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The World Bank

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Report No.: PAD101551

PROGRAM APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF US\$500 MILLION

TO

PT PERUSAHAAN LISTRIK NEGARA (PERSERO)

WITH THE GUARANTEE OF THE REPUBLIC OF INDONESIA

FOR A

POWER DISTRIBUTION DEVELOPMENT PROGRAM FOR RESULTS

March 24, 2016

Sustainable Development
Energy and Extractives Global Practice
East Asia and Pacific Region

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CURRENCY EQUIVALENTS
Exchange rate effective March 24, 2016
Currency unit = Indonesian Rupiah
IDR 1,000 = US\$0.0757839
US\$1 = IDR 13,197.45

FISCAL YEAR
January 1 to December 31

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank	MCB	Miniature Circuit Breakers
BPK	The Audit Board of the Republic of Indonesia	MDU	Main Distribution Units
BPKP	The Board of Supervisors, Finance and Development	MVA	Megavolt Ampere
		MW	Megawatt
		OPRC	Operations Procurement Committee
CPF	Country Partnership Framework	PDDP	Power Distribution Development Program for Results
CPS	Country Partnership Strategy	PDO	Project Development Objective
DLI	Disbursement-Linked Indicator	PforR	Program for Results
DPL	Development Policy Loan		
EIRR	Economic Internal Rate of Return	PLN	PT. Perusahaan Listrik Negara (PERSERO), Indonesia's power utility
ERP	Enterprise Resource Planning		
ESSA	Environmental and Social Systems Assessment		
ETAP	Electrical Transient and Analysis Program	PMU	Project Management Unit
GDP	Gross Domestic Product		
GHG	Greenhouse Gas	PPATK	Financial Transaction Reports and Analysis Section Center
GIS	Geographic Information System	PSO	Public Service Obligation (subsidy)
GOI	Government of Indonesia	PPA	Power Purchase Agreement
GW	Gigawatts	RJP	Rencana Jangka Panjang (PLN's 5-year plan)
IBRD	International Bank for Reconstruction & Development		
IFC	International Finance Corporation	RKAP	Rencana Kerja Anggaran Perusahaan (PLN's annual budget)
IFIs	International Financing Institutions	RUKN	Rencana Umum Ketenagalistrikan Nasional (national energy policy covering 25 years)
IPF	Investment Project Financing	RUPTL	Rencana Usaha Penyediaan Tenaga Listrik (Indonesia's power expansion plan)
IPP	Independent Power Producer		
KIP	Central Information Commission	SAIDI	System Average Interruption Duration Index
KPI	Key Performance Indicator	SAIFI	System Average Interruption Frequency Index
KPK	Komisi Pemberantasan Korupsi	SCM	Supply Chain Management
KPKU	Kriteria Penilaian Kinerja Unggul – Criteria for Excellent Performance (of a State Owned Enterprise)	SOE	State-owned Enterprise
		SPKK	Satuan Pemantau Kinerja Korporat (PLN's internal performance monitoring unit)
kV	Kilovolt	WBG	World Bank Group

Acting Vice President:	Antonella Bassani
Country Director:	Rodrigo A. Chaves
Senior Global Practice Director:	Anita Marangoly George
Practice Manager:	Julia M. Fraser
Task Team Leaders:	Joel Maweni, Dhruva Sahai

INDONESIA

Power Distribution Development Program-for-Results

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PAD DATA SHEET

Indonesia

Power Distribution Development Program for Results (P154805)

PROGRAM APPRAISAL DOCUMENT

East Asia & Pacific Region
Energy and Extractives Global Practice

Basic Information			
Date:	March 24, 2016	Sectors:	Energy
Country Director:	Rodrigo A. Chaves	Themes:	Infra services for PSD (50%) Rural services infrastructure (25%) City-wide infra services delivery (25%)
Practice Manager:	Julia M. Fraser		
Global Practice Director:	Charles M. Feinstein		
Senior Global Practice Director:	Anita M. George		
Program ID:	P154805		
Team Leaders:	Joel Maweni Dhruva Sahai		
Program Implementation Period: Start Date: May 1, 2016		End Date: December 31, 2019	
Expected Financing Effectiveness Date:		April 30, 2016	
Expected Financing Closing Date:		April 30, 2020	
Program Financing Data			
<input checked="" type="checkbox"/> Loan	<input type="checkbox"/> Grant	<input type="checkbox"/> Other	
<input type="checkbox"/> Credit			
For Loans/Credits/Others (US\$M):			
Total Program Cost :	US\$1,450	Total Bank Financing :	US\$500
Total Cofinancing		Financing Gap :	
Financing Source		Amount	
BORROWER/RECIPIENT		US\$530 million	
IBRD		US\$500 million	

ADB	US\$420 million
Total	US\$1,450 million

Borrower: PT Perusahaan Listrik Negara (PERSERO)

Responsible Agency: PT Perusahaan Listrik Negara (PERSERO)

Contact:	Mr. Sofyan Basir	Title:	President Director
Telephone No.:	62 21 725 1254	Email:	

Expected Disbursements (in US\$ Million)

Fiscal Year	2016	2017	2018	2019	2020				
Annual	99	77	108	95	121				
Cumulative	99	176	284	379	500				

Program Development Objective(s):

The program's development objective is to increase access to electricity services and to improve the efficiency and reliability of their delivery in selected areas of Indonesia.

Compliance

Policy

Does the program depart from the CAS in content or in other significant respects?	Yes []	No [X]
Does the program require any waivers of Bank policies applicable to Program-for-Results operations?	Yes []	No [X]
Have these been approved by Bank management?	Yes []	No []
Is approval for any policy waiver sought from the Board?	Yes []	No [X]
Does the program meet the Regional criteria for readiness for implementation?	Yes [X]	No []

Overall Risk Rating: Substantial

Legal Covenants

Name	Recurrent	Due Date	Frequency
Program Fiduciary, Environmental and Social Systems (Loan Agreement Schedule 2 Section I, A)	X		Throughout Project Implementation

The Borrower shall carry out the Program, or cause the Program to be carried out, in accordance with financial management, procurement and environmental and social management systems acceptable to the Bank.			
Name	Recurrent	Due Date	Frequency
Anti-Corruption Guidelines (Loan Agreement Schedule 2 Section I, B)	X		Throughout Project Implementation
The Borrower shall carry out the Program, or cause the Program to be carried out, in accordance with the provisions of the Anti-Corruption Guidelines.			
Name	Recurrent	Due Date	Frequency
Implementation Arrangements Maintenance (Loan Agreement Schedule 2 Section I, C, 1 (a))	X		Throughout Project Implementation
The Borrower shall maintain, at all times during Program implementation, within the Borrower's regular administrative system, implementation arrangements (including the Directorate of Corporate Planning, the Directorate of Finance, the Directorate of Regional Business for Sumatra, Directorate of Human Capital Management, Directorate of Procurement, SPKK, SPI, SHK, the Wilayahs and Distribution Units in Sumatra), all with staff, functions and resources satisfactory to the Bank.			
Name	Recurrent	Due Date	Frequency
Program Management Unit (Loan Agreement Schedule 2 Section I, C, 1(b))	X		Throughout Project Implementation
The Borrower shall maintain, a Program Management Unit at the Borrower's headquarters in Jakarta, assigned with staff (including technical, environmental and social, fiduciary, monitoring and evaluation specialists) in adequate number and with resources and functions satisfactory to the Bank.			
Name	Recurrent	Due Date	Frequency
Program Implementation Units (Loan Agreement Schedule 2 Section I, C, 1(c))	X		Throughout Project Implementation
The Borrower shall ensure that Program Implementation Units at the Wilayahs are, at all times during Program implementation, led by a general manager who is assisted by adequate professional and administrative staff (including procurement and financial management specialists), with experience and qualifications, functions and resources satisfactory to the Bank.			
Name	Recurrent	Due Date	Frequency
Annual Work Plan (Loan Agreement Schedule 2 Section I, C, 2 (a), (b))	X		Throughout Project Implementation
The Borrower shall furnish to the Bank no later than January 20 in each calendar year, beginning in 2017, the Annual Work Plan.			

Thereafter, ensure the implementation of the Annual Work Plan in a manner consistent with the Program Description in Schedule 1 of the Loan Agreement.			
Name	Recurrent	Due Date	Frequency
Program Action Plan (Loan Agreement Schedule 2 Section I, C, 3)	X		Throughout Project Implementation
<p>The Borrower shall undertake the actions set forth in the Program Action Plan.</p> <p>Except as the Bank and the Borrower shall otherwise agree in writing, the Borrower shall not assign, amend, abrogate, or waive, or permit to be assigned, amended, abrogated, or waived, the Program Action Plan, or any provision thereof.</p> <p>The Borrower shall maintain policies and procedures adequate to enable it to monitor and evaluate, in accordance with guidelines acceptable to the Bank, the implementation of the Program Action Plan.</p>			
Name	Recurrent	Due Date	Frequency
Excluded Activities (Loan Agreement Schedule 2 Section II)	X		Throughout Project Implementation
The Borrower shall ensure that the Program excludes any activities as defined in the Loan Agreement Schedule 2, Section II.			
Name	Recurrent	Due Date	Frequency
Program Reports (Loan Agreement Schedule 2 Section III A)	X		Throughout Project Implementation
The Borrower shall monitor and evaluate the progress of the Program and prepare Program Reports in accordance with the provisions of Section 5.08 of the General Conditions of the Loan Agreement. The Borrower shall furnish the Program Reports to the Bank not later than thirty (30) days after the end of each calendar quarter.			
Name	Recurrent	Due Date	Frequency
Program Financial Audits (Loan Agreement Schedule 2 Section III B)	X	Not later than six months after the end of the fiscal year of the Borrower	Annual
The Borrower shall have the Financial Statements audited in accordance with the provisions of Section 5.09 (b) of the General Conditions. Each audit of the Financial Statements shall cover the period of one fiscal year of the Borrower. The audited Financial Statements for each such period shall be furnished to the Bank not later than six months after the end of such period.			
Name	Recurrent	Due Date	Frequency
Verification (Loan Agreement Schedule 2 Section III C)	X		Throughout Project Implementation

The Borrower shall maintain appropriate monitoring and evaluation arrangements for the Program satisfactory with the Bank, including DLI verification protocols as defined in Schedule 2, Section III C. of the Loan Agreement.

The Borrower shall cause the Independent Verification Agent to undertake, no later than one month after the date of the Loan Agreement a verification audit to assess the fulfillment of appropriate Disbursement Linked Results set out in Schedule 4 to the Loan Agreement in accordance verification protocol agreed with the Bank; and, no later than two months after the date of the Loan Agreement furnish to the Bank the report of the Independent Verification Agent, in form and substance agreed with the Bank.

For the purpose of collecting and collating appropriate data for the above-mentioned verification audit(s), the Borrower shall deploy and maintain, throughout the period of implementation of the Program, staff in adequate numbers and with appropriate qualifications and experience.

Name	Recurrent	Due Date	Frequency
Debt Service Coverage Ratio (Loan Agreement Schedule 2 Section V)	X		Throughout Project Implementation

The Borrower shall maintain a debt service coverage ratio of 1.5 times as defined in Schedule 2, Section V of the Loan Agreement.

Team Composition			
Bank Staff			
Name	Title	Specialization	Unit
Joel Maweni	Energy Adviser	Team Lead	GEE02
Dhruva Sahai	Senior Financial Analyst	Team Lead	GEE02
Gailius Draugelis	Lead Energy Specialist	Energy Sector Coordination	GEE02
Yash Gupta	Senior Procurement Specialist	Procurement	GGODR
Christina Donna	Senior Financial Management Specialist	Financial Management	GGODR
Evarist Baimu	Senior Counsel	Legal	LEGES
Chau-Ching Shen	Senior Finance Officer	Disbursements	WFALN
Puguh Imanto	Energy Specialist	Energy	GEE02
Hung Tan Tran	Power Engineer	Energy	GEE02
Kian Siong	Environmental Specialist	Environment	GENDR
Angelia Budi Nurwihapsari	Procurement Analyst	Procurement	GGODR
Susan Shen	Manager	Peer Reviewer	LLIOP
Xiaodong Wang	Senior Energy Specialist	Peer Reviewer	GEE02
Frederic Verdol	Senior Power Engineer	Peer Reviewer	GEE04
Francesca Recanatini	Senior Public Sector Specialist	Governance Specialist	GGODR
Imad Saleh	Operations Adviser	Adviser	OPSPQ
Sri Oktorini	Program Assistant	Operations Support	EACIF
Cristina Hernandez	Program Assistant	Operations Support	GEE02

Hien Minh Vu	Program Assistant	Operations Support	GEE02
Rumiah Aritonang	Program Assistant	Operations Support	EACIF

Non Bank Staff			
Name	Title	Specialization	City
Chrisantha Ratnayake	Consultant	Distribution Planning	Colombo
Sulistiowati	Consultant	Social	Jakarta
Arip Syaman Sholeh	Consultant	Financial Management	Jakarta
I Made Ro Sakya	Consultant	System Planning	Jakarta
Roxana Caprosu	Consultant	Governance Specialist	Washington DC
Kazim Saeed	Consultant	Economist	Karachi
Jace Jeesun Han	Consultant	Energy Specialist	Washington DC

I. STRATEGIC CONTEXT

A. Country Context

1. Indonesia is the world's largest archipelagic state, its fourth most populous nation, and the 10th largest economy in terms of purchasing power parity. It is a member of the ASEAN group of countries that have a combined population of 608.4 million and is also a member of the G-20. With more than 17,500 islands, of which 6,000 are inhabited, Indonesia has a population of over 250 million, with 300 distinct ethnic groups and over 700 languages and dialects. It has a gross national income per capita of US\$3,524 (2014) and it has more than halved extreme poverty to 11.3 percent in the past fifteen years.

2. Indonesia's economic planning follows a 20-year development cycle. The current plan spans from 2005 to 2025. The five-year medium-term development plan, i.e. the third phase of the long-term plan runs from 2015 to 2019, and focuses on key development priorities including energy and infrastructure development, and on improving social assistance programs in education and health-care. Recent energy subsidy reforms have enabled shifts in public spending towards programs that directly impact the poor. However more than 28 million Indonesians currently live below the poverty line set at US\$24.4 per month and approximately half of all households remain clustered around this poverty line. Employment growth has been slower than population growth, and public services remain inadequate by middle income country standards. Indonesia is also doing poorly on a number of health and infrastructure related indicators.

3. In addition despite rising government spending in recent years, Indonesia's core infrastructure stock, such as electricity, road networks, ports, and telecommunication facilities, has not kept pace with economic growth. The resultant "infrastructure gap" in terms of both quantity and quality of investment is due to several factors among which the most important are: a complex and non-transparent regulatory framework for implementation of infrastructure projects; an underdeveloped framework for Public-Private Partnerships resulting in insufficient mobilization of private funds for investment; and the inadequate participation of domestic capital markets in channeling funds to infrastructure sectors. The infrastructure gap contributes to undermine productivity, growth, competitiveness and poverty reduction efforts.

4. Going forward, reducing the infrastructure gap would support growth and prosperity through several channels. The spending effect would support short-term growth and the creation of jobs. As the investments translate into infrastructure stock, private investment will be crowded-in and productive capacity, and long-term growth will be supported. As infrastructure services are delivered firms' competitiveness would increase and so would the population's access to services.

B. Sectoral and Institutional Context

5. The power sector in Indonesia is dominated by the state owned power utility, PT. Perusahaan Listrik Negara (PERSERO) or PLN that owns and operates 39.3 GW of the 51.6 GW of installed generating capacity (2014). Independent Power Producers (IPPs) represent 7.9 GW of installed capacity, and the balance is from captive generation. Total electricity produced

in 2014 was 228.5 TWh of which 198.6 TWh was sold during the year to industries (33.2 percent), households (42.3 percent), businesses (18.3 percent), and others (6.2 percent). PLN's annual peak load in 2014 was 33.3 GW, an increase of 8.06 percent over the prior year. PLN with its monopoly until 2009 on power transmission and distribution (39,910 km of transmission lines, and 925,312 km of distribution lines) is also the major purchaser of electricity produced by IPPs (53.2 TWh or 23.3 percent of total production). While the private sector has made inroads in negotiating licenses with local governments for electricity supply and distribution for isolated mini-grids, PLN remains the dominant force in transmission and distribution in Indonesia. The sector is regulated by the Ministry of Energy and Mineral Resources, while decisions relating to the sector's financial footing including those on proposed tariff increases are taken at the Parliamentary level (Commission VII of the House of Representatives) in discussion with the Ministry of Finance, the State Planning Ministry, the Ministry of State Owned Enterprises, and PLN. The sector until recently was characterized by low electricity tariffs, and high subsidies to PLN. These subsidies projected at 0.6 percent of GDP in 2015 remain unsustainable at current levels, and the government has embarked upon a tariff rationalization effort aimed at limiting subsidies to low income consumers.

6. In addition, Indonesia, with an electrification ratio of 84.3 percent of the population, lags behind its neighbors such as Thailand, Vietnam and China which have achieved universal access. Access to electricity is an important driver for improvements in health and educational outcomes as well as for income growth opportunities for the population. With demand continuing to increase at an annual rate of about 8 percent the national power expansion plan (RUPTL) for the next ten years to 2024 projects a requirement for 70 GW of new generation capacity together with associated transmission and distribution capacity. Public sector resources through PLN are used to finance part of the additional generation capacity alongside the private sector which is expected to develop, finance and operate at least 50 percent of the new capacity during 2015-24.

7. In the face of tremendous pressure to keep pace with economic growth combined with investments that were well below the levels needed to ensure reliable supply, Indonesia's power system has been left with inadequate generating capacity to meet electricity demand (average annual demand growth of 7.8 percent during 2009-13). The sector has faced significant challenges in mobilizing large investments from the public and private sectors due to the following reasons:

- a. *Weak sector financial footing* of PLN due to low electricity tariffs combined with limited Government fiscal space to support major investments.
- b. *A large and unsustainable government public service obligation (PSO) subsidy* averaging US\$9.3 billion annually during 2011-14, and projected at 0.6 percent of GDP in 2015 covering 24 percent of PLN's operating revenues.
- c. *PLN's limited borrowing capacity* due to subsidized electricity tariffs combined with delayed subsidy payments negatively impacting PLN's financial condition and therefore its access to financial markets.
- d. *Weak contract management and implementation capacity* at PLN leading to long lead times in contracting and construction required to install new capacity.

- e. *High political risk* due to an evolving policy framework, regulatory uncertainty, and delays in the issuance of licenses and approvals, undermining private investment.

8. Additional energy sector challenges include a rapid increase of coal in power generation imposing environmental costs on the economy and on society and energy efficiency programs that have yet to gain any significant traction. Coal accounted for about 52 percent of the generation fuel mix at the end of 2014 and its share is expected to increase to 60 percent by 2019. The increasing share of coal in the generation mix will be mitigated to some extent by the GoI's commitment to increase the proportion of renewable energy sources to about 23 percent of the generation mix by 2025. In addition, while the lack of implementation of significant energy efficiency programs to date has contributed to the persistent rapid growth in power demand and capital investment requirements, the ongoing rationalization of tariffs and removal of subsidies will improve incentives for more energy efficiency efforts in the future.

9. The impacts of inadequate investment in power infrastructure are felt through power deficits and persistent low access to electricity (42 million Indonesians have no access to electricity).

10. To address these challenges, at a strategic level, the GoI has committed to a number of long term measures around the following targets:

- a. reducing, and better targeting, energy subsidies to improve productive and resource allocative efficiency;
- b. expanding electricity access by improving the electrification rate from 84.3 percent in 2014 to 99 percent by 2024;
- c. scaling-up renewable energy deployment from 11 percent in 2014 to 23 percent of the energy mix by 2025;
- d. placing investment to expand power generation capacity as one of the high priority pillars of its infrastructure revival program; and
- e. mobilizing a partnership program on energy conservation to incentivize industrial enterprises to convert to energy efficient technologies.

11. At an operational level the GoI has undertaken or initiated the following several measures to address the above power sector challenges:

- a. *Prepared an ambitious power sector investment program.* PLN has developed a power system expansion plan called the “Rencana Usaha Penyediaan Tenaga Listrik”, (RUPTL) for 2015-2024 which is expected to add 70 GW to the system at a total cost of about US\$97 billion. For the first five years (2015-2019) the program will add 42 GW, including 7 GW carried over from prior fast track programs. Out of this program PLN is expected to build, finance and operate 5 GW at an estimated cost of US\$40 billion, including the cost of the associated transmission and distribution investments and the private sector is expected to implement the balance of 30 GW. Given the implementation difficulties in the past and with ongoing projects, delivery of such a massive program will be challenging for both PLN and the GoI. To succeed, it will be necessary for GoI and PLN to step up measures to address the constraints to the

- implementation of the investment program and to identify new ways of doing business. The proposed Program presents a new approach for implementation of the distribution investments.
- b. *Implemented substantial increases in electricity tariffs* in the last two years to improve PLN's financial performance, to better manage power demand and to reduce the PSO subsidy.
 - c. *Issued a new geothermal law and pricing decree* to provide incentives for the development of Indonesia's substantial domestic energy resource.
 - d. *Completed a gas development master plan* to provide a strategy/road map for improving the management of gas resources, including their availability to the domestic market.
 - e. *Initiated a performance based regulation for PLN* so that power prices can be based on efficient costs.
 - f. *Introduced a feed-in tariff* to incentivize private finance for renewable energy development.
 - g. *Initiated a process to introduce a direct lending mechanism* for SoEs to borrow directly from bilateral and multilateral sources for infrastructure financing.
 - h. *Created a performance management unit* at the line ministry and a project management office under the National Project Director, to improve energy project delivery.

12. The Bank is also supporting Indonesia to address these sector development challenges through development policy and investment lending and through technical assistance advisory services. Three ongoing IPF operations for a total of about US\$1.2 billion in IBRD Loans are supporting the sector's ability to meet demand by financing expansion of renewable energy generation capacity (Upper Cisokan Hydropower Project) and transmission lines and substations. The recently approved Development Policy Loan is leveraging policy reforms to improve the regulatory framework for private sector participation in both power and gas, to reduce energy subsidies, and to improve the framework for increased electrification nationwide. In addition, the Bank is engaging with the Government through Advisory Services and Analytics on its core engagement areas of strengthening sector governance and sustainability, supporting renewable energy and low carbon development, expanding access to modern energy services, and enabling gas sector policy formulation and investment planning. These Advisory Services and Analytics have included the development of a gas sector master plan, an Eastern Indonesia electricity access scale-up strategy, support for a performance based regulation to improve PLN's operational efficiency, and related areas,

C. Relationship to the CPF and Rationale for Use of Instrument

13. The Bank's current Country Partnership Framework (CPF) for Indonesia covering the period FY 2016-20 was discussed in December 2015. Earlier in 2015 the Systematic Country Diagnostics (SCD) had identified infrastructure bottlenecks as constraints to inclusive growth. The CPF assigned a priority role to infrastructure, including energy, for furthering the government's development goals of building a more prosperous, equal and economically independent Indonesia, eliminating extreme poverty and boosting shared prosperity.

14. Sustainable energy and universal access is identified as a key engagement area for the World Bank Group. Specifically, the CPF identifies the following four main areas for the Bank to focus on in the energy sector: (i) energy infrastructure: improving operational efficiencies, reliability of services through among others transmission and distribution and pumped storage; (ii) renewable energy and low carbon development: accelerating geothermal and other renewables complemented with sustainable development of hydropower and the gas sector; (iii) access to modern energy services: potentially through grid extensions, possible off grid solutions, modern cooking solutions; and (iv) sector governance, competitiveness and efficiency, particularly through the DPL series, and project delivery TA.

15. To implement this engagement strategy, the World Bank Group’s support to the sector comprises the traditional Investment Project Financing (IPF), IFC equity and loans to private sector projects and TA, in addition to the recently introduced development policy lending. IPF and TA are used to support power infrastructure projects, especially renewable energy, to facilitate the rationalization of the electricity tariffs and subsidy regime, and to strengthen project/program implementation capacity of the line ministry and of energy sector SoEs. Development policy lending is being used to leverage policy reforms for low-carbon development, improved access to electricity, rationalization of energy subsidies and creation of an environment for enhanced private sector participation.

16. The power sector has faced significant implementation constraints including under past and ongoing Bank supported operations. These constraints have resulted in slow implementation and disbursement of expenditures leading to delayed realization of project benefits. The main constraints are: (i) regulatory – land acquisition and obtaining right of way through forestry lands for infrastructure development, and (ii) PLN specific – project management, procurement and contract management delays. These constraints are summarized in the text box below which also shows the underlying causes and the ways in which the PforR is designed to mitigate them.

Box 1: Lessons Learned from Past and Current Bank Operations in Indonesia’s Power Sector

<i>Performance constraints</i>	<i>Underlying Causes</i>	<i>How PforR addresses Lessons Learned</i>
<p>Regulatory Delays in project implementation [in generation and transmission projects]</p>	<p>Weak institutional capacity in project management, including inadequate planning, engineering, procurement and contract implementation, in managing large and technically complex contract packages. In addition, slow decision-making due to fragmented responsibilities, and rigid internal approval requirements.</p>	<p>Under the Program, the Main Distribution Unit items, which comprise the bulk of expenditure, are fairly standardized and do not involve intricate engineering. Furthermore these items are procured centrally through framework agreements with registered (pre-qualified) manufacturers in a streamlined manner.</p> <p>Implementation is decentralized through Wilayahs who procure the small value goods, works, and services. Corporate reorganization is completed, project monitoring processes is improved, and delegation of authority is being considered to expedite approvals.</p>

<p><i>Land acquisition</i></p>	<p><i>Several layers of approval across multiple jurisdictions & agencies that have typically taken several months/years to complete. Legislation supporting market based compensation to landowners yet to be tested in practice.</i></p>	<p><i>A framework for procurement performance monitoring and reporting to be undertaken by PLN has been agreed under the Program Action Plan. Focuses on the distribution segment of the power sector which has less demand for land, and uses the alignment of existing roads to reach proposed consumers.</i></p>
<p><i>RoW through forestry lands</i></p>	<p><i>Nascent (2012) legislation permitting right to traverse conservation forests. Protection forest use to be compensated through reforestation of twice the amount of land in adjacent property. Backlog for Government appointed surveyors to identify alternate land.</i></p>	<p><i>The Program does not envisage right of way access through conservation or protection forests.</i></p>

17. *Lessons Learned from Past and Ongoing Operations:* The choice of the PforR for the proposed operation has been informed by lessons learned from these operations, the GoI interest in piloting a results based approach in distribution, and experience from other countries. The PforR is designed to mitigate the implementation constraints encountered with past and ongoing generation and transmission projects as follows:

- Implementation of distribution investments is decentralized to PLN’s branch offices (Wilayahs) which conduct the planning, design, procurement, contract management, payment, and commissioning processes. These decentralized arrangements have resulted in faster implementation with annual budget execution of about 80% compared to around 50% for transmission and generation projects.
- The simpler nature of distribution activities and the small value of contracts also require simpler designs and project management. The specifications of Main Distribution Unit items, which comprise the bulk of expenditures under Program, are fairly standardized and procurement is carried out centrally and efficiently through framework contracts with registered (prequalified) manufacturers.
- It will support the distribution segment of the power industry which typically has more limited environmental and social impacts. Unlike generation and transmission projects the requirements for land for substations are minimal and communities willingly donate and/or sell land in order to have the benefits of access to electricity. The land requirements for distribution lines are regularly mitigated by routing the lines through existing road corridors.

