

## Chapter 2

### Power Industry and Power Price in the Philippines

This chapter looks at (i) the power industry structure in the Philippines, and then compares it with that of Indonesia, Malaysia, and Thailand; (ii) the power price in the Philippines; and (iii) power rate setting in the Philippines.

#### 2.1 The Power Industry in the Philippines

There are various policy measures that can reduce power supply costs, but their effectiveness varies depending on the power industry structure and regulations per country. In this subsection, the power industry structures (i.e. generation, wholesale, transmission, and distribution/retail) in the Philippines and its comparative nations (Indonesia, Malaysia, and Thailand) are reviewed. The overview is summarised in Table 2-1.

**Table 2-1. Overview of Power Sector Structure in Four Countries**

Indonesia	<ul style="list-style-type: none"><li>• The state-run Perusahaan Listrik Negara is the main player.</li><li>• The generation sector has been liberalised, and IPPs have entered the market.</li><li>• The wholesale market takes the single buyer system, and PLN buys all the generated electricity.</li><li>• Power transmission, distribution, and retail are monopolised by PLN.</li></ul>
Malaysia	<ul style="list-style-type: none"><li>• Tenaga Nasional Bhd (TNB), Sabah Electricity Sdn. Bhd, and Syarikat SESCO Bhd are the main players in Peninsular Malaysia, Sabah State, and Sarawak State, respectively.</li><li>• The generation sector has been liberalised, and many IPPs exist.</li><li>• The wholesale market takes the single buyer system.</li><li>• Power transmission, distribution, and retail are regionally monopolised – i.e. by TNB Transmission Network and TNB Distribution in Peninsular Malaysia, by Sabah Electricity Sdn. Bhd. in Sabah State, and by Syarikat</li></ul>

	SESCO Bhd in Sarawak state.
The Philippines	<ul style="list-style-type: none"> <li>● The generation sector has been liberalised, and the state-run National Power Corporation and many IPPs have entered the market. However, IPPs are the main entities in power generation, and the National Power Corporation only manages small-scale power sources for rural electrification.</li> <li>● Although wholesale electricity spot markets exist, distribution/retail companies procure power mainly through long-term bilateral transactions with power generator.</li> <li>● The power transmission sector is monopolised by the National Grid Corporation of the Philippines.</li> <li>● The power distribution sector is regionally monopolised by multiple private enterprises. Main enterprises are Manila Electric Company (Luzon), Visayan Electric Company (Visayas), and Davao Light and Power (Mindanao).</li> <li>● The retail sector has been partly liberalised (contestable consumers are 750 kW or higher).</li> </ul>
Thailand	<ul style="list-style-type: none"> <li>● The state-run Electricity Generating Authority of Thailand is the main player.</li> <li>● The generation sector has been liberalised, and many IPPs exist.</li> <li>● The wholesale market takes the single buyer system, except small-scale power sources with 90 MW or below.</li> <li>● The power transmission sector is monopolised by the Electricity Generating Authority of Thailand.</li> <li>● The power distribution/retail sector is regionally monopolised, where the Metropolitan Electricity Authority takes charge for the metropolitan area; and the Provincial Electricity Authority, for other areas.</li> </ul>

Note: IPPs = Independent Power Producers.

Source: Japan Electric Power Information Center.

The regulatory structure of the power industry (power generation, transmission, and distribution/retail) is shown in Table 2-2. In all the countries in this study, the generation sector has been liberalised and brought Independent Power Producers (IPPs) into the market. In fact, the power development using IPPs has been increasing, most notably in the Philippines.

The power development rendered by the state-run National Power Corporation (NPC) has been limited to small-scale power plant for rural electrification after the market reform in 2001, and IPPs are the main entities in developing new power plants.

For wholesale markets, the three countries other than the Philippines adopt the single buyer system, where a state-run enterprise purchases electricity generated by IPPs, etc. and monopolistically sells it to transmission and distribution (T&D) sector/business operators. However, in Thailand, Small Power Producers with an output of 10-90 MW and Very Small Power Producers with an output of less than 10 MW directly sell power to distribution business operators.

In the Philippines, the main form of power trading is through long-term bilateral transactions between a power generator and a distribution/retail company. In addition, trades are also carried out through Wholesale Electricity Spot Markets (WESMs), which are ran by the Philippine Electricity Market Corporation (PEMC),<sup>1</sup> in Luzon and Visayas Islands.

In a single buyer system, it is possible for a state-run enterprise to select the power source as a single buyer. However, in the Philippines, long-term bilateral transactions amongst private enterprises as well as transactions in wholesale markets give little room for the government to be directly involved in such processes.

The T&D or retail sectors are regulated in Indonesia, Malaysia, and Thailand. In the Philippines, partial liberalisation of the retail sector started in 2013. The contestable consumer segment has been widened in stages, and the currently 750 kW or higher consumers can choose their electricity supplier.

---

<sup>1</sup> Established by the Philippines' Department of Energy.

**Table 2-2. Regulatory Structure in the Four Countries**

Country	Market Structure		
	Power generation	Transmission	Distribution/retail
Philippines	Liberalised	Regulated	Partly liberalised
Indonesia	Liberalised		Regulated
Malaysia	+		
Thailand	Single buyer		

Source: Author.

The structures of the power industry in all four countries are shown in Table 2-3. In this study, due to limited data, the cost structure will be analysed by focusing on the power supply in a metropolitan area of each nation. That is, the structure of the Manila Electric Company (Meralco) in the Luzon Island of the Philippines (where Manila is located) will be compared with the Java-Bali area (where Jakarta is located), Malay Peninsula (which includes Kuala Lumpur) and the network of Thailand’s Metropolitan Electricity Authority (MEA), which includes Bangkok. In particular, for the power generation sector, the study will look at the IPPs from the Philippines; PT Indonesia Power and PT Pembangkitan Jawa-Bali from Indonesia; Tenaga Nasional Bhd (TNB) from Malaysia; and Electricity Generating Authority of Thailand (EGAT) from Thailand. For the transmission sector, a comparison will be made on how the following work: the National Grid Corporation of the Philippines (NGCP), P3B Jawa Bali from Indonesia, TNB from Malaysia, and EGAT from Thailand. For the distribution/retail sector, a comparison will be made on the processes of the Meralco from the Philippines, P3B Jawa Bali from Indonesia, TNB from Malaysia, and the MEA from Thailand.

**Table 2-3. Company Structures in Four Countries**

	Philippines			Indonesia		Malaysia			Thailand	
	Capital	Other areas		Capital	Other areas	Capital	Other areas		Capital	Other areas
	Luzon	Visayas	Mindanao	Java-Bali		Malay Peninsula	Sabah	Sarawak	Bangkok	
Generation	IPP	IPP/NPC		Indonesia power /IPP	PLN/IPP	TNB/IPP	SESB/IPP	SESCO/IPP	EGAT/IPP	
Transmission	NGCP			P3B Java-Bali		TNB	SESB	SESCO	EGAT	
Distribution/Retail	Meralco	VECO	Davao light	P3B Java-Bali	PLN Batam PLN Tarakan	TNB	SESB/ Local Distributors	SESCO/ Local Distributors	MEA	PEA

IPP = independent power producer; NPC = National Power Corporation (The Philippines); NGCP = National Grid Corporation of the Philippines; VECO = Visayan Electric Company (Philippines); PLN = Perusahaan Listrik Negara (Indonesia); TNB = Tenaga Nasional Bethad (Malaysia); SESB = Sabah Electricity Sdn. Bhd. (Malaysia), SESCO = Syarikat SESCO Bhd (Malaysia), EGAT = Electricity Generating Authority of Thailand, MEA = Metropolitan Electricity Authority (Thailand), PEA = Provincial Electricity Authority (Thailand)

Note: Shaded sections indicate the subjects of comparative analysis in this study.

Source: Author.

Note, however, that the Philippines consists of numerous islands, and the type and cost structure of power generation for islands may significantly differ from that for a metropolitan area. The comparative analysis thus takes this into consideration.

