

ENERGY INVESTMENT OPPORTUNITIES IN THE PHILIPPINES



TABLE OF CONTENTS

Petroleum Sector	1
Service Contracts	3
Oil and Gas Resources	4
Philippine Conventional Energy Contracting Round	4
Coal Sector	7
Coal Consumption	7
Coal Production	8
Coal Importation	8
Coal Exportation	8
Current and Existing Coal Operating Contracts (COCs)	8
Coal Resources	12
Philippine Conventional Energy Contracting Program	14
Renewable Energy Sector	15
Feed-In-Tariff (FIT) System	16
Net Metering Program	17
Renewable Portfolio Standards (RPS) for On-Grid Areas	17
Renewable Portfolio Standards (RPS) for Off-Grid Areas	18
Green Energy Option Program (GEOP)	18
Renewable Energy Market (REM) Rules	18
Natural Gas Sector	19
Industry Profile	19
Investment Opportunities	21
Downstream Oil Industry Sector	23
Oil Storage Facilities	24
Total Country Demand of Petroleum Products	25
Gasoline Station Lending and Financial Assistance Program	26
Power Sector	27
Power Supply and Demand Outlook	29
Ideal Location of Power Plants	33
Supply Sector	36
Qualified Third Party (QTP)	37
Alternative Fuels Sector	39
Industry Profile	39
Investment Opportunities	40
Energy Efficiency Sector	41
The Energy Service Companies (ESCOs)	41
DOE ESCO Accreditation	42
Advantages of a DOE Certified ESCO	42
The Energy Efficiency and Conservation Act	42
Existing Incentives in the Energy Sector	43

LIST OF TABLES

TABLE	PAGE
Petroleum Sector	
1 List of Active Petroleum Service Contracts	3
Coal Sector	
2 Coal Consumption by Sector	7
3 Amount of Coal Imported from other Countries	8
4 List of Coal Operating Contract (COC) Holders	8
5 Summary of Regional Coal Resources (MMT)	13
Renewable Energy Sector	
6 Renewable Energy - Based Capacity Installation Targets	15
7 Awarded RE Service Contracts	16
8 RE Installation Targets and FIT Rates	17
Natural Gas Sector	
9 Natural Gas Market Potential from the Offgrid Islands	20
10 Potential and Proposed Natural Gas Infrastructure Projects	21
Downstream Oil Industry Sector	
11 Investments of New Players	23
12 Total Number of Retail Stations	23
13 Liquid Fuels Storage Capacities excluding LPG	24
14 LPG Storage Capacities	25
15 Historical Average Demand of Total Petroleum Products	26
Power Sector	
16 2018 Grid-Connected Installed Capacities (MW)	27
17 WESM Registration Update in Luzon and Visayas	29
18 Private Sector Initiated Power Projects in Luzon	30
19 Private Sector Initiated Power Projects in Visayas	31
20 Private Sector Initiated Projects in Mindanao	32
21 Government-owned Generating Plants	35
22 Independent Power Producer (IPP) Plants	36
23 RCOA Registered Members	36
24 Market Share Determination per Grid and National Grid	37
25 Operational Qualified Third Parties Providing 24/7 Electricity Service to their Subject Areas	37
26 Qualified Third Parties with Authority to Operate from ERC but not yet Operational	38
27 Qualified Third Parties awaiting for ERC issuance of Authority to Operate and schedule for expository hearing	38
Alternative Fuels Sector	
28 E-Trike Distribution	40

LIST OF FIGURES

FIGURE	PAGE
Petroleum Sector	
1 Historical Petroleum Production (1979-2018)	1
2 Petroleum Service Contracts Map	2
3 Map of the relative sizes of the Resource classes for Oil and Gas and the estimated oil and gas ratio	5
4 Pre-Determined Areas for Offer and Active Service Contracts Map	6
Coal Sector	
5 Coal Statistics (in MMT)	7
6 Coal Operating Contractors in the Exploration Stage	11
7 Coal Operating Contractors in the Dev't & Production Stage	12
8 Coal Resources in the Philippines	14
Renewable Energy Sector	
9 Ranking of the Philippines in the Energy Trilemma Index since 2014	15
10 Biofuels Registration / Accreditation	16
11 Registered Qualified End-Users	17
Natural Gas Sector	
12 Potential Natural Gas Market for Non-Power Application	19
13 PMPC's 97-MW Avion Open-Cycle Natural Gas-Fired Power Plant	20
14 KEILCO's 1,200 MW Ilijan Combined-Cycle Power Plant	22
15 FNPC's 414 MW San Gabriel Power Plant	22
Power Sector	
16 Existing and Future Philippine Network Topology	28
17 Philippines Demand and Supply Outlook (2016-2040)	29
18 Luzon Demand and Supply Outlook (2016-2040)	30
19 Visayas Demand and Supply Outlook (2016-2040)	31
20 Mindanao Demand and Supply Outlook (2016-2040)	32
21 Recommended Power Plant Connection Points in Luzon	33
22 Recommended Power Plant Connection Points in Visayas	34
23 Recommended Power Plant Connection Points in Mindanao	34
24 NGCP's Transmission Backbones and Island Interconnections	35
Alternative Fuels Sector	
25 Sample unit of the patrol vehicle that was donated to PNP Reg. 8	39
26 Actual photo of e-trike unit that was deployed to various cities and municipalities in the Philippines (Right) Pure Electric Vehicle that was part of the Japan Non-Project Grant Aid (NPGA)	40
Energy Efficiency Sector	
27 ESCO Projects Breakdown	41

PETROLEUM SECTOR



INDUSTRY PROFILE

As of 30 June 2018, the country has a total crude oil production of 77.08 million barrels (MMbbl). Major producers are Galoc oilfield with a total production of 21.15 MMbbl, Nido oilfield with 19.30 MMbbl, Matinloc oilfield with 12.61 MMbbl, and North Matinloc oilfield with 2.28 MMbbl.

As illustrated in Figure 1, the country's production of petroleum since 1979 from 13 fields has totaled to 77.41 MMbbl of crude oil, 77.08 MMbbl of condensate, and 2.02 trillion standard cubic feet (scf) of gas.

In 1979, Nido oil field in Northwest Palawan was the source of crude oil reaching 8.57 MMbbl for the year. Cadlaog and Matinloc oil fields were also developed and produced in 1981 and 1982, respectively.

Another notable addition to the production was from West Linapacan in 1992 to 1996. A downward trend was observed from 1979 to 2000 as a result of the fields' depletion. The bulk of the recent crude oil production since 2008 is from the Galoc oil field totaling up to 21.15 MMbbl.

In 1994, San Antonio gas field in Cagayan started production that lasted until 2008 which yielded 3.54 billion scf of gas. The dramatic increase in natural gas production from 2002 is attributed to the Malampaya Deep Water Gas-to-Power Project which produced 1,938,305.87 million scf of gas and 75.04 MMbbl of associated condensate. The Malampaya Project is still hailed as the largest and most successful natural gas industry project in the Philippines.

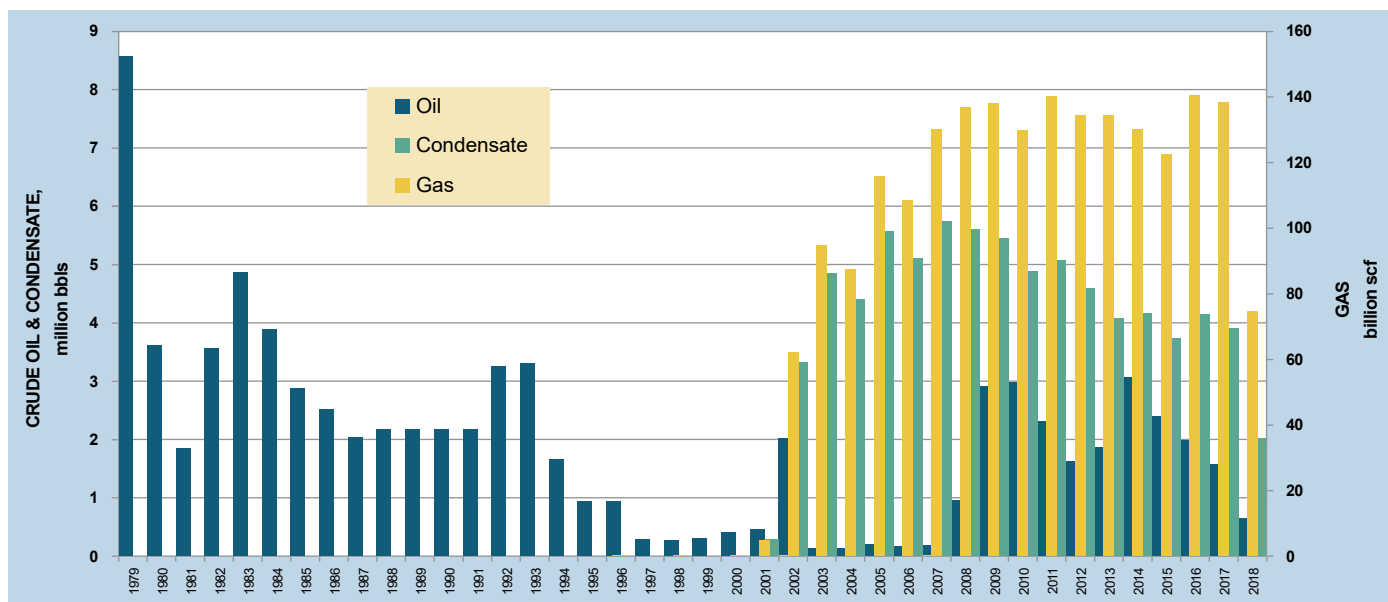


Figure 1. Historical Petroleum Production (1979-2018)

Source: Energy Resource Development Bureau (ERDB) as of June 2018

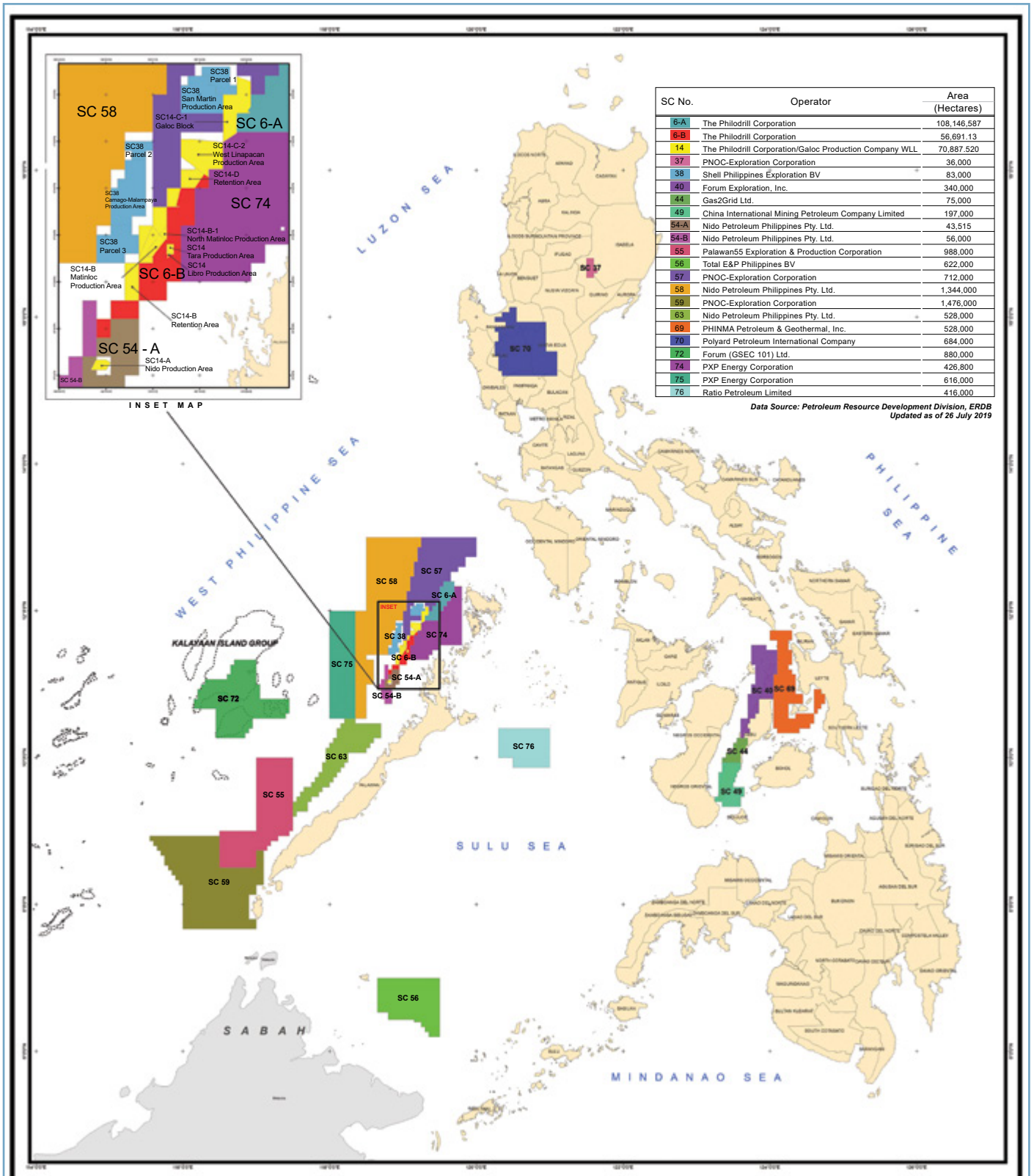


Figure 2. Petroleum Service Contracts Map (as of July 2019)

Service Contracts

The Philippine Government, under Section 4 of Presidential Decree (PD) No. 87 "Oil Exploration and Development Act of 1972", through the DOE, is mandated to promote and undertake exploration, development and production of the country's indigenous petroleum resources through petroleum service contracts (PSCs).

The DOE currently supervises and monitors 20 PSCs as shown in Figure 2 to ensure that the respective work commitments under the exploration and production stage of the SCs are fully implemented.

Continuing efforts are being made by the DOE to attract more investments for petroleum explorations under the Philippine Conventional Energy Contracting Program (PCECP).

Table 1. List of Active Petroleum Service Contracts

No.	Service Contract (SC) Number	Location	Name of Company / Operator	Phase/Status
1	SC-6A	Offshore Northwest Palawan	Philodrill Corporation [formerly Salvacion Area/Pitkin Petroleum PLC (Octon)]	Production
2	SC-6B	Offshore Northwest Palawan	Philodrill Corporation [formerly Cities II/Husky II/Alcorn Prod./The Philodrill Corporation (Libro) - Block A	Production
3	SC-14	Offshore Northwest Palawan	The Philodrill Corporation	Production
		Offshore Northwest Palawan	Phinma Energy Corporation [formerly Trans-Asia Petroleum Corporation (TAPET)] - Block B	Production
		Offshore Northwest Palawan	Galoc Production Company (Galoc) - Block 14C-1	Production
		Offshore Northwest Palawan	Philodrill Corporation [RMA (HK) Ltd.] - Block 14C-2 West Linapacan	Production
4	SC-37	Quirino, Isabela	PNOC Exploration Corporation Cagayan Basin Exploration	Production
5	SC-38	NW Palawan	Shell Philippines Exploration B.V. (SPEX) (from GSEC #47)	Production (producing)
6	SC-40	Onshore/Offshore North Cebu	Forum Exploration, Inc. (formerly Forum Pacific, Inc.)	Production
7	SC-44	Central Cebu	Gas2Grid (G2G) Ltd.	Exploration
8	SC-49	Onshore/Offshore Southern Cebu	China Int'l Mining Petroleum Company Ltd. (formerly: Phil-Mal Petro Energy)	Production (producing)
9	SC-53	Onshore/Offshore Mindoro	Mindoro-Palawan Oil & Gas, Inc.	Exploration (Under Motion for Reconsideration)
10	SC-54	Offshore Northwest Palawan	Nido Petroleum Phils. Pty., Ltd. (54A & 54B)	Exploration
11	SC-55	Offshore Southwest Palawan	Palawan55 Exploration & Production, Inc. [formerly Otto Energy Philippines, Inc. (OEPI)/BHP Billiton/Otto Energy Investment Ltd. (OEIL)]	Exploration
12	SC-56	Sulu Sea	Total E&P Philippines B.V.	Exploration
13	SC-57	Calamian Block, Offshore Northwest Palawan	PNOC Exploration Corporation Calamian	Exploration

No.	Service Contract (SC) Number	Location	Name of Company / Operator	Phase/Status
14	SC-58	West Calamian Block, Northwest Palawan	Nido Petroleum Phils. Pty. Ltd.	Exploration
15	SC-59	West Balabac, Offshore Southwest Palawan	PNOC Exploration Corporation	Exploration
16	SC-63	Offshore Southwest Palawan	Nido Petroleum (formerly PNOC EC)	Exploration
17	SC-72	Recto Bank	Forum (GSEC 101) Ltd.	Exploration
18	SC-74	Offshore Northwest Palawan	PXP Energy Corporation (formerly Pitkin Petroleum PLC)	Exploration
19	SC-75	Offshore Northwest Palawan	PXP Energy Corporation	Exploration
20	SC-76	Offshore East Palawan	Ratio Petroleum Ltd.	Exploration

Source: ERDB (as of 04 December 2019)

INVESTMENT OPPORTUNITIES

Oil and Gas Resources

The total recoverable resources (mean value) of the Philippines are estimated to be 3,629 MMbbl and 27,314 billion scf of gas. These resources are grouped according to the Philippine Petroleum Resource Classification System. Nearly 90% of the resources are undiscovered, of which 35% were mapped and 65% are still unmapped. Figure 3 displays the map of the relative sizes of the resource classes for oil and gas and the estimated oil and gas ratio.

