

# Learning from Power Sector Reform

## The Case of The Philippines

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## Abstract

The Philippines power sector underwent a substantial and largely complete reform process. Following a severe shortage of supply in the late 1980s and the Asian Financial crisis of 1997, which made the dollar-denominated debt of the National Power Corporation extremely burdensome, the Electric Power Industry Reform Act was passed in 2001. This was intended to improve the quality of service and reduce power tariffs via the introduction of private participation and competition at the wholesale and retail levels. Although the implementation of the full reform program took longer than originally expected, the unwavering

support given to the reform agenda by successive presidents of the country ensured that the planned steps had all been completed by 2013. At that time, retail competition and open access for consumers in Luzon and Visayas of more than one megawatt were introduced. The reform process was not impeded by complications that would have arisen if consumer subsidies had been endemic, but retail prices are even higher than might have been expected in the absence of subsidies, due to domestic taxation and the presence of some inefficiencies that have not yet been eliminated by the onset of competition.

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# Learning from Power Sector Reform: The Case of The Philippines

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Keywords: power sector reform, electric utility, power generation, energy access, state-owned enterprise, regulation, electricity pricing.

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<sup>1</sup> This paper is based on data collected and interviews conducted in the Philippines by Rauf A. Tan and Eric Groom. Valuable guidance was provided by Yuriy Myroshnychenko of the World Bank Country Team for the Philippines.

## Foreword

“Rethinking Power Sector Reform” is a multiyear global initiative of the Energy & Extractives Global Practice that provides an updated assessment of power sector reform experiences across the developing world. The initiative aims to revisit and refresh thinking on power sector reform approaches, in the light of accumulated evidence about the performance of countries undertaking different types of reforms. The goal is to reignite the policy debate around reform approaches by articulating a new vision that incorporates lessons learned over the past 25 years. It also reflects on how recent technological trends and business models that are disrupting the sector may call for new thinking on reform strategies.

Since the 1990s, a standard set of policy prescriptions for power sector reform has been widely used. These include vertical and horizontal unbundling of power utilities; private sector participation; creation of an independent regulator; achievement of cost recovery pricing; and the introduction of competition in power generation. While this package of reforms was, at least partially, adopted by several developing countries, momentum and uptake slowed considerably in the 2000s. There is a need to revise approaches in the light of 25 years of experience, evidence, and technological disruptions to provide practitioners with a flexible frame of reference that can help identify the types of reforms needed to improve the power sector in different country contexts.

Supported by the World Bank’s [Energy Sector Management Assistance Program](#) (ESMAP) and the [Public – Private Infrastructure Advisory Facility](#) (PPIAF), the initiative works with different partners and experts across the World Bank Group (WBG) and beyond to generate evidence, analysis and insights on key themes of interest to power sector reform practitioners and decision makers globally: cost recovery, utility governance and restructuring, power markets, regulation, and political economy. Findings and recommendations on each of these themes will be included in a forthcoming Flagship Report.

The initiative is strongly evidence-based, grounding its research in an in-depth exploration of the 25-year power sector reform journey of 15 World Bank Group client countries that represent a wide diversity of geographies, income levels, and approaches to reform. The selected countries are Colombia, the Dominican Republic, the Arab Republic of Egypt, India, Kenya, Morocco, Pakistan, Peru, the Philippines, Senegal, Tajikistan, Tanzania, Uganda, Ukraine, and Vietnam.

An important output of the project is a series of case studies – of which this is one – that provide a narrative of the reform dynamics in each country and evaluate the impact of reforms on key dimensions of sector performance including security of supply, operational efficiency, cost recovery and energy access. For a subset of countries that pursued deeper reforms – Colombia, India, Peru and the Philippines – the project also includes a series of free-standing case studies that evaluate the experience with wholesale power markets. The purpose of the case studies is to reflect upon the experiences of individual countries with a view to extracting lessons of

broader interest to the global community. It is not the role of these papers to recommend any particular way forward for the countries in question.

These case studies, which constitute companions to the synthesis of the Flagship Report, are being published in the Policy Research Working Paper Series of the World Bank. As such, the case studies represent the views of the authors alone and should not be attributed to the World Bank or to any other person or institution.

## Abbreviations and Acronyms

BAT	Build and Transfer
BENECO	Benguet Electric Cooperative
BLT	Build lease and transfer
BOO	Build own and operate
BOT	Build Operate and Transfer
CAIDI	Customer Average Interruption Duration Index
DoE	Department of Energy
EC	Electric co-operative
EPIRA	Electric Power Industry Reform Act
EPM	Empresas Públicas de Medellín
GENCOS	Generation Companies
GWh	Giga Watt hours
IPP	Independent power producer
IRR	Implementing Rules and Regulations
JCPC	Joint Congressional Power Commission
MERALCO	Manila Electric Company
NEA	National Electrification Administration
NGCP	National Grid Corporation of the Philippines
NPC	National Power Company
O&M	Operation and management
PDP	Power Development Program
PSALM	Power Sector Assets and Liabilities Management Corporation
QfD	Quasi-fiscal deficit
RCOA	Retail Competition and Open Access
RES	Retail electricity suppliers
ROO	Rehabilitate own and operate
ROT	Rehabilitate operate and transfer
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
TSC	Transition Supply Contract
WESM	Wholesale Electricity Spot Market

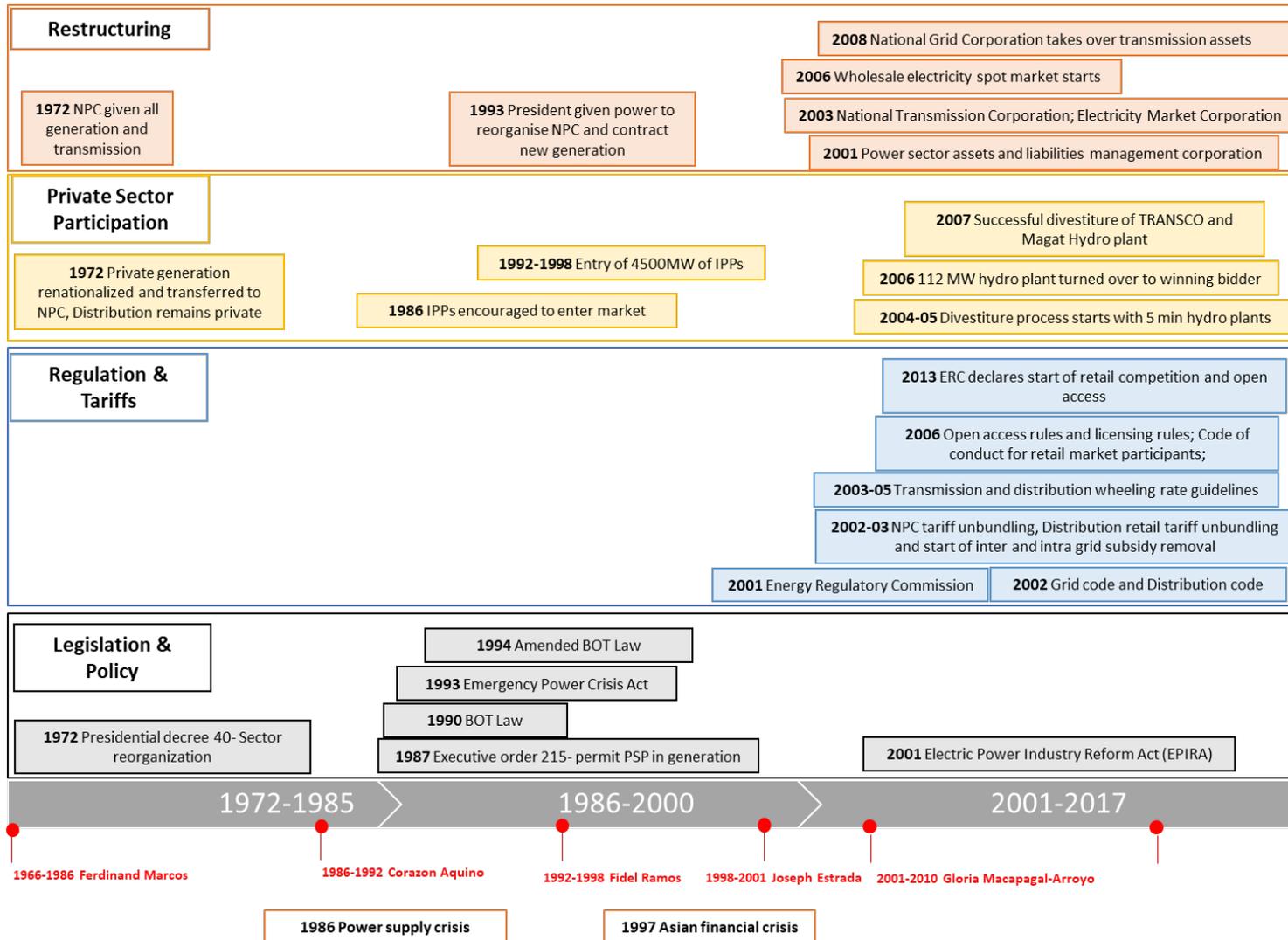
## 1 Introduction

At the beginning of the 1990s, the Philippines power sector was dominated by the state-owned National Power Company (NPC) which controlled and owned the majority of generation and transmission in the country. Distribution was owned by private companies of which the Manila Electric Company (MERALCO) was the largest, and by some cooperatives. This kind of mixed public-private ownership in the power sector as a starting point of the reform process is rarely seen among developing countries.

In the late 1980s, the country had faced a severe power crisis in which demand was unable to match supply, and governments had tried a number of measures to encourage the entry of the private sector to build, operate and transfer generation. Initial policies were less successful but eventually 4,500 MW of capacity was added between 1990 and 1998. NPC was heavily in debt, largely because its dollar denominated loans had been hit hard by the massive sudden change in the exchange rate in 1972. This was exacerbated by the Asian financial crisis of 1997 which slowed demand and made the take or pay contracts very burdensome.

Faced with these serious problems, in 2001 the Electric Power Industry Reform Act (EPIRA) was passed which aimed to improve the quality of electricity service and reduce power rates. The timeline of events in the power sector is split into two: the first covers the period from 1972 to 2001 (which includes the nationalization of privately owned generation and transmission, and the introduction of extraordinary powers to encourage the entry of IPPs), and the second covers the post-EPIRA period from 2001 (figure 1).

**Figure 1: Philippines power sector reforms timeline**



This study explores the Philippines' power sector reform experience drilling down into the dynamics between sector development, performance, and key reform interventions, with special focus on sector planning and procurement, access and accountability, tariff setting and regulation, and utility performance. The study begins with a detailed, chronological account of its development and reform history. From here, it turns to consider the performance and development of the sector over the recent decades and seeks to understand why the Philippines was able to carry out a comprehensive reform program.

## 2 Three phases in the evolution and reform of the Philippines' power sector

### 2.1 Political context

Democratic institutions were introduced to the Philippines by the United States at the beginning of the twentieth century. The apparent success of these imported practices gave the Philippines its reputation as "the showcase of democracy in Asia." Before 1972, the constitutional separation of powers was generally maintained. Political power was centralized in Manila, but it was shared by two equally influential institutions, the Presidency and Congress. The checks and balances between them, coupled with the openness of bipartisan competition between the Nacionalista and Liberal parties, precluded the emergence of one-person or one-party rule. Power was transferred peacefully from one party to another through elections.

This situation was abruptly halted in 1972 when President Ferdinand Marcos, who had been elected to this office in 1966, declared Martial Law amid threats of Communist and Muslim insurgencies. Marcos abolished Congress and appointed and removed government officials.

In 1981 elections for President were held, which was won by Marcos, while the opposition parties boycotted the elections. It was in this environment in August 1983 that President Marcos' foremost critic, former Senator Benigno Aquino, returned from exile and was assassinated. The country was thrown into an economic and political crisis that resulted eventually, in February 1986, in the ending of Marcos's 21-year rule and his flight from the Philippines.

The February 1986 People's Power Revolution elevated the widow of former Senator Benigno Aquino, Corazon C. Aquino, to the presidency. She renounced the dictatorial powers she inherited from Marcos and returned the Philippines to the rule of law; she lived with the checks on her own power inherent in three-branch government; and she scheduled national elections to create a two-chamber legislature and local elections to complete the country's redemocratization.

Political parties grew in profusion after the Marcos martial law regime was ended. There were 105 political parties registered in 1988. As in the pre-Marcos era, most legal political parties were coalitions, built around prominent individuals, which focused entirely on winning elections, not on what to do with the power achieved.

The election of 1991 was the first “regular election” since the last presidential elections in 1969 and the discredited 1986 “snap elections”. It was to be the first step to normalcy under the new 1987 constitution. Fidel V. Ramos won the presidency with only 24 percent of the votes cast, with a slim margin over the next ranked candidate. It became imperative for President Ramos to form alliances and partnerships to push his agenda.

President Ramos had a broad reform agenda covering not only economic liberalization measures (for example, continuing trade liberalization, privatization, dismantling monopolies and cartels) but also institutional reforms (tax and customs administration, bureaucracy, judiciary), redistributive reforms (social reform agenda), and political reform (party system, electoral process). At the end of the day, he was most successful where the reform effort entailed liberalization and deregulation, that is, getting government out of the way to foster market efficiency. The success record of his programs for institutional reform is less evident, partly because these are by nature more intractable and complex and require sustained action over a long period, perhaps longer than a president’s term. At the end of his term, the country was suffering from the effects of the 1997 Asian Crisis.

The Philippine’s economic growth has been characterized by a “boom-bust” cycle. The first 12 years after the restoration of democracy in the Philippines coincided with even more volatile growth. A brief “boom”—two years of over 5 percent growth—was followed by a “bust,” where growth became flat or even negative. While this was a period of significant economic reforms—both the Aquino and Ramos governments espoused liberal economic policy—and capital buildup, it was also a period marked by political difficulties; natural disasters (including a major earthquake in 1990 and a devastating volcanic eruption in 1991); and, toward the end, the Asian crisis. A debilitating power shortage moreover contributed to the economy’s contraction in 1991.

The succeeding 12 years were marked with varying conditions of political stability. Under the presidencies of Joseph Estrada (1998–2001) and Gloria Arroyo (2001–2010), the economy gradually accelerated despite bouts of political turmoil and serious economic shocks. In particular, financial and economic reforms that have gradually been put into place since the 1990s, as well as professional economic management, have led to strong fundamentals that have borne fruit in recent years.

Both Estrada and Arroyo were popular leaders at the start of their administrations. Both had successful track records in government service. Estrada was a popular actor and a City Mayor, Senator, and finally a Vice President before assuming the Presidency. Arroyo was a member of the political elite, a daughter of previous Philippine President Diosdado Macapagal, a Senator and Vice President. Despite their initial popularity and majority legislative coalitions, the two presidents experienced significant slumps in public trust ratings, divided governments, and destabilization and takeover attempts during their terms of office.

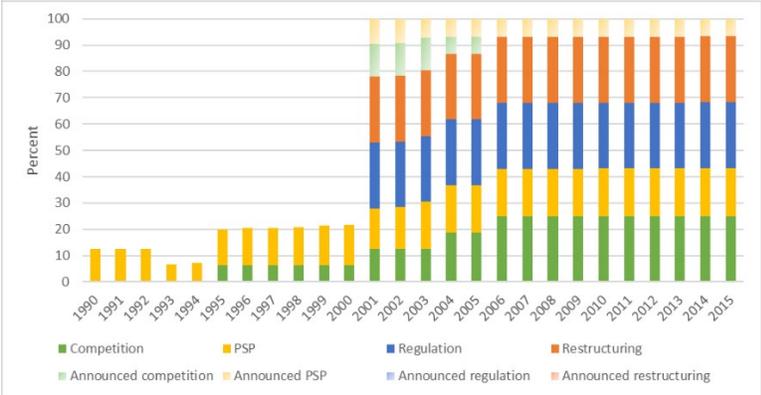
Estrada assumed the presidency in 1998 at the tail end of the Asian Financial Crisis when the country was suffering from the sharp depreciation of the Peso that continued to 2000. This led

to an exodus of capital, which was blamed on Estrada’s political leadership and economic mismanagement. A second People Power revolution in January 2001 forced Estrada to step down, and Vice President Gloria Arroyo became president. As expected, serious challenges to Arroyo’s rule were raised, including destabilization and impeachment attempts, resulting in a slowdown in the reform and privatization program. However, after her successful re-election in 2004, President Arroyo’s government pursued sector reform with more determination and this, coupled with a greater political certainty, encouraged foreign investment into the sector. The Presidencies of Benigno Aquino III of the Liberal Party (elected in 2010), and Rodrigo Duterte of the Peoples’ Democratic Party (elected in 2016), have seen a continuation of the power sector reform program, with many steps being implemented (concerning the operation of the Wholesale Electricity Spot Market, the introduction of renewables, electric cooperative development with respect to improving access, and retail competition).

### 2.2 Sector Development

The standard package of reforms prescribed by international donors in the 1990s included four principal components: restructuring (vertical and horizontal unbundling of power utilities); private sector participation; creation of an independent regulator; and competition in power generation. The index of announced reforms and actual reforms illustrated in figure 2<sup>2</sup> shows that the Philippines has implemented the 1990s standard model of reform in almost its entirety. The following is a detailed history of the development of power sector reforms in the country. The success of the reforms taken will be examined in the next part of this study.

**Figure 2: Actual and announced reforms in the Philippines, 1990-2015**



Source: Rethinking power sector reforms

<sup>2</sup> In order to aggregate across the four dimensions of power sector reform considered in this study, a simple Power Sector Reform Index is constructed. The index gives each country a score on an interval of 0 to 100 on each dimension of power sector reform. The scores are based on giving equal weight to each step on each dimension of the reform continuum. The average of the four 0-100 scores is used to provide an overall summary of the extent of reform. For more on the index, see the annex.

### 2.2.1 1972 – 1986 Nationalization

When President Ferdinand Marcos declared Martial Law in September 21, 1972, he had a vision of a “New Society” for the Philippines. Part of that vision was the total electrification of the country, which he embodied in Presidential Decree 40. The NPC (which had been created in 1936) was charged with the responsibility of setting up the transmission line grids and the construction of associated generation facilities in Luzon, Visayas and Mindanao. This resulted in the transfer of most privately-owned generation and transmission to the state sector, while the distribution of the electricity generated by the NPC remained with private distribution utilities, electric cooperatives, and local government units. In areas beyond the NPC grid, cooperatives, private utilities and local government could own and operate isolated grids and generation facilities. As a result, MERALCO was changed from a vertically integrated private utility to a private distribution company subject to state regulation.

Through the creation of a Ministry for Energy undertake energy policy and planning, and a central responsible implementing agency, the NPC, President Marcos was able to also achieve his policy of decreasing dependence on imported oil by harnessing indigenous sources of energy such as hydro and geothermal. Nuclear was also part of his planned generation mix designed to address the electricity demand of the country.

It was through the concentration of power by the President, who had both executive and legislative powers, that he was able to drive his reform agenda. This saw the construction of 20 power plants, and the supply of electricity to 2.7 million households in 1986 (representing 45.6 percent of total households). The country’s dependence on Middle East oil was reduced from 92 percent in 1973, to 71 percent in 1980, and to 57 percent in 1984. By 1985, the Philippines stood as the world's second-largest user of geothermal power.

### 2.2.2 1986 – 2000: Emergency measures

The performance of NPC after the transfer of privately-owned generation and transmission was poor due to a failure to prudently operate and maintain its plants. Aging power plants had to be retired and hydro capacity was reduced due to droughts. In 1986, President Aquino ordered the mothballing of the recently completed 623 MW Bataan Nuclear Power Plant, because of concerns with the procurement for the plant by the previous administration, and uncertainty about safety highlighted by the recent experience at Chernobyl. There had been no planning for a replacement for the capacity that it would have provided. NPC had accumulated billions in debt and lacked the financial capability to build and install critical capacity to forestall the impending power crisis.

As a result of these factors there were large scale shortages of power and frequent blackouts. The Aquino administration passed in 1987 Executive Order 215 whose principal aim was to permit and encourage private sector participation and remit NPC’s monopoly. Although NPC continued

to possess principal responsibility for the construction of “associated generation facilities” within the grid, private sector entities could seek accreditation to construct and operate “electric generating plants, intending to sell their production to the grid, consistent with the development plans formulated by NPC”.

As a further encouragement to private sector participation in generation the Build-Operate-and-Transfer Law (BOT) was enacted in 1990. This permitted private contractors under a BOT or Build-and-Transfer (BAT) scheme to construct and operate power generation for an assured “reasonable return of its investment and operating and maintenance costs.” Despite these legislative encouragements, by the end of the Aquino regime in 1992 only one contract for a 70-MW gas turbine powerplants had been signed.<sup>3</sup>

President Fidel Ramos came into power in 1992 and solving the power crisis was high on his agenda. To ensure his economic programs, he requested, and Congress granted, one-year special emergency powers that allowed the President “to enter into negotiated contracts for the construction, repair, rehabilitation, improvement or maintenance of power plants, projects and facilities, and to reorganize NPC” under the Republic Act 7648 (Emergency Power Crisis Act). In view of the one-year limit, to encourage the immediate and sustained entry of IPPs, the government took on the following risks:

1. Market Risk: “Take or Pay” provisions that guaranteed payment for the contracted electricity regardless of whether or not these were fully generated;
2. Fuel Risk: the off-taker either was to provide the fuel or assume the fuel price and availability risks;
3. Foreign Exchange Risk; and
4. Sovereign Guarantee.

Tax exemption was also granted

This was followed by the Amended BOT Act of 1994 that introduced, in addition to BOT and BAT schemes, Build-own-and-operate (BOO), Build-Lease-and-Transfer (BLT), rehabilitate-own-and-operate (ROO), and rehabilitate-operate-and-transfer (ROT) schemes. The law also introduced the concepts of “the unsolicited proposal” and directly negotiated contracts, which were bold departures from the stringent public bidding procedures previously required of government contracts.<sup>4</sup>

A total of 42 IPP contracts were directly negotiated by NPC. Half of these contracts had short gestation periods and were mostly diesel or bunker fuel generators or power barges that could immediately supply the pressing power needs. While these effectively resolved the power crisis, it also exposed an inefficient electric power industry and there were calls for further reforms in

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<sup>3</sup> M. Chen. 2007. “The Philippine power sector: issues and solution.” The Philippine Review of Economics, Vol. XLIV, page 38.

<sup>4</sup> See H. Antonio: “A History of the Philippine Power Sector” in “The Energy Report: Philippines. Growth and Opportunities in the Philippine Electric Power Sector. 2013-2014 Edition. Kpmg.com/energyaspac.

the electric power industry. The earlier IPPs tended to be expensive because of the following: (1) the rapid capital recovery period under short PPAs; (2) the extreme pressure on government negotiators stemming from the grave electricity crisis; and (3) the high fuel cost oil plants were dispatched as baseload facilities during the crisis.