### 2.1.1 The Philippines

#### a) Electric power policies

In 1990, the Philippines enacted the Build-Operate-Transfer Law to resolve the power shortage from the late-1980s to late-1990s, prioritising infrastructure investment above all. The government first decided to allow IPPs to enter the power generation sector that had been monopolised by the state-run power authority, the NPC. To facilitate the entry of new IPPs, the Power Purchase Agreement (PPA) between IPPs and the NPC offered preferable conditions to IPPs, including long agreement terms of 20-25 years, high power purchase prices

from IPPs, and 'take or pay' clause.<sup>2</sup> This initiative resulted in an increase in the investment in power plants, which was what the initial policy had hoped to achieve. However, it also caused NPC's power procurement cost to rise sharply.

Affected by the soaring procurement cost and the currency devaluation during the Asian Financial Crisis, the NPC's financial conditions rapidly deteriorated. In response, the government started the power industry's reform. In June 2001, it released RA 9136 – or the Electric Power Industry Reform Act (EPIRA). Under this act, the government established the main entities involved in the reform of the power industry:(i) the Energy Regulatory Commission (ERC), which has the authority to regulate and supervise the generation, transmission, distribution and retail sectors; and (ii) the Power Sector Assets and Liabilities Management Corporation (PSALM), which would manage the power generation assets of NPC and promote the privatisation of NPC itself.

In light of the power price surge in the past, the government also introduced a policy that excluded new long-term PPAs between NPC and IPPs. According to the EPIRA, the liquidation of NPC's assets was to be completed in over 25 years from 2001, but an extension of the liquidation completion period by 10 years is currently under deliberation. The NPC's facilities are to be sold to private companies in stages, starting from power generation plants with higher profitability, while the Small Power Utility Group of NPC is to control and operate the remaining power generation plants in areas where privatisation is difficult.

In 2003, the Philippine government separated the power transmission sector of NPC and established the transmission authority TransCo. In 2007, the government sold a 25-year business right for the power transmission lines of TransCo to a private company through a public tender. The private business operator that won the tender established the NGCP in February 2008, and officially acquired the rights to the power transmission business in January 2009. TransCo supervises and guides NGCP in terms of business operations to ensure that the latter is appropriately carrying out the country's plans on the transmission grid.

---

<sup>2</sup> Under the take of pay clause, a buyer (NPC) of commodity (electricity) shall pay certain amount of money to a seller (IPP) regardless of actual off take of commodity. The clause is designed to reduce risk of investor by ensuring his income.

As part of the power reform, WESMs were opened in Luzon (in 2006) and in Visayas (in 2010). Plans to open a WESM in the Mindanao Island are currently under consideration.

In the retail sector, the EPIRA started to liberalise the retail market in June 2013. The scope of contestable customers was initially at 1 MW or higher and was later expanded in stages. Starting June 2017, customers with 750 kW or higher were able to select their power supplier.

It was, however, as early as April 2016 that the ERC introduced the Retail Competition and Open Access to enable large consumers to freely select their power supplier company and thus promote competition in the retail market. Through this, ERC announced a rule to restrict power procurement by Retail Electric Suppliers (RES) to a maximum of 50% of the generation capacity of affiliated generation companies. This way, other RES could have the chance to procure power from that same generation company. The rule also prohibits one RES from providing 30% or more of the peak power demand.

The ERC defined other rules, such as banning power distribution companies from engaging in power retailing business in areas where multiple power suppliers exist.<sup>3</sup>

## **b) Electric power market structure**

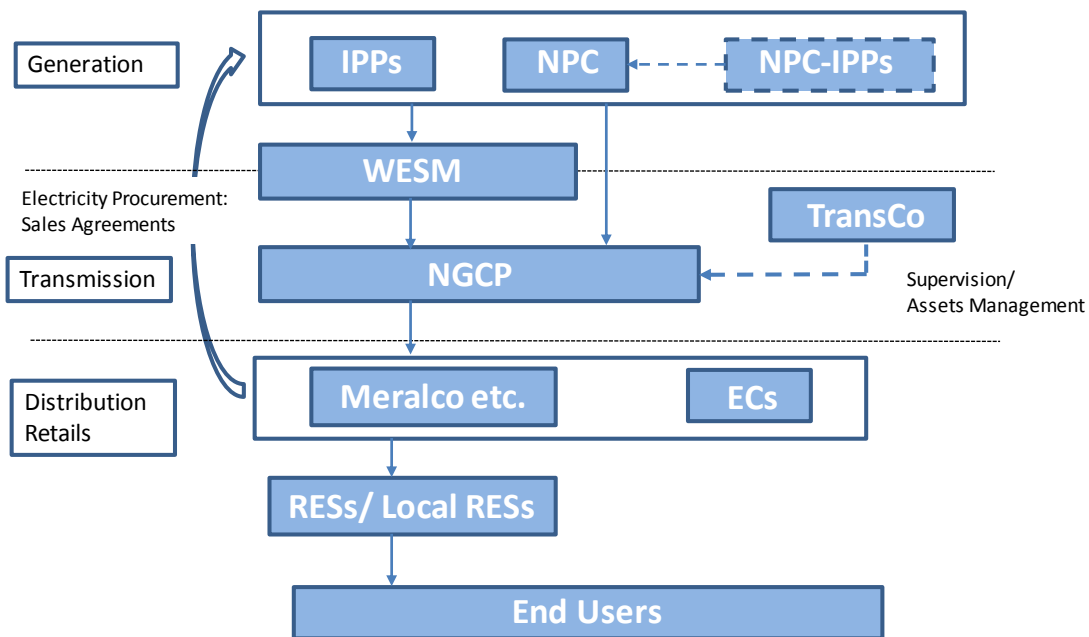
In the Philippines, NPC and IPPs take charge of the power generation business while the NGCP handles the power transmission business. All the generation facilities that NPC owned had been transferred to PSALM except those assigned for NPC's Small Power Utility Group that were poorly performing or unprofitable – hence, difficult to sell to private investors. The IPPs consist of regular IPPs and NPC-IPPs that operate power plant sold by PSALMA to private enterprises.

The ratio of IPPs that directly close bilateral contracts with distribution companies but do not enter into a contract with NPC has nearly reached 100% in the Luzon Islands, indicating that the operation of the power generation business has been completely transferred from the state-run NPC to private IPPs.

---

<sup>3</sup> Energy Regulatory Commission, 'Retail Competition and Open Access', 8 September 2016  
NNA – Philippines, 12 April 2016.

**Figure 2-1. Electric Power Market Structure in the Philippines**



EC = Electric Cooperative, IPPs = Independent Power Producers, NGCP = National Grid Corporation of the Philippines NPC = National Power Corporation, RES = Retail Electric Suppliers, WESM = Wholesale Electricity Spot Market.

Source: Power Sector Assets and Liabilities Management Corporation.

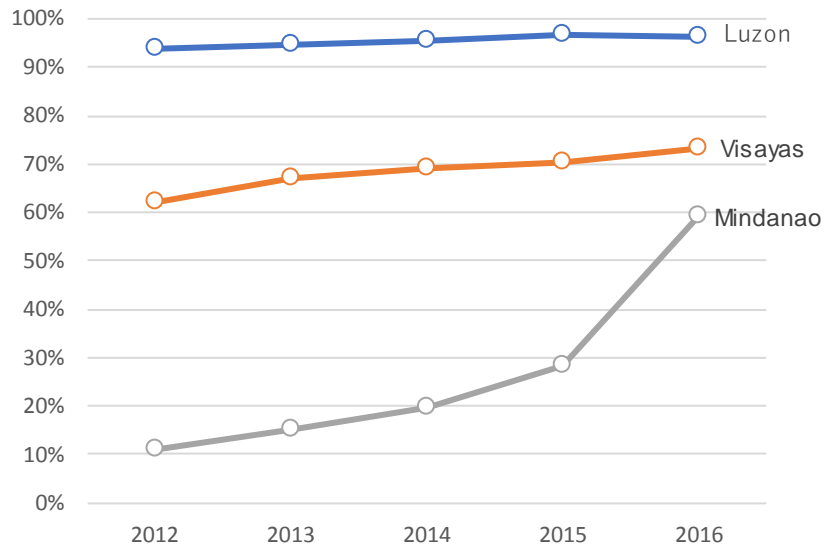
The ratio of IPPs in the Mindanao Islands without NPC contract has also risen in the last five years, approaching the ratio for the Visayas Islands. This indicates that the entry of private IPPs into the power generation sector gained traction in general, albeit some degree of difference across the major island groups. Based on the number of participants, a competitive environment is slowly evolving.