Philippine Conventional Energy Contracting Program

Last 22 November 2019, the new licensing scheme referred to as the Philippine Conventional Energy Contracting Program (PCECP) was launched to encourage more private sector participation in the upstream petroleum industry. This program is in accordance with DOE Department Circular (DC) No. DC2017-12-0017. The PCECP was adopted and became effective on 27 December 2017 to buoy up more private investors to participate and be involved in the upstream petroleum industry.

The PCECP capitalizes on strengths (e.g. transparency and competitiveness) of previous contracting schemes, embodied in the conduct of the PECRs since 2003 to guarantee maximum participation of potential investors.

The PCECP adopts the same system employed in the past PECRs. However, in addition to the areas to be offered by the DOE, interested parties may opt to participate in the program at any time they are prepared to submit the necessary application requisites through:

(1) Competitive Selection Process. The DOE may publish a set of Pre-Determined Areas (PDAs) for bidding.

(2) Nomination. Applicant/s may nominate and publish their respective area/s of interest that is/ are outside PDAs.

During the launching of the PCECP, fourteen (14) PDAs were offered by the DOE as shown in Figure 4. As of June 2019, one (1) company showed their interest in PDA No. 3 which is located in East Palawan Basin. Nineteen (19) companies already submitted their request for Area Clearance and four (4) of these companies also rendered their respective Letters of Intent (LOIs) and three (3) of the LOIs were approved by the C-REC to publish their nomination.

The fourteen (14) areas offered under PCECP are shown in Figure 4. For more details on the areas and the application guidelines, visit <https://www.doe.gov.ph/pcecp>.

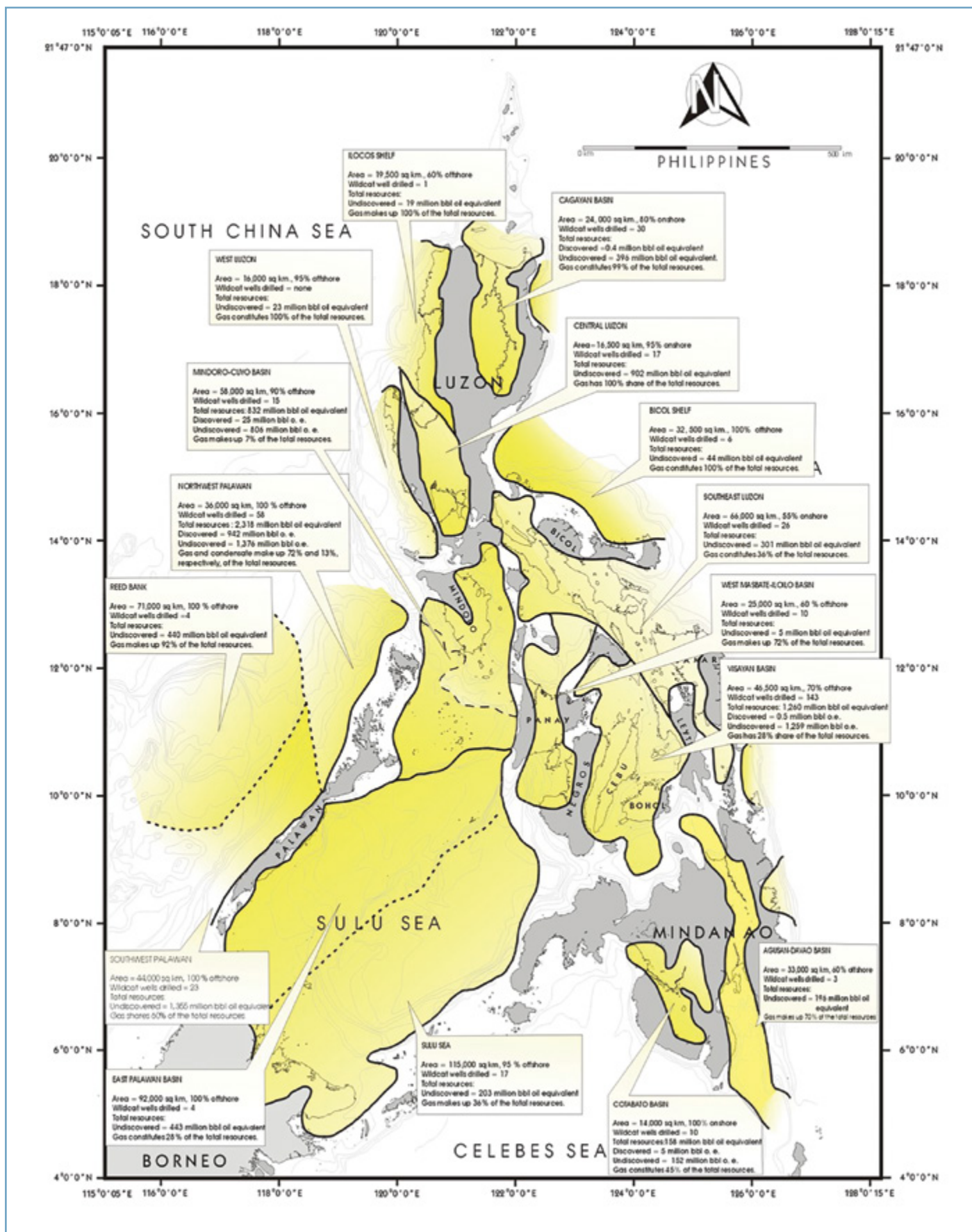


Figure 3. Map of the Relative Sizes of the Resource Classes for Oil and Gas and the Estimated Oil and Gas Ratio

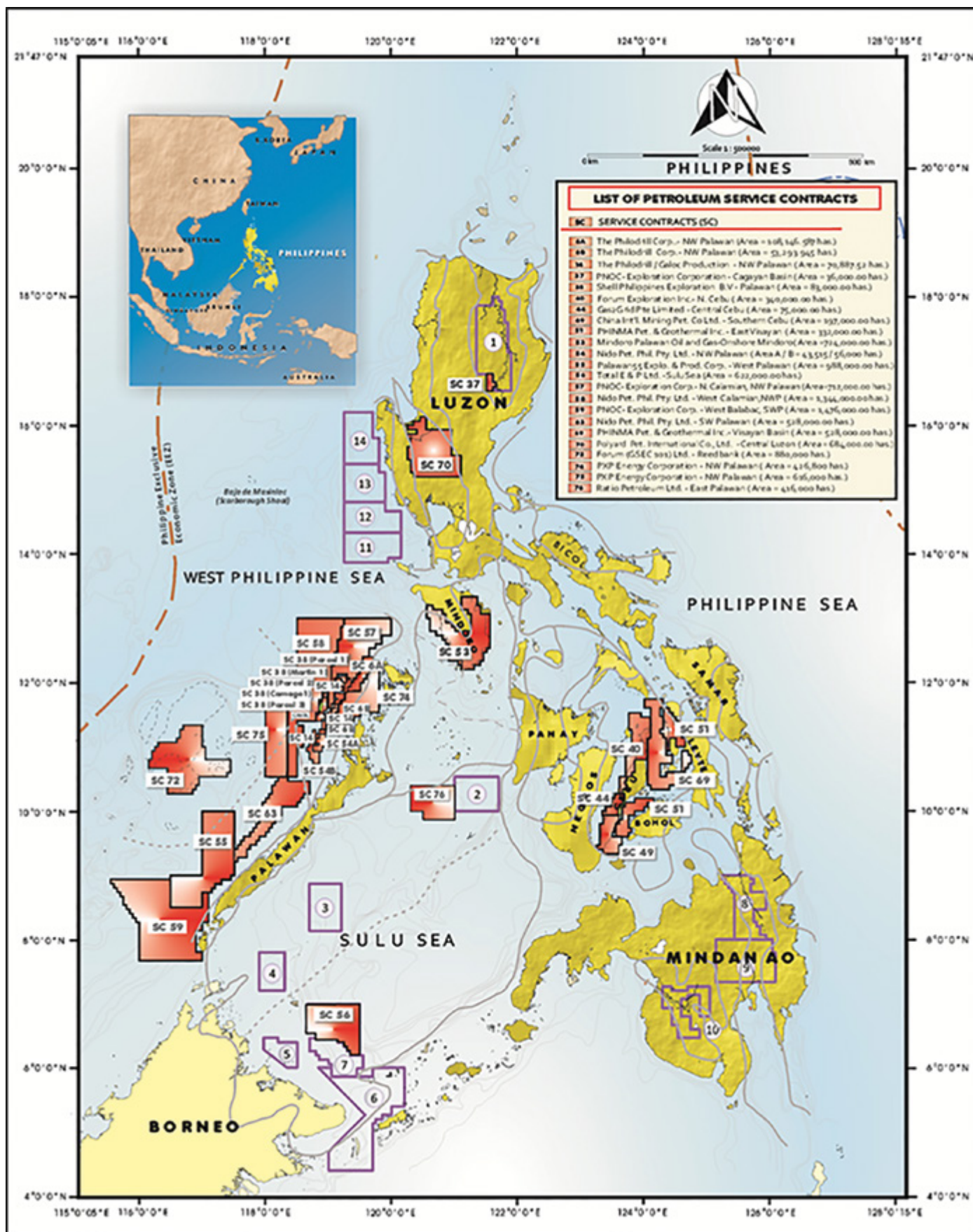


Figure 4. PCECP Map of the Pre-Determined Areas for Offer

COAL SECTOR

INDUSTRY PROFILE

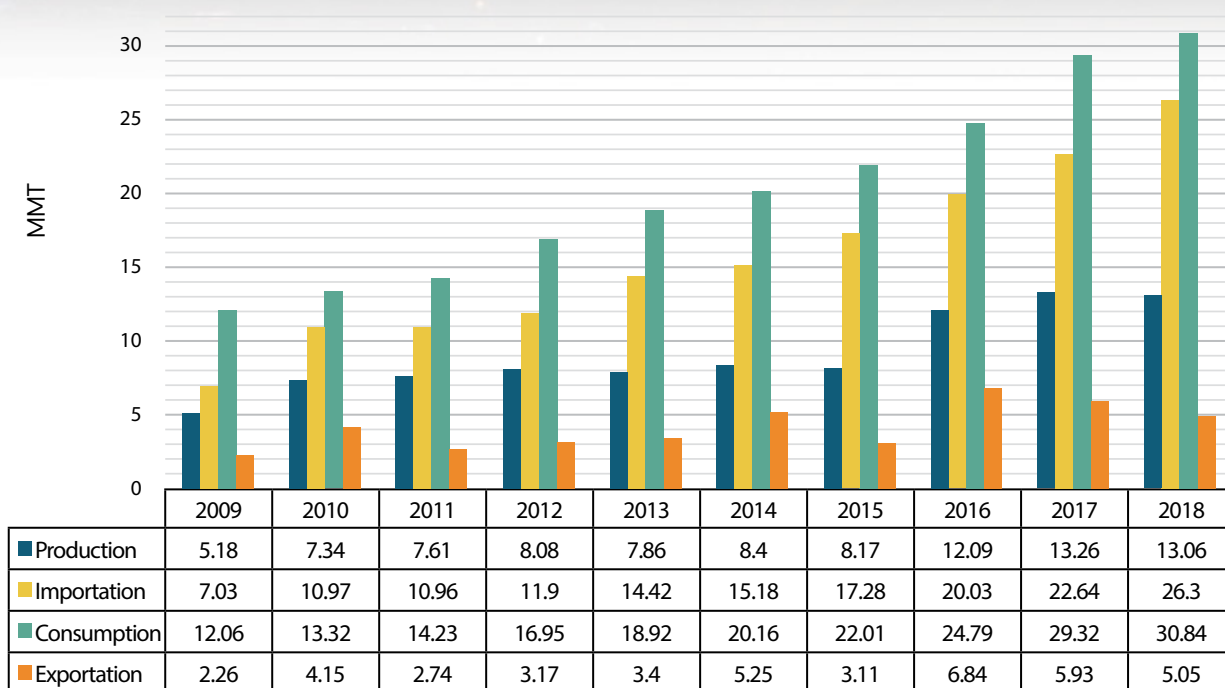


Figure 5. Coal Statistics (in MMT)

Source: ERDB (as of December 2018)

Coal Consumption

The country's coal consumption from 2009 to 2018 has steadily grown from 12.06 million metric tons (MMT) to 30.84 MMT. The increase in coal consumption during the period was attributed to the commissioning of several coal-fired thermal power plants in strategic locations in the country. Further, other industries (garment, canning, chemical, coconut oil mill, etc.) with small boilers have shifted from oil-fired to coal-fired due to the rising and volatility of oil prices.

In 2018, the total coal consumption was reported at 30.84 MMT which was 5.18% higher than the 2017 consumption of 29.32 MMT. Table 2 indicates that the power generation sector had the highest share of 84.6%, cement manufacturing at 8.8%, and other industries used up only 6.6% of the total consumption.

Table 2. Coal Consumption by Sector

	Consumption (MMT)	Percentage
Power Generation	26.1	84.6%
Cement Manufacturing	2.7	8.8%
Other Industries	2.0	6.6%
TOTAL	30.8	100.0%

Source: ERDB (as of December 2018)

Coal Production

As illustrated in Figure 5, the country's coal production sustained a steady increase from 5.18 MMT in 2009 to 8.08 MMT in 2012 and finally to 13.06 MMT in 2018. The sharp rise from 2015 to 2016 was attributed to the substantial increase in production of Semirara Mining and Power Corporation (SMPC)'s output when it started to export in 2007. The open pit coal mine of SMPC in Semirara Island, Antique accounted for more than 90% of the annual domestic coal production.

In 2018, the local coal production reached 13.06 MMT. In addition, the largest share of 99.18% is from SMPC; 0.39% from other Coal Operating Contract (COC) holders; and 0.48% from small-scale coal mining permittees.

Coal Importation

Since 2008, the Philippines has been dependent on imported coal to meet its increasing coal demands. From 7.03 MMT in 2008, the importation grew to 26.3 MMT in 2018. This trend originated from a decline of 7.027 MMT in 2009; decreased slightly to 9.065 MMT in 2012; and soared steadily to 14.415 MMT in 2013.

In 2018, the total coal importation was at 26.3 MMT which was 16.17% higher than 2017 importation of 22.64 MMT. As indicated in Table 3, the largest share of 88.53% was sourced from Indonesia, 1.25% from Australia, and 1.32% from Russia. In addition, 0.30 MMT were sourced from Vietnam while 0.15 MMT was imported from other countries.

Table 4: List of Coal Operating Contract (COC) Holders

Name of Company		COC No.	Location
Exploration COCs			
1	DMC-Construction Equipment Resources, Inc.	154	Bagumbayan, Sultan Kudarat
2	ASK Mining & Exploration Corporation	162	Cagwait-Marihatag, Surigao del Sur
3	BlackGem Resources and Energy, Inc.	175	Cateel and Baganga, Davao Oriental
4	Timberwolves Resources, Inc.	181	Guigaquit, Surigao del Norte
5	Altura Mining Philippine, Inc.	182	Bagamanoc, Caramoran and Panganiban, Catanduanes

Table 3. Amount of Coal Imported from Other Countries

	Imported Coal (MMT)	Percentage
Indonesia	23.28	88.53 %
Russia	1.32	5.01 %
Australia	1.25	4.75%
Vietnam	0.30	1.15 %
Others	0.15	0.56%
TOTAL	26.30	100.0 %

Source: ERDB (as of December 2018)

Coal Exportation

Coal exports reached 5.05 MMT in 2018, from 5.93 MT in 2017. The excess production from Semirara Mining and Power Corporation (SMPC) in 2018 was exported to China, the country's top export market for coal. This was followed by India and Thailand both at 0.55 MMT.

