November 2014
No.117

MBC RESEARCH REPORT

Walking the Talk down the Tight Road to Energy Security

HIGHLIGHTS

- When the power industry is disintegrated or unbundled, profit margins at each stage of production could pile up on prices, unless market competition and regulation are able to put a cap on margins. If regulation fails to facilitate effective competition, prices in an unbundled power industry, such as in the Philippines, are higher than under vertical integration.
- Like the Philippines before, Indonesia and Malaysia are seeing the need to restructure their respective industries from the vertically-integrated, state-managed structure to one that is market-based and private sector-led. Both recognize that their current tariffs and fuel subsidies are unsustainable, and does not encourage efficiency.
- If EPIRA were amended, it would create uncertainty that international and local investors would be more reluctant to build new power plants, especially when supply is already tight. Therefore, the clamor to fully implement, rather than amend, EPIRA appears to have greater merit now.

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We have to walk our talk. While we are proud of the growth performance of our economy, we should make use of this as a platform for ensuring that reforms that would create a rising middle class by creating jobs are institutionalized.

– MBC Co-Vice Chairman Roberto F. De Ocampo OBE
Former Secretary of Finance

Job creation remains the foremost challenge for the Philippine economy in the coming years, notwithstanding brisk economic growth rates that have put the country ahead of the pack in Southeast Asia, and even Asia as a whole. Government statistics reveal that gross domestic product (GDP) grew by 6% in the first half of 2014, but the percentage of unemployed persons stood at 7.2%, an improvement of only 0.1% compared to the same period in 2013.

Economic growth has not been widely felt because only a few economic sectors and geographic areas are driving it. Indeed, weak linkages between the leading growth sectors and the rest of the domestic economy have yielded narrow benefits, and the predominance of capital-intensive (labor-saving) industries has resulted in growth that has not yet reduced poverty incidence commensurately.

In this light, the Joint Foreign Chambers of Commerce in the Philippines (JFC) has been focusing on "Seven Big Winner Sectors", which are seen as the top drivers of more inclusive economic growth. These sectors are: 1) Agribusiness; 2) Business Process Outsourcing; 3) Creative Industries; 4) Infrastructure; 5) Manufacturing and Logistics; 6) Mining; and 7) Tourism, Medical Travel, and Retirement. (Arangkada, 2014)

Arangkada (2014), an assessment report published by the Arangkada Philippines Project and the American Chamber of Commerce of the Philippines (AmCham), emphasizes that in order to create more jobs so that employment growth keeps pace with economic growth, the Philippines must embark on a number of crucial reforms, among which are energy sector reforms that will boost competitiveness at this time of increasing regional and global integration. Energy, which falls under the Infrastructure Big Winner Sector, will play a significant role in job creation and overall economic progress, since the performance of this sector will largely determine the attractiveness of the country as an investment destination.

With due focus on this priority area of concern by the govern-

Chart 1: The 5 Most Problematic Factors for Doing Business in the Philippines
(% of responses)

Corruption - 17.6%

Inadequate supply of Infrastructure - 15.9%

Source: WEF Global Competitiveness Report 2014-2015

ment and business community, this research report will attempt to review the current energy situation, its outlook, and the surrounding policy discussions towards greater energy security.

EXPENSIVE AND UNRELIABLE ENERGY IS DRAGGING DOWN COMPETITIVENESS

Expensive and unreliable electricity supply in the Philippines is considered to be a major deterrent to inward foreign direct investments—an area where the country has lagged behind its neighbors since 2001. As a matter of fact, the 2014-2015 Global Competitiveness Report of the World Economic Forum (WEF) identifies the inadequate supply of infrastructure as the second most problematic factor for doing business in the country. Included in the Infrastructure pillar is the quality of electricity supply which ranks at the bottom half of 144 surveyed countries.

In 2013, the United States Agency for International Development (USAID) published a noteworthy study of electricity pricing in selected Southeast Asian countries. The study provided a detailed analysis of the structure and individual components of Philippine electricity prices, and then compared them with rates in Indonesia, Malaysia, Singapore, and Thailand. The tariffs in these selected economies reflected adjustments to approximate cost of supply and ensure comparability. Changes in regulations and policies were also simulated to identify the impact on end user prices.

USAID (2013) reveals that between 2004 and 2011, Meralco prices increased by an average annual rate of 6.7% to 8.7%, depending on customer class. Average inflation during the same period was 4.8%. As a result, real electricity prices increased, which could be traced to the removal of subsidies, the introduction of new taxes (particularly value-added tax in 2006), and the adjustment in distribution charges.

Although Meralco customers account for about 60% of total electricity consumption, the prices of the country's largest distribution utility (DU) do not represent the prices of the Philippines. Each of the 140 DUs in the country follows a regulated price schedule that reflects supply conditions in its respective franchise area. The upshot is a wide variation of prices across localities. For example, a residential customer may be charged from P5.50 to P13.03 per kWh, depending on location. To represent these different prices, a base composite price (i.e., an average price, weighted by actual consumption and after removing transitory elements) is constructed. The base composite prices by customer class and major island group in 2011 are shown in Table 1.

USAID (2013) notes that pricing based on location distinguishes the Philippines from its neighbors, whereas a uniform price schedule is adopted in all parts of Thailand and Singapore, and most parts of Indonesia and Malaysia. Prices are also more volatile in the Philippines since the schedules change monthly, as opposed to quarterly in Thailand and Singapore (for non-contestable customers) and irregularly in Indonesia and Malaysia. In addition, residential customers are still heavily subsidized in Indonesia, Malaysia, and Thailand, while inter-class and intra-class subsidies have been eliminated in the Philippines due to reforms.

That pricing structure and regulation are different across countries emphasizes the pitfall of drawing conclusions from a mere comparison of retail tariffs. Chart 4 shows the retail tariffs in the five countries in 2011.

While Philippine prices are close to Singaporean prices, Philippine prices are generally higher than those prevailing in Indonesia, Malaysia, and Thailand. Residen-

Tax regulations - 13.3%

Inefficient government bureaucracy - 12.6%

Tax rates - 9.7%

tial customers in the Philippines pay nearly four times the price levied on their counterparts in Indonesia, while industrial customers are charged at least 60% more than their equivalent in Thailand.

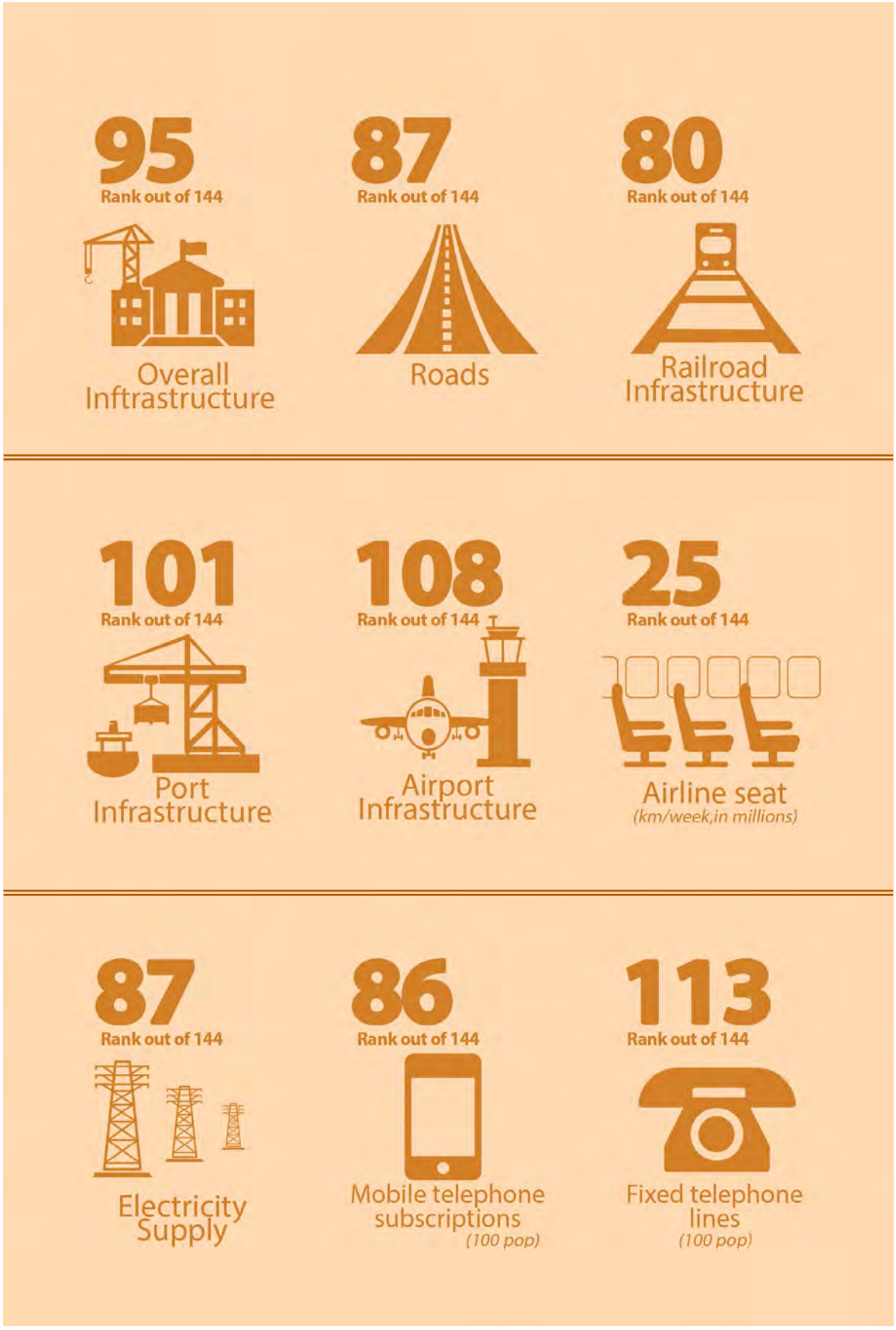
USAID (2013) cites taxes and subsidies as possible explanations for the price differences. Effectively, tax rates are 10% in Indonesia, 6% in Malaysia, 9% in the Philippines, 7% in Singapore, and 7% in Thailand. Nevertheless, the bigger contributor to price differences is the implicit subsidies to state-owned utilities. The International Energy Agency (IEA) estimates that in 2011, the electricity subsidies in Indonesia, Malaysia, and Thailand were at least $5.56 billion, $94 million, and $5.67 billion, respectively. These estimates are conservative when compared to actual government transfers to the Indonesian utility (Perusahaan Listrik Negara) worth $10.24 billion in 2011 alone. The Malaysian utility (Tenaga Nasional Berhad) received much smaller direct transfers (about $153 million in 2010; undisclosed in 2011), but a hefty fuel discount of at least 26% on the market price of indigenous fuel was applied. The actual subsidy on Malaysian electricity price is reckoned to be about six times the IEA estimate. The subsidy in Thailand, on the other hand, is the least transparent since it is passed through the domestic price of indigenous natural gas. When taxes and subsidies are removed, the cross-country tariffs are shown in Chart 5.