18. Although PLN's implementation of the distribution program has fared much better than that of generation and transmission there exists scope for leveraging PLN's program systems for distribution to speed up implementation even more and to achieve the key GOI objective of universal access to electricity in the next ten years as well as to improve efficiency and effectiveness of expenditures. By speeding up implementation, the PforR would help to increase the percentage of the population with access to electricity in Sumatra, a region with the largest population outside of Java-Bali. About 3.2 million additional customers will be added over the next five years. About 85 percent of the population already has access to power in Sumatra. The remaining population is either far from the grid in the remote areas or are the poorest households in already electrified areas. The program would therefore contribute to reaching the poorest and the bottom 40 percent of the population in Sumatra.

19. Given that substantial generation capacity reserves exist on Sumatra and that significant additional capacity is either already under construction or at procurement stages there is a need to speed up distribution system development to enable this power to be efficiently and reliably delivered to consumers¹. The PforR instrument would help to speed up implementation by:

- a. focusing the attention of PLN and other concerned government agencies on results since disbursements of the Bank Loan would be based on results instead of expenditures as is the case with Investment Project Financing;
- b. allowing PLN to use its own program systems while simultaneously supporting the improvements of those systems – experience has shown that PLN has generally achieved higher rates of budget execution when using its own systems rather than those of the government and/or external development partners; and
- c. reducing the cost of doing business for PLN by allowing it to use the same systems (its own) for both International Financial Institutions (IFIs) financing the program i.e. the Asian Development Bank (ADB) and the Bank

20. Not only is the PforR instrument expected to enable faster program implementation for the reasons explained above but it is also expected to contribute to improvements in the effectiveness of PLN's expenditure programs and to the strengthening of institutions.

21. *GoI's Interest in Piloting Results-based Approaches.* Given the implementation constraints experienced in generation the GoI is keen to launch results based approaches to improve project implementation outcomes. The ADB has recently approved a results-based loan of about US\$600 million to support transmission and distribution in Sumatra for the same 5-year period, of which US\$420 million is for distribution. These results-based loans offer PLN an opportunity to pilot a new approach to providing incentives for improving implementation performance, developing institutional capacity, and lending to SoEs through the direct lending mechanism. As the first PforR in Indonesia its successful implementation has the potential to facilitate the adoption of similar innovative mechanisms in other parts of the country and in other sectors. The PforR is closely aligned with the Energy Development Policy Lending (DPL) series, the first of which was approved by the Board in early December 2015, in that improvements in the

¹ The pipeline of generation and transmission projects is not fully funded and hence the IFI's support for distribution will enable PLN to shift more resources to these projects as well as towards projects in other regions.

policy framework leveraged by the DPL series, including on tariff reforms, will help to improve the viability of distribution investments carried out under the Program.

22. *Experience from distribution sectors in other countries.* The PforR instrument is suitable for supporting distribution activities because the outputs and outcomes of distribution activities are more easily measurable and verifiable, criteria that is critical for a system that disburses based on achievements rather than on expenditures. Although this would be the first PforR supported by the Bank in the power distribution sector globally the linkage of disbursements to results is similar to output-based lending which has been used quite extensively and successfully in the power distribution sector in many countries.

23. Finally, the PforR is also an appropriate instrument to deploy for the proposed investments given the existence of a well-defined government program.

II. PROGRAM DESCRIPTION

A. Program Scope

24. PLN's current power expansion plan comprising generation, transmission and distribution investment requirements (the "Rencana Usaha Penyediaan Tenaga Listrik" or RUPTL) covers the period 2015-2024. The broader context for the RUPTL is the Rencana Umum Ketenagalistrikan Nasional (RUKN) which is a 20-year national policy document approved by Parliament. The RUKN provides the GoI's policy guidance for preparation of the RUPTL. This guidance is related primarily to the projected energy demand and desired targets for electrification and the energy mix of production. The current RUKN was approved by Parliament in 2008 and covers the period up to 2027.

25. To close the power infrastructure gap which is constraining economic growth the current administration is focusing on implementation of the 5-year time slice of the RUPTL covering the period 2015-2019. Consistent with both the RUKN and the RUPTL the key objectives of the 5-year time slice are to increase access to electricity for household consumers and to meet the economy's power needs while improving efficiency and reliability of supply. Its specific key targets are to increase generation capacity by 35 GW and increase access to electricity from 85%, to 97% by 2019. Further, PLN's detailed implementation plan envisages improvements in efficiency (loss reduction) and reliability indicators (SAIDI and SAIFI) as detailed in Annex 4.

26. The estimated total costs of the RUPTL for 2015-2019 are US\$83.4 billion of which US\$58.9 billion is for generation, US\$17.1 billion is for transmission, and US\$7.4 billion is for distribution as shown in Table 1 below. Excluding the expected private sector financing for generation, PLN's investment requirements for the 5 years to 2019 are US\$43.3 billion of which US\$11.75 billion are for the Sumatra region.

Table 1: Power Sector Expansion Expenditure Plan (RUPTL) for 2015-2019

Expenditure type	Total PLN (US\$billion)	Sumatra only (US\$billion)
Generation		
by PLN	18.80	4.40
by IPPs	40.10	8.64
Total	58.90	13.04
Transmission		
by PLN	17.10	5.90
Distribution		
by PLN	7.40	1.45
Total Sector Expenditure Plan	83.40	20.39
Total PLN Expenditure Plan²	43.30	11.75

27. The Government’s program on which the proposed PforR is based is the national distribution component of the 2015-2019 time slice of the RUPTL which is estimated to cost US\$7.4 billion. The program comprises activities aimed at improving distribution system planning capabilities, increasing access to electricity by connecting new customers and improving existing distribution networks, and increasing the efficiency and quality of services to existing consumers.

Bank Financed Program-for-Results

28. The PforR Program to be supported by the Bank is a geographic slice of the distribution component of the RUPTL in that it would only cover Indonesia’s Sumatra region out of the national distribution plan for the period 2015-2019. It is also a time slice in that it covers the first five years of the sector expansion plan for the period 2015-2019. The estimated cost of the Sumatra distribution program is US\$1.45 billion or about 20% of the total national distribution for the five years.

29. PLN has selected the Sumatra region for coverage under the proposed program based on several specific criteria. First, Sumatra has the largest population center outside Java Bali with about 54 million people, of which 9 million have no access to electricity and it is an important economic growth center for Indonesia. Second, there are substantial existing and planned generation and transmission investments in Sumatra that require complementary investment in distribution in order to enable the power produced when these investments are commissioned to be delivered to the regional economy. Third, a focus on Sumatra offers the best prospect for fast progress towards achieving the RUPTL’s national ER target of 99.4 percent by 2024. Up to about 3.2 million customers could be added to the grid in the 5 year period to 2019 resulting in an increase in the regional electrification ratio from 85 percent to about 90 percent. Fourth, the region offers the best opportunity for “piloting” the use of the IFI’s performance-based lending instruments, learning lessons, and improving effectiveness of its program expenditure management before attempting to use them in the more difficult terrain of Eastern Indonesia.

² Excluding private sector financing of generation capacity expansion

30. PLN's strategy is mobilize substantial private sector resources for generation and to focus its own resources and those from multilateral funding agencies to finance transmission and distribution activities.

31. The Program will support implementation of activities designed to achieve PLN's program goals in five result areas as follows:

Result Area 1: Improved access to electricity. To achieve this objective the Program will support the expansion of the distribution network with approximately: (i) 19,487 circuit-km of MV and 23,594 circuit-km of LV distribution lines; and (ii) 28,327 transformer units with a total MVA capacity of 2,895. These network improvements will enable PLN to connect about 3.2 million additional customers over the 2015-2019 period.

Result Area 2: Improved quality of service. Activities to improve the quality of service will involve system reinforcement and upgrading and customer outage management. In addition the Program activities will include upgrading of Distribution Control Centers to SCADA functionality and completion of a GIS database in each Wilayah. These activities will improve the accuracy of measuring system reliability using the System Average Interruption Duration Index (SAIDI) and System Average Interruption Frequency Index (SAIFI) - internationally recognized standards for measuring system reliability. Reduced MV feeder technical interruptions, and decreases in the frequency and duration of outages and in voltage fluctuations will indicate an improvement in the quality of services.

Result Area 3: Improved distribution efficiency. To achieve this objective the Program will support rehabilitation and upgrading of existing distribution lines and substations, and installation of additional substations and of improved metering devices. Distribution losses, a key barometer of utility performance, deteriorated significantly in 2013 (ranged from 7.4%-14.7% among the Wilayahs) and again in 2015 after showing a modest recovery in 2014. The expected additions to the system of 80 grid substations (under PLN's transmission program and not part of the PforR) by 2017 will help to reduce system losses. The Program will complement loss reduction efforts by: (i) expanding, rehabilitating, and upgrading the distribution lines and substations; (ii) increasing the number of distribution transformers and thereby improving the LV/MV ratio in the network; and (iii) supporting improved network planning.

Result Area 4: Increased power consumption. The GoI's expectation is that increased household connections will translate into higher levels of electricity consumption which would contribute to improved productivity and income growth among the population although per capita consumption may initially decline as poorer consumers are connected. The Program will, therefore, also measure the increases in sales to residential customers that will result from implementation of the Program activities. All the activities that will be implemented under the Program to increase access, improve quality of services and to improve efficiency

and institutional capacity will also contribute to increased power consumption by relieving constraints that have kept average annual growth rates at about 8 percent and below. However, achievement of this goal will also be influenced by activities outside the program related to generation and transmission components of the RUPTL and the risks related thereto are moderate. The risks and the relevant measures to manage them are explained in the integrated risk framework.

Result Area 5: Improved institutional capacity. The Program’s institutional capacity building objectives are to improve distribution system planning and budgeting and to improve operational management.

32. To strengthen distribution planning the Program will include the following activities: (i) review, update and issuance of revised distribution planning guidelines; (ii) integration of planning software with GIS databases; (iii) enabling the use of planning software by multiple users at each location through procurement of a corporate license.

33. Activities to integrate budgeting with Enterprise Resource Planning system (ERP) will be extended to cover all Wilayahs in Sumatra. Under the Program, PLN will review the potential to optimize the use of GIS databases, not only for distribution planning but also for customer outage management, transformer load management and asset management functions.

Program Beneficiaries

34. The principal Program beneficiaries will include: (a) about 3.2 million new customers that will be connected to the grid and benefit from a more reliable energy source; (b) existing industrial and commercial customers who will benefit from increased quality of service and will thus be able to better plan their operations; (iii) domestic contractors who will have the opportunity to bid and participate in the implementation of the Program; (iv) local equipment and materials suppliers who will be able to bid and supply the Wilayahs with distribution materials; and (v) the local population that will benefit from increased employment opportunities during construction as the Program represents a significant scale up of PLN’s distribution activities. About 50.1% of beneficiaries are expected to be women (based on 2011 population data). The project will neither directly promote nor sustain any gender inequalities in the country. Increased access to electricity will in general benefit both men and women, however regional and global evidence suggests that women in particular benefit.³

³ According to the EAP Companion to the World Development Report 2012, “Toward Gender Equality in East Asia and Pacific”: While lack of electricity affect both female- and male-led enterprises, evidence suggests that such constraints may be more onerous among small and informal firms than among larger firms and, therefore, may constrain female-led enterprises disproportionately. In Indonesia female-led enterprises tend to be smaller, more precarious, less capital-intensive and less productive than male-led enterprises (Indonesia Country Gender Action Plan). Furthermore, having access to electricity extends the hours available for both productive and leisure activities, particularly for women and girls (World Bank, 2012).

**Table 2: Program Financing
(US\$Million)**

Source	Amount	% of Total
Government		
PT PLN	530	37
IBRD	500	34
Other Development Partners		
Asian Development Bank	420	29
Total Program Financing	1,450	100

The Asian Development Bank’s Program

35. The Asian Development Bank (ADB) has prepared and negotiated a Results Based Loan (RBL) of US\$600 million to PLN. The ADB RBL instrument is very similar to the PforR. The RBL will support PLN’s transmission and distribution expenditure program over the 2015-19 period in the Sumatra region. Thus, both ADB and the Bank are proposing to provide parallel financing for the same distribution program in Sumatra over the same period. The only difference in program coverage is that of the US\$600 million ADB Loan about US\$180 million will be used to support prior results of the transmission component of the RUPTL; otherwise the Disbursement-Linked Indicators (DLIs), the implementation, monitoring and evaluation arrangements have been successfully harmonized through consultations and information sharing during the preparation process. ADB has also agreed to use the same Independent Verification Agent that PLN will retain for the PforR.

B. Program Development Objective (PDO)

36. The program’s development objective is to increase access to electricity services and to improve the efficiency and reliability of their delivery in selected areas of Indonesia.

C. Program Key Results and Disbursement Linked Indicators

37. The Program’s key outcome indicators are as follows and the Results Framework is provided in Annex 2:

- a. The additional total number of customers connected to PLN’s grid. This indicator measures the degree of access to electricity achieved by the Program.
- b. Reduction in System Average Interruption Duration Index (SAIDI) and System Average Interruption Frequency Index (SAIFI). These are internationally accepted measures of power supply reliability.
- c. Percentage reduction in distribution system losses. This is a key parameter for assessing system efficiency improvements.
- d. Annual increases in sales in GWh to residential customers to measure increases in consumption enabled by the Program.

- e. Improved capacity for distribution planning, procurement and contract management.

38. The Program results chain summarizing the expected outcomes, the intermediate indicators and the relevant activities that will be undertaken by the Program to achieve the PDO are summarized in Table 3. The proposed DLIs are shown in bold in the intermediate/outputs and outcomes columns of the table.

Table 3: Program Results Chain

Result Area	Activities	Intermediate indicators/outputs	Outcomes
RA 1: Improved access to electricity	Extension of 20kV distribution lines	Annual approved work plans (RKAP) Percentage of work plans completed Additional Length of distribution lines (increase in kms) Additional capacity of distribution transformers (increase in MVA)	Number of residential customers connected
RA 2: Improved quality of service	System reinforcement Customer outage management	Annual approved work plans (RKAP) Percentage of work plans completed Additional Length of distribution lines (increase in kms) Number of MV feeder interruptions per 100 kms Additional Capacity of distribution transformers (increase in MVA)	Reduction in SAIFI and SAIDI Improved voltage profile
RA 3: Increased distribution efficiency	Rehabilitate and upgrade distribution lines Rehabilitate and upgrade substations Improved metering	Approved annual work plans (RKAP) Percentage of work plans completed Additional distribution transformer units	Reduction in distribution losses
RA 4: Increased power consumption	All the above activities will contribute to this result area	Approved annual work plans (RKAP) Percentage of work plans completed	Volume of additional energy sales to residential customers (increase in TWh)
RA 5: Institutional strengthening and capacity building	Improve distribution planning Staff training Post PLN Procurement regulations on website Implement upgraded e-procurement system and post contract award details in e-procurement system Conduct assessment of local	Issue revised distribution planning guidelines Enhanced use of GIS facilities Integrate budgeting with ERP in all Program Wilayahhs Number of certified and skilled systems planners and procurement staff Contract data publicly available Mfg. capacity shortfalls if any, identified and actions taken to broaden the mfg. base.	Increased efficiency in program implementation Increased procurement transparency Increased procurement transparency Assurance of timely equipment deliveries

	mfg. capacity for MDU items Prepare a roadmap to implement a whistleblower mechanism Disclosure of PLN's blacklist onto website & electronic portal Develop framework for procurement performance monitoring and reporting	Strengthen regulations and establish mechanism PLN blacklist made publicly available Systematic monitoring of procurement performance	Improve complaint handling mechanism Improved transparency Assurance of timely Program implementation
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39. The DLIs have been selected and agreed upon with PLN. The selection of DLIs was guided by three key considerations. For each result area, the use of the identified outcome indicators as DLIs was considered first as this would directly provide the incentives for meeting program goals. The second step was to consider the feasibility of measuring, monitoring and verifying the indicators. In cases where the measurement and monitoring of outcome indicators presented difficulties due, for example, to deficiencies in PLN's systems the use of output/intermediate indicators was considered. In the latter situation, the choice of specific intermediate/output indicators was guided by their significance in signaling progress towards achieving the planned outcomes. Finally, the selection of DLIs was informed and coordinated with the Asian Development Bank who are financing the same program in Sumatra. The selection of DLIs has therefore been harmonized with the ADB.

40. There are ten DLIs. Loan allocations for prior results are embedded in DLIs 1-7. The DLIs comprise a mix of outcome indicators (2) and intermediate indicators (8). Five of the intermediate/output DLIs fall under the institutional strengthening and capacity building results area and are intended to facilitate process/behavioral changes that will speed up preparation of annual plans, facilitate program budgeting, and improve distribution planning –changes that will in turn facilitate the achievement of the Program's objectives. This set of DLIs will seek to help PLN to achieve potential program system improvements that were identified during the technical and fiduciary assessments. The other three intermediate/output DLIs relate to important program implementation milestones (that will signal progress towards achievement of program outcomes). For example, reduced technical interruptions per 100 kms of MV distribution lines will signal improvements in the quality of power services whereas increases in kilometers of MV distribution lines will signal the increased potential for additional customer connections.

41. Apart from the institutional strengthening and capacity building results area all the indicators are already being measured and monitored by PLN. The rationale for the choice of DLIs by result area is further elaborated below:

- a. **Improved Access to electricity:** The number of residential customer connections is a key indicator used by both PLN and the GOI to assess progress of the country's electrification goals. This is a direct outcome measure for access that is easy to measure, monitor and verify. In addition to this indicator the Bank and PLN agreed to also use the length of additional MV distribution lines as an additional DLI for increased access given that it is an important signal of progress towards increasing customer connections. It will also measure network coverage which is an indicator of possible additional connections that will materialize in future.
- b. **Improved quality of service:** Ideally SAIDI and SAIFI would be the best outcome measures for assessing the quality of services. However, PLN's procedures for measuring SAIDI and SAIFI while improving are still work in progress and will be strengthened with the conversion of distribution control centers into full SCADA functionality and with the completion of installation of GIS facilities in all Wilayahs during the Program period. Hence the Bank and PLN agreed to use the number of MV feeder technical interruptions per 100 km (an intermediate indicator) as the DLI for this result area. Nonetheless SAIDI and SAIFI indicators will be monitored and reported under the Program's Results Framework.
- c. **Increased efficiency:** Distribution system losses are a key measure of a utility's operational efficiency. Recent trends, however, have seen distribution losses increasing in both 2013 and during the first half of 2015. The improvement of distribution losses is heavily dependent on the completion of the new grid substations and associated transmission lines (a complementary project but outside the scope of this project). Without the timely completion of these grid substations technical losses are expected to increase with the added network loads. Furthermore while some investments in the Program will help to reduce losses others such as network expansion may actually increase losses. The Bank and PLN have agreed to focus efforts on improving network planning to minimize losses. They have also agreed to use additional number of transformer units installed, an intermediate indicator, as the DLI for this result area. The additional number of transformers connected will help PLN to focus on reducing LV feeder lengths and increasing MV coverage which will help reduce the technical losses in the LV system.
- d. **Increased power consumption:** This is a straightforward measure that captures the translation of increased residential customer connections (the DLI under RA 1) into actual access benefits for the beneficiaries. It also captures the increase in consumption of existing consumers which sometimes need to be facilitated by network improvements. This also is a measure that PLN ordinarily monitors and is easily verifiable through billing reports. The use of this measure as a DLI will give PLN incentive to increase actual power flows and not only customer connections.
- e. **Institutional strengthening and capacity building:** The two prior results and three DLIs for this results area are based on the prioritized recommendations of the draft technical and fiduciary assessments. For prior results the approval of 2016 work plans is intended to provide PLN with an incentive to expedite the approvals before

the start of its fiscal year so that its Wilayahs have enough time to fully implement the plans within the year; while the selection of the IVA is meant to provide independent verification of Program results. The two DLIs for the implementation phase are intended to strengthen distribution system planning and improve program budgeting. The measures supported by the institutional strengthening and capacity building results area will be expected to positively impact implementation of the entire PLN distribution program beyond Sumatra and beyond the RPJMN (Medium Term Infrastructure Development Plan) in the long term.

42. Table 4 below shows the allocation of the IBRD Loan to the DLIs, including the allocation to prior results, as agreed with PLN during preparation of the Program. A detailed DLI matrix is presented in Annex 4. The allocation of the IBRD Loan among the ten DLIs was guided by two main considerations. First, in the hierarchy of the government’s program goals is increasing the electrification ratio to near universal levels by 2024. Hence the bulk of the Loan (US\$306 million) is allocated to the three related DLIs of customer connections and growth in residential energy sales (1, 2 and 5). The second hierarchy of program goals relate to enhancing distribution efficiency and the quality of services and about US\$125 million was allocated to the DLIs (3 and 4) related to these goals.

Table 4: Disbursement Linked Indicators

Results	DLI#	Disbursement Linked Indicators	Indicative Loan Allocation (US\$ Million)
Improved access to Electricity	1	✓ Additional Number of Customers	145.56
	2	✓ Additional Length of MV distribution lines (km)	55.00
Improved quality of services	3	✓ Number of MV feeder technical interruptions per 100 km	60.00
Increased efficiency	4	✓ Additional distribution transformer units	65.56
Increased power consumption	5	✓ Growth in residential energy sales (%)	105.55
Institutional strengthening and capacity building	<u>Prior results</u>		(16.00)
	6	✓ FY 2016 Annual Work Plan approved	15.00
	7	✓ PLN has collaborated with development partners in the recruitment of an independent verification agent	1.00
	<u>DLIs during implementation</u>		(52.33)
	8	✓ Integrate budgeting with ERP in all Program Wilayahs	19.00
	9	✓ Issue revised planning guidelines acceptable to the Bank	25.00
	10	✓ Integrate planning software with GIS facilities	8.33
Total			500.00

D. Key Capacity Building and Systems Strengthening Activities

43. An important feature of this operation is institutional strengthening and capacity building to further improve PLN’s effectiveness in implementing its power distribution program. The

technical, fiduciary and governance assessments have identified a number of areas for systems strengthening.

44. PLN's systems for distribution planning can be improved to optimize outcomes related to distribution losses and power supply reliability levels. Its procurement and contract management practices require strengthening to increase transparency and ensure competition for the supply of materials and equipment which could lead to better bid prices and more efficient program costs.

45. Financial management of the program could be enhanced by: (i) strengthening the capacity and accountability of SPKK, the performance verification unit that reports to PLN's President Director; (ii) linking the budget to ERP application in order to facilitate budget preparation and monitoring; and (iii) implementing appropriate modifications to ERP to facilitate financial reporting.

46. These capacity building and systems strengthening needs have been incorporated in the Program design as follows: (i) through DLIs and prior results fulfilment of which will trigger disbursement of the loan amounts allocated to the DLIs 6-10; and (ii) as specific actions to be undertaken by PLN under the Program Action Plan during the program period and within agreed time frames (Annex 8).

47. For actions requiring resources PLN has opted to use its own resources instead of seeking technical assistance, except for an assessment of needs for upgrading distribution control centers to full SCADA functionality for which PLN has requested the Bank's support in securing grant financing. PLN will retain the services of an Independent Verification Agent (IVA) for the duration of the Program to verify the achievement of DLIs and to support the capacity building of SPKK. ADB has agreed to finance the first two years of the verification agent's services and PLN will ensure availability of funding for the remainder of the Program period. During negotiations the terms of reference for the IVA were agreed upon with PLN.

III. PROGRAM IMPLEMENTATION

A. Institutional and Implementation Arrangements

48. The program will be administered by a central Project Management Unit (PMU) located at PLN's headquarters, but the physical implementation activities will be carried out by PLN's regional offices called "Wilayahs". The Wilayahs have been carrying out similar programs over the years and are experienced and capable of managing the distribution construction work envisaged under the program. Most material requirements will be requisitioned from approved suppliers under PLN's Supply Chain Management (SCM) system and the balance of items will be procured locally by the Wilayahs. The construction works contracts will be procured by the Wilayahs. All implementation activities will be carried out by the respective contracts divisions within each Wilayah and overseen by the distribution systems manager under the Wilayah General Manager. The PMU supported by the Wilayahs will bear overall responsibility for the work program, quality and timeliness of the program works, and its satisfactory completion.

B. Results Monitoring and Evaluation

49. Annex 2 presents the Program's Results Framework. PLN, as implementing agency, will have the responsibility for overall Program results monitoring and evaluation. Within PLN the specialized performance monitoring unit (Satuan Pemantau Kinerja Korporat - SPKK) will collect and consolidate data from the Wilayahs and assist the PMU to prepare a quarterly performance monitoring report. SPKK's role under the Program is in line with its existing mandate to report to PLN's President Director on corporate performance against the agreed key performance indicators. The Wilayahs also currently maintain statistics on virtually all the indicators for which they will be required to provide data under the Program. While PLN's evaluation capacity and established procedures are reasonable the Program will bring added value by helping PLN to further strengthen its monitoring and evaluation methodologies and capacity through the assistance of a third party verification agent as described in para 51 below.

C. Verification Protocols and Disbursement Arrangements

50. **Verification Protocols:** In line with the Bank's policy for PforRs, PLN will retain an IVA on terms of reference acceptable to the Bank to verify the achievement of DLI results. As agreed with PLN the same IVA will be used to verify DLIs under both the ADB and the IBRD loans. While the Borrower is responsible for engaging the IVA, in order to engage the IVA in time for the Program's prior results to be verified by loan signing (expected around the end of April 2016), funding for this IVA will initially be sourced through an ADB administered grant using ADB's procurement procedures. This grant is expected to cover the initial two years of the IVA's engagement. Subsequent to this PLN will put in place an arrangement for retaining an IVA for both IFI loans for the remaining period of the Program on the basis of terms of reference satisfactory to the Bank.

51. The IVA will verify results through financial audit, procedural verification, and physical inspection that will test the accuracy and quality of results claimed by PLN. In accordance with good audit practice, physical verification will take place against a sampling framework and frequency. The level of calibration will be detailed in the terms of reference or Verification Protocol that is satisfactory to the Bank. The IVA will use the Verification Protocol as the basis for preparation of a Program Results Verification Report that will be submitted to the Bank by PLN.

52. **Disbursements:** The Loan proceeds will be disbursed against submission to the Bank of the IVA's Program Results Verification Report on the achievement of DLIs. PLN will present the Program Results Verification Report to the Bank within three months of the end of each calendar year. The Bank will use the Program Results Verification Report to determine the amount of the eligible disbursements to be made based on the results achieved.

