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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT  
PROGRAM DOCUMENT  
ON A PROPOSED LOAN

IN THE AMOUNT OF US\$500 MILLION  
TO THE  
REPUBLIC OF INDONESIA

FOR A  
FIRST INDONESIA SUSTAINABLE AND INCLUSIVE ENERGY  
DEVELOPMENT POLICY LOAN

November 3, 2015

Macroeconomics & Fiscal Management and Energy & Extractives Global Practices  
East Asia and the Pacific

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# REPUBLIC OF INDONESIA-GOVERNMENT FISCAL YEAR

January 1 – December 31

## CURRENCY EQUIVALENTS

(Exchange Rate Effective as of October 28, 2015)

Currency Unit	Rupiah (IDR)
US\$ 1.00 =	IDR 13,630

## ABBREVIATIONS AND ACRONYMS

ASA	Advisory Services and Analytics	MDG	Millennium Development Goal
ADB	Asian Development Bank	MEMR	Ministry of Energy and Mineral Resources
AFD	<i>Agence Française de Développement</i> (French Development Agency)	MOF	Ministry of Finance
BCFD	Billion cubic feet per day	MW	Megawatt
BI	Bank Indonesia	OECD	Organization for Economic Co-operation and Development
BKPM	<i>Badan Koordinasi Penanaman Modal</i> (Indonesia Investment Coordinating Board)	OSS	One Stop Service
BLSM	<i>Bantuan Langsung Sementara Masyarakat</i> (temporary unconditional cash transfer)	PBR	Performance-Based Regulation
BP	Basis point (bp)	PEFA	Public Expenditure and Financial Accountability
BPK	<i>Badan Pemeriksa Keuangan</i> (State Audit Agency)	PLN	<i>Perusahaan Listrik Negara</i> (State Electricity Company)
BPS	<i>Badan Pusat Statistik</i> (Central Bureau of Statistics)	PMO	Performance Management Office
CoP	Conference of the Parties	PMU	Project Management Unit
CPF	Country Partnership Framework	PP	Percentage point (pp)
CPS	Country Partnership Strategy	PPA	Power Purchase Agreement
DPL	Development Policy Loan	PSIA	Poverty and Social Impact Analysis
EOP	End of period (eop)	PV	Photovoltaic
FDI	Foreign Direct Investment	REER	Real effective exchange rate
FIT	Feed-in tariff	RPJMN	<i>Rencana Pembangunan Jangka Menengah Nasional</i> (National Medium Term Development Plan)
FMU	Forest Management Unit	RUKN	<i>Rencana Umum Ketenagalistrikan Nasional</i> (National General Plan for Electricity)
FY	Fiscal Year	RUPTL	<i>Rencana Umum Pembangunan Tenaga Listrik</i> (PLNPLN Long Term Business Plan)
GDP	Gross Domestic Product	SCD	Systematic Country Diagnostics
GHG	Green House Gas	SOE	State-Owned Enterprise
GOI	Government of Indonesia	SPAN	<i>Sistem Perbendaharaan dan Anggaran Negara</i> (Integrated Financial Management System)
GW	Gigawatt	Susenas	<i>Survei Sosial dan Ekonomi Nasional</i> (National Socio-economic Survey)
IBRD	International Bank for Reconstruction and Development	TA	Technical Assistance
ICR	Implementation Completion and Results	TCF	Trillion cubic feet
IDR	Indonesian Rupiah	US\$	United States Dollar
IEA	International Energy Agency	USAID	United States Agency for International Development
IEG	Independent Evaluation Group	VA	Volt ampere
IMF	International Monetary Fund	VAT	Value Added Tax
IPP	Independent Power Producer	VSL	Variable Spread Loan
IsDB	Islamic Development Bank	WB	World Bank
KfW	<i>Kreditanstalt Für Wiederaufbau</i> (German Development Bank)	WBG	World Bank Group
KWH	Kilo-watt hour (kWh)	YOY	Year-on-year

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**THE REPUBLIC OF INDONESIA**  
**FIRST INDONESIA SUSTAINABLE AND INCLUSIVE ENERGY DEVELOPMENT**  
**POLICY LOAN**

**TABLE OF CONTENTS**

<b>SUMMARY OF PROPOSED LOAN AND PROGRAM</b>	<b>6</b>
<b>1. INTRODUCTION AND COUNTRY CONTEXT</b>	<b>7</b>
<b>2. MACROECONOMIC POLICY FRAMEWORK</b>	<b>9</b>
<i>2.1 RECENT ECONOMIC DEVELOPMENTS</i>	<i>9</i>
<i>2.2 MACROECONOMIC OUTLOOK AND DEBT SUSTAINABILITY</i>	<i>14</i>
<b>3. THE GOVERNMENT’S PROGRAM</b>	<b>16</b>
<b>4. THE PROPOSED OPERATION</b>	<b>18</b>
<i>4.1 LINK TO GOVERNMENT PROGRAM AND OPERATION DESCRIPTION</i>	<i>18</i>
<i>4.2. PRIOR ACTIONS, RESULTS AND ANALYTICAL UNDERPINNINGS</i>	<i>18</i>
<i>4.3 LINK TO CPF, OTHER BANK OPERATIONS AND THE WBG STRATEGY</i>	<i>30</i>
<i>4.4 CONSULTATIONS, COLLABORATION WITH DEVELOPMENT PARTNERS</i>	<i>31</i>
<b>5. OTHER DESIGN AND APPRAISAL ISSUES</b>	<b>32</b>
<i>5.1 POVERTY AND SOCIAL IMPACT</i>	<i>32</i>
<i>5.2 ENVIRONMENTAL ASPECTS</i>	<i>34</i>
<i>5.3 PUBLIC FINANCE MANAGEMENT, DISBURSEMENT AND AUDITING ASPECTS</i>	<i>39</i>
<i>5.4 MONITORING, EVALUATION AND ACCOUNTABILITY</i>	<i>40</i>
<b>6. SUMMARY OF RISKS AND MITIGATION</b>	<b>41</b>
<b>ANNEX 1: POLICY AND RESULTS MATRIX</b>	<b>43</b>
<b>ANNEX 2: LETTER OF DEVELOPMENT POLICY</b>	<b>46</b>
<b>ANNEX 3: BRIEF BACKGROUND ON INDONESIA’S ENERGY SECTOR</b>	<b>51</b>
<b>ANNEX 4: EXPERIENCE FROM ENERGY SECTOR DEVELOPMENT POLICY FINANCING</b>	<b>54</b>
<b>ANNEX 5: ACCESS AND RELIABILITY IN INDONESIA’S ELECTRICITY SECTOR</b>	<b>55</b>

## LIST OF FIGURES

Figure 1: The national poverty rate has halved over the past decade, albeit at a declining pace....	9
Figure 2: In the baseline trajectory government debt-to-GDP remains below 30 percent.....	15
Figure 3: Poor and vulnerable households are mainly on lower voltage connections.....	33
Figure 4: Electricity expenditure shares are low, averaging just under 3 percent.....	33

## LIST OF TABLES

Table 1: Key Macroeconomic Indicators .....	11
Table 2: Key Fiscal Indicators .....	13
Table 3: DPL Prior Actions and Analytical Underpinnings .....	30
Table 4: Summary of estimated GHG and local emissions impacts associated with Prior Actions .....	36
Table 5: Systematic Operations Risk Rating (SORT) .....	42

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## SUMMARY OF PROPOSED LOAN AND PROGRAM

### REPUBLIC OF INDONESIA

#### FIRST INDONESIA SUSTAINABLE AND INCLUSIVE ENERGY DEVELOPMENT POLICY LOAN

<b>Borrower</b>	The Republic of Indonesia
<b>Implementation Agency</b>	Coordinating Ministry for Economic Affairs and the Ministry of Finance
<b>Financing Data</b>	IBRD Variable Spread Loan; Amount: US\$ 500 million.
<b>Operation Type</b>	Programmatic (1st of 2), single-tranche
<b>Pillars of the Operation And Program Development Objectives</b>	This programmatic DPL series supports key policy and institutional reforms with the following objectives: A) Reducing the fiscal cost of electricity provision; B) Improving the investment climate in the energy sector; C) Removing constraints to renewable energy expansion; D) Expanding access to modern, reliable energy.
<b>Result Indicators</b>	<p>A1: Reduction in the electricity subsidy transferred from the government budget to PLN as electricity tariffs move toward economic cost.</p> <p>A2: PLN tariffs and electricity subsidy calculation is based on efficient benchmarks for network losses, thermal plant efficiency, operational expenses, and a productivity improvement factor approved under a PBR framework.</p> <p>B1: PLN enters into new long-term agreements for domestic gas supply, as measured by the daily gas volume to be supplied under new contracts or contract extensions signed after December 2015 of 5-years or greater duration.</p> <p>B2: Reduction by half in the number of days, as stated in the regulations, to process a (gas) IPP license</p> <p>C1: Geothermal power projects are developed according to the provisions of the Geothermal Law of 2014</p> <p>D1: Increase in the Government-measured household electrification rate</p>
<b>Overall Risk Rating</b>	Substantial
<b>Operation ID</b>	P154291



**IBRD PROGRAM DOCUMENT FOR A PROPOSED  
FIRST INDONESIA SUSTAINABLE AND INCLUSIVE ENERGY DEVELOPMENT  
POLICY LOAN (DPL)  
TO THE REPUBLIC OF INDONESIA**

**1. INTRODUCTION AND COUNTRY CONTEXT**

1. **This program document presents a proposed DPL to support the Government of the Republic of Indonesia’s priorities for developing a sustainable and inclusive energy sector that would further the country’s medium-term economic development and poverty reduction goals.** The proposed operation, in the amount of US\$ 500 million, is the first in a planned programmatic series of two single-tranche operations supporting critical policy and institutional reforms that have four key development objectives: (A) reducing the fiscal cost of electricity provision; (B) improving the investment climate in the energy sector; (C) removing constraints to renewable energy expansion; and (D) expanding access to modern, reliable energy.

2. **The DPL series forms an integral part of the World Bank Group’s (WBG) overall energy strategy in Indonesia, supporting the Government’s sectoral priorities and its Intended Nationally Determined Contribution (INDC) commitments to reduce greenhouse gas (GHG) emissions.** At the top of the Government’s priorities, the energy sector, in particular reliable electricity and gas supply, is seen as a key building block for economic development, including addressing the energy needs of the poor. The Government’s key goals for the sector’s development are to achieve nearly universal access to reliable electric power by 2020, to reliably and efficiently meet rising energy demand, mainly through domestic energy sources, transition to a sustainable energy sector development path through increased use of gas, renewable energy and energy conservation, make the energy sector more competitive and efficient. Additionally, in preparation for the Conference of the Parties (CoP) in Paris, the Government of Indonesia has committed to a 29 percent unconditional GHG reduction compared to the business as usual scenario by 2030 and identified promotion of clean and renewable energy sources among the key measures to achieve this target. It also announced a conditional reduction of an additional 12 percent subject to certain provisions in an anticipated global agreement.<sup>1</sup>

3. **The proposed DPL series aims to address key policy and institutional bottlenecks in support of the Government’s objectives for a more sustainable and inclusive energy sector.** The Government has determined that reducing the fiscal cost of poorly targeted energy subsidies can support a reallocation of spending to more pressing development needs. It is also prioritizing the scaling up of investments in currently inadequate energy infrastructure, particularly by mobilizing private financing, in order to address a critical constraint on the country’s competitiveness and growth. This will require improving the financial position of the State Electricity Company (PLN) and improving the investment climate for private investors. To meet projections of fast growing electricity demand, the Government has placed a high, near term priority on an ambitious program to increase power generation capacity by nearly 43 GW between 2015 and 2019, of which about 57 percent is planned for private sector investment.

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<sup>1</sup> According to the released INDC, Indonesia’s conditional reduction is subject to “provision in the global agreement including through bilateral cooperations, covering technology development and transfer, capacity building, payment for performance mechanisms, technical cooperation and access to financial resources.”

About 60 percent of the fast track program is coal fired generation while the remaining 40 percent is mainly gas and a smaller share of renewables. The Government is, however, targeting a higher share of renewable generation in the medium term, which is needed to improve the sustainability of growth given accelerating local and global emissions (with coal accounting for just over half the generation fuel mix in 2014). Unlocking opportunities for alternatives to coal-fired generation as quickly as possible, which is a focus of the proposed DPL, is key to enabling Indonesia's transition to a more sustainable and inclusive energy development path. The policy reforms supported by the DPL aim to reduce the risk of an even greater share of coal in power generation, and increase the share of renewables, relative to the business as usual case. Increasing access to modern, reliable energy, with approximately 16 percent of Indonesia's households lacking access to electricity and those with access facing significant problems with reliable supply, is also key to supporting further poverty reduction and reducing vulnerability.

4. **The DPL series anchors the Bank's broader energy strategy in Indonesia which aims to expand opportunities for alternatives to coal-fired power generation as quickly as possible and accelerate universal access to reliable, modern energy.** Drawing on the WBG's Energy Directions Paper, the Bank's energy strategy combines support to policy and institutional reforms, local capacity building and investments in support of the proposed Country Partnership Framework for FY16-FY20 focus areas on Sustainable Energy and Universal Access, and Delivering National Infrastructure. The Bank's broad range of investment and technical assistance (TA) engagements include: (a) renewable energy and low carbon development, including geothermal power and hydropower development; (b) energy infrastructure, including pumped storage and electricity transmission; (c) access to modern, reliable energy, including electricity distribution and promotion of cleaner cookstoves; (d) sector governance, competitiveness and efficiency, a cross cutting area including the DPL series. PLN, the large state-owned electricity utility, is a major beneficiary of this engagement, which over many years has included not only investments, but also a wide range of associated TA and capacity building in planning, financing and sustainable delivery electricity infrastructure. For instance, ongoing and previous engagements include training in design of microgrids, capacity building and/or technical assistance on financing options, sedimentation and integrated catchment management for hydropower, and least cost electrification planning for three island provinces. Ongoing investment engagements also address *inter alia* improvements in procurement and contract management.

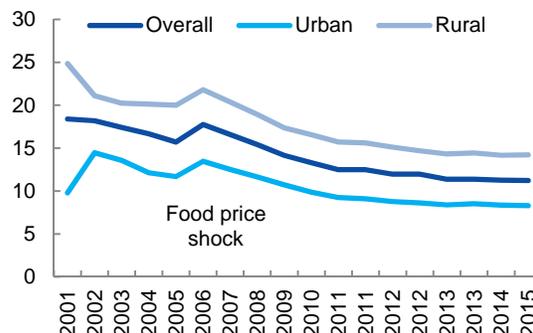
5. **Recognizing the ambition of the Government's program and its challenges, the Bank's engagement continues to seek out cooperation and partnerships – the proposed operation has been prepared in coordination with a number of other development partners.** These development partners – ADB, France's AfD, and Germany's KfW – are, in parallel, also providing policy-based financing to support the Government's reforms to shift the energy sector to a more sustainable path.

6. **In terms of broader country context, over the past decade, Indonesia has seen strong growth and job creation, supporting poverty reduction, but the end of the commodity boom has exposed structural weaknesses.** Following the recovery from the Asian financial crisis, annual growth averaged 5.6 percent over 2001-12. As the external tailwinds of commodity prices and demand and global financing conditions have turned to headwinds, growth has slowed, down to 5 percent in 2014.

7. **Indonesia's progress on poverty reduction contrasts sharply with its performance in sharing prosperity.** From 1999 to 2015, the national poverty rate halved to 11.2 percent

(Figure 1), largely through sustained growth and job creation. Recently, however, the rate of poverty reduction has begun to stagnate, with a near zero decline in 2015. Lifting the “hard core” poor permanently out of poverty will require greater focus and new programs. The number of vulnerable in 2014 (i.e., those between the poverty line and 1.5 times the line) remains high, at 65 million people or 27 percent of the population, mainly due to a lack of productive employment and vulnerability to shocks<sup>2</sup>. Together, the poor and vulnerable are 38 percent of the population (i.e., the bottom 40). In addition, inequality, as measured by the Gini coefficient, increased from 30 points in 2000 to 41 points by 2014, by far the fastest widening seen in East Asia, and with the true level of inequality likely to be higher as household survey data do not sufficiently capture rich households.<sup>3</sup> Rising inequality has been driven largely by an increasing skilled wage premium and an unequal distribution of capital ownership and capital income.

**Figure 1: The national poverty rate has halved over the past decade, albeit at a declining pace** (national poverty rate, percent)



Source: Statistics Indonesia, BPS

**8. As set out in the SCD, eliminating poverty and increasing shared prosperity in Indonesia requires delivery on three challenges:**

(a) sustaining economic growth that generates quality jobs, by addressing a broad range of structural weaknesses including infrastructure bottlenecks, such as in energy, a poor business environment, the functioning of labor, land and capital markets, and skills shortages and mismatches; (b) improving the quality of spending and access to key services; and (c) enhancing the quality of natural resource governance and management.

**9. Indonesia’s new President, Joko Widodo (“Jokowi”), took office on October 20, 2014.** The new administration has announced a series of ambitious development goals, and has initiated implementation of relevant programs and reforms, particularly on infrastructure investment, universal health care programs, and fuel subsidy reforms. While initially the President seemed set to face a parliamentary opposition led by his former campaign rival, the opposition coalition has splintered. However, political tensions remain which complicates policymaking and coordination within the government; these challenges and vested interests continue to hinder effective implementation of reforms.

## 2. MACROECONOMIC POLICY FRAMEWORK

### 2.1 RECENT ECONOMIC DEVELOPMENTS

**10. Indonesia’s economy has slowed since 2012 as a result of the commodities downturn and policy response, with recent headwinds coming from renewed financial market volatility.** Real GDP growth declined to 4.7 percent yoy in the first half of 2015, down from 5.0 percent in 2014 and from its 6.4 percent peak in 2010. The main cause of the growth moderation

<sup>2</sup> World Bank staff calculation using the National Socioeconomic Survey (Susenas) for 2014. The national statistical office (BPS) just released the headline poverty numbers for March 2015 but the full data is not yet available to calculate the number of vulnerable.

<sup>3</sup> World Bank staff calculation.

has been slower investment growth. Weaker job creation and significant Rupiah depreciation has also weighed on household consumption growth. In line with weak domestic demand, import volumes contracted significantly in H1 2015 after growing by around 2 percent in 2013-2014, while exports increased only slightly faster over the same period.

11. **Weaker global commodity prices and demand have put exports under pressure.** Export revenues contracted in each of the last three years, and a further 12.4 percent yoy in the first half of 2015. Sharp falls in commodity prices have driven much of the decline in commodity export revenues, which account for approximately 60 percent of total exports.<sup>4</sup> Commodity export volumes have declined by about a quarter over the same period. The commodities downturn has reduced potential GDP growth - now estimated at around 5.5 percent - and exposed structural challenges, including the low quantity and quality of public investment, the quality of the investment climate and skills shortages.

12. **The current account balance weakened as global commodity prices declined, but the deficit remains moderate relative to GDP.** After recording generally small surpluses over the 2000s, the current account swung into deficit in the final quarter of 2011, reaching -3.0 percent of GDP in 2014. The deficit opened up mainly due to a sharp contraction in the goods trade surplus since 2012, resulting from weaker net commodity exports and a large oil and emerging gas deficit. Import compression on the back of more moderate domestic demand growth helped the goods trade surplus rise in 2014 and a further contraction in imports, especially due to lower oil prices, brought down the current account deficit to 2 percent of GDP in the first half of 2015. There are large structural deficits in the services trade and income sub-accounts.