Current and Existing COCs

As of December 2018, there are thirty (30) COCs under the Exploration Phase while there are thirty-one (31) COCs under the Development and Production Phase as shown in Table 4.

The locations of the COCs under the Development and Production Stage as well as those in the Exploration Stage are illustrated in the maps in Figures 6 and 7, respectively.

	Name of Company	COC No.	Location
6	Blackstone Mineral Resources, Inc.	183	Naga, Zamboanga Sibugay
7	PNOC-Exploration Corporation	185	Buug and Malangas, Zamboanga Sibugay
8	PNOC-Exploration Corporation	186	Imelda, Payao & Malangas, Zamboanga Sibugay
9	ALCO Steam Energy Corporation (Formerly SKI Mining Corporation)	187	Trento, Agusan del Sur
10	MEGA Philippines Inc.	188	Lake Sebu, South Cotabato, Palimbang, Sultan Kudarat and Maitum, Sarangani
11	Semirara Mining Corporation	189	Bulalacao, Oriental Mindoro
12	Semirara Mining Corporation	190	Maitum and Kiamba, Sarangani
13	South Davao Development Corporation, Inc.	191	San Jose and Magsaysay, Oriental Mindoro
14	CoalBlack Mining Corporation	193	Tandag and Tago, Surigao del Sur
15	Sahi Mining Corporation	194	Butuan City, Agusan del Norte & Sibagat, Agusan del Sur
16	Sahi Mining Corporation	195	Butuan City, Agusan del Norte & Sibagat, Agusan del Sur
17	Altura Mining Philippines, Inc.	200	Rapu-Rapu, Albay
18	Empire Asia Mining Corporation	201	Kitcharao, Agusan del Norte
19	Altura Mining Philippines, Inc.	202	Bislig, Surigao del Sur
20	Empire Asia Mining Corporation	203	Bislig, Surigao del Sur & Trento, Agusan del Sur
Exploration COC with Application for Conversion to Development /Production Contracts			
21	Titan Exploration & Dev. Corporation (Pending application for DP)	159	Manay, Davao Oriental
22	3Kings Sunrise Mining Corporation (Pending application for DP)	165	Carmen, Cebu
23	Titan Exploration & Dev. Corporation (Pending application for DP)	166	Diplahan-Buug, Zamboanga Sibugay
24	Blackgem Resources & Energy, Inc.	169	Tarragona, Davao Oriental
25	Dell Equipment & Construction Corporation (Pending application for DP)	170	Sarangani & South Cotabato
26	Cedaphil Mining Corporation (Pending application for DP)	171	Toledo, Cebu
27	Core 8 Mining Corporation (Pending application for DP)	172	Toledo, Cebu

	Name of Company	COC No.	Location
28	BlackGem Resources and Energy, Inc.	174	Batan Island, Rapu-Rapu, Albay
29	Yolo Mining Resources, Inc. (Formerly Goodyield Resources Development, Inc.)	176	Trento, Agusan del Sur and Boston, Davao Oriental
30	Empire Asia Mining Corporation	192	Lingig and Bislig, Surigao del Sur
Development/Production Coal Operating Contracts (COCs)			
1	Semirara Mining Corporation	5	Semirara Island, Caluya, Antique
2	Adlaon Energy Development Corporation	9	Argao, Badian, Moalboal and Dalaguete, Cebu
3	Ibalong Resources & Development Corporation	13	Badian and Dalaguete, Cebu
4	PNOC-Exploration Corporation	41	Diplahan, Malangas, Imelda and Siay, Zamboanga Sibugay
5	Filipinas (Prefab) Systems, Inc.	68	Bulalacao, Oriental Mindoro
6	Filipinas (Prefab) Systems, Inc.	77	Payao, Zamboanga Sibugay
7	Filipinas (Prefab) Systems, Inc.	78	Diplahan, Payao, Imelda and Alicia, Zamboanga Sibugay
8	Benguet Corporation	83	Marihatag, San Miguel and Tago, Surigao del Sur
9	A Blackstone Energy Corporation	93	Siay, Zamboanga Sibugay
10	D. M. Wenceslao and Associates, Inc.	116	Alicia, Gattaran, Amulong, Peñablanca and Iguig, Cagayan Valley
11	PNOC-Exploration Corporation	122	Cauayan, Naguillan and Benito Soliven, Isabela
12	D. M. Wenceslao and Associates, Inc.	123	Iguig and Amulong, Cagayan Valley
13	Lima Coal Development Corporation	125	Batan Island, Rapu-Rapu, Albay
14	Daguma Agro Minerals, Inc.	126	South Cotabato & Sultan Kudarat
15	Smart Mining and Resources Development Corporation (Formerly Bislig Ventures Construction and Development Corporation)	127	Bislig City, Lingig and Trento, Surigao del Sur
16	Samaju Corporation	128	Bilbao, Batan Island, Rapu-Rapu, Albay
17	Samaju Corporation	129	Bagaobawan, Batan Island, Rapu-Rapu, Albay
18	Grace Coal Mining and Development, Inc. (Formerly Brixton Mining)	130	Diplahan, Buug and Malangas, Zamboanga Sibugay
19	Forum Cebu Coal Corporation	131	Badian and Dalaguete, Cebu
20	Sultan Energy Phil. Corporation	134	Ninoy Aquino, Sultan Kudarat & South Cotabato
21	SKI Construction Group, Inc.	135	Danao City and Compostela, Cebu

	Name of Company	COC No.	Location
22	SKI Energy Resources, Inc.	136	Alpaco, Naga, Cebu
23	Batan Coal Resources Corporation	137	Brgy. Dapdap, Batan Island, Rapu-Rapu, Albay
24	Bonanza Energy Resources, Inc.	138	Maitum, Sarangani Province and Ned, Lake Sebu, South Cotabato
25	Visayas Multi-Minerals Mining and Trading Corporation	142	Toledo City, Cebu
26	Great Wall Mining and Power Corporation	145	Tandag, Tago and San Miguel, Surigao del Sur
27	Abacus Coal Exploration and Development Corporation	148	Tago, Cagwait, Tandag and Marihatag, Surigao del Sur
28	IL Rey'c Coal Mining Exploration Corporation	149	Carmen and Danao City, Cebu
29	Guidance Management Corporation	151	Calatrava, Negros Occidental
30	Lima Coal Development Corporation	153	Bacon and Gubat, Sorsogon
31	BBB Mining and Energy Corporation	173	Asturias and Danao City, Cebu

Source: ERDB (as of December 2018)

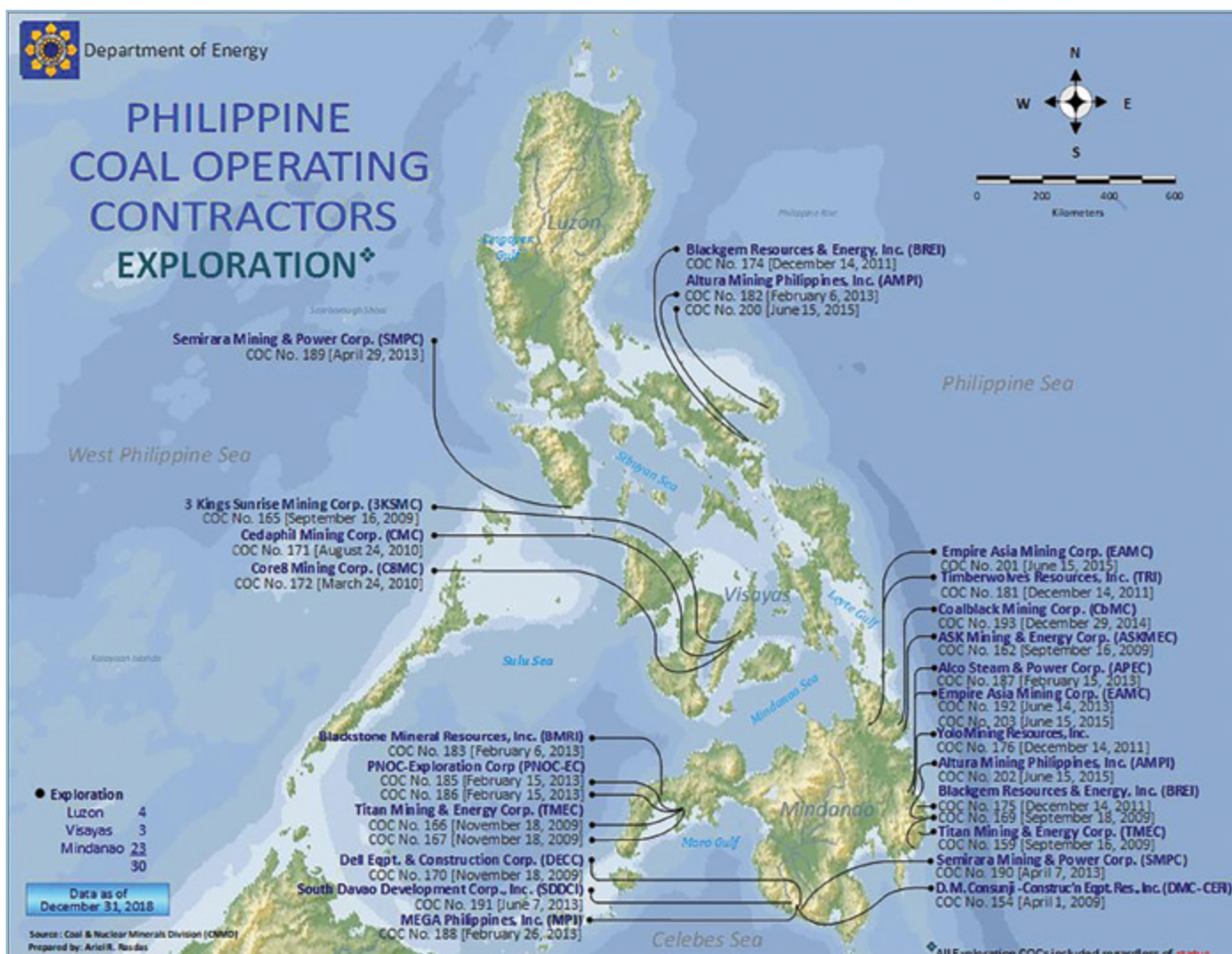


Figure 6. Coal Operating Contractors in the Exploration Stage (as of December 2018)



Figure 7. Coal Operating Contractors in the Development and Production Stage (as of December 2018)

INVESTMENT OPPORTUNITIES

Coal Resources

The country's total coal resource potential is estimated at 2,370 MMT as of 31 December 2018. From this resource potential, the estimated total in-situ reserves and total mineable reserves amount to about 586.65 MMT and 469.26 MMT, respectively.

These coal resources are scattered throughout the major islands of the Philippine archipelago. Of the total in-situ reserves, about 46.5% is located in Semirara Island, Antique; 14.07% in Cagayan Valley (Cagayan and Isabela); 13.9% in South Cotabato; and the remaining 25.53% is distributed among various provinces in the country.

In terms of quality, majority of Philippine coal resources are sub-bituminous with heating values ranging from 7,000 to 9,400 BTU/lb (Evaluation Report by Robertson in 1977 and updated by Wardell-Armstrong in 1985). Bituminous coal reserves at 10,700 - 12,100 BTU/lb are found in Zamboanga Sibugay, Quezon, Catanduanes, Masbate and Southern Cebu. While vast lignite reserves with an average of 4,600 BTU/lb are located in Cagayan and Isabela. Typically, Philippine coal is soft to dense; mostly formed during the Miocene age (23 – 25 million years ago); occurs in moderately to severely disturbed areas; swells and pinches; and developed in lagoon to shallow marine environments. Table 5 shows the various coal resources in the country.

Table 5. Summary of Regional Coal Resources (MMT)

Coal Region	Resource Potential ¹	Positive Reserves ^{2,5,6}	Probable Reserves ^{2,5}	In-situ Reserves ^{2,5}	Mineable Reserves ^{2,5}
Cagayan Valley	336,000	80,104.73	3,695	82,568.06	70,182.85
Cebu					
Central	40,000	3,556.63	4,968.49	6,867.98	4,120.79
Northern	75,000	5,558.99	770.41	6,072.60	3,643.55
Southern	50,000	1,527.78	2,482.62	3,182.86	1,909.71
Davao	100,000	1,794.64	2,341.88	3,355.90	2,013.54
Masbate	2,500	74.99	-	74.99	45.00
Mindoro	100,000	1,310.64	198.00	1,442.64	865.59
Negros	4,500	1,555.03	1,213.39	2,363.96	1,418.38
Polillo, Batan & Catanduanes	17,000	5,456.30	2,428.87	7,075.55	4,245.33
Quezon	2,000	93.00	-	93.00	55.80
Samar	27,000	7,474.89	1,667.73	8,586.71	7,278.81
Semirara ⁴	550,000	243,839.05	43,820.36	273,053.62	232,094.73
Surigao	209,000	29,851.25	62,795.64	71,715.01	48,858.18
Zamboanga	45,000	34,177.98	6,553.24	38,546.81	23,128.09
Bukidnon	50,000	-	-	-	-
Maguindanao	108,000	-	-	-	-
Sarangani	120,000	-	-	-	-
South Cotabato	230,400	35,319.71	69,492.98	81,648.36	69,401.12
Sultan Kudarat	300,300	-	-	-	-
TOTAL	2,366.70	451,694.63	202,428.60	586,647.02	469,261.43

Source: ERDB (as of December 2018)

Notes:

¹ Resource potential for Coal Regions are based on Robertson Research International Ltd., 1977 Evaluation

² Total Positive, Probable, In-situ and Mineable Reserves for Coal Regions (except Cagayan) are based on Coal and Nuclear Minerals Division's verified Reserves (DOE standard computation) from Coal Operating Contract Holders area and Approved Work Program and Scale Coal

³ Mining Permit Applicants area

⁴ Total Reserves for Cagayan are based on D.M. Wenceslao & Asso. and R-P German computation in Iguig, Cagayan

⁵ Coal Reserves of Semirara in Panian, Himalian, Unong, Molave, and Narra

⁶ Positive, Probable, In-situ and Mineable Reserves are based on the DOE standard computation

Total Production of Coal Operating Contracts and Small-Scale Coal Mining Permittees are part of the Positive Reserves



Figure 8. Coal Resources in the Philippines (as of December 2018)

Philippine Conventional Energy Contracting Program (PCECP)

The DOE embarked on a new contracting regime for coal which aims to attain optimal exploration and development of the country's indigenous coal resources by adopting a more flexible contracting/licensing system known as the "Philippine Conventional Energy Contracting Program (PCECP)". Anchored in Presidential Decree (PD) No. 972 or "The Coal Development Act of 1976" and Republic Act (RA) No. 7638 or the "The Department of Energy Act of 1992", the program will provide a transparent and competitive evaluation and awarding of a COC.

The PCECP for Coal has been issued through Department Circular (DC) 2017-09-0010 on 13 September 2017. This new scheme enables prospective investors in coal exploration to apply for COCs anywhere in the country at any given time.

Further, the program also promotes transparency as investors have the option to determine their preferred area through:

(1) Nomination and Publication where applicants shall formally nominate through written communication the area/s of their interest addressed to the Review and Evaluation Committee (REC); or

(2) Offering of Pre-Determined Areas (PDAs) where applicants may apply for coal areas not covered by any application for nomination.

Details on the PCECP for coal can be accessed through the DOE Website: <https://www.doe.gov.ph/laws-and-issuances/department-circular-no-dc2017-09-0010>.

RENEWABLE ENERGY SECTOR

INDUSTRY PROFILE

The various Renewable Energy (RE) policies implemented and the increase in the development and installation of the RE Projects in the country significantly contributed in placing the Philippines as top rank among 125 countries in terms of Environmental Sustainability in the World Energy Council (WEC)'s Energy Trilemma Index. This means that the country has an increased renewable generation but with low carbon and energy intensity resulting in lower emissions. WEC ranks countries' energy performance across its three core dimensions: Energy Security,

Energy Equity, and Environmental Sustainability.