53. PLN understands that if after the Loan Closing Date the Bank establishes that the Withdrawn Financing Balance exceeds the total amount paid for Program Expenditures, exclusive of any such amounts financed by any other financier or by the Bank under any other loan, credit or grant, the Borrower shall promptly upon notice from the Bank, refund to the

Bank such excess amount of the Withdrawn Financing Balance. The Bank shall then cancel the refunded amount of the Withdrawn Financing Balance.

54. **Prior Results:** An amount of up to US\$ 100 million has been allocated for prior results. Of this amount about US\$83 million is embedded in DLIs 1-5 and US\$16 million is provided under the institutional and capacity building result area, (DLI 6 and 7 for completion of the FY2016 annual work plan and the recruitment of the IVA respectively). Disbursements for prior results will be made against the verification of the results following the effectiveness of the Loan.

IV. ASSESSMENT SUMMARY

A. Technical

55. **Strategic Relevance and Program Structure:** The Government has developed an overall program to address the goal of increasing economic growth to 7 percent or above in the medium term in order to reduce inequality and poverty in the country. A crucial component of this program is the role of infrastructure development, in particular electrical energy. Overall, the Government's target is to achieve near complete electrification of the country by 2024 and improve performance of the sector's operations. The development program is well structured and built up in a number of stages. The overall framework for the development of the power distribution sector is established in the RUPTL which provides an identification of stakeholder expectations and PLN's own mission and goals. The next stage deals with the formulation of a strategy by analyzing the village electrification road map, PLN's short and long term goals, operational issues, key performance indicators and strategic initiatives and leads to the preparation of a five year investment plan which is called the Rencana Jangka Panjang (RJP) that is prepared for each Wilayah. When developing the RJP a detailed review of the performance over the past 5 years is conducted (Kriteria Penilaian Kinerja Unggul or KPKU assessment) including a SWOT analysis to assist in developing a more focused approach to meeting the goals set for the next five years. The proposals in the RJP are next translated into an annual implementation plan and budget which is called the Rencana Kerja Anggaran Perusahaan (RKAP). The RKAP spells out the details of network expansion and improvements to be carried out in each year along with the related budgetary costs.

56. According to the RUPTL for 2015-24, Sumatra's distribution system needs additional network facilities of around 20,000 circuit km of MV lines, 23,000 circuit km of LV lines and 2,895 MVA or 28, 000 units of distribution transformers. It is observed that in respect of PLN's budgeted work program about 80 percent of the approved works are completed each year and the remaining items are carried forward to the following year. The overall progress on planned distribution works is considered to be satisfactory.

57. The key program objectives may be broken down to its key components as follows:

- a. Improve access to electricity.
- b. Improve quality of service.
- c. Improve distribution efficiency.
- d. Increase supply of electricity for local development.

e. Institutional development.

58. A program for the improvement of customer service such as enhancement of outage management services and attending to consumer requests is also addressed when preparing the annual budgetary requirements. Activities under components a, b and c will mostly influence each other, but are classified according to their prime targets.

Technical Soundness

59. All network development and improvement activities are planned by the planning unit of the respective Wilayahs. This unit utilizes the distribution planning software called Electrical Transient and Analysis Program (ETAP) to model the network and to undertake load flow studies to provide performance characteristics such as network voltages and losses for development proposals under consideration. ETAP is industry standard software and is used by many utilities and consultants worldwide and provides an acceptable basis for identification and justification of the development projects. A series of discussions between PLN corporate headquarters and the respective Wilayah on the related technical and budgetary issues leads to the finalization of the above investment plans which are then implemented by each Wilayah. During preparation the Bank team agreed with PLN on a number of areas for improvement such as integrating GIS data into program planning, reviewing technical standards, and improved attention to the rural electrification component to speed up access to non-electrified areas, etc.

60. Distribution system losses is a key barometer of the performance of a power utility. Distribution losses at PLN have increased during 2012-14 with Sumatra distribution losses being 11.9 percent in 2014. The increase in distribution losses is attributed to the delay in high voltage substation construction, combined with the expansion of the MV Network to reach scattered consumers. The overall deterioration in loss performance is a matter of concern and a detailed evaluation of the causes for the increase in losses will be carried out under the Program along with a proposed upgrading of PLN's distribution control centers, and investment in distribution substations.

61. The Wilayahs have adequate technical, and organization capacity to operate and maintain their distribution assets. During Program preparation the Bank's technical assessment confirmed that the distribution assets are well maintained and in good condition. In the past PLN has allocated adequate funding for operation and maintenance of the Wilayahs distribution assets in the range of 3-5 percent of capital expenditures in line with best industry practices. Future allocations will be assured through the recently introduced Performance-based Regulation which allows for adequate maintenance in tariff setting thus assuring PLN of adequate revenues to cover O&M costs.

62. **Results Monitoring and Evaluation Capacity:** PLN's annual program review when preparing the RKAP budget and activities for the next year offers a good opportunity for annual monitoring of the program. Statistics maintained by each Wilayah on the agreed KPIs also offer an effective facility for the monitoring of results. PLN's evaluation capacity is satisfactory and procedures already established for the program arrangements described above provide an effective vehicle for efficient supervision. In addition PLN has established a specialized

performance monitoring unit, the SPKK. The SPKK has a comprehensive computerized program to measure performance against established KPIs. This program is based on a data entry system that limits the possibility for tampering with the results. SPKK reports directly to the company's President Director and prepares regular reports on corporate performance against the agreed key performance indicators. Although this is a credible framework for results monitoring there is room to improve monitoring and evaluation capacity at PLN corporate level by strengthening the approaches, and methodologies used by SPKK. This will be supported through the services of an IVA to be retained by PLN for the duration of the Program.

63. **Economic Evaluation:** The program's economic justification is based on improved operating characteristics of the existing networks as well as improved access. Improved operating characteristics will provide lower system losses (resulting in reduced generation costs and reductions of GHG emissions), improved supply reliability (resulting in increased consumer satisfaction as well as economic benefits of reduced outages) and lower rates of equipment damage and maintenance costs. Increased access will provide a number of economic benefits to currently unserved areas as well as better living standards in remote locations.

64. The main *quantifiable* benefit of the program is the incremental electricity that will be available. Electricity tariffs do not reflect the value of electricity in Indonesia. And a reliable measure of willingness to pay is not available for Sumatra. Therefore, the economic analysis values the incremental electricity at the weighted average cost at which electricity is supplied in Sumatra i.e. Rp. 1,876 per kWh (*Achieving Universal Electricity Access in Indonesia*, July 2015). This economic value is maintained throughout the evaluation period.

65. **Results:** A hurdle rate of 5 percent was used for the economic internal rate of return (EIRR) and the net present value (NPV) calculations. A salvage value of zero was assumed for the project's investments. The results of the economic analysis, including the sensitivity analysis, are summarized in Table 5 where the base case shows an economic internal rate of return of 15.7 percent which exceeds the hurdle rate.

66. **Sensitivity analysis:** Three sensitivity scenarios were run on this result: increase in the project's direct cost, reduction in the project's benefits, and delay in the commencement of the project's benefits stream. The analysis shows that the project is most vulnerable to a fall in its benefits by 5 percent which reduces the economic IRR to 12.6 percent. A decrease of 13.9% in benefits represents the switching value at which the economic IRR falls below the hurdle rate (i.e., negative NPV). The project is not highly sensitive to increases in direct cost. A 10 percent increase in direct cost brings the economic IRR down to 14.5 percent. The switching value is correspondingly high. If all three sensitivity scenarios are realized at once, the EIRR falls to 10.2 percent which is well above the hurdle rate.

Table 5: Results of Economic Analysis

Results of Economic Analysis	Discount rate	Results WITHOUT emissions benefits		Results WITH emissions benefits	
		EIRR	NPV@ 5%	EIRR	NPV@ 5%
Base Case	5.00%	15.7%	14,468	17.8%	20,253
Project's direct cost increases by	10.0%	14.5%	13,565	16.6%	19,351
Project benefits reduce by	5.0%	12.6%	9,237	15.1%	14,733
Delay of 1 year		13.9%	12,418	15.9%	17,547
All impacts: 10%, cost increase, 5% reduced benefits, 1 year delay		10.2%	6,780	12.5%	11,652

67. **Financial Assessment:** PLN is structured to operate on commercial principles. However due to the Government's policy of keeping electricity tariffs below the cost of power supply for most consumer categories, PLN's financial condition continues to rely on a Government public service obligation (PSO) subsidy. This PSO subsidy which covers the shortfall between electricity tariffs and PLN's cost of power supply, and which the Government is legally required to pay, was 34 percent of PLN's revenues in 2014. The Government commenced a tariff rationalization initiative in 2010 which has led to a series of tariff increases.

68. PLN continued to remain profitable during 2015 with a net profit of Rp. 396 billion (US\$0.03 billion). PLN's operating revenues (excluding PSO) increased from Rp. 193 trillion (US\$15.5 billion) in 2014 to Rp. 217 trillion (US\$15.7 billion) in 2015. A major contributor to this increase in operating revenues is the approximately 2.1 percent increase in energy sales volume, and the uprating of capacity of urban customers resulting in higher tariff revenues from these customers. PLN also remains sufficiently liquid⁴ and it has adequate headroom to cover its existing investment program and its operations.⁵ PLN has demonstrated the ability to borrow from both the local and global financial markets to meet its investment needs.⁶ However, PLN's ability to leverage additional financing to cover future investments will remain contingent upon the Government meeting its financial obligation to PLN, and its commitment to the tariff reform agenda.

PLN's Financial Projections

69. PLN expects sales revenues, and revenues excluding Government subsidies to grow at an average annual rate of about 14.6 percent and 14.3 percent respectively during 2016-19. PLN's operating costs and interest expenses are expected to be higher than its operating revenues during the projection years thereby requiring continued average annual Government PSO subsidy contributions of Rp. 54 trillion (US\$3.9 billion). PLN is also expected to remain sufficiently liquid over the projection period with an average year-end cash balance of Rp. 23.7 trillion (US\$1.7 billion).

⁴ PLN's liquidity decreased (in Rp.) from Rp. 27 trillion (US\$2.2 billion) in 2014 to Rp. 23.5 trillion (US\$1.7 billion) in 2015.

⁵ PLN's debt service coverage ratio is estimated to be 1.68 x during 2015 on a non-ISAK 8 basis.

⁶ During 2012, PLN issued a US\$1 billion global medium term note (5.25% interest and 30 year maturity).

70. PLN's capital investment forecasts show a 59 percent increase in expenditures from Rp. 50.2 trillion in 2015 to Rp. 79.8 trillion in 2016 with a further 136 percent increase to Rp. 188 trillion in 2017. This represents a huge scale-up in PLN's capital expenditures from current levels (Rp. 50.2 trillion in 2015 against a planned Rp. 60.2 trillion for the year). This proposed substantial increase in capital spending would be extremely difficult to achieve in such a short time frame given the nascent proactive, market-oriented policy reform measures aimed at improving the delivery of electricity projects, combined with the challenging economic environment that has adversely impacted Government-supported liquidity enhancement and market access initiatives for PLN.⁷ This scale-up in capital spending will also place a significant burden on PLN's borrowing capacity. PLN may therefore have to moderate during the initial years of the 35 GW program, the Government's expectations of its ability to realize the proposed project commissioning and electrification targets under the RUPTL, and RUKN (national electrification program).

71. PLN may also experience financial stress due to the devaluation of the Indonesian Rupiah in recent years with the currency having dropped to its lowest level since 1998.⁸ While PLN's revenues are in local currency, its financial obligations to international suppliers and lenders remain in hard currency. Recent delays in the disbursement of the PSO when combined with foreign exchange losses have required PLN to draw upon its cash reserves to meet its debt service obligations to its lenders, and make payments to its suppliers. PLN would need to proactively manage its foreign exchange exposure in order to guard against future foreign exchange losses undermining its financial position, liquidity, and market access.

72. PLN has also revalued its assets which has improved its leverage ratios, but the revaluation has generated a tax liability of Rp. 19 trillion of which Rp. 13 trillion is due in 2016 making up most of the Rp. 14.07 trillion in tax payables for the year. This is higher than the Rp. 9 trillion (including Rp. 6 trillion related to the revaluation) of taxes paid during 2015 and Rp. 1.7 trillion in 2014. If PLN were to pay this tax liability during 2016, when combined with a maturing US\$ 550 million bond, it could lead to a decline in its debt service coverage ratio to below 1x. PLN has instead requested a waiver of this tax liability under a prevailing presidential decree. Alternatively it may seek a conversion of this liability into Government equity.

Monitoring PLN's Financial Condition

73. PLN is undertaking a significant investment program while the sector is undergoing reforms in pricing and subsidies. In view of PLN's current and projected financial information, the financial covenant of the debt service coverage ratio (DSCR) of 1.5 times which is the same ratio as under the ongoing IPF loans is considered to be appropriate for this Program. Although the Government incurred PSO arrears of Rp. 19.7 trillion by December 31, 2015, these arrears

⁷ The Government is planning an equity infusion of Rp. 10 trillion during 2016 to improve PLN's liquidity and access to bank and capital markets.

⁸ PLN's foreign exchange losses as per its revised financial information were Rp. 28.06 trillion as of December 31, 2015. While historically 3 - 5 % of forex losses are actually realized, the upcoming maturity of US\$1.05 billion of bonds in a depressed FX environment could place additional strains on PLN's liquidity.

are expected to be paid under a payment plan agreed upon with PLN⁹. Based on these developments, PLN have moderated their capital expenditure program and have discussed their revised capital investment outlook with their investors and with the ratings agencies accordingly. In response to a request from the Ministry of Finance, the Bank and ADB made a decision not to exercise any remedies with respect to their respective financial covenants related to the DSCR for a temporary period up to June 30, 2016, for ongoing projects where PLN is acting as an Implementing Agency. The decision was meant to give the Government time to adjust to fiscal pressures during a challenging economic environment during which it needs to address competing expenditure priorities. It is expected that after June 30, 2016 the Government will be able to make the required financial transfers under its PSO obligation to PLN to enable them to return to compliance with the covenant. PLN's financial condition would therefore need to be monitored closely in the next few years to ensure that its financial strategy remains relevant to keep it on a strong financial footing.

74. A detailed analysis of PLN's financial condition is available in the Bank's Project Files.

B. Fiduciary

75. A Fiduciary Systems Assessment (FSA) was carried out to evaluate the arrangements relevant to the Program and to determine whether they provide reasonable assurance that the Program funds will be used for their intended purpose. Taking into account the improvements required and the agreement on the actions required to strengthen the systems (which are reflected in the PAP), the overall fiduciary framework is considered adequate to support the Program management and to achieve the desired results with due attention to the principles of economy, efficiency, effectiveness, transparency and accountability.

Financial Management Systems

76. PLN has been the recipient of financial assistance from several donors, including the Bank, and it has met the Bank's reporting requirements under ongoing IPF loans by submitting IFRs and audited financial statements on time. PLN has also introduced an appropriate segregation of duties between its technical and financial/administration functions, and its operational policies are documented in a manual. Changes in policies and procedures are formalized through the issuance of circulars by Directors. For the distribution program, the budget is prepared and compiled by PLN's Wilayahs which are then consolidated at PLN Headquarters. The budget is allocated to recipient Wilayahs following a review, prioritization, and approval process during a stakeholders' meeting at PLN Headquarters. The entire budget planning through effectiveness process could take up to nine months to complete.

77. Payments can be done only when the budget is effective and funds are available. Control over budget availability is maintained manually, as the budget application is not linked to the Enterprise Resource Planning system (ERP).

⁹ Rp. 7 trillion in 2014 PSO receivables has already been paid to PLN by the Government by December 2015. The remaining 2014 balance of Rp. 12.3 trillion is expected to be repaid monthly over four months starting February 2016 (about Rp. 3 trillion a month).

78. For distribution related projects implemented by the Wilayahs, technical verification and payments are done by relevant sections at the Wilayah level. From the assessments conducted by the FM team, adequate controls appear to be in place for the technical verification and payments processes. On average the Wilayahs pay third party invoices within 10 days of receipt. This contrasts with up to 46 days taken by PLN Headquarters to make payments related to activities financed under IPF loans. Payments by PLN Headquarters take much longer due to the multiple layers (PLN Wilayah office, PLN Headquarters, Directorate General of SMI within MOF, State Treasury Office) of verification and approval prior to a request for payment being submitted to the Bank. Under the proposed PforR, payments will be done directly by the Wilayah office.

79. A consolidated financial report is prepared monthly by PLN Headquarters. The consolidation is done manually as the ERP system cannot accommodate some reporting formats requested by the Board of Directors (BOD).

80. PLN Headquarters monitors Wilayah performance against the achievement of key performance indicators that are directly linked to the issuance of personnel performance bonuses. Monitoring of KPIs is undertaken through a review and oversight of the same by the internal audit (SPI), and corporate performance monitoring (SPKK) divisions. While SPI staff are based both at headquarters and at the Wilayahs, SPKK's monitoring is mostly done virtually by headquarters staff through video conference on a quarterly and monthly basis.

81. The Program audit will be conducted by a private audit firm as part of the annual audit of PLN's financial statements. The private auditor shall also provide an auditor's opinion on the Program. The private audit firm shall continue to select Wilayah offices to be visited based on risks and include distribution investments in the audit. The entity audit report should be submitted to the Bank not later six months after the end of PLN's fiscal year.

Procurement Systems:

82. The Program does not envisage any large value contracts that could exceed the OPRC Threshold. Based on the procurement of major goods i.e. Main Distribution Unit (MDU) items in year 2015 (consolidated procurement is carried out by PLN for the whole of Indonesia through framework contracts), the size of the contracts for Sumatra under the Program in 2015 is between US\$10,000 to US\$10 million. PLN's revised Procurement Regulations, effective since January 2015 are based on modern procurement concepts; embody general principles of Public procurement i.e. efficiency, effectiveness, competition, transparency, and fairness; and include several features of the World Bank's new Procurement Policy framework. The new procurement regulations are in the initial stages of implementation and the effectiveness of the procurement systems is yet to be fully ascertained. However, the assessment from the initial stages of the implementation of the new regulation provides reasonable assurance that the procurement systems under the Program will achieve the intended results.

83. Over ninety percent of the total procurement expenditure (comprising of goods i.e. MDUs and small value works, and goods procured by about 240 units at regional and area levels) are sourced through an open competitive bidding process. Out of these items, sixteen MDU items which constitute about 75-80 percent of the expenditure are procured under framework contracts

entered into with local manufacturers for the whole of Indonesia including the Sumatra region. Eleven MDU items constituting about 70-75 percent of procurement expenditure are procured by first qualifying the manufacturers (called Registration or DPT) from within Indonesia against pre-disclosed criteria and then inviting bids from those qualified manufacturers. Five MDU items (plus one type of MV panel) comprising around 6-8 percent of total expenditures have only two qualified manufacturers in Indonesia and PLN enters into Direct Contracting (Direct Appointments) with each of the two manufacturers through an “open book method.” While the procurement of MDUs is from manufacturers from Indonesia with local content ranging between 10-60 percent, the assessment shows the presence of major international manufacturers in Indonesia and adequate bid response in the procurement of MDUs from local manufacturers (except for items procured through the open book method).

84. The procurement procedures and systems under PLN’s distribution program are more streamlined when compared to procurement processes in generation and transmission projects. The Program also does not envisage large EPC contracts. However, in view of major delays in project implementation under the Bank’s investment project financing operations, the team has advised PLN to conduct independent diagnostics of PLN’s project management processes (including procurement and contract administration) to identify procurement and implementation bottlenecks and strengthen institutional capacity.

Fraud & Corruption Assessment:

85. *Legal Framework:* Indonesia has a fairly comprehensive legal framework and institutions in place to prevent, detect, investigate and prosecute potential cases of fraud and corruption in the electricity sector. The KPK (Komisi Pemberantasan Korupsi) is the Anti-corruption Agency and main national institution responsible for corruption issues (prevention, investigation and prosecution). KPK also plays a coordination and supervision role towards other institutions responsible for eradicating corruption in the electricity sector. These include: (i) internal PLN structures; (ii) Financial Transaction Reports and Analysis Section Center (PPATK); (iii) Attorney General; (iv) Anticorruption Courts; (v) The Audit Board of the Republic of Indonesia (Badan Pemeriksa Keuangan, BPK); (vi) The Board of Supervisors, Finance and Development (Badan Pengawasan Keuangan Dan Pembangunan, BPKP), (vi) Central Information Commission (KIP); and (vii) Ombudsman of the Republic of Indonesia. However some of the internal regulations of individual institutions, including PLN, are new or in the process of being amended which could impair the effectiveness of some reporting, investigating, or sanctioning mechanisms. Furthermore PLN faces challenges with the actual implementation of some procedures already in place. The assessment focused on potential fraud and corruption risks for the implementation of this Program as follows:

86. *Complaint Handling Mechanisms:* PLN has a functioning Call Center to receive complaints from citizens regarding quality of service, misconduct and related matters; and a functional complaints handling mechanism to address the procurement related complaints as per which bidders can and are required to submit their objections within three days of announcement of award to the Procurement Implementing Officer and if unsatisfied with the decision, bidders can appeal to the User (General Manager as Wilayah or Board of Directors in Pusat). PLN has a whistle blower system that staff can use to report allegations of wrongdoing. However, this

whistle blower mechanism appears to be ineffective. The Bank has advised PLN to review and strengthen the whistle blower regulation including the measures available for providing protection to the whistle blowers

87. *Transparency, accountability, and access to information.* The Bank agreed with PLN on how to improve transparency and compliance with the national right of access to information legislation through the implementation of measures, such as the regular and systematic uploading of new procurement regulations on to its website and public disclosure of award details as per its regulations through its e-procurement system. PLN has also been implementing a new internal ethics strategy under the title PLN Birsi (PLN Clean) since 2012 that includes a new gratification control program. The Bank recommended that PLN improve its compliance with the gratification reporting requirements under the program. PLN also has its own list of blacklisted firms which is currently not publicly disclosed. PLN agreed to disclose this on its website as per PLN regulation 166/2012.

88. *Applicability of Anti-Corruption Guidelines of the Bank for the Program.* PLN agreed to implement the program in accordance with the Bank's Guidelines on Preventing and Combating Fraud and Corruption in Program-for Results Financing (ACG) with PLN. The Bank informed PLN of its obligations under the ACG for the Program as per which PLN will share information with the Bank regarding all allegations of fraud and corruption in connection with the Program, investigate all credible allegations received, and report to the Bank on actions taken. The Bank and PLN have defined the reporting mechanisms to share the investigations' findings and ensure that timely and appropriate action to address any fraud and corruption cases and prevent their recurrence. PLN also agreed to monitor and abide by the Bank's list of debarred/suspended firms and to cooperate in any inquiry that may be conducted by the Bank into allegations or other indications of fraud and corruption in connection with the Program. PLN will report quarterly on its compliance with the ACG.

89. Based on fiduciary assessment, the following areas have been agreed for compliance/institutional strengthening of the Program:

- a. To post procurement regulations on PLN's website
- b. To implement the upgraded e-procurement system and announce award details through the portal as per PLN's regulations
- c. To follow the open book method for the procurement of MDUs only when the number of qualified manufacturers is less than three and no additional items beyond the existing 16 MDU items shall be procured using open book method under this Program.
- d. No Direct Procurement/Direct Appointment of SOEs or PLN's subsidiaries, joint ventures, affiliates under this Program.
- e. No direct procurement or direct appointment of small or micro industries under this Program for contracts above IDR 300 million.
- f. Comprehensively assess the capacity of local manufacturers for MDU items
- g. Procurement audits conducted by SPI of 15 percent of contracts awarded by each procuring unit under the Program and sharing the findings of the procurement audits with the Bank annually

- h. Develop a Procurement Performance Monitoring Framework and report performance as per the Framework
- i. Improve the accountability of SPKK reports by including verification by regional operations head.
- j. Strengthen SPKK and SPI's reporting functions through capacity building activities offered by the independent verification agency.
- k. Expedite the release of the budget effectiveness document at Wilayah level immediately following the Shareholders' General Meeting
- l. Linkage of budget application with ERP in a pilot Wilayah and expanded thereafter to remaining Wilayahs in Sumatra
- m. Carry out the Program in accordance with the provisions of the Anti-Corruption Guidelines
- n. No contracts to be awarded to firms on the Bank's list of debarred/temporarily suspended firms –PLN's blacklist to be uploaded on to its website and electronic portal as per PLN regulation 166/2012
- o. PLN to prepare a roadmap to strengthen existing whistle blower regulations and system

C. Environmental and Social

90. The Bank with support from PLN carried out an environmental and social system assessment (ESSA) to gauge the environmental and social management systems applicable to the Program which include among others, potential risks and impacts of the proposed program, compliance with environmental and social management regulations, harmonization with GOI's environmental and social risk management systems, and capacity for effective management in light of PLN's current performance. The Bank and PLN have conducted public consultations with stakeholders on the Draft ESSA in five Wilayahs: Lampung City in Lampung, Banda Aceh City in Aceh, in Tanjung Pandan in Bangka-Belitung, Belitung Island, Palembang City in South Sumatra, and Padang City in West Sumatra. The draft ESSA was disclosed on PLN's website on October 16, 2015 prior to the first public consultation, and in the Infoshop. The final ESSA was disclosed on March 29, and March 30, 2016 in the Infoshop and on PLN's website respectively.

91. PLN already has a set of procedures on environmental and social safeguards systems that are aligned with the Indonesian legal framework and with Bank policies. The Wilayahs have been carrying out similar distribution programs over the years and are experienced in and capable of managing distribution construction envisaged under the program. The environmental impact of the proposed distribution activities is small and temporary i.e. during construction. The operation of distribution activities does not trigger any requirements under GOI's environmental regulations due to their low potential impacts.

92. From a social perspective, Program activities normally occur within the right of way of existing roads. When Program activities occur on private land, PLN's practice is to minimize the siting of concrete poles on private lands, and to avoid disturbance of non-land assets to the maximum extent possible. Land acquisition would be needed for switching substations (around 6x8 m²) and it is paid for prior to construction under the norm of willing buyer, willing seller. However, the number of switching substations to be built under the Program are expected to be

limited. Since land acquisition is limited, and there is no physical or economic displacement of individuals, impacts on affected persons is expected to be minor.

93. PLN has a well-established management system for handling any grievance/complaint from the public throughout the country, namely through their Call Center 123 and through front-line customer services representatives. Through *Call Center 123* which can be accessed by anyone, anywhere in Indonesia through PLN’s website, email, telephone, and social media (e.g. Facebook, Twitter); Wilayahs immediately act on community complaints including those related to construction impacts, environment, community health and safety, and social issues, by deploying PLN’s technical service responders. The role of the Wilayah is to verify the issues and resolve the grievances/complaints within 24 hours by referring to their standard operating procedures.

94. A monthly report from the Call Center 123 summarizes complaint handling performance (e.g. number of power outages, resolution of complaints, outstanding issues, etc.) that become the source data for calculating SAIDI and SAIFI of the Wilayahs. Once compiled, the information is uploaded into the management information system (SILM). One of the sections in SILM covers environmental and social management performance.