As a result of these legislative changes a total of US\$ 6 billion in investments in 4,800 MW of installed capacity had been made by IPPs in the period 1990 - 1998. However, the 1997 Asian financial crisis slowed peak demand, resulting in a large oversupply of power as the economy slowed and demand dropped below forecast levels. At the same time NPC's debt continued to be a problem. By 2001 it owed about US\$ 16 billion to creditors (\$10 billion of IPP obligations and \$6 billion of debt). There was pressure from a number of sources, including NPC's creditors, for the government to implement sweeping regulatory changes in order to avoid a looming further power crisis.

At this time the industry structure and ownership consisted of the state-owned NPC, a bundled utility that was responsible for central management and control of both generation and transmission of electricity in the whole country and whose supply of electricity came from its own power plants and from Independent Power Producers (IPPs). It had exclusive ownership of the transmission grid and was also responsible for central systems planning and systems operations.

Electricity was supplied to end-users by distribution utilities that had a franchise over a specific geographical area. There were 16 privately-owned distribution utilities, 8 local government owned distribution utilities and 119 electric cooperatives (ECs). The distribution utilities contracted with NPC and/or IPPs for the supply of electricity and with the former for the transmission of its power supply. There were also large end-users, that were not supplied by the distribution utility, "directly connected" to the transmission grid by sub-transmission assets. The Department of Energy oversaw energy policy and the Philippine Energy Program. It supervised NPC, which was in charge of the Power Development Program, and the National Electrification Administration (NEA) which supervised the electricity cooperatives. The Energy Regulatory Board approved tariffs after a judicial process.

At the NPC, an in-house study was conducted on NPC Privatization and Restructuring as a long-term solution to meet the future power needs of the Philippine economy. Drawing on and consistent with the then global trends in power sector reform process, particularly from the United Kingdom, countries in Latin America, the United States, Australia, New Zealand and Canada, the study proposed the divestment by NPC of its generation and transmission facilities and the restructuring of the existing regulated monopoly to a competitive market.

The motivation for the proposed reforms was to extract efficiencies and to demolish monopolies. The vision was the creation of five government-owned generation companies that would be run as private enterprises and where each would not have a monopoly over any part of the load curve, or any geographical location. Long-term supply contracts would be negotiated with the

distributed utilities for all the capacities of these generation companies at a pre-determined tariff. The shares of stocks of the generation companies would be sold to the public for a wider ownership base. The intent was to protect consumers' interests whereby the upside of the new private generation companies would come from efficiencies they would be able to extract from their operations. To address the removal of monopolies, there would be open access at the distribution level and retail competition introduced. All of these points eventually made their way into the provisions of the future Electric Power Industry Reform Act (EPIRA).

The study paved the way for the first version of the Omnibus Power Industry Bill filed in 1995 that was intended to privatize NPC and restructure the electric power industry. The Bill was filed late in the 9<sup>th</sup> Congress of the Ramos Administration and was read twice during the Congress but did not pass through the third reading as Congress went for recess for the May 1998 national elections.

The Asian financial crisis had occurred in 1997 and had a great impact. NPC had to contend with meeting the take or pay contractual obligations that guaranteed payments to the IPPs whether or not they were dispatched or consumed. Also, these contractual obligations, as well as the other loans of NPC, were denominated in foreign currency and its payments were hard hit by the huge peso devaluation against the dollar. Because the loans and contracts of NPC were government-guaranteed, the fiscal position and economy of the Philippines was greatly affected. In the first quarter of 1998, the Philippines and the ADB negotiated and agreed on a US\$300 million loan for the Power Sector Restructuring Program and the passage of the privatization and restructuring bill was a pre-condition for its release.

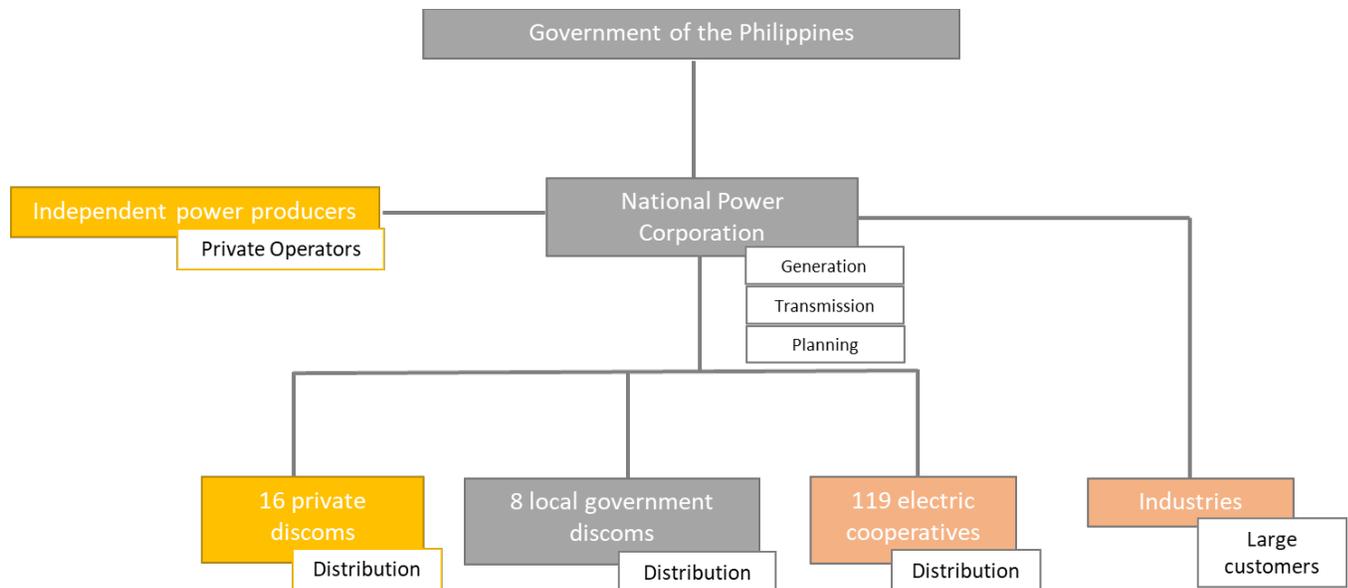
On June 30, 1998, President Joseph Estrada was sworn into office. On January 20, 1999, he filed a refined version of the Omnibus Power Industry Bill, House Bill 8457. As it was certified as one of his administration's priority legislations, Congress took immediate action. However, in the last quarter of 2000, the political scene changed, and an impeachment case was filed in the House of Representatives, which was fast-tracked to the Senate. Congress was turned into an impeachment trial court, effectively halting all pending bills.

### 2.2.3 2001 – present: The journey to competition

On January 20, 2001, President Gloria Macapagal Arroyo assumed the presidency after the EDSA Revolution of 2001. Being an economist, her administration was committed to pursue economic progress for the country and she certified the pending House Bill 8457 as among her priority legislations. Congress approved the bill on April 21 and finally, on June 8, 2001, Republic Act (RA) No. 9136, the Electric Power Industry Reform Act (EPIRA) was approved and signed into law. It became effective on July 10, 2001, 15 days after its publication in two major newspapers of general circulation as required by law.

The sector structure prior to the passage of the EPIRA is shown in [Figure 3](#).

Figure 3: Sector Structure Prior to EPIRA (2001)



The reforms in the Philippine electric power industry were directed and implemented in accordance with the EPIRA. Its Implementing Rules and Regulations (IRR) were promulgated by the Department of Energy (DoE) and approved by the Joint Congressional Power Commission (JCPC) on February 27, 2002.

Section 2 of the EPIRA declared the policy objectives of the Philippine government to be:

- a) To ensure and accelerate the total electrification of the country;
- b) To ensure the quality, reliability, security and affordability of the supply of electric power;
- c) To ensure transparent and reasonable prices of electricity in a regime of free and fair competition and full public accountability to achieve greater operational and economic efficiency and enhance the competitiveness of Philippine products in the global market;
- d) To enhance the inflow of private capital and broaden the ownership base of the power generation, transmission and distribution sectors;
- e) To ensure fair and non-discriminatory treatment of public and private sector entities in the process of restructuring the electric power industry;
- f) To protect the public interest as it is affected by the rates and services of electric utilities and other providers of electric power;
- g) To assure socially and environmentally compatible energy sources and infrastructure;
- h) To promote the utilization of indigenous and new and renewable energy resources in power generation in order to reduce dependence on imported energy;
- i) To provide for an orderly and transparent privatization of the assets and liabilities of the National Power Corporation;
- j) To establish a strong and purely independent regulatory body and system to ensure consumer protection and enhance the competitive operation of the electricity market; and
- k) To encourage the efficient use of energy and other modalities of demand side management.

To attain the foregoing policy objectives of the EPIRA, the electric power industry had to be restructured and the assets of the National Power Corporation (NPC) privatized.

The generation and transmission assets of the state-owned National Power Corporation (NPC) had to be unbundled. NPC's transmission assets were to be carved out and a National Transmission Corporation (TransCo) created which was fully owned by a newly created Power Sector Assets and Liabilities Management Corporation (PSALM) that also assumed the corresponding liabilities of these transmission assets. The on-grid generation assets and independent power producer (IPP) contracts of NPC and its corresponding liabilities were also to be transferred to the PSALM. The EPIRA directed the PSALM to privatize these generation and transmission assets.

The reformed electric power industry was envisioned to be composed of four sectors: generation, transmission, distribution and supply. The EPIRA also created an independent quasi-judicial regulatory body, the Energy Regulatory Commission (ERC). Its functions were to: promote competition, encourage market development, ensure customer choice and penalize abuse of market power. It was also tasked to enforce the implementing rules and regulations of the EPIRA.

Generation of electric power was to be competitive and open. It would not be considered a public utility operation and was not required to secure a national franchise. This allowed foreign companies to own 100 percent of power plants except those that utilized natural resources which had to remain under the control of Filipinos. The ERC would regulate the prices for the supply of electricity for the captive market. Prices of electricity for the competitive market were not be subject to regulation and instead a Wholesale Electricity Spot Market would determine the prices of electricity traded in the market.

The transmission of electric power would be a regulated common electricity carrier business that provided open and non-discriminatory access to all electric power industry participants. The sub-transmission assets were to be segregated from the transmission facilities in accordance with the levels of transmission and sub-transmission voltage that was set by the ERC, and subsequently disposed to the distribution utilities which would be responsible for operating, maintaining, upgrading, and expanding said assets.

The distribution of electricity to end-users would be a regulated common carrier business requiring a national franchise and providing open and non-discriminatory access to all user. The distribution utilities' obligation to supply electricity would be for the contestable market (customers), which was to be open and competitive to distribution utilities with respect to their franchise area and to retail electricity suppliers (RES) licensed by the ERC. Prices for the supply of electricity to the contestable market would not be regulated by the ERC.

The EPIRA envisioned the reformed electric power industry to have a regime of Retail Competition and Open Access (RCOA), initially for '1MW contestable customers' but ultimately

at the household level. It required five essential requisites for the initial declaration of RCOA for ‘1MW contestable customers’ in Luzon and Visayas, as shown in Table 1 .

**Table 1: Prerequisite conditions for declaration of Retail Competition and Open Access Regime in Luzon and Visayas**

<b>Prerequisite condition for declaration of RCOA</b>	<b>Date achieved</b>
1. ‘Cross-Subsidy Removal Scheme’ implemented	June 2002
2. The Energy Regulatory Commission (ERC) approves unbundled transmission wheeling charges and distribution wheeling charges	June 2002 for transmission, October 2003 for distribution
3. Wholesale electricity spot market starts commercial operations	June 2006
4. Transfer of control or management of at least seventy percent (70 percent) of the total energy output of power plants under contract with NPC (IPPs) to IPP Administrators	End 2010
5. Privatization of at least seventy percent (70 percent) of the total generating capacity of NPC in Luzon and Visayas	End 2012

Requirements 1, 2 and 3 were attained between June 2002 to June 2006. From that point on, the critical path for declaration of ROCA became requirements 4 and 5: the privatization of 70 percent of both the NPC generation assets and IPP contracts.

Fifteen years from the EPIRA promulgation, mandatory contestability under RCOA may be realized as it was declared by the ERC to be effective on February 27, 2017 for 1MW and above contestable customers under Resolution 28, Series of 2016.

#### *2.2.3.1 PSALM and privatization*

The PSALM was established on June 26, 2001 and began its operations on July 1, 2001 with the objective of liquidating all NPC financial obligations and stranded contract costs in an optimal manner. Section 47 of the EPIRA also provided the following guidelines: “The NPC plants and/or IPP contracts assigned to IPP Administrators, its related assets and assigned liabilities, if any, shall be grouped in a manner which shall promote the viability of the resulting generation companies (GENCOS), ensure economic efficiency, encourage competition, foster reasonable electricity rates and create market appeal to optimize returns to the government from the sale and disposition of such assets in a manner consistent with the objectives of this Act.” In the grouping of the generation assets and IPP contracts of NPC, the following criteria were to be considered:

- 1) A sufficient scale of operations and balance sheet strength to promote the financial viability of the restructured units;

- 2) Broad geographical groupings to ensure efficiency of operations but without the formation of regional companies or consolidation of market power;
- 3) Portfolio of plants and IPP contracts to achieve management and operational synergy without dominating any part of the market or of the load curve; and
- 4) Such other factors as may be deemed beneficial to the best interest of the national government while ensuring attractiveness to potential investors.

One of the key milestones of the EPIRA was the privatization of at least 70 percent of the total capacity of NPC’s generation assets and IPP contracts in Luzon and Visayas within a three year period from its effectivity. It further provided that any unsold capacity should be privatized not later than eight years from the effectivity of EPIRA.

It was only 11 years after the promulgation of the EPIRA, on September 24, 2012, that the ERC, in a joint statement with the Department of Energy (DoE), declared the phased in and partial commercial commencement of RCOA on June 26, 2013, following a 6-month transition period that started December 26, 2012 for 1MW and above contestable customers in Luzon.

In 2005, aside from the transmission assets, PSALM had a total generation portfolio of 11,190MW composed of 6,234MW of NPC generation assets and 4,956 of IPP contracts. By 2016, PSALM had privatized the transmission assets and approximately 73 percent of its generation portfolio. 4,601MW of NPC’s generation assets have been sold and 3,607 MW of IPP contracts had been transferred to Independent Power Producer Administrators (IPPAs). By October 2016 PSALM privatization efforts had generated a total of US\$19.96 billion, of which US\$10.8 billion had been collected (see Table 2). Of this, PSALM had utilized US\$9.6 billion of the collected privatization proceeds to liquidate its outstanding financial obligations.

**Table 2. Privatization Proceeds as of 3<sup>rd</sup> Quarter 2016 (in US\$ Billion) \***

Privatization Assets	Generated	Collected	Balance
Generation Assets	3.61	3.61	0.00
Decommissioned Plants	0.01	0.01	0.00
Transmission Assets	6.10	3.96	2.14
IPP Contracts	10.25	3.23	7.02
<b>Total</b>	<b>19.96</b>	<b>10.80</b>	<b>9.15</b>

Source: PSALM. \*US\$ ≈50 PhP

In 2016, PSALM had outstanding financial obligations of US\$10.1 billion (PhP 506.3 billion), down from a peak of US\$24.8 billion (PhP1.24 trillion) in 2003. Of this, US\$4.6 billion (PhP 230.9 billion) was in IPP Obligation and \$US\$ 5.5 billion (PhP 275.4 billion) was in debt. Adding the forecasted interest and other charges would bring the total amount of debt to US\$7.4 billion (PhP 372 billion) and total financial obligations of US\$12.1 billion (PhP602.9 billion).

It is uncertain whether the remaining receivable balance of US\$9.15 billion (PhP442 billion) plus the possible proceeds from the future privatization of the remaining 1,632.1MW generation assets and 1,298.75MW of IPP contracts will be able to liquidate the projected total financial obligation. Using the approximate average privatization value that has been realized from the

privatization to date of US\$785,000 per MW for NPC generation assets (US\$3.61 billion/4,601MW) and US\$2,842,000 per MW for IPP contracts, the remaining generation portfolio of PSALM may generate US\$5.1 billion (PhP 255.8 billion).

Together, the balance of collectables plus new sales is greater than the financial obligations of PSALM. However, the timings and values of privatization proceeds and its collections differ from the timings and values of the debt service of the Long-Term debt and IPP Obligation payments. This has been addressed by PSALM by resorting to new borrowings which it has been allowed in order to fund operations as well as to refinance existing obligations.

A number of factors hindered the privatization process. The overall political and investment climate was also not conducive for successful privatization. The administration of President Arroyo was marked with coup attempts and various political movements. The presidential elections were due in May 2004 which raised doubts on the continuance of the privatization in case a new president was elected. There was little appetite from international investors. Thus, in 2004, PSALM was constrained to bid out only pilot privatization cases of 5 small hydro plants, totaling 8.5MW, ranging in capacity from 0.4 to 3.5 MW with total proceeds of US\$5.1 million, all won by local companies. Amid much controversy, President Arroyo ran for and won the presidency in 2004 giving her a full term of 6 years. The privatization efforts in the electric power industry were resumed with more determination.

There was delay in the establishment of Transition Supply Contracts (TSCs) that would be attached to the power plant sale.<sup>5</sup> The EPIRA mandated the NPC to negotiate TSCs with the distribution utilities which would contain the terms and conditions of supply and a corresponding schedule of rates, including applicable adjustments and/or indexation formulas. The term of the TSCs should not extend beyond one year from the introduction of open access. While the law provided for transition supply contracts, it was not mandatory. The TSCs had to be negotiated, but it was only in mid-2005 that ERC approved the template for the transition supply contracts. This delay in the approval of the transition supply contracts was further aggravated by the stalling of NPC in its negotiation with distribution utilities. While the negotiation for TSCs was on their shoulders, they did not start the negotiations with the distribution companies. Ultimately, NPC was able to sign 117 TSCs with distribution utilities. However, it did not have one with Meralco, the largest DU, which initially refused to negotiate as it had IPPs of its own to supply its requirements.

NPC also stalled on the preparations for asset privatization such as providing information, access to the asset, land titling, and other related issues. Clearly, NPC was manifesting its resistance to privatization. This prompted the President to change the leadership of NPC to someone from

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<sup>5</sup> Transition Power Supply contracts pegged at the ERC approved NPC rate were utilized. The NPC rate as approved by the regulator was based on the cost of the portfolio of generation assets that NPC owned. This meant that there was no direct relationship between the tariff and the operating cost of a particular asset or power plant. This mismatch favored power plants with operating costs below the NPC rate.

PSALM in September 2008. It was hoped that having someone from PSALM assume the presidency of NPC would lead to a better relationship between the two organizations and speed up accomplishment of the requirements for privatization.

A further requirement for private buyers was the establishment of the Wholesale Electricity Spot Market (WESM) as they wanted an alternative source of supply in the absence of bilateral supply contracts. The commercial operation of WESM commenced only on June 26, 2006.

Further, obtaining creditor consent added to the challenges. Creditors included the International Bank for Reconstruction and Development, the Asian Development Bank, Overseas Economic Cooperation Fund, Japan Bank for International Cooperation, Eximbank of Japan, Kreditanstalt fur Wiederaufbau, Credit National, Insituto de Credito Oficial, Eximbank of Korea, Deutsche Bank, Citibank, Bank of Tokyo, Bank of New York among others. Creditors' consents on both the debt and asset transfer were granted only by 2008.

Finally, when all was in place, the momentum for the privatization of NPC's generation assets picked up in 2008, so that by end 2010 a total of 4,102 MW of generating capacity had been privatized, thus attaining the milestone of the privatization of 70 percent of NPC's generating assets.

#### 2.2.3.2 Privatization of transmission assets

There were four attempts to privatize the transmission assets of NPC that had been transferred to the National Transmission Corporation (TRANSCO).

The first attempt was in 2003. It was planned that the privatization of TRANSCO would go ahead of that of the generation assets. On July 14, 2003, the privatization bidding and awards committee for TRANSCO declared a failure of bidding for its twenty-five-year concession contract. It failed at the pre-qualification stage because only one party, Singapore Power International, submitted a pre-qualification proposal by the July 11, 2003 deadline. A minimum of two pre-qualification proposals needed to be submitted to proceed with the bid process. The most likely reason for this lack of interest was the absence of a clear regulatory regime for the transmission business.

A second attempt was immediately put into process but suffered the same fate as the first attempt. The third attempt was made in 2006-2007. The privatization process passed the pre-qualification stage with three pre-qualified bidders: 1) the consortium of Triratna Holdings, US-based Newbridge Asia IV L.P. and Malaysian power firm Tenaga Nasional BHD.; 2) the consortium of Monte Oro Grid Resources Corporation and State Grid Corporation of China; and, 3) the consortium of Filipino-owned investment firm Citadel Holdings Inc. and Italian power grid operator Terna SPA. However, on the February 25, 2007 deadline for the submission of bids, only the consortium of Citadel Holdings Inc. and Terna SPA submitted a bid. A minimum of two bids was required to proceed with the bid process. As such, the bidding was declared a failure. Under the procurement law and the bidding procedures adopted for the TRANSCO procedure, after two

failed biddings, a negotiated deal may be entered with the sole bidder. However, the decision was to re-bid.

Finally, the fourth attempt was successful when more than one qualified bidder emerged. The National Grid Corporation of the Philippines (NGCP) formally took over and has been operating the facilities and assets of the TRANSCO since January 15, 2009. The NGCP is the corporate vehicle of the consortium of Monte Oro Grid Resources Corporation, Calaca High Power Corporation, and the State Grid Corporation of China which offered the highest financial bid of US\$ 3.950 billion that exceeded the Reserve Price and won the TRANSCO concession through competitive bidding on December 12, 2007. Subsequently, NGCP obtained a congressional franchise in late 2008, remitted US\$987.5 million to PSALM, equivalent to 25 percent of concession price which was the required commencement fee, fulfilled all pre-conditions and signed the Deed of Transfer.

The Concession Agreement provided that the balance of seventy five percent of the Concession Fee amounting to US\$2,962 billion would be converted to Philippine Pesos at a fixed exchange rate equal to 42 pesos and 75 centavos (PnP42.75) for every U.S. dollar (US\$1.00) with interest in 40 semi-annual installments. The interest rate was set at the Philippine Dealing System (PDS) Treasury Fixing for 10-year tenors, or PDST-F 10-year benchmark published by the Philippine Dealing and Exchange Corporation as at November 12, 2007 for the period until December 2010 and reset every five years (consistent with the Regulatory Period of the Transmission Business with ERC).