The power distribution sector consists of various small and large distribution utilities (DUs), including about 15 private DUs such as Meralco, the largest private DU in the Philippines; eight local government-operated distributors; and about 120 small-scale electric cooperatives.

Meralco accounts for about 55% of the DUs as of 2016. In isolated islands and other areas without power transmission systems, the power is supplied by NPC’s Small Power Utility Group.

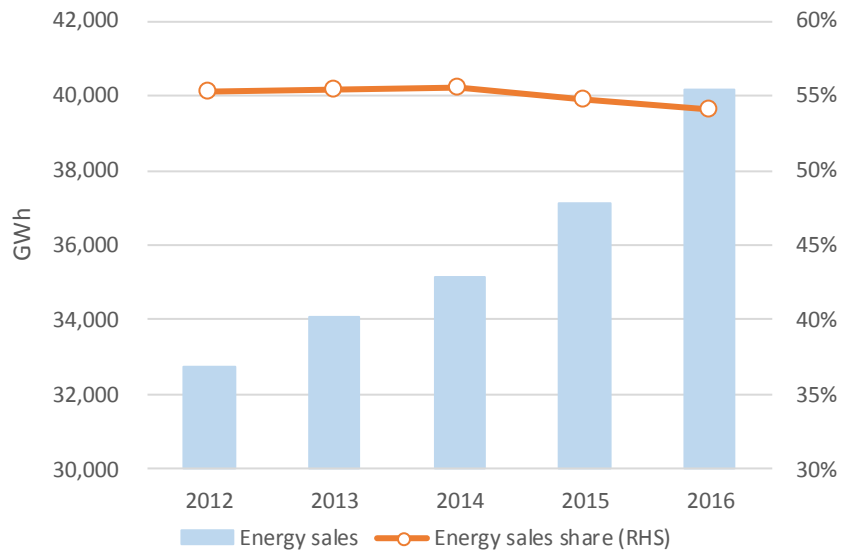


**Figure 2-2. Share of IPP Without NPC Contract Against Total Generation (kWh term)**



Source: Data provided by Department of Energy, government of the Philippines.

**Figure 2-3. Meralco's Energy Sales and Share in the Philippines**



Source: Meralco Annual Report (2016).

Distribution utilities procure power through bilateral transactions with power generators or by trading at a WESM and selling the power to consumers at supply locations. When WESM was opened in 2006, trading through this market accounted for about 40%<sup>4</sup> of all traded power. The share subsequently dropped to 10% due to various factors, including when Meralco started bilateral contracting with NPC. Although EPIRA stipulated that 'spot trading is to account for 10% or more of the total trading volume for five years after the establishment of WESM (2006)', the volume of spot trading has not reached 10% of the total trading volume since 2011, the last year of the five-year term specified by EPIRA. The low ratio of spot trading at WESMs and an increase in the number of bilateral contracts suggest that the wholesale market has become stiff, and competition is not functioning in practical terms.

The EPIRA has other future plans, though, including an open access to T&D lines and a plan to realise active power trading.

In the retail market, the contestable consumers currently are with contracted electric power of 750 kW or higher. As of September 2016, there were 1,482 contestable consumers, with a peak demand of 4,643 MW (about 38% of the total peak demand).<sup>5</sup>

### **c) Governmental involvement in power industry**

This subsection summarises the possibility of governmental involvement along the power supply chain. Although this report suggests using policies to reduce the power supply cost, the degree of governmental involvement depends on the market structure.

In the Philippines, many sectors in the power supply chain face many competition amongst private enterprises; hence, the room for the government to be involve is small in general.

In the power generation sector, the government can exercise its influence in the granting of permits and approvals. After all, many IPPs have entered the generation sector following its liberalisation. Although the government cannot control the wholesale market, it can establish a competitive environment. For the T&D sectors, wheeling charges and retail rates in the non-liberated sectors are regulated, and the government can potentially reduce the costs further

---

<sup>4</sup> Theoretically, 100% of electricity including that from PPA supplied to WESM. However, after that, electricity from PPA exempted from bidding, thus to make actual competitive transaction in WESM become smaller.

<sup>5</sup> Energy Regulatory Commission, 'Retail Competition and Open Access', 8 September 2016.

through regulations.

**Table 2-4. Government's Involvement in the Power Industry (the Philippines)**

Fuel supply	● The government has little room to influence the fuel supply as private IPPs choose and make the decision.
Generation	● The government can control the power plant development of NPC-SPUG although its role is limited to rural electrification. ● The government can be indirectly involved in power plant development by IPPs through licensing procedures.
Wholesale	● Both bilateral transactions and trading at WESMs are between private enterprises only; thus, the government has limited room for intervention.
Transmission	● This is a regulated sector, and room for the government to involve exists in its review of rates.
Distribution	● This is a regulated sector, and room for the government to involve exists in the review of rates.
Retail	● This is partly liberated, and room for the government to involve is small.

NPC-SPUG = Nation Power Commission–Small Power Utility Group.

Source: Author.

### **2.1.2 Indonesia**

#### **a) Electric power policies**

To cope with the sudden rise in the demand for power in the late 1980s, private capital (e.g. IPPs) was injected into Indonesia's power sector starting 1992.

In August 1998, the government announced its power market policy reform, wherein it would geographically and functionally divide Perusahaan Listrik Negara (PLN). The reform aimed to introduce the market mechanism, improve the transparency in the power industry, and allow the efficient entry of private enterprises.

The draft New Electricity Law, which was meant to deregulate the power industry and promote competition in the generation sector, included allowing the central and state governments to

grant permits and approvals for the power industry under the control of the central government.

In September 2009, the New Electricity Law was passed by the House of Representatives, paving the way for IPPs to enter the power business that used to be monopolised by PLN.

In 2015, the Business Plan for Electricity Provision was issued. This aimed to increase the IPP ratio to 75% by 2034. In addition, the Ministry of Energy and Mineral Resources Regulation 01/2015 required access of the power transmission network to be opened to the private sector.

Administrative organisations involved in the power sector include the *Dewan Energi Nasional* (or the National Energy-Management Committee), which formulates comprehensive policies in the development and utilisation of energy; *Badan Perencanaan Pembangunan Nasional* (Bappenas, or the Ministry of National Development Planning), which is in charge of national development planning; and *Kementerian Energi dan Sumber Daya Mineral* (or the Ministry of Energy and Mineral Resources), which manages the resources and energy sector in general.

The basic guidelines and plans in Indonesia's energy policies are formulated based on the Energy Law passed in August 2007. The Energy Law included provisions on the establishment of the National Energy Management Committee, promotion of resource development, and prioritisation of domestic supply of energy. It stipulated that the National Energy Management Committee is to formulate *Kebijakan Energi Nasional* (or national energy policies), and the Ministry of Energy and Mineral Resources will be the agency responsible for the formulation and execution of individual energy and mineral resources policies.

In September 2009, the New Electricity Law was enacted. While following the old Electricity Law in principle, the New Electricity Law stipulated a new power supply system in which the national government was to take responsibility for power supply while local governments are also given a certain level of authority. Previously, the minister of the Ministry of Energy and Mineral Resources or the president had the authority over the *Rencana Umum Ketenagalistrikan Nasional* (General National Power Plan) and the revision of electricity rates. Today, the New Electricity Law has to acquire approval from the Assembly.