95. During Program implementation, the Bank will review environmental and social aspects as well as the grievance redress resolution record based on the SILM report, the Call Center 123 report, and land transaction documentation if any. The review will be based on random sampling and field visits to selected Wilayahs.

96. The assessments undertaken are of the view that the environment and social systems currently in place through the GOI’s environmental and land acquisition laws/regulations as well as PLN’s internal guidelines (*PLN Decrees*) are sufficient to comply with the Bank’s Operational Policy (OP) 9.00.

97. The Bank will coordinate with the ADB on environmental and social requirements under the Program. The Bank and ADB have shared our respective environmental and social assessments. Both institutions’ programs have similar environmental and social safeguards filters and actions, e.g. the ADB’s requirements for screening out high-risk projects are similar to those of the Bank’s as are its recommendations for building capacity in the Program Wilayahs on environmental health and safety. The Bank and the ADB have also agreed to jointly coordinate with PLN during Program implementation in order to avoid duplication of effort, and promote efficient utilization of Program resources.

D. Integrated Risk Assessment Summary

Risk	Rating
Technical	Moderate
Fiduciary	Substantial
Environmental and Social	Moderate

Disbursement Linked Indicator	Moderate
Overall Risk	Substantial

Risk Rating Explanation

98. The key identified risks and related management measures are detailed in Annex 7. Based on this risk analysis the overall risk rating is assessed to be substantial. This is because of fiduciary risks which are rated substantial. The Program risks are described below. A number of key management measures are proposed.

- a. Timely availability of adequate generation and transmission capacity: Delays in completion of upstream generation and transmission line investments could lead to the under-utilization of the distribution infrastructure created by the Program and to the delayed realization of its expected benefits. The Bank and PLN teams' extensive reviews of the planned generation, transmission and distribution investments showed that the risk of inadequate generation and transmission capacity is moderate because: (a) about 9 GW is planned to come on stream during the period to 2016-2019; (b) out of this total planned generation 3.5 GW comprising 2.1 GW under construction and 1.4 GW gas fired generation under procurement will be commissioned by 2017; (c) even without additional generation capacity the current reserve margins of about 40% would provide sufficient generation capacity to sustain the distribution expansion program; and (d) a 275kV transmission line under construction to connect the power surplus South Sumatra to the power deficit North Sumatra will be commissioned in 2017. During implementation the Bank will review annual work and expenditure plans for generation, transmission, and distribution investments for the region to identify any risks and management measures.

- b. Construction delays for distribution program investments could arise for several reasons such as the institutional capacity for program management at the Wilayah levels, including capacity for processing procurement, for contract management and for program monitoring. Constraints could also arise from the capacity of the contracting industry to supply required goods, services and works. An analysis of the Wilayahs' program implementation capacity has been carried out under the assessments. As a result staff training will be undertaken in distribution planning and procurement. Other risk management measures will include annual work plans and budgets to be prepared by PLN for each Wilayah and reviewed by the Bank on an annual basis and close monitoring of the progress of works will be undertaken during implementation by Bank supervision missions. Bank implementation support will need to be strategically designed to be effective given the scattered nature of the program works across the whole of Sumatra.

- c. Sustainability of Program Investments. Shortfalls in the operation and maintenance of program investments could arise from financial and/or technical constraints, including organizational deficiencies in PLN. However, a review of the historical allocations for O&M shows that PLN expenditures are in line with best industry practices at 3-

- 5% of capital expenditures. Further the Bank's technical assessment confirmed that the distribution assets are well maintained and in good condition. Future allocations will be assured through the recently introduced Performance-based Regulation which allows for adequate maintenance in tariff setting thus assuring PLN of adequate revenues to cover O&M costs.
- d. Fiduciary risks: Procurement and contract management. First, there is the risk that the capacity of local manufacturers may not be adequate to meet the needs of the PDDP for the five "Main Distribution Items". During the initial stages of program implementation PLN will assess the capacity of the local manufacturers. Risk management measures may involve inclusion of more manufacturers in the bidding process. Second there is a risk of low transparency due to procurement through manual reverse auctions instead of through the e-procurement system, and due to non-disclosure of award details. To mitigate this risk, PLN has agreed to implement an upgraded e-procurement system by June 2016 and to announce award details through their portal as per PLN's regulations. PLN has also agreed to post PLN's Procurement Regulation on its website. Third, inadequate monitoring of contracts and absence of data on contract management for performance measurement may also contribute to implementation difficulties and delays. To mitigate this risk, PLN has agreed to develop a procurement performance monitoring framework and to provide a quarterly report on key procurement performance indicators throughout the duration of the Program. Fourth there is a risk of including items (other than the sixteen MDU items) in the open book method and of PLN's continuing with the open book method for MDUs even if the number of qualified manufacturers exceeds two. In this regard, PLN has agreed that no additional items beyond the existing sixteen MDU items will be procured using the open book method under this Program and that PLN will follow the open book method for MDU items only when number of qualified suppliers in the DPT is less than three. Fifth, there is the risk related to the perception of fairness, transparency, and economy in the procurement process related to the Direct Appointment/Direct Procurement of SOEs, PLN's/SOEs' Subsidiaries or PLN's/SOEs' Affiliated Companies. In this regard, PLN has agreed that there will be no Direct Appointment/Direct Procurement of any SOEs/PLN's subsidiaries under the Program. Sixth, there is the risk related to a lack of oversight due to inadequate samples of contracts chosen for SPI's procurement audit. To this effect, PLN has agreed that its SPI will carry out a procurement audit of fifteen percent of contracts awarded by each procuring unit and share the findings of the audit with the Bank annually under the Program.
- e. Fiduciary risks – Financial Management FM risks include delays resulting from cumbersome internal procedures, reviews and approvals, absence of clear delegations of authority for contracts and variations signing; delays in budget effectiveness; and semi-manual preparation of financial records and report consolidation.

E. Program Action Plan

99. Program assessments have identified a number of potential improvements that could be carried out to improve the development effectiveness of PLN's distribution expenditure program. These relate primarily to the technical, procurement and financial management areas. The environmental and social assessments have revealed relatively minor issues. The Bank and PLN have agreed on measures to be taken to improve program management with regard to the identified weaknesses and these are summarized below. Detailed presentation of the actions to be taken by PLN are available in the Program Action Plan in Annex 8.

100. **Technical Aspects:** The assessments have recommended: (a) strengthening the capabilities of the distribution system planning units at Wilayah and Area levels by enhancing technical planning tools and providing adequate training to staff; (b) improving the use of GIS data, not only for planning, but also for managing customer outages, transformer loading and asset management; (c) reviewing distribution planning concepts to promote greater use of more efficient concepts such as increasing the MV/LV ratio of the system; (d) reviewing loss evaluation techniques that are currently in use by PLN to better estimating technical losses and implementing more targeted loss reduction programs; and (e) undertaking an assessment of the need for SCADA facilities and implementing adequate facilities in all Wilayahs to facilitate monitoring of feeders and restoration of customer services when failures occur. Annex 8 details the specific actions to be undertaken under the program Action Plan including the time frames.

101. **Procurement and contract management:** The assessments have identified a number risks related to: (a) perceptions of lack of transparency due to non-disclosure of procurement regulations and of details of contract awards; (b) direct appointment of SOEs, PLN's/SOE subsidiaries or PLN's/SOE's Affiliated Companies; (c) potential inadequacy of the local manufacturing capacity to meet PLN's requirements for main distribution materials procured through Limited Bidding as the distribution program expands; and (d) risk of delays and cost overruns due to lack of systemic collection of procurement and contract implementation data and reporting and performance monitoring. Proposed measures to address these risks are detailed in the Program Action Plan presented in Annex 8.

102. **Financial Management:** With regard to financial management the fiduciary assessment has identified weaknesses related to: (a) budget monitoring and control; (b) risks of inaccuracy in the preparation and consolidation of semi-annual financial reports; and (c) the inadequacy of the current reporting done by the SPKK to serve as the basis for verification of DLIs. Under the Program Action Plan (Annex 8), PLN will start integrating the budget application with ERP and tailoring ERP to support generation of financial reports. The risk related to the verification of DLIs will be addressed through the use of an external party (IVA) to conduct an independent verification of the DLIs and to support SPKK and SPI in establishing an approach and verification methodology and in building required capacity within PLN.

103. **Fraud and Corruption:** The F/C assessment identified a series of potential fraud and corruption risks for the implementation of this Program as follows: (a) an ineffective whistle blower mechanism to file and handle complaints in PLN; (b) limited knowledge on the gratification control program leading to low gratification reporting rates; and (c) evolving

institutional capacity in PLN to guarantee the right of access to information for citizens e.g. pending disclosure of PLN's blacklist of individuals and companies on its website, pending disclosure of PLN's procurement regulations on its website and others. The Bank suggested specific measures that PLN can take to address and mitigate these potential risks, which are detailed in Annex 8

104. **Environmental and Social:** PLN's Wilayahs have been carrying out similar distribution activities over the years and are therefore experienced and capable of managing environmental and social issues for the Program. Nevertheless, the Wilayahs' capacity to manage environmental and social issues will need to be maintained through regular monitoring and training by PLN headquarters. The Bank will annually review the environmental and social monitoring conducted by PLN Headquarters and Wilayahs. The review will also support PLN with remedial action to improve PLN's environmental and social systems as described in Annex 6.

F. Grievance Redress Program Action Plan

105. Communities and individuals who believe that they are adversely affected as a result of a Bank supported PforR operation, as defined by the applicable policy and procedures, may submit complaints to the existing program grievance redress mechanism or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address pertinent concerns. Affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit <http://www.worldbank.org/GRS>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

Annex 1: Detailed Program Description

Program development objective

1. The program's development objective is to increase access to electricity supply and to improve the efficiency and reliability of its delivery in selected areas of Indonesia.

The Government's Program

2. PLN's current power expansion plan comprising generation, transmission and distribution investment requirements (the "Rencana Usaha Penyediaan Tenaga Listrik" or RUPTL) covers the period 2015-2024. The broader context for the RUPTL is the Rencana Umum Ketenagalistrikan Nasional (RUKN) which is a 20-year national policy document approved by Parliament. The RUKN provides the GoI's policy guidance for preparation of the RUPTL. This guidance is related primarily to the projected energy demand and desired targets for electrification and the energy mix of production. The current RUKN was approved by Parliament in 2008 and covers the period up to 2027.

3. To close the power infrastructure gap which is constraining economic growth the current administration is focusing on implementation of the 5-year time slice of the RUPTL covering the period 2015-2019. Consistent with both the RUKN and the RUPTL the key objectives of the 5-year time slice are to increase access to electricity for household consumers and to meet the economy's power needs while improving efficiency and reliability of supply. Its specific key targets are to increase generation capacity by 35 MW and increase access to electricity from 85%, to 97% by 2019. Further, PLN's detailed implementation plan envisages improvements in efficiency (system losses) and reliability indicators (SAIDI and SAIFI) as detailed in Annex 4. The estimated total costs of the RUPTL for 2015-2019 are US\$83.4 billion of which US\$58.9 billion is for generation, US\$17.1 billion for transmission and US\$7.4 billion for distribution. The Government's program on which the proposed PforR is based is the distribution component of the 2015-2019 time slice of the RUPTL which entails activities to improve distribution system planning capabilities, connect new customers, improve existing distribution networks, and increase the quality of services.

Bank Financed Program-for-Results

4. The PforR Program to be supported by the Bank is a geographic slice of the distribution component of the RUPTL covering Indonesia's Sumatra region for the period 2015-2019. The estimated cost of the Sumatra distribution program is US\$1.45 billion or about 20% of the total national distribution program over the first five years of the 2015-2024 RUPTL. PLN has selected the Sumatra region for coverage under the proposed program based on several specific criteria. First, Sumatra has the largest population center outside Java Bali with about 54 million people, of which 9 million have no access to electricity and is an important economic growth center for Indonesia. Second, there are substantial existing and planned generation and transmission investments in Sumatra that require complementary investment in distribution in order to enable the power produced when these investments are commissioned to be delivered to

the regional economy. Third, a focus on Sumatra offers the best prospect for fast progress towards achieving the RUPTL's national ER target of 99.4 percent by 2024. Up to about 3.32 million customers could be added to the grid in the 5 year period to 2019 resulting in an increase in the regional electrification ratio from 85 percent to about 90 percent. Fourth, the region offers the best opportunity for "piloting" the use of the IFI's performance-based lending instruments, learning lessons, and improving effectiveness of its program expenditure management before attempting to use them in the more difficult terrain of Eastern Indonesia. Thus, PLN's strategy is to mobilize multilateral funding to complement its own and fill the financing gap for the Sumatra distribution program.

5. Overall, Sumatra has a total of 11,504,195 consumers (as of end 2014) and has a maximum demand of 5,791 MW. Wilayah North Sumatra and Wilayah S2JB (South Sumatra-Jambi-Bengkulu) constitute the largest units with around 27% and 22% respectively of the consumers. Wilayah West Sumatra (10%), Riau & Riau Archipelago (12%) and Distribution unit Lampung (15%) are of medium size. Wilayah Aceh (11%) and Bangka/Belitung islands (3%) are substantially smaller than the rest.

6. There are 29,721 villages in Sumatra of which 29,658 already have access to electricity either from PLN (78%) or local utilities (21%). There are only 63 villages that currently have no supply at all. Some of these can be at very long distances (even up to 200 km) from the grid and also have a very low population thus making grid extension economically unviable. Off-grid solutions (both local generation and standalone systems such as Solar Home Systems) need to be pursued for these areas. Other unsupplied areas (say within 50 km or so), could be supplied with grid extensions. Overall, the prospects of achieving the planned targets by the year 2019 are fairly good.

Program governance structure

7. The development program is well structured and built up in a number of stages with the participation of PLN's various units at headquarters and regional levels. First, the development of the power distribution sector is established in the RUPTL (10 Year Planning of Power System Development) which provides an identification of stakeholder expectations and PLN's own mission and goals. The RUPTL is developed by PLN Pusat (Headquarters) and approved by MEMR. The next stage deals with the formulation of a strategy by analyzing the village electrification road map which is carried out at the level of PLN's decentralized regional offices (Wilayahs). PLN's short and long term goals, operational issues, key performance indicators and strategic initiatives and leads to the preparation of a five year investment plan which is called the Rencana Jangka Panjang (RJP). The Corporate RJP is prepared by PLN Pusat, and each Wilayah develops their RJP in conformity with the Corporate RJP. The RJP includes a detailed review of performance over the past 5 years (Kriteria Penilaian Kinerja Unggul or KPKU assessment) and a SWOT analysis to assist in developing a more focused approach for meeting the goals set for the next five years. The proposals in the RJP are next translated into an annual implementation plan and budget which is called the Rencana Kerja Anggaran Perusahaan (RKAP). The RKAP spells out the details of network expansion and improvements to be carried out in each year along with the related budgetary costs.

8. For operation, the Sumatra power distribution system is managed by 6 Wilayahs and 1 distribution unit of PLN. Each Wilayah is responsible for both the power distribution network and the generation plant feeding into the 20 kV distribution system while the distribution unit is responsible only for the distribution system. Each Wilayah/distribution unit manages one or more provinces in Sumatra.

9. Since September 1, 2015, PLN has restructured its organizational structure according to which the Sumatra power system is overseen by the Directorate of Sumatra Region for Wilayahs Aceh – Sumut – Sumbar – RKR – S2JB - Babel, while the Directorate of Western Jawa Region is responsible for the Distribution Unit in Lampung. Within the Directorates there are 3 (three) divisions i.e. for Development, Construction, and Operation. These divisions will assist the Director to supervise the Wilayahs and the distribution unit with respect to operation & maintenance and construction activities as well as for overseeing KPI targets, development planning, and budgeting.

10. For program monitoring purposes a specialized performance monitoring unit (Satuan Pemantau Kinerja Korporat - SPKK) collects and consolidates data from the Wilayahs and prepares a performance monitoring report every six months. SPKK reports to PLN's President Director on corporate performance against the agreed key performance indicators.

Program Activities, Costs and Financing Plan

11. To achieve its objectives over the 5-year period to 2019 the Program consists of three types of activities and targets that are listed below and summarized in Table A1.

12. The Program goals consistent with RUPTL targets and supported by these activities can be broken down into 5 components parts as follows:

- a. Construction/rehabilitation/upgrading of 19,487 circuit-km of MV distribution lines;
- b. Construction/rehabilitation/upgrading of 23,594 circuit-km of LV distribution lines; and
- c. Installation of 28,327 transformer units with a total MVA capacity of 2,895.

Table A1: Summary of Program Activities and Capital Costs

Wilayah	MV	LV	Trafo		Investment
	Circuit-km	Circuit-km	MVA	Unit	10 ⁹ Rp
Wilayah Aceh	1,803	1,722	219	2,110	1,610
Wilayah North Sumatra	2,612	2,908	425	4,180	2,695
Wilayah West Sumatra	2,162	2,217	390	3,805	2,153
Wilayah RKR	2,955	9,883	719	7,138	5,076
Wilayah S2JB	7,636	3,390	610	5,950	5,581
Wilayah Bangka & Belitung	1,217	1,652	105	959	1,003
Distribusi Lampung	1,102	1,822	427	4,185	1,965
Sumatra	19,487	23,594	2,895	28,327	20,082

Program Expenditure Framework

13. At a total cost of around US\$1.45 billion, financing of the Program is expected to be provided by IBRD and ADB loans of US\$500 million and US\$420 million respectively and PLN's internal financing (including GoI equity) of US\$530 million.

14. An analysis of historical budget allocations and execution performance is shown in Table A2. This shows that disbursements of under the Program are carried out effectively and exceed 80% each year. Undisbursed amounts are carried over to next year's budget. Over the Program period budget allocations will be higher than for the last 4 years by about 20% annually on an average basis. However, the Wilayahs have the capacity to implement the higher volume of work satisfactorily. Allocations of funding for operation and maintenance are covered from PLN's internal resources. The technical assessments confirmed that Sumatra's distribution assets are adequately maintained and satisfactorily operated.

Table A2: Actual Budget Allocation and Disbursed for Distribution Asset
Budget Allocation
(Rp x 10⁹)

Wilayah	2012			2013			2014		
	Dist	Rural	Total	Dist	Rural	Total	Dist	Rural	Total
Wilayah Aceh	278	71	350	230	66	296	281	84	365
Wilayah North Sumatra	368	47	415	300	148	448	418	76	494
Wilayah West Sumatra	218	57	275	210	67	277	250	65	315
Wilayah RKR	654	190	844	359	142	501	648	126	774
Wilayah S2JB	768	220	987	601	268	870	562	249	811
Wilayah Bangka & Belitung	150	62	212	226	51	277	181	57	239
Distribusi Lampung	491	46	537	317	86	403	358	48	406
Sumatra	2,927	692	3,619	2,243	828	3,070	2,699	706	3,405

Wilayah	2012			2013			2014		
	Dist	Rural	%	Dist	Rural	%	Dist	Rural	%
Wilayah Aceh	274	66	97%	230	64	100%	238	84	88%
Wilayah North Sumatra	363	31	95%	246	97	76%	360	50	83%
Wilayah West Sumatra	215	52	97%	207	66	99%	236	62	95%
Wilayah RKR	602	168	91%	346	134	96%	550	118	86%
Wilayah S2JB	548	211	77%	352	256	70%	476	220	86%
Wilayah Bangka & Belitung	121	58	85%	115	50	59%	98	56	64%
Distribusi Lampung	465	37	94%	297	78	93%	308	35	84%
Sumatra	2,588	624	89%	1,792	746	83%	2,265	625	85%

Note : % : Percentage of Total Disbursement to Total Budget

Program Implementation

15. The Program will be administered by a central Project Management Unit (PMU) located at PLN's headquarters, but the physical implementation activities will be carried out by PLN's Wilayahs. The Wilayahs have been carrying out similar programs over the years and are

experienced and capable of managing the distribution construction work envisaged under the Program. Most material requirements will be requisitioned from approved suppliers under PLN's Supply Chain Management (SCM) system and the balance of items will be procured locally by the Wilayahs. The construction works contracts will be procured by the Wilayahs. All implementation activities will be carried out by the respective contracts divisions within each Wilayah and overseen by the distribution systems manager under the Wilayah General Manager. The PMU supported by the Wilayahs will bear overall responsibility for the work program, quality and timeliness of the program works, and its satisfactory completion.

16. The Wilayahs are responsible for environmental and social management of the activities which they implement with guidance and support from PLN Headquarters. They have been carrying out similar distribution programs over the years and are experienced in and capable of managing distribution construction envisaged under the project.

Annex 2: Results Framework and Monitoring

Program Development Objective:												
The program's development objective is to increase access to electricity services and to improve the efficiency and reliability of its delivery in selected areas of Indonesia.												
PDO Level Results Indicators	Core	DLI	Unit of Measure	Baseline (2014)	Target Values					Frequency	Data Source/Methodology	Responsibility for Data Collection
					2015	2016	2017	2018	2019			
Number of new customers connected ¹⁰ /(People provided with access to electricity under the program by household connections)	■	■	Number (000's)/Number (000's)	11,180 (total)	604/(3,020)	661/(3,305)	645/(3,225)	671/(3,355)	649/(3,245)	Quarterly	Wilayah	SPKK
SAIDI	<input type="checkbox"/>	<input type="checkbox"/>	Minutes/customer-year	493	485	480	475	469	463	Quarterly	Wilayah	SPKK
SAIFI	<input type="checkbox"/>	<input type="checkbox"/>	Number of interruptions/customer-year	8.63	8.51	8.40	8.32	8.21	8.11	Quarterly	Wilayah	SPKK
Distribution electricity losses per year in the program area	■	<input type="checkbox"/>	%	11.92	11.57	11.21	10.86	10.50	10.00	Quarterly	Wilayah	SPKK
Intermediate Results Area 1: Improved access to electricity												
Annual approved work plans (RKAP)	<input type="checkbox"/>	<input type="checkbox"/>	Approval – Trillion Rp.	2.7	3	3.5	4	4.4	5.1	Annual	SPKK	SPKK
Percentage of capital expenditure completed	<input type="checkbox"/>	<input type="checkbox"/>	%	82	82	83	84	85	85	Annual	SPKK	SPKK
Additional length of MV distribution lines constructed	<input type="checkbox"/>	■	Thousand km-Circuit	92,716 (total)	2,051	2,231	2,412	2,452	2,546	Quarterly	Wilayah	SPKK
Intermediate Results Area 2: Improved quality of service												
Number of MV feeder technical interruptions	<input type="checkbox"/>	■	Technical interruptions/10	21.22	21.17	21.12	21.08	21.04	21.02	Quarterly	Wilayah	SPKK

¹⁰ The number of consumers planned to be connected by PLN over the Program period is 3.2 million. The Bank Program target is set at a lower level to factor in normal implementation risks.

			0 circuit-km MV Network										
Intermediate Results Area 3: Increased efficiency													
Additional distribution transformer units	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Unit	80,130 (total)	2,252	3,098	3,330	3,801	4,109	Quarterly	Wilayah	SPKK	
Additional capacity of distribution transformers (increase in MVA)	<input type="checkbox"/>	<input type="checkbox"/>	MVA	7,981 (total)	336	333	346	356	365	Quarterly	Wilayah	SPKK	
Intermediate Results Area 4: Increased power consumption by residential customers													
Volume of increased residential energy sales	<input type="checkbox"/>	<input checked="" type="checkbox"/>	GWh	15,850 (total)	951	1,008	1,069	1,133	1,201	Quarterly	Wilayah	SPKK	
Intermediate Results Area 5: Institutional strengthening and capacity building													
FY 2016 Annual Work Plan Approved	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Approval of the Work Plan							Prior Result			
PLN has collaborated with development partners in the recruitment of an independent verification agent	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Recruitment							Prior Result	PLN Pusat		
Integrate Budgeting with ERP in all Program Wilayah	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Percentage of Integrated Budgeting			50%	100%			Quarterly	Wilayah	SPKK & Sumatra Region	
Issue revised planning guidelines acceptable to the Bank	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Issue of revised planning guidelines			Submission to PLN's Director, Sumatra	Approval by PLN's Director, Sumatra			Upon completion	PLN Pusat	PLN Pusat-Directorate of Sumatra Region	
Integrate planning software with GIS facilities	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Integration of planning software with GIS facilities						5 feeders	Quarterly	Wilayahs in coordination with Sumatra Operations Division		
Procurement audits for at least 15% of contracts issued by each procuring unit	<input type="checkbox"/>	<input type="checkbox"/>	Number		15%	15%	15%	15%	15%	annually	SPI	PLN Pusat	

Annex 3: Disbursement Linked Indicators, Disbursement Arrangements and Verification Protocols

Disbursement-Linked Indicator Matrix

- 1) The indicative timeline for DLI achievement are in calendar years, for which the annual targets are proposed to be achieved.
 2) Annual disbursements against calendar year targets will be carried out in April of the following year based on actual outcomes (e.g. the disbursement for the targets achieved in Calendar Year 2017 will be made in April 2018 following submission of the Program Results Verification Report to the Bank within three months of the end of each calendar year). Disbursement for prior results will be made at Loan Signing.

	<i>Total Financing Allocated to DLI</i>	<i>As % of Total Financing Amount</i>	<i>DLI Baseline (2014)</i>	<i>Indicative timeline for DLI achievement</i>				
				<i>FY 2016</i>	<i>FY 2017</i>	<i>FY 2018</i>	<i>FY 2019</i>	<i>FY 2020</i>
				<i>September 2015 – April 2016¹¹</i>	<i>May 2016 – December 2016</i>	<i>2017</i>	<i>2018</i>	<i>2019</i>
DLI 1 Number of new customers connected (Thousands)			11,180 (total)	270	60	387	403	449
Allocated amount (US\$ Millions)	145.56	29%		25.06	5.58	35.90	37.36	41.66
DLI 2 Additional length of MV distribution lines constructed (Thousand km-Circuit)			92,716 (total)	5,382	557	1,251	1,339	1,380
Allocated amount (US\$ Millions)	55.00	11%		29.87	3.09	6.95	7.43	7.66
DLI 3 Number of MV feeder interruptions (Permanent interruptions/100 circuit-km MV Network)			21.22	-¹²	21.12	21.08	21.04	21.02

¹¹ Prior results that are achieved between the approval of the PCN and the loan signing.

¹² An accurate estimate of the number of MV feeder interruptions at the end of April 2016 is only possible when firm data is available for December 2015. Since the preliminary data suggests that the interruptions indicator may not show an improvement at the end of April 2016 no allocation has been made for this DLI for prior results.