While Philippine prices are still higher despite adjustments in taxes and subsidies, the gaps are not as sizeable as found in a simple comparison of retail tariffs. USAID (2013) cites market structure as a plausible explanation, since it is difficult to track in terms of its contribution to tariff. The industry structure in Indonesia, Malaysia, and Thailand (vertically-integrated and managed by public utilities) is bound to produce different prices compared to a private sector-led, unbundled industry such as the one prevailing in the Philippines and Singapore. For example, Thai public utilities subsist on a return on capital of 7.5% for the Electricity Generation Authority of Thailand and 5.73% for two DUs, compared to about 15% for private DUs in the Philippines. Furthermore, when the industry is disintegrated or unbundled, profit margins at each stage of production could pile up on prices, unless market competition and prudent regulation are able to put a cap on margins. If regulation fails to facilitate effective competition, prices in an unbundled industry are inevitably higher than under vertical integration.

Price differences can also reflect inherent differences in costs of supply due to network conditions, load demand profile, and generation mix, among others. Network costs in Singapore are marginal and unique because of its geographic size and dense customer base. However, most of the differences in supply conditions are less obvious and can only be properly diagnosed by a cost of service study, which is already beyond the scope of work for USAID (2013).

Another critical point of inquiry is whether Philippine electricity prices can be reduced without misaligning them with costs or distorting market signals. USAID (2013) examined the impact on prices of some of the proposed policy adjustments involving tax restructuring, elimination of subsidies, and redistribution of royalties from indigenous fuels. Simulations were made for the use of historical asset values instead of current asset values in calculating distribution tariffs, as well as the change in the basis of regulation of electric cooperatives from cash-based to performance-based. Possible changes in composite prices as

Details of the Infrastructure Component of the Global Competitiveness Index



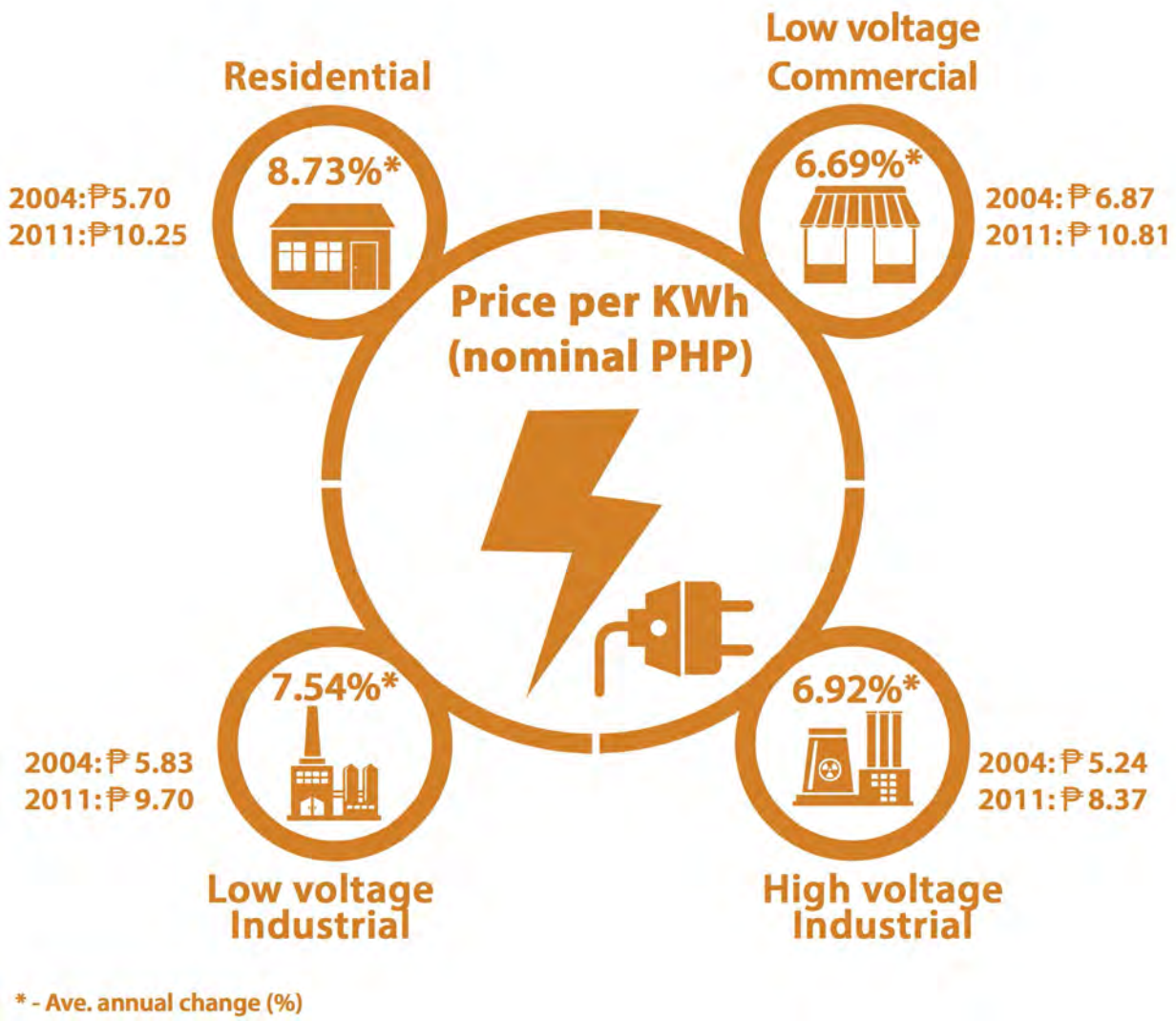
Source: WEF Global Competitiveness Report 2014-2015

a result of policy adjustments are summarized in Table 2.

Adjustments in taxes, followed by rebates of natural gas royalties, produced the largest potential reduction in prices. However, USAID (2013) issues a caveat in stating that none of the results should be viewed as endorsement of any policy change. The merit of rebating the government share on the utilization of indigenous fuels to electricity consumers is debatable since it tends to distort the relative prices of fuels. Similarly, the removal of VAT on electricity would mean less fiscal resources for other public services. Even as asset revaluation increases distribution charges, there are conceptual and practical arguments that justify the use of replacement costs in asset pricing. Valid objections can also be raised in computing rebates on the basis of kWh consumption since it goes in favor of heavy users and can be seen as a disincentive for energy efficiency and conservation. Therefore, the results of the counterfactual simulations in USAID (2013) are best seen as mere demonstrations of the influence that policies and regulations still have on electricity tariffs despite the move towards a more market-based price determination.

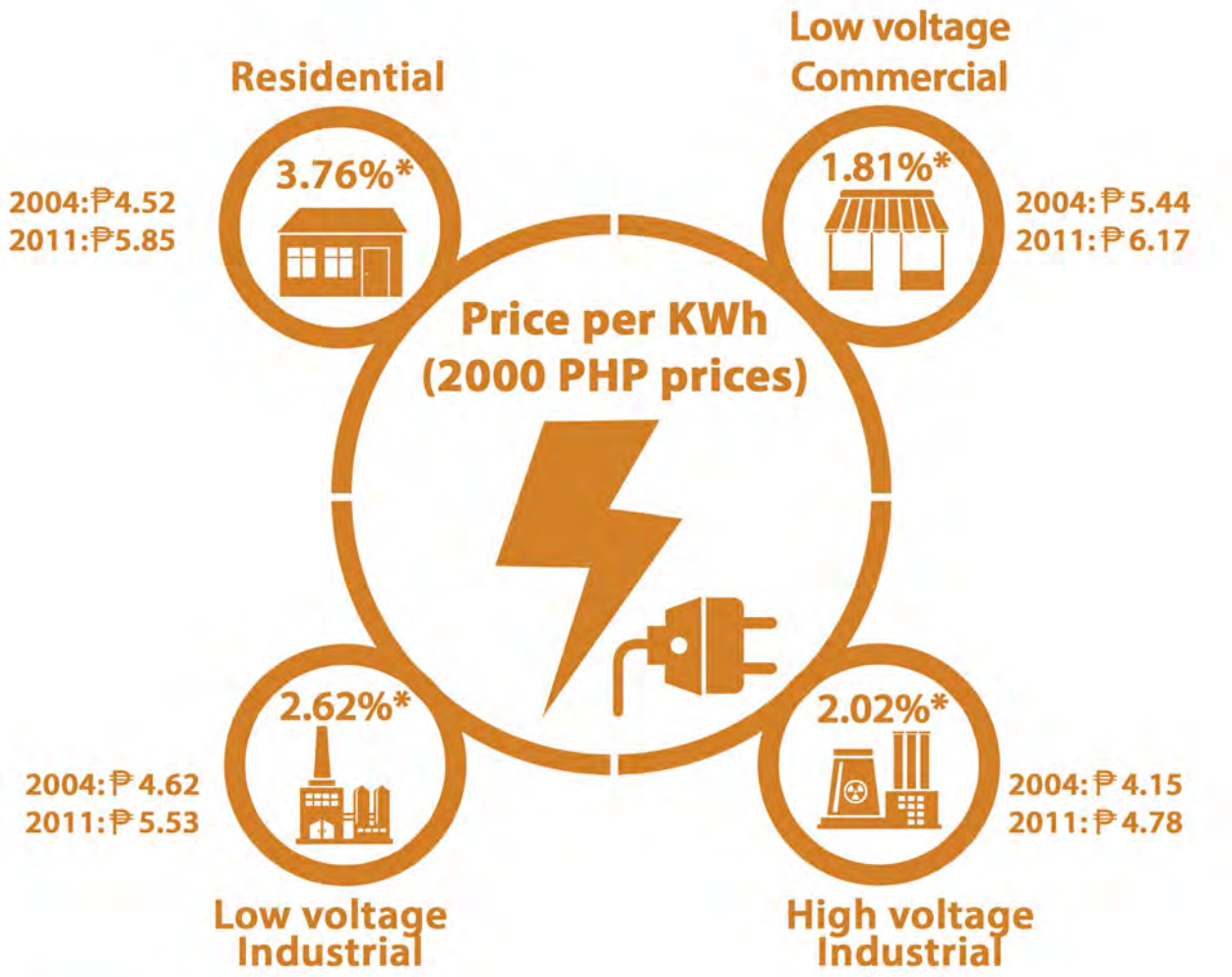
With regard to the energy supply mix, data from the Department of Energy (DOE) suggest that the Philippine economy still relies quite heavily on imported fossil fuel, which has also contributed to increasing electricity prices. (See Charts 6 to 8.)

Chart 2: Meralco Electricity Tariffs by Customer Class, 2004-2011



Note: Meralco = Manila Electric Company, kWh = kilowatt-hour, PHP = Philippine peso.
Source: USAID (2013)

Chart 3: Meralco Electricity Tariffs by Customer Class, 2004-2011



Note: Meralco = Manila Electric Company, kWh = kilowatt-hour, PHP = Philippine peso.
Source: USAID (2013)

THE TIGHT ROAD TOWARDS GREATER ENERGY SUPPLY

Actual data reveal that the reserve margin has been tight in the Visayas, while energy shortage is already evident in Mindanao. Indeed, such observations have put energy supply reliability into question. (See chart 9.)

In its midterm update of the Philippine Development Plan for 2011-2016 (PDP 2011-2016), the National Economic and Development Authority (NEDA) notes that the overall strategy for accelerating infrastructure development is to increase public spending to enhance the quality, adequacy, and accessibility of infrastructure facilities and services. For energy in particular, Table 3 shows the capacities of committed and indicative private sector-initiated power projects in Luzon, Visayas, and Mindanao from 2013 to 2016, as well as the targeted ratio of dependable capacity to peak demand and required reserve by 2016.