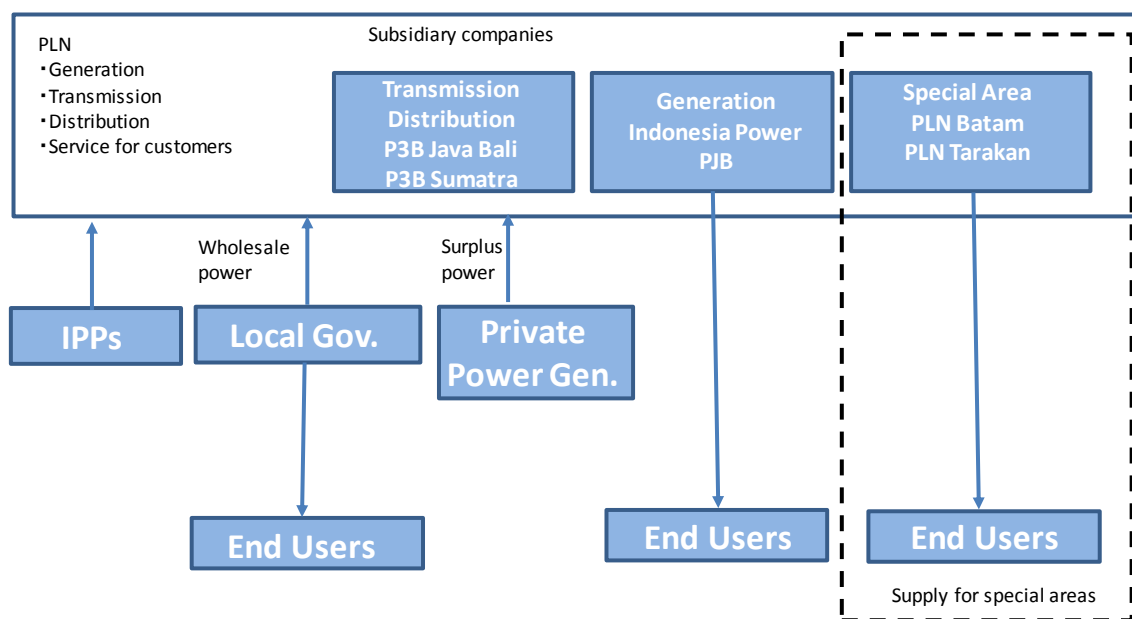
In addition, presidential decrees and ministerial decrees for utilisation of renewable energy, promotion of introduction of IPPs, and urgent development of coal-fired thermal power plants were issued.

**b) Electric power market structure**

The current power industry system is ran by the fully government-owned stock company PLN and its subsidiaries or IPPs in the generation sector. The PLN has monopoly over the T&D sectors. It has power generation subsidiaries as well as other subsidiaries in charge of transmission and distribution in special development areas. As a company, it has divided its business units into separate legal entities, each intended to operate independently and profitably. Its largest operations is the Java-Bali grid area, where PLN has two generation subsidiaries.

Sale of power from IPPs to PLN undergoes public tender in principle. However, the government has adopted a system that allows PLN to directly appoint a supplier without tendering for power generated from renewable energy, surplus power, and for power supplied to crisis areas.

**Figure 2-4. Electric Power Market Structure in Indonesia**



Source: Kementerian Energi dan Sumber Daya Mineral.

**c) Governmental involvement in power industry**

Many segments in the power sector remain regulated; thus, there is still room for the Indonesian government to be involved directly when compared to the case of the Philippines. Only Indonesia’s power generation sector has been liberalised (i.e. the IPPs), although there is still some extent of governmental control. For instance, procurement of power from IPPs remains to

be through public tender.

**Table 2-5. Government's Involvement in the Power Industry (Indonesia)**

Fuel supply	<ul style="list-style-type: none"><li>• A state-run enterprise is in charge of supplying fuel for generation. The government can also be involved in cost reduction through fee regulations for fuel suppliers.</li></ul>
Generation	<ul style="list-style-type: none"><li>• Through the PLN, the government can dictate its policy regarding costs in power plant development.</li><li>• Selection of IPPs is by public tender, where the development year and development amount by fuel type are specified. Therefore, the government can remain involved directly (although it can only be indirectly involved, through public tendering, in the area of cost reduction).</li></ul>
Wholesale	<ul style="list-style-type: none"><li>• Electric power generated by IPPs is purchased by PLN based on long-term PPAs. Competitive wholesale markets do not exist.</li></ul>
Transmission	<ul style="list-style-type: none"><li>• This is a regulated sector, where the government can be involved in the rates review process.</li></ul>
Distribution	<ul style="list-style-type: none"><li>• This is a regulated sector, where the government can be involved in the rates review process.</li></ul>
Retail	<ul style="list-style-type: none"><li>• This is a regulated sector, where the government can be involved in the rates review process.</li></ul>

Source: Author.

### **2.1.3 Malaysia**

#### **a) Electric power policies**

Since the 1980s, the Malaysian government's policy has been aiming to promote the privatisation of the power business. The nation has introduced a controlled market model aiming to establish a power wholesale market while maintaining the incumbent power supply and electricity rate level.

The Malaysian Development Plan of the Economic Planning Unit under the Prime Ministers' Department includes policies and guidelines not just for the economy as a whole, but for the nation's power sector as well. The Ministry of Energy, Green Technology and Water formulates plans specifically for the energy sector.

Malaysia has region-specific reforms for Peninsular Malaysia, and the Sabah and Sarawak States. In the Sarawak State, the state government is responsible for issuing licenses. Power auditors are appointed in the state government based on the Sarawak Power Supply Proclamation.

Regulations in the energy sector for Peninsular Malaysia and the Sabah State are handled by the Energy Commission, which was reorganised based on the Energy Commission Act 2001.

In Peninsular Malaysia, the National Electricity Board that used to have monopoly over the power industry was split and privatised as part of the system reform and then renamed as Tenaga Nasional Bhd (TNB). From the latter half of 1990s, subsidiary companies of TNB such as a thermal generation company, transmission company, distribution company and hydroelectric generation company have been established. These companies are still positioned as subsidiaries of TNB since the bill for electricity liberalisation was shelved in 2001. These firms are divided into core businesses in electric power generation, transformation/transmission and distribution.

In the Sabah State, the Sabah Electricity Board was incorporated in 1998 and became the Sabah Electricity Sdn. Bhd. Its largest shareholder is TNB, which has 80% of the total stocks issued. The Sabah State government holds the remaining 20%.

The Sarawak State established the Syarikat SESCO Bhd (SESCO) in 2005 to conduct the generation, transmission and distribution of power. All SESCO stocks are held by the Sarawak State government.

Triggered by the shortage in power supply capability in 1993, the government decided to introduce IPPs. As a result, the power supply in Peninsular Malaysia started to rely on IPPs. For PPAs between TNB and IPPs, reviews/evaluations such as those that aim to reduce prices had been made since 1993. Unlike the regulatory system in Peninsular Malaysia and Sabah State, Sarawak State does not issue licenses to IPPs. Instead, electric power generation is handled by two IPPs wholly owned by SESCO and two IPPs from the Sarawak Enterprise Corp. Bhd (SECB) group.

To stabilise the supply of energy, the government tries to balance the utilisation of coal and LNG

and to promote hydroelectric power generation. In Peninsular Malaysia in recent years, there have been periods when TNB and IPPs were unable to receive sufficient amounts of natural gas from natural gas supplier Petronas. In such a case, TNB adapts by shifting from natural gas to oil products or by increasing coal use, although TNB shoulders as well the fuel procurement cost. In addition, the government is trying to slowly bring the natural gas price, which is kept low by subsidies, closer to the market price; this, thus, increases the electricity rates.

