

SECTOR OVERVIEW

A. Sector Performance

1. Indonesia is the largest economy in Southeast Asia, with an estimated gross domestic product of \$932.3 billion in 2016. The economy experienced consistent growth after the Asian financial crisis, averaging around 5.0% per year (reaching a high of 6.4% in 2010), and the country is working to improve this growth rate. However, the country's power infrastructure is struggling to keep up with its strong economic performance, and improved access to affordable, sustainable forms of energy is critical to enhance the country's competitiveness. The Government of Indonesia therefore intends to expand its electricity generation capacity from approximately 52 gigawatts (GW) to 79 GW by 2019, and to 130 GW by 2026, as envisioned in the government's new Electricity Power Supply Business Plan, 2017–2026.¹

2. Indonesia has an abundance of nearly every form of energy. It is estimated to have 126.6 billion tons of coal reserves, 3.6 billion barrels of proven oil reserves, and 98 trillion cubic feet of proven natural gas reserves.² The country also has 29.5 GW in potential geothermal energy resources (the world's largest), 75.0 GW in potential hydropower, 532.6 GW in potential solar power, 32.6 GW in potential biomass and biogas, and 113.5 GW in potential wind power. However, nearly every energy subsector is facing challenges due to a history of subsidizing fossil fuels, an uncertain regulatory framework that discourages private sector investments, and the high cost of infrastructure for connecting production to consumption centers. Efforts to scale up renewable energy use have been constrained by inefficient sector policies, implementation challenges, a lack of capacity, environmental issues, permit delays, and a history of low energy pricing.³

B. Sector Framework

3. **Policy and regulatory body.** Overarching goals and policies for the energy sector are set by the government's energy council, Dewan Energi Nasional. The Ministry of Energy and Mineral Resources (MEMR) is the main policy-making body for the power sector, and is responsible for preparing laws and regulations for the sector, issuing business licenses, establishing tariff and subsidy policies, and guiding the development of the government's rolling 10-year national power development plans. MEMR proposals must be approved by the President of Indonesia after consultations with Parliament. Local governments play a large role in project implementation, mostly through permit and land acquisition processes.

4. **Electricity utility.** Perusahaan Listrik Negara (PLN), the state-owned electricity utility, generates 79% of Indonesia's power,⁴ manages power distribution as the owner and operator of the transmission system, and is the country's monopoly wholesale purchaser of electricity. It facilitates private sector participation in power generation while maintaining control over system planning, operation, and pricing. Government approval of PLN tariffs takes into account the

¹ Government of Indonesia, State Electricity Corporation (PLN). *Electricity Power Supply Business Plan (RUPTL 2017–2026)*. Jakarta.

² Government of Indonesia, Ministry of Energy and Mineral Resources. 2016. *Handbook of Energy and Economic Statistics of Indonesia*. Jakarta.

³ ADB. 2017. *Report and Recommendations of the President to the Board of Directors: Proposed Result-Based Loan Perusahaan Listrik Negara Sustainable Energy Access in Eastern-Indonesia-Electricity Grid Development Program*. Manila.

⁴ PLN. May 2017. *Offering Memorandum, Global Medium Term Note Program*. p. 19.

public's willingness and ability to pay. As a result, the retail price of electricity in Indonesia is low, below PLN's average cost of generation. Through the Ministry of Finance, the government provides a subsidy to PLN to compensate for the company's inability to recover its costs through the consumer tariffs set by the government, under the support requirements of a law on state-owned enterprises known as the public service obligation (PSO).⁵

5. PLN's electricity sales have been increasing by more than 13% per year, from Rp113 trillion in 2011 to Rp214 trillion in 2016.⁶ Households make up 92.2% of the customer base, but account for only about 43% of total power consumption. In 2016, 21% of PLN's revenues came from the PSO subsidy, down from 45% in 2011. The subsidy equals the total electricity generation cost, including the financing cost and a predetermined profit margin, less revenue from retail sales to the customers. The government's policy of including a profit margin in the PSO subsidy allowed PLN to report an annual earnings before interest and tax margin of more than 7% of total revenues in 2016.⁷ As seen in the expense breakdown in Table 1, fuel costs accounted for 43% of PLN's operating budget in 2016, significantly less than in previous years.