	<i>Total Financing Allocated to DLI</i>	<i>As % of Total Financing Amount</i>	<i>DLI Baseline (2014)</i>	<i>Indicative timeline for DLI achievement</i>				
				<i>FY 2016</i>	<i>FY 2017</i>	<i>FY 2018</i>	<i>FY 2019</i>	<i>FY 2020</i>
				<i>September 2015 – April 2016¹³</i>	<i>May 2016 – December 2016</i>	<i>2017</i>	<i>2018</i>	<i>2019</i>
Allocated amount (US\$ Millions)	60.00	12%		0.00	28.28	14.07	9.76	7.89
DLI 4 Additional distribution transformer units			80,130 (total)	3,032	732	1,670	3,406	5,112
Allocated amount (US\$ Millions)	65.56	13%		14.25	3.44	7.85	16.00	24.02
DLI 5 Volume of increased residential energy sales (GWh)			15,850¹⁴ (total)	656	693	975	1,133	1,460
Allocated amount (US\$ Millions)	105.55	21%		14.08	14.88	20.94	24.32	31.34
DLI 6 (prior result) FY 2016 Annual Work Plan approved				Approval of the Work Plan				
Allocated amount (US\$ Millions)	15.00	3%		15.00				
DLI 7 PLN has collaborated with development partners in the recruitment of an independent verification agent				Recruitment				
Allocated amount (US\$ Millions)	1.00	0.2%		1.00				

¹³ Prior results that are achieved between the approval of the PCN and the loan signing.

¹⁴ This DLI measures an annual improvement by comparing the year's result to the previous year's (i.e. the difference between the year's record and the previous year's). The August 2015 figure (the base figure) is calculated on a pro-rating basis (i.e. the 2014 result plus 8 months of the improvement for the entire 12 months in 2015).

	<i>Total Financing Allocated to DLI</i>	<i>As % of Total Financing Amount</i>	<i>DLI Baseline (2014)</i>	<i>Indicative timeline for DLI achievement</i>				
				<i>FY 2016</i>	<i>FY 2017</i>	<i>FY 2018</i>	<i>FY 2019</i>	<i>FY 2020</i>
				<i>September 2015 – April 2016¹⁵</i>	<i>May 2016 – December 2016</i>	<i>2017</i>	<i>2018</i>	<i>2019</i>
DLI 8 Integrate budgeting with ERP in all Program Wilayahs					3 Wilayahs	4 Wilayahs		
Allocated amount (US\$ Millions)	19.00	3.8%			9.50	9.50		
DLI 9 Issue revised planning guidelines acceptable to the Bank					Submission to PLN's Director, Sumatra	Approval by PLN's Director, Sumatra		
Allocated amount (US\$ Millions)	25.00	5%			12.50	12.50		
DLI 10 Integrate planning software with GIS facilities								At least 5 Feeders
Allocated amount (US\$ Millions)	8.33	2%						8.33
Total Financing Allocated:	500	100%		99.26	77.27	107.70	94.87	120.90

¹⁵ Prior results that are achieved between the approval of the PCN and the loan signing.

DLI Verification Protocol Table

#	DLI	Definition/ Description of achievement	Scalability of Disbursements (Yes/No)	Protocol to evaluate achievement of the DLI and data/result verification		
				Data source/agency	Verification Entity	Procedure
1	DLI 1 Number of new customers connected (Thousands)	Annual new customer connections	Yes	PLN Wilayah	IVA	Program Verification Report prepared by the IVA
2	DLI 2 Additional length of MV distribution lines constructed (Circuit-km thousands)	Annual km of MV lines built	Yes	PLN Wilayah	IVA	Program Verification Report prepared by the IVA
3	DLI 3 Number of MV feeder interruptions	Technical interruptions/100 circuit-km MV Network	Yes	PLN Wilayah	IVA	Program Verification Report prepared by the IVA
4	DLI 4 Additional distribution transformer units	Annual new transformer units energized	Yes	PLN Wilayah	IVA	Program Verification Report prepared by the IVA
5	DLI 5 Volume of increased residential energy sales (GWh)	Annual electricity sales to residential customers	Yes	PLN Wilayah	IVA	Program Verification Report prepared by the IVA
6	DLI 6 (prior result) FY 2016 Annual Work Plan approved	FY 2016 RKAP approved by PLN's Board of Directors	No	PLN	IVA	Program Verification Report prepared by the IVA
7	DLI 7 (prior result) PLN has collaborated with development partners in the recruitment of an independent verification agent	Recruitment of an independent verification agent by PLN	No	PLN	PLN	Contract issued and signed
8	DLI 8 Integrate budgeting with ERP in all Sumatra Wilayahs	Integration of budgeting with ERP in all Program Wilayahs completed	No	PLN	IVA	Program Verification Report prepared by the IVA
9	DLI 9 Issue revised planning guidelines acceptable to the Bank	Revised distribution planning guidelines issued	No	PLN	IVA	Program Verification Report prepared by the IVA

#	DLI	Definition/ Description of achievement	Scalability of Disbursements (Yes/No)	Protocol to evaluate achievement of the DLI and data/result verification		
				Data source/agency	Verification Entity	Procedure
10	DLI 10 Integrate planning software with GIS facilities	GIS integrated with planning software for distribution planning	Yes	PLN	IVA	Program Verification Report prepared by the IVA

Bank Disbursement Table

#	DLI	Bank financing allocated to the DLI	Of which Financing available for		Deadline for DLI Achievement	Minimum DLI value to be achieved to trigger disbursements of Bank Financing	Maximum DLI value(s) expected to be achieved for Bank disbursements purposes	Determination of Financing Amount to be disbursed against achieved and verified DLI value(s)
			Prior results	Advances				
1	DLI 1 Number of new customers connected (Thousands)	145.56 million	Yes	No	NA	NA	1,569 (Sum of PforR targets from September 2015 to December 2019)	US\$92,797 per a thousand additional customers
2	DLI 2 Additional length of MV distribution lines constructed (Circuit-km thousands)	55 million	Yes	No	NA	NA	9,909 (Sum of PforR targets from September 2015 to December 2019)	US\$5,551 per a thousand additional circuit-km
3	DLI 3 Number of MV feeder interruptions (Number of Permanent interruptions/100 circuit-km MV Network)	60 million	Yes	No	NA	NA	21.02 (PforR Target for 2019)	US\$2.98million per a hundredth of the reduced Permanent interruption /100 circuit-km MV Network
4	DLI 4 Additional distribution transformer units	65.56 million	Yes	No	NA	NA	13,952 (Sum of PforR targets from September 2015 to December 2019)	US\$4,699 per an additional transformer unit
5	DLI 5 Volume of increased residential energy sales (GWh)	105.55million	Yes	No	NA	NA	4,917 (Sum of PforR targets from September 2015 to December 2019)	US\$21,468 per an additional GWh sold per year
6	DLI 6 (prior result)	15 million	Yes	No	NA	NA	Approval	US\$15 million disbursed upon the approval of the FY 2016 Work Plan

#	DLI	Bank financing allocated to the DLI	Of which Financing available for		Deadline for DLI Achievement	Minimum DLI value to be achieved to trigger disbursements of Bank Financing	Maximum DLI value(s) expected to be achieved for Bank disbursements purposes	Determination of Financing Amount to be disbursed against achieved and verified DLI value(s)
			Prior results	Advances				
	FY 2016 Annual Work Plan approved							
7	DLI 7 PLN has collaborated with development partners in the recruitment of an independent verification agent	1 million	Yes	No	NA	NA	Recruitment	US\$1 million disbursed upon the recruitment of an independent verification agent
8	DLI 8 Integrate budgeting with ERP in all Program Wilayahs	19 million	No	No	NA	NA	Full integration of budgeting with ERP	US\$9.5 million to be disbursed upon completion of 3 Wilayahs; another US\$9.5 million to be disbursed upon completion of remaining 4 wilayahs
9	DLI 9 Issue revised planning guidelines acceptable to the Bank	25 million	No	No	NA	NA	Issue of revised planning guidelines	US\$12.5 million to be disbursed upon the formulation of the guidelines and request for approval by PLN's Director, Sumatra; US\$12.5 million to be disbursed upon the approval of the submitted guidelines by PLN's Director, Sumatra
10	DLI 10 Integrate planning software with GIS facilities	8.33 million	No	No	NA	NA	Integration of GIS facilities in planning process in at least 5 feeders	US\$1.667 million per each feeder for which the integration of the planning software with GIS is completed

Disbursement Mechanism

1. Project year for measuring DLRs will be on a calendar year basis, i.e. from January through December, except for
 - a) Prior Results: The period for measuring prior results will be from September 2015 through expected signing date (about April 2016);
 - b) First project year: Will begin from the project signing date (about May 2016) through December 2016.
2. Bank disbursements will be made to a bank account designated by PLN and acceptable to the Bank. No advance will be made and Bank disbursements will be on a reimbursement basis, contingent upon achievement of DLRs.
3. DLIs and associated annual indicative targets and amounts of financing are described in the Disbursement Linked Indicator Matrix. The Program has ten (10) DLIs, and all are measured through the achievement of the Program results. The Matrix shows indicative annual results for each DLI and all DLIs are scalable, except for DLIs 6, 7, 8 and 9. Disbursement for each DLI is not linked and disbursed amount in any given project year will depend on the extent of achievement made in that given year. This means that disbursements for any of the DLIs (except for DLIs 6, 7,8 and 9) in a given year will be equal to the product of 'unit price' (calculated as total allocation for the DLI divided by the maximum target set for the same DLI, with proper rounding) and target achieved in that given year.
4. DLIs 6, 7, 8 and 9 are not scalable. If DLR for a given project year is not achieved, allocation for that year will be held until the year in which such DLR is achieved.
5. During implementation, if certain DLI (or DLIs) is determined to be un-achievable, the associated allocation may be reallocated to i) other DLI or replacement DLI; ii) or cancelled.
6. DLIs 6 and 7 are for prior results and there are also imbedded prior results in DLIs 1 through 5. Allocated amounts for prior results will be disbursed upon project effectiveness, subject to successful verification of related DLRs.

Annex 4: Summary Technical Assessment

Program Description

1. The Government has developed an overall program to address the goal of increasing economic growth to 7% or above in the medium term in order to reduce inequality and poverty in the country. A crucial component of this program is the role of infrastructure development, in particular electrical energy. Overall, the Government's target is to achieve near complete electrification of the country by 2024 and improve performance of the sector's operations.
2. The objective of the Power Distribution Development Program is to increase access to electricity services and to improve the efficiency and reliability of their delivery in Sumatra Island, the second biggest and populated area in Indonesia. Increasing access to the un-electrified areas will address the infrastructure shortcomings that hamper growth and development. Improving the efficiency of supply and enhanced reliability will support growth and prosperity by improving the conditions under which industrial and commercial establishments operate resulting in lower costs, increased competitiveness in the international exports and related businesses and better services performed. Retail consumers will also benefit from the better quality of service and reduced outages resulting in better quality of life. Benefits of the program will also include reduce migration away from undeveloped areas, thus reducing urbanization pressures.
3. The Sumatra Island selected for the Program is also of particular relevance due to a number of factors. It is the second biggest island in Indonesia representing 25% of the country's total area. Around 20% of the country's population is on this island. It has 10 of Indonesia's 34 provinces and is one of the fastest developing areas second only to Java-Bali in terms of economic significance. Due to the highly saturated conditions prevailing in the Java-Bali Island there is a growing demand for better conditions in adjacent areas and Sumatra is the logical extension of the development of the Java region. The Government has instituted various programs to assist this development. In addition, a large scale generation and transmission investment program that is underway in Sumatra will require, for its effective utilization, se facilities an upgraded distribution network.
4. According to the RUPTL (2015 – 2024), an estimated US\$1.45 billion is needed to develop the distribution network in Sumatra to meet PLN's medium-term objectives of increasing access, efficiency and reliability. The proposed Program will contribute US\$500 Million to the total financing plan and the balance will be provided by ADB: US\$420 Million, and PLN: US\$530 Million.

Overall characteristics and Organizational Structure

5. The overall access rate for Sumatra is estimated at 85%. As the population of Sumatra is around 55 million, it is estimated that 8 million people do not have access to electricity. Of the 29,721 villages in Sumatra 29,658 already have access to electricity either from PLN (78%) or from local utilities (21%). Of the 63 villages that are currently not connected to power supply

some are located at very long distances (even up to 200 km) from the grid and have very low populations, thus making their connection by grid extension economically unviable. Off-grid solutions (both local generation and standalone systems such as Solar Home Systems) need to be pursued for these areas. Other unconnected villages that are nearer to the grid (say within 50 km or so), could be supplied with grid extensions. Overall, the prospects of achieving the planned electricity access target rate of 90 percent by the year 2019 are fairly good.

6. The Sumatra power distribution system is managed by PLN's 6 Wilayahs and 1 Distribution Unit. Each Wilayah is responsible for both the power distribution network and the generation plant feeding into the 20 kV distribution system while the Distribution Unit is responsible only the distribution system. Each Wilayah/Distribution Unit manages one or more provinces in Sumatra.

7. The Wilayah/Distribution Unit is the central point of control that manages all budgetary allocations in consultation with the Distribution Division at PLN HQ (PLN Pusat) and supervises the activities of the Areas and Rayons (geographically-based sub units of the Wilayahs). The Area units manage construction activities and also handle the operation and maintenance work, where necessary through the Rayon units. The Rayons basically function as sub units of the Areas.

8. Since September 1, 2015, PLN has restructured its organization so that the Sumatra power system is overseen by the Directorate of Sumatra Region for all the 6 Wilayahs (Aceh, Sumut, Sumbar, RKR, S2JB, and Babel) and by the Directorate of Western Java Region for the Distribution Unit, Lampung. Within the Directorate of Sumatra Region there are three divisions for Development, Construction and Operation. These divisions will assist the Director to supervise the Wilayahs and the distribution unit with respect to operation & maintenance and construction activities as well as overseeing KPI targets, development planning and budgeting.

9. Overall, Sumatra has a total of 11,504,195 consumers (as of end 2014) and has a maximum demand of 5,791 MW. Wilayah North Sumatra and Wilayah S2JB (South Sumatra-Jambi-Bengkulu) constitutes the largest units with around 27% and 22% respectively of the consumers. Wilayah West Sumatra (10%), Riau & Riau Archipelago (12%) and Distribution unit Lampung (15%) are medium-sized. The Wilayah Aceh (11%) and Bangka/Belitung islands (3%) are substantially smaller than the rest.

Technical Soundness

10. Distribution operations in Sumatra are carried out to appropriate standards and adequate facilities exists for carrying out the intended development Program. There are also numerous levels of oversight as well as a regular review of the performance of each unit against pre-determined KPIs to ensure that performance levels are maintained and improved. The current practice of outsourcing some activities (e.g. breakdown service restoration, wayleave clearance, meter reading and construction activities) to private contractors will be continued and thus, will help to keep PLNs staff at optimum levels.

11. **Sales Growth Rate:** Over the past 5 years, there has been substantial load growth at an average annual rate of about 8.8%. In recent years the load growth rate has been substantially suppressed in a number of areas due to supply constraints. Thus, when supply constraints are removed load growth may reach double digits.

Table A3. Energy Sales in Sumatra 2010 - 2014

No	Wilayah	Sales					CAGR
		2010	2011	2012	2013	2014	
		GWh	GWh	GWh	GWh	GWh	%
1	Wilayah Aceh	1,492	1,580	1,755	1,815	1,966	7.1%
2	Wilayah North Sumatra	6,636	7,194	7,809	7,917	8,271	5.7%
3	Wilayah West Sumatra	2,187	2,403	2,649	2,781	3,005	8.3%
4	Wilayah RKR	2,510	2,845	3,270	3,597	3,972	12.2%
5	Wilayah S2JB	4,155	4,506	5,262	5,725	6,199	10.5%
6	Wilayah Bangka & Belitung	437	536	665	721	805	16.5%
7	Distribusi Lampung	2,259	2,426	2,793	3,182	3,392	10.7%
	Sumatra	19,677	21,489	24,203	25,739	27,611	8.8%

12. **System Losses:** A Distribution system loss is a key barometer of the performance of a power utility. Until 2012 distribution losses remained at single digits in three of the Wilayahs, North Sumatra, West Sumatra and Bangka & Belitung. In West Sumatra and Bangka & Belitung the reasonable level of losses also continued in 2013 and 2014. However, system losses increased considerably in 2013 in all Wilayahs with the average losses increasing by as much as 2 percentage points. In 2014 there was a marginal improvement in losses in almost all Wilayahs but the levels still remained above the pre-2013 figures. Further the first half of 2015 saw increased losses in all the Wilayahs except in S2JB which recorded a slight reduction. The overall deterioration of the loss performance is a matter of concern and it is recommended that PLN carries out a detailed evaluation of the causes of the increases in losses.

Table A4: Sumatra Distribution Losses 2010 – 2015 (Mid)

Losses	2010	2011	2012	2013	2014	Mid 2015
Aceh	9.3%	9.7%	11.2%	14.7%	13.4%	14.4%
Sumut	9.2%	8.9%	9.4%	12.5%	12.1%	12.9%
Sumbar	6.0%	6.4%	6.0%	7.4%	7.5%	8.3%
RKR	9.9%	10.5%	11.8%	13.1%	11.6%	11.9%
S2JB	9.3%	13.4%	11.6%	12.6%	12.9%	12.5%
Babel	9.5%	8.0%	6.7%	8.3%	8.9%	9.8%
Lampung	11.0%	13.1%	11.1%	12.9%	13.6%	12.9%
Sumatra	9.2%	10.3%	10.1%	12.2%	11.9%	12.8%

13. Some of the increases in system losses are probably attributable to the lack of commissioning of new grid substations in the recent past. The lack of such supply injections to the distribution network results in (a) increased loadings on existing lines (with technical losses increasing by a square of the growth rate) and (b) extension of the medium voltage lines over long distances to feed new supply areas. Both factors lead to increases in technical losses. In many Wilayahs the feeder lengths of the 20 kV medium voltage lines have exceeded 100 km and instances of lines exceeding 300 km have occurred. The planned addition of about 80 grid

substations to the system by 2017 alongside the complementary 20 kV medium voltage development will reduce the current level of technical losses in the MV network.

14. The ratio of LV to MV investments also indicates that substantial losses may come from poorly planned LV networks. Accordingly, the Technical Assessment report recommended that PLN should carry out a detailed loss analysis in each Wilayah that has above single digits. When expanding networks the most appropriate and efficient technique is to transmit the power as much as possible on the MV network and limit the LV line lengths. This requires a greater use of step down transformers of smaller capacity as opposed to large capacity transformer stations and long LV lines.

15. **SAIDI & SAIFI:** Reliability of Distribution services are measured by SAIDI (*System Average Interruption Duration Index*) and SAIFI (*System Average Interruption Frequency Index*). In 2014 SAIDI and SAIFI were 8.21 *hours/customer-year* and 8.36 *incident/customer-year* respectively. PLN's procedures for measuring network reliability by SAIFI and SAIDI standards have improved considerably since 2013 with the development of special application program (APKT) for their computation. The accuracy of the system will be further improved when (a) all the Distribution Control Center are uprated to Supervisory and Control Data Acquisition (SCADA) functionality, and (b) when the GIS data base used to compute SAIDI/SAIFI is completed in each Wilayah. At present the system should be treated as 'under development' (though a substantial improvement to the earlier practice) and will be capable of producing accurate data in a couple of years.

Table A5: SAIDI of Sumatra 2010 - 2014

	Wilayah	SAIDI				
		minutes/customer-year				
		2010	2011	2012	2013	2014
1	Wilayah Aceh	231	321	207	280	177
2	Wilayah North Sumatra	2,064	443	313	232	231
3	Wilayah West Sumatra	307	603	249	1,047	566
4	Wilayah Riau & Riau Archipelago	1,373	695	236	432	845
5	Wilayah S2JB	258	376	223	843	734
6	Wilayah Bangka & Belitung	868	274	156	369	221
7	Distribusi Lampung	659	753	259	707	564
	Sumatra	1,007	496	255	553	493

Table A6: SAIFI of Sumatra 2010 – 2014

	Region	SAIFI				
		times/ customer-year				
		2010	2011	2012	2013	2014
1	Wilayah Aceh	5.22	5.95	4.17	6.89	3.25
2	Wilayah North Sumatra	20.06	10.4	6.64	6.68	3.56
3	Wilayah West Sumatra	11.31	11.48	4.61	25.4	9.51
4	Wilayah RKR	9.03	6.49	3.23	6.73	12.49
5	Wilayah S2JB	5.95	6.58	3.72	28.6	17.68
6	Wilayah Bangka & Belitung	11.34	3.83	2.2	2.7	1.18
7	Distribusi Lampung	6.22	7.75	7.75	14.34	5.97
	Sumatra	11.44	8.17	8.27	14.52	8.63

Institutional Arrangements - Distribution Network Development Program and Structure

16. The organizational arrangements and methodology for PLN's network development program is well structured and built up in a number of stages. The overall framework for the development of the power distribution sector is established in the RUPTL (10 Years Planning of Power System Development) which provides an identification of stakeholder expectations and PLN's own mission and goals. RUPTL is developed by PLN Pusat (Head Quarter) and approved by MEMR. This program lays out the broad framework indicating developmental goals and objectives to be achieved. The next stage deals with the formulation of a strategy by analyzing the village electrification road map, PLN's short and long term goals, operational issues, key performance indicators and strategic initiatives and leads to the preparation of a five year investment plan which is called the Rencana Jangka Panjang (RJP). Corporate RJP is prepared by PLN Pusat, and each Wilayah will develop their RJP, based on the corporate RJP. RJP will include a detailed review of the performance over the past 5 years (Kriteria Penilaian Kinerja Unggul (KPKU) assessment) and a SWOT analysis to assist in developing a more focused approach to meeting the goals set for the next five years. The proposals in the RJP are next translated into an annual implementation plan and budget which is called the Rencana Kerja Anggaran Perusahaan (RKAP). The RKAP spells out the details of network expansion and improvements to be carried out in each year. The annual budgets are prepared on the basis of the RKAPs for each Wilayah.

17. At each of the stages above there is consultation between the Pusat and the peripheral operating units. The directorate of Corporate Planning and the Distribution Directorate (responsible for a defined geographic area) are the principle units in Pusat. In addition the System Planning Directorate (which is more focused on transmission development) is also involved in the development of the multi-year and annual plans. The distribution directorate is also supported by the distribution division at Pusat. This division is responsible for more 'hands-on' support and review of the Wilayah activities. At the operational level the Wilayahs are the principle organizational and control unit. They are supported by Area units which are sub units of the Wilayahs. While the overall strategy, framework and budget levels are determined more at the Pusat level the individual plans for network development originate at the Area units and are reviewed and processed by the Wilayahs before transmission to the Pusat. A number of discussions and consultations between the parties are carried out before a particular plan or budget is approved. Feeder load flows needed to support specific network developments are carried out by the Area units under the direction and guidance of the Wilayahs.

18. The key program objectives may be broken down to its key components (identified as 'baskets') as follows:

- a. Improve access to electricity.
- b. Improve quality of service.
- c. Improve distribution efficiency.
- d. Increase supply of electricity for local development.
- e. Institutional development.

19. Each of the proposals submitted for the Annual Budget (RAPK) has to be supported by a description and a quantitative analysis (where relevant) under each of the above baskets. As

examples, the proposals for improved access will identify the prospective consumers that can be connected, the proposals for improved reliability will indicate its impact on SAIDI/SAIFI and the proposals improved efficiency will provide the expected loss reduction benefits. In view of the structuring and evaluation of the existing program items in line with the development goals it is very convenient to keep track of the achievement of the selected DLIs in each yearly development program.

20. **System Planning:** As discussed above the detailed planning of network development for the Annual Budget (RAPK) is essentially carried out by the planning engineers in the Area units under the supervision of the Wilayah and subsequent review by the Pusat Distribution unit. Usually the developments are planned using a software program to compute the load flows in the system. However, the program is not linked to the GIS system which has now been developed to cover most of the networks in Sumatra. Another disadvantage is the limitations on the number of users possible at each location and the lack of and high turnover of trained staff. To overcome these limitations the Project has developed a number of improvements to the planning procedures as described in the ‘Program Action Plan’ below.

Program’s Expenditure Framework

21. Distribution development in Indonesia is usually funded through state budget (APBN) and PLN budget (APLN). APBN will finance rural electrification, and PLN will finance Distribution expansion. Both are coordinated by each Wilayah. Starting from 2016 Annual Budget, the funding of rural electrification will be determined by PLN with a corresponding equity provision by government. The annual disbursements of Distribution development are carried out effectively and more than 80% of the budget is disbursed. Undisbursed amounts are carried over to next year’s budget.

Table A7: Actual Budget Allocation and Disbursed for Distribution Asset

Budget Allocation
(Rp x 10⁹)

Wilayah	2,012			2,013			2,014		
	Dist	Rural	Total	Dist	Rural	Total	Dist	Rural	Total
Wilayah Aceh	278	71	350	230	66	296	281	84	365
Wilayah North Sumatra	368	47	415	300	148	448	418	76	494
Wilayah West Sumatra	218	57	275	210	67	277	250	65	315
Wilayah RKR	654	190	844	359	142	501	648	126	774
Wilayah S2JB	768	220	987	601	268	870	562	249	811
Wilayah Bangka & Belitung	150	62	212	226	51	277	181	57	239
Distribusi Lampung	491	46	537	317	86	403	358	48	406
Sumatra	2,927	692	3,619	2,243	828	3,070	2,699	706	3,405

Disbursement			Rp x 10 ⁹						
Wilayah	2,012			2,013			2,014		
	Dist	Rural	%	Dist	Rural	%	Dist	Rural	%
Wilayah Aceh	274	66	97%	230	64	100%	238	84	88%
Wilayah North Sumatra	363	31	95%	246	97	76%	360	50	83%
Wilayah West Sumatra	215	52	97%	207	66	99%	236	62	95%
Wilayah RKR	602	168	91%	346	134	96%	550	118	86%
Wilayah S2JB	548	211	77%	352	256	70%	476	220	86%
Wilayah Bangka & Belitung	121	58	85%	115	50	59%	98	56	64%
Distribusi Lampung	465	37	94%	297	78	93%	308	35	84%
Sumatra	2,588	624	89%	1,792	746	83%	2,265	625	85%

Note : % : Percentage of Total Disbursement to Total Budget

22. It is observed that in respect of PLN's budgeted work program over 83% of the approved works are completed each year. Overall the progress on planned distribution works is considered to be satisfactory.

23. According to RUPTL 2015 – 2024, Sumatra Distribution need additional network facilities around 20 thousand circuit km of MV Network, 23 thousand circuit km of LV Network and 2895 MVA or 28 thousand unit of distribution transformer. Table A8 shows detail of additional distribution asset needed during 2015 – 2019. With the proposed new planning guidelines to be introduced it is anticipated that the ratio of MV to LV line additions will be improved with more MV investments and less on the LV.