### **b) Electric power market structure**

Figure 2-4 shows the electric power industry structure in Malaysia. Tenaga Nasional Bhd, Sabah Electricity Sdn. Bhd., and SESCO engage as vertically integrated business operators in the regions of Peninsular Malaysia, Sabah State and Sarawak State, respectively. The other players are the many IPPs licensed by the Energy Commission of Malaysia.

In the power generation sector, the government introduced the IPP system to inject private investments as a response to the rapid increase in power demand. The first PPA with an IPP was concluded in 1993.

Plans to unbundle vertically integrated power business operators and completely liberalise the power market were suspended in 2001, following the impact of certain factors such as the California electricity crisis in 2000.<sup>6</sup>

In the distribution sector, the number of distribution companies other than the large companies – TNB, SESB, and SESCO – rose from 42 in 2006 to 138 in 2010 (most recent available data). They receive electricity from TNB in the case of the Malay peninsula and resell it to local demand centres such as industrial complexes.

### **c) Government's involvement in the power industry**

The situation in Malaysia's power sector is similar to that in Indonesia, although the former's government has a larger capacity than the Philippines to be involved at each stage of the power supply delivery. The generation sector is the only sector that has been

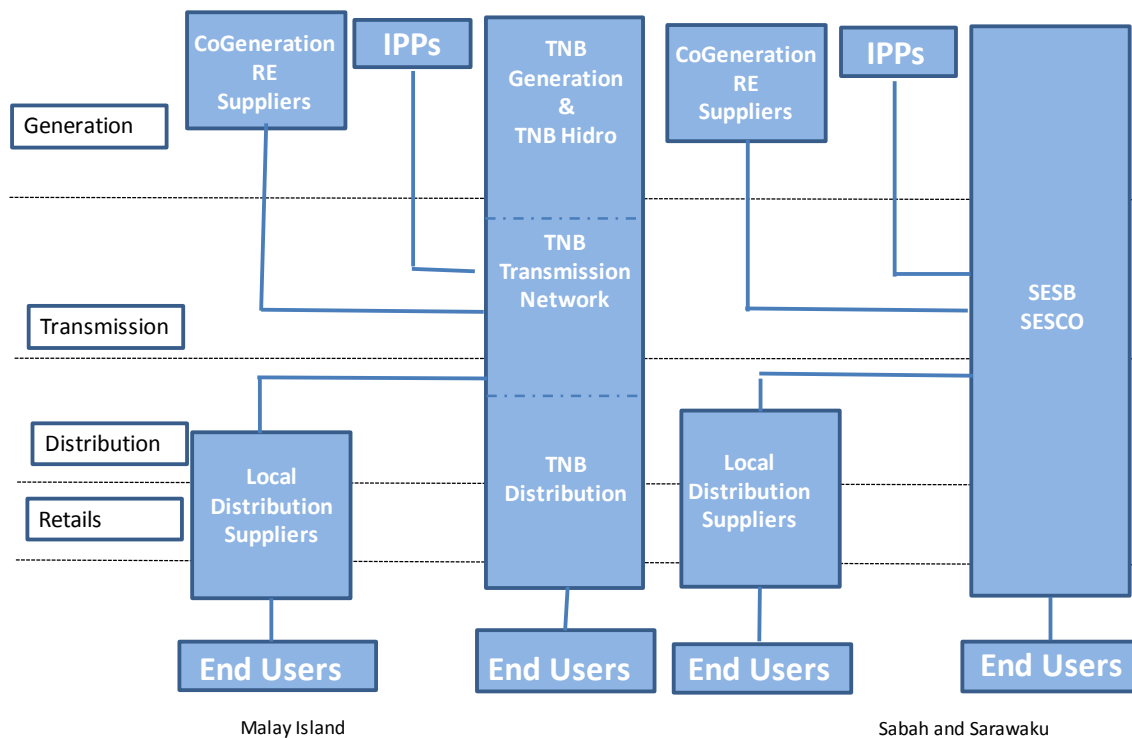
---

<sup>6</sup> Japan Electric Power Information Center, Inc. (2011) 'The Electric Power Industries in the World 2011, Vol 1, Supplement Version 2'



liberalised (i.e. IPPs), although governmental control can be in terms of specifying the type of plant during the power procurement process of IPPs through public tender.

**Figure 2-5. Electric Power Market Structure in Malaysia**



IPP = Independent Power Producers, SESCO = Syarikat SESCO Bhd, TNB = Tenaga Nasional Bhd, SESB = Sabah Electricity Sdn. Bhd.

Source: Energy Commission, 'Energy Commission Profile Booklet'.

**Table 2-6. Government's Involvement in the Power Industry (Malaysia)**

Fuel supply	<ul style="list-style-type: none"> <li>• A state-run enterprise, Petronas, takes charge of fuel supply for generation. There is room for the government to help reduce costs through fee regulations for fuel suppliers. Oil and natural gas through pipelines are regulated; LNG and coal are bought at market prices.</li> </ul>
Generation	<ul style="list-style-type: none"> <li>• TNB in Peninsular Malaysia, SEBC in the Sabah State, and SESCO in the Sarawak State are ran by the national or state government; the government has a huge potential to intervene.</li> <li>• Selection of IPPs is conducted by public tender. Here, the government</li> </ul>

---

can be involved directly in specifying the development year and development amount of power generation capacity by fuel type. On the other hand, it can only indirectly intervene in cost reductions through the public tender process.

---

Wholesale      • Electric power generated by IPPs is purchased by TNB/SEBC/SESCO based on long-term PPAs. Competitive wholesale markets do not exist.

---

Transmission      • This is a regulated sector; the government's involvement is in the electricity rates review.

---

Distribution      • This is a regulated sector; the government's involvement is in the electricity rates review process.

---

Retail      • This is a regulated sector; the government's involvement is in the electricity rates review process.

---

Source: Author.

#### **2.1.4 Thailand**

##### **a) Electric power policies**

Thailand's Ministry of Energy is in charge of the energy sector, including price regulation of energy resources, fair trading in the energy industry, and promotion of alternative energy. The ministry has the Energy Policy and Planning Office and the Department of Alternative Energy Development and Efficiency under its structure. The state-run EGAT, the Metropolitan Electricity Authority (MEA), and the Provincial Electricity Authority (PEA) engage in the provision of power under the guidance of the Ministry of Energy.

Thailand has radically reformed the power industry structure since the 1980s. Affected by the Asian Financial Crisis, the government was forced to receive the International Monetary Fund's support and drew up the Master Plan for State Sector Reform. The Master Plan included establishing a power pool market and complete liberalisation that centred on the division and privatisation of EGAT, although this plan was called off due to concerns over foreign capital ownership for EGAT and other factors.

### **(b) Electric power market structure**

In 1992, the government of Thailand encouraged participation of private enterprises such as IPPs and Small Power Producers into the power generation sector to promote competition. Until then, EGAT monopolised the power generation and transmission sectors; and MEA and PEA, the power distribution sector. However, EGAT had difficulties developing enough power generation capacities to keep up with the rapid increase in power demand. Its investment burden in building power plants grew, which led the government to introduce private funds.