The Government's extensive efforts to promote and develop renewable energy in the country has immensely progressed since the passage of the Renewable Energy (RE) Act of 2008. The National Renewable Energy Program (NREP) was formulated to triple the RE-based capacity of the country from 5,438 MW in 2010 to 15,304 MW in 2030. An additional capacity of 9,865 MW will be required as shown in Table 6.

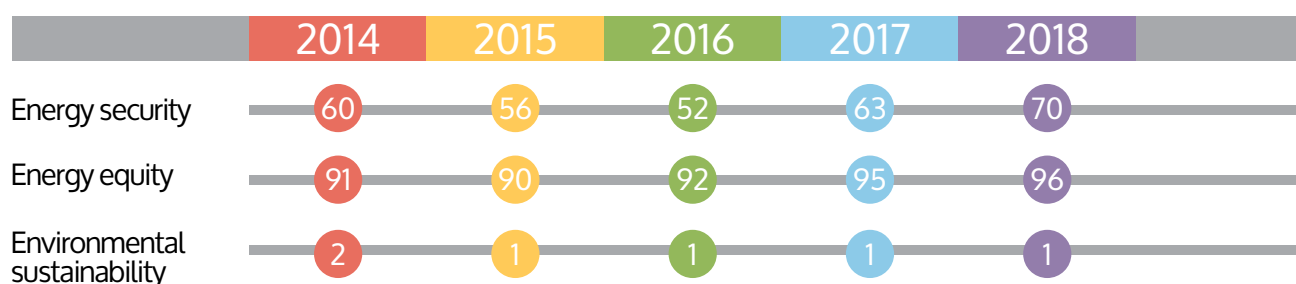


Figure 9. Ranking of the Philippines in the Energy Trilemma Index since 2014

Source: World Energy Council

Table 6. Renewable Energy - Based Capacity Installation Targets

Sector	Installed Capacity (MW) as of 2010	Target Capacity Addition by				Total Capacity Addition (MW) 2011-2030	Total Installed Capacity by 2030
		2015	2020	2025	2030		
Geothermal	1,966.0	220.0	1,100.0	95.0	80.0	1,495.0	3,461.0
Hydro	3,400.0	341.3	3,161.0	1,891.8	0.0	5,394.1	8,724.1
Biomass	39.0	276.7	0.0	0.0	0.0	276.7	315.7
Wind	33.0	1,048.0	855.0	442.0	0.0	2,345.0	2,378.0
Solar	1.0	269.0	5.0	5.0	5.0	284.0	285.0
Ocean	0	0.0	35.5	35.0	0.0	70.5	70.5
TOTAL	5,439.0	2,155.0	5,165.5	2,468.8	85.0	9,865.3	15,234.3

Source: National Renewable Energy Program (NREP)

As of December 2018, the Department monitored 909 existing Renewable Energy Service Contracts (RESCs) with an aggregate potential capacity of 31,635.51 MW and an installed capacity of 4,701.86 MW.

Table 7. Awarded RE Service Contracts

Resource	Number of Awarded Projects	Potential Capacity (MW)	Installed Capacity (MW)
Hydro Power *	474	14,124.10	1,021.79
Ocean Energy	1	-	-
Geothermal**	38	575.00	1,918.19
Wind	73	2,390.25	426.90
Solar	263	14,171.87	925.34
Biomass	60	374.29	409.64
TOTAL	909	31,635.51	4,701.86

* Excluding 49 installed projects with 2,643.68MW capacity under RA 7156, CA 120, PD 1645, RA 3601 & Own-Use

** Excluding 1 potential project with 20 MW capacity under PD 1142

Source: Renewable Energy Management Bureau (REMB) as of December 2018

On biofuels, there are 23 registered and accredited companies operating bioethanol and biodiesel plants as shown in Figure 10.

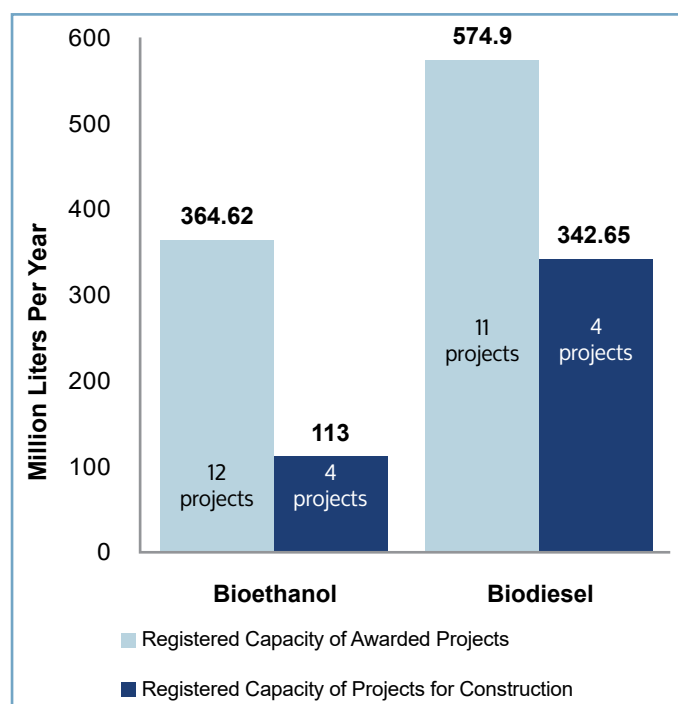


Figure 10. Biofuels Registration / Accreditation

Source: REMB (as of December 2018)

INVESTMENT OPPORTUNITIES

The RE Act offers various policy mechanisms to further encourage the development and utilization of renewable energy in the country. These are the following:

Feed-In-Tariff (FIT) System

The FIT System was promulgated by the Energy Regulatory Commission (ERC) on 12 July 2010 and took effect on 12 August 2010. FIT is a non-fiscal incentive scheme that offers guaranteed payments applicable for 20 years on a fixed rate per kilowatt-hour for emerging RE sources, excluding any generation for own use. The ERC approved the FIT rates on 27 July 2012 with the corresponding installation targets as shown in Table 8.

In order to qualify for the FIT scheme, RE developers must meet certain eligibility criteria and obtain a certificate of eligibility from the DOE. As of 31 December 2018, a total capacity of 1,111.18 MW for 59 projects was issued Certificate of Endorsement for FIT Eligibility (COE-FIT) to ERC. After the 3-year FIT regime which ended on December 2017, installation targets for hydropower and biomass technology were undersubscribed and reasons for such includes issues on permitting and licensing. With this, application for FIT Eligibility for the remaining installation target balance is extended until end of 2019 for biomass and until full subscription for run-of-river hydropower.

Table 8. RE Installation Targets and FIT Rates

Resource	Installation Target	ERC Approved FIT Rates	ERC Approved Degression Rates (after effectivity of FIT)	With Certificate of Endorsement to ERC		Installation Target Balance
	Capacity (MW)	PhP/kWh		No. of Projects	Capacity (MW)	Capacity (MW)
Hydro	250	5.90	0.5%, after year 2	5	34.60	203.90
		***5.8705		6	11.5	
Wind	200	8.53	0.5% after year 2	3	249.90	6.10
	*200	**7.40		3	144.00	
Solar	50	9.68	0.6% after year 1	6	108.90	-
	*450	**8.69		17	417.05	
Biomass	250	6.63	0.5% after year 2	15	125.16	104.78
		***6.5969		4	20.06	
Ocean	10	Deferred	-	-	-	-
TOTAL	1,410			59	1,111.18	314.78

Source: REMB (as of December 2018)

- * Additional installation targets
- ** FIT rates for the respective additional installation targets (W-ERCRes14, s2015; S-ERCRes6, s2015)
- *** Degressed FIT rates (H&B-ERCRes1, s2017)
- **** Reckoning date is January 2015 (Deadline: December 2017)

Net Metering Program

Net Metering Program allows a customer to produce its own electricity supply up to 100 kW through RE facilities installed within its premises. As of 31 December 2018, a total of 2,232 qualified end-users were registered under the Net Metering Program with a total rated capacity of 17,569.55 kW, wherein 65.61% of which is from MERALCO.

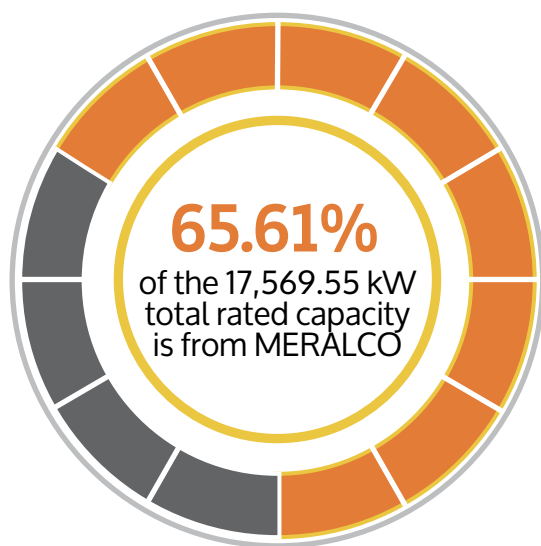


Figure 11. Registered Qualified End-Users

Source: REMB (as of November 2018)

Renewable Portfolio Standards (RPS) for On-Grid Areas

The RPS Rules for On-Grid Areas was promulgated on 22 December 2017 through Department Circular No. DC2017-12-0015 and took effect on 31 December 2017. It is a market-based policy that requires the Mandated Participants to source or produce a specified portion of their energy supply from Eligible RE Facilities:

1. All Distribution Utilities (DUs) for their Captive Customers;
2. All Suppliers of Electricity for the Contestable Market; and
3. Generating Companies only to the extent of their actual supply to their directly connected customers.

The minimum annual incremental RE percentage, which is initially set at 1% of the mandated participant's Net Electricity Sales for the previous year, will be used to determine the current year's requirement.

As proof of compliance to the RPS, Renewable Energy Certificates (RECs) shall be surrendered to the RE Registrar on an annual basis in accordance to the mandated participant's annual RPS requirement. 1 REC is equivalent to 1 MWh and has a validity of three (3) years from date of issuance. All mandated participants are required to start complying with their RPS obligation in 2020 based on their Net Electricity Sales for the baseline year 2018.

Renewable Portfolio Standards (RPS) for Off-Grid Areas

The RPS Rules for Off-Grid Areas was promulgated on 24 August 2018 through Department Circular No. DC2018-08-0024 and took effect on 29 September 2018. It intends to rationalize the efficient use of the universal charge for missionary electrification (UCME) and improve self-efficiency in power generation through integration of RE in the supply mix in off-grid and missionary areas.

The following Mandated Participants are required to generate and/or procure, supply and maintain a minimum percentage of RE share in their energy portfolio to meet the minimum RE requirement in their respective Off-Grid and Missionary Areas which shall be consistent with the Optimal Supply Mix prescribed in the Missionary Electrification Development Plan:

1. Generation Companies including National Power Corporation – Small Power Utilities Group (NPC-SPUG), New Private Power Providers (NPPs) and Qualified Third Parties (QTPs); and
2. DUs and local government-operated electric systems with respect to their own embedded generation facilities.

Similar to the RPS On-Grid Rules, the annual incremental RE generation in each of the Off-Grid or Missionary Areas after the baseline year 2018 shall not be lower than 1% and the full implementation thereof shall be for year 2020.

Green Energy Option Program (GEOP)

The GEOP Guidelines was promulgated on 18 July 2018 through Department Circular No. DC2018-07-0019 and took effect on 22 August 2018. GEOP is a voluntary RE policy mechanism that sets the general rules and procedures to properly guide the end-users, RE suppliers and network service providers in facilitating the option taken by the end-users particularly in choosing RE resources as their source of energy. The Department will issue the supplemental guidelines to cover the issuance of Operating Permits to Renewable Energy (RE) Suppliers under the GEOP.

Renewable Energy Market (REM) Rules

The establishment of the RE Market provides the venue where trading of Renewable Energy Certificates (RECs) shall take place between and among REM Trading Participants. The REM shall serve as a platform for RPS Mandated Participants to comply with their minimum RPS requirements both for on-grid and off-grid.

The Department will soon issue the Department Circular on the establishment of the RE Market (REM), RE Registrar, and the REM Rules.

NATURAL GAS SECTOR

INDUSTRY PROFILE

The Philippines, distinct with its abundant natural resources, is self-sufficient in natural gas with almost 100% of production coming from the Malampaya gas field. This indigenous gas provides 95% to the existing gas fired power plants with a total capacity of 3,401.50 MW and minimal volume equivalent to 2% is consumed by a refinery. The remaining volume is attributed to flaring, gas heating, usage of natural gas for own-use power generation in the platform and linepack in the 504 km natural gas pipeline. These existing power plants are the 1,094.80 MW Sta. Rita, 549.10 MW San Lorenzo and 1,227 MW Ilijan plants providing the baseload requirements in the Luzon grid while the newly operated 430 MW San Gabriel Plant is designed to provide the mid-merit demand and the 100.6 MW Avion gas power plant provides for the peaking demand. The refinery is using natural gas for its own power and furnaces.

The Malampaya gas field is programmed to produce (as of 31 December 2018) 116 bcf of gas per year or an average of 414.3 million standard cubic feet per day. Aggregate gas production in 2018

from Malampaya gas field reached 150.8 bcf while its cumulative gas production starting from its commercial operation in 2001 to 31 December 2018 is recorded at 2.09 tcf. The commercial operation and additional capacities of the Avion and San Gabriel gas-fired power plants in 2016 contributed to the increase in utilization rate of natural gas.

The Malampaya gas field is expected to begin to deplete in 2022, and Service Contract (SC 38) which has the concession to operate the said gas field will terminate in 2024. Thus, there is a need to explore, develop, and promote other indigenous sources of natural gas to expand the application of natural gas and continue the operation of the existing 2,400 MW gas fired power plants and the refinery, as their respective Gas Sales and Purchase Agreements (GSPA) will terminate from 2022 to 2024.

The country has a potential domestic source of natural gas supply estimated at 19.579 tcf from its 16 sedimentary basins. Currently, the government is promoting the development of the country's



Figure 12. Potential Natural Gas Market for Non-Power Application

indigenous petroleum resource through the PCECP. However, the timing and volume of new natural gas discoveries are yet to be determined. Given this situation, imports will be the main source of natural gas in the medium-term until new gas fields are discovered and to produce commercially.

LNG importation in the country requires the necessary infrastructure projects such as the LNG Import Receiving Terminal (floating or land-based) and conventional & virtual pipeline network to transport natural gas to the potential demand centers initially in Luzon where demand forecast is highest in the next 10-15 years, and later cater to the demand requirements in Visayas and Mindanao. LNG will primarily be consumed in the power sector, but will soon provide the requirements for non-power applications as shown in Figure 12.

With the declining trend in the production of the domestic gas resources, imports are projected to commence in 2022, with an initial volume of two (2) million metric tons per annum (MMtpa).

Additional regasification capacity is expected to come online by 2023-2024. Available excess capacity of the LNG import terminal, transmission and distribution system shall be offered for third party access (TPA). This mode is envisioned to create more players, encourage competition, drive efficiency and lower costs and price to consumers. On the other hand, TPA provides a diverse and sustainable sources of energy and enhance security supply of energy.

Natural gas or LNG can also provide the demand from base load, mid-merit and peaking requirements in the power system, and can compete with other fuel sources that can provide least-cost optimal electricity from such demand centers. This flexibility also complements the increasing number of renewables in the energy system.

Table 9. Natural Gas Market Potential from the Off-Grid Islands

Off-Grid Power Plants	Installed Capacity (MW)	Dependable Capacity (MW)
Luzon	416.358	326.844
Oil-Based	404.403	315.771
Hydro	11.925	11.048
Solar	0.030	0.025
Visayas	40.494	30.696
Oil-Based	40.494	30.696
Mindanao	76.886	58.562
Oil-Based	76.216	58.162
Hydro	0.670	0.400
Philippines	533.738	416.102
Oil-Based	521.113	404.629
Hydro ancillary	12.595	11.448
Solar	0.030	0.025

Source: EPIMB (as of December 2018)



Figure 13. Prime Meridian Powergen Corporation's (PMPC) 97 MW Avion Open-Cycle Natural Gas-Fired Power Plant which started commercial operations on September 26, 2016 in the First Gen Clean Energy Complex in Batangas City.

Additional potential opportunity for natural gas or LNG is envisioned in off-grid or missionary islands as replacement of existing oil-based power plants and to provide ancillary services. However, there is

a need to cluster the marginal demand in the off-grid islands to build an economically viable LNG facility. Table 9 shows the potential market for natural gas.

INVESTMENT OPPORTUNITIES

Crucial to the development of the natural gas industry in the country is the participation of the private sector in building the required infrastructure. Table 10 provides a detailed list of the proposed natural gas infrastructure projects that are subject to the non-pricing regulation of the DOE.