13. **Despite the narrowing current account deficit, external financing vulnerabilities remain, including significant private external debt rollover requirements.** FDI, which was broadly stable over the year, covered 58 percent of the current account deficit in 2014, but has eased in H1 2015. Consequently, financing of the current account deficit has continued to rely on potentially volatile portfolio investment. This surged in 2014 to a record high, driven mainly by strong net foreign purchases of domestic government bonds. Portfolio investment has remained solid so far in 2015 despite small net equity outflows in the second quarter. Gross external financing needs have also increased due to rising private (non-financial) sector external debt: US\$124.5 billion or 14 percent of GDP in May 2015, up from US\$82 billion in December 2011. Short-term private sector external debt stood at US\$41.4 billion in May 2015, more than twice its level at end-2009, but still well-covered by reserves.

14. **The overall financial system position remains solid but corporate and SOE sector health has shown some signs of strain.** Banks are well-capitalized, with capital at 20.5 percent of risk-weighted assets in May 2015. However, as growth has slowed and funding costs risen, nonperforming loans have increased modestly from 1.8 percent of total loans at the end of 2013 to 2.6 percent in May 2015. The recent rise in NPLs has been driven by non-financial corporate debt (including SOEs), which stood at 34 percent of GDP in May 2015.

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<sup>4</sup> The net weighted price index for Indonesia's six major export commodities (coal, natural gas, crude oil, palm oil, rubber and copper) was 50 percent lower in August 2015 than its February 2011 peak, following additional price pressure in recent months.

**Table 1: Key Macroeconomic Indicators**

	2012	2013	2014	2015f	2016f	2017f	2018f
<b>Real Economy</b>	<i>Annual percentage change, unless otherwise indicated</i>						
Real GDP	6.0	5.6	5.0	4.7	5.3	5.5	5.5
Per Capita GDI (in US\$ Atlas Method)	3,599	3,759	3,654	3,515	3,514	3,662	3,998
Contributions to GDP growth (ppt):							
Consumption	3.5	3.6	3.1	2.8	3.1	3.3	3.3
Investment	2.9	1.7	1.3	1.2	1.6	1.9	1.9
Net exports	-1.5	0.6	-0.3	0.7	0.3	0.0	0.0
Imports (real growth)	8.0	1.9	2.2	-3.2	3.6	5.9	6.2
Exports (real growth)	1.6	4.2	1.0	-0.2	4.7	5.7	5.9
Unemployment rate (ILO definition)	6.3	6.1	5.9	..	..	..	..
GDP deflator (avg.)	3.8	4.7	5.4	4.9	5.3	4.6	4.5
CPI (avg.)	4.0	6.4	6.4	6.8	5.5	5.0	4.8
<b>Fiscal accounts*</b>	<i>Percentage of GDP</i>						
Expenditure	17.2	17.3	16.9	17.0	16.6	..	..
Revenue	15.4	15.1	14.7	15.1	14.5	..	..
General Government Balance	-1.8	-2.2	-2.2	-1.9	-2.1	..	..
General Government Debt	23.0	24.9	24.6	25.2	25.3	..	..
<b>Selected Monetary Accounts</b>	<i>Annual percentage change</i>						
Base Money (M2)	15.0	12.8	11.9	..	..	..	..
Credit to non-government (eop)	22.4	22.1	14.2	..	..	..	..
Interest (key policy interest rate), eop	5.8	7.5	7.8	..	..	..	..
<b>Balance of Payments</b>	<i>Percentage of GDP, unless otherwise indicated</i>						
Current Account Balance	-2.7	-3.2	-2.9	-2.0	-2.6	-2.7	-2.7
Imports	23.2	23.2	22.7	20.0	20.2	19.7	21.1
Exports	23.0	22.5	22.4	20.7	20.3	19.6	20.6
Direct Investment (net, in billion US\$)	13.7	12.2	15.5	10.9	12.4	13.4	14.6
Gross Reserves (in million US\$, eop)	112.8	99.4	111.9	108.0	113.0	121.0	133.0
Months' import cover (goods)	7.6	6.8	8.0	9.1	9.0	9.0	9.2
As % of short-term external debt	206.4	176.6	188.8	185.5	178.8	175	182.4
External Debt	27.5	29.2	33.1	35.5	36.3	35.9	34.4
Term of Trade (index 2008=100)	94	81	85	..	..	..	..
Exchange Rate (average) IDR/US\$	9,387	10,461	11,865	..	..	..	..
<b>Memo items</b>							
GDP nominal in (in billion US\$)	918	910	889	863	916	1,012	1,116

*Note:* Using revised and 2010-rebased GDP. \* Fiscal accounts are based on revised 2015 Budget and draft 2016 Budget. \*\* 2015 and 2016 are World Bank staff projection based on the Government's primary deficit targets. Source: MoF as published by the MoF.

*Source:* BPS; Ministry of Finance; BI; World Bank staff projections.

15. **Monetary policy has anchored inflation expectations and prioritized reducing external imbalances.** Bank Indonesia (BI) has held its policy rate at 7.5 percent since February

2015 in response to sticky inflation and continuing exchange rate pressures, despite weakening domestic demand. Headline inflation, at 6.8 percent yoy in September, is expected to average 6.5 percent in 2015, above the target of 4 +/-1 percent on account of the November 2014 fuel price increase<sup>5</sup> and persistently high food prices. BI has maintained a tighter stance since the June 2013 rise in subsidized fuel prices and the 2013 “taper tantrum”. Consistent with tighter monetary policy, domestic credit growth declined from over 23 percent yoy in September 2013 to 9.3 percent in July 2015.

**16. Flexible exchange rate management since mid-2013 has contributed to macroeconomic stability, but further depreciation pressures require increased vigilance.** The Rupiah has fallen by 41 percent against the US Dollar since July 2013. After an initially sharp adjustment in Q3 2013, the depreciation has been generally orderly as BI foreign exchange interventions have limited volatility. The flexible exchange rate has helped to cushion the trade shock which began in 2011, strengthened currency market liquidity (which, however, remains very shallow) and facilitated a steady rise in gross reserves. The real effective exchange rate (REER) also depreciated over H2 2013, by 16 percent, but has since strengthened by 7 percent, reflecting relatively high domestic inflation.<sup>6</sup> The gradual currency adjustment appears to have been manageable for the corporate sector to date. BI has also taken steps to encourage more hedging and penalize high levels of external leverage. Nevertheless, there are risks that some businesses (e.g., in mining or manufacturing) may face external debt repayment difficulties.

**17. Fiscal management has been generally prudent and there has been a significant energy subsidy reform.** The fiscal stance has been mildly expansionary, with the primary balance moving to a deficit of around 1.0 percent of GDP in 2013 and 2014. This was driven initially by expenditure pressures, notably on energy subsidies, mainly for fuels, which swelled to an average of 3.4 percent of GDP over 2012-2014 (20 percent of central government expenditures). In a major policy shift and taking advantage of low oil prices, effective January 1, 2015, the Government introduced a new regulated fuel pricing system with semi-automatic monthly price adjustments based on economic costs, removal of the explicit subsidy for gasoline, and introduction of a fixed per liter subsidy for diesel. This reduced fuel subsidy costs from 2.4 percent of GDP in 2014 to a budgeted 0.6 percent of GDP in 2015 and provides space for higher spending on priorities such as infrastructure and social programs. However, the implementation of the new fuel pricing system has been uneven so far and the government has sent mixed signals regarding additional changes.<sup>7</sup> As discussed below, electricity subsidies remain sizeable at 0.6 percent of GDP in 2015 but have declined from 1.0 percent of GDP in 2014.

**18. Weak revenue performance has emerged as a major fiscal challenge amid a challenging macroeconomic environment.** Total revenues in the first eight months of 2015 were down 6.9 percent yoy, with taxes growing only by 0.7 percent yoy, significantly below the

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<sup>5</sup> Subsidized gasoline and diesel prices were raised by an average of 33 percent in June 2013 and 34 percent in November 2014, each increasing the consumer price index by 3-3.5 percent.

<sup>6</sup> In July 2015, the IMF assessed the REER to be overvalued by 0-10 percent. International Monetary Fund, 2015 External Sector Report—Individual Economy Assessments, July 27, 2015.

<sup>7</sup> Retail gasoline/RON 88 and diesel prices have been kept unchanged since March 2015 (IDR 7300 and IDR 6900 per liter, respectively), despite fluctuations in the reference oil price (Mean of Platts Singapore/MOPS) and Rupiah exchange rate. The Minister for Energy and Mineral Resources has been quoted saying that the government has an upper and lower band for fuel prices. The state-owned oil company Pertamina reported a loss of IDR 12 trillion between January and July 2015 due to the spread between the announced and market prices (<http://bisnis.news.viva.co.id/news/read/653147-menteri-esdm--harga-bbm-belum-akan-turun>)

targeted increases of 14.6 and 30 percent, respectively, in the revised 2015 Budget. In 2014 total revenues rose also only by 7.1 percent (compared with nominal GDP growth of 10.7 percent), and the tax-to-GDP ratio fell to 10.8 percent, from over 12 percent before the global financial crisis. In an effort to reach the revenue target in 2015, the government has announced and implemented a number of policy measures and also measures to improve tax administration and compliance. At the same time, in an attempt to improve the investment climate, the Government recently issued new regulations on tax holidays and allowances.

**Table 2: Key Fiscal Indicators**

<i>Percentage of GDP</i>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015*</b>	<b>2015 Jan-Aug realization</b>	<b>2016**</b>
<i>Overall balance</i>	-1.8	-2.2	-2.2	-1.9	-1.6	-2.1
<i>Primary balance</i>	-0.6	-1.0	-0.9	-0.6	-0.8	-0.7
<i>Total Revenues (and grants)</i>	15.4	15.1	14.7	15.1	7.5	14.5
<i>Tax Revenues</i>	11.4	11.3	10.9	12.7	6.0	12.3
Domestic tax	10.8	10.8	10.5	12.3	5.8	11.9
Income tax	5.4	5.3	5.2	5.8	3.1	6.0
Oil and gas	1.0	0.9	0.8	0.4	0.3	0.4
Non-oil and gas	4.4	4.4	4.4	5.4	2.8	5.6
Value added taxes	3.9	4.0	3.9	4.9	2.0	4.5
International trade tax	0.6	0.5	0.4	0.4	0.2	0.3
<i>Non-tax revenues</i>	4.0	3.7	3.8	2.3	1.5	2.2
<i>Grants</i>	0.0	0.1	0.0	0.0	0.0	0.0
<i>Expenditures</i>	17.2	17.3	16.9	17.0	9.1	16.6
<i>Central government expenditure</i>	11.6	11.9	11.4	11.3	5.4	10.5
Wages and compensation	2.3	2.3	2.3	2.5	1.7	2.7
Goods and services	1.6	1.8	1.7	2.0	0.7	2.5
Capital expenditures	1.6	1.9	1.4	2.4	0.5	1.4
Interest payments	1.2	1.2	1.3	1.3	0.8	1.4
Subsidies, of which:	4.0	3.7	3.7	1.8	1.1	1.6
Energy	3.6	3.3	3.2	1.2	0.8	0.9
Fuels	2.5	2.2	2.3	0.6	0.4	0.6
Electricity	1.1	1.0	1.0	0.6	0.3	0.4
Social expenditures	0.9	1.0	0.9	0.9	0.4	0.6
Other expenditures	0.0	0.0	0.1	0.3	0.0	0.2
<i>Transfers to regions</i>	5.6	5.4	5.4	5.7	0.5	6.1
<i>Net Financing</i>	2.0	2.5	2.5	1.9	..	2.1
Domestic (net)	2.3	2.6	2.6	2.1	..	2.1
of which bonds (net)	1.9	2.4	2.6	2.5	..	2.6
Foreign (net)	-0.3	-0.1	-0.1	-0.2	..	0.0
Disbursement	0.4	0.6	0.5	0.4	..	0.6
Amortization	-0.6	-0.6	-0.6	-0.5	..	-0.5

*Notes:* Using revised and 2010-rebased GDP; \* indicates revised Budget; \*\* indicates draft Budget

*Source:* Ministry of Finance as published by the Ministry of Finance.

**19. On August 14, 2015, the government submitted to Parliament a draft 2016 Budget, to be approved by end-October, which projects a fiscal deficit of 2.1 percent of GDP.**

Though continued improvement is seen in the composition of spending (e.g., further reduction in energy subsidies, and a significant increase in the health spending and social assistance), the draft 2016 Budget is based on ambitious revenue targets. Total revenue in 2016, equivalent to 14.5 percent of GDP, is 12.0 percent higher than MoF's latest revenue outlook for 2015 and the projected increase comes almost entirely from an increase in tax collection by 14.5 percent from an already optimistic revenue base. Given the challenging external macro environment and moderate growth affecting both the 2015 and 2016 revenue outlook, significant tax collection effort will be required to meet the 2016 revenue target and to support budget execution.

## **2.2 MACROECONOMIC OUTLOOK AND DEBT SUSTAINABILITY**

20. **In the baseline scenario, GDP growth is expected to be 4.7 percent in 2015, lower than the pace in 2014, picking up modestly to 5.3 percent in 2016.** Indonesia is transitioning to a new level of trend growth, roughly 1–1.5 percentage points lower than during the commodities boom. A very gradual pick-up in domestic demand growth is expected in 2016, as consumer and business sentiment improve somewhat. This scenario is predicated on the government prioritizing infrastructure spending and reforms to improve the business environment.<sup>8</sup> Export volumes are expected to stage a gradual recovery owing to a modestly rising global trade growth, but imports will also likely pick up on the back of the expected firming in investment, including more infrastructure spending. Consequently, in combination, net exports are not expected to add significantly to output growth through 2016.

21. **Risks to the growth and fiscal outlook are to the downside, but possible tradeoffs with fiscal financing risks appear manageable.** External risks stem from less supportive global financial conditions and the possibility of a further slowdown in commodity and external demand. Domestic risks include slower and more modest reform implementation, in part due to the expected fiscal revenue shortfall, and that relatively tight credit and profit margins continue to weigh on private spending. In terms of fiscal risks, if weaker-than-expected revenue performance is combined with more emphasis on higher expenditure execution to support growth, then a larger than projected fiscal deficit may be associated with higher financing risks and costs, especially in the currently volatile financial market conditions. The recent rise in global risk aversion has driven Indonesian local currency sovereign yields up by 106 basis points year to date for the 10-year bond (to 8.9 percent on October 22). However, the government has proactively taken measures to manage such risks, frontloading its market financing strategy and increasing foreign official borrowing this year, and has strictly adhered to the 3 percent fiscal deficit to GDP limit, maintaining low debt to GDP ratios. If access to financial markets tightens and the government cuts public spending, most likely capital spending, temporarily then the adverse near-term growth impacts would be limited given a small fiscal sector.

22. **Against the backdrop of sticky inflation and persistent nominal currency depreciation pressures, the scope for monetary easing is limited.** The current account deficit is expected to decline to 2 percent of GDP in 2015 and then pick up to 2.6 percent in 2016, with the down-shift in global oil prices reducing net oil imports, although partly offset by lower natural gas revenues. The expectation of only modest global trade growth with no upswing in

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<sup>8</sup> On September 9, 2015, the government announced a rolling package of reforms that remove and simplify onerous regulations relating to business licensing, import procedures, foreign ownership, and anti-corruption. However, the effectiveness of the package will depend on the government's implementation capacity.

commodity prices weighs on the outlook for exports, while the ambitious public spending program (see below) would also add to import demand.<sup>9</sup> Consequently, BI, with its focus on reducing external imbalances, is likely to move cautiously in loosening monetary policy.

23. **Fiscal management will need to respond to revenue underperformance.** The fuel subsidy cost savings generated by the January 2015 reform, of approximately 1.9 percent of GDP in 2015, are offset by lower oil and gas revenues. The space for revenue gains in 2015 through policy and administration changes is shrinking. In July, the Ministry of Finance revised down its revenue target for 2015 by IDR 112 trillion and the deficit up to 2.2 percent of GDP, with room to go further within the legal limit.<sup>10</sup> 2015 gross fiscal financing needs are estimated at 5 percent of GDP, of which, as of end-August, 76.7 percent had already been met through securities issuance and about 7 percent are expected to be met through foreign official lending.

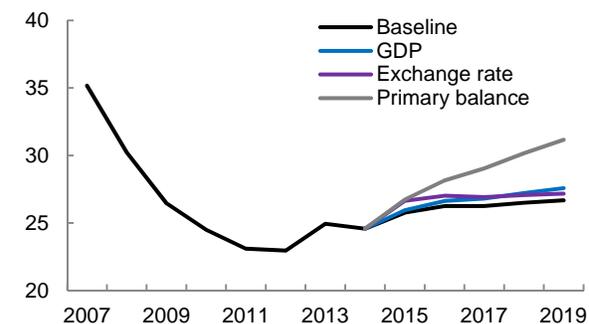
24. **Much needed increases in development spending, notably on infrastructure, though currently below budgeted levels, remain feasible with careful selection, including by SOEs.** The government’s revised revenue and deficit outlook provides room for well targeted investment spending. The Government has injected capital of 0.6 percent of GDP into SOEs in 2015, with an additional 0.3 percent planned in 2016. This could boost infrastructure spending, and GDP growth, but its quantity and quality remain uncertain.

25. **Government debt sustainability is strong.**

Following a decade-long steep and sustained decline on the back of small fiscal deficits and solid GDP growth, government debt-to-GDP reached 23 percent in 2012. The debt-to-GDP ratio remains moderate under a range of economic scenarios. Under the baseline, debt-to-GDP is projected to rise only slightly from the 2014 level of 24.6 percent to approximately 26 percent through 2018. In scenarios with one-time, permanent one standard deviation shocks to either real GDP growth or the exchange rate in 2015, government debt remains below 30 percent of GDP in the medium term. Only when a similar shock (equivalent to 1 percentage point of GDP) is applied to the primary balance does the debt-to-GDP ratio increase to 31.2 percent in 2019. In addition to a moderate debt level, the risk profile of the government debt stock is solid, although non-resident holdings of domestic bonds are relatively high at 40 percent. The average time to maturity is relatively long, at 9.9 year. Less than 15 percent of the debt is variable rate. Currency exposure is significant, with 43 percent of total debt denominated in foreign currency.<sup>11</sup> In order to mitigate this risk, Indonesia’s debt management strategy continues to focus on domestic bond issuance and financing from

**Figure 2: In the baseline trajectory government debt-to-GDP remains below 30 percent**

(government debt-to-GDP, percent, under baseline and - 1 standard deviation shocks to key variables)



Source: MoF; World Bank projections

<sup>9</sup> In this respect, the proposed DPL series and related actions can help mitigate external imbalances over the long run by strengthening the energy sector, thus improving export competitiveness and reducing energy imports.

<sup>10</sup> The general government deficit is capped by law at 3 percent of GDP. The threshold for each level of government is determined each year in a MoF regulation. The 2015 and 2016 maximum threshold for the sub-national government has been set at 0.3 percent and for the central government at 2.7 percent of GDP.

<sup>11</sup> All debt profile figures are preliminary for 2014 (Source: Ministry of Finance).

multilateral and bilateral partners. Finally, fiscal risks arising from expanding balance sheets of key state-owned enterprises need to be monitored closely.

26. **The macroeconomic policy framework is considered adequate for the proposed operation.** Indonesia's economy has weathered a significant deterioration in external demand and its terms of trade and, in mid-2013, in financial market conditions. This resilience in part reflects a comparatively large domestic demand base and strong structural growth forces, including demographics and rapid urbanization, but also a policy framework that has proved itself responsive to the risk of macroeconomic imbalances. The Government has also made sizeable progress in strengthening crisis preparedness and management protocols.