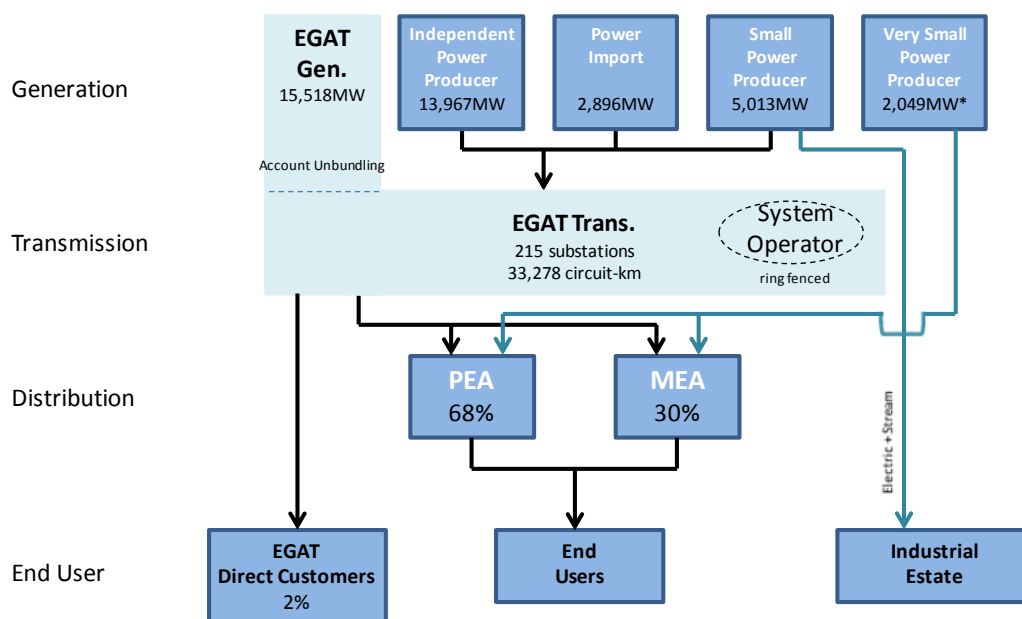
The clamour to privatise was a factor that paved the way for private funds to flow into the power generation sector. Thus, IPPs and Small Power Producers (i.e. those with power sale capacity of 90 MW or less) started to enter the scene.

In 2006, Very Small Power Producers (i.e. those with capacity of less than 10 MW) were permitted to sell power to MEA and PEA. Today, EGAT procures electricity from IPPs, Small Power Producers, and neighboring countries (Lao PDR and Malaysia) and sell it wholesale to the distributors (PEA and MEA), as well as direct sales to large consumers. It also owns and operates transmission systems.

### **(c) Governmental involvement in power industry**

The state of Thailand's power industry is similar to that of Indonesia and Malaysia. Compared to the Philippines, however, Thailand has more capacity to get involved at each stage of the power supply delivery. It has liberalised only its generation sector, although there remains room for governmental intervention via IPP's public tenders, wherein the former can specify the fuel type.

**Figure 2-6. Electric Power Market Structure in Thailand**



Remark: As of Aug 2015 \*ERC Data  
 (ERC: Energy Regulation Commission) (MEA: Metropolitan Electricity Authority) (PEA: Provincial Electricity Authority)

EGAT = Electricity Generating Authority of Thailand; MEA = Metropolitan Electricity Authority; PEA = Provincial Electricity Authority.

Source: Electricity Generating Authority of Thailand, as of August 2015.

**Table 2-7. Government's Involvement in the Power Industry (Thailand)**

Fuel supply	<ul style="list-style-type: none"> <li>State-run PTT takes charge of supplying fuel for power generation. There is room for the government to be involved in cost reduction through fee regulations for fuel suppliers.</li> </ul>
Generation	<ul style="list-style-type: none"> <li>For power development directly conducted by EGAT, the government has a huge opportunity to be involved.</li> <li>Selection of IPP is conducted via public tenders and EGAT's decision. Therefore, the government can directly be involved in fuel selection. When it comes to cost reduction, the government can only indirectly intervene through public tendering.</li> </ul>
Wholesale	<ul style="list-style-type: none"> <li>Electric power generated by IPPs is purchased by EGAT based on long-</li> </ul>

---

term PPAs. Competitive wholesale markets do not exist.

---

Transmission	•	This is a regulated sector; the government’s involvement is in the rates review process.
Distribution	•	This is a regulated sector; the government’s involvement is in the rates review process.
Retail	•	This is a regulated sector; the government’s involvement is in the rates review process.

---

Source: Author’s summary.

## 2.2 The Power Price in the Philippines

The power prices in the Philippines differ by demand sector, year, and region.<sup>7</sup> In terms of demand, its industrial sector enjoys lower prices compare to the residential sector, as is the case for many other countries. This is mostly because of the difference in T&D costs. In general, industrial consumers connect to high voltage lines. Thus, the low voltage distribution line cost is not factored in their electricity bill.

The Luzon grid has experienced a remarkable reduction in power price since 2012, eventually becoming the country’s lowest-price power supplier for industrial consumers in 2016. Visayas, meanwhile, has the highest price amongst the regions, while Mindanao has raised the price for both industrial and residential consumers.

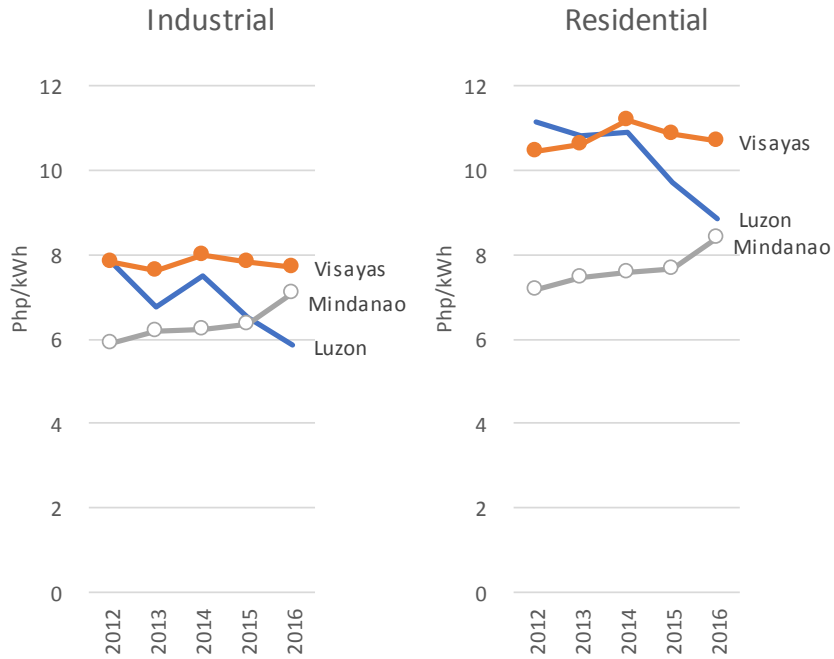
The sharp decline in the power price at the Luzon grid can be explained by the reduction in the power generation cost during the period. Since the fuel cost of thermal power generation is pass on to consumers, the steep drop in crude oil price after mid-2014 is a possible reason.

Figure 2-8 below shows how distribution companies apply different strategies to power generation pricing. In the Visayas and Mindanao, the same power generation price is charged to both industrial and residential consumers. On the other hand, the company in Luzon charges less to industrial consumers.

---

<sup>7</sup> In section 2.2, Luzon, Visayas, and Mindanao are represented by Manila Electric Company (Meralco), Visayan Electric company (VECO), and Davao Light and Power, respectively.