Using the dollar to Philippine peso exchange rate in the Concession Agreement for the 75 percent of the Concession amounted to PhP169 billion, which is slightly greater than the ERC determined Regulatory Asset Base for the regulatory year ending 2007 which was at PhP163 billion in the published ERC Final Determination for the Regulatory Reset for the National Transmission Corporation for 2006 to 2010.

By allowing the deferred payment of the Concession Fee, PSALM also awarded to NGCP an additional upside equivalent to the difference between the Vanilla Weighted Average Cost of Capital of 15.87 percent granted by ERC for Return on Capital in the said Final Determination and the interest rate on the deferred payment which is estimated at 9.4 percent for 75 percent of the value of the transmission assets. This would mean that NGCP would recover its investment costs in less than 6 years.

But the true benefit of the TRANSCO privatization was the transfer of the responsibility for capital investments from government to the private sector. NGCP had to complete whatever projects were on-going beginning 2009. For the years 2011 to 2016, the ERC approved NGCP capital expenditures amounted to PhP49 billion (approximately US\$1 billion).

#### *2.2.3.3 Bidding and the privatization process*

Having even just one outcome of the privatization effort challenged would have derailed and endangered the whole privatization process, and it is notable that not a single privatization

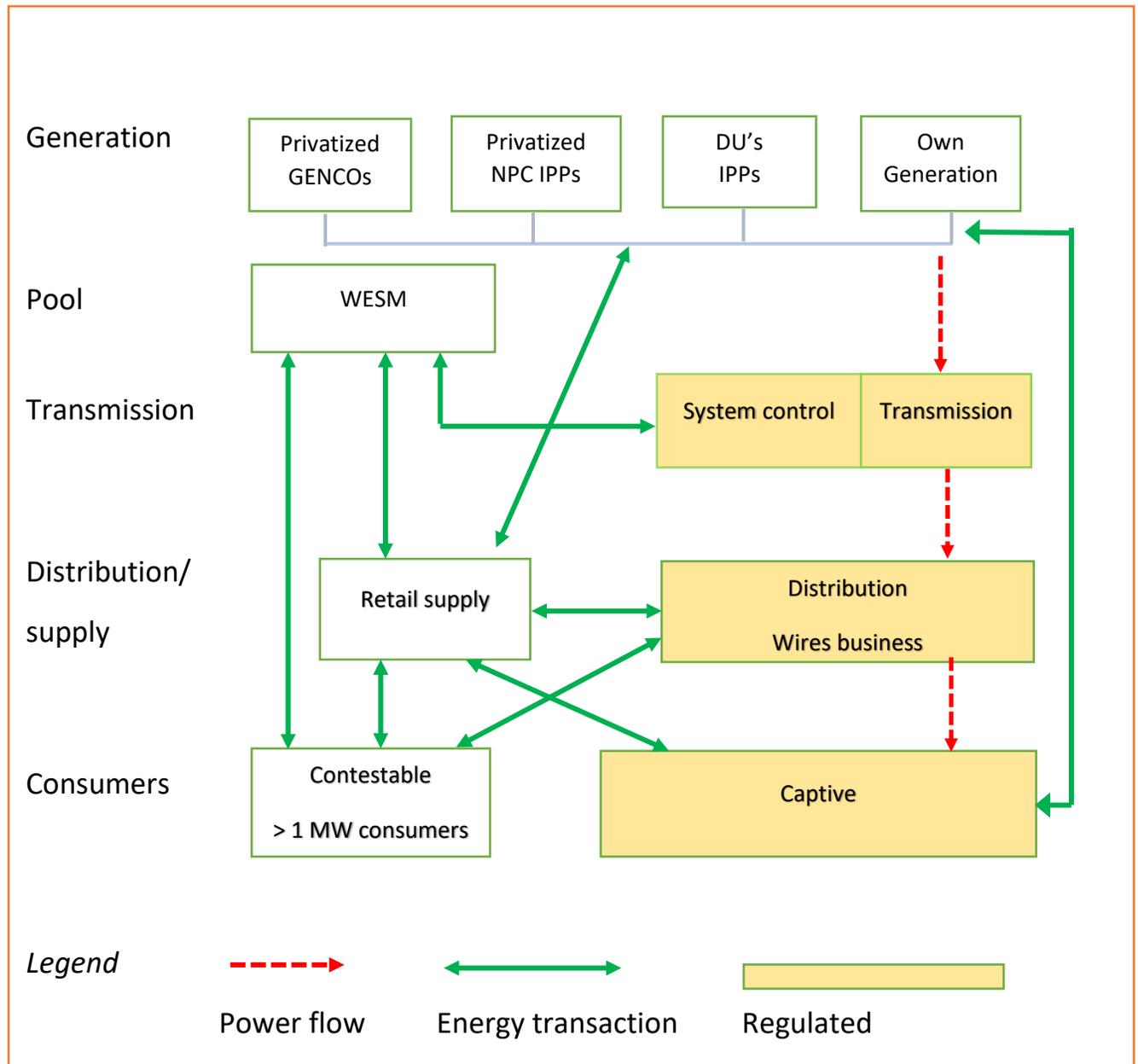
outcome was ever challenged. This has been attributed to the very clear, straightforward, exhaustive, and transparent bidding process that was meticulously laid out and followed to the letter. Right after the creation of PSALM, its first President ensured that the privatization process was designed to withstand scrutiny. A two-step bidding process was adopted for a pre-agreed Asset Purchase Agreement whereby two bid envelopes were required: one for the legal component; and the other, the financial component. Only the financial component bids of bidders who hurdled the legal component are opened. In addition, there was a reserve price that the financial component had to hurdle. The reserve price was pre-determined and sealed in an envelope and opened after the financial component bids are opened. The winning bidder was the highest bid over the reserve price

#### *2.2.3.4 Market Power*

One of the criticisms of the privatization process has been that it has led to an increase in the market power of the distribution segment of the market. While NPC was a monolithic generation company, it provided a counter balance to the biggest distribution utility, Meralco. After the break-up of NPC, the emerging generation companies may have less leverage with Meralco. Meralco currently represents 75 percent of total electricity consumption in Luzon and 55 percent of total electricity consumption nationwide. On the other hand, a generation company is limited to owning 35 percent of the total installed generating capacity for a grid and 25 percent of total installed generating capacity nationwide. While generators need to sell to Meralco, Meralco is also allowed to own and build power plants, and to source up to fifty percent of its demand from these plants. This clearly gives Meralco the upper hand in any negotiation and is a result of the decision not to horizontally unbundle the distribution sector. This had been a concern from the start of the drafting of the electricity reforms. Initially, distribution sector reform was included in the planned reform—the Meralco franchise was to be broken up, at least into two, and the electric cooperatives were to be consolidated to form more massive units. The owners of the Meralco franchise lobbied their allies in congress, while politicians did not want the local government units to lose their control over the electric cooperatives. Thus, this aspect of sector reform was not included in the final version of the EPIRA.

The energy flow and transaction structure are shown in Figure 4 and the timeline of the post EPIRA reform steps is shown in Box 1.

Figure 4: Energy flows and transactions structure in the Philippines, 2016



Source: "The Energy Report: Philippines" 2013-2014 Edition. KPMG.

**Box 1: Timeline of steps taken in reform program**

- 2001 (EPIRA)
- EPIRA aims to increase private participation in GT&D. The first step involved unbundling generation and transmission. National Power Corporation assets were privatized with the exception of assets of strategic importance. Assets are to be bid out, proceeds are to be used to settle debts of NPC.
- Power Sector Assets and Liabilities Management Corporation (PSALM) created to manage privatization of NPC assets and obligations.
  - Transmission: PSALM also owned newly created National Transmission Corporation (TRANSCO) responsible for the planning, construction, O&M of the high voltage grid until sale. The O&M of TRANSCO assets privatized and now operated by the National Grid Corporation of the Philippines (NGCP), the winning concessionaire under a 25 year concession agreement with performance-based regulation replacing previous return on rate base methodology.
  - Generation: NPC retained control over off-grid generation assets. Grid generation assets are still being privatized through a bidding process. As of June 30, 2016, 4.6 GW capacity had been sold, with 1.6 GW remaining unsold. PSALM also bid out 3.6 GW IPP contracted capacities to IPPAs (through BOTs). EPIRA limits control of generation by a single owner to 30 percent of generation capacity within a single grid. Generation charges are set according to the price determination methodology of the WESM, according to a return on base methodology for NPC, and through negotiation on bilateral contracts for IPPs.
  - Distribution: Utilities retained licenses to supply customers in franchise area, however franchise area is made open to competition among suppliers (qualified third-party providers are able to enter unviable areas of a franchise). Electric cooperatives were all non-stock cooperatives and the law allowed them to convert to stock cooperatives or to stock corporatization. Private Distribution Utilities set charges monitored by ERC on Performance Based Regulation (previously Return on Rate base). Electric Cooperative charges follow a benchmarking methodology.
- 2002-2005: NPC and distribution utility rates are unbundled, and cross-subsidies removed (inter-grid, intra-grid and inter-class).
- In 2004, projected peak demand was 38 percent-53 percent higher than actual demand. NPC was heavily indebted, had a large debt service obligation and take or pay contracts with IPPs. NPC long term debts were about 30 percent of the Government's contingent liabilities.
- 2006: Wholesale Electricity Spot Market (WESM) starts commercial operation in Luzon.
- Based on EPIRA's targets, about 70 percent of NPC's assets and IPP contracts should have been privatized by 2004. However, in 2006 only 10 percent of generation assets were privatized. Meanwhile privatization of TRANSCO through a concession agreement had failed four times between 2003 and 2006.
- 2013: RCOA commercial operations in Luzon and Visayas (1 MW consumers). Going forward the threshold for participants will be reduced.

### 3 Sector Performance

This part of the report considers the implications of the Philippines' reform experience for sector performance and development over the period 1990–2015. The evidence-based analysis deals with improvements in the Philippines' power sector performance along the following dimensions:

- Security of supply
- Access and affordability
- Efficiency and financial viability
- Tariffs and cost recovery

For each aspect of performance, we evaluate the extent to which the various institutional reforms, or lack thereof, are responsible for how performance has evolved.

By 1986, at the time of the accession of President Aquino, following the nationalization of NPC by President Marcos, the Philippines power sector was facing three problems. First, there was a shortage of generation capacity with severe blackouts ensuing. Second, the performance of NPC in the operation and maintenance of its plants was poor, thus exacerbating the shortage of capacity; and third, NPC had accumulated a very large debt which hampered its ability to build new capacity.

The response by the Philippines government to the shortage of capacity was similar to that adopted in other countries facing the same problems. It first took a number of steps to encourage the immediate entry of IPPs into the system, but then drew up plans for the privatization and restructuring of the power sector. Successive presidents supported efforts to pass the appropriate legislation, until the EPIRA was passed in 2001.

The extensive experience of reform of the restructured sector is considered under four headings: energy security, access and affordability, efficiency and cost recovery, and financial viability. For each of these categories quantitative and qualitative measures of performance are discussed and comparisons with other countries included in the Rethinking Study are made. Assessments are made for the whole sector, for MERALCO (a large DISCO) and for the Benguet Electric Cooperative (BENECO). For the analysis of institutional aspects of performance, comparators are provided for the case of Colombia, Peru, and Vietnam (three countries with an extensive experience of reform) and for the average of all countries included in the Rethinking Study.

An overall view of the performance of the reform strategy is given by a qualitative assessment of the steps taken in the restructuring of the electricity sector and by a measure of the degree of privatization that has taken place.<sup>6,7</sup>

Table 3 indicates that the Philippines have proceeded much further with unbundling than comparator countries and the international benchmark. The high score relative to other countries for horizontal unbundling, which enables competition between entities, is particularly notable. As regards privatization, Peru scores slightly higher than the Philippines, but other comparator countries and the international benchmark are much lower. The performance of distribution, as in other countries, is considerably lower than that for generation and transmission. In the case of the Philippines the lower share of privatized distribution can be attributed in part to the special role of the cooperatives.<sup>8</sup>

*Table 3: Utility restructuring and private sector participation in the Philippines and comparators, 2015*

	Colombia	Peru	Philippines	Vietnam	International benchmark
<b>Utility Restructuring</b>	<b>35%</b>	<b>73%</b>	<b>100%</b>	<b>47%</b>	<b>45%</b>
Vertical Unbundling	70%	80%	100%	60%	55%
Horizontal Unbundling	0%	67%	100%	33%	34%
<b>Pvt sector participation</b>	<b>49%</b>	<b>61%</b>	<b>62%</b>	<b>10%</b>	<b>24%</b>
PSP in Generation	63%	78%	84%	31%	41%
PSP in Distribution	35%	19%	39%	0%	16%
PSP in Transmission	50%	88%	66%	0%	14%

Source: Data collected for the Rethinking Power Sector reform Project

<sup>6</sup> The privatization (PSP) scores are based on the World Bank's PPI database. Each economy is scored on the basis on the number of projects that have been privatized (divested) in the sector. Full divestiture receives a higher score as compared to partial divestiture. The tabulated scores for generation, transmission and distribution are then multiplied by the respective share of the private sector in each of the operational areas. This gives individual scores for PSP in generation, distribution and transmission. The scores are averaged to get to the PSP score.

<sup>7</sup> Utilities where unbundling involves ownership separation receive the highest scores while utilities where unbundling involves just functional separation receive the lowest. Both horizontal and vertical unbundling are scored separately for each area of operation- generation, distribution and transmission. The restructuring score is the average of vertical and horizontal unbundling.

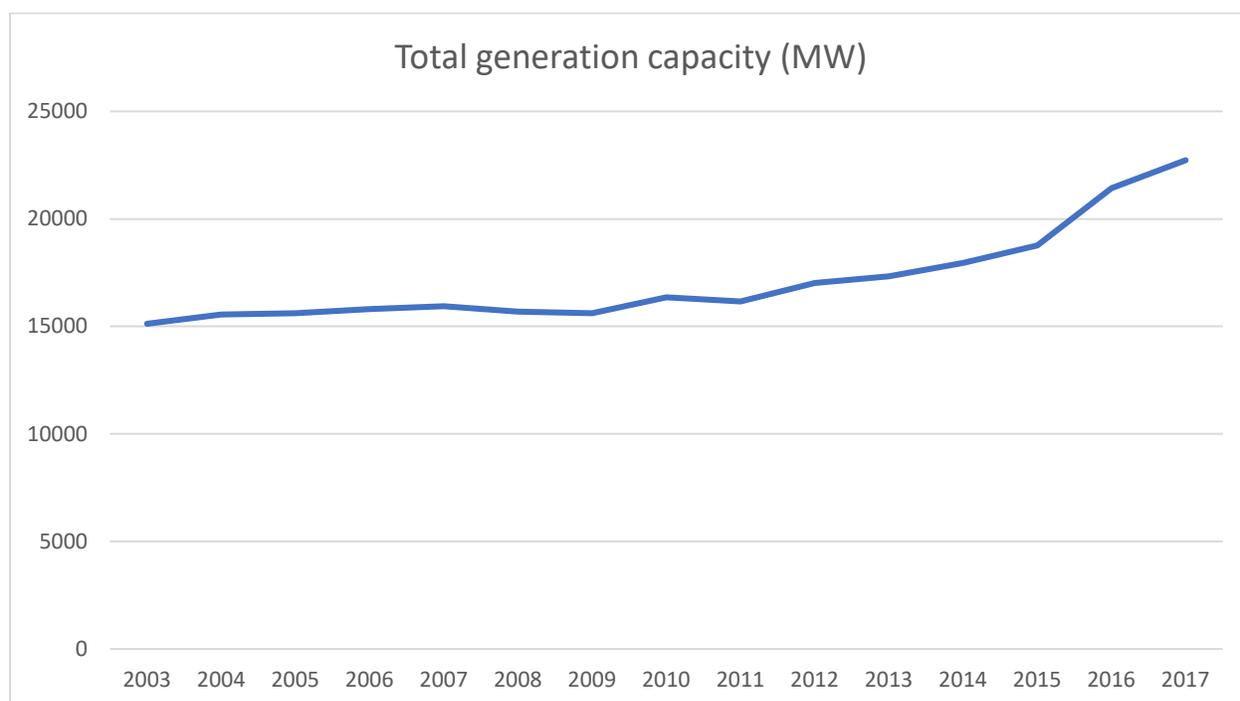
<sup>8</sup> Cooperatives are private companies owned by consumers and highly supervised by the government. In this sense the distribution sector is 100 percent private, but the table gives a value equating privatized to investor owned.

### 3.1 Energy Security

#### 3.1.1 Performance

Energy security had been a major concern for the Philippines in the early 1990s, but vigorous action had provided a short-term solution through the entry of several IPPs made possible by emergency legislation. Figure 5 shows that post EPIRA there was initially slow growth (1.9 percent per annum) in total capacity until 2012, while since then capacity has expanded rapidly (5.9 percent per annum).

**Figure 4: Total Installed Generation Capacity (MW)**

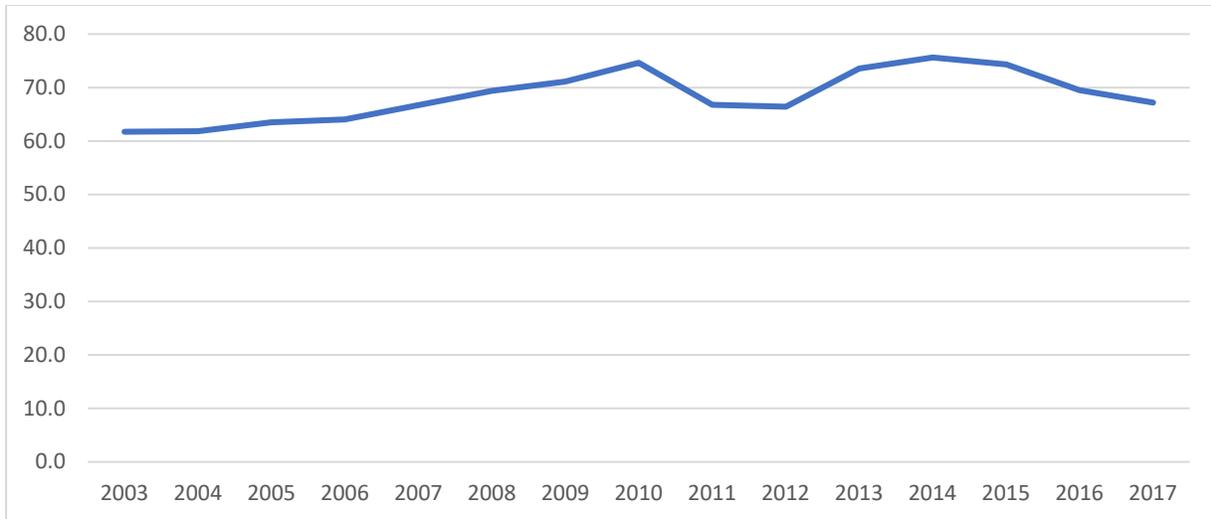


*Source:* Philippines Department of Energy.

A measure of the adequacy of the generation capacity is given by the ratio of peak demand to dependable capacity. The highest monthly peak demand is identified for each of the three main geographic areas (Luzon, Visayas and Mindanao). Adding these together gives the total non-coincident peak demand, which is the upper bound of the highest coincident peak for the three areas. The ratio of peak demand to dependable capacity is shown in

Figure 6. Over the period for which data are available, the ratio worsened at the beginning of the period when peak demand reached almost 80 percent of dependable capacity thus reducing the reserve margin to a critical level, but the rapid growth of capacity in the last few years has seen the ratio drop back to a safer level.

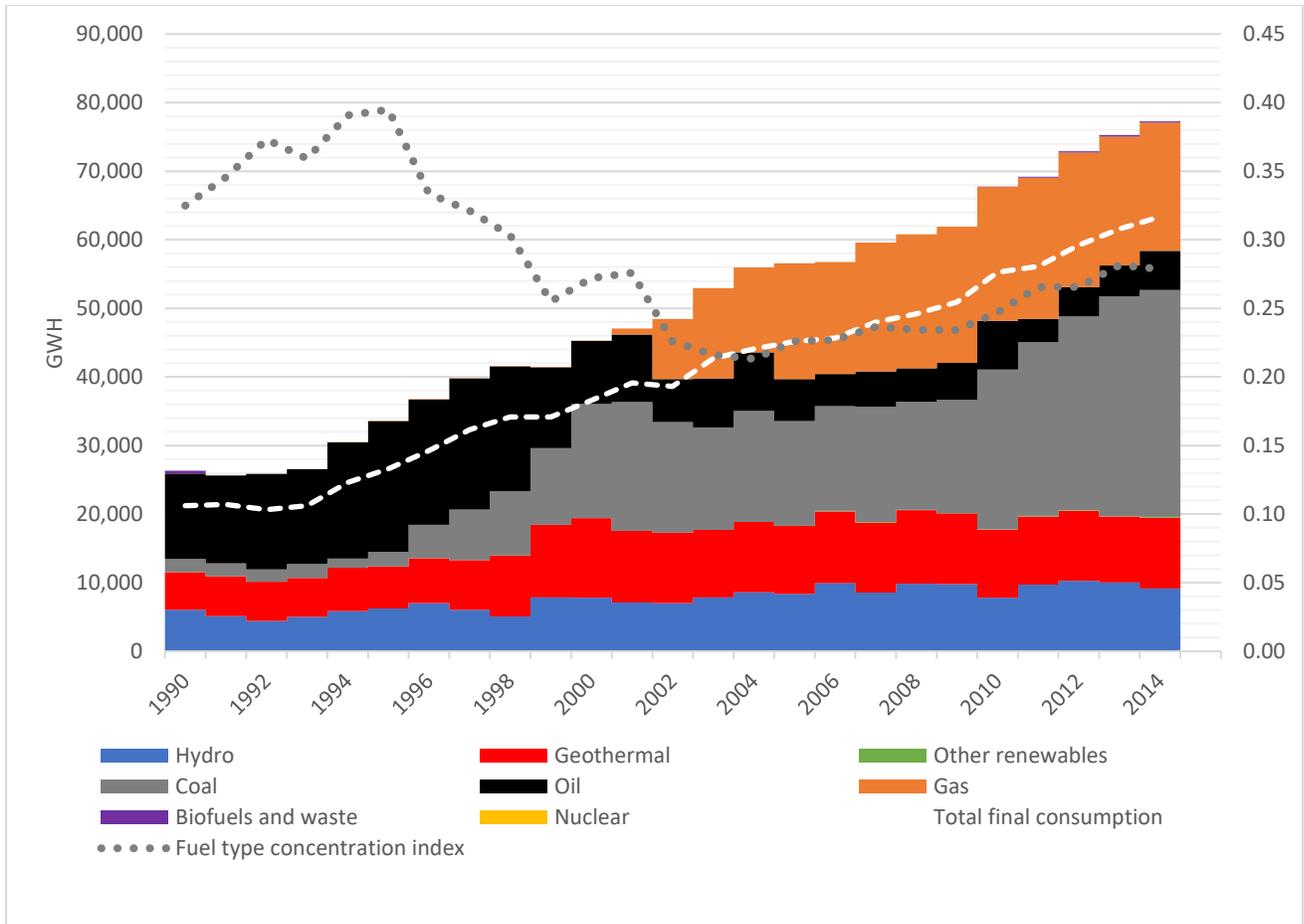
**Figure 5: Ratio of Peak Demand to Dependable Capacity ( percent)**



Source: Philippines Department of Energy.