### 3. THE GOVERNMENT'S PROGRAM

27. **Since taking office, the Jokowi administration has set out a series of ambitious development goals, particularly relating to infrastructure development and social programs.** At the same time, the President's electoral platform – the “Nawa Cita” – has been reflected in the National Medium-term Development Plan (RPJMN) for 2015-2019 which sets out national development goals and the main directions of policy for the period. The new Government's growth strategy aims to put structural reforms on a faster track, with a series of reform packages announced since mid-September 2015.

28. **Strengthening the energy sector is one of the Government's top priorities as it views the sector as a key constraint to economic growth.** As highlighted in the National Medium Term Agenda (RPJMN 2015-2019), the Government's key goals for the sector can be summarized as to: (a) reliably and efficiently meet rising energy demand by expanding domestic supply of primary energy through increased domestic oil and gas production, as much as possible, to address energy security concerns; (b) transition towards a sustainable energy sector development path through increased use of domestic gas, renewable energy and scaling up energy efficiency measures; (c) make the energy sector more efficient and competitive; and (d) achieve nearly universal access to electric power. Indonesia has reported remarkable progress providing access to electricity, based on Government figures, to 84.35 percent of households in 2014, up from about 67.15 percent in 2010. Still, Indonesia faces formidable challenges to providing access to the remaining 16 percent of households and delivering sufficient volumes of electricity reliably and sustainably to all connected customers. (Annex 3 provides brief background on the Indonesian power sector and its challenges.)

29. **To achieve its development objectives, the Government has placed a high priority in the near term on increasing investment in the power sector, including from the private sector.** The targeted increase is nearly 42.9 GW between 2015-2019 (35 GW in a new fast track program and about 7 GW from a previous fast track program), with accompanying transmission and distribution investments, and in the medium term a further 27.5 GW over 2020-2024. Overall, chronic underinvestment and wasteful subsidies have left Indonesia with a power deficit while PLN forecasts high annual electricity demand growth of about 8.8 percent over 2014-2020 (RUPTL 2015-2024). PLN estimates that to supply projected demand, the total investment for incremental generation capacity alone would cost over US\$ 140 billion, i.e., US\$ 14 billion per year in the next 10 years. The pace of execution will depend on improving delivery mechanisms as well as actual load growth, which tracks closely to economic growth.

30. **Compounding this challenge, the Government of Indonesia has a strategy that moves to greater reliance on domestic coal due to declining oil and struggling gas production, affordability constraints, and an underdeveloped low carbon energy policy**

**environment.** By the end of 2024, PLN, whose business plan (RUPTL) currently is heavily relied on by the Government for national power sector investment planning, projects that 60 percent of the 70.4 GW of new capacity added from 2015 will be coal-fired generation, and 40 percent from low carbon energy solutions, including 20 percent gas-fired and 20 percent from renewables (mainly geothermal power and hydropower). For comparison, in 2014, coal’s share in installed generation capacity was 47.5 percent, oil 12.3 percent, gas 29.2 percent, and renewables 11 percent.<sup>12</sup> Based on current RUPTL projections for 2024, coal’s share in installed power generation capacity will be 56.6 percent, oil 2.5 percent, gas 23.9 percent, and renewables 16.9 percent.

31. **However, the Government has also taken important steps that contribute towards a more efficient and sustainable energy sector.** Notable energy subsidy reforms have been adopted. In recognition of the need for significant private financing and investment climate improvements if IPPs are to provide the targeted 50 percent of the fast track program of new generation capacity, the Government’s program on streamlining business licensing procedures focuses on power. Early steps have also been taken aimed at assessing and addressing governance problems in the sector (although the impact has yet to be seen and the challenges are long-term).

32. **The Government also recognizes the need for a strengthened policy environment, to unlock Indonesia’s significant endowment of renewable and gas resources as alternatives to coal.** Hydropower and geothermal resources are Indonesia’s two largest potential sources of renewable energy with an estimated potential of 75GW and 29.4GW, respectively. Solar potential is significant in sunny eastern islands and Indonesia does report biomass potential. However, matching responsible development of renewable potential with load centers on Indonesia’s vast archipelago is a major challenge, requiring well designed policies that make as much of the clean energy potential feasible. Supported by the adoption of provisions in the 2014 Geothermal Law<sup>13</sup>, unlocking geothermal power potential is fundamental, as geothermal power is able to serve as a base load as a direct substitute to coal fired thermal generation. The outcome of the COP-21 process, in which Indonesia is an active participant, can also deepen reforms supported by this DPL and accelerate a shift to a more sustainable energy development path. Indeed, Indonesia’s final Intended Nationally Determined Contribution (INDC) reiterates its commitment to promoting *inter alia* renewable energy and notes it has established the development of clean energy sources as a national policy directive.<sup>14</sup>

33. **Notwithstanding these developments, long-standing sectoral and implementation challenges remain.** These include, for example, coordination within government and with sub-national governments and SOEs, and vested interests and scope for corruption. In addition, while the sector is a high priority, the Government’s focus is also on addressing a slowing of growth, rising fiscal pressures, particularly on the revenue side, and uncertainty in the global economic environment, which may influence plans for energy investments.

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<sup>12</sup> Excludes captive power generation.

<sup>13</sup> The relevant provisions for geothermal power development refer to ‘indirect utilization’ in the law.

<sup>14</sup> The INDC document aims to put “in place the necessary enabling environment for the 2015-2019 period that will lay the foundation for more ambitious goals beyond 2020.” These INDCs, it says, may be adjusted based on the outcome of the COP-21.

## 4. THE PROPOSED OPERATION

### 4.1 LINK TO GOVERNMENT PROGRAM AND OPERATION DESCRIPTION

34. **The proposed DPL series supports the Government’s development priorities for the energy sector.** Delivering on the Government’s goals for new generation, renewables and access will require addressing many challenges. In particular, the proposed DPL series aims to address key energy sector challenges through institutional and policy reforms with four main objectives:

- **Pillar A: Reducing the fiscal cost of electricity provision** by reducing subsidies and moving to cost-reflective tariffs for electricity and improving the efficiency of PLN;
- **Pillar B: Improving the investment climate in the energy sector** by supporting gas supply development and licensing reform to facilitate investment in new generation by the private sector;
- **Pillar C: Removing constraints to expansion of renewable energy** including by supporting geothermal power development through the implementation of relevant provisions in the 2014 Geothermal Law, and putting in place incentives for the development of other renewable energy resources;
- **Pillar D: Expanding access to modern, reliable energy** by establishing a credible national approach to expanded electrification.

35. **The design of the operation builds on the lessons learned from previous DPLs in Indonesia and energy sector DPLs.** Extensive prior analytical work and TA have been critical to identifying the reform program aligned with current government priorities, along with strong government counterparts.<sup>15</sup> The operation has a focused tactical design combined with flexibility.<sup>16</sup> It also reflects the lessons from other energy sector DPL engagements (see Annex 4). For example, while not designed to address all sectoral problems it is embedded within a broader government reform program and part of a broader WBG energy engagement involving sustained TA, analytical and investment lending support. Finally, and importantly, experience of other energy DPLs emphasizes the often high risk-high reward nature of the operations.

36. **This operation is part of a wider WBG support to the sector comprising a mix of financing instruments:** Investment Project Financing (investments in geothermal power, hydropower and pumped storage); Development Policy Loans (this DPL series); Program for Results (planned PforR for electricity distribution); IFC equity and loans for private sector projects; and MIGA’s political risk insurance and other products in the renewable energy sector. In addition, technical assistance and knowledge services will be funded primarily through Indonesia specific and regional trust funds and working with other development partners.

### 4.2. PRIOR ACTIONS, RESULTS AND ANALYTICAL UNDERPINNINGS

37. The proposed operation builds on extensive ongoing dialogue and collaboration between the Government and the World Bank, along with other partners such as the ADB, KfW and AfD, and related technical assistance and investment operations.

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<sup>15</sup> See the 2014 ICR for the Institutional, Tax Administration, Social and Investment DPL series.

<sup>16</sup> See lessons from the 2014 IEG review of the ICR on the Indonesia Infrastructure DPL series (2007 to 2011) which also noted the risk of loss of focus in covering a range of infrastructure sectors with very different problems.

## ***PILLAR A: REDUCING THE FISCAL COST OF ELECTRICITY PROVISION***

### ***Reducing subsidies and moving to cost-reflective tariffs for electricity***

38. **Rationale and context:** Electricity subsidies have been poorly targeted and, averaging 1 percent of GDP in recent years, have imposed a significant opportunity cost on public spending. The legacy of below-cost electricity tariffs has weakened PLN's financial condition, limiting its capacity for new investment, increasing the likely fiscal cost of increased investment in the sector. In addition, from a sustainability viewpoint, electricity subsidies also impose substantial constraints on the Government's support to renewable energy and energy efficiency, whereas more appropriate economic pricing would have helped provide the relevant price signals for investments in these areas

39. **The following prior actions and indicative triggers are proposed to reduce electricity subsidies and moving towards more cost-reflective tariffs:**

**Prior action #1:** The Minister of Energy and Mineral Resources has issued regulations to phase out electricity subsidies for: (a) large- and medium-sized industrial and business categories; and (b) large- and medium-sized residential consumers, as evidenced through MEMR Regulation 9/2014 and MEMR Regulation 19/2014, and PLN has implemented the corresponding tariff increases.

**Prior action #2:** The Minister of Energy and Mineral Resources has issued regulations for the monthly automatic indexation of electricity tariffs – to reflect changes in oil prices, the exchange rate, and inflation – for: (a) large- and medium-sized industrial and business categories; and (b) large residential consumers, as evidenced through MEMR Regulation 31/2014 and MEMR Regulation 9/2015; and, from January 2015, PLN has adjusted its tariffs in accordance with said regulations for the abovementioned categories..

**Trigger #1:** The Borrower issues a decree with actions and roadmap for improved (i) allocation of electricity subsidies to low income consumers, and (ii) tariff structure and efficient cost allocation methodology to tariff categories.

40. **During the second half of 2014, major steps in electricity tariff and subsidy reform were initiated (Prior Action #1).** A movement towards cost reflective tariffs for large and medium-sized industries and business and for medium and larger residential customers was achieved in two steps.<sup>17</sup> The first tariff increase was implemented in May, and then a series of gradual tariff increases were made until November.<sup>18</sup> The policy prioritized the phasing out of electricity subsidy in categories with the largest consumption and ability to pay; each category therefore had different percentage increases depending on the level of subsidies at April 2014. As a result of Prior Action #1, by end-December 2014, it is estimated that electricity consumers in twelve (12)<sup>19</sup> of the existing 37 tariff categories, representing approximately 66 percent of PLN energy sales and 55 percent of PLN total revenues, were at the level for PLN to recover its allowed production costs without government budget support.

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<sup>17</sup> Low capacity household customers are defined here as those with connections of 450 and 900 VA, medium with 1300 and 2200 VA connections and large with 3500-5500 and 6600 VA connections.

<sup>18</sup> These increases were made, respectively under MEMR Ministerial Regulation 09/2014 and 19/2014.

<sup>19</sup> The twelve consumer categories are four household categories, two categories for businesses and two for industries, two for government offices, street lighting and special services.

41. **Moving electricity tariffs of larger consumers to regulated adjustment mechanisms that transfer changes in underlying costs is an extremely significant reform to limit future fiscal subsidy costs.** Electricity tariffs have historically been determined annually on an ad hoc basis. Three external factors, outside the control of PLN, have been the key drivers of significant cost changes and increase in subsidies: the exchange rate, Indonesia Crude Price (ICP) of oil, and domestic inflation. The regulations under Prior Action #2 establish a monthly electricity tariff adjustment mechanism, regulated by the Ministry of Energy and Mineral Resources (MEMR) and calculated and implemented by PLN, based on variations of these three factors, avoiding subsidies to cover the gap. Application of the mechanism has started and from January 2015 PLN tariffs have been adjusted for ten tariff categories (mainly large and medium industries and businesses and large household connections).<sup>20</sup>

42. **Building on these measures, the proposed indicative trigger on the tariff reform for DPL 2 aims to better target remaining subsidies for residential electricity consumer categories.** With the Bank TA support, the MEMR with Ministry of Finance will review a range of options associated also with subsidy reform and the application of the performance based regulation, including enhancing the tariff structure, reflecting efficient cost allocation to each category, and targeting approaches to optimize support to households.<sup>21</sup>

#### ***Improving the efficiency of PLN***

43. **Rationale and context:** Adopting Performance-Based Regulation (PBR) for PLN aims to improve operational efficiency and productivity of PLN to achieve reasonable and prudent costs, and, as a consequence, achieve competitive electricity tariffs to reduce electricity subsidies burden on the budget, and support growth. The process will improve the targeting, transparency and accountability of subsidies, and ensure that actual subsidies remain within the cap set in the approved budget. Implementation will ensure that tariffs paid by non-subsidized consumer categories correspond to efficient costs. The subsidy will be calculated and disbursed based on the approved cap for efficient production costs, allowing the Government to avoid using the budget to cover PLN inefficiencies.

**The following proposed prior action and indicative trigger aim to improve the efficiency and accountability of PLN to control and reduce electricity subsidies:**

**Prior action #3:** The Minister of Finance has signed the MOF Regulation that lays out a performance-based regulation framework covering: (a) setting targets for controllable costs, and the calculation of the revenue requirement for PLN's operations and investments; and (b) the calculation and disbursement of budget support to PLN based on revenue requirement and approved tariffs. **Trigger #2:** The PBR Inter-Ministerial Committee is (i) operational and has agreed on the benchmarks for the initial implementation of PBR for PLN and (ii) is supported by a standing secretariat housed in MOF.

44. **Shifting from the historical practice of cost-plus regulation of PLN, the Ministry of Finance is to issue a decree to determine production costs and disburse electricity subsidy support to PLN based on performance benchmarks (PBR).** The PBR would base tariff and

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<sup>20</sup> While the regulation incorporated medium-sized household categories, PLN sent a letter proposing postponing the initiation of indexation for those categories. In response MEMR issued a follow up regulation revising retrospectively the starting date for these categories to May 2015. To date adjustments for medium-size household categories have yet to be made effective and the Bank team is following up on this issue.

<sup>21</sup> Where possible based on data availability, this analysis will take into account the differential impact across gender of household heads.

electricity subsidy calculations on efficient benchmarks for network losses, thermal plant efficiency, operational expenses, and a productivity improvement factor. Setting costs that are under PLN control, based on performance benchmarks instead of actual costs, would promote increased efficiency and productivity of PLN that should lead to lower costs and efficient tariffs. Independent of whether or not PLN actually improves efficiency, electricity subsidies will be calculated based on efficient benchmark costs, and therefore the PBR regulation will reduce and control electricity subsidies burden on the budget. To create strong incentives for efficiency improvements, benchmarks will be set every three years by the Interministerial Committee. However, initially a transition period of 3 years will be used to test the benchmark mechanism, during which the benchmarks will be set each year until 2019. Implementation of the PBR, supported by proposed Indicative Trigger #2, will require the operationalization of the Interministerial Committee, with representatives from MOF, MEMR and the Ministry of State Owned Enterprises, which would set the benchmark targets and propose the annual electricity subsidy for the budget approval. At the end of each year, PLN must submit an accountability report on the utilization of the electricity subsidy.

45. **Expected results:** The electricity subsidy transferred from the government budget to PLN as electricity tariffs move toward economic cost is targeted to decline from IDR 79.4 trillion in 2013 (audited cost excluding arrears from previous years) to IDR 40 trillion in 2016. This is what is budgeted in the Government's proposed 2016 Budget. This would be a reduction from 1 percent of GDP to 0.4 percent of GDP. PLN tariffs and the electricity subsidy calculation is targeted to be based on a PBR framework by 2017. Following the Bank's engagement strategy summarized in paragraph 4, the Bank plans to provide technical assistance that would support the Government's assessment of PLN's cost of service. This would assist in preparing for the implementation of the initial PBR in 2017.

## ***PILLAR B: IMPROVING THE INVESTMENT CLIMATE IN THE ENERGY SECTOR***

### ***Supporting gas supply development in Indonesia to facilitate investment in power generation***

46. **Rationale and context:** Indonesia's trajectory of high energy demand growth is placing a spotlight on both energy security and on how the country can rebalance the energy mix towards cleaner fuels. Although Indonesia is highly likely to become a net gas importer in the long term, domestic resources still offer an opportunity to enhance energy security and improve the energy mix. Indonesia has an estimated 103 trillion cubic feet (TCF) of conventional natural gas reserves, the third largest in the Asia/Pacific region.<sup>22</sup> For Indonesia to expand production beyond the current level of 6.8 billion cubic feet per day, existing reserves will have to be exploited more intensely, and prospective conventional and unconventional gas resources converted into reserves via exploration and appraisal.

47. **There is a crisis of under-investment throughout the gas value chain.** Regulatory uncertainty and limited incentives for investment in the upstream sector are combined with inadequate infrastructure to bring gas to potential gas end-users (see Annex 3.2). Falls in global oil and regional gas prices have further reduced incentives for investment. As a result, the supply of domestically produced gas to end users, including the expanding power sector, is plateauing.

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<sup>22</sup> These reserves consist of a range of already mature and declining conventional gas fields, stranded conventional gas accumulations which have failed to be commercialized owing to a lack of infrastructure, and both conventional and unconventional gas resources that have yet to be fully evaluated.

Gas production overall, including that converted to LNG for export, peaked in 2010 at 8.9 billion cubic feet per day and in 2014 was 74 percent of that level, reflecting natural decline in older gas fields. The share of (declining) gas production supplied domestically had been rising initially, but subsequently flattened at 52 percent in 2014.<sup>23</sup> Looking ahead, contracted gas supplies will decline and need to be replaced by new commitments, requiring final investment commitments by the sponsors of several large gas production projects. For those gas projects designed to supply the domestic market<sup>24</sup>, any failure to accelerate the rate at which new gas transportation, processing and storage infrastructure is developed, could result in project deferment.

48. **Under the new administration, MEMR has laid out a program of reforms to accelerate investment in the oil and gas industry, with particular emphasis on improving the availability of critical infrastructure to deliver gas to domestic end-users.** To help identify key policy reform measures, the present Government took a number of initiatives early on, including the appointment of the Oil and Gas Reformation Team, which reported in May 2015, and creation of a National Exploration Committee to examine how oil and gas exploration could be accelerated. The *2015 Roadmap of National Gas Policy*, founded on gas demand projections to 2030 that imply a deepening net import position, seeks to promote the use of domestic gas resources as much as possible and to deliver gas to end-users on a reliable and affordable basis. In the upstream gas sector, the main objectives are to provide a conducive environment for commercializing existing gas resources and stimulating exploration. In mid-stream, the objectives are to accelerate investment in critical gas transportation, processing, and storage facilities and to manage gas supply such that demand can be met efficiently and at affordable prices. In the downstream sector the main objective is to achieve an increased share of gas in power generation and to promote the use of gas in a wide range of industry sectors.

49. **The following prior action for the first DPL and indicative triggers for the second DPL are proposed to support gas supply development in Indonesia:**

**Prior action #4:** The Minister of Energy and Mineral Resources has issued a regulation for a systematic and time-bound process for managing expiring production sharing contracts as evidenced through MEMR Regulation 15/2015.

**Trigger #3:** The Borrower adopts revised fiscal terms for production sharing contracts to increase investment into the upstream/midstream including incentives for developing marginal fields, and unconventional resources.

**Trigger #4:** The Borrower introduces regulatory measures in the gas mid-stream that would encourage mid-stream entities to accelerate investment in critical gas processing, transportation and storage facilities.

**Trigger #5:** The Borrower completes a process of detailed gas infrastructure project planning that builds on the 2015 Gas Roadmap and which addresses land use, environmental and social considerations and financing arrangements.