Table 10. Potential and Proposed Natural Gas Infrastructure Projects

Target Operation	Project	Proponent	Location	Capacity	Status
2021	LNG Import Receiving / Hub Terminal	Energy World Gas Operation Philippines, Inc.	Brgy. Ibabang Polo, Grande Island, Pagbilao, Quezon	2 x 130,000 m ³ LNG storage tanks	Granted a 24-month Permit to Construct starting December 21, 2018, as consistent with the submitted work and financial plan of the operator.
2024	Batangas LNG Terminal Project	FGEN LNG Corporation	Brgy. Sta Clara, Brgy. Sta. Rita Aplya, and Bolbok, Batangas City (21 ha)	5.26 mtpa	Issued Notice to Proceed (NTP) in March 7, 2019 and has been granted extension for another six (6) months .
3Q or 4Q of 2023	LNG Storage and Regasification Terminal	Tanglawan Philippine LNG Inc.	AG&P property in Bauan, Batangas (52ha)	2.2 mtpa	Issued a Notice to Proceed in December 21, 2018 and has been granted extension for another six (6) months.
2Q or 3Q of 2021	Floating Storage and Regasification Facility	Excelerate Energy L.P.	9.5 km offshore in Bay of Batangas in about 240 m water depth	SMC Global Power's existing and future gas-fired power plant with a total gross power capacity of up to 1,800 MW on a baseload basis for 15 years	Issued a Notice to Proceed by the DOE on September 20, 2019

Source: OIMB (as of November 2019)

The development of gas infrastructure facilities such as transmission and distribution pipeline networks, including LNG receiving terminals, CNG refueling stations and their respective ancillary facilities are key to the successful expanded use of natural gas as well as development of the downstream natural gas industry. The archipelagic nature of the Philippines dictates the need for a mix of infrastructure network to transport natural gas to all demand sectors in all the regions.



Figure 14. The 1,200 MW Ilijan Combined-Cycle Power Plant, the largest natural gas facility in the country, is being operated by KEPCO Ilijan Corporation (KEILCO) in Ilijan, Batangas.



Figure 15. First NatGas Power Corporation (FNPC) operates the 414 MW San Gabriel Power Plant which started commercial operations on November 2016 and is located in the First Gen Clean Energy Complex in Batangas City.

DOWNSTREAM OIL INDUSTRY SECTOR

INDUSTRY PROFILE

The passage of R.A. 8479 otherwise known as the “Downstream Oil Industry Deregulation Act of 1998” liberated and deregulated the country’s downstream oil industry to ensure a truly competitive market and an adequate and continuous supply of environmentally-clean and high-quality petroleum products. To attain these goals, the government continues to encourage the entry of new investors in the downstream oil industry.

Twenty years after the implementation of R.A. 8479, the downstream oil industry grew steadily with the continuous entry of investors in the country. In the first half of 2018, a total of 293 new downstream oil industry players engaged in different downstream oil activities such as importation, marketing, distribution and storage of petroleum products were recorded. This translates to an accumulated investment of PhP 61.6 Billion as shown in Table 11.

Table 11. Investments of New Players

Activity	No. of Players (In operation)	Investments (In Billion Pesos)
Liquid Fuel Marketing	238	19.25
Fuel Retail Marketing	12	14.31
LPG Bulk Marketing	11	16.61
Terminalling	13	2.61
Bunkering	19	8.82
TOTAL	293	61.60

Source: OIMB (as of June 2018)

Similarly, the industry reported a total of 8,584 retail stations nationwide. Among the country’s three main island grids, Luzon has the most number of retail stations with a total of 5,215 stations, followed by Visayas with 1,694 stations and Mindanao with 1,675 stations constructed by the new downstream oil industry players as shown in Table 12.

Table 12. Total Number of Retail Stations

Region	Major Players	New Players		Regional
		with Bulk Supply/ Facilities	Independent	
National Capital Region (NCR)	612	285	247	1,144
Cordillera Administrative Region (CAR)	27	9	12	48
Region I (Ilocos Region)	122	70	237	429
Region II (Cagayan Valley)	107	57	141	305
Region III (Central Luzon)	295	233	352	880
Region IV (Southern Tagalog)	778	454	638	1,870
Region V (Bicol Region)	188	38	313	539
TOTAL NCR	612	285	247	1,144
TOTAL – REST OF LUZON	1,517	861	1,693	4,071
OVERALL TOTAL LUZON	2,129	1,146	1,940	5,215

Region	Major Players	New Players		Regional
		with Bulk Supply/ Facilities	Independent	
Region VI (Western Visayas)	337	223	209	769
Region VII (Central Visayas)	346	155	144	645
Region VIII (Eastern Visayas)	137	45	98	280
OVERALL TOTAL VISAYAS	820	423	451	1,694
Region IX (Zamboanga Peninsula)	86	9	43	138
Region X (Northern Mindanao)	201	17	184	402
Region XI (Davao Region)	218	108	356	682
Region XII (SOCCSKSARGEN)	129	12	149	290
Region XIII (CARAGA)	70	5	79	154
Autonomous Region of Muslim Mindanao (ARMM)	-	5	4	9
OVERALL TOTAL MINDANAO	704	156	815	1,675
OVERALL TOTAL	3,653	1,725	3,206	8,584

Source: OIMB (as of June 2018)

Note: *Outlets with 1-5 branches

Oil Storage Facilities

The Philippine Government is encouraging investments in the establishment of regional petroleum stockpiles to form part of the government measures to ensure oil security. Tables 13 and 14 show the storage of Liquid Fuels and LPG in the country which are mostly privately owned and operated.

Table 13. Liquid Fuels Storage Capacities excluding LPG

Region	No. of Depots	Storage Capacity Depots (MB)	No. of Import Terminals	Storage Capacity Terminal (MB)	Total No. of Depots & Import Terminals	Storage Capacity (Total MB)
NCR	12	265	2	293	14	559
Region I	1	0	4	386	5	387
Region II	1	73	-	-	1	73
Region III	7	612	7	7,402	14	8,014
Region IV	24	549	5	2,963	29	3,513
IV-A	6	287	5	2,963	11	3,251
IV-B	18	262	-	-	18	262
Region V	5	267	0	0	5	267
Region VI	10	547	3	299	13	846
Region VII	8	89	5	934	13	1,024
Region VIII	6	211	2	100	8	310
Region IX	4	229	-	-	4	229
Region X	8	478	4	1,225	12	1,703
Region XI	-	241	5	787	5	1,028
Region XII	3	132	-	-	3	132
Region XIII	2	92	-	-	2	92
ARMM	3	530	-	-	3	530
TOTAL	94	4,317	37	14,389	131	18,706

Source: OIMB (as of December 2017)

Table 14. LPG Storage Capacities

Region	No. of Depots	Storage Capacity Depots (MB)	No. of Import Terminals	Storage Capacity Terminal (MB)	Total No. of Depots & Import Terminals	Storage Capacity (Total MB)
NCR	3	23.62	-	-	3	24
Region I	-	-	2	61	2	61
Region II	0	-	0	-	0	-
Region III	4	15.50	1	145	5	161
Region IV-A	3	5.47	3	188	6	194
Region V	1	2.92	-	-	1	3
Region VI	2	1.25	3	30	5	31
Region VII	2	1.48	4	93	6	94
Region VIII	2	1.25	1	11	3	13
Region IX	1	0.68	1	12	2	12
Region X	-	-	1	14	1	14
Region XI	1	1.37	1	25	2	26
Region XII	2	0.68	-	-	2	1
Region XIII	1	0.68	-	-	1	1
TOTAL	22	54.92	17	579	39	634

Source: OIMB (as of December 2017)

Oil downstream facilities are located in different sites nationwide. The country has a total of 171 depots and terminals with a total capacity of 33,944 thousand barrels (MB). 43% of the refineries capacity are located in Batangas and Bataan. The remaining 13% or 4,371 MB are storage facilities of Petron, Shell and Chevron (1,665 MB) and other oil players (2,706 MB). Meanwhile, import terminals for the whole country have a total capacity of 14,968 MB or 44% of the total country's storage capacity.

Luzon has the most number of depots and import terminals (including the two refineries) with 87 storage facilities which is equivalent to 27,859 MB storage capacity, followed by Visayas with 47 storage facilities or a total of 2,318 MB and Mindanao with 37 storage facilities of 3,767 MB.

Total Country Demand of Petroleum Products

The National Capital Region (NCR) has the highest share at 37.19% of the country's total average demand for 2012-2017, followed by Region 3 at 12.59%, then CALABARZON at 11.72%; all located in the island of Luzon. In the Visayas area, Region 7 has the highest share at 6.80%. While in Mindanao, Davao Region (Region 11) has 4.82% share followed by Northern Mindanao (Region 10) with 4.29% of the country's total average demand. Overall, Luzon has the highest demand at 71.37%, followed by Mindanao at 15.59% and Visayas at 13.04% of the country's total average demand for 2012-2017.

Table 15. Historical Average Demand of Total Petroleum Products (F.Y. 2012-2017)

Region	Percent Share
CAR	0.57
NCR	37.19
Region I	2.69
Region II	1.89
Region III	12.59
Region IV-A	11.72
Region IV-B	2.03
Region V	2.71
Region VI	4.69
Region VII	6.80
Region VIII	1.55
Region IX	2.44
Region X	4.29
Region XI	4.82
Region XII	2.23
ARMM	0.29
CARAGA	1.52
TOTAL	100.00

Source: OIMB (as of December 2017)

INVESTMENT OPPORTUNITIES

Gasoline Station Lending and Financial Assistance Program

In its efforts to achieve the social policy objective of fair prices and to attain a truly competitive petroleum product market, the DOE promotes and encourages the direct participation of the private sector and cooperatives in the retailing of petroleum products. Moreover, the Department encourages a joint venture and/or supply agreements with new industry participants in the establishment and operation of gasoline stations. This can be realized through provision of necessary technical and financial assistance.

Section 10 of Republic Act 8479, otherwise known as the Downstream Oil Deregulation Act of 1998 mandates the DOE to promote retail competition through the establishment of a Gasoline Station Training and Loan Fund (GSTLF). The said fund shall be provided by the Philippine Amusement and Gaming Corporation (PAGCOR), shall be administered by the DOE, and shall be coursed through a financial institution, identified as the Development Bank of the Philippines (DBP).

The GSTLF is designed to provide credit assistance to new industry participants (borrower) whose owners have successfully completed the two-fold program on skills and management training for the establishment, operation, and maintenance of gasoline stations. The financial assistance covers the retailing of all petroleum products sold in the gasoline stations, including LPG.

The DOE issued Department Circular No. 2003-06-007 providing the detailed guidelines and requirements in availing the said fund.

Furthermore, the DOE through its Oil Industry Management Bureau (OIMB) shall undertake the preliminary evaluation of the loan application and endorse to the DOE Review Committee the results of its evaluation. Applications that merit approval by the DOE Review Committee shall be forwarded to the DBP for financial evaluation.

For approved application, the DOE shall issue a notice of approval for DBP to process the loan documents including the Loan Agreement and subsequent release of the check to the applicant/borrower. The grantee of the loan shall submit to the DOE a monthly status report (e.g., pre-construction report; progress report and monthly report) on the construction and operation of the gasoline station starting from the notice of approval of the loan.

POWER SECTOR

INDUSTRY PROFILE

As a result of the reforms implemented in the electricity industry since 2001 through Republic Act No. 9136 otherwise known as the Electric Power Industry Reform Act (EPIRA), the generation sector has been competitive with the active participation of the private sector. However, the transmission and supply sectors remain to be supervised by the government.

In 2018, the country has a total installed capacity of 23,281 megawatts (MW) with dependable capacity

of 20,825 MW or 89% of the installed capacity.

As indicated in Table 16, the Philippines has a diverse portfolio of energy sources, with coal providing 38%, oil based 16.2%, natural gas 14.8%, and renewable energy 31%. The aggregate installed capacity from natural gas and renewable energy resources is 10,667 MW or equivalent to 45.8%; while the installed capacity from renewable energy resources is 7,214 MW or equivalent to 31%.

Table 16. 2018 Grid-Connected Installed Capacities (MW)

Fuel Type	Luzon		Visayas		Mindanao		Philippines	
	Installed	Dependable	Installed	Dependable	Installed	Dependable	Installed	Dependable
Coal	6,264	5,970	1,059	1,043	1,521	1,355	8,844	8,368
Oil based	2,208	1,399	697	472	866	720	3,771	2,590
Diesel	810	709	642	472	866	720	2,318	1,901
Oil Thermal	650	150	-	-	-	-	650	150
Gas Turbine	748	540	55	-	-	-	803	540
Natural Gas	3,452	3,286	1	0	-	-	3,453	3,286
Renewable Energy	4,210	3,991	1,652	1,454	1,352	1,136	7,214	6,581
Geothermal	871	805	965	865	108	100	1,944	1,770
Hydro	2,535	2,464	19	19	1,134	978	3,688	3,462
Biomass	106	86	102	85	51	14	258	182
Solar	362	301	476	396	59	44	896	740
Wind	337	337	90	90	0	0	427	427
TOTAL	16,133	14,646	3,410	2,969	3,738	3,210	23,281	20,825

Source: DOE List of Existing Power Plants as of 31 December 2018, released 5 March 2019

Note: Figures were rounded off

The country's transmission system is composed of three (3) main grids, namely; Luzon, Visayas and Mindanao grids which are monitored by the National Transmission Company (TransCo) and operated and maintained by the National Grid Corporation of the Philippines (NGCP) under a 25-year concessionaire arrangement. The Luzon and

Visayas transmission grids are interconnected by submarine cables with a capacity of 440 MW. Further, the islands within the Visayas grid are also interconnected with various capacities, while the Mindanao grid still remains to be isolated. However, NGCP is targeting the completion of the Visayas-Mindanao interconnection by 2020.

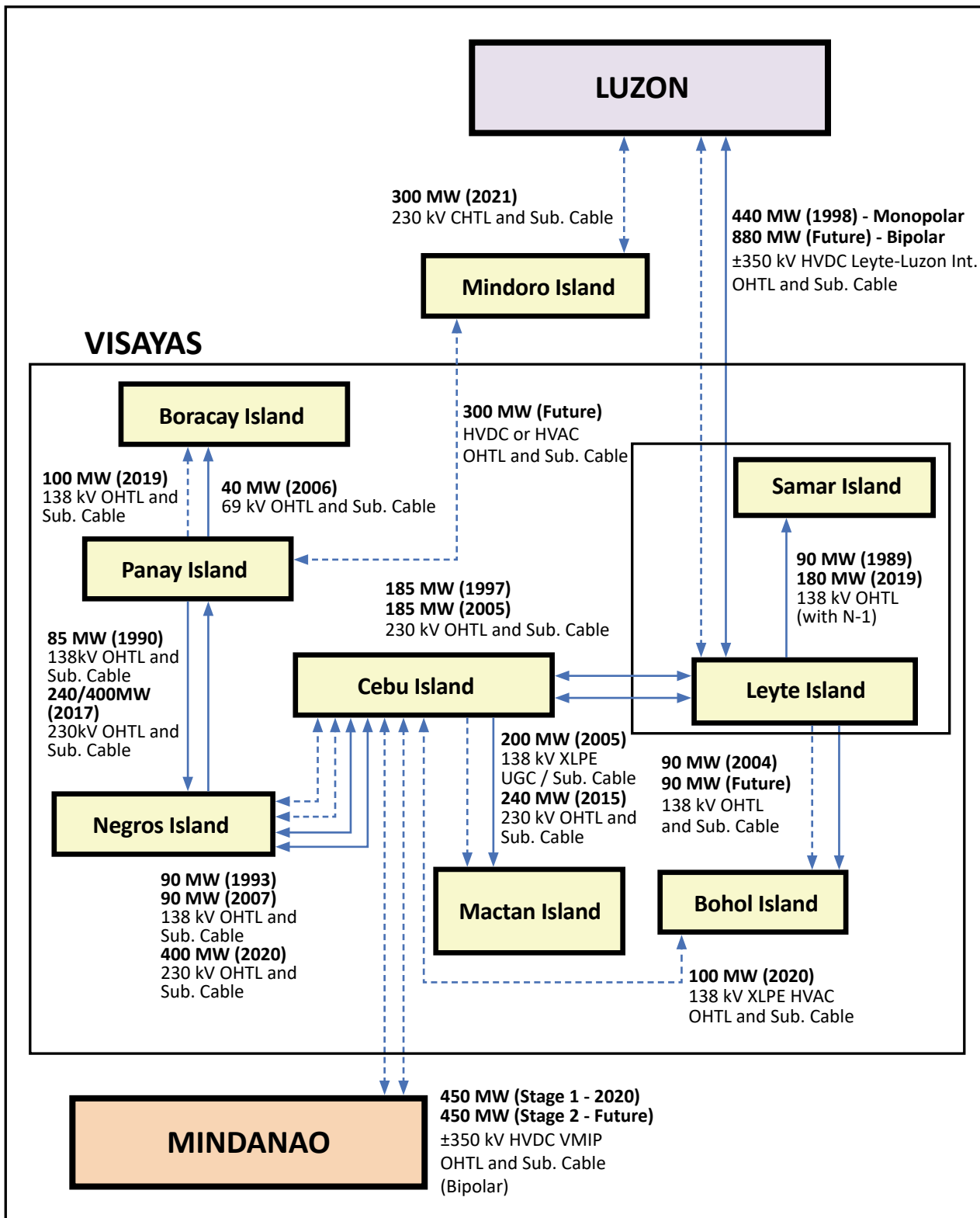


Figure 16. Existing and Future Philippine Network Topology

- Notes: OHTL – Overhead Transmission Line
- Sub. Cable – Submarine Cable
- UGC – Underground Cable
- N-1 – Single Outage Contingency

Source: EPIMB (as of June 2018)

Moreover, the existing distribution network consists of 121 electric cooperatives (ECs) operating nationwide which are under the supervision of the National Electrification Administration (NEA) and 23 private distribution utilities. The ECs are organized as private, non-stock, non-profit, non-political entities owned and operated by the consumers they serve.