An important feature of Philippines’ energy policy has been the desire to diversify the fuel source and to reduce the dependence on imported oil products. **Figure 7** shows that the total amount of oil-fired generation has been reduced since 2002, while the use of hydro and geothermal have continued at the levels of the early 1990s, thus seeing their shares in the total reduced. Gas has increased in amount and in its share of the total, and coal has seen an even larger increase in total use and share. This increase in coal use came in two waves. Firstly, during the 1990s when IPPS were encouraged to enter the sector to meet the shortage of capacity, and secondly, post 2010. The initial move away from oil saw the fuel concentration index drop from the high level of 40 percent reached in the mid-1990s to a low value of 21 percent in 2004. The increasing use of gas and coal then led to a rise an of the index to 28 percent by 2015.

**Figure 6: Generation by fuel type (GWh) and fuel concentration index**



Source: International Energy Agency

The security of supply can be judged also by the amount of load shedding and outages that have been experienced. By 2015 the World Bank’s Enterprise Survey indicated that the Philippines’ performance indicators for electricity supply reliability were well above those for East Asia (Table 4), although the extent of outages and the ownership and use of self-generation still pointed to a weakness in the supply of electricity.

**Table 4: Reliability of Electricity Supply**

Indicator	Philippines	East Asia
percent of firms experiencing outages	39.9	45.9
Number of outages per month	0.1	4.9
Average duration of outage (hours)	3.0	4.3
Average sales lost to outages for those experiencing outages percent	0.8	3.2
percent owning generators	42.7	32.5
percent of electricity from generators for those owning a generator	38.9	25.8

Source: World Bank Enterprise Survey

## *Institutional evaluation of planning and procurement*

### 3.1.2 Institutions

The Department of Energy (DoE) was created in 2001 as the sector reform began. EPIRA mandated the DoE to supervise the restructuring of the electricity industry and gave it the responsibility of preparing and annually updating a Power Development Program (PDP). The PDP integrates generation, transmission and distribution plans of the various utilities. It also develops and updates the existing Philippine Energy Plan (PEP) which includes the exploration, development, utilization, distribution and conservation of energy resources.

The PDP process has evolved from econometrics based, top-down approach to a bottom-up approach where the DoE aggregates the energy forecasts of the individual distribution utilities, embedded generators and directly connected customers of NGCP. These initial estimates are harmonized with the actual power delivery of the transmission company.

The NGCP is responsible for the formulation of the Transmission Development Plan (TDP) in consultation with the electric power industry players. The generation companies, distribution utilities, and NGCP may hire consultants for their individual planning. Table 5 shows that planning is well advanced but is not as comprehensive as the setup in Colombia.

**Table 5: Institutional arrangements for power sector planning and procurement in the Philippines and comparators, 2015<sup>9</sup>**

	<b>Colombia</b>	<b>Peru</b>	<b>Philippines</b>	<b>Vietnam</b>	<b>International benchmark</b>
<b>Planning and Procurement</b>	<b>95%</b>	<b>77%</b>	<b>59%</b>	<b>59%</b>	<b>70%</b>
Generation planning	86%	43%	71%	71%	56%
Procurement of generation	95%	90%	100%	50%	85%
Transmission planning	100%	75%	50%	100%	72%
Transmission procurement	100%	100%	17%	17%	64%

Note: Scores based on index developed for the Rethinking Power Sector Reform Project. For more details go to project website at [http://www.esmap.org/rethinking\\_power\\_sector\\_reform](http://www.esmap.org/rethinking_power_sector_reform)

Procurement of generation and transmission is also shown in table 5, and for generation plants the Philippines achieves the maximum score,<sup>10</sup> but only a low score for transmission procurement, basically because all transmission projects are awarded to the incumbent. The project procurement processes of both the transmission and distribution companies are tied up with their rate setting methodologies. The projects to be pursued in accordance with the development plans, the capital amounts and scheduling are part of the documents reviewed and

<sup>9</sup> For details on the planning and procurement index, see the annex.

<sup>10</sup> The methods of procurement for generation allowed under the emergency powers of the 1990s (e.g. direct negotiation with the government) were only short term and were removed by the adoption of EPIRA.

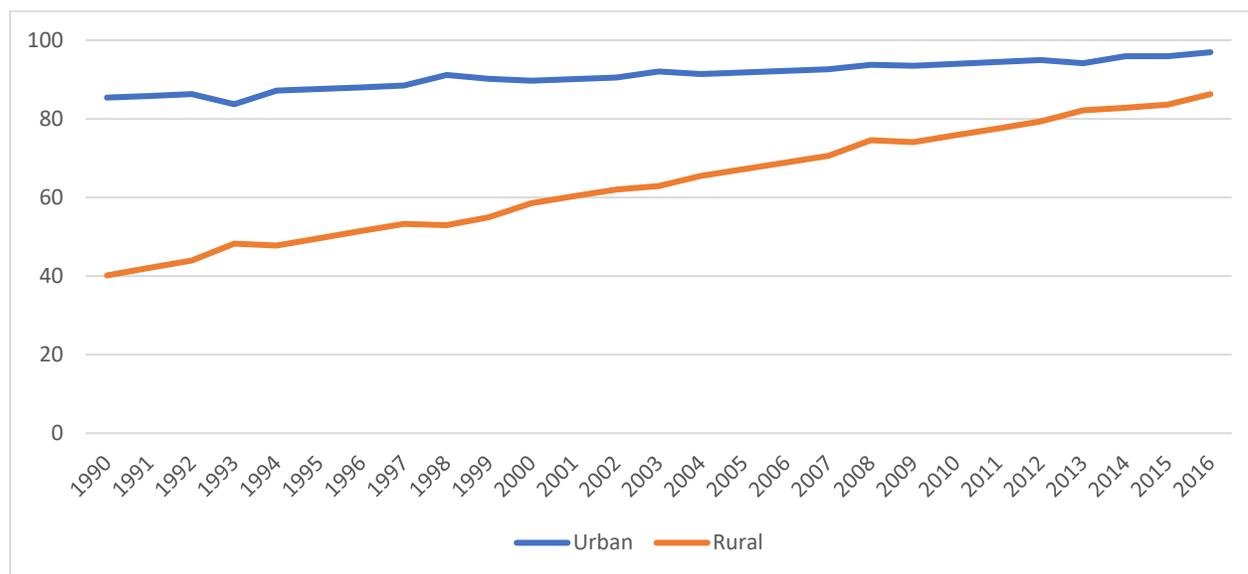
approved by the ERC and are for implementation during the subsequent regulatory period. Generation projects are subject to the Certificate of Compliance by the ERC and endorsements by the Securities and Exchange Commission and the DoE.

## 3.2 Access and affordability

### 3.2.1 Performance

Access to grid electricity is a problem in many developing countries, but here the Philippines has had moderate success. From 1990, when the overall rate of access was 62 percent, the level has increased steadily, to 74 percent in 2000, 84 percent in 2010 and 91 percent in 2016. **Figure 8** shows that the rate of urban electrification was high throughout the period, and that rural electrification made very substantial progress, increasing from 40 percent in 1990 to 86 percent in 2016. Nevertheless, there are large regional differences in access—Bangsamoro (a Muslim area in Mindonao) has a rate below 40 percent.

**Figure 7: Rates of access in urban and rural areas**

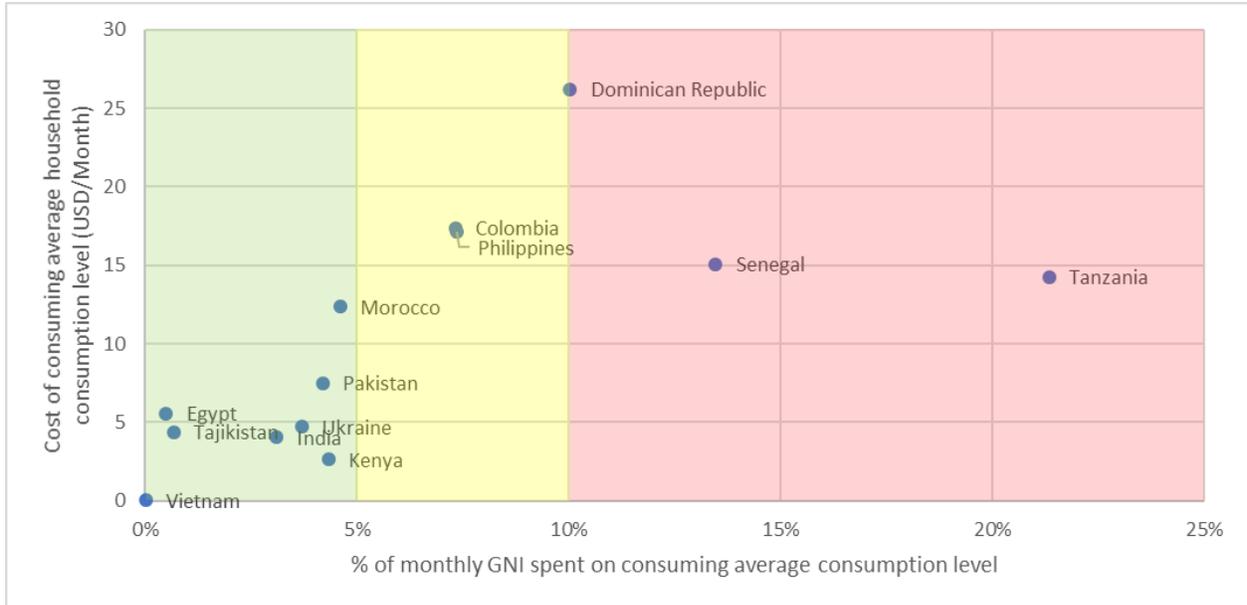


Source: Tracking SDG 7, 2018

The *affordability* of electricity to most consumers is still determined by tariffs set by the government, because the RCOA still applies only to 1 MW and above customers. The tariff structure uses an increasing block approach. The first block is a “social” block of 20 kWh with zero price, although there is a monthly fixed charge of US\$ 0.49 for all users irrespective of the amount used. The price of the highest block is US\$ 0.21, and the average residential tariff in 2017 was US\$ 0.17. The average household consumption was 98 kWh/month, equivalent to an annual expenditure on electricity of \$205. Households in the bottom 40 percent of Gross National Income had an income of \$2795, so that to purchase the national average consumption of electricity these households would have had to spend 7.4 percent of income (figure 9). While this

is high, it is far below the most extreme case of Tanzania where 22 percent of household income of the poorest 40 percent would be needed to purchase the national average consumption.

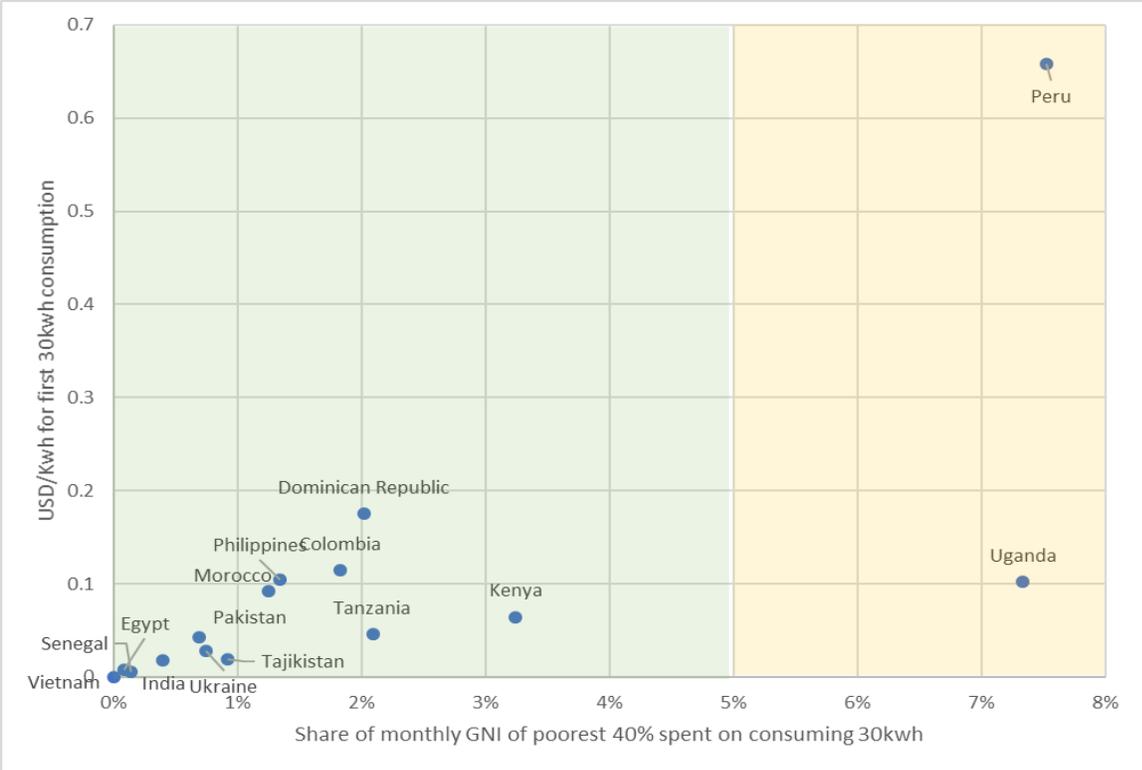
**Figure 8: Affordability of average consumption level in the Philippines, 2016**



Source: RISE, 2018

Further insight into the tariff structure is given by the calculation of the cost of acquiring 30 kWh/month and comparing this with the household income of the poorest 40 percent. In the Philippines the average tariff charged for 30kWh a month is US\$ 0.11, equivalent to monthly expenditure on electricity of \$ 3.1. With an average monthly income for the poorest 40 percent of households of \$232, the share of income required to purchase 30kWh/month would be 1.3 percent (figure 10).

**Figure 9: Affordability of subsistence consumption in the Philippines, 2016**



Source: RISE 2018

### 3.2.2 Institutions

The distribution utilities have been responsible for grid rollout in their service areas, while the rural electrification program was carried out by the electrical cooperatives under the supervision of the National Electrification Administration (NEA) that had been first created in 1960, amended in 1969, and given a new mandate in 2004 as a result of the passing of the Republic Act 10531. Interestingly, rural electrification is one of the remaining functions of the NPC through its Small Power Utilities Group. Previously, rural electrification was subsidized on the generation side by NPC and on the distribution side by NEA. However, EPIRA introduced a “Universal Charge on Missionary Electrification” (UCME) in addition to other charges (stranded costs, stranded debt and environmental ones) on all utility bills which is used to subsidize further grid development.

Access can be encouraged by various provisions on new connections and the institutional scores for these are shown in Table 6. The score for the regulation of new connections at 57 percent is below that of the average in the Rethinking study (65 percent). The lack of any connection subsidies and any requirement for the utility to provide a connection within a specified time after an application are important brakes on increasing the rate of connection. For the regulation of solar home systems Philippines scores full marks and is above the global average for regulation of mini-grids as well. While the country allows private owners to operate mini grids legally, the

lack of regulations to cover issues once the grid reaches the area served by the mini-grid may prove to be a bottleneck in spread of mini grids.

Table 6: Regulatory framework for electricity access in the Philippines and comparators, 2015<sup>11</sup>

	Colombia	Peru	Philippines	Vietnam	International benchmark
<b>Energy Access Regulation</b>	67%	57%	74%	7%	56%
<i>Regulation of New Connections</i>	68%	88%	57%	14%	65%
<i>Regulation of solar home systems</i>	100%	50%	100%	0%	66%
<i>Regulation of mini-grids</i>	33%	33%	67%	NAV	44%

Note: Scores based on index developed for the Rethinking Power Sector Reform Project. For more details go to project website at [http://www.esmap.org/rethinking\\_power\\_sector\\_reform](http://www.esmap.org/rethinking_power_sector_reform)

### 3.3 Efficiency and financial viability

The low level of operational and commercial efficiency of the power sector pre EPIRA was an important contributing factor to the acceptance of a need to change the way in which the sector would operate. To provide a detailed assessment of operational and commercial efficiency it was decided to focus on two companies. MERALCO (a distribution utility) and BENECON (an electricity co-operative) as representative of performance of different types of ownership structure – MERALCO being privately owned, and BENECON a non-profit cooperative. The scores for these two utilities are not directly comparable, but MERALCO can be compared to the utilities from Peru, Colombia and Vietnam.

Distributors are a regulated common carrier business operating on franchises and subject to regulation by the ERC. Distributors vary widely in size/technical/financial capacity and operating standard (e.g. voltage levels and metering). MERALCO is the Philippines' largest distribution utility serving over a quarter of the population and the regions that accounts for 50 percent of the country's GDP. Performance Based Regulation, which MERALCO is subject to, calculates a Performance Index Factor which includes service interruption, system loss and voltage level criteria. Consumers are to be compensated if guaranteed service levels are not met.

BENECON is organized and registered as a non-stock non-profit service-oriented entity providing services in the City of Baguio and Benguet province under a franchise of 50 years granted by the NEC. As a cooperative, BENECON is owned and operated by the consumers it serves which also elects the board of directors.

Electric cooperatives (EC) are generally smaller in terms of the market they serve. The ECs distribution infrastructure was financed almost completely by public money through the NEA. Most of the loans were subsequently mandated by EPIRA to be absorbed by PSALM. EPIRA also

<sup>11</sup> For details on the electricity access index, see the annex.

mandates the NEA to strengthen ECs technical and financial viability and prepare them for changes in the electricity market.

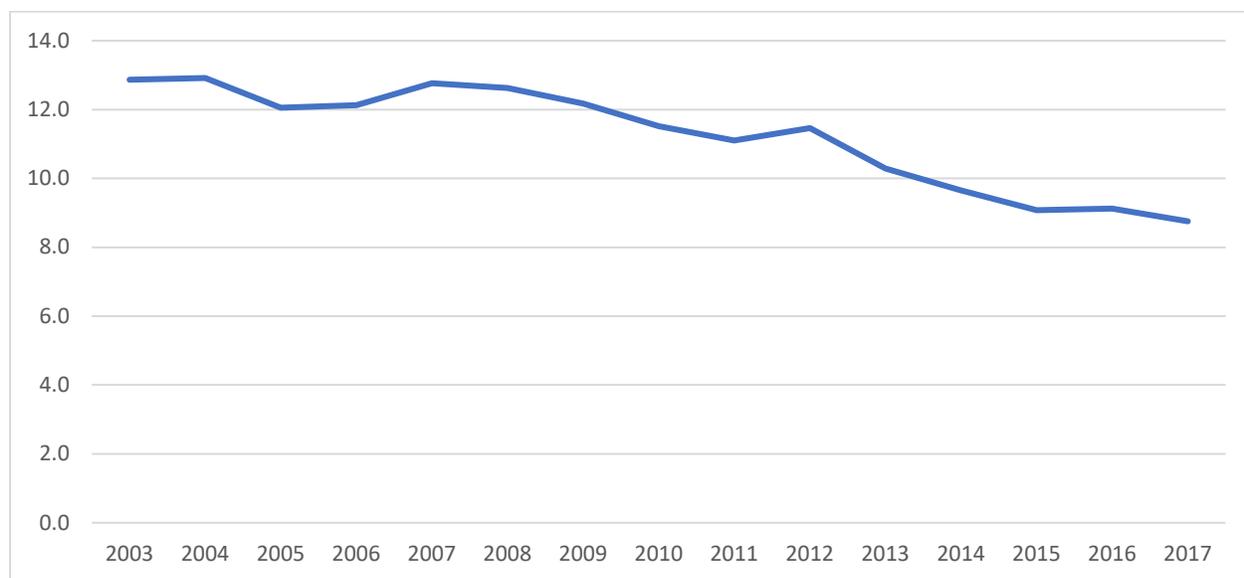
A study on ECs in 2009, found that their performance varied significantly, depending on factors such as sales and customer density, customer structure, size (measured by sales and number of customers), system loss and number of customers per employee. The study concluded among other things that ECs venturing into low density areas, pressured by local politicians, would worsen their performance further.<sup>12</sup>

Electric cooperatives are rated annually on a based on a set of parameters developed by NEA that includes collection efficiency, system loss, payment to power suppliers. 70 ECs received rating AAA (95-100) in 2015, while BENEKO's performance rating in 2014 was AA (90-94).

### 3.3.1 Performance

A factor that had contributed to earlier problems of supply shortages was the overall level of non-technical losses (transmission and distribution). These have fallen steadily from around 13 percent in 2003 to 9 percent in 2017 (see **Figure 11**) largely because of the stricter regulation of ERC on the private DISCOs and the ECs. The system loss of the transmission sector has not been reduced despite 10 years of privatization.

**Figure 10: Transmission and distribution non-technical losses as a percent of total generation, 2003-2017**



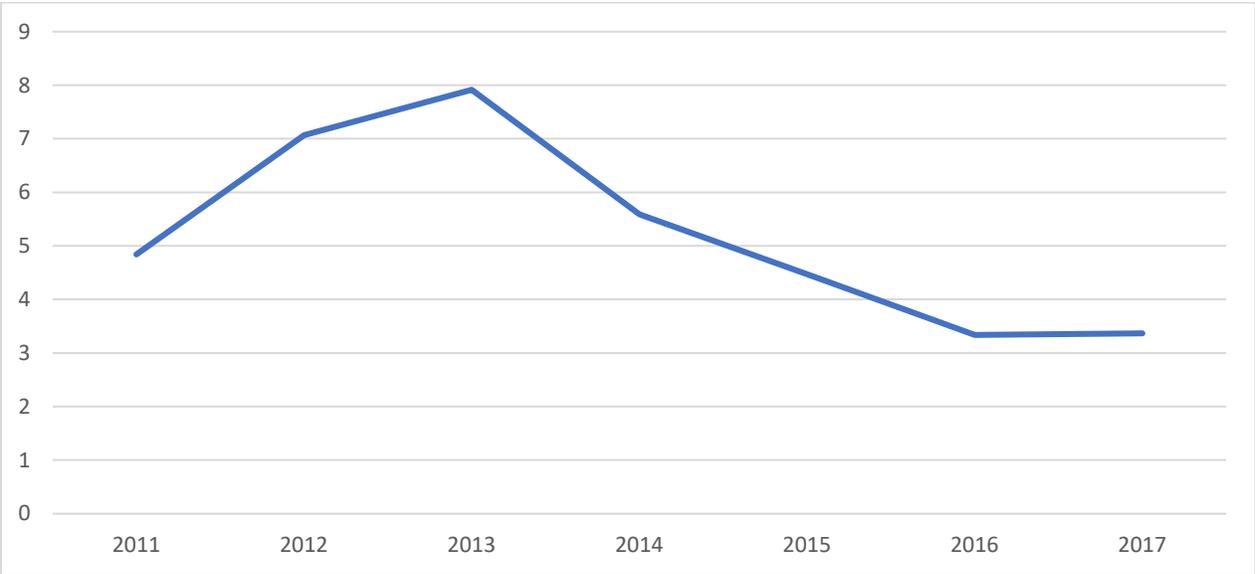
Source: Philippines Department of Energy.