Taking a longer perspective on the supply-demand outlook, the DOE has released more detailed projections for the Luzon, Visayas, and Mindanao grids, as shown by Charts 10 to 12 and and Tables 4 to 9.

Energy outlook projections are also given by Asian Development Bank (ADB, 2013) and Asia-Pacific Economic Cooperation (APEC, 2013). The analysis in both publications extends up to year 2035, wherein two cases are presented. On the one hand, there is the business-as-usual (BAU) case, which considers the continued implementation of current poli-

cies and the use of current levels of technology applications.

On the other hand, there is the alternative case, whose primary objective is to estimate the potential for fossil fuel savings (compared with the BAU case) as the measure to enhance energy security through the maximum deployment of advanced technologies and shifts to low-carbon technologies on both the energy demand and energy supply sides. In the alternative case, it is assumed that policies will be put in place to ensure that maximum use is made of the currently available best-performance energy efficiency technologies and renewable power generation technologies.

ADB's (2013) BAU case shows that the primary energy demand of the Philippines is projected to increase from 40.5 Mtoe (million tons of oil equivalent) in 2010 to 82.9 Mtoe in 2035. This implies an annual average growth rate of 2.9%. In contrast, with the deployment of advanced technologies, primary energy demand in the alternative case will increase moderately at 2.3% per year, reaching 71.4 Mtoe in 2035 (or 13.9% lower than the BAU case).

APEC's (2013) BAU case, meanwhile, shows that the final energy demand of the Philippines is expected to expand at an average annual rate of 2.9% from 2010 to 2035. This translates to a total final energy demand of 49 Mtoe by 2035, from the 2010 level of 23.8 Mtoe. Together with brisk economic growth, both the industry and domestic transport sectors are projected to grow at an average annual rate of 3.3%

Table 1: Base Composite Prices by Customer Class and Region, 2011 (per kWh, in PHP)

REGION	RESIDENTIAL	LOW VOLTAGE COMMERCIAL	LOW VOLTAGE INDUSTRIAL	HIGH VOLTAGE INDUSTRIAL
NCR	10.26	10.81	9.69	8.37
LUZON	10.13	10.52	9.55	8.33
VISAYAS	9.57	8.71	8.78	8.66
MINDANAO	7.04	6.58	6.55	6.19
ALL REGIONS	9.77	10.08	8.93	8.08

Note: Meralco = Manila Electric Company, kWh = kilowatt-hour, PHP = Philippine peso.
Source: USAID (2013)

over the next 25 years. Growth in the industry sector will be driven by the projected expansion of the machinery industry, whose energy demand will increase by 5% annually during the same period.

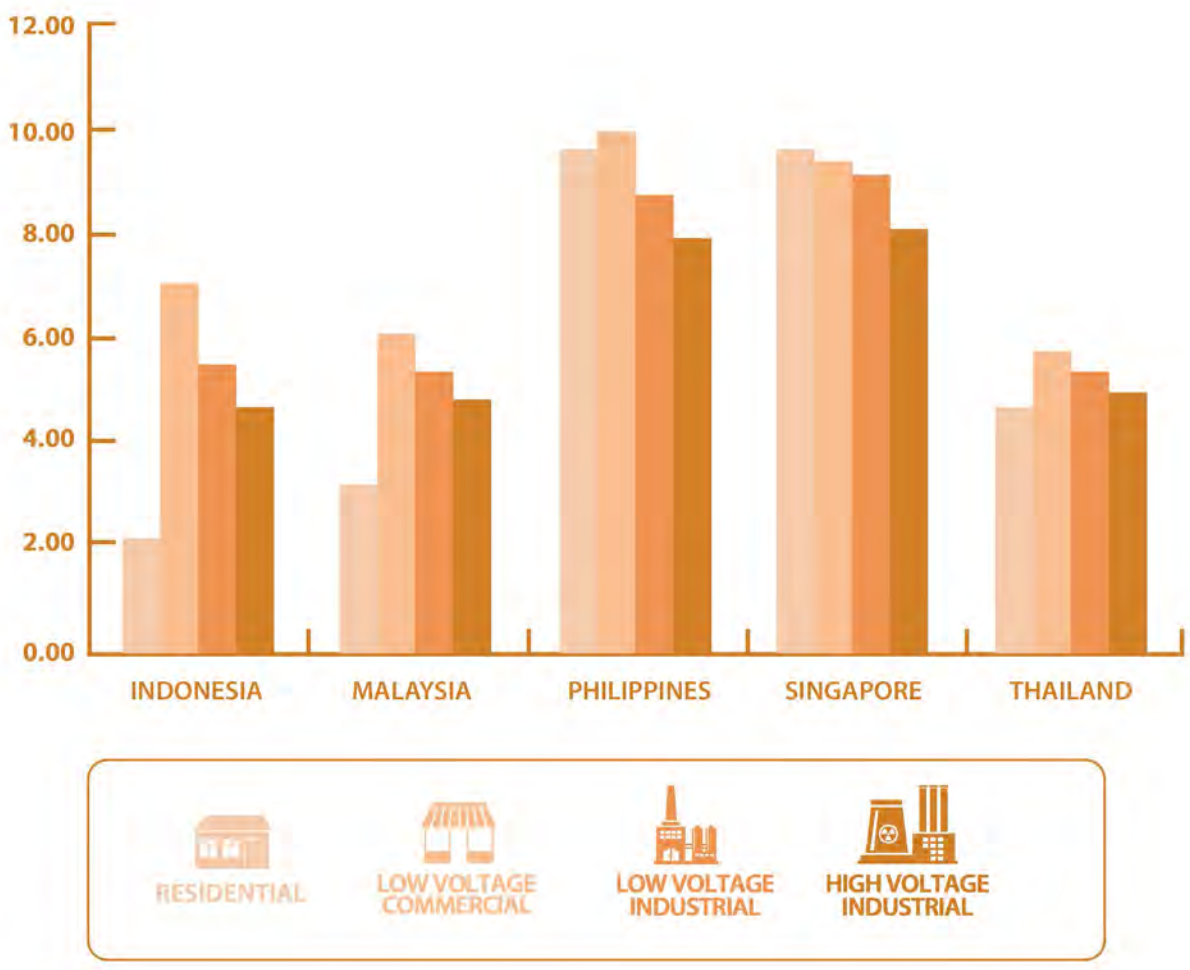
Moreover, oil will continue to dominate the energy mix from 2010 to 2025, as it accounts for a third of total primary energy supply. This is mostly driven by the transport sector, which will consume more than 60% of total oil supply during the period. In terms of growth, coal will grow the fastest at an average annual rate of 6.5% during the outlook period. By the end of 2025, coal is likely to exceed oil in the primary energy supply mix, mainly as a result of coal use for electricity generation.

POLICY DISCUSSIONS ON THE ELECTRIC POWER INDUSTRY REFORM ACT (EPIRA)

It would be good to recall that EPIRA, enacted on 8 June 2001, established the framework for reforming the electricity industry in the Philippines. The primary objectives of EPIRA are to privatize the power industry, to foster competition therein, and to bring down electricity prices. Consistent with these objectives, EPIRA unbundled the industry into four sectors: 1) generation, 2) transmission, 3) distribution, and 4) supply. EPIRA's main points pertaining to the four sectors are presented in Table 10.

Nevertheless, more than a decade since the enactment of EPIRA, only privatization has occurred, and the more important goal of cost reduction remains elusive. The critical bridge between these two goals is fostering competition in the power in-

Chart 4: Comparative Electricity Retail Prices, 2011 (per kWh, in PHP)



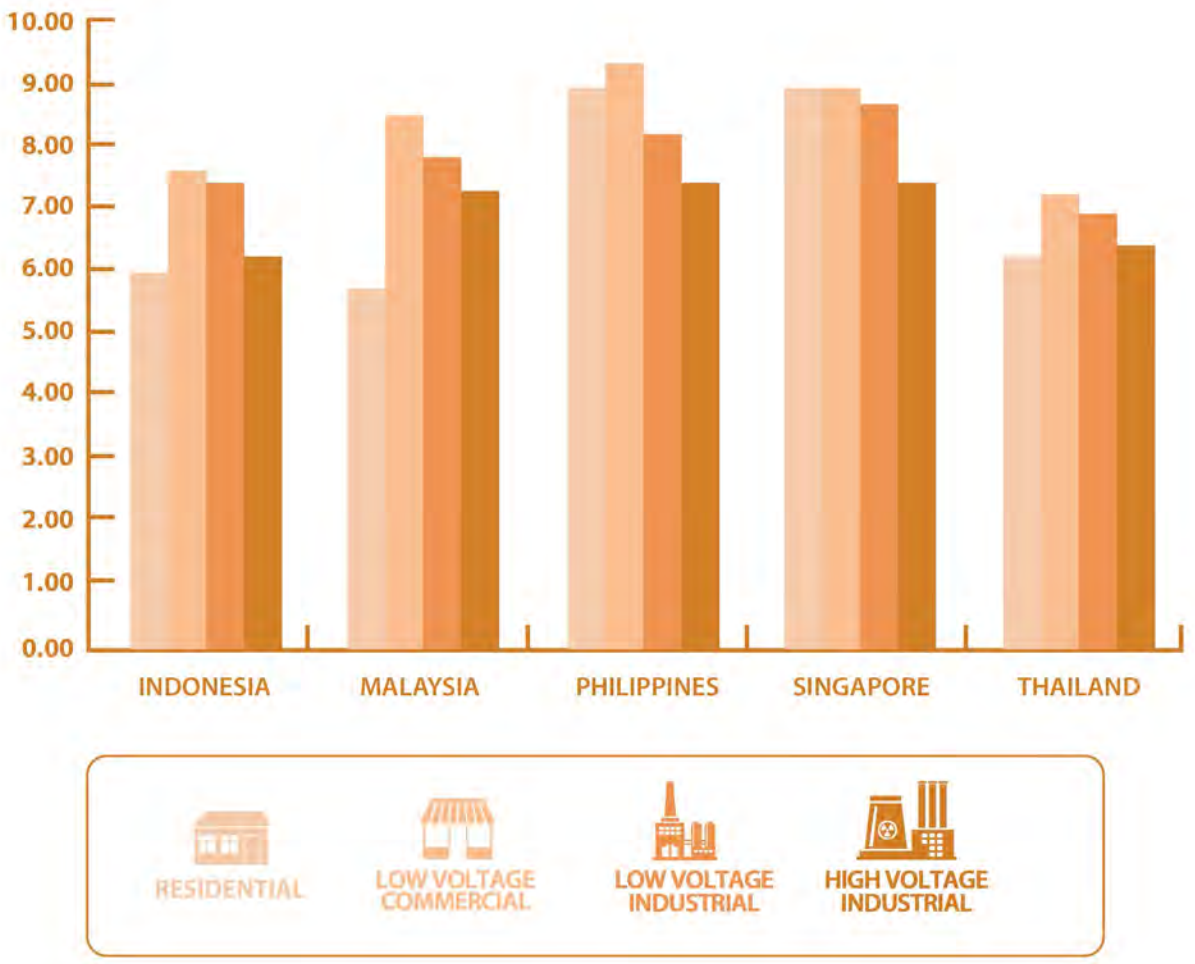
Note: kWh = kilowatt-hour, PHP = Philippine peso.
Source: USAID (2013)

dustry—this has yet to fully take place. As such, there are those who think that the law itself is seriously flawed. Philippine lawmakers themselves have sought to introduce amendments to EPIRA in order to address perceived weaknesses and clarify ambiguous provisions in the law (Senate Economic Planning Office, 2008). On the other hand, there are those who think that the problem has actually been in the failure of government to implement EPIRA faithfully and properly.