50. **Given its importance to investors, Prior Action #4 of the DPL seeks to address upstream regulatory uncertainty relating to the extension of expiring Production Sharing Contracts (PSCs).** In March 2015, the Minister of Energy and Mineral Resources issued a

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<sup>23</sup> BP Statistical Review of World Energy figures.

<sup>24</sup> Domestic supply obligations under Production Sharing Contracts apply to all of the big projects under development.

regulation (15/2015) to address uncertainty about the terms and conditions surrounding extensions of expiring PSCs. The regulation establishes a rules-based and time-bound process for reviewing applications and deciding on the terms of contract extensions.<sup>25</sup> Among those PSCs on which decisions have already been made are two that account for a significant share of current gas production and two further important gas-producing PSCs are among those expiring in 2018. This means that PSCs which account for the lion's share of Indonesia's current gas production are expected to be extended by 2017, thereby enabling new gas supply commitments to be made into the future.

51. The proposed indicative triggers for DPL 2 focus on three further areas - upstream contractual terms, midstream regulation and infrastructure planning processes - which aim to address the crisis of under-investment in gas supply.<sup>26</sup> Recently the Government has begun to review the contractual terms for oil and gas exploration and production to make them more attractive while preserving the ability of the Government to capture rent from the more economically successful gas projects.<sup>27</sup> The Government has also recognized the need to establish a regulatory framework that will encourage the incumbents in the gas midstream to step up their investment in gas transportation, processing and storage infrastructure, as well as to clarify the role for new entrants. In September 2015 the Government announced that a Presidential Regulation on Gas Mid-Stream Governance will soon be issued. A public document issued by MEMR in August 2015 explained proposed arrangements under which a national gas "aggregator" will be established whose functions will be to pool gas supplies received at different prices and assure delivery to off-takers in power, industry and household sectors at regulated prices linked to the average costs of gas flowing through the system.<sup>28</sup> International experience suggests that the efficient operation of a system of national gas aggregation, as proposed, will require detailed and effective regulation if it is to operate as intended, namely to encourage an acceleration of investment in mid-stream infrastructure, and to guard against the possible abuse of monopoly powers resulting from the concentration of ownership and functions in an aggregator. While some countries (e.g., Pakistan, Nigeria) that adopted the aggregator model

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<sup>25</sup> At the time of issuance of the regulation, there were eight PSCs under which petroleum was being produced that had already or were due to expire in the period to the end of 2017. Since being issued MEMR has received applications through SKK Migas and been able to issue Ministerial decisions in respect of five of these PSCs. A decision has also been made in respect of an additional PSC that was due to expire in 2021. Another eight PSCs are due to expire by the end of 2018 and a further four or five in each year up to 2025.

<sup>26</sup> Supporting the policy dialogue on these triggers, the World Bank is engaged in policy dialogue and technical discussions with the Government on gas sector development in Indonesia and is jointly developing a work program of technical assistance, under the Natural Resources for Development trust-funded program, which corresponds to the three critical areas addressed by the proposed triggers. This TA would draw on international experience in supporting investments across the gas value chain in emerging economies, such as Turkey and Mexico, while recognizing the resource base, institutional, regulatory and political economy characteristics of Indonesia's gas sector.

<sup>27</sup> MEMR has prepared a Ministerial Regulation that adjusts the fiscal and non-fiscal terms of PSCs for unconventional oil and gas. While such resources hold high potential and there has been some success in licensing, only a low level of investment has taken place. MEMR intends now to shift its focus to the terms and conditions for developing marginally economic conventional oil and gas fields and has launched consultations with industry stakeholders as a first step, with a view to preparing and a package of incentive measures in the course of 2016.

<sup>28</sup> The stated motivation for this arrangement is to reduce the burden of negotiation between sellers and buyers, minimize end-use price disparities, curtail the activities of rogue traders, and, where supply lags demand, allocate gas to the sectors in which gas has most economic value. The model which is proposed envisages that the aggregator will perform gas processing, transportation and storage services as well as the merchant function of taking and delivering gas.

have experienced or are still experiencing poor efficiency and governance outcomes, which have been difficult to unwind once established, others (e.g. Netherlands and Turkey) have found ways to accelerate investment and improve performance.

52. **Finally, the gas infrastructure plans set out in the Government’s 2015 Gas Roadmap will need to be quite rapidly developed into an implementable set of projects by undergoing a rigorous planning process.** A well designed gas infrastructure planning process would need to cover relevant technical, economic, financial, environmental and social considerations which are needed as a basis for, among other things, identifying key project risks and deciding which projects will be assigned to the public sector and which will be made available to the private sector. MEMR intends to undertake these planning steps on a rolling basis and by end-2016 to have completed this planning exercise for the first batch of gas infrastructure projects.

53. **Expected results:** The above reforms would be expected to result in an increase in domestic gas supply by virtue of improvements in the investment climate at all stages of the gas value chain. However, realizing this outcome will depend on investments that have a long lead time to prepare and execute and will only be launched once the policy, regulatory and economic environment provide the right signals to investors. Accordingly, a suitable indicator of progress towards the long-term goal within the period of attribution for this DPL will be evidence that new investment intentions are sufficiently well-advanced to justify decisions by major domestic gas off-takers to enter into new supply agreements. The proposed results indicator is that PLN enters into new long-term agreements for domestic and/or inter-island gas supply of a minimum of 125 million cubic feet per day by end-2016, as measured by the daily gas volume to be supplied under new contracts or contract extensions signed after December 2015 of 5-years or greater duration.<sup>29</sup> Measurement against this indicator would not only show reform progress but would have important demonstration value for future gas procurements, both by PLN and IPPs. The engagement on triggers #3, #4, and #5 will be supported by the Bank-executed Natural Resources for Development trust fund-supported programmatic technical assistance.

***Facilitating licensing and delivery of new power generation by the private sector (IPPs)***

54. **Rationale and context:** Business licensing processes are notoriously cumbersome in Indonesia, with electricity generation one of the most prominent examples. According to the Indonesia Investment Coordinating Board (BKPM), as of early 2015, obtaining all the licenses for generating electricity as an IPP takes more than 900 days and 52 separate licenses. In reality, the time required can easily exceed four years. In light of the pressing need for more generation capacity, this is an area for most urgent reform given the lengthy process, lack of clarity and uncertainty of IPP licensing which act as a deterrent for interested investors.<sup>30</sup> In addition, private sector investors noted that processes outside BKPM and central government were also critical constraints, including the process with PLN for obtaining a power purchase agreement and the subnational licenses. Implementation of significant and sustained reforms will greatly influence the success of the Government in moving towards its goals for new generation capacity, and its

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<sup>29</sup> PLN has gas supply contracts totaling almost 500 million cubic feet per day that will expire by the end of 2017. This represents roughly 40 percent of PLN’s current gas supply. In addition, to fuel the 6 GW of new gas-fired plants that PLN intends to build under the 35 GW national generation expansion plan, PLN will need to procure a further 500 million cubic feet per day of supply. Meeting these gas procurement challenges will require PLN to source gas from both domestic and imported sources.

<sup>30</sup> World Bank team interviews with private sector developers, as part of support to BKPM licensing reforms.

ability to mobilize the required financing from private sector sources. Furthermore, since electricity generation is merely the beginning of the ambitious agenda on business licensing simplification, its success will have an important signaling effect.

55. **The Government has launched licensing reform, including establishment of the One Stop Service (OSS) in BKPM, as a broad and ambitious agenda and declared electricity generation as the first subsector for reform.**<sup>31</sup> On April 7, 2015, BKPM announced that initial steps toward simplification of license had been taken. To achieve meaningful reforms, the Government will have to manage regulatory changes and achieve full implementation of such changes in day-to-day practices of relevant government agencies.

56. **The following prior actions on IPP licensing are informed by WBG support to BKPM on the Central OSS implementation and licensing reform.**

**Prior action #5:** The Minister of Agrarian and Spatial Affairs/Head of National Land Agency and the Minister of Environment and Forestry have amended regulations to streamline administrative procedures (relating to licensing of building rights, land use and location permits) and reduce the time required to obtain central government's licenses for setting up independent power producer projects, as evidenced through MoEF Regulation P-97/2015 and MASA Regulation 2/2015.

**Prior action #6:** The Minister of Energy and Mineral Resources and the Minister of Environment and Forestry have issued regulations to delegate the licensing authority for setting up independent power producer projects to the Indonesia Investment Coordinating Board for inclusion in its national one-stop-service for investment, as evidenced through MEMR Regulation 35/2014, MoEF Regulation 97/2014, as amended by MoEF Regulation 1/2015.

57. **Prior Actions #5 and #6 have been met through a number of regulatory changes made within the context of the central government OSS.** The total number of days to complete IPP central government licensing has been significantly reduced through regulatory changes to streamline administrative processes. According to BKPM, the main licenses issued at the central government level (MEMR, Ministry of Environment and Forestry, Ministry of Finance, Ministry of Manpower and Land Agency) have been moved to be processed at the BKPM OSS.<sup>32</sup> For example, a new regulation for building permits has simplified the procedures to obtain these licenses, reducing the time from 143 to 90 working days with no reduction or elimination of the substantive process.<sup>33</sup> Similar streamlining of processing has cut the time for obtaining permits or licenses from 110 working days to 52 to utilize forest area land (*Ijin Pinjam Pakai Kawasn Hutan, IPPKH*).<sup>34</sup> In addition a new regulation on location permits has extended the time limit for such permits from 1 year to 3 years, reducing the need to re-apply for this license frequently.<sup>35</sup> The amended regulations and processes for these and other licenses apply already for new investors initiating the application for the licensing process. Based on available information, the streamlined administrative procedures under prior actions #5 and #6 are not expected to reduce

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<sup>31</sup> For further information see in "Streamlining business licensing in Indonesia" in the World Bank's Indonesia Economic Quarterly March 2015.

<sup>32</sup> Agencies such as PLN have representatives at the OSS but not all of their licenses are processed there.

<sup>33</sup> Regulation No. 2 of 2015 of the Minister of Agriculture and Spatial Planning/Head of the Land Agency (BPN) for obtaining a building permit (*Hak Guna Bangunan, HGB*) for plots of more than 15 acres.

<sup>34</sup> Regulation No. P.7 / MenLHK-II / 2015 of the Minister of Environment and Forestry.

<sup>35</sup> Regulation No. 5 of 2015 of the Minister of Agriculture and Spatial Planning.

or change the underlying substantive licensing requirements, such as for environmental due diligence (see Section 5.2).

58. **IPP licenses were the first priority sector to be implemented in the central government OSS.** Key agencies, including MEMR and the Ministry of Environment and Forestry, have been delegating the processing of their IPP-related licenses through the central OSS and assigned Liaison Officers to BKPM.<sup>36</sup> The OSS itself is formally up-and-running, though the inevitable challenges of full implementation are only in the process of being worked out. While the pace at which the OSS has been called into being has been impressive, it will take some time to fully implement even the existing processes, let alone simplified and streamlined processes like for electricity generation.

59. **Expected results:** By introducing parallel processes and simplifying some of the licensing procedures, the actions aim to reduce the time it takes to process an IPP license. The total number of days required to obtain all IPP licenses is sensitive to the type of IPP, as is the impact of any particular regulatory or administrative change. Given this sensitivity, the results indicator is for a reduction in the number of days, as stated in the regulations, to process a gas generation IPP license from a baseline of 600 days (as of March 2015) to 300 days in 2016.

### ***PILLAR C: REMOVING CONSTRAINTS TO EXPANSION OF RENEWABLE ENERGY***

60. **Rationale and context:** The environmental costs and impact of Indonesia's fast growing emissions from burning fossil fuels will be significant, and can be moderated by scaling-up renewable energy production and application of advanced low-carbon technologies. The PLN business plan (RUPTL 2015), endorsed by MEMR, has set a medium term target of achieving around 6,000 MW of installed geothermal power capacity by 2024 from existing capacity of 1,438.5 MW. However, policy support to the geothermal power sector has faced implementation issues. Since 2003, the government has intensified its policies to scale up and speed up geothermal power development, mainly through the Geothermal Law of 2003, and the establishment of a Geothermal Fund of US\$200 million in 2011 and a 2012 Feed in Tariff (FIT) policy. Despite these efforts, current estimates suggest that no more than an additional 274 MW would be reached by the end of 2016, and another 230 (to 670) MW by 2020 are likely. Movement towards Indonesia's ambitious targets for new renewable installed capacity, and achieving the objectives of the new Geothermal Law that was passed by Parliament in 2014, will require implementing regulations, appropriate pricing mechanisms and addressing other barriers that have stalled geothermal and other renewable development.

61. **The proposed DPL supports the following proposed prior actions and indicative triggers to facilitate new investments in geothermal and other renewable power development:**

**Prior action #7:** The Borrower has improved conditions for geothermal power development through the issuance of Geothermal Law No. 21 of 2014.

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<sup>36</sup> Regulation No. 35 of 2014 of the Minister of Energy and Mineral Resources delegated 10 licenses related to electricity. Regulation No. 97 of 2014 of the Minister of Environment and Forestry, further revised by No. 1 of 2015, delegated 17 licenses to the central OSS including several relevant for IPP. Liaison Officers at BKPM may have a mandate to process and issue the license directly, or may transfer the application to their ministry or agency if it requires substantive technical knowledge (for example, interpreting environmental testing results or certain types of construction and engineering permits).

**Prior action #8:** The Ministry of Energy and Mineral Resources has submitted to the Ministry of Law and Human Rights, a draft Government Regulation to implement the Geothermal Law No. 21 of 2014 provisions for the local benefit-sharing mechanism involving a “production bonus” payment by geothermal companies to local governments.

**Trigger #6:** The Borrower issues the implementing regulations for the 2014 Geothermal Law on the process to convert geothermal energy to electricity (“indirect utilization”).

**Trigger #7:** The Borrower reviews performance of existing schemes promoting market-based mechanisms for development of renewable energy.

**In order to increase the pace of geothermal power development, the Government has taken important steps to resolve institutional, regulatory and tariff constraints, and included relevant provisions in a new Geothermal Law that was passed by Parliament in 2014.** In June 2014, MEMR issued a new regulation to replace the FIT regime with a new ceiling price system based on the benefits of geothermal energy with competitive tenders. This was generally accepted by the industry and is expected to encourage more new projects. Replacing the 2003 Geothermal Law, relevant provisions in the 2014 Law establish and clarify some of the issues that have hindered geothermal power development in Indonesia, for example, the allocation of authority of government institutions over ‘indirect utilization’ of geothermal resources (‘indirect use’ provisions in the Law are intended for electricity generation), licensing requirements and procedures, and forestry issues in geothermal power development. The legal framework allows centralizing geothermal power indirect use concession tenders. The interest of local government in geothermal power development is secured by a production bonus - a benefit sharing mechanism - levied on top of any applicable taxes. The 2014 Geothermal law also removes substantial barriers posed for geothermal power development when it was defined as a mining activity, and this Law now redefines the activity removing unnecessary regulatory requirements more appropriate for mining operations. The Law expands the forested areas where geothermal resources may be developed for indirect utilization from only protected forests previously to protected and conservation forest areas, with limitations as discussed below. While this increases the potential for renewable electricity development, and addresses a key constraint identified by developers, it will require carefully designed and implemented regulation for environmental protection (as discussed further below in Section 5.2). New government regulations, which have been drafted but are not yet approved, are now required to set out detailed implementation guidelines and procedures for relevant provisions of the Law relating to geothermal power development and to address other important shortcomings, including in tender processes, forestry and environment risk management procedures.

62. **The production bonus regulation sets out the details for the implementation of the payment outlined under the 2014 Law by geothermal licensed companies to the local government where the geothermal power working area is located.** This payment aims to share benefits of the geothermal resources with local communities and promote support by local governments. The main issue in the issuance of the regulation was the decision on how to treat the production bonus for 7 existing contracts under operation (whether it should be borne by both the developers and the government or just the government, with the just the government option chosen). The proposed indicative trigger for DPL 2 cover another implementation regulation required for the scale up of geothermal power generation, namely on conversion of geothermal energy to electricity.

63. **Matching diverse energy needs with Indonesia's renewable energy potential is another important challenge.** Recently the government has introduced adjustments to feed-in tariffs (FIT) for small scale renewables (under 10 MW), specifically hydropower and biomass as previous FIT levels were deemed insufficient to attract desired levels of investment. Policies were also adjusted in large-scale renewables, the development of which represents a larger share of Indonesia's total renewable energy potential.<sup>37</sup> The draft National Electricity Development Plan 2015-2034 (RUKN) which was submitted to Parliament this year for consultation includes policy directions to further develop attractive investment schemes with competitive pricing for renewable energy. Following this direction, MEMR is expected to continue to review the performance of policies promoting market-based mechanisms for renewable energy, taking into account stakeholder inputs and learning from domestic and international experience, and make adjustments where needed in order to promote private investments in renewable generation.

64. **Expected results:** In the short and medium term, the impacts of the prior actions supported by the DPL are expected to be the improved prospects for geothermal projects. In the longer term, the expected impact will be an increase in geothermal development and renewable energy generation. Given the long time lag in renewable development and production, and the short time frame until assessment of progress against the DPL actions, the results indicator is evidence of the implementation of renewable projects in line with the 2014 Geothermal Law.

#### ***PILLAR D: EXPANDING ACCESS TO MODERN, RELIABLE ENERGY***

65. **Rationale and context:** As highlighted in Annex 3, Indonesia faces a formidable set of challenges to (a) provide access to 16 percent of households, about 39 million people, and (b) to provide sufficient volumes of electricity, on a reliable basis, to people who have electricity connections. Based on MEMR statistics, the electrification rate in 2013 was 80.51 percent with the 2014 National Energy Policy setting targets of 85 percent by 2015 and universal access of 100 percent by 2020. Indonesia is also a long way away from the per capita consumption of electric power, reliability and quality of supply achieved by peer economies. This unmet demand imposes a cost on the people, especially the more vulnerable, and Indonesia's economy, effectively limiting opportunities to create jobs, eliminate poverty and meet the ambitions for a higher quality of life of its people.

66. **Inadequate resource allocation as well as lack of adequate pricing and institutional arrangement have slowed progress in increasing access and rural electrification.** Historically, PLN has been leading the electrification program, delivering 97 percent of new household connections and in the past ten years connecting approximately 20 million households or 78 million people. Between 2010 and 2014, the Government-reported electrification rate rose by 17 percent from 67.15 percent to 84.35 percent. PLN's current electrification programs are funded by its own resources and by national budget financing. The Electricity Law of 2009 states that central and local government would allocate funds for electrification of disadvantaged communities and for rural electrification. However, the remaining households are the most difficult to connect and electrification ratios differ markedly across Indonesia, from 43.5 percent in Papua to 99.6 percent in Jakarta.

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<sup>37</sup> In 2014, as mentioned above, the MEMR introduced a new geothermal pricing regime using bidding under a regional ceiling prices. In 2015 MEMR issued ceiling prices for large scale hydropower plant expansion or conversion of irrigation dams to hydropower.

67. **Most of the success of Indonesia's electrification efforts can be attributed to implementation of policies introduced from the beginning of the decade.**<sup>38</sup> The Electricity Law of 2009 provides a legal basis for local governments to invite non-PLN players to provide electricity if PLN is not seen to be active. Although it had limited impact in terms of new service providers, the risk of losing market share has stimulated PLN to connect more consumers. In 2012, PLN initiated an electrification road mapping exercise for 2012-2017 to determine which unserved areas would be connected using fiscal resources (for free connections in rural and poor areas, *Program Listrik Desa* or *LisDes*) or PLN's own funds. National budget support for free connections is assigned to, and procurement managed by, MEMR, but timely implementation has been a challenge.<sup>39</sup> After program funding of IDR 2.2 trillion in 2014 and IDR 3.1 trillion (allocated) in 2015, the allocation proposed (still under deliberation) for 2016 is only IDR 0.7 billion (funded from savings from the 2015 program) due to these difficulties. A share of the Government equity injection that is planned for 2016 (currently, IDR5.6 trillion out of IDR10 trillion) is expected to support PLN's electrification program but coordination with MEMR to harmonize national objectives, especially in electrification in rural or remote areas, is challenging.