**Figure 2-7. Comparison in Power Prices by Region**



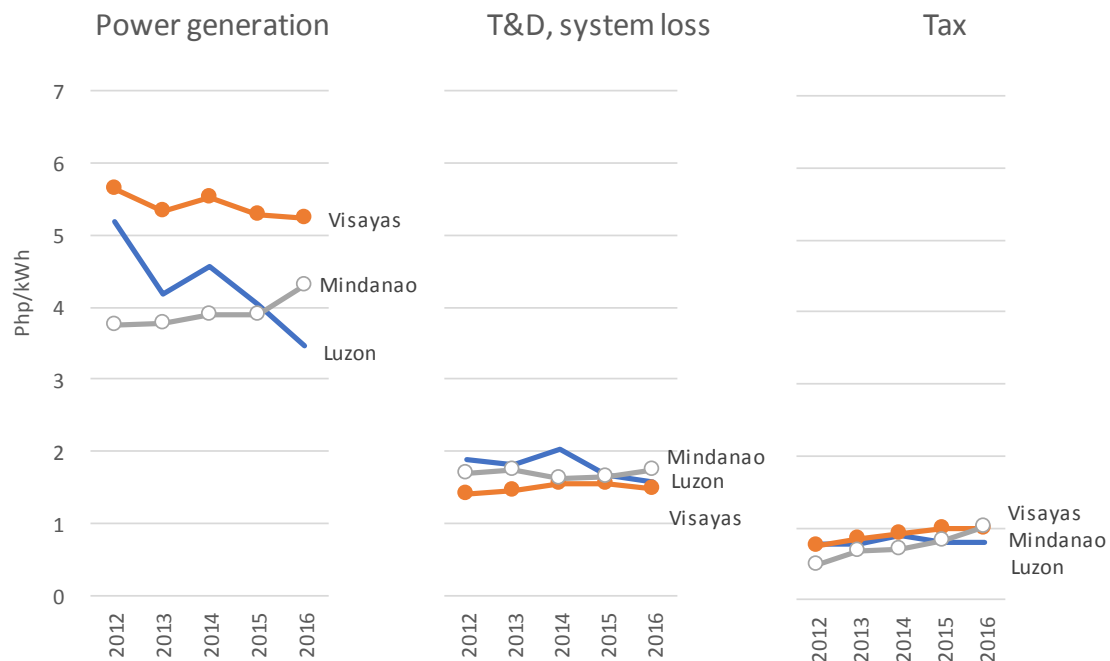
Note: Luzon, Visayas, and Mindanao are represented by Manila Electric Company, Visayan Electric company, and Davao Light and Power, respectively.

Source: Data provided by Department of Energy, government of the Philippines.

Figures 2-8 and 2-9 show that the sums of the transmission, distribution, and system loss charges have wider deviation in the residential prices than in industrial prices.

Taxes tend to increase in every demand sector and region.

**Figure 2-8. Comparison of Power Price by Component and by Region (Industry)**



T&D = transmission and distribution.

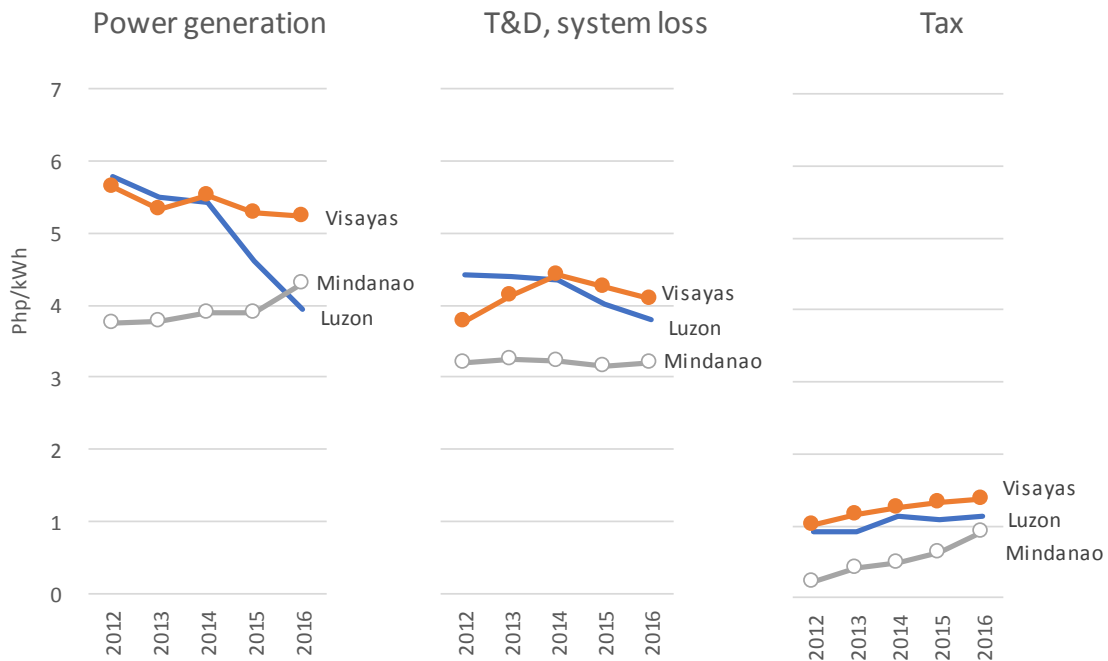
Note: Luzon, Visayas, and Mindanao are represented by Manila Electric Company, Visayan Electric company, and Davao Light and Power, respectively.

Source: Data provided by Department of Energy, government of the Philippines.

Based on the most recent (April 2018) numbers, the Visayan Electric Company (VECO) has the highest average generation charge at ₱5.9036/kWh. On the other hand, Meralco and Davao Light and Power have an average generation charge of ₱5.3612/kWh and ₱5.1669/kWh, respectively.

A further look at the generation charges shows that the power procurement portfolio differs by distribution company. While Meralco procures electricity with relatively low-priced contracts of around ₱5.0/kWh, it also has an extremely high-priced contract at ₱20.2/kWh. The share of this high-priced contract in Meralco's total level of power supply procurement (kWh) is as small as 1.8%, but accounts for 7.0% of the procurement amount in monetary terms. If this high-priced contract can be switched over to an average price contract (₱5.3612/kWh), the average generation charge will be reduced to ₱5.09/kWh (-5%).

**Figure 2-9. Comparison of Power Price by Component and by Region (Residential)**



T&D = transmission and distribution.

Luzon, Visayas, and Mindanao are represented by Meralco, Visayan Electric company, and Davao Light and Power, respectively.

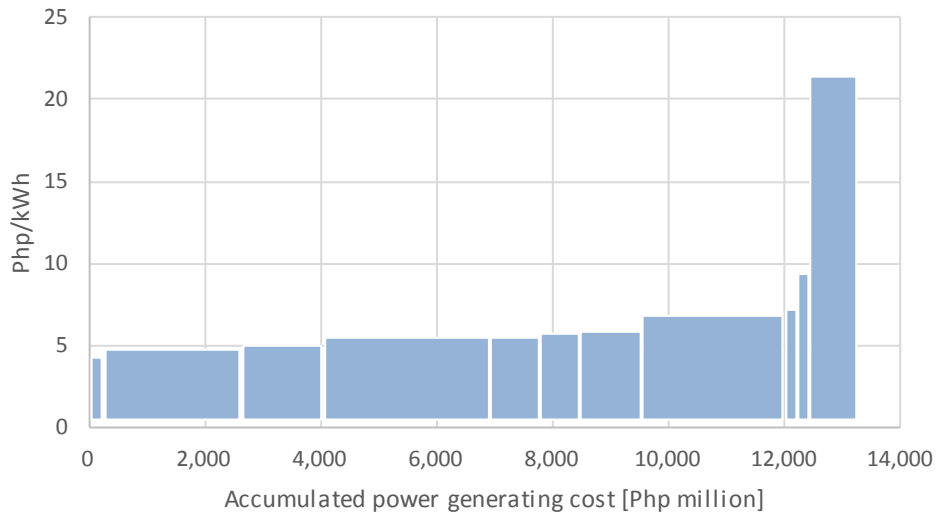
Source: Data provided by Department of Energy, government of the Philippines.