To reiterate what was mentioned in USAID (2013), when an industry is disintegrated or unbundled, profit margins at each stage of production could pile up on prices, unless market competition and prudent regulation are able to put a cap on margins. If regulation fails to facilitate effective competition, prices in an unbundled industry will inevitably be higher than under vertical integration. In their evaluation of the Philippine power sector, Pataliinghug and Llanto (2005) concluded that regulatory rules had to be reviewed and overhauled, given that there were weak commitment mechanisms to enforce contracts, a weak ability to handle administrative intensity, and a weak capacity to process information. Also, although the EPIRA contained provisions to address vertical integration, monopoly, and anti-competitive practices, there were no provisions on mergers.

Taking note of the above observations, the paper gave several recommendations: 1) that structural remedies should be preferred over behavioral rules in curtailing the exercise of market power; 2) that competition should be preferred over ownership, which implied that merely transforming public monopoly to private monopoly would offer no improvement; 3) that a for-

Chart 5: Comparative Electricity Tariffs After Adjusting for Taxes and Subsidies, 2011 (per kWh, in PHP)



Note: kWh = kilowatt-hour, PHP = Philippine peso.
Source: USAID (2013)

Table 2: Simulated Reduction in Composite Prices due to Policy Adjustments (per kWh, in PHP)

POLICY ADJUSTMENT	RESIDENTIAL	LOW VOLTAGE COMMERCIAL	LOW VOLTAGE INDUSTRIAL	HIGH VOLTAGE INDUSTRIAL
Zero VAT	0.7918	0.7938	0.6708	0.6152
6.5% VAT	0.3595	0.3751	0.2962	0.2688
10.5% VAT replacing all taxes	0.0077	0.0290	-0.0182	-0.0181
3% franchise tax replacing all taxes	0.7476	0.7653	0.6622	0.6154
Removal of lifeline discounts	0.1253	0.1321	0.1268	0.1262
Elimination of all subsidies	0.1257	0.1322	0.1270	0.1264
Proportionate rebate of geothermal royalties	0.0078	0.0063	0.0132	0.0102
Additional rebates to DUs with geothermal bilateral contracts (BCs)	0.0078	0.0062	0.0136	0.0103
Rebate of natural gas royalties to Meralco customers only	0.5883	0.7038	0.5084	0.5708
Rebate of natural gas royalties to Luzon customers only	0.5346	0.5798	0.4084	0.4631
Rebate of natural gas royalties to industrial customers only	0.0000	0.0000	1.4618	1.4619
Uniform rebate of natural gas royalties	0.5335	0.5335	0.5334	0.5335
Completion of transition of electric cooperatives (ECs) to performance -based regulation (PBR)	0.0104	-0.0045	-0.0034	-1.5820
No revaluation of MERLACO assets	0.3331	0.2961	0.1794	0.1029

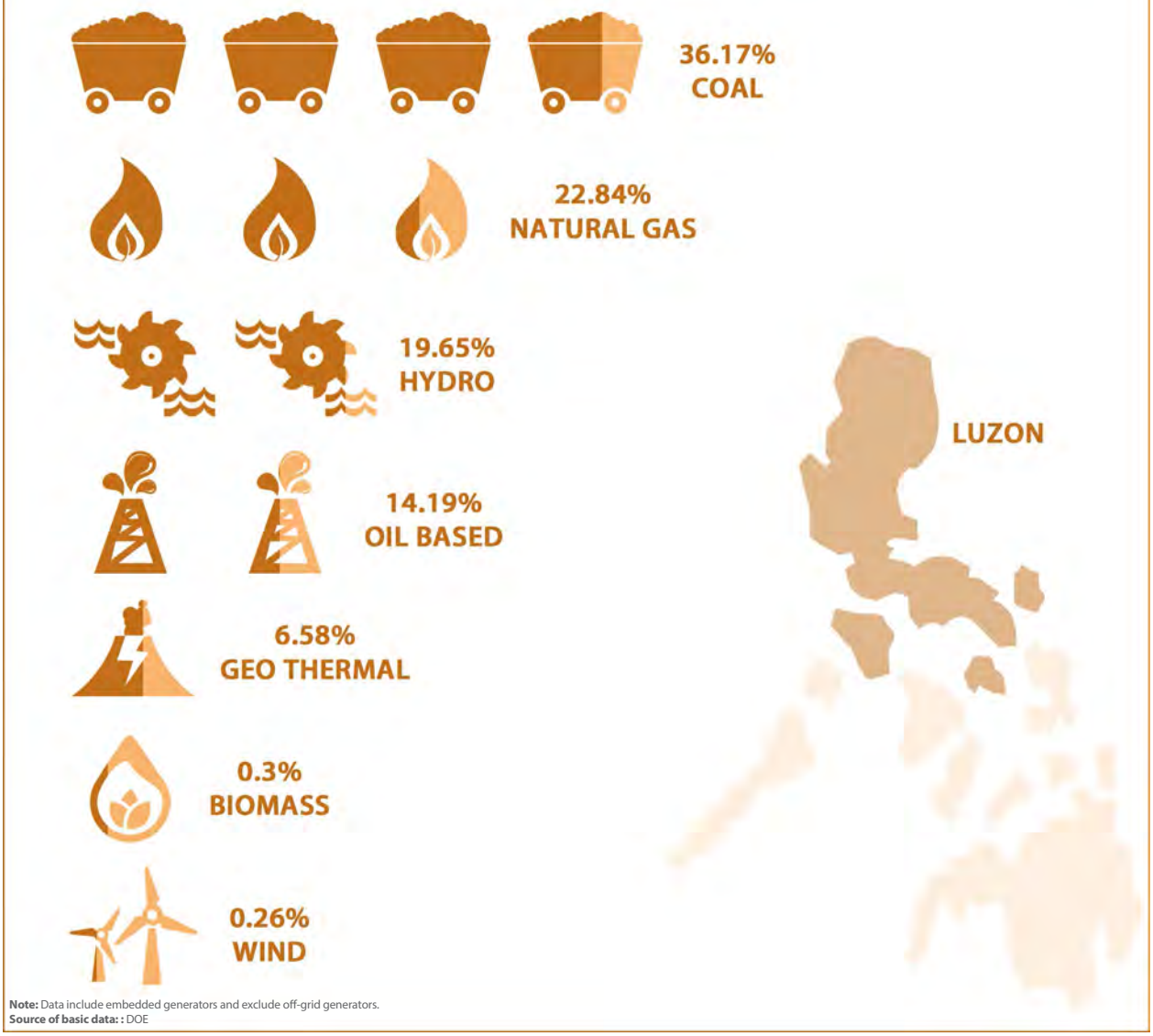
Note: kWh = kilowatt-hour, PHP = Philippine peso.
Source: USAID (2013)

malized planning process should be set up; and 4) that transmission planning objectives should be clarified.

Meanwhile, Brown, De Dios, and Valderrama's (2005) analysis of the key issues facing the power sector after the passage of EPIRA mentioned that there were entities opposing power sector restructuring. These entities even suggested a return to the previous vertically-integrated government-owned monopoly. The paper, however, argued that such a reversal would only discourage private participation in the power sector. Indeed, the right approach was to restructure the industry, while establishing a competitive electricity market. Major delays in implementation were to blame for the financial problems in the power sector. Moreover, although the legal, regulatory, and institutional frameworks for privatization and competition were largely in place, the financial viability of the power sector had to be restored for restructuring to succeed. Thus, regulatory performance should be improved, and the confidence of private sector investors should be enhanced.

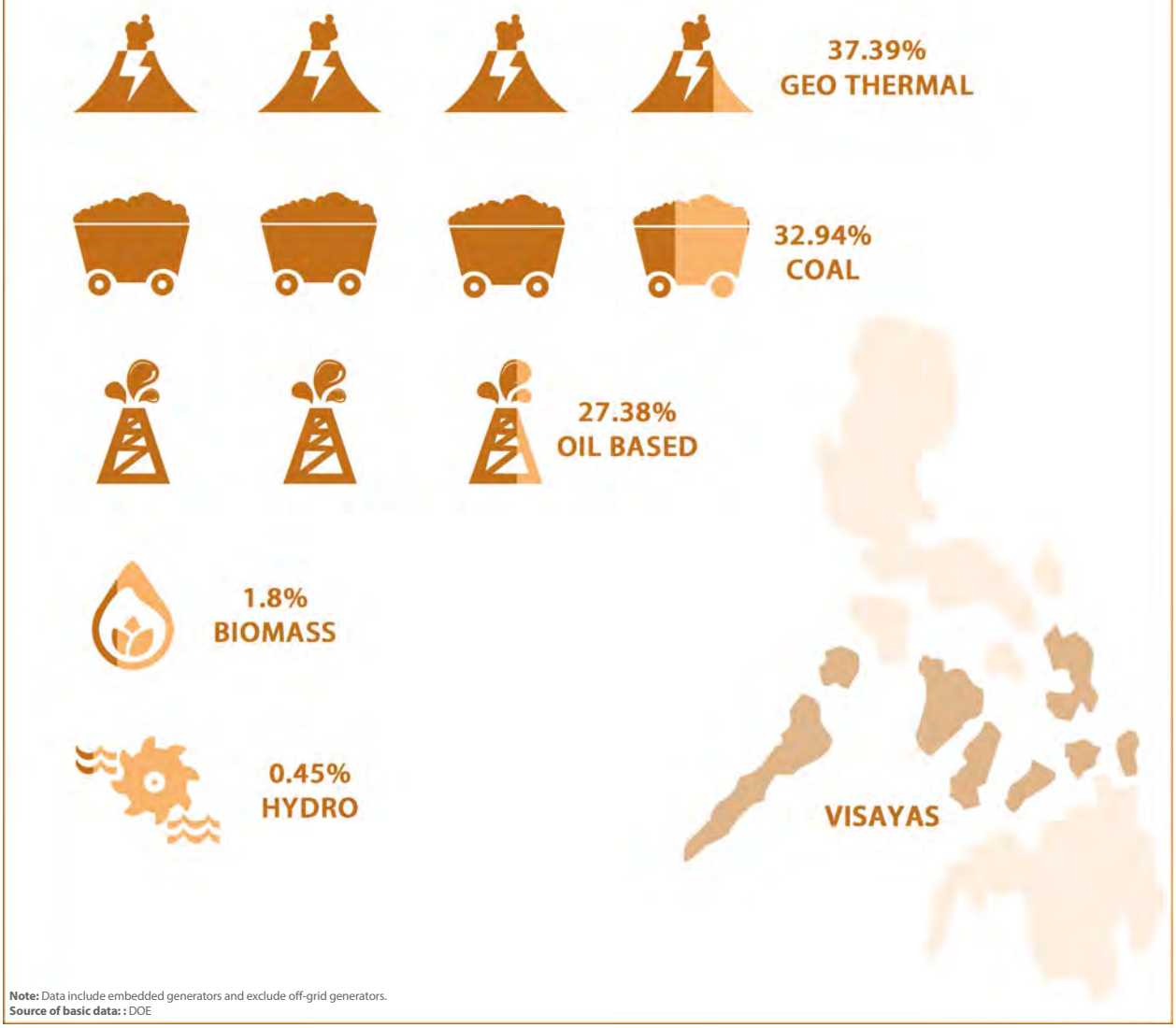
More recently, Austria (2014) has argued that power sustainability, quality, reliability, and cost competitiveness should be officially designated as major components of the national strategy to achieve inclusive growth. The challenge should be faced not by the DOE alone but by the whole economic cluster, addressing all power sector issues as a coordinated group, speaking with one voice. Significantly, the research said that EPIRA should not be touched; rather, it should be implemented fully.