Table A8: Additional Distribution Asset 2015 - 2019

Wilayah	MV Network	LV Network	Trafo		Investment
	Circuit-km	Circuit-km	MVA	Unit	10 ⁹ Rp
Wilayah Aceh	1,803	1,722	219	2,110	1,610
Wilayah North Sumatra	2,612	2,908	425	4,180	2,695
Wilayah West Sumatra	2,162	2,217	390	3,805	2,153
Wilayah RKR	2,955	9,883	719	7,138	5,076
Wilayah S2JB	7,636	3,390	610	5,950	5,581
Wilayah Bangka & Belitung	1,217	1,652	105	959	1,003
Distribusi Lampung	1,102	1,822	427	4,185	1,965
Sumatra	19,487	23,594	2,895	28,327	20,082

24. Budget for Distribution that needs to be allocated is shown in Table A9.

Table A9: Budget Allocation for Distribution 2015 - 2019

Wilayah	Investment					Total
	2015	2016	2017	2018	2019	10 ⁹ Rp
Wilayah Aceh	331	274	296	331	377	1,610
Wilayah North Sumatra	455	432	529	595	683	2,695
Wilayah West Sumatra	353	398	420	463	519	2,153
Wilayah RKR	433	933	1,049	1,229	1,433	5,076
Wilayah S2JB	873	955	1,109	1,221	1,423	5,581
Wilayah Bangka & Belitung	251	196	229	158	168	1,003
Distribusi Lampung	322	331	364	428	520	1,965
Sumatra	3,018	3,519	3,997	4,425	5,123	20,082

Program's Results Framework and Disbursement Linked Indicators

25. The objective of the program is to increase access to electricity supply and to improve the efficiency and reliability of its delivery in Sumatra Island. The key components to meet these objectives have already formulated by PLN in structuring its investment program to the five point 'baskets' described in para 18 above. While there are multiple benefits in relation to the five point baskets the principle outcome related to each of the five baskets are as follows:

- a. Improved access to electricity to result in the addition of new consumers;
- b. Improve quality of service to result in reduced interruptions;
- c. Improve distribution efficiency result in reduced losses;
- d. Increase supply of electricity for local development to result in added sales; and
- e. Institutional development to result in the improved use of modern technology and trained and competent personnel.

26. The proposed Disbursement Linked Indicators (DLIs) will be related to these principle outcomes of the 5 key program objectives and have been selected in consultation with PLN as shown in the table below. The table also provides the base value for 2014 and the target values to be achieved each year.

Table A10: Disbursement Linked Indicators

DISBURSEMENT LINKED INDICATOR	Loan Allocation (10 ⁶ US\$)	Base Line 2014	Unit	Target Value				
				2015 ^{*)}	2016 ^{**)}	2017	2018	2019
Improved Access of Electricity								
Number of Customer (Total)	145.56	11,180	Thousand	11,878	11,938	12,325	12,728	13,177
New Connection				270	60	387	403	449
Annual Growth				5.9%	0.8%	3.2%	3.3%	3.5%
Length of MV Distribution	55	92,716	circuit-km	99,983	100,540	101,791	103,130	104,510
Additional Length				5382	557	1251	1339	1380
Annual Growth				7.1%	1.2%	1.2%	1.3%	1.3%
Improved Quality of Services								
Number of MV Feeder Permanent Interruptions	60	21.22	interruption /100 circuit-km		21.12	21.08	21.04	21.02
Increased Efficiency								
Transformer Unit	65.56	80,130	unit	86,984	87,716	89,386	92,792	97,904
Additional Unit				3,032	732	1,670	3,406	5,112
Annual Growth				9.6%	0.8%	1.9%	3.8%	5.5%
Increased Power Consumption								
Residential	105.55	15,850	GWh	17,210	17,903	18,878	20,011	21,471
Residential Sales Growth				656	693	975	1,133	1,460
Annual Growth				6.6%	6.0%	5.4%	6.0%	7.3%
Institutional Strengthening & Capacity Building								

Prior Result	(16)							
FY 2016 Annual Work program finalization	15			Approval of Workplan				
PLN has collaborated with development partners in the recruitment of an independent verification agent	1			Recruitment				
DLI During Implementation	(52.33)							
Integrate budgeting with ERP in all Program Wilayahs	19				3 wilayah	4 wilayah		
Issue planning guidelines	25				Submission to PLN's Director, Sumatra	Approval by Director, Sumatra		
Integrate planning software with GIS	8.33							At least 5 feeders
Total Loan	500							

Note:

*) 2015 : Sep 2015 – Apr 2016

**) 2016 : May 2016 – Dec 2016

2017 – 2019 : Jan - Dec

Monitoring and Evaluation

27. PLN Headquarters monitors Wilayah performance against the achievement of a number of key performance indicators (KPIs). These indicators cover a wider range of results than the DLIs selected for the Program. Monitoring of KPIs is undertaken through a review and oversight by the internal audit (SPI), and corporate performance monitoring (SPKK) divisions of PLN. The SPI staff monitoring the results are based both at headquarters and at the Wilayahs and operate on an independent basis. SPKK's monitoring is mostly done by computerized program which has a data entry system to capture various operations at the time of occurrence. As an example each tripping of a feeder is logged on to the system as it happens and the consumers affected computed based on a GIS data base¹⁶ which has a record of each consumer related to the network. When the feeder is restored a similar entry is made at the time of the operation. The program collects all such entries and computes values for SAIDI and SAIFI. Similarly for a service connection application an entry is made to the system at time of application and time of completion thus providing the response time for the request. Thus many of the KPI indices are computed by the program without manual interface except for the initial operational entry. In view of the very limited manual interface the monitoring carried out by SKPP is of a higher reliability than systems practiced in many utilities. SKPP also carries out video conferences on a quarterly and monthly basis to appraise the Wilayahs of their performance. This arrangement provides a good methodology for managers to establish controls and corrective measures on an ongoing basis rather than wait for the annual results. The DLIs selected for the project is part of the KPIs that are being monitored by SKPP. It may be noted that PLN has an established procedure for performance bonuses and penalties for a selected number of KPIs.

28. An example of the application of the KPIs for a particular Wilayah is presented below:

¹⁶ This data base is completed to over 80% of consumers in each Wilayah and work is ongoing to complete the data base.

Table A11: KPI performance and targets for Wilayah S2JB

NO	KPI	FORMULA	Unit	Weight	Actual	Target	Actual	Target
					2014	2015	Mei 2015	2016
I Customer Perspective					22			
1	Customer Satisfaction	Result of Third Party Survey	%	6	90	93		91
2	Additional Customer	Customer Number at current year - Customer Number at previous year	cust	3	187,790	211,095	79,104	222,600
3	Recovery Time	$\frac{\sum \text{Duration of disturbance recovery in MV and Trafo}}{\text{No. of Disturbance in MV and Trafo}}$	minute	3	73	150	80	150
4	New Connection Speed	Duration of New Connection, MV excluded	day	3	5	5	4	5
5	SAIDI	$\frac{\sum (\text{Interruption Duration} \times \text{No. of Affected Customer})}{\text{Total Customer in a period}}$	minute/cust	3	733.90	576.82	178.98	471.47
6	SAIFI	$\frac{\sum (\text{Interruption times} \times \text{Customer Affected})}{\text{Customer No in a period}}$	times/cust	4	17.71	16.94	3.72	13.34
II Produk and Process Effectiveness Perspective					31			
1	Electricity Sales	Kwh sales for current period	TWh	3	6.20	7.04	2.62	7.84
7	Distribution Losses w/o I4	$\frac{\text{kWh transfer to Distribution - Dist Owned Use - kWh Sales}}{\text{kWh transfer to distribution}} \times 100\%$	%	6	12.91	9.62	12.56	9.76
8	Feeder Disturbance per 100 kms	$\frac{\sum \text{times of feeder disturbance} \times 100\%}{\text{Total length of feeder}}$	kali/100 kms	2	94.9	108.3	30.6	93.3
9	Rasio of Distribution Trafo Damage	$\frac{\text{Total of damaged trafo} \times 100\%}{\text{Total trafo in Operation}}$	%	3	0.8	1.2	0.3	1.0
IV Human Resources Perspective					14			
1	Human Capital Readiness	Maturity Level (Assessment HCR) skala 1-5	Level	3	3.6	3.6	1.5	3.7
2	Organization Capital Readiness	Maturity Level (Assessment OCR skala 1-5)	Level	8	3.6	3.6	1.5	3.6
3	Personal Productivity	KWh Sales / Personal	MWh/Peg	3	5,630	5,911	2,373	6,041
V Finance and Marker Perspective					22			
1	OPEX Non-Fuel	$\frac{\text{Total Maintenance Cost} + \text{Adm} + \text{Personal}}{\text{kWh Sales}}$	Rp/kWh	5	94.9	90.6	73.0	108.5
2	Production Cost	$\frac{\text{Total Business Cost} + \text{Interest Cost}}{\text{kWh sales}}$	Rp/kWh	3	1,153.4	1,059.5	1,314.0	1,343.1
3	Average Sales Price	$\frac{\text{Total Revenue from Electricity Sales}}{\text{kWh sales}}$	Rp/kWh	2	894.1	1,047.9	972.9	1,066.0
4	Account Receivable Length (PAL + TS + PRR)	$\frac{\text{Average Account Receivable of PAL, TAGSUS dan PRR} \times \text{days periode}}{\text{Revenue of electric sales}}$	hari	5	39.4	34.0	40.5	35.3
5	Inventory Turn Over	$\frac{\text{Jumlah pemakaian material}}{\text{Jumlah saldo material}}$	kali	3	7.18	2.40	1.26	3.00
6	Investment Result							
a.	Program (Contracted Program/Planned --> Without Carry Over)	$\frac{\text{Contracted Program No.}}{\text{Total Planned}} \times 100\%$	%	2	93	100	24	100
b.	Phisic (Actual Payment/Budget)	$\frac{\text{Actual Payment}}{\text{Budget}} \times 100\%$	%	2	85	80	13	80

29. The monitoring and verification on DLIs needed for disbursements will utilize the SKPP system due to its versatility and limited opportunities for tampering with the results. However, an external verification agent will be retained by PLN to monitor and report on the achievement of the DLIs. The agent will provide support to SPKK for further enhancement of its approaches and methodologies for monitoring evaluation and reporting on results.

Technical Risks

30. Implementation of the Program shall be done in a timely and cost effective manner. Some uncertainties may arise from Program preparation up to implementation. The identified risks that may arise need to be anticipated and mitigated. Risk that have been identified are described below.

31. **Delays in the completion of upstream generation and transmission:** Generation and transmission capacity required to meet the demand in the distribution system at the required locations may not be available due to implementation delays. Such delays would lead to under-utilization of investment and delayed benefits of additions to the distribution system.

32. During Program preparation the Bank team conducted a detailed assessment of the status of generation and transmission investments and their linkage to the distribution program. The

conclusion of the analysis was that the combination of existing generation reserves and planned generation and transmission additions to the system during the Program period are adequate to match planned distribution system development. Therefore the risk of inadequate generation and transmission capacity is moderate. Nevertheless, during implementation the Bank team will closely monitor progress of the associated upstream developments through the mechanism of annual work and budget plans to be prepared by PLN.

33. *Construction delays may be encountered in the implementation of the distribution program:* Past implementation of the program, unlike those of the generation and transmission programs has been generally good using PLN's budget (> 80% budget execution) and less so for the Government budget funded activities. Commencing from 2016 PLN has arranged to eliminate the use of the Government's budget given the complex procedures involved that lead to implementation delays and hence this deficiency is not expected to be encountered.

34. Implementation of identified improvement measures will be supported under the program including the strengthening monitoring systems. Annual work plans will be prepared by PLN and reviewed by the Bank on an annual basis. Close monitoring of the progress of works during implementation will be carried out. Bank supervision support will be strategically designed to effectively monitor the implementation of the program of works scattered across the whole of Sumatra. In addition the use of advanced program monitoring techniques will be explored.

35. *Staff at some Wilayahs are not sufficiently trained in network analysis and planning:* An action plan program for technical training has already been commenced for PLN staff. This program shall be enhanced to provide a better technical knowledge for the relevant staff.

36. *Delays in procurement of planning software and development of new planning guidelines:* There can be delays and setbacks in securing the proposed new planning software as well as establishing the new planning guidelines for investment decisions. These will be redressed by regular supervision and technical support provided to PLN.

Program Action Plan

37. Based on the findings during Appraisal, the following action plan shall be carried out to address current shortcomings and improve the realization of the program objectives. Each of the activities described below will be accompanied with a corresponding capacity building program involving both theoretical class room training as well as practical training.

38. *Improvements to the distribution planning process:* It is very important to strengthen the capabilities of the distribution system planning units at Wilayahs and Area units by (a) enhancing the technical tools required to carry out the work and (b) provide the necessary training to staff engaged in the planning function. In respect to (a) the current software used, ETAP, is by individual single user licenses to the different Wilayahs, often with outdated versions. They have no capability of linking with the GIS data base that is established for most of the distribution network. The network data input is therefore done manually and geographic presentation is not possible to efficiently develop new proposals. Multiple use at the planning units of the Areas and the Wilayahs is not possible limiting the discussions needed to fine tune proposals and consider

alternatives. The distribution units have also been developing a good GIS data base on its assets, medium voltage lines, distribution transformers and connected consumers. This data base is used for limited purposes including the APKT program which computes SAIDI and SAIFI but is not effectively used in the planning process. The greatest benefit of a GIS data base in distribution systems is in its application for planning network development. Hence immediate action is needed to obtain a linkage between the planning software and the GIS data base. Current modules of ETAP as well as other commercially available software have this capability and it can be established at minimal costs. Once such a linkage is established the planning process becomes user friendly and efficient. Development proposals can also be presented with geographic diagrams by 'the click of a button' facilitating review and discussion on alternatives. In fact major network development proposals should not be considered without the accompanying geographic maps that illustrate the effectiveness of the proposal. Furthermore, network data also becomes 'current' as new lines are added to the GIS data base and estimated loads on feeders made easier by the consumer data base linked to the GIS. Accordingly, it is proposed that an unlimited corporate license be obtained for ETAP or equivalent software which will include linkage to the existing GIS database.

39. In addition to improve the software program and linkage with GIS, the planning units need to have good size plotters which can be used to plot the networks and facilitate a planning discussion on alternatives etc. The plotting facility can also be used to identify new grid substation locations and for presentation of plans for review by senior management.

40. A large number of personnel (in approximately 32 Area offices and Wilayahs) are engaged in the distribution planning process and there is considerable staff turnover as people move to other departments. Hence it is very necessary to keep the planning engineers well trained at all times. Much of the efficiency of capital investments being made will depend on the capabilities of these planning engineers. Hence their training is a very important and requires the attention of PLN management. In addition to local training provided at the PLN Training University it is proposed that international exposure be also arranged. This is readily possible by participating in 'user group' workshops regularly arranged by software suppliers (including ETAP).

41. **Improved use of GIS data base:** The GIS data base of PLNs assets and consumers is a very useful and important facility which could be put to greater use in a number of applications (other than for the APKT program). Some of these possible applications are listed below:

- a. Identification of fault locations by call center/DCC. When calls are received on supply faults a GIS based application can indicate the locations of the respective calls to speedily identify which component of the network could be the possible cause.
- b. Transformer load management: The number of consumers (and their VA demand) on each distribution transformer will be an indication of the expected load which can be used to ascertain the appropriateness of the transformer rating and initiate any new proposal such as addition of new transformers or augmentation of the existing one.
- c. Asset management: This data base will allow classification of assets by age etc. an enable better asset management practices to be used.
- d. System planning: As explained above

42. ***Review of distribution planning concepts:*** It is recommended that some aspects of the current network plans be reviewed and policy decisions taken on the efficient planning techniques to be used. A major factor is the current excessive investment in the LV networks. Currently the ratio of LV to MV investments is of the order of 1.6 which appears to be quite high. When expanding networks the most appropriate and efficient technique is to transmit the power as much as possible on the MV network and limit the LV line lengths. This requires a greater use of step down transformers of smaller capacity as opposed to large capacity transformer stations and long LV lines. It is possible that the major push towards increasing access rates resulted in ‘quick’ solutions by extending the existing LV networks. Also associated with the recommended policy of greater MV coverage and limitation of LV lines is the possible use of single phase MV extensions and single phase transformers as used extensively in the US practice (as well as other East Asian countries such as Thailand and Philippines). It is thus recommended that PLN examines best practice solutions to the distribution network development and applies the results of studies to future investment, including those of the proposed program.

43. ***Loss evaluation techniques:*** At present a procedure is followed to assess the technical and nontechnical components of recorded system losses in a Wilayah by using an ‘asset based’ model for computing technical losses. This model does not appear to give an accurate presentation of the technical losses of a system. The main parameters of the technical losses of a system are the load of each feeder in relation to the characteristics of the conductor used and the line length. A much more accurate estimation of technical losses of a system is possible by applying the software used to study the system. For the purpose of this assessment it is proposed that the MV feeder load flow results of the ETAP or other software program be used together with estimation of representative samples of the LV network losses. A more accurate determination of technical losses of a system will provide a better yardstick to gauge the efficiency of the performance of the Wilayahs in (a) planning the networks and (b) controlling the non-technical losses of the system. By controlling these two factors the Wilayahs should aim to achieve system losses at single digit levels.

44. ***Focused program to address the long MV lines:*** Currently the distribution system has a fair number of substantial long MV lines. Feeder line lengths exceeding 100 km appears to be a common feature and feeder lines of 300 km or more are also present in the system. Many of these long lines may have arisen due to successive unplanned extensions to cater to the RE program demands. These long lines will contribute significantly to system losses and longer and more frequent interruptions. Hence a focused attempt at improving the networks associated with these long lines need to be carried out on a priority basis.

45. ***Evacuation plans from new Grid substations:*** A number of new Grid substations are expected to be commissioned in Sumatra over the next five years. Efficient plans need to be made for the evacuation of power from these grid substations and to optimize the distribution networks supplied. Focused attention of PLN will be drawn to this aspect. Furthermore Bank supervision will also focus on ensuring efficient planning in this area.

46. ***Improvement of the Distribution Control Centers:*** Currently speedy restoration of system failures and improvement of the SAIDI/SAIFI norms are hampered by the deficiencies in the

SCADA facilities in the Wilayahs. Three of the Wilayahs have no remote monitoring of the feeders while in the others the SCADA facilities have various limitations. While PLN is making attempts to improve SCADA facilities in each DCC it is recommended that a more comprehensive proposal be developed to include all deficiencies in each Wilayah. For this purpose a study will be undertaken to assess all the requirements at each Wilayah, substation and switching station. The best arrangement would be to issue a single tender to include all the required work for the upgrading of all DCCs in Sumatra. This will allow competitive bids and also ensure a common application program for all DCCs.

Annex 5: Summary Fiduciary Systems Assessment

1. A Fiduciary Systems Assessment (FSA) was carried out to evaluate the arrangements relevant to the Program and to determine whether they provide reasonable assurance that the Program funds will be used for their intended purpose. Taking into account the improvements required and the agreement on the actions required to strengthen the systems (which are reflected in the PAP), the overall fiduciary framework is considered adequate to support the Program management and to achieve the desired results. The Assessment of Program fiduciary systems integrates findings in three areas:

- a. The **procurement systems** were assessed to determine the degree to which the planning, bidding, evaluation, contract award and contract administration arrangements and practices provide a reasonable assurance that the Program will achieve intended results through its procurement processes and procedures
- b. The **financial management systems** were assessed to determine the degree to which the relevant planning, budgeting, accounting, internal controls, funds flow, financial reporting and auditing arrangements provide a reasonable assurance on the appropriate use of Program funds and safeguarding of its assets; and
- c. The Program was also assessed how PLN's governance systems handle **the risks of fraud and corruption**, including the use of complaint mechanisms, and how such risks are managed and mitigated in light of the government's commitments under the Guidelines on Preventing and Combating Fraud and Corruption in Program for-Results Financing (Anti-Corruption Guidelines or ACGs).

2. *Brief Background and Summary of Institutional Arrangements:* The PDDP would be funded through direct lending to PT PLN with a sovereign guarantee. This is a relatively new financing arrangement with most prior bilateral and multilateral loans having been on-lent through the Ministry of Finance to state-owned enterprises. The underlying enabling Presidential decree for direct lending has been signed. The related Government regulations have been issued with the institutional mechanisms for project identification, due diligence and recommendation to the Ministry of Finance for guarantee issue are included in the regulation. The program will be administered by a central Project Management Unit (PMU), but the physical implementation activities will be carried out by PLN's regional offices called "Wilayahs". The Wilayahs have been carrying out similar programs over the years and are experienced and capable of managing the distribution construction work envisaged under the program. There are several area units under each Wilayah responsible for implementing the program.

3. *Planning and Budgeting:* Distribution investment is part of PLN's regular budget and is part of the Government's general plan on national electricity (RUKN). PLN uses RUKN as a basis to prepare the RUPTL, a 10-year plan to fulfill electricity demand in its business area. The RUPTL is prepared through a process which involves the consolidation of investment requirements as determined by PLN's Units and Wilayahs, and in discussion with various Departments at PLN.

4. The proposed program for Bank support would cover the power distribution program of the 5 year time slice of the 2015-2024 RUPTL in the Sumatra region. The proposed program would be US\$1.45 billion. PLN is planning to finance the program with an ADB Loan of US\$420 million, an IBRD Loan of US\$500 million and its own resources for the balance of US\$530 million. The Bank's PforR Loan would finance expenditures for this subprogram of the RUPTL, and disbursements would be made for agreed results achieved during 2015-2019, including prior results from the date of the approval of the Program Concept Note (PCN) by the Bank's management to effectiveness of the Loan. The Government's capital injection of IDR 10 trillion is being planned for PLN of which IDR5.6 trillion is planned for Distribution investments. This proposed equity infusion shall be agreed upon with Parliament during the FY 16 budget discussions. PLN plans to use part of this amount to cover this Program. The next step would entail the Government issuing a Government decree (Peraturan Pemerintah) and relevant Government regulations (Peraturan Menteri Keuangan) outlining the details of the proposed equity infusion. The Government's fund for capital injection would need to be included in the government budget document (DIPA).

5. The RUPTL is a basis for preparing the five-year Corporate Long Term Plan (Rencana Jangka Panjang Perusahaan - RJPP) and a guidance for annual investment decisions in PLN's Corporate Budget Work Plan (Rencana Kerja Anggaran Perusahaan – RKAP). The budget is prepared and compiled by PLN's Wilayah offices which are then consolidated at PLN Headquarters. The budget is allocated to recipient Wilayahs following a review, prioritization, and approval process during a stakeholders' meeting at PLN Headquarters. The entire budget planning through effectiveness process could take up to nine months to complete. Though the budget becomes available later in February at the Wilayah level, PLN starts the procurement process earlier in December of the preceding year and in January PLN can use the budget carried-forward to make contract payments. .

6. Control over budget availability is done manually by the Finance Unit at Wilayahs, since the budgeting system application is not linked to ERP. PLN is developing a new comprehensive budgeting application system called Budget Planning and Monitoring Information System (SIP2A) that will be linked to ERP. This application is still under development and is currently at the user testing phase.

7. Until recently for the distribution network, in addition to its procurement systems under PLN's budget (APLN) PLN also followed national procedures as set forth in the Presidential Regulation (Perpres 54/2010 as amended from time to time) that apply to budgetary support from the Government (APBN). As PLN's future investments for the distribution program are expected to be through equity infusion and not through budgetary support, PLN will follow only one set of regulations, i.e. PLN's procurement regulations and not Perpres. Accordingly only PLN's procurement systems were assessed for the Program.

8. *Procurement Profile of the Program:* The Program does not envisage any large value contracts that could exceed the OPRC Threshold. Annual expenditures for the procurement of goods and works in year 2015 are of the order of US\$200 million. Major procurement under the Program consists of sixteen Main Distribution Unit (MDU) procured through framework contracts for achieving value for money through economies of scale, reduced number of

transactions, and faster procurement. Out of these sixteen MDU items, nine items (i.e. Distribution Transformers; Single Phase Meters; Cables; Conductors; Cubicles; MCB; Isolators; Fuse Cutout; and Lightning Arrestors), representing about 50 percent of the total annual expenditure are procured by PLN's Supply Chain Management (SCM) division at PLN Pusat (Head Office). Seven MDU items (i.e. Concrete and Steel Poles, Load Break Switch, LV and MV Panels, Current Transformers & Potential Transformers), representing about 25-30 percent of the total annual procurement expenditure are also procured for the whole of Indonesia (called Joint Procurement) by procuring units in some of PLN's Regional Offices (Wilayahs). Based on the framework contracts for the whole of Indonesia for these sixteen MDUs for 2015, the size of the contracts for Sumatra in 2015 is between US\$10,000 to US\$10 million.

9. *Procurement Regulatory Framework*: PLN's revised Procurement Regulation 620, effective since January 2015, is based on modern procurement concepts. The Regulation embodies general principles of Public procurement, i.e. efficiency, effectiveness, competition, transparency, and fairness; and includes several features of the World Bank's new Procurement Policy framework. The regulation requires Procurement to follow the "Value-for-Money" (VfM) principle i.e. an optimum combination of 6 (six) rights (6 Rs) right quality, right quantity, right time, right place, right socioeconomic goal and right price and not necessarily the lowest initial price. Under the 6 Rs concept, the right price is given the last position because it is dependent on the other 5 Rs. The socio-economic goal may be social, environmental and other strategic goals such as promoting the use of domestic products. The new procurement regulations are in the initial stages of implementation and as such the effectiveness of the procurement system is yet to be fully ascertained. However, assessment from the initial stages of implementation of the new regulation provides reasonable assurance that procurement systems under the PDDP will achieve the intended results. PLN's Procurement regulations are presently not publicly disclosed. PLN has agreed to make its procurement regulations available on its website by early 2016. Procurement Methods followed by PLN under the Program are:

- a. *Open/Limited Competitive Bidding*: Eleven of the MDU items which constitute about 70-75 percent of procurement expenditure are procured first by qualifying the manufacturers against pre-disclosed criteria (through press advertisement). Bids are then invited from the qualified (registered or DPT) manufacturers which in PLN's regulation is termed as "Limited Bidding" even though this is equivalent to national competitive bidding. There are between 3 to 19 registered manufacturers for eleven MDU items procured through a competitive process. For the procurement of construction works and maintenance services procured by the Wilayahs/areas (around 240 procuring units) which constitutes approximately 20-25 percent of the procurement expenditure, PLN normally follows open national competitive bidding except for some small value items that are procured using Direct Procurement. Thus over 90 percent of total procurement expenditure is through national competitive bidding.
- b. *Open book method (Direct Contracting/Direct Appointment)*: Five MDU items (plus one variant of MV panels) comprising around 6-8 percent of total expenditures have only two qualified manufacturers for which PLN enters into Direct Contracting (or Direct Appointment) with each of the two manufacturers through an "open book

method”. Though the unit prices of such items procured under open book method are low (normally varying between US\$2 to 60), these items have high impact on the reliability of the distribution network and hence the strategic sourcing with the two qualified manufacturers is with the objective of ensuring quality, timely delivery and reasonableness of prices. Under this method both manufacturers, through a confidentiality arrangement with PLN, are required to share their cost structure, overhead and profit percentages which are reviewed and verified by an international consulting firm, Accenture hired by PLN. The open book method appears to be an improved procedure of Direct Appointment and is being followed in PLN since 2012 for Power Transformers. For Distribution, PLN started following the open book method since 2015 in instances when the number of registered/qualified manufacturers is less than 3. However, there are no regulatory boundaries to the use of the open book method. For Power Transformers (which are not part of the Distribution Program) PLN is still continuing to follow the open book method even when the number of registered manufacturers was recently increased from two to four. PLN has agreed that no additional items under the Program will be included under open book method and that PLN will follow this method only for those MDUs where the number of qualified manufacturers is less than three.