On the other hand, the wholesale electricity spot market (WESM) has been established in Luzon and Visayas and is being operated by Independent Electricity Market Operator of the Philippines (IEMOP) which is governed by the Electricity Management Corporation (PEMC). As of September 2019, 271 participants have been registered which are detailed in Table 17.

Table 17. WESM Registration Update in Luzon and Visayas

Category	Registered						
	Total	Direct			Indirect		
		Luzon	Visayas	Mindanao	Luzon	Visayas	Mindanao
Generation Companies	123	80	39	3	1	0	0
Customers	148	44	38	5	52	7	2
Private distribution utilities & Local government utilities	17	8	4	0	5	0	0
Electric cooperatives	71	29	28	0	14	0	0
Directly Connected Customers	56	7	6	1	33	7	2
Wholesale aggregators	4	0	0	4	0	0	0
TOTAL	271	124	77	8	53	7	2

Source: PEMC (as of September 2019)

The establishment of the WESM in Mindanao continues at parallel operation program to assess the readiness of the Mindanao stakeholders and ensure the reliability and robustness of the market operation systems and interfaces with NGCP, generation companies, distribution utilities and directly connected customers.

POWER SUPPLY AND DEMAND OUTLOOK

Based on the available current capacity of 16,629 MW, Figure 18 shows that the country's power demand will continue its upward trend as we aggressively move towards industrialization and urbanization. The projections indicate a total additional capacity of 43,765 MW will be needed by 2040.

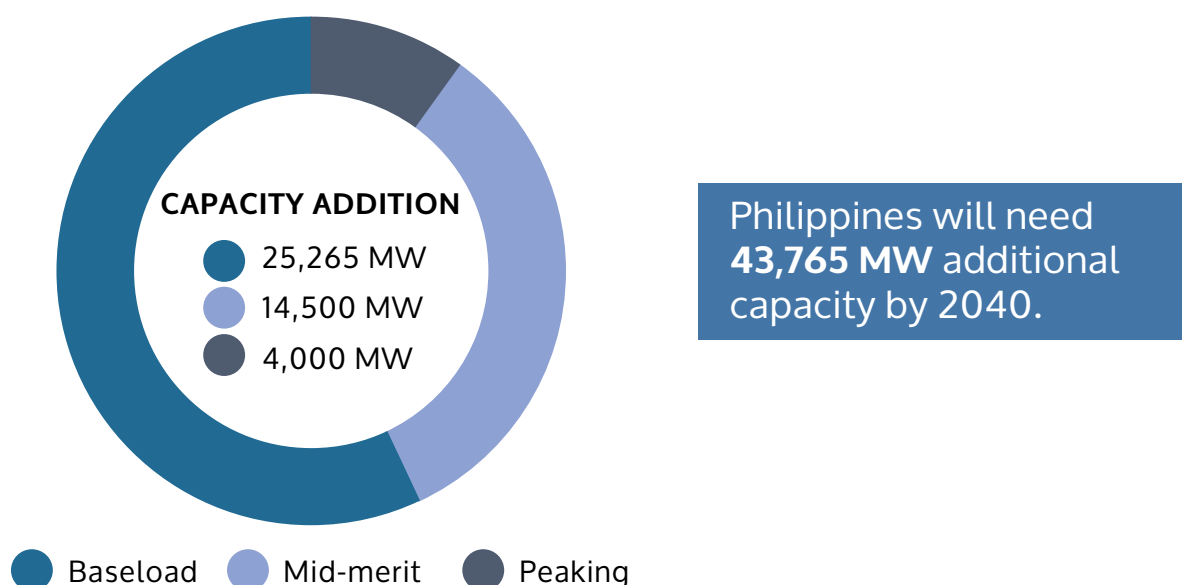


Figure 17. Philippines Demand and Supply Outlook (2016-2040)

Source: DOE Power Development Plan (PDP) 2016-2040

Luzon

The Luzon grid will be requiring 24,385 MW additional capacity by 2040 based on the 2013-2040 forecast in Figure 19. Further, 13,635 MW will be required from baseload plants, 8,300 MW from mid-merit plants and 2,450 MW from peaking plants.

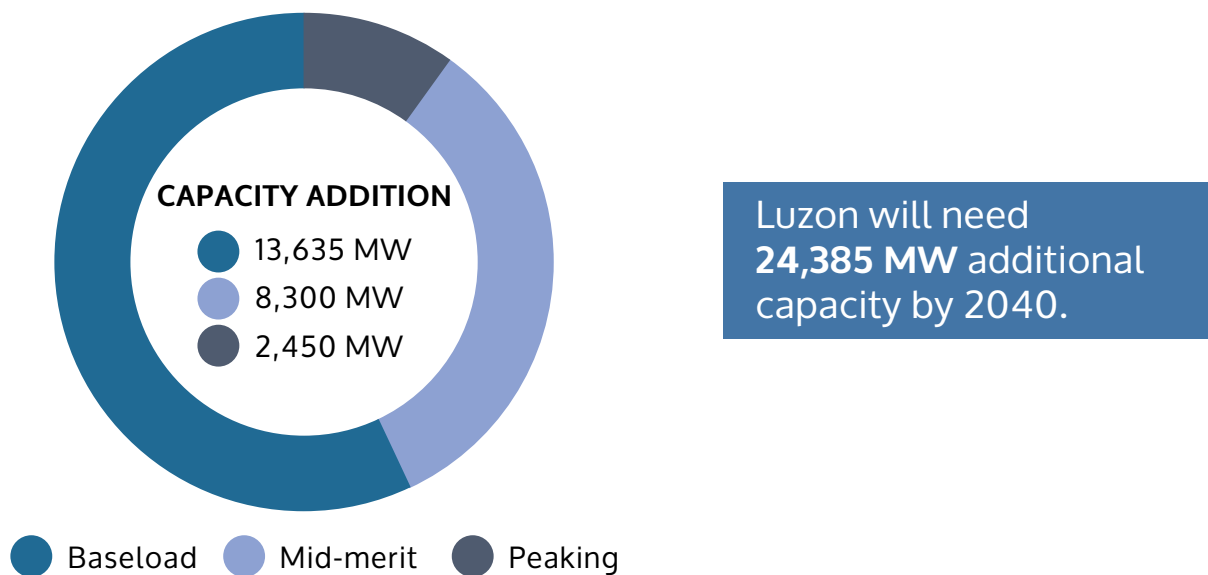


Figure 18. Luzon Demand and Supply Outlook (2016-2040)

Source: EPIMB

As of February 2019, there are 19 committed power projects with a capacity of 4,834.8 MW and 95 indicative projects with a total of 29,903.1 MW initiated by the private sector with the details provided in Table 18.

Table 18. Private Sector Initiated Power Projects in Luzon

Fuel Type	Committed			Indicative		
	No. of Projects	Capacity (MW)	% Share	No. of Projects	Capacity (MW)	% Share
Coal	6	3,950.0	81.7	7	8,935.0	29.9
Oil based	0	0	0	3	346.0	1.2
Natural Gas	1	650.0	13.4	5	5,860.0	19.6
Renewable Energy	17	234.8	4.9	80	14,762.1	49.4
Geothermal	1	31	0.6	1	250.0	0.8
Hydro	8	22.6	0.5	29	3,488.2	11.7
Biomass	7	66.2	1.4	11	116.0	0.4
Solar	1	115	2.4	32	8,929.5	29.9
Wind	0	0	0	7	1,978.4	6.6
TOTAL	19	4,834.8	100.0	95	29,903.1	100.0

Source: DOE List of Private Sector Initiated Power Projects (as of 28 February 2019)

Visayas

The Visayas grid will require 9,180 MW additional capacity by 2040 as shown in Figure 20 with 5,330 MW to be provided by baseload plants, 3000 by mid-merit plants, and 850 MW by peaking plants.

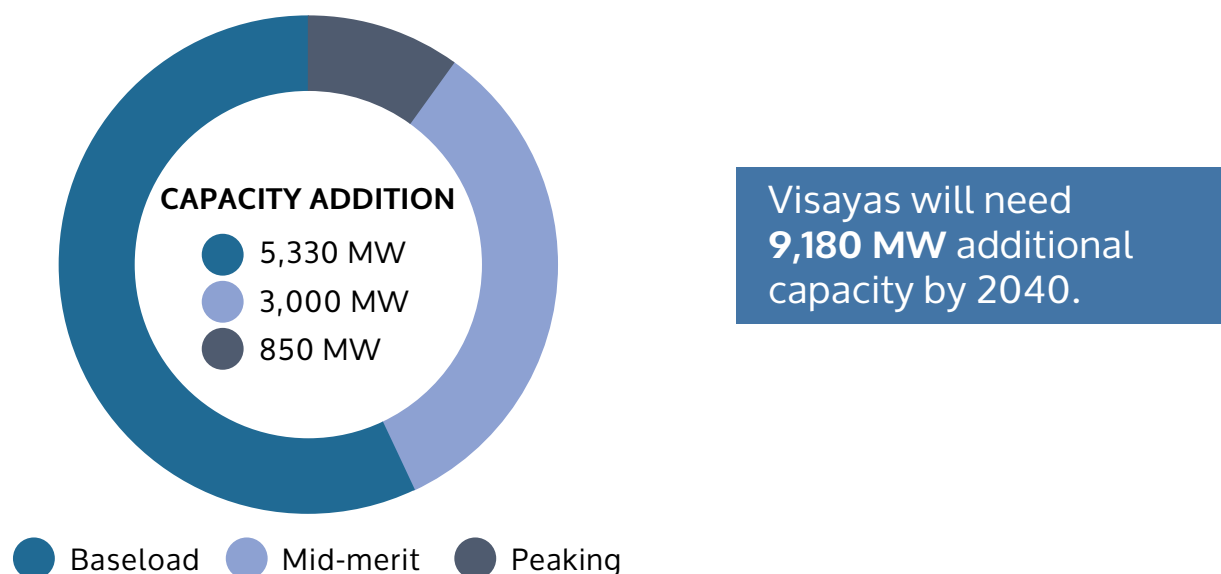


Figure 19. Visayas Demand and Supply Outlook (2016-2040)

Source: DOE Power Development Plan (PDP) 2016-2040

Currently there are 14 committed projects with a total capacity of 784.7 MW and 38 indicative power projects with 3,753.1 MW expected capacity which are summarized in Table 19.

Table 19. Private Sector Initiated Power Projects in Visayas

Fuel Type	Committed			Indicative		
	No. of Projects	Capacity (MW)	% Share	No. of Projects	Capacity (MW)	% Share
Coal	2	435.0	55.4	1	600.0	16.0
Oil based	1	70.0	8.9	3	81.5	2.2
Natural Gas	0	0	0	0	0	0
Renewable Energy	11	279.7	35.6	34	3,071.6	81.8
Geothermal	1	50.0	6.4	1	40.0	1.1
Hydro	2	23.1	2.9	13	728.2	19.4
Biomass	8	206.6	26.3	3	32.0	0.9
Solar	0	0	0	10	703.4	18.7
Wind	0	0	0	7	1,568.0	41.8
TOTAL	14	784.7	100.0	38	3,753.1	100.0

Mindanao

In spite of the new capacities installed in Mindanao, the grid will still need 10,200 MW additional capacity with 6,300 MW baseload requirement, 3,200 mid-merit, and 700 MW peaking plants as indicated in Figure 21.

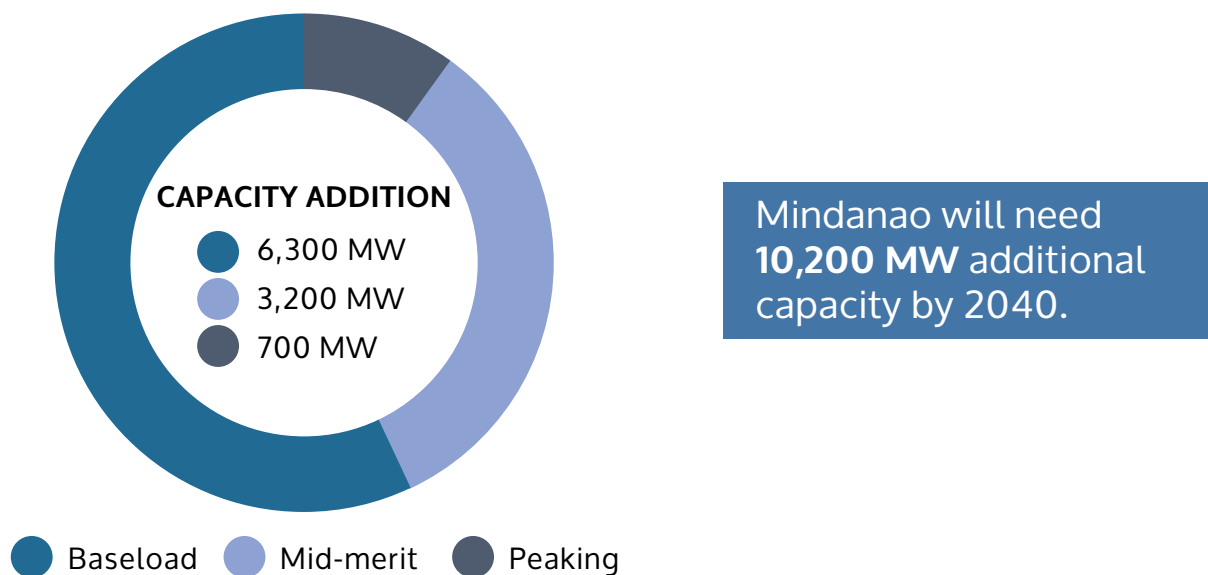


Figure 20. Mindanao Demand and Supply Outlook (2016-2040)

Source: DOE Power Development Plan (PDP) 2016-2040

There are 11 committed projects in the pipeline with a total capacity of 779.3 MW and 41 indicative power projects with an aggregate capacity of 2,895.4 MW in Mindanao as listed in Table 20.

Table 20. Private Sector Initiated Projects in Mindanao

Fuel Type	Committed			Indicative		
	No. of Projects	Capacity (MW)	% Share	No. of Projects	Capacity (MW)	% Share
Coal	2	700.0	89.8	3	1,333.0	46.0
Oil based	0	0	0	1	5.8	0.2
Natural Gas	0	0	0	0	0	0
Renewable Energy	8	79.3	10.2	38	1,556.6	53.8
Geothermal	0	0	0	1	30.0	1.0
Hydro	3	33.0	4.2	12	603.2	20.8
Biomass	4	21.4	2.7	7	119.4	4.1
Solar	1	25.0	3.2	18	804.0	27.8
Wind	0	0	0	0	0	0
TOTAL	11	779.3	100.0	41	2,895.4	100.0

Ideal Location of Power Plants

Information on the existing transmission lines and the projects in the pipeline which recommend potential sites in the country are crucial in the identification of an appropriate site for a power plant. Figures 21, 22 and 23 provide recommended connection points in Luzon, Visayas, and Mindanao where new power plants may connect without the need for any significant transmission

reinforcement as identified by NGCP. However, other information should be gathered such as fuel supply/transport, topology/geology of site, accessibility, availability of the area, availability of cooling water, fresh water supply, security, and environmental concerns. In addition, Figure 24 shows NGCP's major transmission projects.