Chart 6: Luzon Capacity by Fuel Type (as of May 2013)



Note: Data include embedded generators and exclude off-grid generators.
Source of basic data: : DOE

Chart 7: Visayas Capacity by Fuel Type (as of May 2013)



Note: Data include embedded generators and exclude off-grid generators.
Source of basic data: : DOE

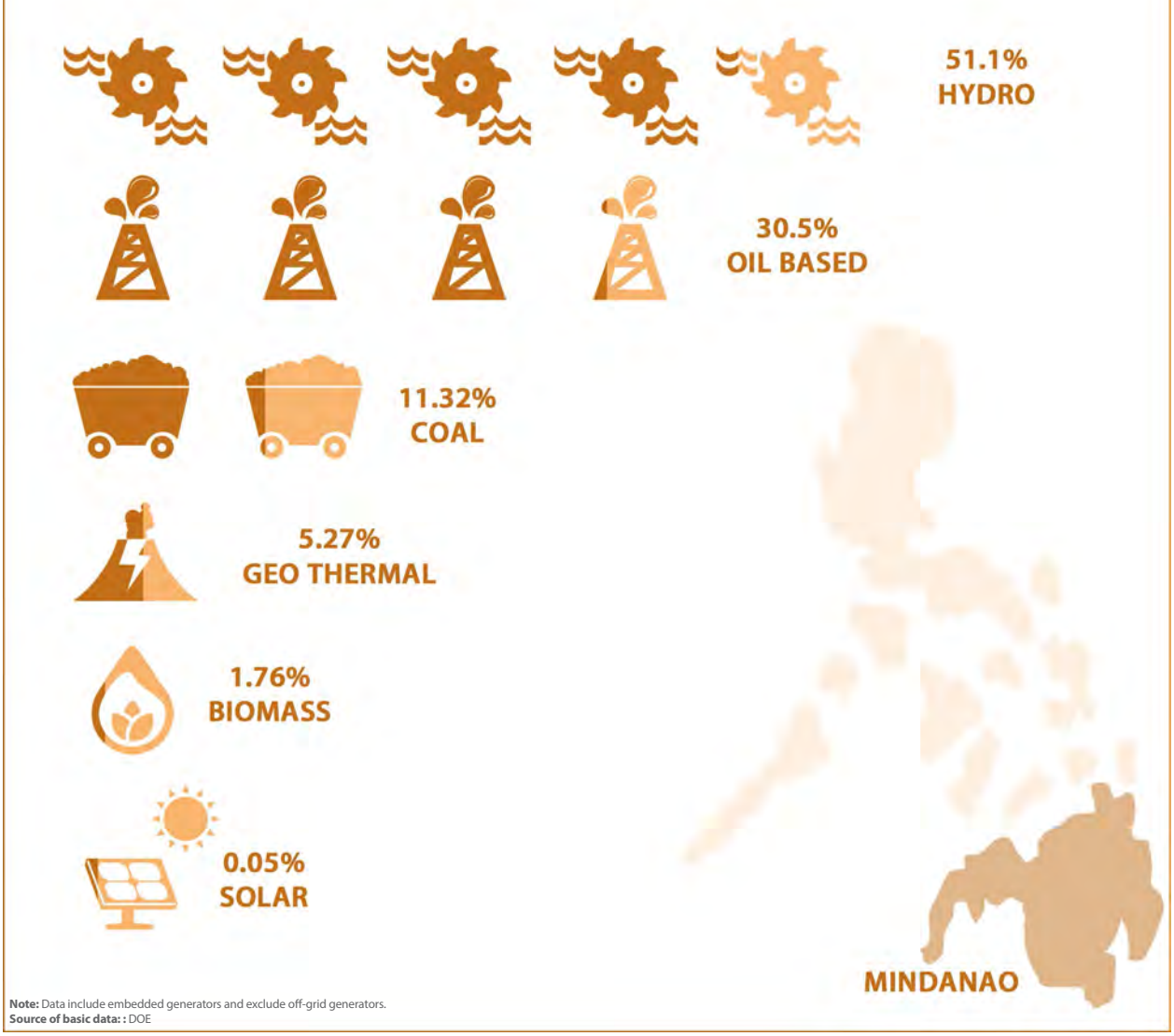
Austria, thus, offered the following recommendations: 1) that the market power of the electric cooperatives should be strengthened; 2) that the opportunities to harness the combined market powers of private utilities should be evaluated; 3) that the Wholesale Electricity Spot Market (WESM) should be reviewed, revamped, or suspended; 4) that the merits of mandating solar power for the heating and lighting of commercial and public buildings and establishments in order to release 15% of current capacity to the market should be evaluated; 5) that items adding to cost should be reviewed or removed; 6) that the quality and role of the DOE and the ERC should be strengthened; 7) that there should be an overall plan for power plant construction; and 8) that there should be a committed joint public-private leadership.

CONCLUSION

Indeed, the Philippine government faces huge challenges in implementing its power sector reforms due to financial, political, and regulatory constraints. At the same time, it must address a looming power crisis in an environment where the private sector is reluctant to invest in the power sector. With the lead time required for the development and construction of new generation capacity, clear and decisive action ("walking the talk") is most certainly required immediately, particularly in Visayas and Mindanao, if future energy shortages are to be averted.

As noted in Brown, De Dios, and Valderrama (2005), under Section 47 of EPIRA, the National Power Corporation is prohibited from investing in new generating plants. Thus, all new plants must be constructed by private sector investors. If no new power plants

Chart 8: Mindanao Capacity by Fuel Type (as of May 2013)



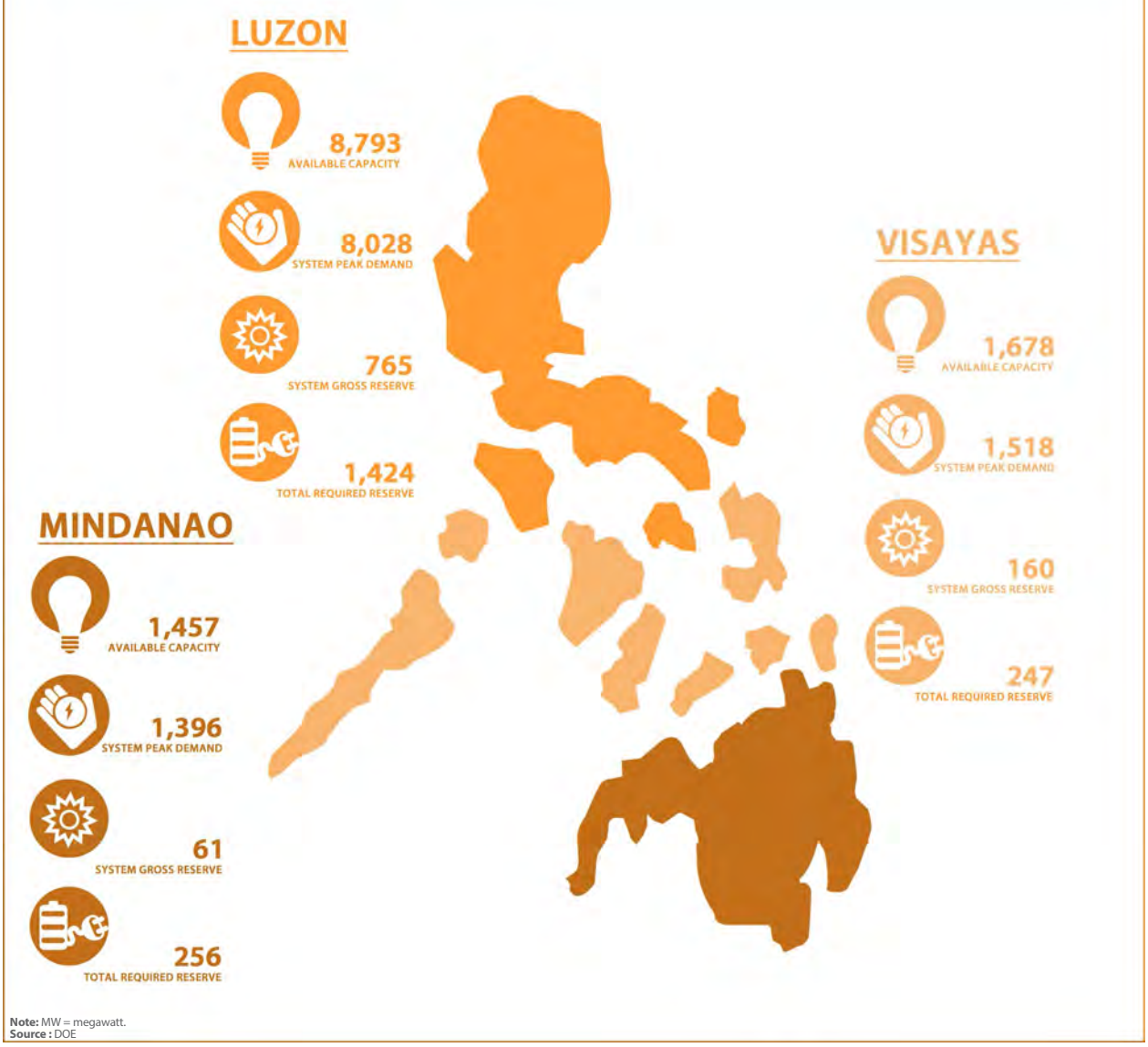
Note: Data include embedded generators and exclude off-grid generators.
Source of basic data: : DOE

are constructed immediately, there is a real risk that the country will once again face massive blackouts and enter into another cycle of shortages. The country might be forced to avail of emergency independent power producer (IPP) programs under onerous power purchase agreements (PPAs). Electricity prices and debts would increase. Ultimately, the entire reform program would be delayed yet again.

USAID (2013) also offers some thought-provoking insight on the brewing debate on whether the Philippines took a wrong policy turn when it restructured the electricity market. While critics of the restructuring have been citing the still uncompetitive Philippine prices after more than a decade, Indonesia and Malaysia are seeing the need to restructure their respective industries from the traditional vertically-integrated, state-managed structure to one that is market-based and private-sector-led. Indonesia and Malaysia recognize that their current tariff structures and fuel subsidies are unsustainable. They realize that their public utilities are underperforming because the market structure does not create enough incentives for efficiency. They realize that the inefficiencies in the electricity sector are affecting the rest of the economy as it attracts other industries dependent on subsidized energy. Just like the Philippines more than a decade ago, the Indonesian and Malaysian economies are constrained by political realities from pursuing market reforms. On this score, it would be odd to blame reforms that other countries are seeking to emulate now.