Table 1: Perusahaan Listrik Negara Financial Statement
(Rp trillion)

Item	2011	2012 ^a	2013	2014	2015	2016
Revenues	208.0	232.7	257.4	292.6	273.8	283.2
Sale of electricity	112.8	126.7	153.4	186.6	209.8	214.1
Subsidy	93.2	103.3	101.2	99.3	56.5	60.4
Other	2.0	2.6	2.7	6.7	7.5	8.6
Operating expenses	185.6	203.1	220.9	247.8	225.6	254.4
Fuel and lubricants	131.2	136.7	147.6	170.5	138.4	109.5
Purchased electricity	1.3	2.9	2.4	3.5	4.4	59.7
Other	53.2	63.7	70.7	73.8	82.8	85.2
EBIT	22.4	29.5	36.5	44.9	48.2	28.8
Net income	5.4	3.2	(29.6)	11.0	6.0	10.5

() = negative, EBIT = earnings before interest and tax.

^a Figures for 2012 may not be comparable with figures for the previous periods because electricity purchases from independent power producers were classified differently.

Source: Perusahaan Listrik Negara annual reports.

6. Historically, PLN's average generation cost has far exceeded the average tariff; this gap was largest in 2008 when fuel prices were unprecedentedly high, and after 2011, when the government began to reduce fuel subsidies progressively.⁸ Although the level of subsidies at the consumer level are decreasing, the government is committed to continuing to subsidize PLN for its services. Simultaneously, the rapid development of non-diesel generation options has become a key strategy for PLN to mitigate mounting budget deficits. During 2014–2015, the new administration embarked on reforms by removing subsidies on gasoline, raising diesel prices, and removing power tariff subsidies for industrial, commercial, and large residential households, while instituting an automatic price adjustment for all but a few electricity consumer categories. The electricity subsidy for the remaining households is being phased out during 2017, except for the poorest households. As of July 2017, the electricity tariff for unsubsidized households was Rp1,467.28 per kilowatt-hour (footnote 3).

7. PLN was rated BB by Standard & Poor's and Baa3 by Moody's. The likelihood that the government will provide timely and sufficient extraordinary support to PLN in the event of financial

⁵ Under Article 66 Law No. 19/2003, state-owned enterprises should be compensated directly from the government's budget for the full cost of executing the government mission (i.e., PSOs).

⁶ PLN's audited financial statements (2011–2016).

⁷ The profit margin included in the subsidy was 5% in 2009, 8% in 2010 and 2011, and 7% from 2012 onward.

⁸ ADB. 2015. *Summary of Indonesia's Energy Sector Assessment*. Jakarta.

distress is extremely high because of (i) PLN's dominant and important role in the electricity sector, and the economy overall, as the largest electricity producer and monopoly operator of transmission and distribution networks; (ii) the legislative requirement obligating the government to cover PLN's cost of generation through the PSO subsidy; (iii) current government guarantees for PLN debt obligations;⁹ and (iv) the government's financial interest in the wholly owned state utility. PLN's credit ratings will likely remain linked to the government's sovereign ratings.

8. Indonesia's electricity transmission and distribution grid is divided into five regions: Java-Bali, Sumatera, Kalimantan, Sulawesi and Nusa Tenggara; and Maluku and Papua, which is further divided into 33 separate grids. The Java-Bali grid tends to have lower costs due to its larger population and higher density, as well as its heavy reliance on cheap coal generation plants. Other networks, including Sulawesi & Nusa Tenggara, tend to rely more on diesel generation and are therefore more vulnerable to fuel price hikes, making these regions interesting for renewable energy developers.

C. Regulatory Framework and Government Sector Strategy

9. The current legal and regulatory framework for the electricity sector is provided by an electricity law adopted in 2009. The law made the MEMR the primary regulatory body, and effectively ended PLN's 60-year monopoly as the only electricity supplier in Indonesia. In areas where PLN does not provide power services, it has allowed provincial entities, private entities, and cooperatives to engage in the integrated power supply business.¹⁰ However, independent power producers (IPPs) that wish to sell electricity directly to end users can only serve areas that were declined by PLN and are not included in PLN's electrification plans. IPPs that wish to sell electricity directly to end users must build their own grids, but those that plan to use PLN's grid must enter into a power purchase agreement with PLN. The associated tariffs must then be approved by the national or regional governments, as well as the central and local parliaments. By partially liberalizing the electricity industry, the law aims to promote risk sharing between the state and private investors, and accelerate the reduction of the country's shortfall in power supply capacity.