An indirect measure of possible systemwide overall efficiency gains driven by the reform is given by the average annual spot settlement price on the wholesale electricity spot market (WESM).

<sup>12</sup> Valderrama and Bautista, "Efficiency Analysis of Electric Cooperatives in the Philippines", 2009.

Data for this market are available from the beginning of 2011 and the annual average price (Figure 12) has fallen steadily from a peak reached in 2013 of 8 pesos/kwh to the 2017 value of 3.4 pesos/kWh (US\$ 0.068). These gains are passed on to consumers through the pricing formula determined by the ERC. Some of these gains are due to the large fall in oil prices from 2013 to 2016, but the declining importance of oil in the power sector indicates that other forces were involved in the reduction of the WESM price.

**Figure 11: Annual average wholesale electricity spot market price (pesos/kwh)**

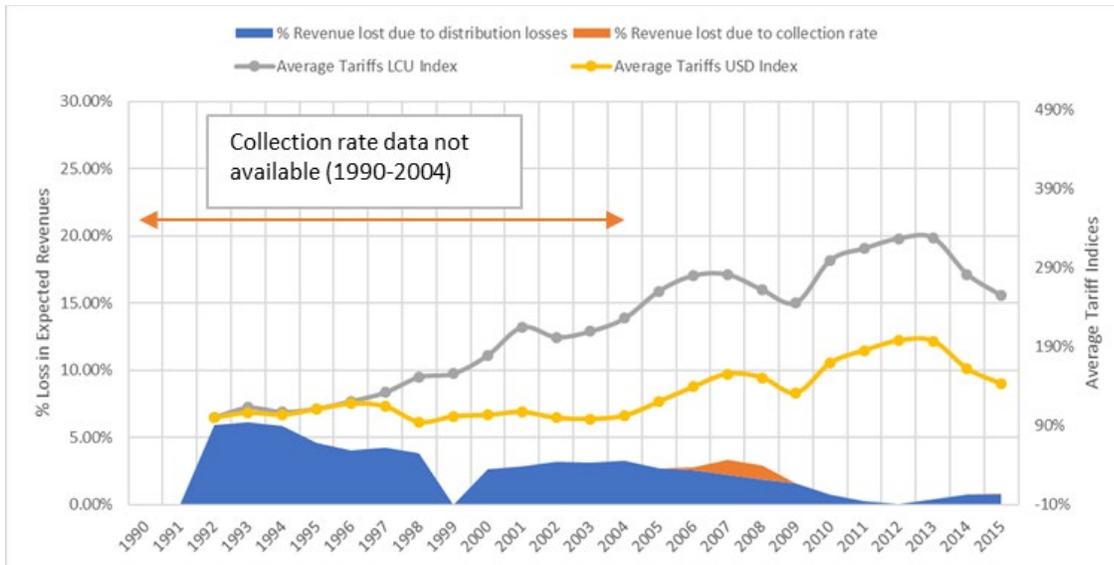


Source: Philippines Electricity Market Corporation: WWW.wesm.ph

At a utility level, efficiency measures related to distribution and collection losses for MERALCO are shown in Figure 13 and for BENECON in Figure 14. In both cases the total percentage loss of revenue due to collection losses and T&D losses fell over the period.<sup>13</sup> MERALCO experienced collection losses only during a three-year period with other years seeing a collection rate of at least 100 percent. Distribution losses declined to about 8 percent of production (equivalent to 0.8 percent of revenue). BENECON experienced larger losses, with collection rates dipping to 97 percent in 2011-2012, and distribution losses at 10 percent of output. Together these losses were equivalent to 2 percent of BENECON’s revenue. An index of average tariffs (relative to the 1992 value) in local currency and in US \$ is included as a reference.

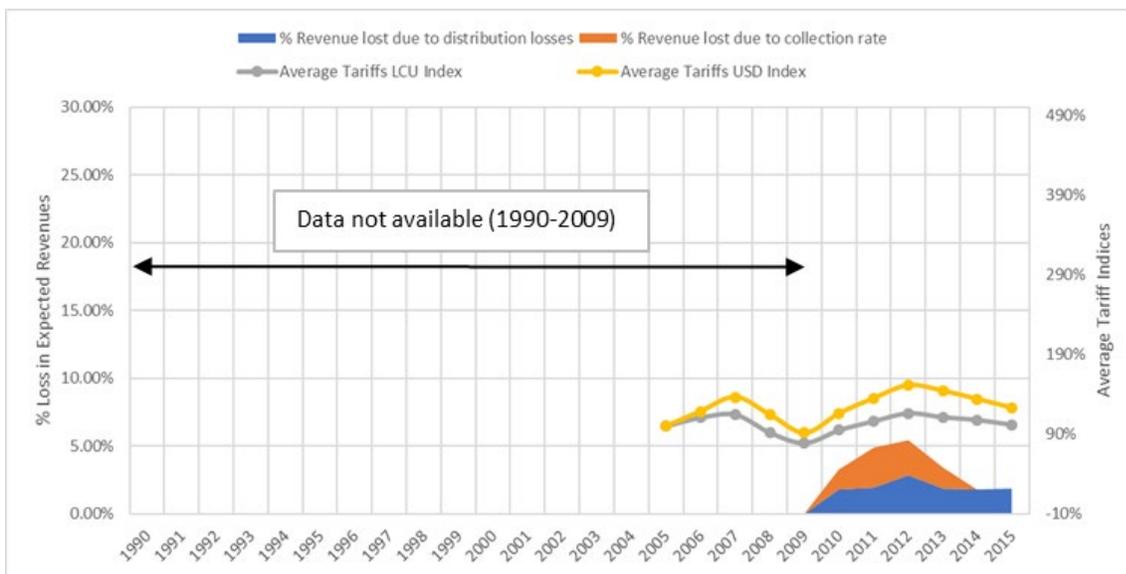
**Figure 12: Evolution of MERALCO’s operational inefficiencies and average tariffs, 1992-2015**

<sup>13</sup> There were no data on collection losses of MERALCO prior to 2005, and no data for either loss for BENECON prior to 2009.



Source: Rethinking Power Sector Reforms project

Figure 13: Evolution of BENEKO's operation inefficiencies and average tariffs, 2010-2015

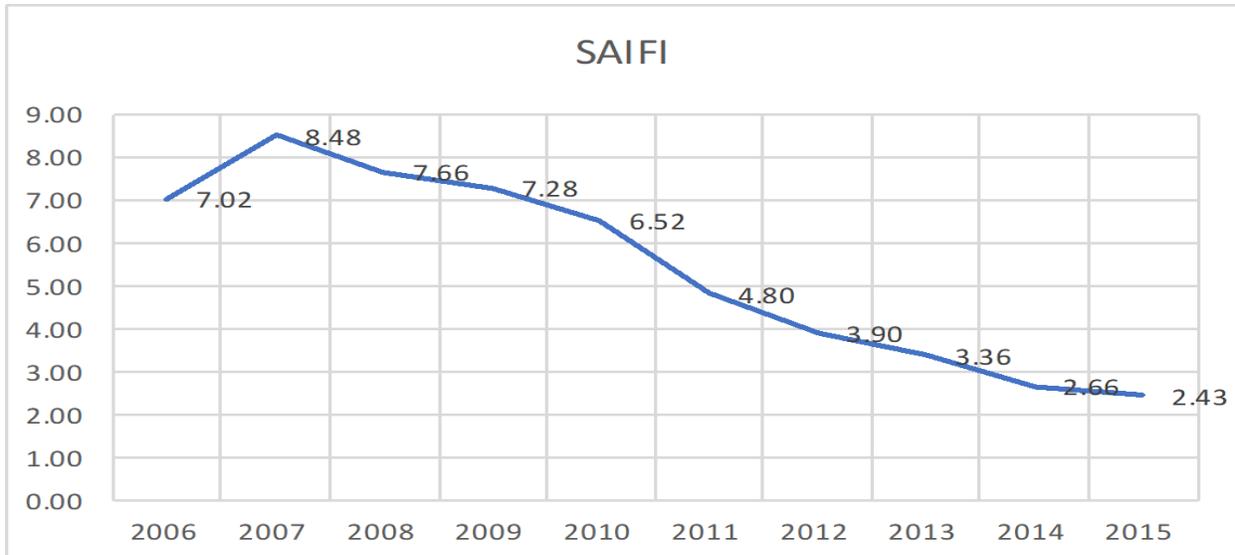


Source: Rethinking Power Sector Reforms project

Further insight on the performance of MERALCO is given by various customer-based standards for distributors that are included in the Performance Index Factor. Customers are compensated by the distribution utility if guaranteed service levels are not met. The evolution of interruption indicators during the period 2010 to 2015 show a trend of improvements (reduction of interruption in number and duration). Improved performance for both SAIFI (Figure 15) and SAIDI indicators can be attributed to sustained significant capital expenditures in MERALCO sub-transmission and distribution systems, and Customer Retail and Shared Services organizations. The SAIFI (average number of interruptions per customer per year declined from a peak of 8.5 in

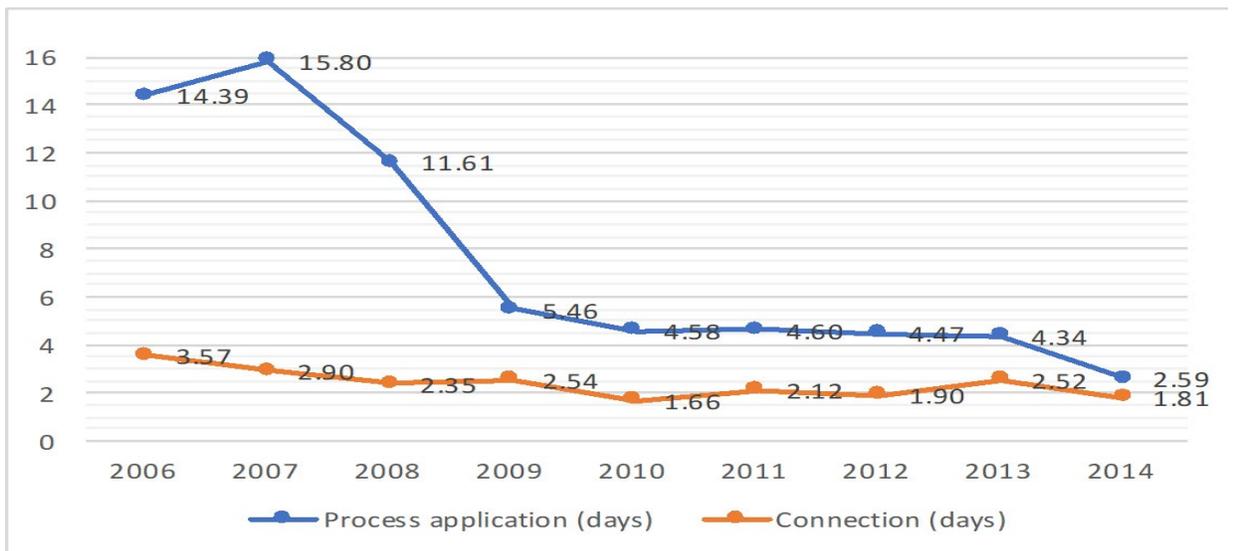
2007, to a low of 2.4 in 2015, while the SAIDI (average duration of each interruption) fell from 200 minutes in 2006 to 58 minutes in 2015.

Figure 14: Quality of supply (SAIFI) for MERALCO, 2006-2015



A further measure of performance is given by the average number of days taken for a new connection (Figure 16) which declined sharply from 14.4 in 2006 to 2.6 in 2014.

Figure 15: Number of days taken for a new connection by MERALCO



Together these performance indices for MERALCO present a picture of steady improvement in service and efficiency.

### 3.3.2 Institutions

The two Philippine utilities are compared to two utilities from Vietnam (the Northern Power Corporation [NPC] and the Hochiminh City Power Corporation [HPCMC]); two from Colombia (EPM and CODENSA); two from Peru (Luz del Sur and Hidrandina); as well as the average of all utilities included in the Rethinking study. It is important to note that BENEKO is an EC and is mandated by the government to operate without profit, while MERALCO is privately owned. Moreover, they are designed to serve very different consumer profiles so that direct comparison of performance may not be appropriate.

On **corporate governance** MERALCO scored 100 percent, satisfying all criteria that apply to a private company, while BENEKO scored 67 percent.<sup>14</sup> MERALCO outperformed all the other utilities in the sample, but BENEKO performed less well than some comparators, although still above the average for the study (table 7).

**Table 6: Corporate governance of utilities in the Philippines and comparators, 2015<sup>15</sup>**

	Colombia		Peru		Philippines		Vietnam		International benchmark
	EPM	CODENSA	Luz del Sur	Hidrandina	MERALCO	BENEKO	NPC	HCMPC	
<b>Corporate Governance</b>	<b>76%</b>	<b>96%</b>	<b>85%</b>	<b>40%</b>	<b>100%</b>	<b>83%</b>	<b>8%</b>	<b>8%</b>	<b>62%</b>
<i>Accountability</i>	75%	92%	92%	58%	100%	67%	17%	17%	60%
<i>Autonomy (SOEs)</i>	78%	100%	78%	22%	100%	100%	0%	0%	63%

Note: Scores based on index developed for the Rethinking Power Sector Reform Project. For more details go to project website at [http://www.esmap.org/rethinking\\_power\\_sector\\_reform](http://www.esmap.org/rethinking_power_sector_reform)

Table 8 shows that on the overall **financial discipline** indicator MERALCO scores 71 percent (above the average level but below the scores for Luz del Sur, and the two Colombian utilities), while BENEKO scores 53 percent. MERALCO lacked the ability to issue new bonds, while BENEKO, given its cooperative nature, does not incorporate a number of good practices related to raising capital (as did the Vietnamese utilities). Both utilities failed to cost the PSO and BENEKO was not required to meet financial performance targets set by shareholders.

**Table 7: Utility management index of utilities in the Philippines and comparators, 2015<sup>16</sup>**

	Colombia		Peru		Philippines		Vietnam		International benchmark
	EPM	CODENSA	Luz del Sur	Hidrandina	MERALCO	BENEKO	NPC	HCMPC	
<b>Utility Management</b>	<b>83%</b>	<b>43%</b>	<b>85%</b>	<b>70%</b>	<b>81%</b>	<b>68%</b>	<b>65%</b>	<b>65%</b>	64%
<i>Financial Discipline</i>	76%	69%	86%	65%	71%	53%	53%	53%	59%
<i>Human Resource</i>	86%	60%	90%	71%	79%	86%	50%	50%	62%
<i>Information and Technology</i>	87%	0%	80%	73%	93%	67%	93%	93%	71%

Note: Scores based on index developed for the Rethinking Power Sector Reform Project. For more details go to project website at [http://www.esmap.org/rethinking\\_power\\_sector\\_reform](http://www.esmap.org/rethinking_power_sector_reform)

<sup>14</sup> Because BENEKO is a non-stock cooperative there are no shareholders. The consumer owners pay equal membership fees but there are no capital shares.

<sup>15</sup> For details on the corporate governance index, see the annex.

<sup>16</sup> For details on the utility management index, see the annex.

MERALCO and BENECON outperform the Vietnamese comparators and also the average utility included in the study on **human resource** good practices. The only shortcomings are the inability of managers to hire or fire employees as needed.

On **information and technology** MERALCO (93 percent) performs well, above all comparators, with the only shortcoming being the lack of an IT system to support energy management. The Vietnamese utilities have a similar level of performance but BENECON at 57 percent is below the average utility in the Rethinking study, lacking in good practices such as Advanced Metering Infrastructure and a website that allows for submission and follow-up of consumer complaints.

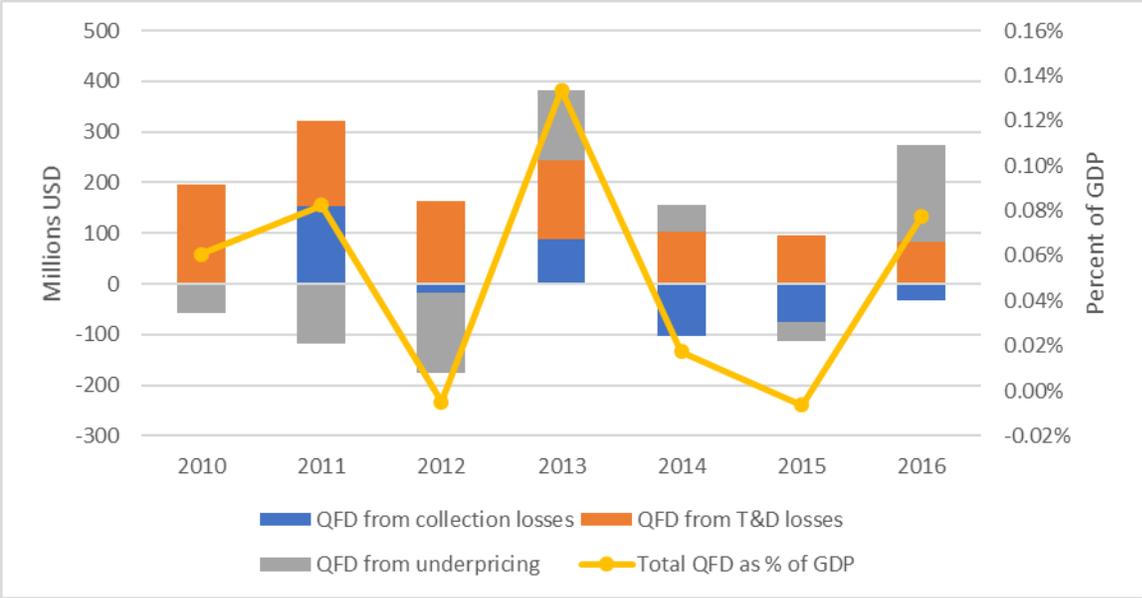
### 3.4 Cost Recovery and tariffs

The analysis continues to focus on the performance of MERALCO and BENECON as representing the overall picture for the Philippines. Manila Electric Company (MERALCO) is the largest distribution utility in the Philippines and serves 6.3 million customers. Its service area covers 36 cities and 75 municipalities, including Metro Manila and other political and economic centers. The Benguet Electric Cooperative, Inc. (BENECON) is an electric cooperative, owned and operated by the consumers it serves. It serves six districts in Baguio City and five districts in Benguet Province, with a total of 188,395 metered connections.

The revenue gap in a power utility can be measured using the quasi-fiscal deficit (QFD), a measure that compares the revenues that would be captured by an 'ideal utility' that charges cost recovery tariffs, fully collects revenues and keeps distribution losses to a technical minimum, with the revenues captured by the actual utility. This gap can be decomposed according to the portion attributable to under-recovery of costs through depressed tariffs, the portion attributable to the under-collection of revenues due to commercial inefficiencies, and the portion attributable to excessive distribution losses.

The quasi-fiscal deficit attributable to MERALCO and BENECON was around US\$ 240 million in 2016. Average revenue per kWh slightly exceeded cost-recovery level, resulting in no deficit from under-recovery of costs. Collection rates have been equal to or greater than 100 percent for each company since 2014, so there has been no deficit from uncollected revenues. Technical losses, averaging 6.38 percent for the two utilities, were just above the benchmark (5 percent) used for the cost recovery analysis leading to a small contribution to the QFD. The bigger issue for these utilities was underpricing which contributed about 80 percent to the QFD. Nonetheless QFD remains quite low at 0.07 percent of the GDP. *Figure 17* shows the quasi-fiscal deficit for each year from 2010 to 2016.

**Figure 16: Quasi-fiscal deficit attributable to MERALCO and BENECON, 2010-2016**



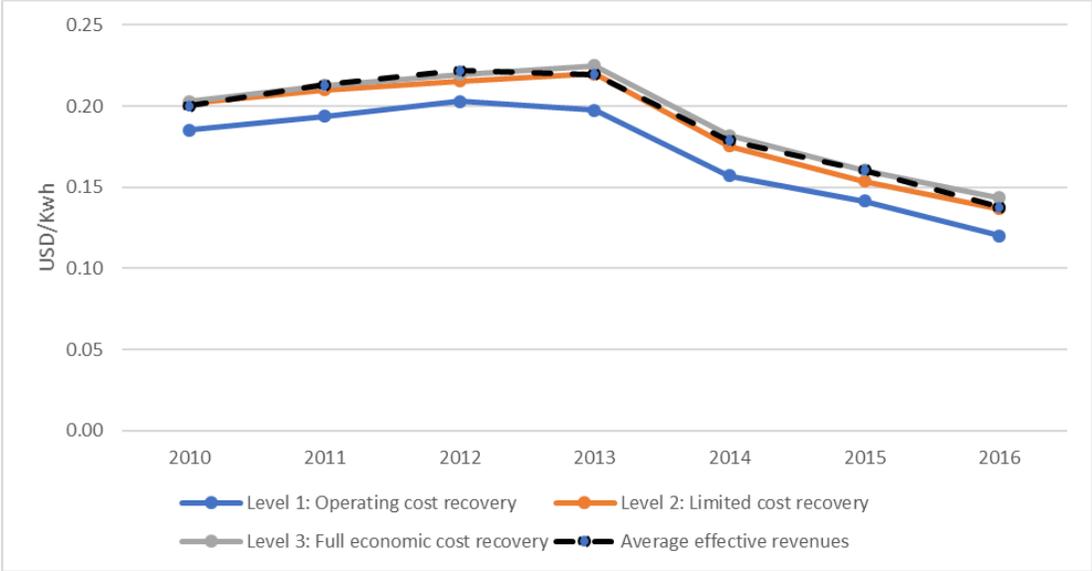
**3.4.1 The degree of cost recovery**

The financial viability of the sector largely depends on achieving cost-reflective tariffs. To assess Pakistan’s progress toward cost recovery, a detailed analysis of MERALCO and BENECO financials was conducted. The analysis sets benchmarks for three levels of cost recovery: (i) operating costs only; (ii) operating costs plus limited capital costs, such as debt service; and (iii) full capital costs on current and planned future investments. The financial viability analysis does not account for costs associated with service delivery that are covered separately by other parties, for example if a donor provides concessional capital. In a second stage, the analysis evaluates the sector against a full-cost-recovery benchmark that incorporates any costs that are currently subsidized. Data for the analysis were available for the period 2010–2016.