Lastly, if EPIRA were sent back to Congress for review, it would create so much uncertainty that international and local investors would be even more reluctant to

Chart 9: Supply-Demand Situation (in MW, as of September 2014)



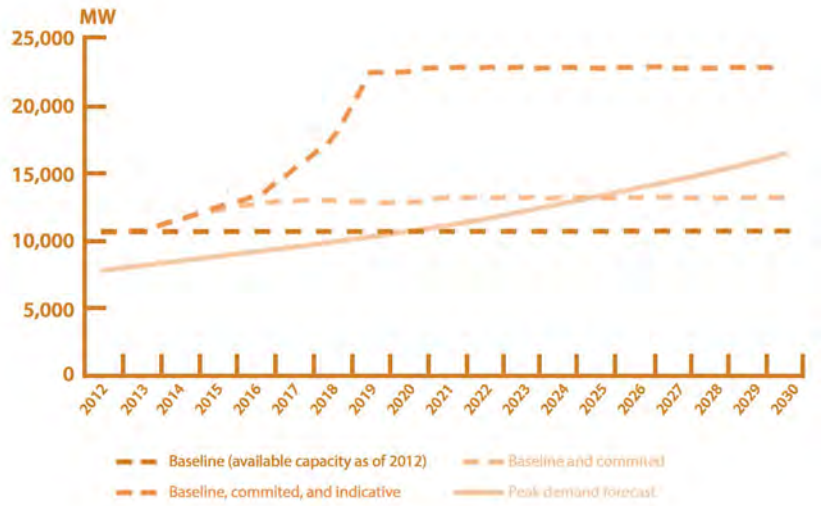
Note: MW = megawatt.
Source : DOE

Table 3: Target Capacity of Committed and Indicative Private-Sector-Initiated Power Plant Projects, 2013-2016

Particulars	GRID		
	LUZON	VISAYAS	MINDANAO
Capacity of committed power plant projects (in MW, 2013-2016)	767.4	429.6	515.0
Capacity of indicative power plant projects (in MW, 2013-2016)	9,702.5	718.0	1,928.0
Ratio of dependable capacity to peak demand and required reserve (2016)	107.86%	105.32%	100.00%

Note: MW = megawatt.
Source : PDP 2011-2016

Chart 10: Luzon Grid Supply-Demand Outlook, 2012-2030



Note: MW = megawatt. Baseline (available capacity as of 2012) = 10,744 MW.
Source of basic data : DOE

build new power plants, especially at this time when power supply is already tight. This view has been supported by almost all the Philippine Business Groups—the Makati Business Club, included—as well as the Joint Foreign Chambers of the Philippines. With such a view from key stakeholders in the economy, indeed, the clamor to fully implement EPIRA, rather than amend, seems to hold much merit now. ■

On the projected 2015 Luzon power reserves gap

Based on Department of Energy estimates, which was verified during Congressional hearings, Luzon will face a maximum projected **shortfall of 1,004 MW** of reserves occurring between April and May, of which 600 MW is the required dispatchable reserve and 404 MW is the required contingency reserve. During the shortage period, the Luzon grid will be placed on yellow alert for a total of four weeks, which may translate to rotating blackouts. The imminent reserves gap is attributed to the Malampaya turnaround, increased number of forced outages of power plants, and delays in the commissioning of committed power projects.

As a response to calls from the government to assist in averting a potential crisis, MBC, the Philippine Independent Power Producers Association (PIPPA), the Retail Electricity Suppliers Association (RESA), and Meralco held a series of consultations from August to October with both government and private sector partners to identify possible solutions and mitigating measures to the projected power reserves gap.

A report was drafted and sent to the President and Congress as part of the private sector's contribution to the joint effort. Based on the report dated 10 October 2014, MBC, PIPPA, RESA, and Meralco have identified a **potential 1,076 MW of additional capacity** that may be added to the grid coming from the following sources:

Source	Capacity (MW)
Interruptible Load Program (as of Oct 7)	320
Interconnection of Power Plants	160
Committed capacity	156
Ilijan-1 operating on pure diesel	140
Malaya-1 contribution after rehabilitation	300
TOTAL	**1,076 MW**

In detail, the following action steps were committed by the private sector for implementation:

Expansion of the Interruptible Load Program (ILP) in the Meralco franchise area
With the success of the power companies in Cebu, Davao, and Cagayan de Oro in implementing the ILP, Meralco has likewise introduced the program in its franchise area in order to generate additional capacity for the grid. The ILP aims to reduce aggregate demand during the peak hours of 10am to 3pm by having large power users voluntarily deload from the grid and run their generator sets instead, but subject to just compensation for fuel and maintenance expenses.

Continued on page 27

Table 4: Details of Committed Capacity for Luzon Grid

Particulars	Mother/Joint Venture Company	Location	Dependable Capacity (MW)	Target Commercial Operation
SLTEC Puting Bato Coal-fired Power Plant Phase I	Trans-Asia Oil and Energy Development Corp.	Batangas	135	2014 (544.4 MW)
San Gabriel Avion Project	First Gen Power Corp.	Batangas	100	
Burgos Wind Power Project Phase I	Energy Development Corp.	Ilocos Norte	87	
Caparispisan Wind Energy Project	UPC Asia Corp.	Ilocos Norte	81	
Burgos Wind Power Project Phase II	Energy Development Corp.	Ilocos Norte	63	
Majestics CEZ Solar Project	Majestics Energy	Cavite	21	
Bangui Bay Wind Power Project Phase III	NorthWind Power Development	Ilocos Norte	19.9	
Pampanga Solar Power Project	Raslag Corp.	Pampanga	10	
SJCi Power Rice Husk-fired Biomass Plant Phase I	San Jose City I Power Corp.	Nueva Ecija	10	
SJCi Power Rice Husk-fired Biomass Plant Phase II	San Jose City I Power Corp.	Nueva Ecija	10	
Bataan 2020 Rice Hull-fired Cogen Plant	Bataan 2020 Inc.	Bataan	7.5	
SLPGC Coal-fired Power Plant Phase I Unit 1	DMCI Power Corp.	Batangas	150	2015 (618.9 MW)
SLPGC Coal-fired Power Plant Phase I Unit 2	DMCI Power Corp.	Batangas	150	
SLTEC Puting Bato Coal-fired Power Plant Phase II	Trans-Asia Oil and Energy Development Corp.	Batangas	135	
Anda Power Corp. Circulating Fluidized Bed Coal-fired Power Plant	Anda Power Corp.	Pampanga	82	
Pililla Wind Power Project Phase I	Alternergy	Rizal	67.5	
IBEC Husk-fired Biomass Power Plant	Isabela Biomass Energy Corp.	Isabela	18	
Sabangan HEPP	Aboitiz Power Corp.	Mt. Province	13.2	
Bicol Biomass Energy Corp.	Bicol Biomass Energy Corp.	Camarines Sur	3.2	

San Gabriel Plant Phase II	First Gen Power Corp.	Batangas	450	2016 (760.8 MW)
Limay Power Plant Project Phase I Unit 1	SMC Consolidated Power Corp.	Bataan	150	
Limay Power Plant Project Phase I Unit 2	SMC Consolidated Power Corp.	Bataan	150	
GITC Biomass Power Plant Project	Green Innovations for Tomorrow Corp.	Nueva Ecija	10.8	
Pagbilao Coal-fired Thermal Power Plant	TeaM Energy/Aboitiz Power	Quezon	420	2017 (420 MW)
San Buenaventura Power Ltd. Co. Project	QPPL/EGCO	Quezon	460	2018 (460 MW)
TOTAL			2,804.1	

Note: MW = megawatt.
Source : DOE

Table 5: Details of Indicative Capacity for Luzon Grid

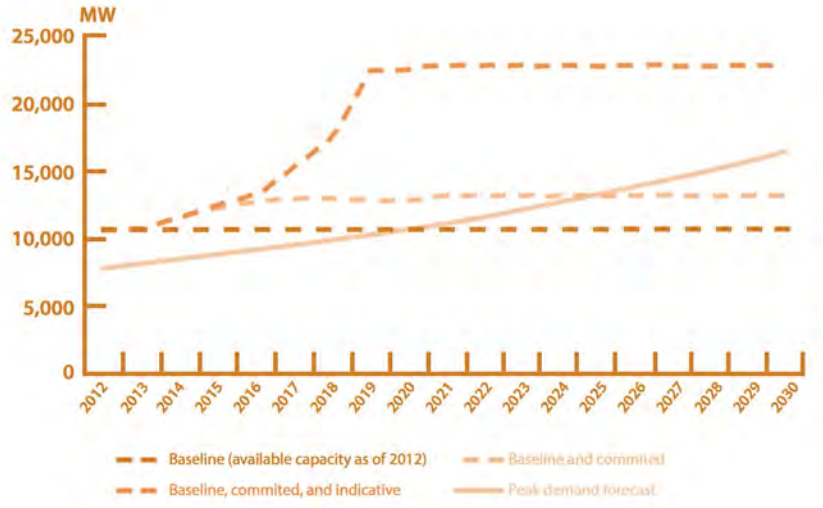
Name of Project	Mother/Joint Venture Company	Location	Rated Capacity (MW)	Target Year of Commissioning
Pasuquin East Wind Power Project Phase I	Energy Logics Philippines Inc.	Ilocos Norte	48	2015 (144 MW)
Balaoi Wind Power Project	UPC Renewables	Ilocos Norte	45	
Currimao Solar Photovoltaic Power Project	Mirae Asia Energy Corp.	Ilocos Norte	20	
Waste-to-Energy Project using Thermal Gasifier Conversion	CJ Global Green Energy Philippine Corp.	Camarines Sur	18	
Ibulao Hydroelectric Power Project	Hydrocore Inc.	Ifugao	4.5	
Burgos Solar Power Project	Energy Development Corp.	Ilocos Norte	4	
Dupinga Hydroelectric Power Project	Constellation Energy Corp.	Nueva Ecija	3	
SM North EDSA Solar Power Project	Solar Philippines Commercial Rooftop Projects, Inc.	Quezon City	1.5	
Bacman 3 Geothermal Project	Energy Development Corp.	Sorsogon	40	2016 (136 MW)
FDC Camarines CFB Coal Power Plant	FDC Utilities Inc.	Camarines Sur	40	
Macabud Solar Photovoltaic	ATN Philippines Solar Energy Group, Inc.	Rizal	30	

Main Aklan	Sunwest Water & Electric Co., Inc.	Albay	15	
Tinoc 2	Philnew Hydro Power Corp.	Ifugao	11	
Combined Cycle Gas Turbine Power Plant Unit 1	Atlantic, Gulf and Pacific Company of Manila (AG&P)	Bataan	1,200	2017 (4,288 MW)
AES Masinloc Expansion	AES Masinloc Power Partners Co., Inc.	Zambales	600	
Limay Power Plant Project Phase III	SMC Consolidated Power Corp.	Bataan	600	
San Gabriel Power Plant Phase II Unit 1	First Gen Corp.	Batangas	450	
San Isidro Combined Cycle Gas Turbine Plant Project	Trans-Asia Oil and Energy Development Corp.	Batangas	415	
Lucidum Energy Coal Power Plant	Lucidum Energy Inc.	Zambales	300	
SLPGC Coal-fired Power Plant Phase II	DMCI Power Corp.	Batangas	300	
Limay Power Plant Project Phase II	SMC Consolidated Power Corp.	Bataan	300	
Sembrano Wind Power Project	Alternergy	Laguna	72	
Rangas Geothermal Project	Energy Development Corp.	Sorsogon	40	
Pinacanauan	Sunwest Water & Electric Corp.	Cagayan	6	
Tinoc 3	Philnew Hydro Power Corp.	Ifugao	5	
Combined Cycle Gas Turbine Power Plant Unit 2	Atlantic, Gulf and Pacific Company of Manila (AG&P)	Bataan	1,200	2018 (3,253.1 MW)
Mariveles Expansion Project	GN Power Ltd. Co.	Bataan	1,200	
San Buenaventura Power Ltd. Co. Project	San Buenaventura Power Ltd. Co.	Quezon	460	
JG Summit Coal-Fired Power Plant Units 1 and 2	JG Summit Holdings Corp.	Batangas	300	
Pagudpud Wind Power Project	EDC Pagudpud Wind Power Corp.	Ilocos Norte	84	
Tinoc 4	Quadriver Energy Corp.	Ifugao	5	
Tinoc 1	Philnew Hydro Power Corp.	Ifugao	4.1	