10. To encourage further private sector participation in power generation and to bolster renewable energy development, the Ministry of Economic Affairs opened both small- and large-scale renewable energy projects to foreign investors. Small-scale projects (up to 10 MW) require a 51% domestic partner, while larger projects require a 5% local shareholding.¹¹ In 2017, several new renewable energy regulations were issued and subsequently revised. New regulations have been issued to (i) set renewable energy tariffs compared to the local and national grid price; (ii) regulate the procurement process (Regulation Nos. 12 and 50); and (iii) more generally for the power sector, reallocate some risks under the power purchase agreement (Regulation No. 10, but subsequently amended by Regulation No. 49). PPA's for wind and solar projects signed after 2017 will be subject to a tariff cap. In regions where the cost of the regional grid is higher than the national average cost; the tariff will be capped at 85% of that respective grid. For areas where the cost of the regional grid is lower than the national grid, the tariff will be agreed upon with PLN by negotiation, although it is understood that the national average is set as a cap.

⁹ Moody's notes that government support is further motivated by the fact that a default on PLN nongovernment debt obligations could lead to a cross-default of government-guaranteed bank financing.

¹⁰ The public power supply includes the generation, transmission, distribution, and sale of power. Entities engaged in the public power supply must obtain a power supply license, and power generators must have an operating license. As part of the 2009 electricity law, PLN was deemed to have held a power supply license and was given the right of first refusal to operate in any service area.

¹¹ Ministerial Regulation No. 14/2012 on small- and medium-scale power generation using renewable energy.

11. Indonesia's broad development goals are outlined in its long-term national development plan for 2005–2025. This plan is divided into four 5-year phases, each with a medium-term national development plan. Long-term goals for energy in particular are outlined in the 2014 National Energy Policy, which emphasizes resource diversification, environmental sustainability, and maximizing the use of domestic resources. The policy targets an energy mix of oil (25%), gas (22%), coal (30%), and new and renewable energy (23%) by 2025. The National Medium-Term Development Plan, 2015–2019 aims to increase the country's installed capacity for electricity generation to 86 GW, boost annual per capita electricity consumption to 1,200 kilowatt-hours, and raise the national electrification ratio to 96.6%.¹² The 2014–2015 reforms aimed to (i) improve sector governance and expand energy production through greater private sector investment and more effective public sector investment, (ii) increase the country's reliance on domestic gas, (iii) expand renewable energy generation and energy efficiency investments, and (iv) expand access to modern energy for all Indonesians. The strategy focuses particularly on reaching remote areas of the archipelago, especially the eastern regions where energy access rates are lowest and where renewable energy options are often the most economically viable (footnote 3).

D. Projected Electricity Supply and Demand in Indonesia

12. **Insufficient generation capacity.** Indonesia's power plants currently run at full capacity to cover average demand, and have limited buffer to cover demand hikes. Total installed capacity in 2016 was 54,665 MW, comprising 43,294 MW from PLN's own plants, and the remaining 11,371 MW from IPPs and leased plants.¹³ During peak hours, PLN is forced to impose rolling blackouts in critical areas to avoid risking a full outage across the entire system. In 2016, electricity interruptions in Indonesia occurred 15.1 times per consumer per year, and the interruptions lasted an average of 25.5 hours per consumer per year (footnote 14). The blackouts and uncertainty about the power supply force grid-connected hospitals, hotels, and other public facilities to depend on costly emergency backup systems, such as diesel generators.

13. Due to economic growth fueled by a growing manufacturing sector and expanding middle class, the electricity demand is forecast to reach 482,973 gigawatt-hours by 2026 (up from 224,862 gigawatt-hours in 2015), with an average growth of 8.6% per year between 2016 and 2025. Given the current electricity demand forecasts, PLN intends to develop a total of 77,878 MW during 2017–2026. The forecast capacity of each energy source is shown in Table 2.