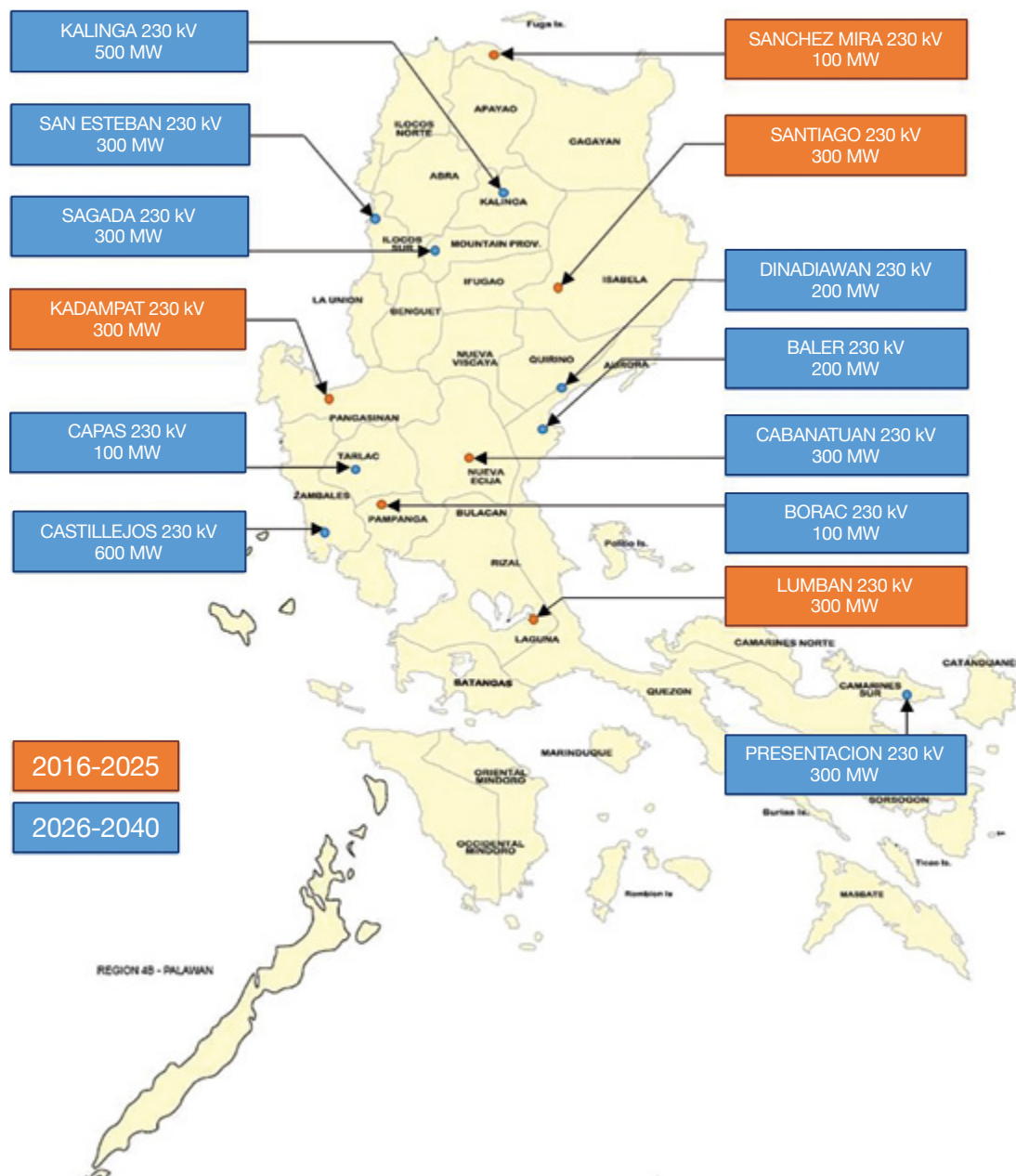


Figure 21. Recommended Power Plant Connection Points in Luzon

Source: 2016-2040 Transmission Development Plan

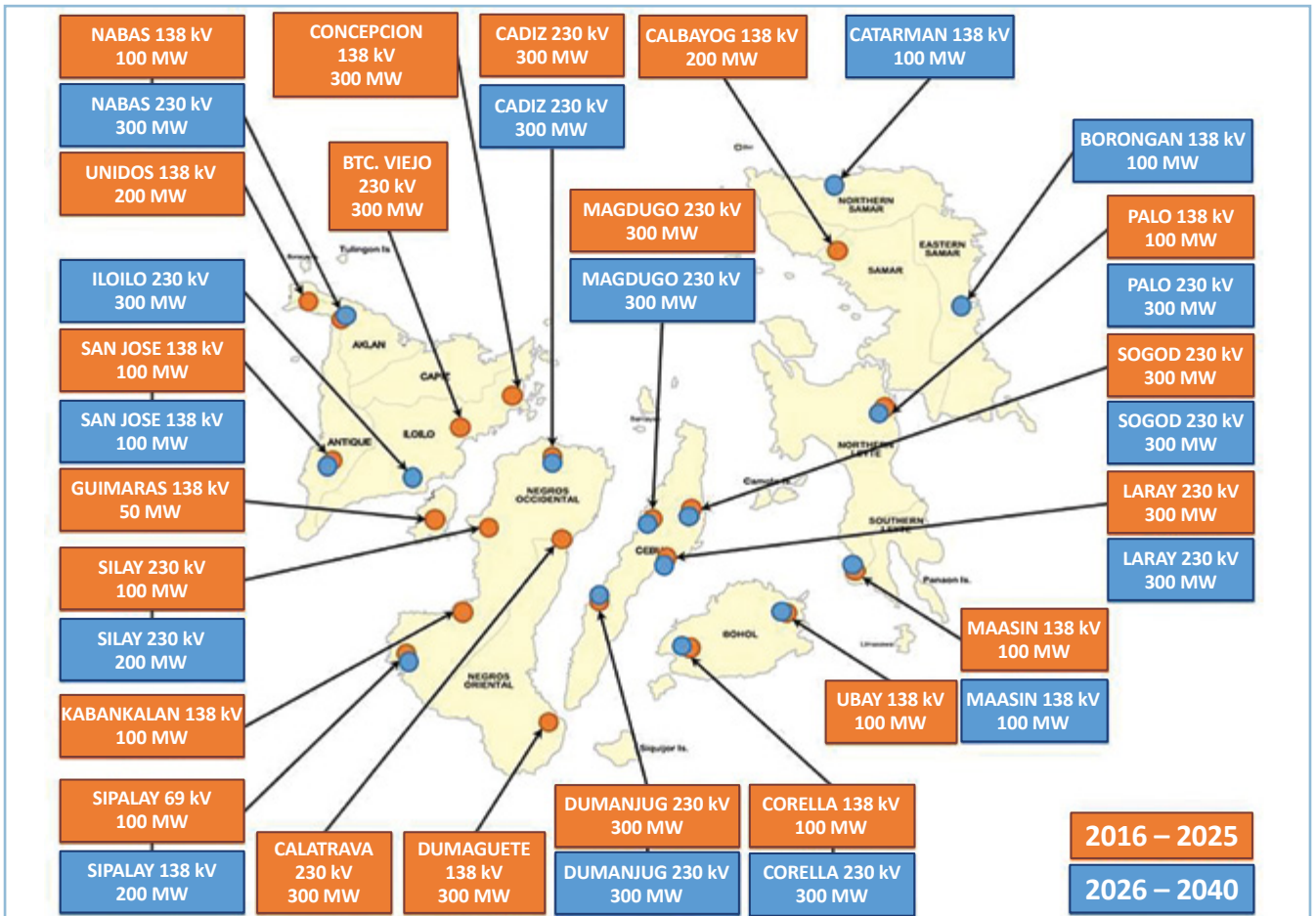


Figure 22. Recommended Power Plant Connection Points in Visayas

Source: 2016-2040 Transmission Development Plan

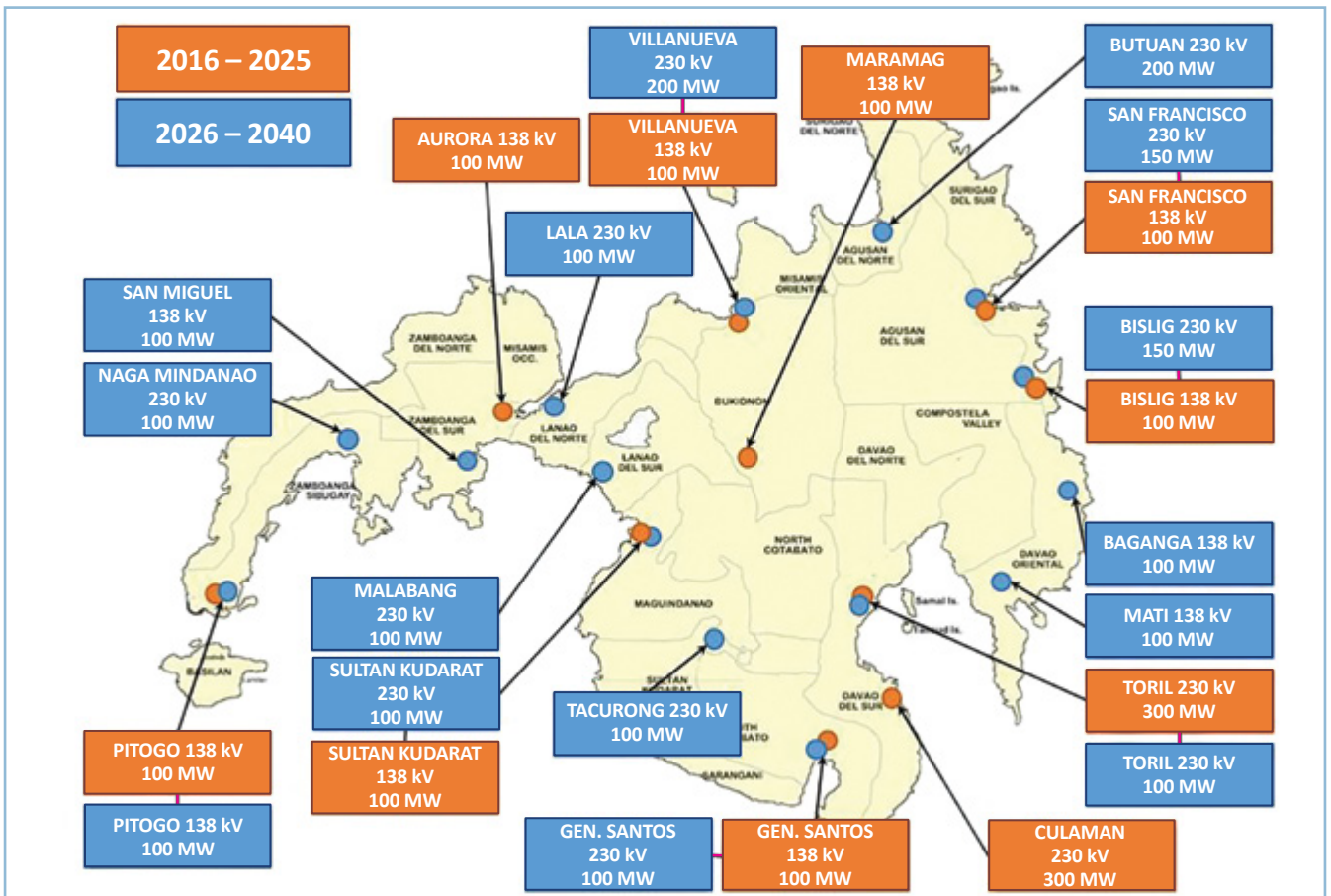


Figure 23. Recommended Power Plant Connection Points in Mindanao

Source: 2016-2040 Transmission Development Plan

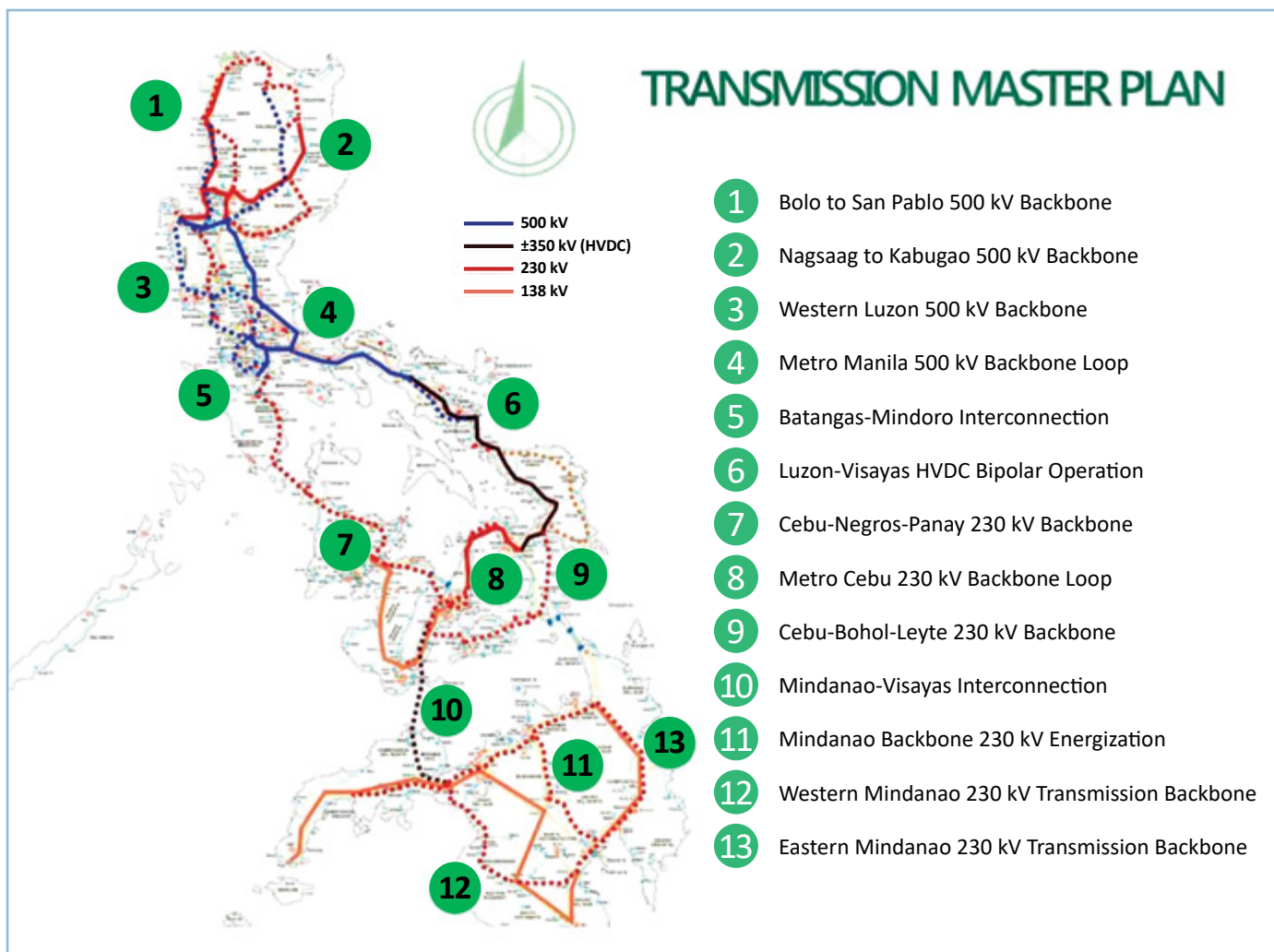


Figure 24. NGCP's Transmission Backbones and Island Interconnections

Source: NGCP's Transmission Plan

As of September 2019, Tables 21 and 22 show the Power Sector Assets and Liabilities Management Corporation (PSALM)'s assets for privatization and its indicative privatization schedule.