Meralco PowerGen Coal-Fired Power Plant	Meralco PowerGen Corp.	Bataan	1,200	2019 (1993.2 MW)
San Gabriel Power Plant Phase II Unit 2	First Gen Corp.	Batangas	450	
JG Summit Coal-Fired Power Plant Units 3 and 4	JG Summit Holdings Corp.	Batangas	300	
Kayabon Geothermal Project	First Gen Power Corp.	Albay	40	
Majayjay	Majayjay Hydro Power Co., Inc.	Laguna	2.2	
Colasi	Colasi Mini HydroElectric Power Plant Corp.	Camarines Norte	1	
TOTAL			9,814.3	

Note: MW = megawatt.
Source : DOE

Chart 11: Visayas Grid Supply-Demand Outlook, 2012-2030



Note: MW = megawatt. Baseline (available capacity as of 2012) = 2,037 MW.
Source of basic data : DOE

Table 6: Details of Committed Capacity for Visayas Grid

Particulars	Mother/Joint Venture Company	Location	Dependable Capacity (MW)	Target Commercial Operation
TPC Coal-fired Power Plant Expansion Project	Global Business Power Corp.	Cebu	82	2014 (237 MW)
San Lorenzo Wind Power Project	Trans-Asia Renewable Energy Corp.	Guimaras	54	
Nasulo Geothermal Project	First Gen Power Corp.	Negros Oriental	50	
Universal Robina Corp. Bagasse Cogeneration Facility	Universal Robina Corp.	Negros Occidental	31	

San Carlos Solar Photovoltaic Power Project	San Carlos Solar Energy Inc.	Negros Occidental	9	
Villasiga HEP	Sunwest Water & Electric Co., Inc.	Antique	8	
HPCo Bagasse Cogeneration Plant	Hawaiian Philippines Company	Negros Occidental	3	
Nabas Wind Power Project	PetroWind Corp.	Aklan	50	2015 (68 MW)
SCBiopower Bagasse-Fired Power Generation Project	San Carlos Biopower Inc.	Negros Occidental	18	
Concepcion Coal-fired Power Plant	Palm Thermal Consolidated Holdings Corp.	Iloilo	270	2016 (270 MW)
Cantakoy Hydroelectric Power Plant	Quadriver Energy Corp.	Bohol	8	2017 (8 MW)
TOTAL			583	

Note: MW = megawatt.
Source : DOE

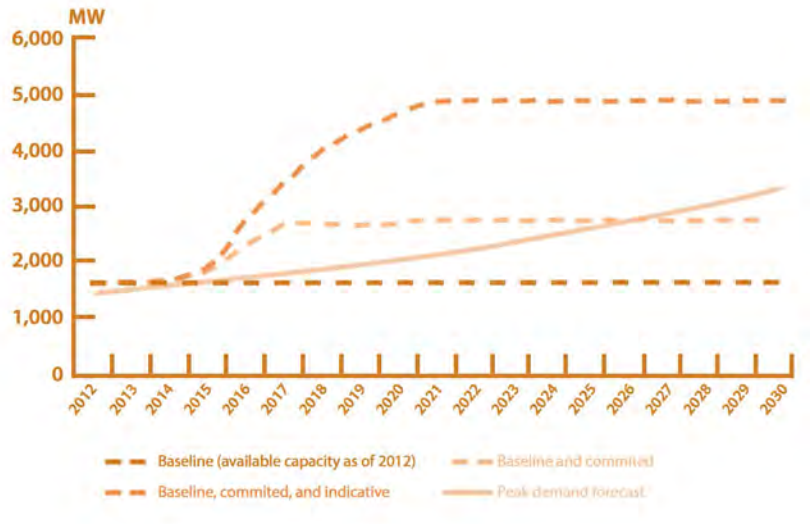
Table 7: Details of Indicative Capacity for Visayas Grid

Name of Project	Mother/Joint Venture Company	Location	Rated Capacity (MW)	Target Year of Commissioning
Calumangan Diesel Power Plant	Energreen Power & Development Corp.	Negros Occidental	10	2014 (10 MW)
Cadiz Solar Power Project	Phil. Power Exploration & Development Corp.	Negros Occidental	100	2015 (338.9 MW)
Pulupandan Wind Power Project	First Maxpower International Corp.	Negros Occidental	50	
Biliran Geothermal Plant Project	Biliran Geothermal Inc.	Biliran	49	
AES Battery Power Storage Project	AES Philippines Power Partners	Negros Occidental	40	
Leyte Solar Photovoltaic Power Project	Philippine Solar Energy Farm Leyte, Inc.	Leyte	30	
San Carlos Solar Power Project	San Carlos Solar Energy Corp.	Negros Occidental	30	
Calumangan Diesel Power Plant	Energreen Power & Development Corp.	Negros Occidental	17	
Igbulo (Bais) Hydroelectric Power Project	Century Peak Energy Corp.	Iloilo	5.1	
Hilabangan (Upper Cascade)	Century Peak Energy Corp.	Negros Occidental	4.8	
Hilabangan (Lower Cascade)	Century Peak Energy Corp.	Negros Occidental	3	

PEDC Expansion Project	Panay Energy Development Corp.	Iloilo	150	2016 (211.4 MW)
South Negros Biomass Power Plant	South Negros Biopower Inc.	Negros Occi-dental	22.3	
FDC Danao CFB Coal Power Plant	FDC Utilities, Inc.	Cebu	20	
Maninila (Lower Cascade)	Century Peak Energy Corp.	Antique	4.5	
Sibalom (Upper Cascade)	Century Peak Energy Corp.	Antique	4.2	
Sibalom (Middle Cascade)	Century Peak Energy Corp.	Antique	4	
Sibalom (Lower Cascade)	Century Peak Energy Corp.	Antique	3.3	
Maninila (Upper Cascade)	Century Peak Energy	Antique	3.1	
Therma Visayas Energy Project	Aboitiz Power Corp.	Cebu	300	2017 (318.5 MW)
Timbaban Hydroelec-tric Power Project	Oriental Peninsula Resources Group, Inc.	Aklan	18	
Basak II	Meadowland Developers, Inc.	Cebu	0.5	
Dauin Geothermal Project	Energy Development Corp.	Negros Oriental	40	2021 (40 MW)
TOTAL			918.8	

Note: MW = megawatt.
Source : DOE

Chart 12: Mindanao Grid Supply-Demand Outlook, 2012-2030



Note: MW = megawatt. Baseline (available capacity as of 2012) = 1,616 MW.
Source of basic data : DOE

Table 8: Details of Committed Capacity for Mindanao Grid

Particulars	Mother/Joint Venture Company	Location	Dependable Capacity (MW)	Target Commercial Operation
Coal-fired Therma-South Energy Project Unit 1	Therma South Inc.	Davao del Sur	150	2014 (191.1 MW)
Peak Power Bunker-Fired Power Plant	Peak Power Soccsargen Inc.	General Santos City	20.9	
Mapalad Energy Diesel Power Plant	Mapalad Energy Generating Corp.	Iligan City	15	
Peak Power Bunker-Fired Power Plant	Peak Power San Francisco Inc.	Agusan del Sur	5.2	
Southern Mindanao Coal-fired Power Station	Sarangani Energy Corp.	Sarangani	200	2015 (645 MW)
Coal-fired Therma-South Energy Project Unit 2	Therma South Inc.	Davao del Sur	150	
SMC Davao Power Plant Project Phase I Unit 1	SMC Consolidated Power Corp.	Davao del Sur	150	
FDC-Misamis Circulating Fluidized Bed Coal-Fired Power Plant Project Unit 1	FDC Utilities Inc.	Misamis Oriental	135	
LPC Biomass Power Plant Project	Lamsan Power Corp.	Maguindanao	10	
FDC-Misamis Circulating Fluidized Bed Coal-fired Power Plant Units 2 and 3	FDC Utilities Inc.	Misamis Oriental	270	2016 (454 MW)
SMC Davao Power Plant Project Phase I Unit 2	SMC Consolidated Power Corp.	Davao del Sur	150	
Lake Mainit Hydroelectric Power Project	Agusan Power Corp.	Agusan del Norte	25	
Malaybalay Bioenergy Corp. Multifeedstock Power Generating Facility	Malaybalay Bioenergy Corp.	Bukidnon	9	

GNPower Kauswagan Clean Coal-Fired Power Plant	GNPower Kauswagan Ltd. Co.	Lanao del Norte	540	2017 (579 MW)
Puyo Hydroelectric Power Project	First Gen Mindanao Hydropower Corp.	Agusan del Norte	30	
Limbatangon Hydroelectric Power Project	Turbines Resource & Development Corp.	Misamis Oriental	9	
TOTAL			1,869.1	

Note: MW = megawatt.
Source : DOE

Table 9: Details of Indicative Capacity for Mindanao Grid

Name of Project	Mother/Joint Venture Company	Location	Rated Capacity (MW)	Target Year of Commissioning
Circulating Fluidized Bed Coal-fired Power Station	San Ramon Power Inc.	Zamboanga City	100	2014 (258.4 MW)
Tagoloan Hydropower	First Gen Mindanao Hydropower Corp.	Bukidnon	39	
Davao del Norte Circulating Fluidized Bed Biomass Coal-Fired Thermal Power Plant	FDC Utilities, Inc.	Davao del Norte	20	
Bubunawan Hydroelectric Power Project	First Gen Mindanao Hydropower Corp.	Bukidnon	23	
Kirahon Solar Power Project Phase I	Kirahon Solar Energy Corp.	Misamis Oriental	12.5	
Misamis Oriental Biomass Power Plant Project	Misamis Oriental Bioenergy Solutions	Misamis Oriental	10.8	
Digos Solar Photovoltaic Power Project	Enfinity Philippines Renewable Resources, Inc.	Davao del Sur	10	
Cabadbaran Hydroelectric Power Project	First Gen Mindanao Hydropower Corp.	Agusan del Norte	9.75	
Kalilangan Bio-Energy Corp. Multi Feedstock Power Generating Facility	Kalilangan Bio-Energy Corp.	Bukidnon	9	
Don Carlos Bio-Energy Corp. Multi Feedstock Power Generating Facility	Don Carlos Bio-Energy Corp.	Bukidnon	9	
Tumalaong Hydroelectric Power Project	First Gen Power Corp.	Bukidnon	9	
Centralla Solar Power Project	NV Vogt Philippines Solar Energy One, Inc.	South Cotabato	6.25	

SMC Davao Power Plant Phase III	SMC Consolidated Power Corp.	Davao del Sur	300	2016 (400 MW)
Sibuguey Power Plant Project	Philippine National Oil Company	Zamboanga	100	
Balingasag Thermal Power Plant	Minergy Coal Corp.	Misamis Oriental	110	2017 (162.4 MW)
Mindanao 3 Geothermal	Energy Development Corp.	North Cotabato	50	
New Bataan Hydroelectric Power Project	Euro Hydro Power (Asia) Holdings, Inc.	Compostela Valley	2.4	
SMC Davao Power Plant Project Phase II	SMC Consolidated Power Corp.	Davao del Sur	300	2018 (610 MW)
Ozamis Coal-Fired Power Plant	Ozamis Power Generation, Inc.	Misamis Occidental	300	
Culaman Hydroelectric Power Project	Oriental Energy and Power Generation Corp.	Bukidnon	10	
TOTAL			1,430.8	

Note: MW = megawatt.
Source : DOE

Table 10: Main Points of the EPIRA

Section	Declaration
Section 6	**Generation** of electric power, a business affected with public interest, shall be competitive and open.
Section 7	The **transmission** of electric power shall be a regulated common electricity carrier business, subject to the ratemaking powers of the Energy Regulatory Commission (ERC).
Section 22	The **distribution** of electricity to end-users shall be a regulated common carrier business requiring a national franchise. Distribution of electric power to all end-users may be undertaken by private distribution utilities, cooperatives, local government units presently undertaking this function, and other duly authorized entities, subject to regulation by the ERC.
Section 29	The **supply** sector is a business affected with public interest. Except for distribution utilities and electric cooperatives with respect to their existing franchise areas, all suppliers of electricity to the contestable market shall require a license from the ERC.