10. While under the Distribution Program PLN normally follows a competitive method of procurement or open book order or Direct Procurement, PLN’s regulation also envisages Direct Appointment of SOEs, PLN’s/SOEs’ Subsidiaries or PLN’s/SOEs’ Affiliated Companies and/or small and micro enterprises. Although the possibility of PLN entering into Direct Appointment with SOEs and/or PLN’s affiliate under the Distribution Program appears to be low, this practice, if used under the Program, could be perceived as a Conflict of Interest and of compromising on fairness, transparency and economy in the procurement process. As part of Program Action Plan, PLN has agreed to exclude Direct Procurement/Direct Appointment of SOEs and/or PLN’s subsidiaries, Joint Ventures, affiliates under this Program.

11. *Direct Procurement*: Direct Procurement is meant to meet the operational needs of simple and low risk goods with a value <IDR 300 million or US\$23,000 equivalent which is done in Wilayahs/areas based on specific needs and circumstances, which includes procurement from small or micro industries. The cumulative value of such Direct Procurements is expected to be insignificant. However, there will no Direct Appointment/Direct Procurement of small or micro industries under this Program for contracts above IDR 300 million.

12. *Local content*: The sourcing of MDUs is from local manufacturers in Indonesia with local content ranging between 10-60 percent. However, major international manufacturers have established their manufacturing works in Indonesia and the assessment indicates adequate bid response from local manufacturers with over five bids in approximately 68 percent of procurements by the SCM division and between 3-5 bids for 20 percent value of procurement by SCM. The assessment also suggests that PLN specifies the minimum local content requirement in a manner that ensures that no manufacturer, otherwise meeting the registration/qualification criteria, is disqualified based on local content regulations.

13. Evaluation and award criteria: Most of the goods and works under Distribution are evaluated on a lowest price basis. PLN uses reverse auction by providing all bidders with the opportunity to submit revised bids at a fixed time. This exercise is repeated three times at a fixed interval of 30 minutes each. The results of each auction are made available to all the participating bidders. If as a result of the third round of negotiations, the lowest bid is within the estimates, the same is selected for award, otherwise PLN negotiates with the lowest bidder to bring the unit price below cost estimates. The assessment also noted that PLN enters into framework agreements for MDU items with more than one manufacturer (up to five), for which PLN depending on the specific items to be procured, specifies in the bidding documents, percent of volume to be allocated to L1 and for L2, L3, provided L2, L3 matches the price of L1. For one of the MDU items i.e. Single Phase meters PLN follows a two stage bidding system using technical scores with 70 percent weightage and cost weightage 30 percent in the evaluation of bids. For this item there is no reverse auction though PLN does negotiate with the bidders if the quoted unit rate is higher than PLN's estimates. The team's assessment also indicates that PLN has not discriminated against private manufacturers in awarding contracts under its Distribution Program.

14. E-Procurement: Before the new procurement regulations effective since 2015 were issued, PLN had been carrying out procurement for items funded through its own budget APLN (except for EPC contracts) following PLN's e-procurement system. Since 2015 PLN has been carrying out procurement manually as PLN is in the process of upgrading the e-procurement system for ensuring consistency with the new procurement regulations. The Bank has not assessed PLN's e-procurement system. The assessment noted that while normally reverse auctions are expected to be carried out through e-procurement, in 2015 PLN carried out reverse auctions manually which carries the risk of lack of transparency. PLN is, however, committed to upgrade and implement the e-procurement system for enhanced transparency and efficiency in the procurement process. The upgraded e-procurement system is anticipated to be completed by June 2016.

15. Public Disclosure of Bid and Award Details: Bid opportunities are publicly disclosed on PLN's website and are advertised in national/regional newspapers. Award details under the Limited Bidding process (and other competitive methods of procurement) are available through the e-procurement system to the extent of the bid reference number and the name of the winning bidder. In view of the confidentiality arrangement between PLN and the manufacturers under the Open book method, award information under this method is not publicly disclosed. As PLN's e-procurement systems are being upgraded and all procurements in 2015 are carried out conventionally (except advertising bid notices on website), award details (not even names of winning bidders) are disclosed publicly. The team advised PLN for public disclosure of all award details on PLN's website for various methods of procurement including open book method and direct procurement which should include the names of participating bidders, quoted and evaluated prices and reasons for rejection of any bid. PLN, however, informed that as an SOE, PLN is complying with disclosure requirements in relevant laws applicable to SOEs and the award details are being made available to the participating bidders only. PLN further informed the Bank that the announcement of the winning bidder will however be publicly available through its e-procurement system once implemented, by June 2016. PLN's regulation also provide for objections (and appeals) to the award by the unsuccessful bidders.

16. *Procurement Organization and Capacity:* PLN's new Board of Directors and Board of Commissioners were announced in December 2014. However the formal allocation of Director's portfolios was not undertaken until August-September 2015, when PLN announced the new organization structure with seven Regional Directors; and four additional Directors, one each for Procurement; Corporate Planning; Finance; and Human Resources. As per PLN's procurement regulations, the Procurement Planning and Procurement Implementing Officers, responsible for the procurement process must be Procurement accredited. In PLN there are 1317 certified procurement officers. The procurement certification is valid for three years. The certification is valid for 3 years and the employee should take an examination and after that seek renewal. The Bank recommended to PLN to systematically track the status of individual certifications and closely monitor their renewals. Procurement of nine MDU items is carried out by the SCM Division which has seventeen qualified staff and seven MDU items by designated Wilayahs all of which have professionally qualified (mostly engineers) and procurement certified staff. The SCM Division is headed by a Division Head who is reporting to the Director (Strategic Procurement). Each of the seven Wilayahs in Sumatra is headed by a General Manager. Each Wilayah is divided into areas headed by an Area Manager reporting to the GM Wilayah. Each Wilayah and area unit also has certified procurement staff. PLN also conducts training on a regular basis for procurement staff twice a year and more than twenty training programs were conducted after the new procurement regulation came into force. PLN is committed to enhance the skills of its staff through further training.

17. *PLN's Procurement Performance in the Power Distribution Sector:* From the available data for the year 2015, for sixteen MDUs, it was noted that PLN took between 28 to 100 days from the invitation of bids to award excluding time for registration (DPT) which varies between 33 to 43 days. Regarding competition in the bidding process, 68 percent of SCM procurements resulted in more than five bids, and 20 percent between 3-5 bids. The assessment reveals weaknesses in systemic reporting, monitoring and analyzing procurement performance as data sets for years 2011-14 did not include key information for appropriate data analytics to be undertaken and for year 2015 the only data available was for framework contracts entered by SCM Division for nine of the MDU items with no procurement and contract implementation data available for procurements carried out by Wilayahs and for individual orders issued for MDUs based on the framework contracts. For effective monitoring and evaluating procurement performance, PLN has agreed to develop a procurement performance monitoring framework and periodic reporting of information of key performance indicators throughout the program. Further the Bank has advised PLN to comprehensively assess the available capacity of local manufacturers net of other commitments to meet PLN's project volumes for MDUs and in case of inadequate number of qualified manufacturers to agree on steps for expanding the list of registered manufacturers.

18. *PLN's Performance in EPC Contracts under ongoing operations:* The assessment shows major delays throughout the project cycle in ongoing Bank financed Power Generation and Transmission Projects. The delays in ongoing operations are due to PLN's cumbersome internal processes; absence of quality oversight; inadequate contract monitoring; weak contract management capacity; delays in internal approvals; and delays in delegating authority for contract and amendment signing leading to contractors working for several months without contracts. Due to these concerns, Procurement and IP performance of these projects are rated

Moderately Unsatisfactory. The procurement procedures and systems under the Distribution program are more streamlined within PLN. PDDP also does not envisage large EPC contracts. However, in view of major delays in project implementation under IPF operations, the team has advised PLN for a diagnostics of PLN's project management processes (including procurement and contract administration) to identify the bottlenecks and implementation of agreed actions for strengthening institutional capacity.

19. *Treasury Management and Funds Flow.* For distribution related projects implemented by the Wilayahs, technical verification and payments are done by relevant sections at the Wilayah level. Adequate controls appear to be in place for the technical verification and payments processes. The Finance unit has service standards set at six days maximum for payment processing. The average time for the Finance unit of the Wilayahs to process payments is five days from receiving the invoices. Findings from Wilayahs' visited show that the average period for payment of third parties' invoices in the Wilayahs varies from 10-24 days after the invoice is received. With a more synchronized system, it is possible to reduce the number of days for payment processing, e.g. through a linked budget application with ERP.

20. PLN has adequate control over its cash in bank. PLN implements a centralized imprest mechanism for transferring funds from PLN Headquarters to Wilayahs and Branches. PLN Wilayahs prepare a Monthly Cash Forecast (*Anggaran Kas Bulanan/AKB*) through their A2K application based on the approved budget. The Treasury Division at PLN Headquarters transfer funds to the Wilayah bank accounts on a weekly basis, based on the monthly cash forecast. At the end of each week, any balance above IDR 1.1 million in unit accounts are automatically refunded to PLN's central bank account. Bank reconciliation is carried out at each level on a monthly basis and is approved by two authorized officers (who are different from the preparer)

21. The PforR would be the first direct loan from the Bank to PLN. Therefore, it would not be affected by inherent direct payments issues which created long payments processes under IPF loans. There would not be requirements to verify payments through DG SMI within MOF and KPPN (State Treasury Office). PLN would receive loan payments directly from the Bank. Program reconciliation will be done by the Treasury division at PLN Headquarters on an annual basis. The Government has issued a Presidential Decree for direct loans to SOEs. A Minister of Finance decree which stipulates detailed procedures for the issuance of Government guarantees for direct loans to SOEs was issued in October 2015.

22. *Internal Controls and Audit:* PLN has an adequate internal control in place for the preparation and approval of transactions and for the segregation of duties. FM procedures and policies are documented in a manual. All changes in finance/accounting policies and procedures are formalized through the issue of circulars by the Finance Director. PLN has an adequate asset management system. Fixed assets register for the Distribution unit is maintained at the Wilayahs and Branches level through ERP and is monitored by the Distribution unit for their physical condition, and updated through a system called Management Service Information System (*Sistem Informasi Layanan Manajemen SILM*). The Finance unit monitors the monetary value of the assets through ERP. Physical check for distribution assets is carried out when there are changes to these types of assets. Broken assets must be replaced immediately within three hours as they would impact the SAIDI/SAIFI key performance indicators (KPIs) and customers directly.

23. PLN has an internal audit department (SPI) with 187 staff at Headquarters reporting to the President Director. There are internal control units at unit offices with a similar role. Most of the staff are engineers. This department and units undertake internal audits based on an annual work program (PKPT), which starting in December 2014 prepared audits by using a risk-based approach. The President Director can request special audits in addition to the annual audit program that has been agreed upon. The scope of work for internal audits includes compliance (including procurement audit) and performance audit. The verification of Key Performance Indicators (KPI) is one aspect which is covered by SPI audits. Follow up on internal audit findings must be completed no later than 30 days after the report is received. Delays on follow-up action would affect the overall KPI score of the office. The information pertaining to the basis of determining the risk profile and sample contracts audited by SPI and audit findings were not available during the assessment. In order to enhance the fiduciary oversight of the Program, SPI will carry out a procurement audit for fifteen percent of contracts awarded by each procuring unit and share the findings of the procurement audit with the Bank annually under the Program by providing (a) the list of contracts awarded by each procuring unit during the year giving contract description, method of procurement; date of award, contract price; (b) list of specific contracts taken up for audit for each procuring unit; (c) a completed check list for each contract audited as per the agreed format; and (d) highlight any systemic issues observed during Program procurement, and propose follow up action.

24. The President Director recently changed SPI's organization structure in September 2015. The target is to have 1,000 auditors located at Regional Offices as Resident Auditors. Based on self-assessment done in 2014, SPI is rated as a 2.8 in the IIA's Internal Audit Capability Model (IA-CM). This self-assessment showed that SPI is close to reaching the integrated level i.e. level 3.¹⁷

25. PLN also has a Corporate Delivery Unit (*Satuan Pengendalian Kinerja Korporat - SPKK*) with 12 staff located at PLN's Head office that report directly to the President Director. The unit is responsible for monitoring and evaluation of the overall corporate performance, strategic program and guiding action in change management. The unit is responsible for consolidating the units' KPIs through the internal SILM application and BOD dashboard. SPKK's monitoring is mostly done virtually by headquarters staff through video conference on a quarterly and monthly basis. The report generated by SPKK would be used as the basis for preparing the DLI achievement report.

26. *Accounting and Financial Reporting*: Budget monitoring is currently conducted on a monthly basis at PLN Headquarters by the Planning and Budgeting Division. The budget monitoring report generated from the application is submitted to the Corporate Secretary for review. The Planning and Budgeting section at the Units/Wilayahs also use the A2K application to monitor their own budget on a monthly basis. The budget application cannot automatically

¹⁷ Level 3 has the following characteristics: (i) Internal Audit (IA) policies, processes, and procedures are defined, documented, and integrated into each other and the organization's infrastructure; (ii) IA management and professional practices are well established and uniformly applied across the IA activity; (iii) IA is starting to align with the organization's business and the risks it faces; (iv) IA evolves from conducting traditional IA to integrating as a team player and providing advice on performance and management of risks; (v) Focus is on team building and capacity of the IA activity and its independence and objectivity; and (vi) Generally conforms to the IIA's International Standards for the Professional Practice of Internal Auditing.

generate budget reports in the format required by the BOD due to its inability to extract actual expenditure information from ERP. This report is therefore produced manually.

27. At the Wilayahs, a manager level staff is responsible for providing explanations to the General Manager on budget variances during monthly management meetings. Budget variance is also one of the agenda items discussed during the quarterly video conference between PLN's BOD with all General Managers. Budget realization is part of the Wilayah office KPI that is monitored by the relevant division at the Head office level. The KPI points are used to determine the Organizational Performance Grade (*Nilai Kinerja Organisasi - NKO*) which then becomes one of the contributing factors in calculating the bi-annual individual performance bonus.

28. All PLN offices have implemented the ERP system. A consolidated financial report is prepared monthly by PLN Headquarters. The consolidation is done manually as the ERP system cannot accommodate some reporting formats requested by the Board of Directors (BOD). This task could be challenging, especially for eliminating inter office transactions and balances to reflect the consolidated financial position. The consolidation is done manually as the ERP system cannot accommodate some reporting formats requested by the BOD.

29. *Program Financial Statements Audit.* As an SOE, PLN is subject to several audits. According to SOE Law No. 19/2003, SOE's financial statements are subject to annual audits by a private audit firm. The audit firm is appointed through the Annual General Shareholder Meeting. In conducting the financial statements audit, the private audit firm follows Indonesia's Standards of Auditing which are adopted from International Standards of Auditing (ISA). The auditor's opinion for PLN's financial statements for FY 2014 is an unqualified (clean) opinion. The audited financial statements of PLN are available on PLN's website. In conducting the audit, the audit firm audited the Wilayahs on a sample basis.

30. The auditor also prepared a management letter to report findings concerning internal controls and recommendations which required management attention for improvement. The management letter for the FY 2014 audit does not include significant internal control issues in terms

31. Other than the regular audit that covers PLN and its subsidiaries, the private audit firm will also conduct several reviews as included in their TOR for FY 2015, e.g. compliance audit and internal control system review, independent review on Key Performance Indicators, and compliance audit according to Standards of Audit No, 62 (PSAK) for Public Interest Entities receiving government funds and according to Public Sector Standards of Auditing (SPKN).

32. The SOE Law also stipulates that Indonesia's Supreme Audit Institution (Badan Pemeriksa Keuangan – BPK) has the right to audit SOEs according to the law and regulations. PLN is subject to a special audit by BPK related to the Government's subsidy received by PLN, as required by MoF regulations. This audit has been conducted by BPK annually.

33. PLN is also subject to an audit by the Inspectorate General of the Ministry of Energy and Mineral Resources (MEMR) on government funds received by PLN for Village Electrification (Listrik Desa) on an annual basis. BPKP also conducts special audits/reviews of PLN based on

requests from the Government, and in particular by MEMR. Upon request from the Minister of Finance, BPKP also conducts SOE management system reviews by following the Good Corporate Governance principles. BPKP also has the right to conduct forensic audits of PLN based on a request from the Committee of Audit, which is established by PLN's Board of Commissioners.

34. The Program audit will be conducted by a private audit firm as part of the annual audit of PLN's financial statements and shall provide an auditor's opinion of the Program. The private audit firm shall continue to select Wilayah offices to be visited based on a set of risk parameters and include distribution investments in the audit. The private auditor's audit report should be submitted to the Bank no later six months following the end of PLN's fiscal year.

35. *Fraud & Corruption Assessment*: PLN has agreed to implement the Program in accordance with the Guidelines on Preventing and Combating Fraud and Corruption in Program-for Results Financing (ACG) and will provide the Bank with reports on how the agreed upon governance actions are implemented.

36. The anti-corruption regulations in place in Indonesia denote a fairly strong legal framework although efforts should still focus on revising provisions such as the length of some procedures or the criminalizing of certain offences in order to make its application more systematic. The fraud and corruption offences are mainly regulated by Law No. 31/1999 on Corruption Eradication, as amended by Law No. 20/2001, the Criminal Code, and Law No. 8/2010 on the Prevention and Eradication of the Crime of Money-Laundering, and Law No. 28 of 1999 on Government Executives who are Clean and Free from Corruption, Collusion and Nepotism. At the same time, some of the internal regulations of individual institutions, including PLN, are new or are in the process of being amended with impacts on the consistency and effectiveness of the reporting, investigating, prosecuting, and sanctioning mechanisms.

37. Indonesia has institutions that are mandated to fight fraud, and corruption. The KPK (*Komisi Pemberantasan Korupsi*) is the main national institution responsible for the prevention, investigation, and prosecution of corruption issues. Investigative functions regarding fraud and corruption allegations are fulfilled by the KPK, the Attorney General's Office and the Police. The KPK, AGO and Police anti-corruption activities are supported by the Financial Transaction Reports and Analysis Center (PPATK) and the Anticorruption Courts are mandated to adjudicate cases of corruption. The external audit and oversight function in the electricity sector is provided by the Audit Board (BPK) of the Republic of Indonesia and the Board of Supervisors, Finance and Development (BPKP). Additionally, the Central Information Commission (KIP) and the Ombudsman of the Republic of Indonesia are mandated to strengthen the transparency and accountability of PLN.

38. While the legislative and institutional framework represents a fairly solid base for the implementation of the rules and procedures required under the Program, the governance assessment has revealed gaps in their application by PLN. In addition to PLN's internal controls and audit mechanism, the assessment looked at its grievance and complaint handling mechanisms; its management's personal asset disclosure compliance; its access to information; transparency, accountability, and integrity mechanisms in place; the applicability of Anti-

Corruption Guidelines of the Bank for the Program; and the public disclosure of PLN's list of debarred firms.

39. *Complaint Handling Mechanisms:* PLN has three complaint handling mechanisms, for citizens, bidders, and for PLN staff. PLN has a functioning Call Center to receive complaints from citizens. PLN also has a functional complaints handling mechanism to address the procurement related complaints as per which bidders are required to submit their objections within three days of announcement of award to the Procurement Implementing Officer and if unsatisfied with the decision, bidders can appeal to the User (General Manager of the Wilayah or Board of Directors in Pusat) whose decision is final. There is also no requirement in Indonesian or PLN regulations to publish data and information about complaint handling. In addition, PLN has a whistle blower mechanism for reporting allegations of wrongdoing. It has been determined through discussion with PLN that the whistleblower mechanism is currently ineffective, and is being given low priority to make it operational. The Bank has advised PLN to review and strengthen its internal whistle blower regulation along with providing protection to whistle blowers.

40. *Transparency, accountability, and access to information.* The Bank discussed with PLN how to improve transparency and compliance with the national right of access to information legislation e.g. by uploading its new procurement regulations on to its website. PLN has also been implementing a new internal ethics strategy under the title PLN Birsi (PLN Clean) since 2012 that includes a new gratification control program. The Bank recommended that PLN improve its compliance with the gratification reporting requirements under the program. PLN has its own list of blacklisted firms which is currently not publicly disclosed. PLN agreed to disclose the blacklisted firms on its website as per PLN regulation 166/2012.

41. *Applicability of Anti-Corruption Guidelines of the Bank for the Program:* The Bank's applicable ACG for the Program were shared and discussed with PLN. The Bank and PLN also discussed PLN's obligations under the ACG for the Program as per which PLN will share information with the Bank regarding all allegations of fraud and corruption in connection with the Program, investigate all credible allegations received, and report to the Bank on actions taken. The Bank and PLN will agree on the reporting mechanisms to share the investigations' findings and ensure that timely and appropriate action is taken to address any fraud and corruption cases and prevent their recurrence. PLN also commits to monitor and abide by the Bank's list of debarred/suspended firms and to cooperate in any inquiry is to be conducted by the Bank into allegations or other indications of fraud and corruption in connection with the Program. PLN will report quarterly its compliance with the ACG.

42. *Fiduciary Risk:* The overall fiduciary risk under the Program is "Substantial". The description of risks and mitigation measures is given in Annex 7.

43. The *Fiduciary Program Action Plan* is presented in Annex 8.

Annex 6: Summary Environmental and Social Systems Assessment

1. The Indonesia Power Distribution Development Program for Results (PDDP or “the Program”) aims i) to increase access to electricity supply, ii) to improve the efficiency (through reduction of distribution losses) and reliability (through reduced outages and improved voltage conditions) of its delivery in selected geographic areas of Indonesia, iii) to improve PLN’s institutional capacity for program planning, design, implementation, and monitoring and evaluation. The State Electricity Corporation (PLN) has selected the Sumatra region for coverage under the proposed program based on several specific criteria. Sumatra, with an electrification ratio of about 85% ranks in the middle between Java Bali and Eastern Indonesia and it is the largest population center outside Java Bali. Of the total of about 54 million people, nine million have no access to electricity. To improve the likelihood of meeting its program targets, PLN’s strategy is to mobilize multilateral funding to complement its own and fill the financing gap for the Sumatra distribution program. Positive environmental and social benefit is expected as major results, specifically, up to almost 3 million customers could be added to the grid in the five year period through 2019 resulting in an increase in the electrification ratio to about 90%. The Program will only finance the power distribution activities in rural and urban areas in Sumatra and most of the additional customers would be in areas already electrified and would thus tend to represent the lowest income households in these areas.

Typology of work

2. The Program will increase access to electricity supply by extending the 20 kV distribution network; improve efficiency by building distribution substations to reduce distribution losses; and increase reliability by building switching substations to reduce outages and improve voltage conditions.

- **Extension of 20 kV distribution lines.** Installation of new poles and power grid which for most cases will be placed along the right of way (ROW) of existing roads owned by the district/provincial government. Besides the new poles, the distribution expansion can take place in the form of a double feeder system (i.e. network expansion using the same pole).
- **Installation of distribution substations (*Gardu Distribusi*).** There are two typical distribution substations to be installed:
 - *Gardu Cantol*, i.e. distribution transformer that is mounted on a single pole
 - *Gardu Portal*, i.e. distribution transformer that is installed on a pad (platform) created by two poles
- **Construction of switching substations (*Gardu Hubung*).** The landed power distribution facilities to improve the reliability of power supply. Switching substations will require an area of approximately 48 m².

Institutional and Implementation Arrangement

3. PLN Regional Offices in charge of distribution are known as PLN *Wilayahs* (or *Wilayah*) There are six *Wilayahs* plus one distribution unit in Sumatra which cover; (i) Aceh; (ii) North Sumatra; (iii) West Sumatra; (iv) South Sumatra, Jambi, and Bengkulu; (v) Riau and Riau

Islands; (vi) Bangka Belitung; and (vii) Lampung (Distribution unit). *Wilayahs* are responsible for the construction, operation, and maintenance of distribution lines (20 kV).

4. The Program will be administered by a Central Program Management Unit (PMU) at PLN HQ, but the physical implementation activities will be carried out by *Wilayahs* that serve as Program Implementation Units (PIUs). The *Wilayahs* have been carrying out similar programs over the years and are experienced and capable of managing the distribution construction work envisaged under the program. Most material requirements will be requisitioned from approved suppliers under PLN's Supply Chain Management (SCM) system and the balance of items will be procured locally by the *Wilayahs*. The construction works contracts will be procured by the *Wilayahs*. All implementation activities will be carried out by the respective contracts divisions within each *Wilayah* and overseen by the distribution systems manager under the *Wilayah* General Manager. The PMU supported by PIUs will bear overall responsibility for the work program, quality and timeliness of the Program works, and its satisfactory completion.

Environmental and Social Management

5. *Environmental Management.* PLN has dedicated safeguards staff at both HQ and at the *Wilayahs*. HQ staff are responsible for policy matters and for overall supervision while staff in the *Wilayahs* are responsible for project implementation, supervision and reporting. At the HQ, the Division of Electricity Safety, Occupational Health, Safety and Environment (*K3-L*) under the Director of Human Capital Management, comprising of four full-time staff manages the environmental and social safeguards issues throughout the country. Meanwhile, each *Wilayah* has an environmental unit (some *Wilayahs* merge their environmental unit with the unit for Electricity Safety and Occupational Health and Safety). The Environmental unit in each *Wilayah* is responsible for the environmental and social management of projects, including the preparation of the environmental documentation, and for analysis and follow-up during environmental supervision. This Environmental safeguards unit in the *Wilayah* is comprised of two or three staff who oversee compliance with safeguards related laws and regulations in PLN's projects. Each individual *Wilayah* will be responsible for managing construction and for managing the environmental and social impact of the Program.

6. PLN has been implementing many power sector projects funded by multilateral agencies for over 20 years; the projects include the existing World Bank funded *Upper Cisokan Pumped Storage Hydro-Electrical Power, Indonesia Power Transmission Development Project* (IPTD1&2) and others. PLN has acquired sufficient knowledge and experience in managing environmental and social safeguards issues. PLN enhances its staff's capacity twice a year through training on environmental and resettlement related safeguards as provided by the Education and Training Unit of PLN Corporate (*Pusdiklat*).

7. *Social Management.* PLN, and in particular the seven *Wilayahs* in Sumatra are responsible for addressing complaints related to environmental and social issues. The *Wilayahs* are also responsible for obtaining land for installing poles along the right-of-way and for the direct purchase of land for switching substations. In most cases, distribution network expansion does not require land acquisition and very few social impacts are expected. However, in some locations, installation of poles located on private land may require minor modifications to their

location to accommodate aesthetics (e.g. poles should not block the entrance to the homes). The Program may need small parcels of land for switching substations (6x8m²), for which the responsible *Wilayahs* will carry out land acquisition on the basis of a willing buyer, willing seller (direct purchase) approach. Loan funds cannot be used to purchase land and therefore a budget to purchase land is provided by each *Wilayah*.