**Figure 18** shows average tariff revenues for each year 2010-2016 compared to the three levels of cost recovery for MERALCO. The average revenues for the largest utility in the Philippines have tracked operating and limited capital cost recovery (level 2) well, allowing for average revenues per kWh to closely follow any rises or falls in costs. The main driver in the declining costs seen since 2013 has been lower fuel prices and the negotiation of new, lower cost supply agreements. MERALCO’s power purchase costs are still high due to expensive “legacy PPAs” signed during the 1990s power crisis. Roughly 1900MW of these PPAs will expire by 2025 and are expected to be replaced by lower cost contracts, resulting in further reductions to operating costs and the regulated tariff. Tariffs do not yet completely cover all capital costs, but the gap is very small and further improvements in performance can be expected to close this gap.

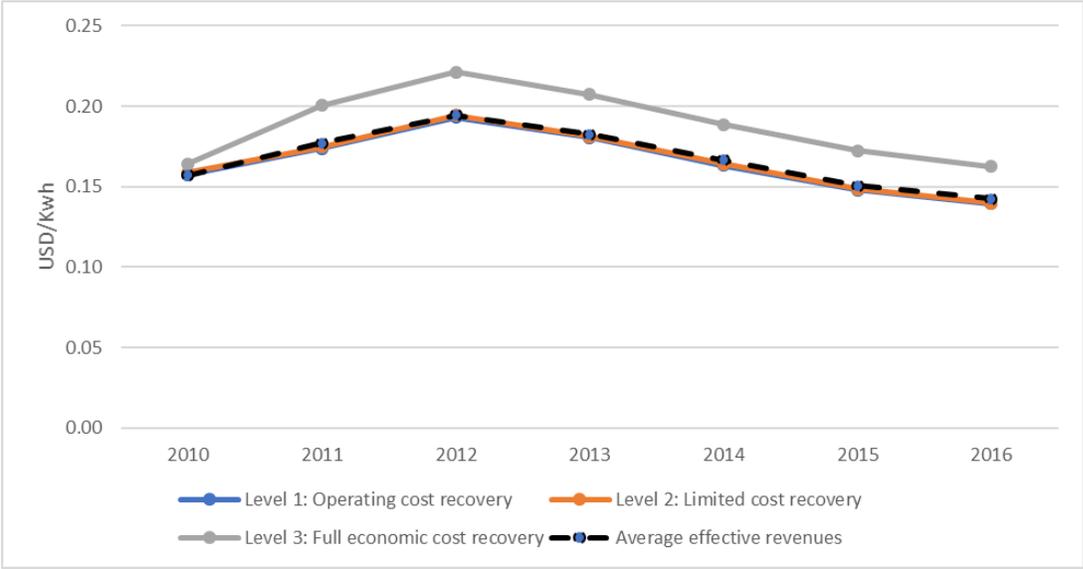
Average revenues for BENEKO also cover level 1 and 2 but there is a relatively bigger gap (2 cents) between full cost recovery and effective average revenues. The Utility has also benefitted from the reduction in costs since 2013 and can be expected to achieve full cost recovery with improvements in efficiency. The tariff structure of both utilities allows for a passthrough of many of the utilities' costs, along with monthly adjustments that correct for over- or under-recovery.

Figure 17: Evolution of full financial cost recovery for MERALCO, 2010-2016



Source: Rethinking Power Sector Reform Project

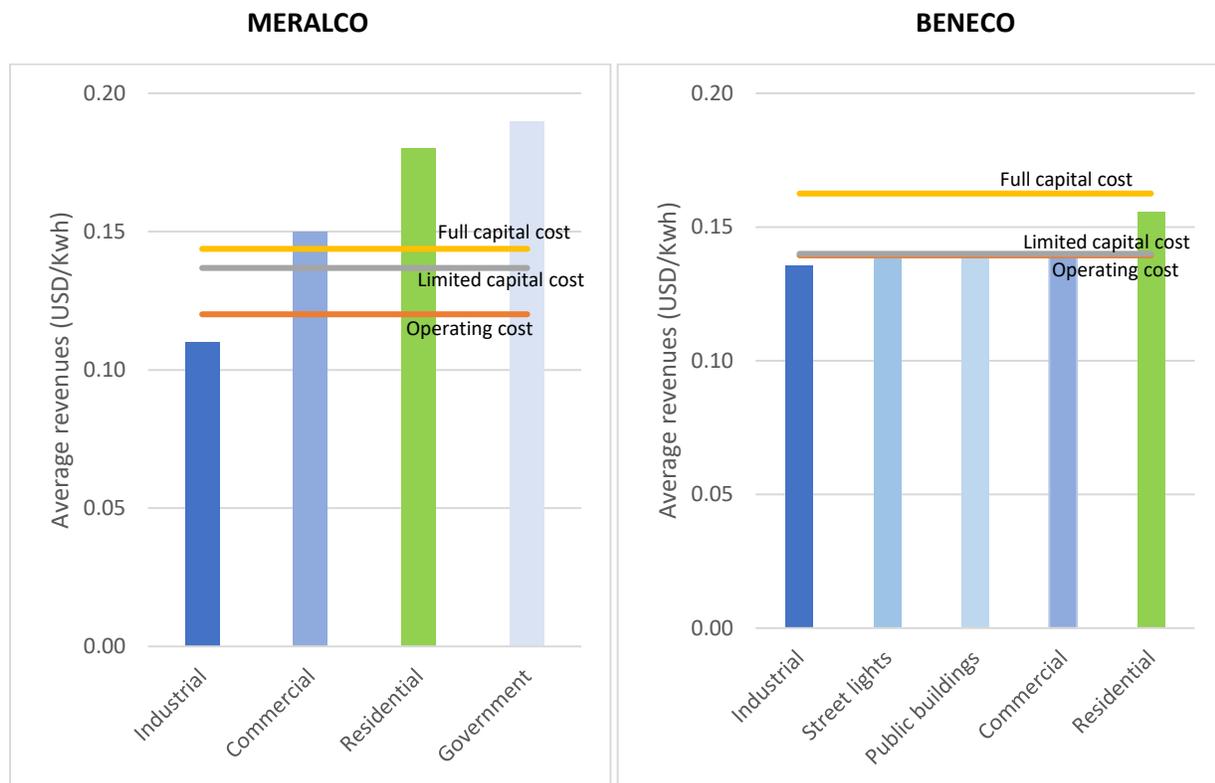
Figure 18: Evolution of full financial cost recovery for BENEKO, 2010-2016



Source: Rethinking Power Sector Reform Project

While a utility may recover costs through the average tariff level, it is pertinent to examine whether all customer groups are facing cost recovery tariffs. Average revenues from residential customers are above full cost recovery level<sup>17</sup> for MERALCO and just a bit lower for BENEKO (figure 20). MERALCO has a greater disparity between residential customers' share of revenues and consumption than BENEKO. MERALCO's residential customers make up 30 percent of consumption and 37 percent of revenues. BENEKO's residential customers make up 52 percent of consumption and 55 percent of revenues. MERALCO's industrial consumption (30 percent) outweighs its share of revenues (22 percent), but this relationship may be due to industrial customers imposing lower costs on the system than the average cost of service for all customer classes. Industrial consumption only makes up 0.5 percent of overall consumption for BENEKO. Figure 21 compares the percent of consumption for each customer class to the percent of revenue from that class.

Figure 19: Average tariff revenue and cost recovery by customer group, 2016



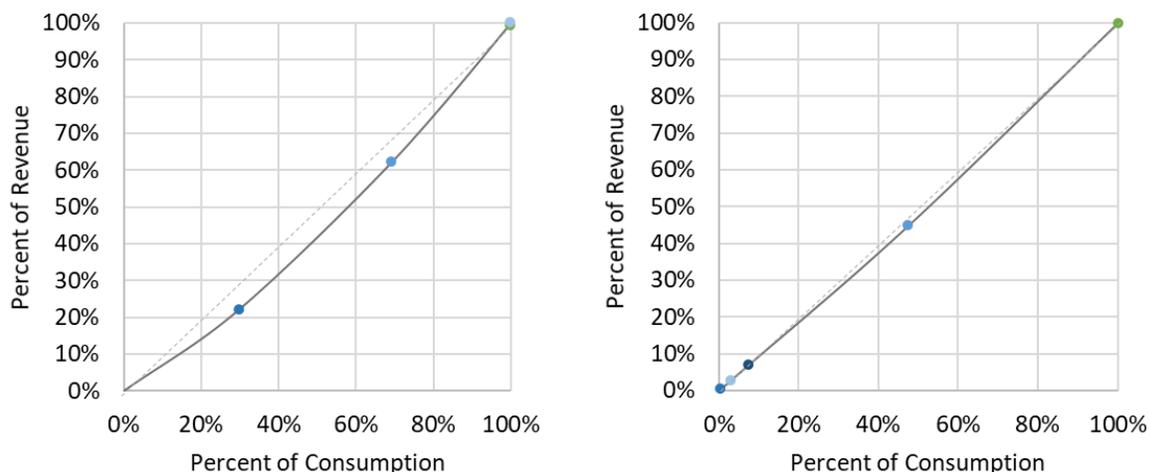
Source: Rethinking Power Sector Reform Project

Figure 20: Percent of revenue against percentage of consumption by customer group, 2016

MERALCO

BENEKO

<sup>17</sup> A3 is defined as A2 plus financing costs (to the utility) and the associated O&M costs for new capital investments (based on an adequate investment prioritization framework) required to meet future demand.



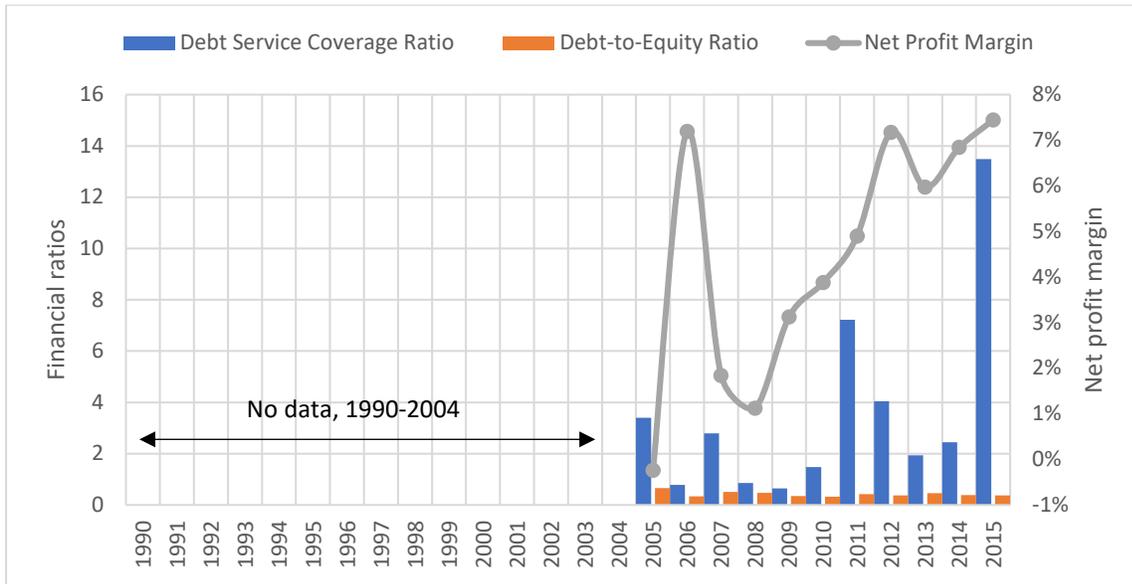
Source: Rethinking Power Sector Reform Project

There are no government subsidies to the sector, but there are cross-subsidies within the residential customer group. Residential customers using up to 100 kWh receive a lifeline discount applied to the total of the generation, transmission, system loss, distribution, supply, and metering charges. This discount ranges from 20 to 100 percent depending on total consumption level. Residential customers consuming 1-20 kWh receive a 100 percent discount; those consuming 21-50kWh receive a 50 percent discount; those consuming 51-70kWh receive a 35 percent discount; and those consuming 71-100kWh receive a 20 percent discount. This discount is funded by a Lifeline Subsidy Charge paid by all other customers. Customers over 60 years old also receive a 5 percent discount.

MERALCO is able to fund its CAPEX plan primarily through inflows from operations, while BENEKO is heavily dependent on external financing. MERALCO is one of the top performing utilities in the Philippines and has made a profit in every year since 2005, with a clear increasing trend in its net profit margin since 2008 (Figure 22). MERALCO's investments in 2016 totaled US\$ 567 million (10 percent of revenues). It is more dependent on operating cash flows than external financing to fund investments, with an external financing index ratio of -0.40 in 2016 (negative due to dividends paid exceeding financing inflows). The Reinvestment Fund for Sustainable CAPEX (RFSC) component of tariffs is used to fund CAPEX. However, MERALCO can obtain commercial financing if the RFSC does not cover the full CAPEX plan. MERALCO has a corporate credit rating of BB+. Its average borrowing rate was 3.54 percent in 2016; even an average borrowing rate of zero percent would not bring it to full cost recovery.

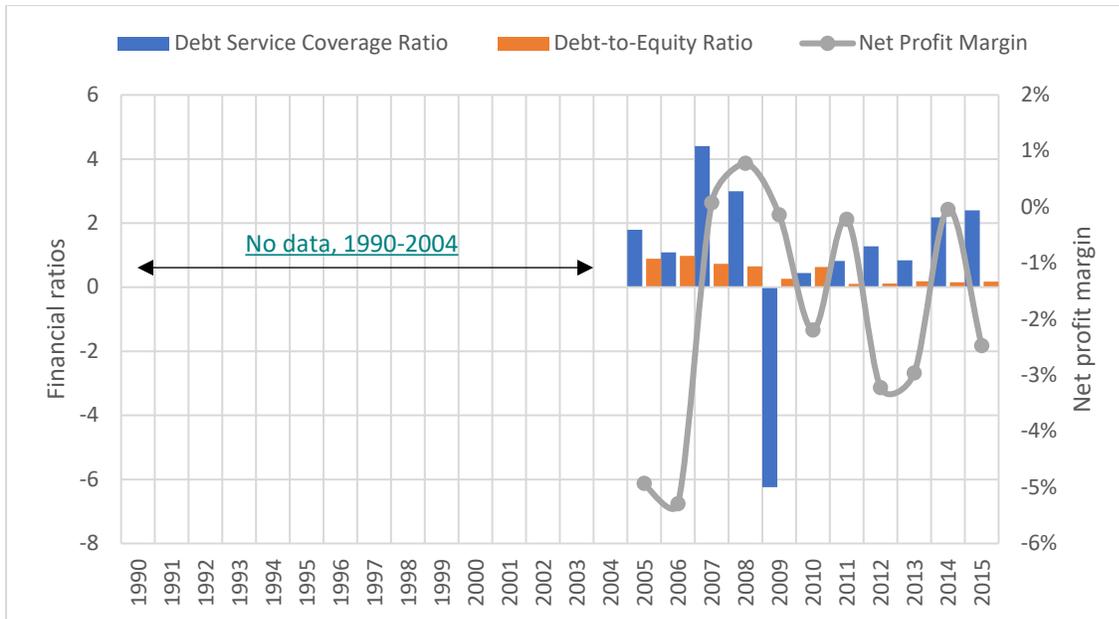
BENEKO has had mixed financial results, with marginal profits in 5 of the last 10 years (Figure 23). Its total investments in 2016 were USD 3 million (6 percent of revenues). Because of negative cash flows from operations in 2015 and 2016, BENEKO has been dependent on external financing to implement its CAPEX plan. Its external financing index ratio was -0.35 in 2016. Its average borrowing rate in 2016 was 3.6 percent; even an average borrowing rate of zero percent would not bring the sector to full cost recovery. BENEKO has established creditworthiness with commercial banks. Its debt servicing ability has also improved since 2011, when the debt service coverage ratio was -6.4 (increased to -1.4 as of 2015).

Figure 21: Financial indicators for MERALCO, 2005-2015



Source: Rethinking Power Sector Reform Project

Figure 22: Financial indicators for BENEKO, 2005-2015



Source: Rethinking Power Sector Reform Project

Table 9 summarizes the financial performance of MERALCO and BENEKO and compares this to the average of firms included in the Rethinking Study. MERALCO stands out as having a positive

net profit margin, while BENEKO shows a small negative margin<sup>18</sup> (loss) and the sample average has a large negative margin. The EBITDA (earnings before interest, taxes, depreciation, and amortization) is positive for both MERALCO and BENEKO (as well as for the sample average) but may be misleading because it omits expenses related to the cost of capital. Importantly, neither Philippine utility receives government transfers, while the sample average has transfers averaging 5 percent of revenue.

**Table 8: Summary of Financial Indicators against Sample Average**

	<b>MERALCO</b>	<b>BENEKO</b>	<b>Global comparator</b>
Net profit (loss) margin (%)	8	-2	-12
EBITDA margin (%)	13	2	6
Current ratio	0.84	2.00	0.79
Debt service coverage ratio	10.33	-1.38	-4.56
External financing index ratio <sup>19</sup>	-0.40	-0.35	6.92
Investment as a percent of revenues (%)	10	6	18
Average borrowing rate (%)	4	4	6
Government transfers as a percent of utility revenue (%)	0		6
Net capital cost recovery ratio <sup>20</sup> (%)	72		16

Note: Sample average from the Rethinking Power Sector Reform Project data observatory and includes data from Tanzania, Senegal, Peru, Colombia, Pakistan, the Philippines, Vietnam, Kenya, Uganda, Tajikistan, the Indian states of Rajasthan, Odisha, and Andhra Pradesh, and Egypt

### 3.4.2 Institutions

The regulator, ERC, was created through the EPIRA Act. This Act also contains, among other issues, its goals, functions, composition, and budget. ERC's objectives are, among others, the following:

- To promulgate and approve rules, regulations, guidelines and policies.
- To enforce rules and regulations, including issuance of permits and licenses.
- To resolve cases (rates and other cases) and disputes.
- To promote consumers' interest.

The performance of the regulatory system is evaluated from two standpoints. First, an evaluation is made of the de jure performance by comparing the laws, rules, and regulations in place with

<sup>18</sup> The net profit of the ECs is misleading because their CAPEX collection is not reflected as revenue while they are required to declare depreciation as an expense.

<sup>19</sup> *External financing index ratio* measured as net cash flow from financing divided by the net cash flow from operations.

<sup>20</sup> *Net capital cost recovery ratio* is the percent of full capital costs that can be recovered through tariff revenues net of operating costs.

various criteria that would be desirable in an ideal system. Second, a de facto evaluation incorporates actual behavior. In most cases the indices are averaged to reach the high-level score but in some cases, we multiply the indicators. Multiplication, rather than an average, of sub-indices is used to reflect the fact that a pair of variables (i.e. autonomy and accountability, governance and substance) are only meaningful when they go together. Average of sub-indexes is adopted as aggregation method when these are largely independent from each other (i.e. tariff and entry regulation).

Performance of regulation is assessed on: regulatory governance, represented by accountability and autonomy aspects; on regulatory substance, represented by tariff regulation, quality regulation and market-entry regulation.

#### *3.4.2.1 Accountability*

According to the EPIRA Act, ERC shall prepare annual reports containing its affairs of that year. The EPIRA Act specifically states that ERC shall submit to the Office of the President of the Philippines and Congress an annual report containing such matters or cases which have been filed before or referred to it during the preceding year, the actions and proceedings undertaken, and its decision or resolution in each case. According to the survey, apart from these annual reports, there have also been independent, non-governmental evaluations of ERC's performance.

With respect to **legal appeals**, there are legally established processes to allow regulated companies or other affected parties to challenge decisions of the regulatory entity. According to the survey, this is in fact complied with in practice and challenges posed by regulated entities go through a well-defined, written and published process.

As regards regulator's **transparency**, there are also several published rules and procedures (ERC's Rules of Practice and Procedures) on different matters, which provide transparency to ERC's activities. Good practices such as publishing the annual report, publishing all decisions and stakeholder involvement in decision making are all part of the regulatory framework.

**Table 9: Formal regulatory governance in the Philippines and comparators, 2015<sup>21</sup>**

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<sup>21</sup> For the complete regulatory governance index, see the annex.

	Colombia	Peru	Philippines	Vietnam	International benchmark
<b>Regulatory Governance</b>	<b>45%</b>	<b>83%</b>	<b>48%</b>	<b>32%</b>	<b>59%</b>
<b>Accountability</b>	<b>75%</b>	<b>85%</b>	<b>95%</b>	<b>64%</b>	<b>83%</b>
<i>Regulatory Oversight</i>	67%	67%	100%	67%	81%
<i>Legal Appeals</i>	100%	100%	100%	100%	100%
<i>Transparency</i>	57%	89%	85%	25%	67%
<b>Autonomy</b>	<b>60%</b>	<b>98%</b>	<b>51%</b>	<b>50%</b>	<b>71%</b>
<i>Decision-Making Autonomy</i>	64%	92%	79%	36%	79%
<i>Budgetary Autonomy</i>	88%	100%	50%	50%	80%
<i>Leadership Autonomy</i>	88%	100%	75%	14%	66%
<i>Managerial Autonomy</i>	0%	100%	0%	100%	59%

Note: Scores based on index developed for the Rethinking Power Sector Reform Project. For more details go to project website at [http://www.esmap.org/rethinking\\_power\\_sector\\_reform](http://www.esmap.org/rethinking_power_sector_reform)

In general, ERCs performance on Accountability is very good (95 percent), as the average of its de jure scores in Regulatory Oversight—100 percent, Legal Appeals—100 percent, and Transparency—85 percent. The main limitations for transparency include the fact that regulator recommendations are not required to be publicly available.

3.4.2.2 *Autonomy*

ERC is an independent commission in charge of granting licenses for electricity generation and supply; of setting transmission and distribution wheeling rates and retail rates for the captive market of distribution utilities; of regulating quality of supply and service; and of regulated utilities oversight. ERC is also responsible for regulating prices or terms of Power Purchase Agreements (PPA), for market design, and for promoting renewable energies and energy efficiency.

ERC’s decisions are binding regarding all matters but utility oversight, in which area its decisions are advisory. Also, according to the EPIRA Act, the ERC shall promulgate and enforce the National Grid Code and a Distribution Code, including performance standards for TRANSCO O & M Concessionaire, distribution utilities and suppliers, and financial capability standards for the generating companies, the TRANSCO, distribution utilities, and suppliers. These standards are set to ensure that electric power industry participants meet the minimum financial standards to protect the public interest.