Source : NEDA

As of 7 October 2014, there is a total of **457 MW** of committed capacity from captive and contestable customers in the program. However, taking into account the experience of Meralco in implementing the ILP, around 70% of total ILP capacity is available for dispatch when the program's protocols are activated. Thus, the adjusted capacity that can be sourced via the ILP is at **320 MW.** This figure is seen to further increase as more entities sign up for the program.

Interconnection of power plants to the grid and completion of committed capacities
The private sector has also committed to connect existing company-owned power plants to the grid, as well as finish the construction or uprating of certain energy facilities by early 2015.

INTERCONNECTION OF POWER PLANTS

Source	Capacity (MW)
Millennium Energy (Navotas)	100
JG Summit (Batangas)	20
Botocan (Laguna)	20
JG Summit – URC (Calamba)	10
JG Summit – URC (Pasig)	10
TOTAL	**160 MW**

Source: Meralco, PIPPA, RESA as of 7 Oct 2014

COMMITTED CAPACITIES

Source	Completion	Capacity (in MW)
Avion (Batangas)	April 2015	100
Millenium Energy (Limay)	March 2015	36
Vivant (Bauang)	March 2015	20
TOTAL		**160 MW**

Source: Meralco, PIPPA, RESA as of 7 Oct 2014

Besides the above, the following steps were also recommended for immediate government action:

Maximize Ilijan-1's capacity via straight-run diesel
During the maintenance shutdown of Malampaya, Ilijan-1's installed capacity of 600 MW will be reduced to only 420 MW due to a shift towards liquid fuel and/or biodiesel. Should Ilijan be allowed to use straight-run diesel, an additional **140MW** may be generated by the facility. This, however, may require a **temporary suspension of the pertinent provisions in RA 9367 or the Biofuels Act,** particularly Sec. 5 wherein a minimum 2% biodiesel blend is required for diesel-run power plants. The suspension of the said provision is recommended to only take place during the shortage period.

Fast track the rehabilitation of Malaya-1
Malaya-1 has been offline since March 2014 and is depriving the grid of **300 MW** of electricity. Presently, there is a proposal for negotiated procurement that may enable the facility to be functional before the summer of 2015. It was recommended that immediate and decisive action on the part of the government to inspect and assess whether Malaya-1's machinery can be repaired before the shortage period must be done at the soonest time.

Intensify campaign for energy efficiency
Lastly, significant gains will be achieved if a very assertive campaign towards energy conservation is spearheaded by the government, with strong support from the private sector. Among the steps identified that can help in this goal include promoting the following:

a) Replacement of old air conditioning units with inverter-types that consume less power
b) Raising of air conditioning temperature by at least 2°C
c) Switching off of aircon units and lights when not in use
d) Widespread adoption of LED lights
e) Shift towards LPG for cooking

On 18 November 2014, the House Committee on Energy approved Joint Resolution 21, granting the president special authority to establish additional power generating capacity, as mandated by Sec. 71 of the EPIRA. The resolution will be the subject of plenary discussions before it is forwarded to the Senate for their own consideration. Most of the recommendations from the October 10 private sector report were incorporated into the approved Joint Resolution.

Below are the salient points of the resolution:

- The special authority granted to the president shall only be effective from March to July 2015.
- Additional generating capacity shall be sourced from the ILP, fast tracking of new committed projects and plants for interconnection, and rehabilitation of existing facilities. Energy efficiency and conservation measures shall also be vigorously pursued by both public and private sectors.
- Pertinent provisions, rules and regulations for the Wholesale Electricity Spot Market, and/or found in the Biofuels Act, Clean Air Act, Philippine Grid Code, and Philippine Distribution Code that may affect the operation of contracted generation capacities will be suspend to ensure the timely commissioning and utilization of the necessary power projects.
- All entities with self-generating facilities (SGF) shall participate in the ILP on or before 31 December 2014 and will be compensated for fuel and maintenance expenses by the government. Entities with SGFs that will be unable to register with the ILP by the deadline may be manually deloaded from the grid without compensation.
- Authorizes all government offices and institutions to retrofit their facilities and buildings with energy efficient appliances and fixtures, subject to emergency procurement procedures.

Note: Compiled by MBC Programs Unit

Bibliography

Department of Energy Power Industry Reforms 22 (2013). *"22nd Electric Power Industry Reform Act Implementation Status Report PeriodCovering November 2012 to April 2013)."* https://www.doe.gov.ph/power-and-electrification/power-industry-eforms/369-status-report-on-epira-implementation/2196-22nd-status-report-on-epira-implementation (accessed May 23, 2014).

APEC Publications. *"APEC Publications - APEC Energy Demand and Supply Outlook, 5th Edition - Philippines."* http://publications.apec.org/publication-detail.php?pub_id=1389 (accessed May 20, 2014).

Policy Brief - Senate Economic Planning Office PB 2008-03 (2008). *"Accelerating Power Sector Reforms: Amending the EPIRA."* http://www.senate.gov.ph/publications/PB%202008-03%20-%20Accelerating%20Power%20Sector%20Reforms.pdf (accessed May 22, 2014).

Aquino, Patrick. *"Philippine Power Situation."* Lecture, 17th Ateneo Graduate School of Business Operations Management Forum from Department of Energy, Makati City, March 24, 2014.

Austria, Benjamin. *"Power Sustainability, Quality, Reliability, and Power Cost Competitiveness: A National Strategy to Achieve Inclusive Growth."* Lecture, Department of Energy Consultative Dialogue on EPIRA Review from Philippine Chamber of Commerce and Industry, Taguig City, February 18, 2014.

Brown, Geoffrey, Jose Victor Emmanuel De Dios, and Helena Valderrama. *"Philippines: Power Sector Profile and Roadmap."* Asian Development Bank Staff Consultant's Report 1 (2005). http://www.merrittenergy.com/ADB%20PPSP&R.pdf (accessed May 22, 2014).

Bureau of Labor and Employment Statistics. *"Current Labor Statistics."* Philippine Statistics Authority. http://www.bles.dole.gov.ph/PUBLICATIONS/Current%20Labor%20Statistics/HTML/table%20of%20contents.html (accessed May 6, 2014).

Manila: United States Agency for International Development (USAID) Philippines, 2013. *Challenges in Pricing Electric Power Services in Selected ASEAN Countries: Philippines Climate Change and Clean Energy Project (C Energy) Final Report.*

National Economic and Development Authority - Philippine Development Plan 2011-2016 Midterm Update. *"Chapter 10: Accelerating infrastructure development." http://plans.neda.gov.ph/pdp/chapter-10-accelerating-infrastructure-development/* (accessed May 13, 2014).

In Energy Outlook for Asia and the Pacific. Mandaluyong City: Asian Development Bank, 2013. 330-335. *"Chapter 12: Southeast Asia."*

De Ocampo, Roberto F. *"Let's 'Arangkada'."* *Philippine Daily Inquirer* (Makati City), March 22, 2014, sec. Opinion - Business Matters. http://opinion.inquirer.net/72837/lets-arangkada (accessed May 5, 2014).

Department of Energy. *"Department of Energy News - 2013 Supply-Demand Outlook"* http://www2.doe.gov.ph/news/2013%20Supply-Demand%20Outlook.pdf (accessed May 12, 2014).

Department of Energy. *"Department of Energy Presentations - Philippine Power Situation"* https://www.doe.gov.ph/microsites/ipo%20web/linked%20files/2013/MEIF2013/01_Philippine_Power_Situation.pdf (accessed May 12, 2014)Presentation given during the Energy Investment Forum at Marco Polo, Davao City on September 25, 2013.

National Economic and Development Authority. *"National Economic and Development Authority"* http://www.neda.gov.ph/wp-content/uploads/2013/12/R.A.-9136.pdf (accessed May 20, 2014).
REPUBLIC ACT NO. 9136: AN ACT ORDAINING REFORMS IN THE ELECTRIC POWER INDUSTRY, AMENDING FOR THE PURPOSE CERTAIN LAWS AND FOR OTHER PURPOSES

National Grid Corp. of the Philippines. *"Philippine Power Situation Outlook as of September 2014."* Letter delivered to the MBC Secretariat on 26 November 2014.

Patalinghug, Epictetus, and Gilberto Llanto. *"Competition Policy and Regulation in Power and Telecommunications." Philippine Institute for Development Studies* 09/2005 (2005). http://www.thebellwether.net/uploads/files/Patalinghug.pdf (accessed May 22, 2014).
An earlier version of this paper was presented at the conference on "Policies to Strengthen Productivity in the Philippines", sponsored by the Asia-Europe Meeting (ASEM) Trust Fund, Asian Institute of Management Policy Center, Foreign Investment Advisory Service, Philippine Institute for Development Studies, and the World Bank, held at AIM Conference Center on June 27, 2005.

Philippine Statistics Authority (PSA) - National Statistical Coordination Board (NSCB). *"PSA-Makati - Poverty Statistics."* PSA-Makati - Poverty Statistics. http://www.nscb.gov.ph/poverty/dataCharts.asp (accessed May 9, 2014).

Schwab, Klaus et al. *"Country/Economy Profiles - Philippines." In The Global Competitiveness Report 2013-2014 Full Data Edition.* Geneva: World Economic Forum, 2013. 314-315.

"Seven Big Winner Sectors - Infrastructure - Power." *In 2014 Arangkada Philippines Third Anniversary Forum: Assessment of Year 2013.* Makati City: The Arangkada Philippines Project (TAPP) and the American Chamber of Commerce of the Philippines, Inc. (AmCham), 2014. 69-80.

Arangkada Philippines. *"SEVEN WINNERS - Arangkada Philippines."* http://www.investphilippines.info/arangkada/seven-winners/ (accessed May 7, 2014).

"Summary Tables." *In National Accounts of the Philippines (Latest Estimates, 4th Quarter 2013).* Makati City: Philippine Statistics Authority - National Statistical Coordination Board, 2013. 9, 13.

World Bank. *"Foreign direct investment, net inflows (BoP, current US$)."* http://data.worldbank.org/indicator/BX.KLT.DINV.CD.WD (accessed May 8, 2014).).