Other donors

8. PLN estimated that the strengthening and development of Sumatra's power transmission and distribution systems will require US\$10,834 million from 2015 to 2019 of which capital investment costs are US\$7,362 million. PLN, with the support of the Government, has requested a loan in the amount of US\$500 million from ADB's ordinary capital resources and US\$100 million from the ASEAN Infrastructure Fund (AIF) to help to finance a portion of the Sumatra transmission and distribution system. ADB through the Electricity Grid Strengthening – Sumatra (EGSS) program will initially finance the program in the amount of US\$480 million by using a results based lending instrument that is similar to the program for results instrument. Both the ADB and IBRD (US\$500 million) programs will be implemented in the Sumatra system, however, unlike the Bank that will only finance **distribution** investments, the ADB program will include both **transmission and distribution** activities.

Environmental and Social Impacts

9. *Environmental impacts.* The Program will only finance power distribution activities in rural and urban areas of Sumatra. The Program will screen out any high risk activities as defined in the Ministry of Environment Regulation (*PERMEN*) No 05/2012 on Type of Activities Requiring AMDAL (i.e. full environmental assessment or Category A as per WB Safeguards Policies). The Program will also exclude any activity within or adjacent to the protected areas, national parks, natural habitats. **The extension of power distribution lines itself is not covered under the PERMEN No 05/2012 due to its low potential impacts.** The *Wilayahs* have been carrying out similar programs over the years and have adequate capacity to manage the distribution construction work envisaged under the Program. Based on site visits to the recently completed and ongoing distribution work, the main potential environmental impact stems from construction work, i.e. poor construction site management that result in environmental issues (e.g. noise, dust, traffic and access disruption, littering, and health and safety issues).

10. *Social impacts.* The Program will not impact communities of indigenous peoples. The Program will take place **in rural and urban areas already electrified** (with existing access roads available for operations and maintenance). The activities to be financed under the Program will at most not require land acquisition. Poles installation will normally take place within the right of way (ROW) owned by the district, city, or provincial government and will not require land acquisition or cause physical or economic displacement. In special cases, if land acquisition is required for switching substations, the social impact is expected to be minor as the acquisition will normally affect narrow strips of land without dwellings or other structures. Social impact due to land acquisition for switching substations is minor considering the size (6x8m²) and the number of substations to be built is very limited. PLN experience in the implementation of distribution line extensions shows that there is no physical displacement of persons due to land

acquisition. The only impact is usually the displacement of a minimum number of trees that are not located in a forest area/protected area.

Environmental and Social Performance of the Program

11. *Environment.* Environmental documentation reviewed, information collected during interviews and consultations with main stakeholders as well site visits to several subproject sites indicate that the environmental and social management that PLN applies to distribution line extensions are encouraging in preventing and reducing environmental and social impacts and are overall in compliance with the core principles and key elements of the OP 9.00. The country legislation, among others aspects i) requires an environmental impact assessment for any type activity potentially generating adverse impact; ii) protects native forests and endangered species, iii) establishes controls to avoid pollution, and iv) promotes health and safety at work sites. Regarding management capacity, PLN has qualified and motivated staff to carry out environmental and social management and monitoring of the works of the Program.

12. Related to the distribution activities, the requirement for environmental impact assessment is not covered by GOI's legal framework, however environmental mitigation measures are stipulated in the Decree of PLN's Board of Directors (PLN Decree) No. 473/2010 on Construction Standards for Low Voltage Power Network¹⁸ and PLN Decree No.606/2010 on Construction Standards for Medium Voltage Power Network¹⁹, PLN Decree No.605/2010 on Construction Standards for Power Distribution Substation and Switching Substation²⁰. PLN implements good practices on managing environmental and social impacts, e.g. conducting meaningful public consultation at the planning stage, provision of waste storage and segregation, and the use of environmentally accepted equipment such as non-polychlorinated biphenyls (PCB) transformers.

13. Worker health and safety is first and foremost in PLN's project implementation. To address the potential risks on workers' health and safety, SMK3 (*Sistem Manajemen Kesehatan dan Keselamatan Kerja* or occupational health and safety management system) was established by PLN respectively for transmission, main substation and distribution, which is well implemented. Performance of occupational health and safety and safeguards compliance are reported quarterly through the online system (i.e. SILM, *Sistem Informasi Laporan Manajemen--* or Information System for Management Report), accessible by authorized staff. The SILM has a scoring system to track the performance and progress of operational aspects in *Wilayahs*, including environmental and social management performance.

14. *Social.* PLN carries out a preliminary survey with meaningful consultation in the planning stage as part of the annual work plan preparation. Socialization of the plan includes consultation that may affect non-land assets (mainly trees) and agreement from land-owners for the use of

¹⁸ PLN.2010. *Lampiran Keputusan Direksi PT PLN (Persero)/Nomor:473.K/DIR/2010 Buku 3 – Standar Konstruksi Jaringan Tegangan Rendah Tenaga Listrik*

¹⁹ PLN.2010. *Lampiran Keputusan Direksi PT PLN (Persero)/Nomor:606.K/DIR/2010 Buku 5 – Standar Konstruksi Jaringan Tegangan Menengah Tenaga Listrik*

²⁰ PLN.2010. *Lampiran Keputusan Direksi PT PLN (Persero)/Nomor:605.K/DIR/2010 Buku 4 – Standar Konstruksi Gardu Distribution and Gardu Hubung Listrik*

land in case poles need to be located on private land. PLN has a proven capacity to implement distribution projects financed by PLN. In the case of distribution projects, *Wilayahs* mitigate social issues effectively and manage risks sufficiently (land acquisition is undertaken without physically or economically displacing persons) and the outcomes were satisfactory from the perspective of affected persons. In terms of land acquisition, no significant gaps were identified between the practices and the core principles of OP 9.00.

Environmental and Social Risks

15. *Environment.* In general, the positive impacts that the program is expected to generate include benefits to the overall economy, and improvements in access to electricity for about 3 million additional customers. Potential adverse environmental and social impacts from construction activities are low and manageable through the technical guidelines of PLN Decrees on the construction of distribution lines. There is a risk however of weak enforcement of contract provisions resulting in community complaints.

16. Potential environmental risks include: (i) risk of not applying initial screening prior to submission of *Wilayah* annual work plans for the Program to PLN HQ; (ii) risk of inadequate environmental supervision (e.g. used transformer oil or oil spillage management); and (iii) risk of contractors' poor construction site management. Although the *Wilayahs* have been carrying out similar programs over the years and are experienced and capable of managing environmental and social issues related to construction work for distribution lines, capacity in environmental and social management particularly in the *Wilayahs* should be maintained through regular evaluation by PLN HQ (via SILM) and capacity building programs (e.g. training). The Program Action Plan includes actions to mitigate these risks and ensure good environmental management practices to be adopted for this Program.

17. *Social.* The social risks associated with the Program are low, i.e. i) risk of not applying initial screening (i.e. to avoid physical or economic displacement) prior to submission of *Wilayah* annual work plans for the Program to PLN HQ and ii) the risk of unfair compensation for plants/crops. Capacity in environmental and social management particularly in *Wilayahs* should be maintained through regular evaluation by PLN HQ (via SILM) and capacity building programs (e.g. training).

ESSA consultation

18. A preliminary consultation on the proposed ESSA framework took place at PLN HQ, Jakarta on September 7 and 9, 2015. PLN HQ and *Wilayah* staff involved in the design, construction, supervision, distribution maintenance, as well as PLN Headquarters' Environmental Unit were consulted with on the preliminary findings of the assessment, along with the identified strengths, risks, and proposed action plan. Inputs from the consultation were included in the action plan.

19. The draft ESSA was disclosed on October 16, 2015 at the Infoshop (English version) and on PLN's websites (Indonesian version). Public consultations of the draft ESSA took place in Bandar Lampung on October 19th, 2015, City of Banda Aceh and Tanjung Pandan (Belitung

Island) on November 3 and 5, 2015; Palembang (South Sumatra) on December 10; and Padang (West Sumatra) on December 11, 2015. Representatives of various local governments (provincial, district/city level), agencies, local universities, communities/ethnic groups, and civil society participated in the public consultations. In each consultation, Bank staff presented detailed information on the PforR process, the proposed Power Distribution Development Program, the key findings and recommendations of the ESSA. Inputs received during consultations were positive towards Program implementation although some criticized PLN's poor service quality (notably outages). Feedback from these consultation are included in final version of the ESSA.

20. The final ESSA was disclosed on March 29, and March 30, 2016 in the Infoshop and on PLN's website respectively.

**Annex 7: Integrated Risk Assessment
INDONESIA: Power Distribution Development Program**

Stage: Appraisal or Negotiations or Board

1. PROGRAM RISKS			
2.1 Technical Risk		Rating:	Moderate
Description: Delays in completion of upstream generation and transmission line investments leading to under-utilization of investment and delayed benefits of additions to distribution capacity.		Risk Management: A detailed assessment of the status of existing generation and transmission capacity and planned investments and their linkage to the distribution program was carried out during program preparation. The assessment showed that the risk of inadequate generation and transmission capacity is moderate given the substantial existing reserve margins and the status of investments already under construction and those at the procurement stage. Further, during implementation the Bank team will closely monitor implementation progress of the associated upstream developments through the mechanism of annual work and budget plans to be prepared by PLN.	
		Resp:Task Team	Stage: Implementation Due Date :Implementation Status: NYD
2.2 Technical Risk		Rating:	Moderate
Description: Construction delays may be encountered in the implementation of the distribution program. Past implementation of the program, unlike those of the generation and transmission programs has been generally good using PLN's budget (> 80% budget execution) and less so for the Government budget funded activities. Starting in 2016 PLN will eliminate the use of the Government's budget given the complex procedures involved that lead to implementation delays. Use of GoI budget, if any, will be very limited and will not impact performance of the Program.		Risk Management: Detailed diagnostic analysis of the Wilayahs' program implementation capacity has been carried out during the technical assessments. Identified improvement measures to be supported under the program are included in the PAP. Annual work plans to be prepared by PLN and reviewed by the Bank on an annual basis. Close monitoring of the progress of works during implementation. Bank supervision support will be strategically designed to effectively monitor the implementation of program works scattered across the whole of Sumatra.	
		Resp:Task Team/PLN	Stage: Implementation Due Date : Implementation Status: NYD
2.3 Technical Risk		Rating:	Low
Description: Staff at some Wilayahs are not sufficiently trained in network analysis and planning.		Risk Management : Develop program for hands-on technical training of staff as already conducted for PLN staff in NTT, Maluku, and Maluku Utara provinces under the geospatial least cost electrification planning TA, which is being successfully applied for distribution expansion planning in those regions.	
		Resp: PLN	Stage: Implementation Due Date :Implementation Status: NYD

2.4 Fiduciary Risk	Rating:	Substantial
<p>Description :</p> <ol style="list-style-type: none"> 1. Lack of Transparency due to non-disclosure of PLN's Procurement Regulations. 2. Lack of Transparency due to manual reverse auctions instead of through e-procurement and non-disclosure of award details. 3. Capacity of local manufacturers may not be adequate to meet the PLN's expansion of Distribution network for "Main Distribution Items" procured through Limited Bidding. 4. Risk of (i) including any item under open book method (ii) continuing Open book method for MDUs even if number of qualified manufacturers exceeds two. 5. Inadequate monitoring during procurement and contract performance information such as bid response, delays in evaluation and award, failed bidding, cost and time overruns during implementation. 6. The current SPKK monitoring arrangements does not provide adequate assurance on accuracy of SPKK report as the report verification is not embedded in the PLN internal system. 7. Delays in budget effectiveness. 8. Semi manual financial records and report consolidation. 9. Lack of adequate oversight as a result of inadequate samples of contracts chosen for procurement audit by SPI. 10. Risk of con compliance to Bank's ACG. 11. Noncompliance to PLN's regulations on disclosure of black listed firms 		<p>Risk Management :</p> <ol style="list-style-type: none"> 1. PLN to post procurement regulations on its website by mid-2016. 2. PLN to implement upgraded e-procurement system by mid-2016 and announce award through the portal. 3. PLN to comprehensively assess the capacity of local manufacturers (net of other commitments) to meet PLN's projected volumes for MDUs and in case of inadequate number of qualified manufacturers to agree on steps for expanding the list of registered manufacturers. 4. PLN confirms that no additional items beyond the existing sixteen MDU items to be procured using open book method under this Program and PLN to follow Open Book method for MDUs only when number of qualified suppliers in DPT is less than three. 5. PLN to develop procurement performance monitoring framework and periodic report information of key performance indicators throughout the program. 6. Improve accountability of SPKK report by including verification steps, e.g. Sumatra Regional Head's review and validation 7. Expedite the availability of the budget document at the Wilayah level once it is approved. 8. Full adoption of ERP in all offices and modification to allow for detailed financial records as required. 9. SPI to carry out the procurement audit for fifteen percent of the contracts awarded by each procuring unit and share the findings of the procurement audit with the Bank annually under the Program. 10. PLN to monitor and abide by the Bank's list of debarred/suspended firms and to cooperate in any inquiry is to be conducted by the Bank into allegations or other indications of fraud and corruption in connection with the Program. 11. PLN to make the list of blacklisted firms available on website for public disclosure

<p>12. Risk of non-disclosure of potential fraud and corruption activities due to the ineffectiveness of the whistle blower system in PLN</p> <p>13. Risk related to a perception of lack of fairness, transparency and economy in the procurement process due to the Direct Appointment or Direct Procurement of SOEs, PLN's/SOEs' Subsidiaries or PLN's/SOEs' Affiliated Companies or small or micro industries.</p>	<p>12. PLN to prepare roadmap to strengthen the whistle blower regulation and systems including providing protection to the whistle blowers.</p> <p>13. No direct procurement or appointment of SOEs and/or PLN's subsidiaries/joint ventures/affiliates and/or small or micro industries under the Program. No Direct Appointment/Direct Procurement of small or micro industries under this Program for contracts above IDR 300 million.</p>			
	Resp: PLN with support from WB	Stage: Appraisal	Due Date : By appraisal and ongoing during implementation	Status: Not yet due
2.3 Environmental and Social Risk	Rating: Moderate			
Description: Weak management and implementation capacity and low awareness of environmental and social safeguards management related to the program.	Risk Management: Detailed diagnostic of institutional capacity has been carried out during the ESSA process including staff mapping in each of the Wilayahs. No major risks were be identified.			
	Resp: Bank	Stage: Implementation	Due Date :	Status: Not yet due
2.4 Environmental and Social Risk	Rating: Moderate			
Description: Lack of enforcement of environmental provisions in the contract that result in community complaint(s).	Risk Management: Environmental impacts are expected to be small and temporary (i.e. during construction). As per GOI's environmental regulations for such activities, an SPPL (a Project Proponent's Letter of Commitment for Environmental Management and Monitoring) is needed or at most a partial environmental assessment (UKL/UPL).			
	Resp: PLN	Stage: Implementation	Due Date :	Status: Not yet due
Description: The need for a well rationalized and articulated strategy for coordinated access coverage, financing, and implementation in Sumatra across the grid network footprints.	Risk Management: The program will be anchored within PLN and its grid network systems. The Ministry of Energy and Mineral Resources, the Ministry of Planning (Bappenas), and PLN will coordinate with local governments to eliminate current or future conflicts with PLN's grid expansion program.			
	Resp: Client	Stage: Preparation	Due Date :	Status: In Progress
Description: The current electricity tariff regime is insufficient to cover PLN's cost of supply, leading to unsustainable government public sector obligation subsidies to preserve PLN's financial viability.	Risk Management: The government has started to rationalize the electricity tariff and subsidy regime; and will continue to do so in the next few years.			
	Resp: Client	Stage: Preparation	Due Date :	Status: Ongoing
Operational Sustainability	Rating: Moderate			

<p>Description: Operation and Maintenance of Assets - risks of inadequate maintenance of distribution infrastructure due to financial and/or technical deficiencies in PLN</p>	<p>Risk Management: A review of historical expenditures shows that PLN has made adequate budgetary allocations for O&M costs in line with best international practices (3-5% of investment expenditures). The Bank’s technical assessment confirmed that the distribution assets are well maintained and in good condition. Future allocations will be assured through the recently introduced Performance-based regulation which allows for adequate maintenance in tariff setting thus assuring PLN of adequate revenues to cover O&M costs.</p>		
	<p>Resp: Bank</p>	<p>Stage: Implementation</p>	<p>Due Date :Implementation</p>
<p>Description: Although cases of corruption have not been noted in PLN for Bank financed projects during the past few years, corruption is a general concern for infrastructure project implementation in Indonesia.</p>	<p>Risk Management: A governance assessments has been carried out and a number of recommended actions, including program procurement audits and implementation of whistleblower protection regulations</p>		
	<p>Resp: Bank</p>	<p>Stage: Implementation</p>	<p>Due Date :Implementation</p>

3. OVERALL RISK RATING	
<p>The overall preparation risk is substantial. A number of risks are rated substantial or higher, including: (i) Fiduciary; and, (ii) Technical Design of Project or Program. A number of key management measures are proposed as indicated above</p>	<p>Substantial</p>

Legend: L – Low
M – Moderate
S – Substantial
H – High

Annex 8: Program Action Plan

Action Description	DLI*	Covenant*	Due Date	Responsible Party	Completion Measurement**
Technical					
Improve distribution planning techniques to optimize outcomes (system losses reduction & improved reliability)					
– Provision of planning software with GIS capability & corporate license	<input type="checkbox"/>	<input checked="" type="checkbox"/>	December 2016	Information Systems Division & Sumatra Development Division	Corporate License
– Application of planning software for distribution investment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	June 2017	Sumatra Development Division	Investment Plan on Medium Voltage
– Improving application of GIS data base in at least five feeders	<input type="checkbox"/>	<input checked="" type="checkbox"/>	December 2018	Wilayah (Coordinated by: Sumatra Operation Division)	Use in application to network planning & outage management in at least five feeders in one Wilayah from MV up to LV network
– Increasing number of skilled and certified systems planners	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Q1 Calendar 2017	Wilayah PLN Training Center (Pusdiklat)	Certified Staff Positions (at least 1 per Wilayah and 1 staff in each area)
– Review options for loss computations by using alternative methodologies e.g. load flow based calculations & simplified spreadsheet methods	<input type="checkbox"/>	<input checked="" type="checkbox"/>	June 2017	Sumatra Operation Division	Modelling and Computation Result - All Wilayahs will provide loss computations using software in at least one area.
– Reviewing and updating planning criteria	<input type="checkbox"/>	<input checked="" type="checkbox"/>	January 2017	Sumatra Development Division	Planning Criteria Document
DCC upgrade to improve supply quality					
– Identification Study of upgrades needed	<input type="checkbox"/>	<input checked="" type="checkbox"/>	December 2016	Sumatra Development Division	Result of Study & Integration into RUPTL

– Engineering Design of DCCs	<input type="checkbox"/>	<input checked="" type="checkbox"/>	December 2017	Sumatra Development Division	Design including bidding document based on identification study recommendations
– Implementation of DCC Upgrade	<input type="checkbox"/>	<input checked="" type="checkbox"/>	December 2018	Sumatra Development Division	Commissioning of upgraded DCCs
Fiduciary					
Post Procurement Regulations on PLN's website	<input type="checkbox"/>	<input checked="" type="checkbox"/>	June 2016	Strategic Procurement Division	Regulations posted on PLN's website
Implementation of upgraded e-procurement system and announcement of award details through e-procurement as per PLN's regulations	<input type="checkbox"/>	<input checked="" type="checkbox"/>	June 2016 [onwards]	Strategic Procurement Division, Supply Chain Management	Recurrent E-procurement system operationalized
Restrict Open Book method for <3 suppliers in DPT (Qualified Suppliers in DPT) for MDUs No additional items beyond the existing 16 MDU items to be procured using open book method under this Program	<input type="checkbox"/>	<input checked="" type="checkbox"/>	June 2016 [onwards]	Supply Chain Management	Recurrent Quarterly reporting
No Direct Procurement/Direct Appointment of SOEs and/or PLN's subsidiaries/Joint Ventures/ affiliates and/ under this Program	<input type="checkbox"/>	<input checked="" type="checkbox"/>	June 2016 [onwards]	Supply Chain Management; Wilayahs/Areas	Recurrent Quarterly reporting
No direct procurement or direct appointment of small or micro industries under this Program for contracts above IDR 300 million	<input type="checkbox"/>	<input checked="" type="checkbox"/>	From June 2016 onwards	Supply Chain Management; Wilayahs/Areas	Recurrent/ Quarterly reporting
Conduct assessment of local manufacturing capacity for MDU items	<input type="checkbox"/>	<input checked="" type="checkbox"/>	September 2016	Supply Chain Management	Assessment report
Improve accountability/credibility of SPKK reporting by	<input type="checkbox"/>	<input checked="" type="checkbox"/>	June 2016 [onwards]	Division Head-Sumatra; SPKK	Recurrent Monthly

integrating Division Head Sumatra's validation of KPIs as reported by the Wilayahs [prior to SPKK reporting]					
Procurement audits by SPI of 15 percent of contracts awarded by each procuring unit under the Program to be shared with the Bank	<input type="checkbox"/>	<input checked="" type="checkbox"/>	June 2016 [onwards]	SPI	World Bank checklist of sample [15%] contracts audited. Annually
No contract awards to firms and individuals on PLN's sanction list and/or on the Bank's debarred/temporary suspension lists – upload PLN's blacklist onto website & electronic portal as per PLN regulation 166/2012.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	From the date of signature of the Loan Agreement onwards	Risk Management Unit; Supply Chain Management; Wilayahs/Areas	Recurrent implementation of proposed governance mechanism
Integrate budgeting with ERP for Program Wilayahs	<input type="checkbox"/>	<input checked="" type="checkbox"/>	December 2017	Wilayah	Integrated budgeting system
Roadmap to strengthen existing whistle blower regulations and system, including guarantees to protect whistle blowers	<input type="checkbox"/>	<input checked="" type="checkbox"/>	September 2016	PLN Pusat	Roadmap for revised WBS system completed
Developing procurement performance monitoring framework & reporting performance as per the framework	<input type="checkbox"/>	<input checked="" type="checkbox"/>	June 2016	PLN Pusat	Procurement performance monitoring report. Quarterly
Environment & Social					
Undertake environment & social monitoring & training in environmental health & safety standards for PLN, and its contractors	<input type="checkbox"/>	<input checked="" type="checkbox"/>	June 2016 [onwards]	PLN Wilayahs/Pusat	Environment & social monitoring & reporting. Quarterly

Annex 9: Implementation Support Plan

1. Substantial inputs will be required by the Bank to support PLN's implementation of the Program for several reasons: (a) as the first PforR in the traditional electricity sector and the first PforR for Indonesia in any sector there will be a significant learning curve for both the Bank and PLN; (b) a decentralized implementation structure with PLN's seven Sumatra branch offices which have no previous experience working with the Bank handling the planning, procurement, implementation and reporting; (c) a high degree of geographic dispersion of activities; (d) a scale up of activities to be carried out simultaneously with efforts to strengthen distribution planning and procurement and contract management; (e) modification/strengthening of the program performance verification procedures given that the Loan disbursement will be based on DLIs; and (f) coordination of implementation support and assessments of outcomes with the Asian Development Bank which will be parallel financing broadly the same Program with the Bank and PLN.
2. Specifically Bank implementation support will be needed in the following areas:
3. **Technical:** The Bank team has reviewed the program systems related to planning of the distribution activities, efficient operation of facilities and provision of quality services. The identified areas for improvement have been agreed with PLN and incorporated in the PAP or used as DLIs. PLN will require continued Bank inputs and advice during the introduction of new systems, tools and techniques.
4. **Procurement:** The Bank's procurement team has carried out an extensive review of PLN's systems for procurement and contract arrangement and has recommended a number of actions. During implementation substantial focus will be needed to support implementation of the road map for increased transparency in procurement and contract management, implementation of new procurement regulations; staff training and certification arrangements.
5. **Financial management support** will focus on advising PLN on improvements to budget monitoring and control, integration of budget modules with ERP and modifying ERP to provide more data needed for financial reporting. Attention will also be needed on operation of internal audit and SPKK verification of performance to support improvements in approaches and methodologies and to strengthen these functions. The adequacy of PLN's resources to cover its share of the Program costs will be a recurrent theme on which the Banks' support will be needed.
6. **Environmental and Social:** The E& S team will focus on ensuring that PLN's guidelines and standards on E&S screening are applied in the selection of activities. In addition the team will help to ensure that capacity to manage E&S matters is maintained by the Wilayahs and at PLN Headquarters through training and other activities.

7. **Support Plan:** The majority of the Bank team will be based in Indonesia as is the case during program preparation. A limited number of experts will participate to bring in specialized and international experience. The table below shows the input requirements.

Table A12: Implementation Support Input Requirements

<i>Time</i>	<i>Focus</i>	<i>Skills Needed</i>	<i>Resource Estimate</i>	<i>Partner Role</i>
<i>First twelve months</i>	<p><i>Orienting the PLN's Project management team towards a program approach.</i></p> <p><i>Donor Coordination</i></p> <p><i>Attention on improving PLN's capacity to carry out due diligence in program design to ensure only viable activities are included in second and subsequent year activities</i></p> <p><i>Institutional result areas- procurement, FM, Planning, Technical</i></p>	<p><i>Program leadership</i></p> <p><i>Financial, Economist</i></p> <p><i>Environment and Social Expertise</i></p> <p><i>Distribution planning</i></p> <p><i>Procurement, Financial Management</i></p> <p><i>Planning</i></p>	<i>About 6 staff weeks per year on average per person</i>	<i>Consultation and information sharing</i>
<i>12-48 months</i>	<p><i>Monitoring and supervision</i></p> <p><i>Monitoring KPIs and DLIs achievement</i></p>	<p><i>Distribution Engineering</i></p> <p><i>Financial Management</i></p> <p><i>Financial Analysis</i></p>		<i>Consultation and information sharing</i>
<i>Other</i>				

Table A13: Task Team Skills Mix Requirements for Implementation Support (template)

<i>Skills Needed</i>	<i>Number of Staff Weeks</i>	<i>Number of Trips</i>	<i>Comments</i>
<i>Team Leader</i>	20	8	<i>HQ</i>
<i>Co-Team Leader</i>	18	8	<i>HQ</i>
<i>Distribution System Planning Specialist</i>	8	4	<i>Regional</i>
<i>Distribution Engineer</i>	8	0	<i>Country based</i>
<i>Financial Analyst</i>	8	4	<i>HQ</i>
<i>Economist</i>	4	3	<i>Regional</i>
<i>Environmental Specialist</i>	8	0	<i>Country based</i>
<i>Social Development Specialist</i>	8	0	<i>Country based</i>
<i>Procurement Specialist</i>	8	0	<i>Country based</i>
<i>Financial Management Specialist</i>	8	0	<i>Country based</i>
<i>Operations Analyst</i>	8	0	<i>Country based</i>