ERC also enforces the rules and regulations governing the operations of the electricity spot market, as well as the activities of the operator and other participants in this market, for the purpose of ensuring a greater supply and rational pricing of electricity.

It is reported that there are no formal provisions under which a ministry or other government body can overturn ERC’s decisions. However, according to the survey, members’ appointment process is not transparent. The Regulator’s leadership does in fact have known connections with the government, the current Chairman being a former employee from the Department of Justice.

This does not seem to be an exception, because the two predecessors were both Congressmen. Moreover, members of the Commission often come from the regulated industry players.

Its overall autonomy score is below Peru, Colombia and the average, while being well above that of Vietnam. On all sub-components it scores below Peru, especially on managerial autonomy (0 percent). Main limitations are the following: the fact that all regulator's budget comes from the treasury, limiting its independence; the fact that ERC is required to follow employment regulations applicable to government or the civil service and that it has no power to determine its own organizational structure, which must be approved by the President.

### *3.4.2.3 Tariff regulation*

As regards the regulatory framework for tariffs, there exists an explicit policy regarding the objectives to be pursued in the determination of end-user power tariffs; these objectives are cost recovery, efficiency, and equity. According to the survey, ERC has authority over tariff level and structure. Both tariff level and structure are proposed by the utility and determined by the regulator. The regulatory framework provides a definition of cost recovery and it includes operating costs, depreciation charges, return on capital, and costs of complying with environmental obligations. There is a clearly specified regulatory framework and the legitimacy of costs is used as a basis for end-user tariff calculations (known and measurable, prudent, and used and useful), which are based on average costs. With respect to tariff determination, there is a written formula that prescribes how end-user tariff levels are to be set, stated in the publicly available Rules for Setting Transmission Wheeling Rates (RTWR) and the Rules for Setting Distribution Wheeling Rates (RDWR), and the regulator must adhere to it. (See the Annex for details on the tariff setting formula.)

Tariff-setting is based on the notion that inefficiencies will gradually be phased out and there exist incentives to improve efficiency (related to losses and labor productivity) and quality, as previously stated.

Table 11 shows that only Peru scores higher on overall tariff regulation than the Philippines (93 percent) which is affected by its inability to affect the frequency of tariff revisions. The international benchmark (76 percent) is well below the Philippines score, but this is an indicator where many countries achieve substantial scores.

Table 11. Formal regulatory substance in the Philippines and comparators, 2015<sup>22</sup>

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<sup>22</sup> For the complete regulatory substance index, see the annex.

	Colombia	Peru	Philippines	Vietnam	International benchmark
<b>Regulatory Substance</b>	<b>81%</b>	<b>83%</b>	<b>95%</b>	<b>85%</b>	<b>76%</b>
<b>Tariff Regulation</b>	<b>92%</b>	<b>100%</b>	<b>93%</b>	<b>83%</b>	<b>77%</b>
<i>Regulatory Framework for Tariffs</i>	100%	100%	86%	100%	90%
<i>Determination of Tariffs</i>	83%	100%	100%	67%	64%
<b>Quality Regulation</b>	<b>100%</b>	<b>100%</b>	<b>92%</b>	<b>71%</b>	<b>75%</b>
<i>Quality of Service Standards</i>	100%	100%	100%	75%	82%
<i>Quality of Service Enforcement</i>	100%	100%	83%	67%	68%
<b>Market Entry Regulation</b>	<b>50%</b>	<b>50%</b>	<b>100%</b>	<b>100%</b>	<b>77%</b>
<i>Permitting New Entrants</i>	50%	100%	100%	100%	90%
<i>PPA Approvals</i>	50%	0%	100%	NAP	57%

Note: Scores based on index developed for the Rethinking Power Sector Reform Project. For more details go to project website at [http://www.esmap.org/rethinking\\_power\\_sector\\_reform](http://www.esmap.org/rethinking_power_sector_reform)

3.4.2.4 Quality Regulation

As regards quality regulation, there are specific quality of service standards formally written and publicly available for quality of product, supply, and commercial service. Utilities are legally required to meet these standards and they take them seriously and generally comply with them. There are rewards and penalties incorporated in the performance incentive scheme under the performance-based rate setting. Penalties are incorporated in the next tariff setting thus, all users are affected, and they are always enforced in practice. Also, it is disclosed to the public whether utilities have met the standards. As regards quality of service enforcement regulated entities are required to report on a periodic basis on different indicators, such as SAIDI, SAIFI, other service interruption indicators, and voltage indicators. According to the survey, these indicators are independently validated and reviewed by ERC.

All measurements of the quality or reliability of the power supply are made publicly available. The information, broken down monthly, has to be collected and supplied to the ERC annually. In addition to the monthly figures, the cumulative performance total against each index must also be provided, from the start of the corresponding calendar year until the end of the month for which each index was measured. The ERC intends to annually publish the information disclosure data for all Regulated Distribution Systems. Finally, formal measurements of overall customer satisfaction are required and are indeed undertaken in practice through customer surveys carried by utilities (more than once a year).

Summing up, the Philippines’ performance on quality regulation is very good (92 percent), with its weakest area being Quality of service enforcement (83 percent). There is a comprehensive quality regulatory framework, with specific and publicly available require information, including processes and consequences of non-compliance. The main limitations are the fact that utilities are not required to use an automated information management system to measure the quality or reliability of the power supply. Here too the score for the Philippines is above the international benchmark but is below the scores for Colombia and Peru (table 11).

#### *3.4.2.5 Market Entry Regulation*

Through the EPIRA Act, private sector participation in the power sector was allowed in all activities: generation, transmission, distribution, and supply. The Act provided a framework for the restructuring of the electric power industry, including the privatization of the assets of NPC and the transition to a competitive structure. The PSALM was created to take ownership of NPC's assets and to manage its privatization with the objective of liquidating all NPC financial obligations and stranded contract costs in an optimal manner. The Concession for TRANSCO was successfully bided out on December 12, 2007 to the National Grid Corporation of the Philippines (NGCP) who took over the transmission function on January 15, 2009. Today, licenses for generation, transmission, distribution, and supply are available to private companies. Licenses may be allocated by application (for all activities), by grandfathering (in the case of some distribution or transmission licenses), and by competition (in the case of transmission). The procedures for allocating licenses are publicly stated in the form of regulations for generation and supply, and in the law for distribution and transmission activities.

Independent Power Producers (IPPs), as well as other generators, are allowed to sign Power Purchase Agreements (PPA) with utilities. Power supply agreements entered into by distribution utilities, are subject to review by ERC. There is a legally specified period in which the regulatory entity must approve or refuse a proposed PPA, but this period is not always complied with in practice. ERC has used provisional approvals to address the problems of extensive delays and backlogs in approval of PPAs, but these do not provide certainty for generators or DISCOs.

Table 11 shows that with respect to market entry regulation, the Philippines attains a maximum score, and that the comparators all perform less well, notably in a lack of requirement that the regulator is legally required to approve all power sales contracts either directly or indirectly.

#### *3.4.2.6 Overall assessment of performance of regulation*

Table 12 summarizes the Philippine's regulatory performance in de jure aspects, which describe what is stated in the legal and regulatory framework, and de facto (or perceived) aspects, which try to capture experts' comments and perceptions of the actual performance of the various aspects of regulation. The overall de jure regulatory score of 46 percent outperforms all comparators, except for Peru, which has an exceptionally well-designed regulatory structure. Also, the de facto score for the Philippines is somewhat below the de jure score, notably pulled down by a large gap between de jure and de facto for market entry regulation. Overall, the performance of the Philippines regulatory system could be strengthened with respect to autonomy, where budgetary autonomy and leadership autonomy were well below the scores attained by Peru and Colombia.

Table 12: Power sector regulation in the Philippines: de jure vs perceived performance, 2015

<b>Indicators</b>	<b>De Jure</b>	<b>Perceived</b>
<b>Overall Regulation</b>	<b>46%</b>	<b>39%</b>
<b>Regulatory Governance</b>	48%	47%
<b>Accountability</b>	95%	86%
<i>Regulatory Oversight</i>	100%	67%
<i>Legal Appeals</i>	100%	100%
<i>Transparency</i>	85%	92%
<b>Autonomy</b>	51%	54%
<i>Decision-Making Autonomy</i>	79%	92%
<i>Budgetary Autonomy</i>	50%	50%
<i>Leadership Autonomy</i>	75%	75%
<i>Managerial Autonomy</i>	0%	0%
<b>Regulatory Substance</b>	95%	83%
<b>Tariff Regulation</b>	93%	92%
<i>Regulatory Framework for Tariffs</i>	86%	100%
<i>Determination of Tariffs</i>	100%	83%
<b>Quality Regulation</b>	92%	92%
<i>Quality of Service Standards</i>	100%	100%
<i>Quality of Service Enforcement</i>	83%	83%
<b>Market Entry Regulation</b>	100%	67%
<i>Permitting New Entrants</i>	100%	100%
<i>PPA Approvals</i>	100%	33%

## 4 Conclusion

The Philippines had a long-standing problem of supply in the power sector. The National Power Corporation, given monopoly status over generation and transmission in 1972, leaving distribution to private sector utilities and cooperatives, struggled to meet demand. Poor maintenance and lack of new investment to replace aging plants, partly caused by a heavy debt burden, resulted in shortages of power and frequent blackouts in the 1980s. The government responded to this emergency in a similar fashion to others in the same situation, by allowing the entry of independent power producers—a policy which brought short-term success, but which had long-term costs because of the concessions that were made to encourage rapid entry.

It was recognized that this strategy was merely delaying further crises and a plan for reforming the power sector was drawn up. This plan mirrored experience in the U.K. and other markets, envisioning extensive privatization and the creation of wholesale and retail competitive markets.

Remarkably, interest in the plan did not fade when the immediate crisis had been averted, and successive presidents supported the concepts involved. In 2001, the Electric Power Industry Reform Act was passed, setting the course for the development of the sector along the general lines advocated by institutions such as the World Bank, regional development banks, and large international aid agencies. Once the law was passed the successive steps of its implementation have been carried out—notably the privatization of most of the generation and transmission assets previously under the control of NPC, the establishment of a wholesale electricity spot market, and recently the establishment of retail competition for large customers.

Although the time to undertake all these steps has been greater than initially envisaged, at no time has there been loss of government support, and this was a crucial factor in the implementation of the reform strategy. The strategy actually implemented left distribution in the hands of a few large players, as well as the much smaller cooperatives. The opening of the retail market will provide evidence of whether the potential competition in this market will result in increased efficiency and lower prices, as was the expectation in the advocacy of retail competition.

A summary of performance and institutions for the main aspects of the reform agenda (security of supply, access and affordability, efficiency and financial viability, tariffs and cost recovery, and regulation) is presented below and in table 13.

Although the aggregate data on the **security of supply** indicate that subsequent to the crisis of the 1980s there has been adequate dependable capacity to meet peak demands in most recent years, there is evidence that outages are still important. Many firms experience outages, and when they do the duration is substantial. As a result, a large number of firms own back-up generation and, for those owning their own capacity, a large part of total electricity used comes from these generators. In terms of fuel use diversification, the Philippine scores well—the historic very high dependence on imported oil has been sharply reduced, geothermal and hydro capacity are substantial, and gas and coal have been introduced into the mix. Although the extensive use

of coal is not seen as risky financially (unlike oil with its highly volatile prices) there is a large environmental downside to this policy that could become important if policies to reduce greenhouse gas emissions become important under international pressure.

On **access**, urban electrification has been high (relative to other developing countries) throughout the period and reached 96 percent by 2016. It is notable that as a result of EPIRA and the establishment of a regulator, distributors face financial disincentives for failure to respond in a timely fashion to requests for service from households. Waiting times for connection have steadily decreased. Rural electrification increased from 40 percent to 86 percent during the post EPIRA period. The geographical configuration of the Philippines (an archipelago consisting of more than 7,000 islands of which nearly one-third are inhabited) presents difficulties for reaching as yet unserved households. The Electricity Cooperatives, supported by NEA, have made steady progress in increasing rural access.

**Affordability** for most households is still determined by government regulated tariffs because retail competition as yet affects only the largest consumers. Households at the lowest 40 percent of Gross National Income per household would have to spend 7.4 percent of income to purchase the national average amount of electricity available at an average tariff of \$0.17/kWh in 2017. To purchase 30 kWh a month at the average tariff charged of \$0.11/kWh would cost \$3.1, equivalent to 1.3 percent of income for these poorest households. On both measures the average tariff for the Philippines is one of the highest in the sample and also in the region.<sup>23</sup> In part this is because several of the countries in the study subsidize electricity, whereas the Philippines does not use subsidies. Other reasons for the high prices include the existence of high price contracts signed at times of supply shortages, and the imposition of several taxes and charges, as well as the existence of inefficient operations. It is notable that the poorest consumers, who use very little electricity, are facing considerably lower tariffs, implying a cross subsidy between consumer classes. Further improvements in affordability can be expected with the onset of retail competition and the replacement of the old high-cost contracts.

On **operational and commercial efficiency**, the performance of the selected distribution utility and of a large cooperative have been good. T&D losses have declined to a level which is comparable with good practice, and collection rates have been near 100 percent. Other indicators of performance which are built into the regulatory framework, such as the average frequency of interruptions (SAIDI), average duration of interruptions (SAIFI), and time to make a new connection have all improved in recent years. However, there is concern that these improvements have been achieved at excessive cost with utilities gold-plating their programs.

**Cost recovery and financial viability** have been largely satisfactory—tariffs have covered operating costs plus debt service and principal repayment, and have nearly covered operating costs plus the full, average weighted cost of capital. Cost have declined since 2013 due mainly to declining fuel costs, and the negotiation of lower cost supply agreements. The expiration of most

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<sup>23</sup> See: M. Thomas, 2014. Spotlight on the WESM. [www.lantaugroup.com/files/ppt\\_wesm\\_mt.pdf](http://www.lantaugroup.com/files/ppt_wesm_mt.pdf)

of the high-cost emergency PPAs by 2025 will see as further decline in costs, as should the continuing operation of the WESM and the impact of the newly introduced retail competition.

**Table 13: Summary of the Philippines' power sector reform efforts**

	Performance	Institutions
Security of supply	Overall performance has been satisfactory, but outages still affect sufficient firms that many own and use back-up generation. Performance of distribution utilities has been improving under incentives from the regulator.	The lack of a mandatory power generation system plan is affecting the timely initiation of power procurement, and the transmission planning process is not transparent and does not allow for adequate stakeholder consultation.
Access & Affordability	Urban access levels have been at high levels for some time, and rural access has steadily improved, although the final 15 percent of rural households may present a substantial challenge, partly due to the geographical nature of the country.  Affordability is still limited. The lack of subsidies has kept prices high, although the onset of wholesale and retail competition is expected to reduce prices. The poorest households do receive a substantial cross-subsidy that keeps the use of a small amount of electricity affordable.	The regulatory incentives for access are built into the incentive system, rather than being an obligation. The lack of regulation for mini-grids and the inability of private owners to operate them legally are factors limiting the expansion of rural access.  The slow introduction of retail competition for households consuming less than 1 MW <sup>24</sup> has been a factor in keeping tariffs high. In addition, the various taxes and charges placed on power raise its price relative to other countries.
Operational and Commercial Efficiency	T&D losses have been low and decreasing, and wholesale competition has seen these prices driven down. At the same time performance	Institutional performance was generally good for the distribution utility, but rather weaker for the cooperative notably on financial practices where it failed on all criteria

<sup>24</sup>Recently steps have been taken to permit the competition for and supply of customers with at least 750 kW.

	standards of delivery for distributors have improved.	related to methods of obtaining external financing.
Cost recovery and financial viability	Tariff setting is still under the control of the regulator, but wholesale prices are determined by the market; retail prices are about to become market driven. Tariffs nearly cover operational and capital costs and the distribution utility has a positive net profit margin. The cooperative has a small net loss.	The framework of regulation has generally worked to improve the financial performance through incentives built into the price formula.

The experience of the Philippines points to some important lessons for the adoption of a reform program to improve the delivery of energy services in other countries.

**First, the success of the Philippines in achieving the transformation of a public utility owning all generation and transmission to private ownership of these sectors and the introduction of competition between generators and between distributors was possible only because of the nature of the political support it received.** During the period of drawing up the plans and of implementing the crucial initial big steps of the reform program, the Presidency was held by a series of incumbents who strongly supported the introduction of the market as a way of improving efficiency and reducing the burden on the state. Without this leadership the initial reform plan would have either been greatly delayed (running the risk of non-completion) or altered in a way that vitiated its original purpose. This support for reform was underpinned by the experience of severe blackouts creating a climate in which there was support for breaking with the traditional public utility model.

**Second, even with a well-designed and comprehensive initial strategy (as embodied in the reform law) the amount of time that would be required to fully complete the reform and introduce retail competition was underestimated.** The process of privatization, if carried out well, and the moves to wholesale and retail competition are complex and can easily be delayed by unexpected difficulties. For example, in the Philippines the privatization of transmission required four attempts, a situation that had not been anticipated at the outset. This observation reinforces the importance of the first, in that leadership and pressure from the highest political levels may be required over a lengthy period to ensure success.

**Third, the absence of direct subsidies to consumers (except for cross-subsidies between different groups of consumers) meant that users had not become used to tariffs being held**

**down at times of increasing fuel prices, although tariffs did not cover all generation and transmission costs, as was shown by the increasing debt accumulated by the public utility (NPC) before the reform.** This meant that it was possible for a competitive sector to emerge through privatization where there was decreasing public financial support. The tariffs are still high by international terms but are being slowly reduced as competition at wholesale and at retail begins to make itself felt.

**Fourth, the creation of a separate and specialized agency (PSALM) that controlled all the state generation and transmission, and was charged with their privatization, was highly successful.** Sales have almost covered the accumulated debts, and the target for selling 70 percent of total generating capacity was met by 2012. Notably, when NPC stalled on the preparation for asset sale in providing information, access to assets, and land titling, the President chose to replace the leadership of NPC with someone from PSALM.

**Fifth, decisions made early on are difficult to reverse once the process of reform gets underway.** For example, the decision to leave the largest distributor, MERALCO, as a single firm rather than split it up as had been proposed in the original plan, would be difficult to reverse at this stage. The size and market share of MERALCO gives it power in the market and improving its performance leans more heavily on regulation without the spur given by sharper competition.

In conclusion, the Philippines experience illustrates that a full reform package can be implemented where there is strong and continuous political support, and where the principles of cost recovery are not undermined by popular pressure for the continuation and even increase of direct subsidies. The further evolution of the performance of the sector as competition becomes more entrenched will provide hard evidence of what a reform package can achieve.

## 5 ANNEX

### 5.1 Tariff setting

The Return on Rate Base Methodology applied to set NPC tariffs ensures that tariffs are set such that they allow recovering prudently incurred costs of service plus a reasonable rate of return. The rate of return shall provide a return that will fairly compensate the company for the risk inherent to the investment. In order to establish just and reasonable rates, the regulator identifies costs incurred during a “test year”, which is a snapshot of ongoing utility costs.

The annual revenue requirement is determined based on a historical test year as follows:

$$RR = OPEX + Payroll + Dep + rxRB \text{ where}$$

RR= revenue requirement

OPEX = operating expenses (necessary, legitimate, prudent, continuing, normal costs, including operating and maintenance expense and taxes)

Payroll= Updated salaries plus allowable benefits Dep = Depreciation

rxRAB= return on investment

r = 12 percent

RAB = rate base (value of used and useful assets plus working capital).

Transmission and distribution tariffs are set according to the Rules for Setting Transmission Wheeling Rates (RTWR) and the Rules for Setting Distribution Wheeling Rates (RDWR), respectively. These rules define a performance-based regulation, through which a forecasted Annual Revenue Requirement (also called Building Blocks) for a regulatory period is determined. This regulatory period includes 4 years for distribution and 5 years for transmission.

According to the RDWR (similar principles are stated in RTWR) the Building Blocks which will form the basis of calculating the Annual Revenue Requirement (ARR) are as follows:

$$ARR_t = Opext + Tax_{m,t} + RegDep_{nt} + [ ( RAB_t + WC_t ) \times WACC ] + Tax_{p,t} \text{ where:}$$

Opext = Nominal operating and maintenance expenditure for regulatory year t which is forecast for that regulatory year and approved by the ERC;

Tax<sub>m,t</sub> = Payment of taxes, other than corporate income tax, for regulatory year t in nominal terms which are forecast for that regulatory year and approved by the ERC;

RegDep<sub>nt</sub> = Regulatory Depreciation for regulatory year t in real terms as determined by the ERC, based on a straight-line method;

RAB<sub>t</sub> = Regulatory Asset Base for regulatory year t in real terms as determined by the ERC derived from a roll-forward calculation of the value of each asset category j

WC<sub>t</sub> = Working capital allowance for regulatory year t, which is set as a proportion of the difference between: (a) the real operating and maintenance expenditure in relation to the relevant Regulated Distribution System which is forecasted for that Regulatory Year and approved by the ERC; and (b) the real amount of the bad debts in relation to the relevant Regulated Distribution System which are forecasted for that Regulatory Year and approved by the ERC.

Such proportions being determined by the ERC, as part of the Regulatory Reset Process, after an analysis of the relevant payables and receivables (which analysis could take the form of a lead/lag study, a benchmark study, or an industry average study focused on private utilities) or may consider the regulated entities actual working capital requirement for the past three (3) years;

WACC = is the weighted average cost of capital calculated using a 'classical' formula and as determined by the ERC. This value is determined by the ERC as part of the Regulatory Reset Process and remains constant for each regulatory year (unless a re-opening event occurs);

Tax<sub>p,t</sub> = Estimated corporate income tax payable by the regulated entity in regulatory year t, in nominal terms, as determined by the ERC; and Annually, a verification takes place to adjust for the actual increase/decrease in price of commodities (inflation); to adjust for the actual increase/decrease in sales; and to review the service performance (incentive or penalty). The formula is as follows:

$MAP_t = [MAP_{t-1} \times \{1 + CWI_t - X\}] + St - K_t + ITA_t$  where:

MAP<sub>t</sub> = Maximum Annual Price cap for period t;

MAP<sub>t-1</sub> = Maximum Annual Price cap for period t-1;

CWI<sub>t</sub> = Change in Weighted Index for regulatory year t, being this index a weighted average between Consumer Price Index variation and exchange rate variation;

X = An Efficiency Factor for regulatory year t, which may be a positive or negative value or even be zero;

St = Performance incentive factor to reward each regulated entity for achieving specified target levels of performance and penalize each regulated entity for failing to achieve specified target levels of performance during the twelve-month period ending on December 31 of regulatory year t-1). St may be a positive or negative value or may be zero;

K<sub>t</sub> = Correction Factor to adjust for over or under recovery of revenue in regulatory year t-1;

ITA<sub>t</sub> = Tax Adjustment to adjust for over or under recovery of corporate income tax in regulatory year t-1.