68. **Current institutional arrangements of planning, financing, and monitoring electrification need to be improved to meet the Government's access targets.** Connecting remaining households requires accelerating both grid and off-grid programs through improved financing mechanisms and implementation processes for PLN. To optimize resources and achieve the target in a planned, coordinated and cost effective manner, there is a need for a clear road map and action plan with appropriate funding, through a process which involves all relevant key stakeholders, in particular local governments and the private sector. Subsidized tariffs for smaller residential customer categories create a disincentive to connect. PLN also has limited borrowing capacity in view of expected capital expenditures in generation and transmission. Introduction of feed-in tariffs for biogas, biomass and small hydropower in 2014 aim to attract further investment for electrification, but need time to be market tested.

69. **The Government has moved recently to address current challenges.** In coordination with loans requested by the Government from multilateral development banks to support PLN's distribution services performance and electrification, the DPL indicative trigger for the second operation builds on recent and ongoing technical assistance to introduce a new approach to electrification programs to provide access to modern, reliable services.<sup>40</sup> The MEMR has submitted to Parliament for consultation the draft National Electricity Development Plan (RUKN, 2015-2024) noting the importance on increasing participation of non-PLN actors, and development of policies to accelerate rural electricity access.

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<sup>38</sup> Further background can be found in World Bank (2013), *Toward Universal Electricity Access: Renewable Energy-Based Geospatial Least-Cost Electrification Planning* - South East Asia Energy Brief and the Government of Indonesia and ADB (2015), *Achieving Universal Electricity Access in Indonesia and Scaling up Renewable Energy Access in Eastern Indonesia*.

<sup>39</sup> After the project is completed, the assets are transferred to PLN through a laborious process, with the responsibility of maintenance, operation and upgrade.

<sup>40</sup> At the request of the Government, the World Bank is preparing a *Program for Results* operation focusing on improving delivery of PLN's electricity distribution services in selected program areas. The operation would focus on improving reliability and quality of services (reduction of interruptions and voltage fluctuations), reducing distribution system losses and connecting new customers to the network. This will be complemented by a proposed similar operation by ADB and the IsDB has initiated discussions on its own similar support. The combined support by donors would increase PLN's distribution services performance and electrification.

**Trigger #8:** The Borrower issues a national approach to electrification with improved coordination of institutional responsibilities, financing mechanisms and planning.

70. **Expected results:** The targeted results indicator is an increase in the household electrification rate as measured by MEMR. The baseline is 84.34 percent in 2014 and the target for 2017 is 92.75 percent.

### *ANALYTICAL UNDERPINNINGS*

71. **The design of the proposed DPL series and the proposed prior actions are informed by substantial advisory and analytical work.** This includes both recently completed and ongoing activities, with strong collaboration with other development partners in the sector.

**Table 3: DPL Prior Actions and Analytical Underpinnings**

<b>Prior actions</b>	<b>Analytical Underpinnings</b>
Prior action #1 and #2 on electricity tariff reform and subsidies	Analytical and TA work has provided analysis of existing tariff structures and options for reform, for example, World Bank (2012-2013), <i>Indonesia Fuel to Power Value Chain</i> which provided a road map for the overall approach to reform of electricity tariffs, including recommended that subsidies be eliminated in a step-wise process for customers who are able to pay the full cost of efficiently delivered electricity service, as reflected in the prior actions.
Prior action #3 on Performance-based Regulation of PLN	A series of World Bank technical reports have supported the development of the methodology of PBR and provided calculations to give a demonstration of the allowable revenues under its implementation. These include studies of PLN power plants in Java (2013), PLN Transmission and Distribution Operational Expenditures and Corporate Functions (2013), PLN’s Investment Plan for 2014-2018 (2013), Determination of PLN’s Revenue Requirement applying Performance Based Regulation (2013) and Performance Based Regulation: Procedure, Budget Provision, Electricity Payment and Accountability (2014).
Prior action #4 on production sharing contracts	The <i>Gas Development Master Plan – Indonesia</i> , prepared by Petroleum Development Consultants, in 2013 highlighted the uncertainty faced by current and potential future gas suppliers in the absence of a clear rules-based procedure to address expiring PSCs. The report of the Oil and Gas Reformation Team, May 2015, echoed this. MEMR’s <i>Gas Road Map</i> and other official documents identified the need to issue a regulation to address this uncertainty.
Prior actions #5 and #6 on IPP licenses	Regulatory reviews under the World Bank support to the implementation of the Central One Stop Service and related licensing simplifications, included analysis (March 2015) providing Mapping and Recommendations on Electricity (IPP) licensing processes (highlighting the scope for time savings from having processes work in parallel whenever possible and from improvement of internal Standard Operating Procedures and Ministerial Regulations).
Prior actions #7 and #8 on geothermal power development	A series of analytical reports and TA have provided input to reforms of the legal and regulatory framework for geothermal power development. For example, ADB and World Bank (2014), <i>Unlocking Indonesia’s Geothermal Potential</i> provided an assessment of geothermal development and recommendations to unlock the sector including tariff reform, Power Purchase Agreements and their renegotiation policy, improvements for tendering processes, upstream risk mitigation, institutional framework and financial issues. Other reports include ADB and World Bank (2014) <i>Indonesia Geothermal Tariff Reform: Tariff Methodology Report</i> and World Bank (2015), <i>The Geothermal Production Bonus- Methodology Report to MEMR</i> , which analyzed the recommended Production Bonus rate and who will bear its cost for different types of geothermal projects.

### **4.3 LINK TO CPF, OTHER BANK OPERATIONS AND THE WBG STRATEGY**

72. **The PDOs of this operation closely support CPF and twin goal objectives.** The PDO are in line with the engagement areas of Sustainable Energy and Universal Access, and Delivering National Infrastructure in the draft CPF FY16-FY20. This operation anchors the overall World Bank Group energy and extractives engagement strategy in Indonesia. The goals of this strategy are to support the Government’s objective of moving toward universal access to

reliable, modern energy, and to create opportunities for Indonesia to shift toward a more secure and sustainable energy development path, through alternatives to coal. The strategy draws on the World Bank Group’s Energy Directions Paper that prioritizes universal access to reliable modern energy, supports all forms of renewable energy, and creates enabling environments for transitions to sustainable energy. The Indonesia strategy is informed by long-standing and in-depth TA and analytical work and by the experience of energy sector investments by the IFC and IBRD, for example, in geothermal and distribution. The WBG strategy mobilizes a wide range of resources for policy dialogue, investment and advisory services. The DPL anchors this engagement and reinforces the coordination and collaboration with other development partners – in particular ADB, AfD, and KfW – which builds up overall international support to Indonesia in shifting its energy sector to a more sustainable path. The Bank has also recently met with IsDB and USAID-funded clean energy program managers to explore cooperation opportunities.

#### **4.4 CONSULTATIONS, COLLABORATION WITH DEVELOPMENT PARTNERS**

73. **The Government’s overall objectives for the energy sector have been discussed significantly in public and with key stakeholders.** This includes, for example, discussions on the National Medium-term Development Plan (RPJMN) for 2015-2019. Many of the individual policy measures supported in this operation have also been separately consulted upon. For example, PLN held consultations with industry stakeholders on tariff adjustments, and disseminated to other stakeholders (for example, Ministry of Finance media training on PBR). In addition to technical support from the World Bank and ADB, MEMR conducted a consultation process during the development of policy and regulatory reforms in the geothermal sector involving various stakeholders such as Ministry of Finance, PLN, Pertamina/PGE, and private geothermal developers. Similarly in relation to the agenda on regulatory simplification and the OSS, not only for IPP but more broadly, a series of consultations were held by BKPM and key ministries on the reforms and for the socialization of the new regulation and licensing application procedures.

74. **The proposed DPL series is part of a broader package of policy-based financing support to the Government’s energy sector reforms from development partners.** Policy-based financing operations from the Asian Development Bank, AfD and KfW, have been prepared against a substantially similar set of policy actions (with ADB providing financing of US\$ 500 million, including US\$ 100 million from the ASEAN Infrastructure Fund, AFD US\$ 150 million equivalent in euro and KfW US\$ 200 million). This reflects long-standing energy sector collaboration in Indonesia, along with a well-established history of parallel policy-based financing operations with the ADB. Joint coordination and discussion meetings are being held with the Government, along with coordination on related TA activities (often financed by other partners, such as the Government of Australia, through trust funds). While the policy directions and overall objectives of the different operations are similar, there are some differences in the coverage of actions in terms of scope and timing.

## 5. OTHER DESIGN AND APPRAISAL ISSUES

### 5.1 POVERTY AND SOCIAL IMPACT

75. **The prior actions in the operation are expected to have positive poverty and social impacts over the medium-term while any potential near-term impact via tariff increases is projected to be limited.**<sup>41</sup> Over the medium term the prior actions under Pillar B, and C are expected to support expanded access to better quality electricity services. As highlighted in the 2013 World Bank Group Energy Directions Paper, improved quality of access to electricity services is essential to reducing poverty and building shared prosperity, through supporting, for example, education, health and employment outcomes.<sup>42</sup> In the near-term the main channel of impact is through the possible effects of adjustments to electricity subsidies and tariffs under Pillar A. There may also be localized impacts, for example, via employment generation, of new investments stimulated by the Prior Actions in Pillars B and C.

76. **To assess the near-term poverty impact of tariff adjustments, it is necessary first to analyze evidence on connection, reliability and consumption patterns.** There are a number of different measures of electrification in Indonesia (see Annex 5 for more details). Furthermore, evidence on the quantity, quality and reliability, affordability and duration of supply is limited and subject to data quality issues. As highlighted above, MEMR data indicates an electrification ratio in 2014 of 84.4 percent (defined as the share of households that have the benefit of electricity power from PLN and non-PLN sources), while the PLN ratio (based on PLN grid and non-grid connections) is slightly lower.

77. **The National Socio-Economic Survey (Susenas) can be used to measure connections, but it has limitations in describing conditions for access to electricity.** Susenas can be used to estimate the number of households with some kind of connection to an electricity supply system and provides households' estimates of their reported expenditure on electricity from which to look at distributional impacts of tariff changes. However, it does not have information about the levels or quality and reliability of electricity actual supplied or the type of PLN customer (e.g., pre or post-paid, grid or non-grid). Annex 5 provides more details on the discrepancies between these ratios which are partly based on the survey nature of Susenas and the administrative data for PLN and MEMR. The discrepancies are partially explained by shared connections, including apartments, and possibly illegal connections. In particular, Susenas surveys estimate that there are about 7.5 million households who have electricity from PLN with no meter installed, which is about 11.8 percent of total households in Indonesia.

78. **Susenas data suggest that the majority of the poor and vulnerable are consumers with low installed electricity capacity (<1300 VA) whose tariffs were not increased under the prior actions in the DPL.** Using PLN's definition of connection, and including the so-called "no meter" households, Susenas indicates that 91 percent of the poor and 94 percent of the vulnerable have some kind of connection to electricity. There is no significant difference between income groups, or by gender, and the share of connections is high in urban households. Fifty

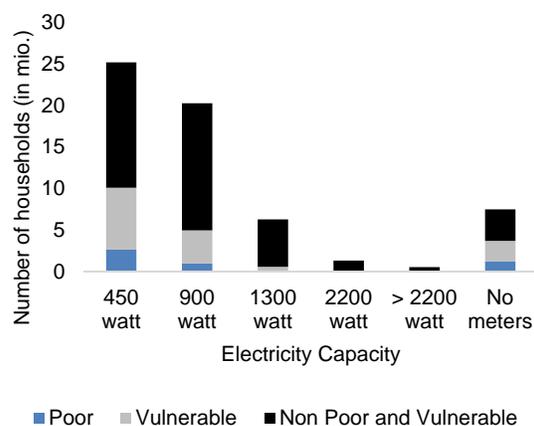
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<sup>41</sup> This section draws on an internal PSIA background paper.

<sup>42</sup> For an example of a group of recent studies that have estimated the effects of electrification on household incomes, employment, and education undertaken, while allowing for the possibility that the connection status of the households is endogenous, see van de Walle, D. et al (2013), "Long-Term Impacts of Household Electrification in Rural India", World Bank Policy Research Working Paper 6527.

three percent and 20 percent of the poor are consumers with 450 VA and 900 VA installed capacity respectively, while the equivalent percentages are 51 percent and 27 percent respectively for the vulnerable. A quarter of poor households and 17 percent of vulnerable households did not have a meter.<sup>43</sup>

**Figure 3: Poor and vulnerable households are mainly on lower voltage connections**

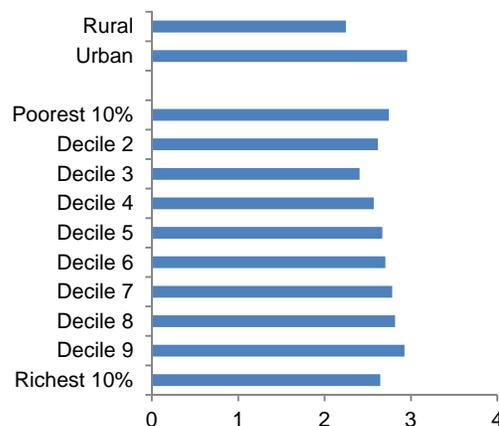


Note: No meter is for households who have access to PLN electricity but do not have any meter installed. This category includes households with shared connections or illegal connections.

Source: Susenas 2014, WB staff calculation

**Figure 4: Electricity expenditure shares are low, averaging just under 3 percent**

(household electricity expenditure, percent of total expenditure)



Source : Susenas 2014, WB staff calculation

79. **On average, Susenas data indicates that households spent about 2.7 percent of their expenditure on electricity in 2014.** The poorest 10 percent spent about 2.7 percent of their expenditure on electricity, which is relatively low compared to fuel (6.3 percent of expenditure), despite only 51 percent of the poorest 10 percent of households using fuel. A similar trend is found for the richest 10 percent who spent about 2.6 percent of their expenditure on electricity and about 5 percent on fuel. In terms of expenditure, female and male headed households on average spend only 2.8 and 2.6 percent of their total expenditure on electricity, respectively.<sup>44</sup>

80. **Given their connection characteristics, the direct impact on the poor and vulnerable from the 2014 and 2015 electricity tariff increases for industrial, business and large residential customers is relatively limited.** Only 2 percent and 4 percent of the poor and vulnerable respectively were on 1300 VA or more installed capacity and subject to the tariff increases in 2014. Indirect effects via broader prices also appeared limited, with inflation dampened by weaker growth momentum in late 2014.<sup>45</sup>

<sup>43</sup> Further study is required to understand the cost sharing mechanism between poor and vulnerable households who share electricity connections to develop assumptions for assessments of tariff increases on households with no meter.

<sup>44</sup> The electrification ratio (PLN basis) for female and male headed households are 98 and 96 percent respectively (statistically significantly different at the 5 percent level). Female headed poor households are more likely than male headed poor households to have connections without a meter installed, with the gender gap even more pronounced for non-poor households.

<sup>45</sup> See World Bank Indonesia Economic Quarterly December 2014.

81. **Depending on its scope and implementation, there is room for further improvements in the allocation of electricity subsidies to low income customers which is proposed as an indicative trigger for the second DPL.** Moving to improve the targeting of remaining electricity subsidies would, if effective, by definition have limited direct impact on the poor.<sup>46</sup> Further analysis of the distributional impact of tariff reforms, and mitigating mechanisms, can help to inform reform design and the Bank is actively engaged in such analysis, including gender impacts.<sup>47</sup> A wide range of measures to mitigate the adverse impact of tariff adjustments are possible, for example, unconditional cash transfers have been successfully implemented in Indonesia to mitigate the adverse impact of fuel price increases.

82. **The Indonesian Government has made progress on reducing gender inequalities, with a greater focus on human development sectors than infrastructure and energy.** Indonesia's ranking in the Gender Inequality Index (GI), that focuses on reproductive health, empowerment and access labor markets, improved from 124<sup>th</sup> in 2011 to 103<sup>rd</sup> in 2013. Furthermore, gender parity has been achieved at all levels of education, women's representation in the policy sphere has increased, and gender-disaggregated data is captured in the national socio-economical surveys. The Indonesian Government's engagement on reducing gender inequality has focused on human development sectors such as health and education, but a gender lens is not yet widely used in key sectors such as energy and infrastructure. As mentioned above, and noted in Annex 5, there are quality issues relating to current available survey data on energy access that can be disaggregated by gender. However, analytical work from other countries, such as analysis of the impact of household electrification in rural India (de Walle et al, 2013, cited above) points to the positive impact for extra work for both men and women (the latter mainly more casual work) and significant positive effects on schooling only for girls.

## 5.2 ENVIRONMENTAL ASPECTS

83. **In terms of energy-related emissions, the DPL series is expected to generate positive net environmental benefits, and to reduce the risk for an even greater share of coal in power generation compared to the business-as-usual (BAU) scenario.** The efficiency and demand reduction incentives created by the tariff reform prior actions to reduce subsidies and move towards cost-reflective electricity tariffs, and the measures supporting an increase in gas and renewables (including geothermal power) in the power generation mix, will have positive impacts on global and local emissions relative to a baseline absent such reforms. While the proposed programmatic series will not eliminate the expected increase of the share of coal-fired power generation, which currently represents 60 percent of the Government's generation program, the DPL policy actions will boost renewable development and efficient use of electricity to mitigate local and global environmental impacts. This will complement GoI efforts for its Intended Nationally Determined Contribution committing to unconditionally reduce GHG

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<sup>46</sup> The current subsidy to lower voltage categories (450 and 900 VA) has relatively low exclusion error but high inclusion error due to the high coverage.

<sup>47</sup> As an illustration, it is instructive to consider the simulated magnitude of the impact on estimated poverty rates if electricity subsidies were removed in their entirety, as a theoretical example, and the consequent potential mitigation costs through compensation programs. Preliminary simulations based on Susenas data suggest that if electricity subsidies had been removed in 2014 for all households monthly electricity expenditure on average would have increased from 2 percent to 3.8 percent of budgets for households on 450 VA and from 2.7 percent to 3.5 percent for those on 900 VA. Estimating a new poverty line after the increase in tariffs allows for the simulation of the poverty impact which, absent compensation, is estimated to be 0.96 percentage points (versus the official 2014 poverty rate of 11.3 percent), with a uniform impact by gender. Initial simulations illustrate that the poverty impact can be offset with the right amount of benefit and that the required compensation is lower than the existing subsidy, thus affordable (although this does not cover political and administrative costs).

emissions by 29 percent by 2030, and by an additional 12 percent under certain conditions, including access to finance. The policies and regulations adopted now can turn the sector onto a greener path with lasting positive local and global environmental impacts.

84. **Indonesia is a top-ten GHG emitter, primarily due to high rates of deforestation and land degradation, but the share of energy-related emissions are expected to rise.** Based on emissions data through 2011 – the last year for which comprehensive global emissions data are available – Indonesia is the fifth-largest emitter when its land-use change and forestry (LUCF) emissions are included in its profile and the eighth-largest emitter when these emissions are excluded. The vast majority (62 percent) come from LUCF, primarily due to deforestation and peat degradation. Emissions from energy (26 percent), the country’s second-largest source, are significantly less important but growing fast, increasing 80 percent in absolute terms since 1995. Plans and projections for about the next 10 years indicate that coal and oil would likely dominate Indonesia’s energy mix, particularly with the expansion of coal-fired power generation. Under a business as usual scenario, future energy-related emissions are likely to continue to rise accordingly.

