



Indonesia



Indonesia is an archipelagic country with more than 17,000 islands, out of which around 3,000 islands are inhabited. The islands scatter between South East Asia and Australia. Population of the country in 2006 is around 220 million. Jawa is the densest island with more than 60% of population and comprises only 7% of the land area.

In 2002, Indonesia's government undertook measures to liberalise the nation's electricity market by enacting the New Electricity Law, law no. 20/2002.

The competition for power generation is on the islands of Jawa Bali, following implementation of the Single Buyer Model. But in December 2004 the Constitutional Court annulled this Law and the old law, Law No. 15/1985, came into force again. In this 1985 law, the government is responsible for the supply of electricity with PLN acting as the responsible authority.

Based on the Electricity Law No. 15 1985, and accompanied by Presidential Decree No. 37 in 1992, private participation in the power sector in Indonesia started. The decree encouraged private participation in electricity generation, transmission and distribution. During 1990 – 1994, 27 power purchased agreements (PPA) were signed between PLN and Independent Private Producers (IPPs).

In 1997, Indonesia had a financial crisis, and the Rupiah level depreciated 250% against the US\$ in 1998. As cost of production contains foreign currencies, such as construction cost, IPP & primary energy payment, on the other hand the revenue of PLN is in local currencies (Rupiah),



Photo: Bloomberg

the financial condition of PLN was not good. Moreover, the financial institution that usually supports PLN and the Indonesian Power sector withdrew from the power project in the country. Moreover, the electricity tariff has been lower than its production cost since the 1997 financial crisis.

Demand and supply

Electricity in Indonesia is mostly provided by PLN, which serves as a State Electricity Company. The power system is scattered into more than 600 isolated systems and 8 interconnected power systems. The largest system is the Jawa Bali power system which consumes more than 80%

PROFILE

Capital Area	Jakarta	Installed Capacity	24,170W
Population	1.919 million km ²	Population Electrified	54.5%
GDP	245.5 million	Main Voltages (kV)	500, 150, 70, 20
Currency	US\$928.1 billion	Natural Resources	petroleum, natural gas, bauxite, coal
	Rupiah		

Indonesia Power Balance 2007 – 2015	2007	2009	2011	2013	2015
Generating capacity (MW)	31,877	38,169	45,494	52,280	59,200
Peak load (MW)	22,970	27,136	31,776	37,239	43,694
Annual growth (%)	7.8	9.1	8.5	8.6	8.7
Res Margin (%)	39	41	43	40	35

system, which consumes more than 80% of the total power in the country. Fifty three percent of the population in Indonesia has been connected to the grid.

Electricity consumption in 2006 was 113 GWh, with non-coincident peak load 20.9 GW. In 2008, non-coincident peak load is expected around 23,5 GW, with electricity consumption 128 TWh.

Total capacity of the power plant in 2007 is 31.877 MW. Primary energy composition of generating capacity is:

- Coal: 36 763 Gwh
- Gas: 18 083 Gwh
- Hydro: 8 666 Gwh
- Geothermal: 2 921 Gwh
- Oil: 36 345 Gwh

Major primary energy is coming from coal. Oil power plant still have significant roll, since

most of the isolated system are supplied by oil diesel power plant. The policy of the power development plant suggest that shifting away from oil fired to more economic primary energy such as coal and natural gas.

The PLN have been constructing many coal power plants in special projects called 10.000 MW coal power plants project which will be in operation around 2009 – 2010. The demand growth of electricity in Indonesia is expected around 8 % per year. The additional capacity needed to cope with the demand is about 2000 - 4000 MW per year. The expected power balance up to the year 2015 is shown in the table above.

Transmission and distribution

Voltage level of transmission and distribution in Indonesia is standardised in low voltage distribution up to extra high voltage transmission system.



Photo: Bloomberg

Transmission Line	
Transmission Line: 500 kV	5,155 km circuit
Transmission Line: 150 kV	31,262 km circuit
Transmission Line 70 kV	4,808 km circuit
Substation transformer	74,943 MVA

Tariff Categories	Average
Social	6.6 cent US\$/kWh
Residential	6.3 cent US\$/kWh
Business	8.3 cent US\$/kWh
Industrial	6.8 cent US\$/kWh
Average	6.9 cent US\$/kWh

The transmission system in Indonesia has 500 kV, 150 kV and 70 kV, while in the distribution system has 20 kV and 220 V.

The transmission line table shows the length of each transmission system and amount of substations in 2008. The 500 kV transmission only exists in the Jawa Bali power system as it is the largest power system experiencing a peak load of more than 15000 MW, while the second largest system is Sumatera. There will be a new voltage level of 275 kV in Sumatera, as the backbone of the power system. Interconnection between Sumatera and Jawa- Bali power system is expected to materialize in 2012 by a HVDC link.

Electricity tariff

The electricity tariff in Indonesia is decided by the Government.

The current tariff follows a uniform tariff structure in all regions of Indonesia. The last decree on electricity tariff was passed by the Presidential Decree No. 104 year 2003. This decree has been constituted for tariff increases, since Jan 2004. The tariff is divided on some categories. The average tariff rates are shown in the table on tariff categories.

A section on demand management has also been included in the tariff structure, mainly for industry and business category. Tariff is divided into peak and off-peak tariff. These strategies have been successfully implanted since the increase of oil price in year 2005.

(Report reproduced from goldbook 2008)



Photo: Bloomberg

Utility Profile 2006	
Total Assets	US\$26.6 bn
Total Revenue	US\$11.6 bn
Total Energy Sales	111.3 TWh
Aggregated Peak Load	19,263 MW
Number of Customers	34,559,253
Number of Employees	43,762
Total Generation Capacity	22,515 MW
IPP Generation Capacity	3,500MW
IPP+Imported generated energy	26.1 TWh
HV+EHV Transmission Lines Length	30,945 kmc
HV+EHV Substation Capacity	53,976 MVA
Primary Distribution Length	236,008 kmc
Secondary Distribution Length	324,454 kmc
Distribution SS Capacity	29,013 MVA
Total Losses	11.54%
SAIDI	15.8 [hours/customer/year]:
SAIFI	13 [times/customer/year]