Because performance-based regulation may result in quality deterioration, this Price Cap envisages a performance incentive factor, St. According to the RDWR, the performance incentive scheme will include

a guaranteed service level scheme in terms of which regulated entities will compensate a Customer directly if certain service delivery performance thresholds are not met. These performance targets may be based on historical service performance levels achieved by a regulated entity or may reflect a measure of improvement as determined by the ERC, based on benchmarking performance levels against other Philippines and international utilities. Such benchmarking and subsequent performance improvements will be subjected to public consultation before being adopted into a performance incentive scheme.

## 5.2 Detailed RPSR Indices

### A. Global reform index

The standard package of reforms prescribed by international donors in the 1990s included four principal components: restructuring (vertical and horizontal unbundling of power utilities); private sector participation; creation of an independent regulator; and competition in power generation.

In order to aggregate across the four dimensions of power sector reform considered in this study, a simple Power Sector Reform Index is constructed. The index gives each country a score on an interval of 0 to 100 on each dimension of power sector reform. The scores are based on giving equal weight to each step on each dimension of the reform continuum (see tabulation below). The average of the four 0-100 scores is used to provide an overall summary of the extent of reform.

<b>Regulation</b>	No regulator = 0		Regulator = 100		
<b>Restructuring</b>	Vertically integrated = 0	Partial vertical unbundling = 33	Full vertical unbundling = 67	Vertical & horizontal unbundling = 100	
<b>Competition</b>	Monopoly = 0	IPPs = 25	Single Buyer Model = 50	Bilateral Contracts = 75	Competitive market = 100
<b>Private Sector Participation</b>	0.5*(Percentage of generation capacity with private sector participation) +				
	0.5*(Percentage of distribution utilities with private sector participation)				

B. Generation and transmission planning index for the Philippines and comparators, 2015

	Colombia	Peru	Philippines	Vietnam	International benchmark
<b>Planning and Procurement</b>	95%	77%	59%	59%	70%
<b>Generation Planning</b>	86%	43%	71%	71%	56%
Country has a generation master plan	○	○	○	○	94%
Country has an overall energy plan	○	○	○	○	65%
Competent entity is responsible for producing the plan	○	●	○	○	88%
Inter-governmental committee oversees the planning unit	○	●	○	●	29%
Power generation system plan is mandatory	●	●	●	○	19%
Plan leads to timely initiation of procurement	○	●	●	○	38%
Planning process is transparent and participatory	○	○	○	●	59%
<b>Transmission Planning</b>	100%	75%	50%	100%	72%
Competent entity is responsible for producing the plan	○	○	○	○	100%
Explicitly linked to power generation plans	○	●	○	○	88%
Plan is mandatory	○	○	●	○	29%
Planning process is transparent and participatory	○	○	●	○	71%

C. Generation and transmission procurement index for the Philippines and comparators, 2015

	Colombia	Peru	Philippines	Vietnam	International benchmark
<b>Procurement of Generation</b>	95%	90%	100%	50%	85%
There is a framework for procurement	○	○	○	●	82%
Country allows International competitive bidding or public auctions for procurement	○	○	○	○	94%
Types of procurement methods allowed					
<i>Unsolicited bids</i>	○	●	●	●	29%
<i>Direct negotiation</i>	○	●	●	○	47%
<i>International competitive tendering</i>	●	○	○	○	88%
<i>Public auctions</i>	○	○	●	●	41%
<i>Stand-alone capacity market</i>	●	●	●	●	0%
Auction design score	0.86	0.71	NAP	NAP	80%
Country uses public auctions for procurement	○	○	●	●	41%
Clear and comprehensive established rules	○	○	NAP	NAP	100%
Credible penalties for violating the rules	○	○	NAP	NAP	86%
Guarantees and penalties to ensure timely completion	○	○	NAP	NAP	86%
Standard, non-negotiable contracts	○	○	NAP	NAP	86%
Stapled financing terms or risk mitigation instruments	○	●	NAP	NAP	86%
No concerns regarding the transparency and fairness of the auction	●	●	NAP	NAP	14%
Efforts to inform and attract bidders to the auction	○	○	NAP	NAP	100%
<b>Transmission Procurement</b>	100%	100%	17%	17%	64%
There is a framework for procurement of new transmission lines	○	○	●	●	59%
Methods used to procure new transmission-					
<i>Competitive tender</i>	○	○	●	●	65%
<i>Direct negotiation</i>	●	●	●	●	24%
All projects are awarded to the incumbent transmission company	●	●	○	○	47%

○	Satisfactory result
●	Unsatisfactory result
NAP	Not applicable
NAV	Not available

D. Access policy framework index for the Philippines and comparators, 2015

	Colombia	Peru	Philippines	Vietnam	International benchmark
<b>Regulation of New Connections</b>	<b>68%</b>	<b>88%</b>	<b>57%</b>	<b>14%</b>	<b>65%</b>
Roles of regulator, utility, rural electrification agency clearly defined	○	○	○	NAV	93%
Utilities have regulatory obligation to connect new customers	○	○	○	○	94%
Regulatory entity has authority to approve connection charges for new customers	○	○	○	●	71%
Connection charges are set using shallow entry	●	○	●	NAP	58%
Government provides subsidy for new connections	●	●	●	●	53%
Connection has to be provided in a specified time	○	○	○	●	94%
Regulatory entity monitors time taken to provide new connections	●	○	●	●	44%
Regulator has authority to levy penalties for not connecting customers on time	NAP	○	NAP	NAP	71%
Time taken to provide connections publicly available	○	○	●	●	24%
There are connection charges	○	○	○	NAV	94%
Customer pays limited connection charges	●	●	●	NAP	43%
Connection charge is publicly available	○	○	○	●	71%
<b>Regulation of solar home systems</b>	<b>100%</b>	<b>50%</b>	<b>100%</b>	<b>0%</b>	<b>66%</b>
Minimum technical standards and post-installation warranty requirements for solar home systems	○	○	○	●	71%
Regulator reviews and approves prices of surplus SHS sales of electricity to the grid operator	NAV	●	○	NAV	62%
<b>Regulation of mini-grids</b>	<b>33%</b>	<b>33%</b>	<b>67%</b>	<b>NAV</b>	<b>44%</b>
Privately owned mini-grids legally allowed to operate	○	○	○	NAV	81%
Clear options for mini-grid operator when the interconnected grid reaches the area, including compensation	●	●	●	NAV	7%
Subsidy or other mechanism to help mini-grid operators recover their costs	●	●	○	NAV	47%

E. Corporate governance- accountability index for the Philippines and comparators, 2015

Corporate governance	Vietnam		Philippines		Colombia		Peru		International benchmark
	NPC	HCMPC	MERALCO	BENECO	EPM	CODENSA	Luz del Sur	Hidrandina	
<b>Accountability</b>	<b>17%</b>	<b>17%</b>	<b>100%</b>	<b>67%</b>	<b>75%</b>	<b>92%</b>	<b>92%</b>	<b>58%</b>	<b>60%</b>
Private or public shareholders appoint board	●	●	○	○	●	○	○	○	36%
Transparent process exists for Board selection	●	●	○	○	●	○	○	●	36%
Board members cannot be removed at will	●	●	○	●	●	○	○	●	29%
Chairperson & CEO are separate positions	●	●	○	○	○	○	○	○	75%
Function of Company Secretary exists	○	○	○	○	○	○	○	○	82%
Board Sub-Committees for different issues	●	●	○	●	○	○	●	●	68%
Audit committee of the Board	●	●	○	○	○	○	○	○	71%
Board Code of Conduct exists	●	●	○	○	○	○	○	○	64%
Requirement to declare conflicts of interest	●	●	○	○	○	○	○	○	75%
Utility has carried out any third party transactions in last five yrs	●	●	○	●	○	●	○	●	46%
Minority shareholders' rights are protected	●	●	○	●	○	○	○	●	39%
Utility publishes an Annual Report	○	○	○	○	○	○	○	○	93%

○	Satisfactory result
●	Unsatisfactory result
NAP	Not applicable
NAV	Not available

F. Corporate governance- autonomy index for the Philippines and comparators, 2015

Corporate governance	Vietnam		Philippines		Colombia		Peru		International benchmark
	NPC	HCMPC	MERALCO	BENECO	EPM	CODENSA	Luz del Sur	Hidrandina	
<b>Autonomy</b>	<b>0%</b>	<b>0%</b>	<b>100%</b>	<b>100%</b>	<b>78%</b>	<b>100%</b>	<b>78%</b>	<b>22%</b>	<b>63%</b>
Board is the final body to take decision on-									
<i>Defining corporate strategy</i>	NAP	NAP	○	○	○	○	○	●	96%
<i>Approving business plans</i>	NAP	NAP	○	○	○	○	○	●	96%
<i>Setting and monitoring performing objectives</i>	NAP	NAP	○	○	○	○	○	○	92%
<i>Selecting, appointing and overseeing the CEO</i>	NAP	NAP	○	○	○	○	○	●	56%
<i>Raising capital from debt</i>	NAP	NAP	○	○	○	○	○	●	68%
<i>Raising capital from equity</i>	NAP	NAP	○	○	●	○	○	●	48%
<i>Major capital expenditures</i>	NAP	NAP	○	○	○	○	○	●	88%
<i>Deciding and implementing tariff adjustments</i>	NAP	NAP	○	○	●	○	●	●	24%
<i>Human resource hiring and firing decisions</i>	NAP	NAP	○	○	○	○	●	○	72%

G. Utility management- financial discipline index for the Philippines and comparators, 2015

Utility management	Vietnam		Philippines		Colombia		Peru		International benchmark
	NPC	HCMPC	MERALCO	BENECO	EPM	CODENSA	Luz del Sur	Hidrandina	
<b>Financial Discipline</b>	<b>53%</b>	<b>53%</b>	<b>71%</b>	<b>53%</b>	<b>76%</b>	<b>69%</b>	<b>86%</b>	<b>65%</b>	<b>59%</b>
Utility has a credit rating	●	●	○	●	○	○	○	●	36%
Utility can issue new bonds	●	●	●	●	○	○	○	●	36%
Utility can issue new equity	●	●	○	●	●	NAV	○	●	26%
Utility pays dividends to shareholders	●	●	○	●	○	○	○	●	29%
Public service obligations are explicitly defined	○	○	○	○	○	○	●	○	46%
PSO is publicly disclosed	●	●	○	○	●	●	NAP	○	38%
PSOs are costed	●	●	●	●	●	●	NAP	●	0%
PSOs are compensated by government	●	●	●	●	●	●	NAP	●	0%
Utility required to meet financial performance targets	●	●	●	●	○	○	○	○	52%
System of internal financial controls exists	○	○	○	○	○	●	○	○	96%
Internal audit function exists	○	○	○	○	○	●	○	○	93%
Utility is subject to state auditing procedures	○	○	●	●	○	○	●	○	71%
Financial accounts are produced	○	○	○	○	○	○	○	○	96%
Financial accounts are audited by external auditor	○	○	○	○	○	○	○	○	93%
Financial accounts are publicly disclosed	○	○	○	○	○	○	○	○	79%
Financial accounts meet national standards	○	○	○	○	○	○	○	○	82%
Financial accounts meet international standards	○	○	○	○	○	○	○	○	57%

○	Satisfactory result
●	Unsatisfactory result
NAP	Not applicable
NAV	Not available

## H. Utility management- human resources index for the Philippines and comparators, 2015

Utility management	Vietnam		Philippines		Colombia		Peru		International benchmark
	NPC	HCMPC	MERALCO	BENECO	EPM	CODENSA	Luz del Sur	Hidrandina	
<b>Human Resource</b>	50%	50%	79%	86%	86%	60%	90%	71%	62%
Annual staff performance reviews exist	○	○	○	○	○	NAV	○	○	93%
Employees receive performance related bonuses	○	○	○	○	●	NAV	○	○	70%
Employees can be fired for poor performance	○	○	○	○	○	○	○	○	79%
Government employment regulation don't apply	●	●	○	○	●	NAV	○	●	26%
Wages not based on government pay scales	●	●	○	○	○	NAV	○	●	48%
Staff training policy exists	○	○	○	○	○	○	○	○	86%
Managers are free to hire employees	●	●	●	●	○	●	NAV	●	12%
Managers are free to fire employees	●	●	●	●	○	●	NAV	●	24%
Managers can execute budget	●	●	○	○	○	●	NAV	○	60%
Managers can implement investment projects	●	●	●	○	○	●	NAV	○	44%
Recruitment involves advertisement of positions	●	●	○	○	○	○	●	○	71%
Recruitment involves short-listing candidates	○	○	○	○	○	○	○	○	89%
Recruitment involves interviewing candidates	○	○	○	○	○	○	○	○	82%
Recruitment involves reference checks	○	○	○	○	○	○	○	○	75%

## I. Utility management- information & technology index for the Philippines and comparator, 2015

Utility management	Vietnam		Philippines		Colombia		Peru		International benchmark
	NPC	HCMPC	MERALCO	BENECO	EPM	CODENSA	Luz del Sur	Hidrandina	
<b>Information and Technology</b>	93%	93%	93%	67%	87%	0%	80%	73%	71%
SCADA system	○	○	○	○	○	NAV	○	○	93%
IT system to support incidence resolution	○	○	○	○	○	●	○	○	75%
IT system to support distribution management	○	○	○	○	○	●	○	○	79%
IT system to support energy management	○	○	●	●	○	●	○	●	64%
Geographic Information System (GIS)	○	○	○	○	○	NAV	○	○	78%
KPIs are used to monitor quality of supply	○	○	○	○	○	NAV	○	○	100%
Advanced Metering Infrastructure (AMI)	○	○	○	○	●	NAV	●	●	52%
Accurate customer database	○	○	○	○	○	NAV	○	○	96%
Call center for dealing with customer complaints	○	○	○	○	○	NAV	○	○	96%
Website for submission of customer complaints	○	○	○	●	○	NAV	○	○	85%
Customer satisfaction regularly monitored	○	○	○	○	○	NAV	○	○	59%
Commercial management system (CMS)	○	○	○	●	●	NAV	○	○	41%
Resource Management System (RMS)	●	●	○	●	○	NAV	○	○	35%
KPIs are used to monitor commercial cycle	○	○	○	○	○	●	●	●	86%
KPIs are used to monitor corporate resource management	○	○	○	●	○	●	●	●	54%

○	Satisfactory result
●	Unsatisfactory result
NAP	Not applicable
NAV	Not available

J. Regulatory governance- accountability index for the Philippines and comparators, 2015

Regulatory governance		Colombia	Peru	Philippines	Vietnam	International benchmark
<b>Accountability</b>		<b>75%</b>	<b>85%</b>	<b>95%</b>	<b>64%</b>	83%
<b>Regulatory Oversight</b>		67%	67%	100%	67%	81%
Regulator's objectives formally stated in law		○	○	○	○	100%
Regulator required to report on its activities		○	○	○	●	88%
Independent third party evaluations of regulator have taken place		●	●	○	○	56%
<b>Legal Appeals</b>		100%	100%	100%	100%	100%
Legally established process to challenge/appeal regulatory decisions		○	○	○	○	100%
<b>Transparency</b>		57%	89%	85%	25%	67%
Publicly available annual reports		○	○	○	○	94%
Recommendations are required to be made public		NAP	○	●	●	33%
Government body receiving recommendations required to respond publicly		NAP	●	●	●	33%
Regulator is required to publish its decisions on-	End-user tariffs	○	○	○	NAP	100%
	Licensing generation or supply	NAP	NAP	○	NAP	100%
	Wholesale or PPA prices and contract terms	○	○	○	NAP	100%
	Market design	○	NAP	○	NAP	100%
	Oversight of regulated utilities	NAP	○	○	NAP	85%
Regulatory decision-making process legally requires the participation of non-government stakeholders in case of-	End-user tariffs	●	○	○	○	69%
	Licensing generation or supply	NAP	NAP	○	●	69%
	Wholesale or PPA prices and contract terms	●	○	○	●	38%
	Market design	●	NAP	○	●	30%
	Oversight of regulated utilities	NAP	○	○	●	38%

○	Satisfactory result
●	Unsatisfactory result
NAP	Not applicable
NAV	Not available

K. Regulatory governance- autonomy index for the Philippines and comparators, 2015

Regulatory governance		Colombia	Peru	Philippines	Vietnam	International benchmark
<b>Autonomy</b>		<b>60%</b>	<b>98%</b>	<b>51%</b>	<b>50%</b>	<b>71%</b>
<b>Decision-Making Autonomy</b>		<b>64%</b>	<b>92%</b>	<b>79%</b>	<b>36%</b>	<b>79%</b>
Areas where entity has a mandate to regulate-	End-user tariffs	○	○	○	○	100%
	Quality of supply and service	○	○	○	○	100%
	Electrification or increased access to energy	●	○	●	●	53%
Decision of the regulatory entity are legally binding in the area of-	End-user tariffs	○	○	○	●	88%
	Grid access charges	○	○	○	●	87%
	PPA/wholesale prices	○	○	○	●	92%
	Quality of supply/service	○	○	○	●	87%
	Market design	○	NAP	○	●	50%
	Licensing	NAP	NAP	○	●	85%
	Utility oversight	NAP	○	●	●	71%
Government body rejecting or modifying regulatory decisions		NAP	●	●	●	17%
Law precribes decision making process for-	End-user tariffs	●	○	○	○	94%
	Grid access charges	●	○	○	○	81%
	Quality of supply/service	●	○	○	○	87%
<b>Budgetary Autonomy</b>		<b>88%</b>	<b>100%</b>	<b>50%</b>	<b>50%</b>	<b>80%</b>
Funding for regulator established by law		○	○	○	○	100%
Percentage of regulator's budget that comes from levies or taxes		0.752	1	0	0	59%
<b>Leadership Autonomy</b>		<b>88%</b>	<b>100%</b>	<b>75%</b>	<b>14%</b>	<b>66%</b>
Legal basis for existence is primary legislation		○	○	○	○	100%
Power to determine own organizational structure and rules		○	○	●	●	50%
Power to determine the allocation and use of budget		○	○	○	●	44%
Legal requirements or restrictions regarding professional profile leadership		○	○	○	●	94%
There is a fixed term for the leadership of the regulatory entity		○	○	○	●	88%
Legal provisions under which leadership an be removed from office		○	○	○	●	75%
Current leadership of entity connected to government or utilities		●	○	●	●	25%
Over 60% of employees are in technical positions		○	○	○	NAV	57%
<b>Managerial Autonomy</b>		<b>0%</b>	<b>100%</b>	<b>0%</b>	<b>100%</b>	<b>59%</b>
Pay scale not linked to govt pay scale or is 90% of utility pay scale		●	○	●	NAV	53%
Not required to follow govt employment regulations		●	○	●	○	63%

○	Satisfactory result
●	Unsatisfactory result
NAP	Not applicable
NAV	Not available

L. Regulatory substance- tariff regulation index for the Philippines and comparators, 2015

	Colombia	Peru	Philippines	Vietnam	International benchmark
<b>Tariff Regulation</b>	92%	100%	93%	83%	77%
<b>Regulatory Framework for Tariffs</b>	100%	100%	86%	100%	90%
Objectives in determining tariffs mentioned explicitly in policy or legal mandate	○	○	○	○	100%
Principles of tariff-setting clearly articulated	○	○	○	○	88%
Authority over the tariff level	○	○	○	○	94%
Clear definition of “cost recovery”	○	○	○	○	88%
Legitimacy of costs is used as a basis for tariff calculations	○	○	○	○	88%
Tariff-setting based on a clearly specified regulatory framework	○	○	○	○	88%
Frequency and schedule of revisions determined by law or regulation	○	○	●	NAP	75%
<b>Determination of Tariffs</b>	83%	100%	100%	67%	64%
Publicly available written formula is to be used for tariff setting and utilities are legally required to adhere to it	○	○	○	○	88%
Avoid passing-through inefficient costs to customers	○	○	○	○	76%
Requirement to submit financial information according to set standards	○	○	○	○	53%
Users bear the costs of incentive mechanisms for renewable energy generation	○	○	○	●	75%
Regulatory mechanisms to compensate generators for the provision of firm capacity or ancillary services	○	○	○	○	58%
Utilities are compensated for the costs of stranded assets	●	○	○	●	25%

○	Satisfactory result
●	Unsatisfactory result
NAP	Not applicable
NAV	Not available

M. Regulatory substance- quality of supply index for the Philippines and comparators, 2015

	Colombia	Peru	Philippines	Vietnam	International benchmark
<b>Quality Regulation</b>	100%	100%	92%	71%	75%
<b>Quality of Service Standards</b>	100%	100%	100%	75%	82%
Requirement to meet quality of service standards	○	○	○	○	100%
Specific quality of service standards are formally written and publicly available for- quality of the product, quality of the service and customer service	○	○	○	○	97%
Performance on quality of service standards is public	○	○	○	○	71%
Fines for failing to meet quality of service standards	○	○	○	●	59%
<b>Quality of Service Enforcement</b>	100%	100%	83%	67%	68%
Requirement to report technical data on a periodic basis	○	○	○	○	100%
Regulator specifies how to collect technical performance data	○	○	○	○	71%
Regulator reviews or validates technical performance data	○	○	○	●	47%
Automated information management systems are required to measure the quality or reliability of the power supply	○	○	●	○	71%
Measurements of the quality or reliability of power supply are made public	○	○	○	○	65%
Financial incentives to meet customer service standards or increase customer satisfaction	○	○	○	●	53%

○	Satisfactory result
●	Unsatisfactory result
NAP	Not applicable
NAV	Not available

N. Regulatory substance- market entry index for the Philippines and comparators, 2015

	Colombia	Peru	Philippines	Vietnam	International benchmark
<b>Market Entry Regulation</b>	50%	50%	100%	100%	77%
<b>Permitting New Entrants</b>	50%	100%	100%	100%	90%
Responsible for monitoring compliance with the terms of the license or permit	●	○	○	○	88%
Authority to impose penalties for violating license or permit terms	NAP	○	○	○	100%
Penalties are formally written and publicly available	NAP	○	○	○	80%
Provisions to force companies to relinquish licenses or permits for violation	○	○	○	○	100%
<b>PPA Approvals</b>	50%	0%	100%	NAP	57%
Legally required to approve all power sales contracts either directly or indirectly	●	●	○	●	59%
Approve or refuse a proposed PPA in a legally specified period of time	NAP	NAP	○	NAP	60%
Authority over the process by which utilities can select or procure power from IPPs	○	●	○	●	50%

○	Satisfactory result
●	Unsatisfactory result
NAP	Not applicable
NAV	Not available