85. **The renewables promotion, efficiency and demand reduction incentives supported by the proposed operation are expected to have positive impacts on global and local emissions.** The PBR regulation and phase out of subsidies are expected to reduce electricity demand and system losses, and therefore result in reductions / savings in power generation compared to the BAU scenario. Several actions support the scale up of renewable energy and gas availability, with increased geothermal power development having large, positive local and global benefits in terms of emissions, relative to the BAU scenario. Relative to the BAU, the prior actions to streamline administrative procedures for central government licenses will on the margin support investments in renewable IPPs, relieving one of the constraints in the particularly difficult policy environment that they currently face. These actions also can help deliver IPPs to replace captive diesel generation. This will have local environmental benefits. Even in a narrowly-defined worst case scenario it is estimated that the marginal increase in GHG emissions would be small in relation to the GHG benefits of the overall operation.

86. **The estimated GHG emissions impact associated with the prior actions are a potential reduction in the range of 254 to 487 million tons, as detailed in the Table below.** In the context of geothermal power development in Indonesia, there is significant uncertainty around the impact of policies on the volume of new generation capacity and rate of development of geothermal reserves, as well as around the business-as-usual level of development absent the Geothermal Law and related reforms. Consequently, two indicative reform impact scenarios for geothermal power development over 2015 to 2024 (the time period of the 2015 RUPTL) are considered relative to the business-as-usual scenario.<sup>48</sup> In the high impact reform scenario the Geothermal Law is complemented by strong progress in associated regulations, helping to deliver new capacity in line with the RUPTL target, while in the moderate impact policy scenario the passage of the Geothermal Law is accompanied by some progress on related regulations and tendering reforms.<sup>49</sup> In terms of the other policy areas, reduction of subsidies also has a

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<sup>48</sup> Making reliable predictions beyond the timeframe of the RUPTL into the late 2020s and beyond would be speculative, and the analysis is limited to investments as may be achieved over the RUPTL horizon of 2015-2024.

<sup>49</sup> The World Bank-ADB *Unlocking Indonesia’s Geothermal Potential* report, prepared in 2013-2014 prior to the passage of the 2014 Geothermal Law includes a review of the probable capacity and earliest possible commissioning dates of related geothermal projects. This identifies cumulative capacity of 4,630 MW of possible geothermal

significant impact.<sup>50</sup> In the case of the PSC (Production Sharing Contract) prior action, while quantification is speculative, the impacts are likely to be positive and even in the worst case of limited policy effectiveness the impacts will unlikely be negative. In addition to the expected GHG outcomes of the specific actions above, the policy and institutional reforms supported by the DPL series are expected to promote a policy environment more conducive for investment in renewables in the medium to longer term which would help Indonesia to make progress towards achieving its INDC targets for GHG mitigation. It should be noted, however, that GHG impact for policy interventions is inherently uncertain compared to specific investment projects particularly because the number, size, and timing of investments that may materialize as a result of specific policy interventions are unknown. In addition, other policy actions associated with GHG reductions, which depend on economic conditions and other factors, cannot be predicted.

**Table 4: Summary of estimated GHG and local emissions impacts associated with Prior Actions**

PA#		GHG emissions Reduction, million tons		Annual damage cost reduction, \$US mn			
		Annual	Lifetime <sup>1</sup>	GHG <sup>4</sup>	Local	Total	
1&2	Subsidy & tariff reform	1.1	21.8	32.7	0.21	32.9	2.4 TWh reduced CCGT generation
3	PLN PBR	0.7	13.6	20.5	0.41	20.9	1 percent heat rate improvement assumed for 750 GWh of coal generation only <sup>3</sup>
4	Gas						Not quantified
5&6	IPP license <sup>2</sup>	-0.73	-14.7	-22.0	28.20	6.2	Worst case
7&8	Geothermal						
	- High policy impact scenario	23.3	466	699	Negligible	699	Geothermal Law plus strong progress on associated regulations and reforms
	- Moderate policy impact scenario	11.7	233	350	Negligible	350	Geothermal Law plus some progress on regulations and tender reforms
Total							
	High geothermal policy impact	24.4	487	730	28.8	759	
	Moderate geothermal policy impact scenario	12.7	254	381	28.8	410	

Notes: <sup>1</sup> Over 20 years; <sup>2</sup> Negative sign means emissions *increase*; <sup>3</sup> Additional emissions reductions would follow from PBR incentives related to other generation projects and further transmission and distribution loss reductions.

projects, implying additions of some 3,130 MW that could be achieved by 2022 under a set of institutional and policy changes. In the absence of these reforms, it is assumed that the achievement at the pace of additions achieved over the past few years would unlikely be much more than 50 percent of this total identified capacity. This level is used to define the assumed business-as-usual scenario of 1,565 MW in new capacity over 2015 to 2024. In the high impact reform, there is assumed to be 4,820 MW of new geothermal capacity over this period, in line with the 2015 RUPTL target, bringing the 2024 total to some 6,320 MW. This is 3,255 MW above the business-as-usual scenario. The moderate impact scenario is assumed to deliver new capacity to move half way to the RUPTL target, i.e. 3,130 MW of new geothermal capacity. This is 1,565 MW above the business-as-usual scenario. In each scenario there will be emissions savings through geothermal generation as opposed to the assumed alternative of coal, with the reform impact calculated relative to the savings under the business as usual scenario level of geothermal power.

<sup>50</sup> These reductions are estimated under conservative assumptions that, due to cost differences, the reduced consumption leads to a marginal reduction of gas fired CCGT generation, whose emissions per kWh are half those of coal.

<sup>4</sup> Based on US\$ 30/ton (baseline 2015 value in the *Social Value of Carbon in Project Appraisal*, Guidance Note to World Bank Group Staff, September 2014).

87. **Prior actions 5 and 6 covering administrative procedures for a set of central government licenses focus on streamlining of administrative procedures rather than changes in substantive processes, such as those relating to social or environmental due diligence.** Based on available information, the streamlined administrative procedures are not expected to reduce or change the underlying substantive licensing requirements.

88. **The development of geothermal energy requires careful regulation and implementation to avoid negative impacts on forests and on forest-dependent peoples.** Almost 70 percent of current geothermal potential is situated in land formally classified as forest under the management of the Ministry of Environment and Forestry (MOEF), either in Protection Forests (*Hutan Lindung*, forests in which sustainable management activities can be undertaken) and Conservation Forests (*Hutan Konservasi*, forests in which no consumptive uses are allowed) which are important in terms of biodiversity, critical ecosystem services and livelihoods.<sup>51</sup>

89. **Indonesia has a comprehensive legal and institutional framework for forests, biodiversity protection and environmental impact assessment and licensing, including aspects related to management of direct, induced and cumulative impacts.** There are, nonetheless, institutional and capacity gaps, particularly regarding enforcement of the existing legal framework, among government agencies and government levels, which may hinder the adequate implementation and management of environmental risks. The World Bank and its development partners are committed to providing guidance and resources to support the Government in improving the environmental and social outcomes of its energy portfolio, as discussed below.

90. **The primary environmental and social risks associated with the geothermal power prior actions, particularly the provisions of the Geothermal Law expanding the forest areas where geothermal power development may occur, derive from the fact that most geothermal potential is indeed located on forest land.** When explored and exploited using appropriate technologies and sustainability measures, geothermal power development can provide an incentive for the proper management of forests and support the livelihoods of forest-dependent communities. If well developed, including strong benefit sharing mechanisms, in partnership with local communities, geothermal power development has the potential to serve as a vehicle for investing part of revenues toward forest protection and community development. Nevertheless, while geothermal power development has a relatively limited footprint compared to other energy options, the primary potential risks include the loss of forests and related ecosystems, forest fragmentation/modification, pollution during plant operation, and potential disruption of the natural water balance of forest ecosystems. Socially, primary risks are associated with land acquisition, particularly given the weak land tenure and access regime in forests.

91. **Recognizing the important potential of sustainably exploiting geothermal resources for geothermal power in forests, MOEF as the licensing authority, has moved to address**

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<sup>51</sup> Indonesia operates with a dual system of control between forest and non-forest land creating overlapping land-related regulations and guidelines, and ambiguous provisions regarding the management and administration of land and land-based natural resources. In addition, there are a large number of customary (*Adat*) communities which subscribe to (largely unwritten) *adat* laws. Land use and tenure is one of the primary areas of disagreement between the state and *adat* communities, particularly in forest lands.

**institutional constraints to geothermal power exploration and development in the Forest Estate.** In that vein, MOEF has drafted an implementing regulation of the 2014 Geothermal Law for ‘indirect utilization’, the relevant provision for geothermal power development, to allow utilization of low-sensitivity conservation forest areas for indirect utilization geothermal activities subject to appropriate environmental due diligence and management. These will be supplemented by new regulations to be drafted by MEMR outlining the requirements for geothermal power development management, including environmental and social aspects.<sup>52</sup> These new regulatory reforms are not anticipated to dilute the requirements for adequate environmental and social impact assessment and management. Notably, the reforms represent an important opportunity for strengthening environmental and social management of geothermal power development.

92. **Currently the Government is promoting decentralized management of forests, through the establishment of decentralized management units – *Kesatuan Pengelolaan Hutan* (KPH) or Forest Management Units (FMUs) – that include the protection and conservation forests.** KPHs are entities that will govern and manage all forest areas and functions at the local level, based on forest management plans, in close consultation with local government, community groups, local industries, license holders, and other stakeholders. 620 KPH are targeted to be established by 2019 but their institutional capacity for carrying out this mandate needs to be strengthened and the issues of dual-system mentioned above resolved. The Bank’s Indonesia Forest Investment Program will support GoI’s efforts for targeted KPH institutional strengthening and building consensus around forest governance alternatives.<sup>53</sup>

93. **The World Bank’s broader country engagement and the new CPF under preparation support a portfolio of activities which aim to improve the environmental sustainability of the energy and forest sectors.** This includes additional investments in renewables, low carbon development and related infrastructure (pumped storage, hydropower, geothermal) and in electricity distribution, as well as analytical and advisory services.<sup>54</sup> The World Bank is committed to providing guidance and resources to support the Government of Indonesia in improving the environmental and social outcomes of their energy portfolio, including through the ongoing regulatory reform process supported through this series. Drawing upon existing resources including the Indonesia Natural Resources for Development Programmatic Approach (World Bank-executed technical assistance and analysis), the World Bank will support the Government to address social and environmental concerns associated with geothermal development and upstream in gas sector planning. Specific areas of support could include benefit-sharing mechanisms and environmental management. Activities in the forest sector, including the Sustainable Landscape Program and Indonesia Forest Investment Program,

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<sup>52</sup> As discussed above, the Geothermal Law includes general provisions for benefit sharing with local governments and communities.

<sup>53</sup> Specifically, the FIP is targeting strengthening of ten (10) KPHs (forest management units) to operationalize the GOI’s strategy for improving local forest management. Such an approach is considered critical to improving management of, and support for, forests by local government and stakeholders. Project support includes efforts to improve the existing policy and institutional framework for KPHs, strengthen related knowledge management, and improve forest management practices through activities to develop and implement forest management plans, demarcate KPH boundaries, empower communities to generate benefits, and build capacity of local governments to perform their related mandate.

<sup>54</sup> For example, covering issues such as geothermal regulatory frameworks and capacity building, watershed management for geothermal projects, biodiversity management for hydropower, financing options and local benefit sharing for hydropower investments, capacity building for smart grid.

will support strengthening of forest management and governance, while the Development Grant Mechanism is expected to build capacity of *adat* communities to secure land access.

94. **In addition, the Government of Indonesia has long-standing and well-regarded collaborations with the Governments of Germany, Denmark and Canada on programs to improve environmental impact assessments.** The Bank also has extensive engagements with the Government of Indonesia on environmental issues and has assisted in upgrading the legal and institutional capacity of the Ministry of Environment through a series of loans in the 1990s and has more recently provided grant-financed TA on improving the implementation of the environmental impact assessment process at the decentralized level.

### **5.3 PUBLIC FINANCE MANAGEMENT, DISBURSEMENT AND AUDITING ASPECTS**

95. **The overall fiduciary risk to this operation arising from Indonesia's public financial management (PFM) system, the use of budget resources and its foreign exchange environment as controlled by the Central Bank is assessed to be moderate.** The country PFM system and the government's commitment to reform are adequate to support the operation.

96. **Steady progress has been made in recent years in the way Indonesia's public finances are managed and in increasing transparency and independent oversight.** A repeat assessment of the Public Expenditure and Financial Accountability (PEFA) was conducted in 2012, following a first assessment in 2007. The results showed that Indonesia has made positive steps in strengthening the quality of its PFM systems; fourteen of the twenty six indicators registered an improvement (while two declined). More recently the Integrated Financial Management Information System was rolled out in 2014 and operational guidelines to implement full accrual accounting have been agreed and are being used since the start of 2015. Since 2009 GOI financial statements have received a qualified audit opinion, as opposed to a disclaimer before, with 71.3 percent of ministries and agencies achieving unqualified audit opinions in 2014. The Government publishes the annual budget in a timely manner, through the MoF website. Further improvements are required in several areas and are supported by a multi-donor trust fund managed by the Bank.

97. **The foreign exchange control environment is assessed to be generally satisfactory.** Bank Indonesia (BI) was last subject to the transitional procedures under the Fund's safeguards assessment policy in 2002. That assessment recommended remedial action to address a number of vulnerabilities in the audit arrangements of BI. The main recommendations have been implemented. Audited financial statements for BI for 2014 have been reviewed and the audit report issued by BPK (the Supreme Audit Institution) contained an unqualified opinion.

98. **The borrower is the Republic of Indonesia and this operation is a single-tranche IBRD loan of US\$ 500 million.** The loan will be made available upon loan effectiveness, provided that the Bank is satisfied with the progress achieved by the Borrower in carrying out the Program and with the adequacy of the Borrower's macroeconomic policy framework. The Government has confirmed that Indonesia will borrow this amount as an IBRD Flexible Loan with Variable Spread in US dollar currency with an annuity repayment schedule linked to commitments.

99. **The loan disbursement will follow the standard Bank procedures for DPLs.** The loan amount will be disbursed into a foreign currency account of the borrower at Bank Indonesia that forms part of Indonesia's official foreign exchange reserves. The equivalent rupiah amount will immediately be transferred to the General Operational Treasury account of the borrower that is

used to finance budget expenditures, as the loan is intended to be used to support the general Government budget. This arrangement has been followed for the previous DPLs. The borrower, within 30 days, will provide to the Bank a written confirmation that this transfer has been completed, and provide to the Bank any other relevant information relating to these matters, including the exchange rate of the conversion from US dollars to rupiah, that the Bank may reasonably request. Disbursements of the loan will not be linked to any specific purchases and no procurement requirements have to be satisfied, except that the borrower is required to comply with the standard negative list of excluded items that may not be financed with Bank loan proceeds, as defined in Schedule 1 to the loan agreement. If any portion of the loan is used to finance ineligible expenditures as so defined in the loan agreement, the Bank has the right to require the Government to promptly, upon notice from IBRD, refund the amount equal to such payment to the Bank. Amounts refunded to the Bank will be cancelled from the loan.

#### **5.4 MONITORING, EVALUATION AND ACCOUNTABILITY**

100. **The program dialogue is ongoing as part of a broad and deep WBG engagement with the Government on energy sector issues, including related technical assistance and investment projects.** The policy dialogue on the DPL series has been undertaken through joint dialogue and regular coordination meetings with the Government and partners providing parallel policy-based financing. The main counterparts are the Coordinating Ministry for Economic Affairs on the overall program, MEMR on electricity tariffs, renewables, access and gas, MOF on performance based regulation of PLN and with PLN on power sector issues. Given the significant delivery ambitions for the sector, the Government has created a Project Management Unit (PMU) under MEMR as a special task force on energy sector reform. The results indicators and their monitoring will be based on, for example, PLN financial reports and government monitoring of the National Energy Plan and National Medium-Term Development Plan, as well as dialogue with key ministries and agencies as part of ongoing TA and investment projects.<sup>55</sup>

101. **Grievance Redress.** Communities and individuals who believe that they are adversely affected by specific country policies supported as prior actions or tranche release conditions under a World Bank Development Policy Operation may submit complaints to the responsible country authorities, appropriate local/national grievance redress mechanisms, 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](http://www.inspectionpanel.org).

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<sup>55</sup> In addition, where feasible due to data availability, the trends in access will also be examined at a household gender-disaggregated level.

## 6. SUMMARY OF RISKS AND MITIGATION

102. **The overall risk rating of this operation is substantial.** Major risks that could have a substantial impact on the operation achieving its development objective include: (a) political economy and governance challenges, and (b) relatedly sector strategies challenges; (c) environmental and social, and related stakeholder, risks (d) weak institutional and implementation capacity; and (e) uncertainty around the macroeconomic environment both globally and domestically. These risks, if materialized, could singly or jointly impact the Government's willingness and ability to implement the reforms or make the outcome of the development agenda less successful. Some may also pose challenges to mobilizing the necessary financing and implementing investments in infrastructure and services.

103. **Political and Governance:** Energy sector reform is a clear priority for the government and the DPL series will fall within its first term. Some bold reforms have already been implemented, but the political environment remains complex and the sector as whole has long-standing vested interests, which may be threatened by reforms that reduce the space for corruption and rent-seeking by increasing transparency and reducing discretion, e.g., on IPP licensing reforms. The PBR is not universally welcomed by PLN as the PBR would enhance the regulatory role of the Government. PLN is itself seeking ways to improve its operations, including a recently announced reorganization, which in turn could add to complexity of implementing the PBR. The DPL actions primarily correspond to high impact reforms based on regulations or decrees, predominantly at a Ministerial level, related to already-approved legislation. Given this approach political and governance risks are rated substantial.

104. **Sector Strategies:** In terms of sector strategies, risks appear strongest for gas. The gas value chain is complex and its development has traditionally taken place only slowly. A high degree of policy clarity and implementation consistency are needed in order to send the right signals to participants, both incumbents and new entrants. The risk of coordination failure is typically significant. An overriding source of risk is that the process of debating and adopting a new Oil and Gas Law becomes drawn out. A further source of risk is the state-led planning model for gas infrastructure development, which, unless regulated carefully and opened up to greater transparency, may lead to inefficiency and poor governance standards. To partially address some of these risks, the Government has already taken measures through secondary legislation in areas of acute investor uncertainty, regulatory gaps or ambiguity. The DPL series supports further measures to strengthen regulatory oversight and bolster performance in the state sector and, more generally, seeks to provide a reform anchor to mitigate residual uncertainty that will exist so long as the new Oil and Gas Law continues to be debated. The engagement on triggers #3, #4, and #5 will be supported by the Bank-executed Natural Resources for Development trust fund-supported programmatic technical assistance.

105. **Environmental and social and stakeholder risks:** The primary environmental and social risks, and relatedly stakeholder risks, associated with the operation derive from the fact that most geothermal potential is located on lands classified as forests (in both protection and conservation forests). When explored and exploited using appropriate technologies and sustainability measures, geothermal power development can provide an incentive for the proper management of forest and support the livelihoods of forest-dependent communities. If well developed, including strong benefit sharing mechanisms, in partnership with local communities, geothermal energy development has the potential to serve as a vehicle for investing part of energy revenues toward forest protection and community development. Nevertheless, while geothermal power development has a relatively limited footprint compared to other power generation

options, the primary potential risks include the loss of forests and related ecosystems, forest fragmentation/modification, pollution during plant operation, and potential disruption of the natural water balance of forest ecosystems. Socially, primary risks are associated with land acquisition, particularly given the weak land tenure and access regime in forests. The World Bank and its development partners are committed to providing guidance and resources to support the Government in improving the environmental and social outcomes of its energy portfolio, as discussed above.