Table 2: New Generation Capacity Development Forecast, 2017–2026
(megawatt)

Type	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Total
Coal-fired	1,163	1,079	10,131	4,593	3,801	3,830	2,200	1,950	415	2,775	31,937
Geothermal	305	165	315	186	365	790	345	1,015	2,510	294	6,290
Combined cycle	150	2,250	6,415	680	940	930	740	2,490	3,400	800	18,795
Gas turbine	922	2,175	818	420	409	424	51	110	155	110	5,594
Hydropower	86	199	486	352	1,668	1,361	1,763	1,277	2,825	81	10,098
Solar	0	0	0	0	520	520	450	450	2,000	0	3,940
Other	63	89	502	353	211	6	0	0	0	0	1,224
Total	2,689	5,957	1,8667	6,584	7,914	7,861	5,549	7,292	11,305	4,060	77,878

Note: Amounts may not sum precisely because of rounding.

¹² Government of Indonesia. 2015. *Medium Term Development Plan (RPJMN 2015–2019)*. Jakarta.

¹³ PLN. May 2017. *Offering Memorandum, Global Medium Term Note Program*. Jakarta.

Source: Perusahaan Listrik Negara. 2017. *Power Supply Business Plan (RUPTL) 2017–2026*. Jakarta.

14. **Supply crisis heightened by greater electrification and reliance on fossil fuels.** Although the national electrification rate increased from 76.2% in 2012¹⁴ to 89.1% in 2015,¹⁵ much remains to be done to meet the 2019 target of 96.6% set in the National Medium-Term Development Plan policy goals. The national average disguises considerable regional inequality. While electrification is high on the Java-Bali grid, it drops well below the national average in South Sumatra (70.9%) and eastern Indonesia (54.8% in Nusa Tenggara Timur and 36.4% in Papua).¹⁶ Given the ambitious targets for increased energy access, it is necessary to create additional generation capacity in regions that trail the national electrification average.

E. Recent Developments to Address the Supply and Demand Crisis

15. To ensure that PLN meets the additional capacity required under the national power development plans, the government has introduced various fast-track programs to accelerate power generation. The first 10,000 MW Fast Track Program (FTP-I), which focused exclusively on coal-fired power plants, was launched in 2006 through Presidential Decree No. 71/2006 (later amended by Presidential Decree No. 59/2009) and laid out in the 2009–2018 national power development plans. As of 2017, FTP-I has delivered 5,707 MW out of the planned 9,975 MW.

16. To harmonize power and sustainability targets better, PLN launched the second 10,000 MW Fast Track Program (FTP-II) in 2010 targeting the addition of 10,000 MW of generating capacity by 2014, with a special emphasis on renewable energy. FTP-II plans to increase geothermal power by 4,000 MW, hydropower by 1,753 MW, coal gasification by 64 MW, and gas by 280 MW, in addition to bulking coal power by 3,000 MW. However, like FTP-I, FTP-II is facing severe delays.

17. In the 2015–2024 national power development plans, the government introduced a third Fast Track Program (FTP-III), which was meant to add 35 GW of power by 2019. In early 2017, pursuant to the National Electricity Business Plan 2017–2026, the government adjusted the target completion dates and capacities under this program to 29 GW by the end of 2019 and 35 GW by the end of 2021. FTP-III does not incorporate the prior commitments of FTP-I and FTP-II, of which around 7 GW of projects are already under construction and planned to be online by 2019. The majority of additions from FTP-III will be coal-fired power plants (56% of the total additions), followed by gas (36%), hydropower (4%), geothermal (2%), and other energy sources (2%).¹⁷

¹⁴ PLN. 2013. *Annual Report 2012*. Jakarta.

¹⁵ PLN. May 2017. *Offering Memorandum, Global Medium Term Note Program*. Jakarta. p. 130.

¹⁶ ADB. 2016. *Achieving Universal Electricity Access in Indonesia*. Manila.

¹⁷ ADB. 2015. *Summary of Indonesia's Energy Sector Assessment*. ADB Papers on Indonesia, No. 9. Manila.