In certain cases, procuring even an expensive electricity supply may be called for during tight supply-demand balance periods to avoid supply shortage. Although a careful assessment is required, some of the reasons to keep the high-cost power plant in the market are:

- Reserve margin of power generation is too small
- Competition in the wholesale market is not effective enough



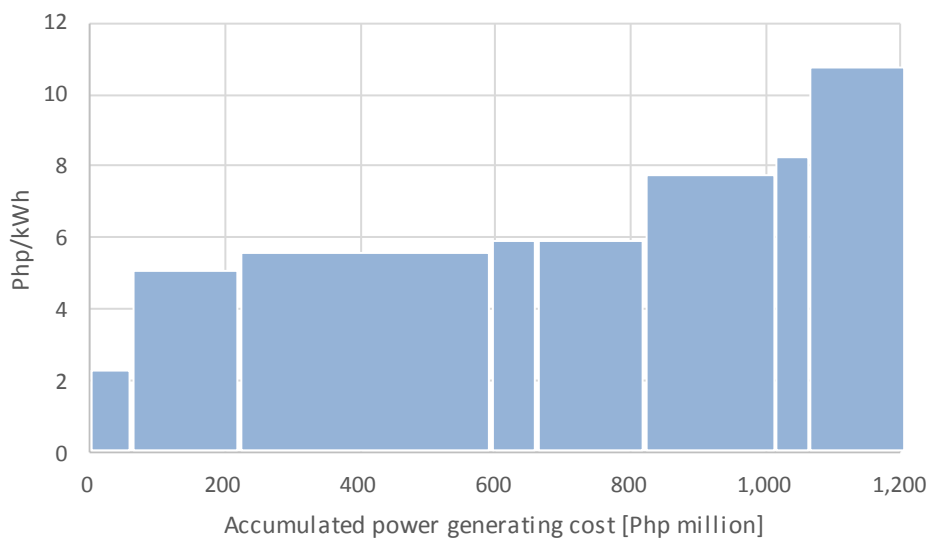
**Figure 2-10. Power Purchase Cost Curve of Meralco (April 2018)**



Source: Meralco’s website.

Although VECO’s power procurement portfolio has no extremely high-priced contracts – about a half of its contracts have prices of ₱6/kWh or higher – its average generation charge is relatively high. These high costs can be partly explained by the capital tie-up between the power generation company and VECO, which defeats any incentives for market competition and thereby, cost reduction.

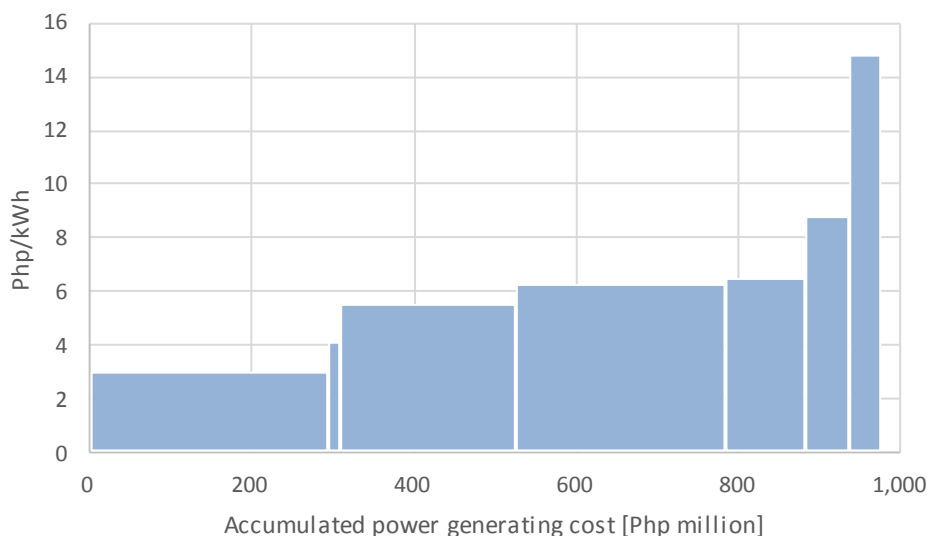
**Figure 2-11. Power Purchase Cost Curve of Visayan Electric Company (April 2018)**



Source: Visayan Electric Company’s website.

About half of the power procured by Davao Light and Power consists of low-priced (₱3.08/kWh) contracts from NPC, thus partially offsetting the high-priced procurement contracts. As a result, Davao Light and Power realises the cheapest average generation charge amongst the three distribution companies.

**Figure 2-12. Power Purchase Cost Curve of Davao Light and Power (April 2018)**

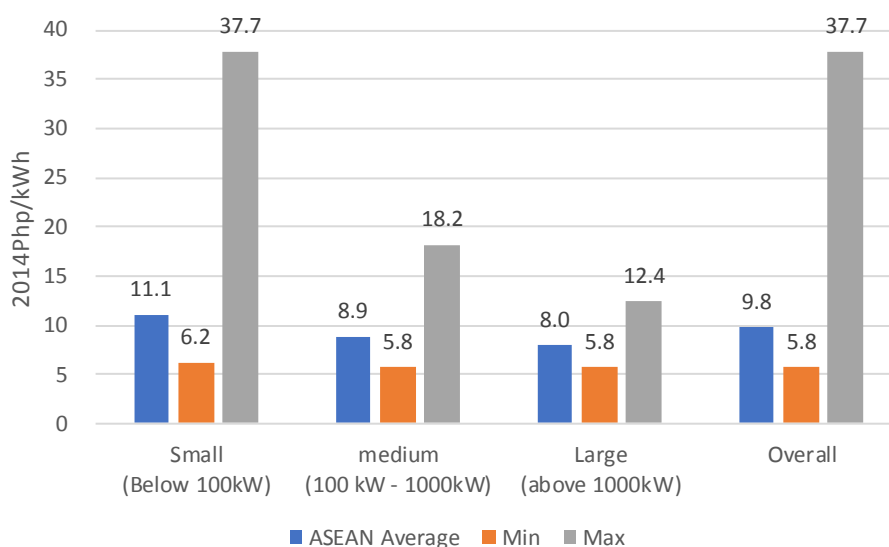


Source: Davao Light and Power’s website.

Meanwhile, the study also looks at the cost of renewable energy. Figure 2-13 indicates the average costs in the ASEAN region, and while these may not necessarily be applicable to the Philippines’ case, important lessons can be inferred.

The overall levelised cost of electricity from solar photovoltaic (PV) is calculated at ₱9.8/kWh, which is cheaper than the high-range power purchase portfolio of Meralco, VECO, and Davao Light and Power. The cost of solar PV varies by projects. For example, in a large solar park that has a capacity of more than 1 MW, the cost of solar PV is at around ₱5.8/kWh to ₱12.4/kWh – almost the same cost incurred by some existing thermal power plants.

**Figure 2-13. Levelised Cost of Electricity for Solar PV in ASEAN Countries in 2014**



Source: ASEAN Center for Energy, November 2016.

### 2.3 Power Rate Setting in the Philippines

The power rate is regulated by the ERC in the Philippines. The commission employs a few different types of methodologies for different power rate.

**Table 2-8. Methodology of Power Rate Regulation in the Philippines**

Transmission charge		Performance based regulation
Distribution charge	Private distribution company	Performance based regulation
	Electric cooperative	Benchmarking methodology Cash flow methodology

Source: Energy Regulatory Commission, 8 September 2018.

Performance-based regulation is a combination of the revenue cap regulation and incentive regulation to improve the performance of a utility company.

In determining the revenue cap, the annual revenue requirement for the next four years' regulatory period is first estimated. Annual revenue is calculated by multiplying rate base by the

WACC. Rate base includes operating expenses, depreciation of asset, and taxes. When a company better the efficiency of its operation, profit improves. In this way, the revenue cap regulation helps reduce the utility company's cost.

However, in the revenue cap regulation, there is the concern that any improvement in a company's efficiency will be attained at a cost to its service quality. This problem is mitigated by another part of the performance-based regulation. The incentive regulation sets certain criteria for service quality: e.g. system average interruption frequency index; and customer average interruption duration index. When a company's service quality performs better than the threshold, the company will receive a reward (i.e. more revenue). When the performance falls below the threshold, the company will be penalised (i.e. with less revenue). Thereby, a company is incentivised to sustain its quality service.

Benchmarking methodology (or yardstick regulation) is often used to regulate the utility companies that has business entities with diverse profiles. Electric cooperatives in the Philippines, for instance, consist of around 100 small entities with 10,000 customers to large ones with 150,000 customers. These are divided into seven groups by size (i.e. based on sales and number of customers). A different electricity rate will be applied to each group: higher rates for smaller electric cooperatives and lower rate for the larger entities. The rate is adjusted by an efficiency factor and performance incentive during the regulatory period. The efficiency factor reduces the rate to improve operational efficiency. The performance factor increases the rate to improve the quality of services.