106. **Institutional capacity for implementation and sustainability:** Indonesia’s implementation challenges are well-known, and highlighted in the recent SCD. Currently, there is a substantial risk related to institutional capacity in core agencies to deliver on the implementation and sustainability on complex reforms in the energy sector. This is notwithstanding efforts by the new administration to strengthen its capacity, for example, through establishment of the PMU in MEMR. The Bank is providing support to the Government for reform implementation through TA and investment lending. In terms of implementation of PBR, risks that PLN might not be able to achieve performance benchmarks set under the PBR due to internal inefficiencies are also significant. In an effort to improve efficiency PLN has recently announced a reorganization, which, as discussed above, may delay in the short run, or if the reorganization is poorly designed or executed in the medium term, its ability to respond to new incentives. As noted in paragraph 4 outlining the Bank’s engagement, the Bank will be engaged with PLN during this period. This includes *inter alia* supporting the Government to assess PLN’s cost of service as well as engaging PLN on improved procurement, contract management, and integrated catchment management approaches for hydropower.

107. **Macroeconomic risks:** The Government faces fiscal pressures, amidst a more challenging international environment (given prospective Federal Reserve tightening and the slowing of growth in emerging markets and commodity demand). As discussed above, steps have been taken, for example, through pre-financing, to mitigate fiscal financing risks arising from a short-fall of revenues and if expenditure cuts are used to limit financing needs then the near-term growth impact is also likely to be limited, given that the fiscal sector is small. Furthermore, the overall macro policy framework is responsive to risks of imbalances, and a range of contingency financing and crisis protocols are in place.

**Table 5: Systematic Operations Risk Rating (SORT)**

Category	Risk	Rating (H, S, M or L)
1	Political and governance	S
2	Macroeconomic	M
3	Sector strategies and policies	S
4	Technical design of project or program	L
5	Institutional capacity for implementation and sustainability	S
6	Fiduciary	M
7	Environment and social	S
8	Stakeholders	S
9	Other	n/a
	Overall	S

*Source:* World Bank staff.

## ANNEX 1: POLICY AND RESULTS MATRIX

Prior actions and Triggers		Results
Prior Actions under DPO 1	Indicative Triggers for DPO 2	
<b>Pillar A—FISCAL SUSTAINABILITY</b>		
<b>Program Development Objective A:- Reducing the fiscal cost of electricity provision</b>		
Prior action #1. The Minister of Energy and Mineral Resources has issued regulations to phase out electricity subsidies for: (a) large- and medium-sized industrial and business categories; and (b) large- and medium-sized residential consumers, as evidenced through MEMR Regulation 9/2014 and MEMR Regulation 19/2014, and PLN has implemented the corresponding tariff increases.	(Indicative) Trigger #1 The Borrower issues a decree with actions and roadmap for improved (i) allocation of electricity subsidies to low income consumers, and (ii) tariff structure and efficient cost allocation methodology to tariff categories.	Result Indicator A1: Reduction in the electricity subsidy transferred from the government budget to PLN as electricity tariffs move toward economic cost: <ul style="list-style-type: none"> <li>• Baseline (2013): IDR 79 trillion (realized)</li> <li>• Target (2016): IDR 40 trillion</li> </ul>
Prior action #2. The Minister of Energy and Mineral Resources has issued regulations for the monthly automatic indexation of electricity tariffs – to reflect changes in oil prices, the exchange rate, and inflation – for: (a) large- and medium-sized industrial and business categories; and (b) large residential consumers, as evidenced through MEMR Regulation 31/2014 and MEMR Regulation 9/2015; and, from January 2015, PLN has adjusted its tariffs in accordance with said regulations for the abovementioned categories.		
Prior action #3. The Minister of Finance has signed the MOF Regulation that lays out a performance-based regulation framework covering: (a) setting targets for controllable costs, and the calculation of the revenue requirement for PLN’s operations and investments; and (b) the calculation and disbursement of budget support to PLN based on revenue requirement and approved tariffs.	(Indicative) Trigger #2 The PBR Inter-Ministerial Committee is (i) operational and has agreed on the benchmarks for the initial implementation of PBR for PLN and (ii) is supported by a standing secretariat housed in MOF.	Result Indicator A2: PLN tariffs and electricity subsidy calculation is based on an efficient benchmarks for network losses, thermal plant efficiency, operational expenses, and a productivity improvement factor approved under a PBR framework: <ul style="list-style-type: none"> <li>• Baseline (2013): No</li> <li>• Target (2017): Yes</li> </ul>
<b>Pillar B---INVESTMENT CLIMATE</b>		
<b>Program Development Objective B: - Improving the investment climate in the energy sector</b>		
Prior action #4. The Minister of Energy and Mineral Resources has issued a regulation for a systematic and time-bound process for managing expiring production sharing contracts as evidenced through MEMR Regulation 15/2015.	(Indicative) Trigger #3 The Borrower adopts revised fiscal terms for production sharing contracts to increase investment into the upstream/midstream including incentives for developing marginal fields, and unconventional resources.	Result Indicator B1: PLN enters into new long-term agreements for domestic and/or inter-island gas supply, as measured by the daily gas volume to be supplied under new contracts or contract extensions signed after December 2015 of 5-years or greater duration. <ul style="list-style-type: none"> <li>• Baseline (2013): Zero</li> </ul>
	(Indicative) Trigger #4 The Borrower introduces regulatory measures in the gas mid-stream that would encourage	

	mid-stream entities to accelerate investment in critical gas processing, transportation and storage facilities.	<ul style="list-style-type: none"> <li>Target (end 2016): 125 million cubic feet per day</li> </ul>
	(Indicative) Trigger #5 The Borrower completes a process of detailed gas infrastructure project planning that builds on the 2015 Gas Roadmap and which addresses land use, environmental and social considerations and financing arrangements.	
Prior action #5. The Minister of Agrarian and Spatial Affairs/Head of National Land Agency and the Minister of Environment and Forestry have amended regulations to streamline administrative procedures (relating to licensing of building rights, land use and location permits) and reduce the time required to obtain central government's licenses for setting up independent power producer projects, as evidenced through MoEF Regulation P-97/2015 and MASA Regulation 2/2015.		<p>Result Indicator B2: Reduction in the number of days to process an (gas) IPP license:</p> <ul style="list-style-type: none"> <li>Baseline (2015): 600 days</li> <li>Target (2016): 300 days</li> </ul>
Prior action #6. The Minister of Energy and Mineral Resources and the Minister of Environment and Forestry have issued regulations to delegate the licensing authority for setting up independent power producer projects to the Indonesia Investment Coordinating Board for inclusion in its national one-stop-service for investment, as evidenced through MEMR Regulation 35/2014, MoEF Regulation 97/2014, as amended by MoEF Regulation 1/2015.		
<b>Pillar C---RENEWABLE ENERGY</b>		
<b>Program Development Objective C: Removing constraints to renewable energy expansion</b>		
Prior action #7. The Borrower has improved conditions for geothermal power development through the issuance of Geothermal Law No. 21 of 2014.	(Indicative) Trigger #6 The Borrower issues the implementing regulations for the 2014 Geothermal Law on the process to convert geothermal energy to electricity ("indirect utilization").	<p>Result Indicator C1: Geothermal power projects are developed according to the provisions of the Geothermal Law of 2014.</p> <ul style="list-style-type: none"> <li>Baseline (2013):No</li> <li>Target (2017): Yes</li> </ul>
Prior action #8. The Ministry of Energy and Mineral Resources has submitted to the Ministry of Law and Human Rights, a draft Government Regulation to implement the Geothermal Law No. 21 of 2014 provisions for the local benefit-sharing mechanism involving a "production bonus" payment by geothermal companies to local governments.	(Indicative) Trigger #7 The Borrower reviews performance of existing schemes promoting market-based mechanisms for development of renewable energy.	

***Pillar D---ACCESS***  
***Program Development Objective D: Expanding Access to Modern, Reliable Energy***

	<p>(Indicative) Trigger #8 The Borrower issues a national approach to electrification with improved coordination of institutional responsibilities, financing mechanisms and planning.</p>	<p>Result Indicator D1: Increase in household electrification rate:</p> <ul style="list-style-type: none"> <li>• Baseline (2014): 84.35 percent (MEMR figure)</li> <li>• Target (2017): 92.75 percent (MEMR target)</li> </ul>
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## ANNEX 2: LETTER OF DEVELOPMENT POLICY



MINISTER OF FINANCE  
OF THE REPUBLIC OF INDONESIA

### LETTER OF DEVELOPMENT POLICY

MINISTRY OF FINANCE

Jakarta, 26 October 2015

No.:S-846 /MK.08/2015

Mr. Jim Yong Kim  
President  
World Bank

Dear Mr. President

1. Since taking office in October 2014, the government of Indonesia has placed a particular emphasis on energy sector development, recognizing its crucial link with the country's economic and broader development performance. The purpose of this Letter of Development Policy is to provide an update on the Government's recent progress towards implementing its reform program and its medium term agenda with regard to strengthening the energy sector.

2. On behalf of the Government of Indonesia, we would like to express our appreciation for the support provided by development partners to energy sector reforms in Indonesia over the recent and longer term. We would also like to request the continued support of our development partners, including the International Bank for Reconstruction/World Bank (IBRD/WB), the Asian Development Bank (ADB), Agence Française de Développement (Afd) and KfW-Entwicklungsbank (KfW) to our reforms in the energy sector. We propose IBRD to provide policy-based loans, the first of which will be in the amount of \$500 million.

#### **Economic and Fiscal Situation**

3. Indonesia's economic growth averaged a respectable 5.8% over the last decade. Investment picked up strongly and returned to the pre-Asian financial crisis level of 33% of gross domestic product (GDP) in 2012. However, GDP growth has decelerated gradually since peaking at 6.5% in 2011 to 5.0% in 2014, its slowest pace since 2009. The more recent slowdown was caused by the decrease in global commodity prices, declining exports and weakening of investment growth. Private consumption continued to be a stable source of growth supported by Indonesia's growing middle class. The contribution of public spending to growth was modest as the government's fiscal space and investment in capital were limited by subsidy spending.

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4. In recent years, government finances have also come under increasing pressure due to the high costs of providing subsidies, particularly for energy consumption as well as declining growth in government revenues. Adversely impacted by the fall in commodity prices in recent years, revenue collection has fallen short of targets in 2013 and 2014.

5. The energy sector reflects many of the constraints facing the country's economy. For example, reflecting broader challenges in the quality of spending, energy subsidies for many years diverted funds away from much-needed investment in infrastructure and social welfare. This has adversely affected our country's ability to, among other things, provide access to electricity for around 35 million of our people. In addition, the private sector often ranks the lack of access to reliable electricity and the resultant need to opt for expensive captive generation as a major impediment to expanding industrial activity in the country. Regulatory uncertainty is often cited as a factor limiting investment in the energy sector.

6. The direct contribution of the energy sector to GDP growth, exports and revenues has been declining in recent years. Oil production has declined steadily and the country lost its status as a net oil exporter in 2004. Without significant additional refining capacity, Indonesia is expected to become one of the world's largest importers of gasoline by 2020. Similarly, without a significant increase in gas infrastructure investment, Indonesia will not be able to optimally develop its natural gas potential. The performance of the sector has not been contributing up to its potential in supporting overall development of the country, whether energy is exported or consumed domestically. The average oil and gas sector's share of real GDP declined from over 10 percent in 2000-2005 to slightly above 5 percent in the last five years. Similarly, the sector's share of export earnings declined from an average of 22.2 percent in 2000-2005 to 18.5 percent in 2010-2014.

#### **Government Response and Medium Term Agenda**

7. Since October 2014, President Joko Widodo has embarked on an ambitious reform program. The government has produced a bold nine point *Nawa Cita* vision for Indonesia that among other things promises to give our nation a competitive edge, and provide material improvements for our people, particularly for those living below the poverty line.

8. The government recognises that the country is undergoing a shift from being a net energy exporter to one that is importing increasing amounts of energy to meet domestic needs. Therefore, rather than being seen as mere commodities to be extracted and exported, what is required is a concerted effort to develop the country's energy resources by making it economic to supply these to domestic energy, oil and gas markets, so that it becomes a key enabler of productivity and sustained and inclusive national economic development.

9. The government initiated a series of energy sector reforms in 2013–2014 which will be accelerated during the 2015–2019 period. In particular, strengthening of the energy sector is highlighted as one of the main priorities within the government's National Medium Term Agenda (RPJMN 2015-2019). Key goals for the sector are to: (i) reliably and efficiently meet rising energy demand by expanding domestic supply of primary energy; (2) transition towards a sustainable energy sector development path through increased use of domestic gas, renewable energy and scaling up energy efficiency measures, and making the energy sector more efficient and competitive; and (3) achieve nearly universal access to electricity. As part of these broader objectives, the Government has placed a high priority on increasing generation capacity by 35 GW by 2019.

10. Strengthening energy pricing fundamentals is the first step towards using it sustainably, and the government has already made some sweeping reforms in this regards. In late 2014 and

early 2015, we took the decisive step of implementing a cost recovery pricing system, and dramatically reduced energy subsidy costs that had ballooned to an annual level of around Rp.310 trillion in 2013. These initiatives were confirmed by the revised budget that was approved in February 2015. They are expected, combined with the sharp decline in crude oil prices, to save Indonesia around Rp.200 trillion in 2015. For 2016, the government plans to lower PLN's subsidy even further within the context of continued tariff reform. This has allowed the government to shift spending from energy subsidies to economic development priorities, especially energy infrastructure development.

11. The government has also moved to improve regulatory certainty in the energy sector by (i) outlining clear procedures to manage expiring oil and gas production sharing contracts, (ii) drafting a new oil and gas law to replace the Law of 2001, (iii) streamlining the licensing of new private sector-led power projects, and putting in place improved purchase prices for power produced from various indigenous and renewable sources of energy.

#### **Improved Sector Governance and Reducing the Fiscal Cost of Electricity**

12. In January 2015, the government removed subsidies on gasoline and fixed the subsidy for diesel at Rp.1,000 per liter. Since January, implementation of the new cost recovery pricing system has been mixed, with prices not rising with the recent gradual increase in oil prices. In the future, the retail fuel prices will be adjusted periodically by the Ministry of Energy and Mineral Resources (MEMR) to reflect the cost recovery basis of the fuel products. In the case of electricity, the government first removed subsidies for industrial, commercial and large residential consumers in late 2014. In early 2015, the government established a system of monthly automatic tariff adjustments for these consumers that accounts for the exchange rate, the Indonesian crude oil price, and inflation, and has started phasing in these increases. The immediate impacts of subsidy removal measures are: (i) increases in the average electricity tariff to support sector sustainability and improved quality and reliability of supply, (ii) reducing the fiscal cost of electricity provision (with savings reallocated to other government programs), (iii) dampened growth in electricity demand with attendant savings from the avoided economic and environmental costs of electricity supply; and (iv) strengthened incentives for efficient use of electricity across the economy.

13. The removal of subsidies makes it possible for PLN to reduce its reliance on government subsidies and to focus on improving its efficiency, financial performance, and its quality of services. Improvements in PLN's financial performance are in turn expected to improve PLN's borrowing capacity and its ability to support essential investment and development of power supply facilities, including new connections. We are already taking steps to improve PLN's performance by (i) putting in place service and quality standards for PLN, (ii) identifying key operational performance indicators, and (iii) improving economic regulations impacting PLN's performance

#### **Private Participation in Energy Sector Further Enabled to Enhance Economic Competitiveness**

14. We have streamlined the licensing and permitting of private sector power projects by setting up a national one-stop service for permitting and licensing at the national level, and then by simplifying some related regulations and empowering the one-stop shop providing that service to take decisions based on these simplified regulations. Integration of licensing procedures and other requirements under a one-stop-shop will enable a significant reduction in project preparatory activities with a corresponding reduction in development costs.

15. In the gas sector, the government is keen to reverse the plateauing trend in domestic gas production by ensuring that exploration and production activities are ongoing despite the low oil prices, and by paving the way for greater investment in pipelines, liquefied natural gas infrastructure and fuelling stations required for increased domestic use of gas. In May 2015, the government addressed the uncertainty surrounding the expiring of production sharing contracts (PSCs) by issuing a regulation that establishes a transparent and time-bound process for making decisions on expiring PSCs. The government is preparing a new oil and gas law for the legislature to review which will aim to assure reliable and sustainable supply of oil, gas and fuels to domestic end-users on the basis of private and public investment in upstream, mid-stream and downstream parts of the supply chain. The government recognizes that the law will seek to strike a judicious balance between the need to incentivize investment and achieve secure and affordable domestic supply. To this end, the government will review upstream fiscal terms in order to incentivize development of marginal fields, deepwater projects, and unconventional resources while preserving government revenue generation from successful, high-return projects.

16. To secure the economic benefits of gas production and consumption, government intends to institute midstream reforms that emphasize efficiency and transparency. Investments in gas transportation and storage infrastructure will be guided by a strategic plan. Government will form a gas aggregation entity in order to facilitate transactions between producers and consumers and to implement pricing and gas allocation policies fostering efficient production and consumption of gas. Regulatory measures will be put in place to guard against accumulation of monopoly rents or excessive margins in transportation and aggregation, assure non-discriminatory access to pipeline capacity, maximize capacity utilization, and achieve transparency in gas pricing, allocation of capacity rights, and tariff-setting.

17. To avoid generating uncertainty the government will in consultation with stakeholders move quickly to put in place regulations to implement the oil and gas law.

#### **Access to Modern and Clean Energy Increased**

18. We are addressing a number of factors that have hampered geothermal development. The Geothermal Law 21 of 2014 has reclassified geothermal activity as a "non-mining" activity, and streamlines the process for tendering of new projects. In addition, we will issue a government regulation for a local benefit-sharing mechanism of a "production bonus" payment to local government, securing their interest in geothermal development. Furthermore, a regulation has been issued that establishes regional price ceilings for geothermal power. Going forward, other reforms envisaged in the revised geothermal law will be implemented including a mechanism to improve the quality of resource data prior to the launch of tenders, the centralization of tendering within the national government, and other measures to unlock Indonesia's geothermal power potential. These measures have enabled the inclusion of 4,815 MW new geothermal generating capacity in PLN's electricity supply business plan (RUPTL 2015–2024). Efforts are also underway to expand sustainable generation from large scale renewables as well as mini-hydro power plants (less than 10 MW), solar power (by the deployment of rooftop PV), wind-power, biomass/biogas, and waste-to-energy schemes and will continue to improve policies to accelerate renewable energy through market based mechanisms.

19. We are embarking on a comprehensive national electrification effort. The goal is for Indonesia to increase the current electrification rate from 84% of households (end 2014) to over 96% by 2019. The government has initiated the process of creating a comprehensive regulatory framework for public and private sources of finance, and preparing a national electrification roadmap, and increasing budgetary resources for expanding access. The national energy plan highlights the new innovations that will be pursued by the government.

20. With the decrease in electricity subsidies, it is expected that there will be a resultant increase in demand for energy efficiency. The government issued minimum efficiency performance standards for key household appliances, is now working on establishing a legal basis for the registering and operating of energy service companies, a national efficient building code and related guidelines for adoption by municipalities.

21. The government continues to explore ways to lower emissions from the energy sector through cleaner fossil-fuel technologies.

#### **Conclusions**

22. In summary, the government is firmly committed to expanding the energy sector in ways that are financially more viable and environmentally sustainable, which in turn can help to reduce poverty and contribute to broad-based economic growth. The policies that we have put in place in 2014 and plan to pursue during 2015-2019 will put in place the necessary enabling environment that will lay the foundation to help the country bolster the security and sustainability of its energy sector through expanded utilization of clean energy sources, improved energy efficiency and conservation measures, and increased access to electricity for all our citizens.

23. Our Government greatly values the support provided by the development partners over the years to help finance Indonesia's energy sector and the provision of technical assistance that is helping us to analyse issues and develop a comprehensive and well-coordinated reform program that should lead to a more inclusive and sustainable energy sector. In closing, we reiterate our Government's strong ownership and commitment to energy sector reform. We look forward to your continued engagement and support in the coming years.

Minister of Finance  
Republic of Indonesia



Bambang P. S. Brodjonegoro

cc.

1. Coordinating Ministry for Economic Affairs
2. Minister of Energy and Mineral Resources
3. Director General of Budget Financing and Risk Management, MoF
4. Country Director of IRM Asian Development Bank (ADB)
5. Country Director of Agence Française de Développement (AFD) Indonesia
6. Country Director of KfW-Entwicklungsbank (KfW) Office Jakarta

## ANNEX 3: BRIEF BACKGROUND ON INDONESIA'S ENERGY SECTOR

### 3.1: A BRIEF OVERVIEW OF INDONESIA'S POWER SECTOR

108. **Power sector structure:** Indonesia's power sector is dominated by the national integrated state-owned power utility, PT *Perusahaan Listrik Negara (Persero)* (PLN). PLN is the owner and operator of transmission and distribution networks, owner (directly or via subsidiaries) of the largest share of installed power generation capacity and single buyer for non-PLN power plants. Although the legal framework allows for private sector utilities, in practice private investment has been limited mostly to power generation, with only a few cases of non-PLN utilities servicing an area. Therefore, network expansions and upgrades have been limited by PLN situation, and there is a need to increase private investor in power generation to ensure adequate reserves.

109. **Power generation:** Installed generation capacity was 50.9 GW as of end-2014, excluding captive generation. PLN supplies consumers through its own generation and purchases from private Independent Power Producers (IPPs) and Public Private Partnership generation (PPU), representing almost 25 percent of installed generation who have long term Power Purchase Agreements (PPAs) with PLN. Some consumers, mainly industries, have captive power plants (estimated at 2.7 GW in 2013). The fuel mix, excluding captive generation, for 2014 shows the dominance of existing coal plants and dependence on oil (53 percent and 12 percent respectively) with a low proportion of renewables (6.5 percent hydro and 4.4 percent geothermal) and gas accounting for 24 percent (MEMR data). Nearly 78 percent of installed capacity is in Java and the remaining capacity is unconnected grids in major islands, and hundreds of isolated mini-grids in rural, remote areas on Java-Bali and outer islands. PLN is trying to incorporate renewable energy resources in current diesel-based systems in outer islands to reduce operational costs and also to enable increasing sustainable access. The scale up of geothermal and gas resources requires adequate regulatory and pricing regimes, that will encourage a more sustainable power generation mix and reverse the trend towards increased reliance on coal fired power generation.

110. **Consumer mix:** Tariffs categories differentiate mainly industrial consumers (33 percent of PLN sales in 2014), business (18 percent), residential households (43 percent), social, government offices and other categories. PLN's sales mix does not capture total industrial demand due to self-supply by captive generation.

111. **Demand profile and growth:** Sustained increases in electricity consumption (with average annual demand growth of 7.8 percent between 2009 and 2013) have been driven by economic growth, urbanization and subsidized electricity tariffs, which discourage energy efficiency and conservation. Indonesia is however still a long way away from the per capita consumption of electric power, reliability and quality of supply achieved by peer economies. Indonesia's annual per capita consumption is estimated to be 787 kWh in 2015. This is only 44 percent of the 2012 average of middle income countries (latest WDI data), 18 percent and 32 percent of the corresponding level for Malaysia and Thailand respectively and 1/10<sup>th</sup> that of OECD members.

112. **Adequacy of supply:** After a period of surplus in power generation caused by the impact of the Asian Financial Crisis, electricity supply has experienced shortages as PLN has faced difficulties in mobilizing sufficient power generation investments to catch up with demand growth. In 2006 and 2008 fast track programs for new generation capacity were launched by the government in view of projected insufficient supply, but implementation experienced delays. Underinvestment in transmission and distribution network has also created bottlenecks, with a negative impact on optimizing generation costs and reducing network losses. The lack of sufficient investment led to power shortages, high levels of supply interruptions and lengthy times to restore power services, and financial difficulties in ensuring adequate access. With demand continuing to increase at an annual rate of about 8 percent, the national power expansion plan (RUPTL) up to 2024 projects a requirement for 70 GW of new generation capacity, and it is expected that public sector resources through PLN would be required to finance around 50 percent of those additions. Given the implementation difficulties in the past and with ongoing projects, delivery of such a massive program will be

challenging for PLN and the government. There is thus a need to improve and maintain an adequate investment climate.

113. **Electricity tariffs and subsidy:** From 2005 tariffs did not follow increases in supply costs, in particular for power generation. There were no tariff increases for households between 2004 and July 2010. Up to 2014, the practice was to set electricity tariffs for all consumer categories below the approved PLN costs with the government covering the gap by providing a subsidy as national budget support to PLN based on a Public Service Obligation (PSO). As a consequence, electricity tariffs are discussed together with the required electricity subsidy (PSO) in Parliament's review and approval of the annual budgets. As discussed below, the government has embarked upon a tariff rationalization effort.

114. **Legal framework and policies:** The Electricity Law (30/2009) is the main legal framework and puts emphasis on economic sustainability, energy security, and environmental conservation, and was expected to promote renewable energy and energy efficiency. Furthermore, through its coordinating unit (UKP4), the National Energy Council, and the Ministry of Energy and Mineral Resources (MEMR), the government objective is to achieve the coordination of government agencies required for policy-making and effective implementation. This, however, remains a "work in progress".

115. **Institutional and planning frameworks:** Under the 2009 Electricity Law MEMR is responsible for energy policies, and supervision and regulation of the power sector. Additionally, MOF regulates the electricity subsidy. The Ministry of State Owned Enterprises also regulates PLN. In terms of planning, MEMR is responsible for developing the long-term National Electricity Plan (RUKN) which provides guidance on investment and funding, and the government targets on increasing the use of renewable energy resources and electrification (MEMR is currently finalizing the next RUKN). Additionally, provinces and districts prepare local electricity plans (RUKD) that will refer to the RUKN. PLN prepares the Electricity Supply Business Plan (RUPTL), based on the RUKN and approved by MEMR, covering a 10-year horizon demand forecasts, expansion plans identifying projects that will be developed by PLN and generation projects to be developed by IPPs.

### **3.2: THE CHALLENGES FOR INVESTMENT IN INDONESIA'S GAS VALUE CHAIN**

116. **Investment in the upstream gas sector has been impeded by regulatory uncertainty and limited economic incentives to invest in finding and commercializing gas.** A decade-long deterioration in the investment climate has reduced the attractiveness of upstream investment, as evidenced by BMI's upstream risk-return index which places Indonesia behind the other countries in the Asia/Pacific region. Central to investor concerns is regulatory uncertainty - longstanding deficiencies regarding complex permitting and approval processes, market distortions from pricing policies and subsidies, difficult land acquisition, conflicting roles and responsibilities within ministry and state-owned enterprises, weak long-range resource planning, and non-transparent discretionary administrative processes nationally and locally.

117. **In the mid-stream gas sector there is limited availability of infrastructure to link potential gas supply (domestic and imported) with domestic off-takers.** The Government's 2015 Gas Roadmap acknowledges that the current gas pipeline system operates on a point-to-point basis and is geographically concentrated in Sumatra and West Java. Building out the system to enable the pipeline system to function on an integrated network basis will require construction of pipelines to connect new gas fields and to interconnect the existing pipelines in Sumatra and Java. It will also require development of floating and land-based LNG re-gasification terminals to receive LNG from domestic (inter-island) and foreign sources. The required investment to develop key gas infrastructure has been estimated to be some US\$ 8 billion. The ownership of existing mid-stream gas infrastructure is dominated by Pertamina and PGN (Perusahaan Gas Negara, the national gas transportation and distribution company) and the Government looks to these SOEs to rapidly accelerate investment if the Government's plans are to be realized. The challenge is whether the financial resources and incentives will be in place to support the scale of investment now needed.

118. **Finally, the global market conditions that have led to sharp falls in global oil and regional gas prices are expected to remain in place during the period of the DPL.** This is having a severe impact on the oil industry's ability to undertake new investment, whether private or public. Petroleum consultancy Wood Mackenzie estimates that Indonesia has projects totaling 17 TCF of gas reserves that are vulnerable to deferral of final investment commitments due to economic and regulatory obstacles.

## ANNEX 4: EXPERIENCE FROM ENERGY SECTOR DEVELOPMENT POLICY FINANCING

119. **Emerging evidence from middle income countries highlights the importance of embedding energy sector DPLs in a broader government reform program.** For example, lessons from the recent programmatic Turkey energy sector DPLs note that success in achieving the program development objectives was contingent on the client prioritizing achievement of those objectives over the implementation of a particular set of measures.<sup>56</sup> Given their complexity, energy sector reforms require action in several inter-related areas, which can seldom be fully covered by a discrete set of DPL prior actions and require a broader sectoral reform focus, as outlined in the case of Indonesia in the above description of the Government's energy sector reform agenda.

120. **Given the technical complexity and political sensitivity of the sector, success of energy sector DPL actions requires dedicated sector operations and sustained long-term support, in the form of technical assistance and investment lending, to the energy sector.** Learnings from the recent Pakistan Power Sector Development Policy Loan highlights the criticality of dedicated sector DPLs, with multi-sector DPLs only playing a secondary or facilitating role when dealing with deep-rooted reluctance to reform (especially in the power sector). Energy sector reform programs require sustained intervention over the long term but must be designed flexibly to allow assessment of progress and adaptation as the reform evolves. This includes leaving open the option to change indicative triggers or bring other instruments, such as technical assistance and investment lending, into play.

121. **Recent empirical analysis looking at the correlates of success in World Bank DPLs highlights the high-risk high-reward nature of energy-sector heavy operations.**<sup>57</sup> Looking at DPLs from 2004 to 2012, it was found that the likelihood of successful DPLs is enhanced through action oriented prior actions and maintaining a clear "line of sight" between the prior actions, stated objectives and intended results/outcome indicators. Energy-heavy DPLs are found to be associated with a higher probability of less successful loans, as measured by IEG validation of the ICR rating of the loan. However, the review notes that "...these operations tend to be high-risk high reward and by no means should be avoided. On the contrary, given the criticality of this sector for developing and emerging economies, efforts to move forward sector reforms need to continue."

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<sup>56</sup> "Republic of Turkey: First Programmatic Electricity Sector Development Policy Loan (PEDPL1) and Second and Third Programmatic Environmental Sustainability and Energy Sector Development Policy Loans (ESES DPL2 and ESES DPL3): Implementation Completion and Results Report", December 23, 2013.

<sup>57</sup> Moll, P., Geli, P., Saavedra, P., "Correlates of Success in World Bank Development Policy Lending", World Bank Policy Research Working Paper 7181, January 2015.

## ANNEX 5: ACCESS AND RELIABILITY IN INDONESIA'S ELECTRICITY SECTOR

122. **As in many other countries, measuring access to electricity in Indonesia faces a number of challenges.** The first challenge is the different definitions used by different agencies and the second challenge is that of accurate measurement given the multiple dimensions of access (such as quantity, quality, affordability and duration of supply).<sup>58</sup>

123. **MEMR and PLN have different definitions to calculate electrification ratio.** MEMR defines electrification ratio as the number of households that have the benefit of electricity power relative to the total number of households.<sup>59</sup> The number of households that have the benefit of electricity power include those who have electricity power from PLN and from non-PLN sources.<sup>60</sup> The sources of the number of households that have the benefit of electricity power are from PLN and from provincial governments (MEMR 2015). PLN defines the electrification ratio as the number of households that have the benefit of electricity power from PLN relative to total number of households.<sup>61</sup> The number of households that have the benefit of electricity power from PLN comes from PLN customer data. The total number of households used by both MEMR and PLN is from Statistics Indonesia (BPS).

124. **Based on MEMR data, in 2014 Indonesia had an electrification ratio of 84.4 percent with around 12.1 million households having no access to electricity.** This is an increase of around 4 percentage points from 80.4 percent in 2013 but lags the ratio of neighboring countries such as Malaysia, Thailand and Vietnam which already have an almost universal electrification ratio. The electrification ratio as indicated by PLN is lower at 82.2 percent. This discrepancy is due to the share of households connected to off-grid systems who are not customers of PLN.

125. **MEMR and PLN's electrification ratios show regional disparities with some provinces in Eastern Indonesia are lagging behind.** According to MEMR, Papua has the lowest electrification ratio at 43.5 percent followed by NTT at 58.9 percent. A similar pattern is shown by the PLN's electrification ratio. In contrast provinces such as DKI Jakarta, Bangka Belitung and Banten have electrification ratios of more than 90 percent using both definitions.

126. **Another source of data is the National Socio-Economic Survey (Susenas).** The Susenas questionnaire asks about the source of lighting as a proxy for access to electricity. If the source is PLN, Susenas further asks about the installed capacity based on PLN's residential customer classifications and in the same question provides an option of no meter to capture those who have some kind of connection to electricity from PLN without any meter installed. Thus, Susenas can be used to estimate the number of households with some kind of connection to an electricity supply system. However, having a connection is a necessary but insufficient condition to having access to electricity. Susenas does not have information about levels of actual electricity service, and the type of PLN customer (e.g., pre or post-paid, grid or non-grid).

127. **There are strengths and weaknesses between the approach taken by the household survey (Susenas) and Government's administrative data (PLN and MEMR figures).** Susenas is a household survey and, like any other surveys, one should allow for margin of error and allow for the sample mean to differ from the actual population mean with some degree of confidence to address sampling errors, inconsistencies and unreliability in responses. PLN administrative data on all PLN registered and metered

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<sup>58</sup> For a discussion of the challenges of measuring energy access see, for example, World Bank (2014), Capturing the Multi-Dimensionality of Energy Access, Livewire: A knowledge note series for the Energy & Extractives Global Practice.

<sup>59</sup> MEMR (2015), *Draft Electricity National General Plan 2015-2034*.

<sup>60</sup> This includes households connected to PLN grid and non-grid PLN (i.e., households that have *Super Ekstra Hemat Energi / SEHEN*) as well as households with electricity from non-PLN sources (Government of Indonesia and Asian Development Bank (2015). *Achieving Universal Electricity Access in Indonesia*, 2015).

<sup>61</sup> This includes households connected to PLN grid and non-grid PLN (ADB 2015).

customers is used by MEMR which in addition also uses data collected from provincial government and the national statistics agencies.<sup>62</sup> Utility data might fail to capture decentralized electrification in rural areas or illegal connections in urban areas.<sup>63</sup>

**128. Comparing the connection ratio from Susenas with the electrification ratio from PLN and MEMR provides some insights.** At the national level, Susenas's electrification ratio based on PLN's definition is 84.6 percent (53.7 million households) which is 2.4 percentage points different from PLN's ratio at 82.2 percent (53.3 million households). The electrification ratio from Susenas using MEMR's definition is 87.2 percent (55.3 million households) which is 2.8 percentage points higher than MEMR's ratio at 84.4 percent (54.7 million households).<sup>64</sup> At the provincial level half of the provinces have a difference of less than three percentage points comparing the Susenas connection ratio with the access ratio of PLN or MEMR. Some of the poorest provinces of Papua, Maluku and NTT have a discrepancy of more than 10 percentage points.

**129. Susenas data also shows a sizeable group of households, about 7.5 million households or 12 percent of all households, who have electricity power from PLN but with no meter installed.** This category includes shared connections and possibly illegal connections which are not captured by either the PLN customer data or MEMR data.<sup>65</sup> Notably, Susenas data indicates that about 630 thousand households still use lanterns, oil lamps and other sources for lighting, the vast majority of which live in rural areas.

**130. Global databases using survey and administrative sources also show significant differences for some countries.** For example, while the differences between the IEA's Energy Access Deficit database (based on utility connection data) and the World Bank's Global Electrification database (based on household surveys) are small in some countries, there are sizeable differences in some larger countries including Indonesia. For example the IEA (World Energy Outlook) cites a 2014 national electrification rate of 76 percent – this implies 60 million Indonesians are without electricity which is 50 million higher than the household survey-based estimate. Similarly for countries such as Pakistan, Philippines and Myanmar the electrification rates are of the order of 20 percentage points higher using household survey data.<sup>66</sup>

**131. However, having some form of connection to electricity does not guarantee that the electricity power is actually supplied.** A connection without any power being available is equal to having no access. Access to electricity requires energy to be provided on a reliable basis and to a specified standard of quality. The electrification ratio measures the prevalence of households with some access to electricity power but does not indicate how reliable the electricity power is. To achieve quality and reliability of electricity supply requires the power system to be built and operated in a way that there is sufficient capacity to cover: peak loads (MW); energy demands (MWh); and the loss of critical elements of the power system, such as generation units, power lines, transformers. In addition, the power system must be operated so that equipment loadings are always within their physical limits. Indonesia's low level of installed generation capacity, combined with its transmission capacity limits, translate into high levels of power supply interruptions and lengthy times to

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<sup>62</sup> It is unclear from the document how the provinces collect the data of non-PLN electricity sources.

<sup>63</sup> See SE4ALL Global Tracking Framework Report "Progress Toward Sustainable Energy 2015". World Bank and International Energy Agency. Washington.

<sup>64</sup> Margin of error is calculated with 95 percent confidence interval and the results show that the difference between Susenas' sample mean and the actual mean from PLN and MEMR is statistically significant.

<sup>65</sup> PLN cannot count customers without meters and MEMR relies on PLN data for PLN supplied customers (with an implied assumption that shared meters provide no guarantee of any electrical service) and then adds off grid consumers to its access/electrification ratio (also with a judgement on a minimum level of service).

<sup>66</sup> See SE4ALL Global Tracking Framework Report "Progress Toward Sustainable Energy 2015". World Bank and International Energy Agency. Washington.

restore power services to customers.<sup>67</sup> Indonesia is a long way from achieving the reliability and quality of supply in countries like the Republic of Korea, Singapore, and Brazil, let alone the supply reliability that OECD citizens take for granted.

132. **Finally, looking at aggregate quantities of data, Indonesia also has a low level of electricity consumption per capita.** Based on available data, average electrical power consumption per capita nationally is estimated as 787.6 kWh per year in 2014. This places it on par with the 2012 consumption levels per capita for lower middle income countries but only 44 percent the average for all middle income countries and 18 percent and 32 percent of peer countries Malaysia and Thailand, respectively, and 10 percent of the average of OECD countries.

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<sup>67</sup> PLN provides System Annual Interruption Duration Index (SAIDI) and System Annual Interruption Frequency Index (SAIFI) that can be used as a proxy for reliability of the electricity power supply. SAIDI measures the average duration of power outage experienced by customers and SAIFI measures the average frequency of power outage experienced by customers. This data show only distribution area interruptions due to transmission and generation outages. As such these figures omit interruptions due to distribution level outages and faults, and therefore significantly understate the level of total level of interruptions experienced by PLN's customers since the vast majority of interruptions typically arise at the distribution level. The available data indicates a high prevalence of electricity supply interruptions in Indonesia and large variation across provinces.