Table 21. Government-owned Generating Plants

Asset Type/ Plant Name	Rated Capacity	Bid/ Turnover Date
Malaya Thermal	650.00	2019
Agus 1 & 2 Hydro	260.00	For rehabilitation Privatization is subject to consultation with Congress and PSALM Board's policy direction
Agus 4 & 5 Hydro	213.10	
Agus 6 & 7 Hydro	273.00*	
Pulangui Hydro	255.00	

*Capacity increased by 19 MW as a result of Agus VI Units 1 & 2 Uprating

Source: Power Sector Assets and Liabilities Management (PSALM) Corporation (as of September 2019)

Table 22. Independent Power Producer (IPP) Plants

Grid	Plant Name	Contracted Capacity (MW)/ Energy (GWh)	Bid/ Turnover Date
Luzon Grid	Casecnan Multi- Purpose Hydro	228.00 GWh	2021
	Caliraya - Botocan- Kalayaan Hydro	797.92 MW	2022
Mindanao Grid	Mindanao Coal-Fired	200.00 MW	2023

Source: PSALM Corporation (as of September 2019)

Supply Sector

Pursuant to Section 31 of the EPIRA, the implementation of Retail Competition and Open Access (RCOA) envisions to put in place a level playing field where suppliers of electricity compete to serve the contestable market based on merit and value being offered.

In June 2013, end-users with monthly average peak demand of at least 1 MW were classified as contestable customers and were allowed to choose their own supplier of electricity. The threshold level was lowered down to 750 kW extending the retail electricity market to more end-users.

Suppliers of electricity in the contestable market are classified either Retail Electricity Suppliers (RES) or Local Retail Electricity Suppliers (LRES). RES are entities authorized to sell, broker, market or aggregate electricity to the contestable customers; while LRES is a non-regulated business segment of a Distribution Utility catering to contestable market only in its franchise area.

In addition, Supplier of Last Resort (SOLR) are entities duly designated to serve Contestable Customers following a Last Resort Supply Event, while, Retail Metering Service Provider (RMSP) are entities owning the billing and the associated metering equipment.

Table 23. RCOA Registered Members

Membership Category	Prospective			Registered			
	June 2013	Oct 2019	Increase	June 2013	Oct 2019	Increase	
Contestable Customers	D ≥ 1MW	892	1,356	52%	239	1,087	355%
	750kW ≥ D > 1MW	0	528		0	301	-
	TOTAL	892	1,884	111%	239	1,388	481%
Suppliers	RES	19	31	63%	15	31	107%
	LRES	13	25	92%	3	14	367%
	TOTAL	32	56	75%	18	45	150%
SOLR	9	47	422%	0	25	-	
RMSP	28	48	71%	18	52	189%	
GRAND TOTAL	961	2,035	112%	275	1,510	449%	

Source: ERC and Central Registration Body (as of October 2019)

As of October 2019, the total prospective participants increased to 2,035 (112% greater than that of June 2013), and is comprised of 1,884 CCs, 56 Suppliers, 47 SOLR, and 48 RMSP. Of the CCs, 1,356 are within 1MW threshold level while 528 are within 750kW-1MW. Of the Suppliers, 31 are RES and 25 are LRES.

Table 24. Market Share Determination Per Grid and National Grid

Grid	Installed Generating Capacity (MW)	% Market Share Limitation as per R.A. 9136	Installed Generating Capacity Limit (MW)
Luzon	15,350,824	30%	4,605,247
Visayas	3,031,458	30%	909,437
Mindanao	3,420,818	30%	1,026,245
Philippines	21,803,100	25%	6,540,929

Source: ERC as of June 2019

Qualified Third Party (QTP)

DC2005-12-011 defines QTP as an alternative service provider that meets the standards and is chosen in accordance with the said circular and is duly qualified and authorized by the Energy Regulatory Commission to serve Unviable Areas pursuant to Section 59 of the EPIRA and Rule 14 of the EPIRA-IRR.

Table 25. Operational Qualified Third Parties Providing 24/7 Electricity Service to their Subject Areas

Project Location	Technology	Target Households	Proponent	Status	Tariff
Rio Tuba, Bataraza, Palawan	1.05 MW Diesel - Biomass	1,744	PSPI	Operational, Authority to Operate (ATO) issued by ERC, 2010	FCRR = Php24.4449/kWh SARR = PhP8.50/kWh
Malapascua, Daan-Bantayan, Cebu	750 kW Diesel	771	PSPI	Operational, Permanent ATO issued by ERC, 2016	FCRR = PhP24.6137/kWh
Sabang, Puerto Princesa City, Palawan	Hybrid : 1.4 MW Solar + 1.2 MW Diesel + 2.3 MWh Battery	683	SREC	Authority to Operate (ATO) issued by ERC 05 October 2016	SARR = PhP12/kWh Residential & Public Bldgs PhP15/kWh Commercial Bldg.
Candawaga & Culasian, Rizal, Palawan	268 kW Diesel	998	PSPI	Interim Relief , April 2018	FCRR = PhP30.4868/kWh SARR = PhP9.9082/kWh
Liminangcong, Taytay, Palawan	108 kW Diesel	709	PSPI	Provisional ATO issued by ERC, 2016	FCRR = PhP36.25kWh SARR = 9.12kWh

Source: EPIMB (as of September 2019)

Table 26. Qualified Third Parties with Authority to Operate from ERC but not yet Operational

Project Location	Technology	Target Households	Proponent	Status	Tariff
Balut Island, Saranggani, Davao Occidental	690 kW Diesel	3570	PSPI	Interim Relief, April 2018	FCRR = PhP33.9905/kWh
Lahuy Island, Haponan Island in Municipality of Caramoan and Quinasalag Island in the Municipality of Garchitorena, Camarines Sur	Lahuy Island: 246 kWp Solar + 400 kW Diesel + 79kWh Battery	771	PSPI	Operational, Permanent ATO issued by ERC, 2016	FCRR = PhP24.6137/kWh

Source: EPIMB (as of September 2019)

Table 27. Qualified Third Parties Awaiting for ERC Issuance of Authority to Operate and Schedule for Expository Hearing

Project Location	Technology	Target Households	Proponent	Status	Tariff
Brgy. Poblacion, Dumarang, Palawan	Hybrid: 132.8 kWp Solar + 144 kW Diesel + 351.1 kWh Battery	331	PSPI	Endorsed to ERC (18 March 2019)	-
Brgy. Manamoc, Cuyo, Palawan	216 kW Diesel	560	PSPI	Endorsed to ERC (18 March 2019)	-
Brgy. Port Barton, San Vicente, Palawan	Hybrid: 200 kWp Solar + 609.5 kW Diesel + 200 kWh Battery	900	PSPI	Endorsed to ERC (18 March 2019)	-

Source: EPIMB (as of September 2019)

ALTERNATIVE FUELS SECTOR

INDUSTRY PROFILE

In pursuit of improving the country's energy security, the DOE continuously implements plans and programs to promote the utilization of indigenous and locally available source of energy in the country. The utilization of Alternative Fuels and New and Emerging Technologies contributes to the Department's goal of an effective fuel diversification.

The implementation of Alternative Fuels Programs of the Department aims to promote and mainstream alternative fuel vehicles (AFVs) and new and emerging technologies (NEETs) in the country. This initiative was realized through the successful implementation of projects related to alternative fuels for transportation and next-generation vehicles.

In 2013, the Government of Japan (GOJ) provided next generation vehicles to the Philippine Government through the Japan Non-Project Grant Aid (NPGA) for the Introduction of Japanese Advanced Products and its System for the Republic of the Philippines (Next Generation Vehicle Package). The Japan NPGA is designed to support the economic and

social advancement of developing countries through the provision of Japanese next-generation vehicles. The grant-aid supports and complements the government's rehabilitation and reconstruction efforts in areas affected by Typhoon Yolanda.

The vehicles provided by the GOJ are as follows: Seventy-seven (77) hybrid electric vehicles (HEVs), four (4) plug-in hybrid electric vehicles (PHEVs), and four (4) electric vehicles (EVs). The grant-aid also includes three (3) fast charging stations situated in the premises of the DOE, the Department of Science and Technology (DOST) and the Office of the President (OP).

The target beneficiaries of the said grant-aid include the Philippine National Police (PNP) of the Provinces of Leyte and Samar, Regional Offices of partner National Government Agencies (NGAs) in Region 8 that are instrumental to emergency response operations and rehabilitation, and partner NGAs in the National Capital Region (NCR).



Figure 25. Sample unit of the patrol vehicle that was donated to PNP Region 8

Source: EUMB

INVESTMENT OPPORTUNITIES

In partnership with the Asian Development Bank (ADB), the DOE deployed three thousand (3,000) locally-made electric tricycles (e-trikes) under the Market Transformation through the Introduction of Energy Efficient Electric Vehicles Project. The units were provided to qualified LGUs and NGAs who were able to comply and meet the documentary requirements set by the DOE and ADB.

The project aims to catalyze the market and entice investors to create new businesses that will support the establishment of the EV Industry in the country. This include charging infrastructures, repair and maintenance services, manufacturing/assembly plants, spare parts, and supply chain.

Known recipients of the e-trike project are thye areas in the country with ongoing efforts from the government.

The DOE donated two hundred (200) e-trike units to the war stricken Marawi City. This provided livelihood to the displaced residents of the city.

In addition, two hundred (200) units were donated to the Department of Transportation (190 units) and the Department of Tourism (10 units) for the rehabilitation of the famous Boracay Island.

In 2016, there are forty-six (46) firms engaged in the EV industry with an initial investment of almost Php 1.2 Billion producing 9,000 units of EVs and giving an estimated 14,000 jobs to the Filipinos. More than 200,000 EVs are being envisioned by the Electric Vehicles Association of the Philippines (EVAP) to be on the road by year 2021 covering all types of EVs such as e-trikes, e-jeeps, e-shuttles, e-buses and e-cars for both public and private transportation as indicated in Table 28.

Table 28. Electric Vehicle Market Projection (2019-2021)

Vehicle Type	No. of Units Per Year			TOTAL
	2019	2020	2021	
E-Trikes*	2,952	1,597	1,758	6,307
E-Quads**	45	50	55	150
E-Jeeps	65	70	80	215
Other EVs (bus, trucks, etc.)	30	33	37	100

Source: EVAP and Philippine Electric Vehicle Industry Domestic Market Projection

Notes:

- * Inclusion of the 3,000 e-trikes under the DOE E-Trike Project
- ** Defined as four-wheeled light electric vehicle for demonstration and non-commercial use



Figure 26. (Left) Actual photo of e-trike unit that was deployed to various cities and municipalities in the Philippines(Right) Pure Electric Vehicle that was part of the Japan Non-Project Grant Aid (NPGA)

Source: EUMB



ENERGY EFFICIENCY SECTOR

INDUSTRY PROFILE

The country places importance in reducing excessive energy consumption across all sectors through strategic and pragmatic approaches towards human development and green growth. The Energy Efficiency Programs and Projects leads us to achieving our mission to improve the quality of life of the Filipino by formulating and implementing policies and programs to ensure sustainable, stable, secure, sufficient accessible and reasonably-priced energy.

It is recognized that Energy Efficiency (EE) opportunities abound in industrial, commercial and institutional sectors in the country. One approach in implementing EE measures is through an Energy Service Company (ESCO).

ESCOs differ from Architectural and Engineering (A&E) firms since they can also provide assistance to arrange financing, maintain equipment and guarantee project performance or savings.

The promotion of ESCOs in the country can create accurate and achievable energy-saving projects from various stakeholders, reducing the financial and technical burden in undertaking retrofitting/improving EE.

As shown in Figure 27, ESCOs intend to contribute towards establishing or enhancing collaboration and partnership among organizations for the promotion and adoption of EE products and technology to include services, which are meant to create or facilitate business opportunities.

INVESTMENT OPPORTUNITIES

The Energy Service Companies (ESCOs)

An ESCO is a company that provides energy services by developing and implementing comprehensive energy efficiency projects. It also offers project engineering design, financing, project management and after performance-based project approach.

ESCOs demonstrate the ability to provide the full range of services required for a comprehensive energy efficiency project including:

- Energy audits;
- Construction management services, including preparation of performance specifications, project design, and project commissioning;
- Providing and arranging project financing;
- Project monitoring and guarantee of energy savings; and
- Equipment maintenance and operations.

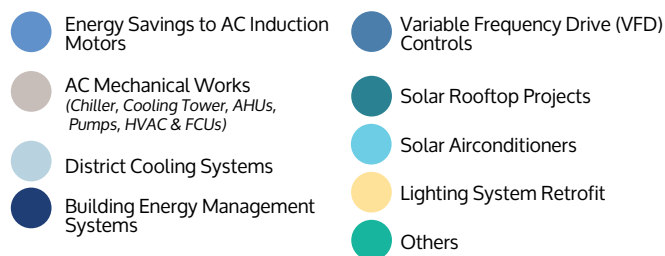
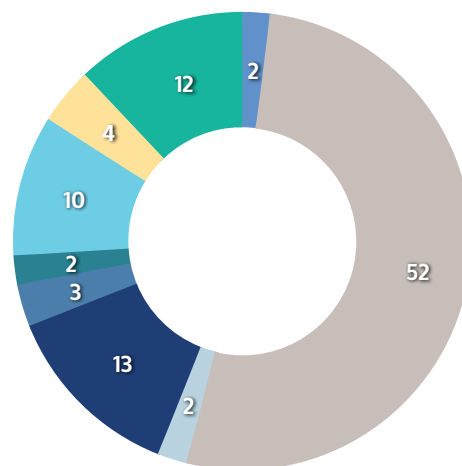


Figure 27. ESCO Projects Breakdown

Source: EUMB as of November 2018

DOE ESCO Accreditation

The DOE ESCO Accreditation System was established to create a register of Certified ESCOs and enhance the professionalism of their practices. The other intended benefits of the system are to ease the implementation of effective energy efficiency projects in various sectors and to monitor the contributions of energy efficiency and conservation in reducing energy demand. For more details on ESCO Accreditation requirements, checklist, and templates, visit <https://www.doe.gov.ph/energy-efficiency/esco-accreditation-requirements-checklist-and-templates>.

Advantages of a DOE Certified ESCO

A DOE Certified ESCO ensures that the ESCO is financially stable and recognized as a legitimate business entity in the Philippines. Furthermore, the certification signifies that an ESCO is qualified to deliver relevant energy projects by way of possessing the required technical expertise, skilled manpower and essential measuring tools/equipment.

As of November 2018, the DOE Accredited ESCOs are as follows:

1. Delta Dore, Inc.
2. TREES Corporation
3. Cofely Philippines
4. Cushman and Wakefield Philippines, Inc.
5. Westco Electrical & Equipment Corporation
6. PNOC-Exploration Corporation
7. Econoserv Solutions International, Inc.
8. Thermal Solutions, Inc.
9. OSP-ESCO International, Inc.
10. Orion Group International, Inc.
11. Meralco Energy, Inc.
12. Hi-Cool Engineering Corporation
13. PNOC - Renewables Corporation
14. Upgrade Energy Philippines, Inc.
15. Digital Marketing
16. Azbil Philippines Corporation

The Energy Efficiency and Conservation Act

Republic Act 11285 entitled "An Act Institutionalizing Energy Efficiency and Conservation, Enhancing the Efficient Use of Energy, and Granting Incentives to Energy Efficiency and Conservation Projects" or the Energy Efficiency and Conservation Act of 2019 was signed into law on 12 April 2019. The Implementing Rules and Regulations (DC2019-11-0014) of the Act took effect on 21 December 2019.

It aims to enhance the stability and sustainability of the country's energy supply by institutionalizing energy efficiency and conservation (EE&C) within the daily functions of all energy-consuming sectors, government and private alike.

The Law shall also push for the shift to energy efficient technologies and alternations by encouraging energy efficiency projects and measures through the initiatives of LGUs, building energy managers, NGAs, and the private sector. Furthermore, the Law shall promote energy efficiency projects by providing fiscal and non-fiscal incentives to establishments and businesses involved in the said undertakings.

EXISTING INCENTIVES IN THE ENERGY SECTOR

Under Book I of E.O. 226 or the Omnibus Investments Code of 1987, a qualified enterprise may enjoy certain benefits and incentives provided it invests in preferred areas of investments enumerated in the Investment Priorities Plan (IPP). The plan is issued annually by the BOI and contains the list of areas of investments eligible for government incentives.

Upon registration with BOI, a qualified enterprise is entitled to the following fiscal and non-fiscal incentives:

Fiscal Incentives:

- Income tax holiday;
- Exemption from taxes and duties on imported spare parts;
- Exemption from wharfage dues and export tax, duty, impost and fees;
- Modified duty rate for capital equipment by virtue of E.O. 313;
- Tax credits; and,
- Additional deductions from taxable income.

Non-fiscal incentives:

- Employment of foreign nationals;
- Simplification of customs procedures;
- Importation of consigned equipment; and,
- The privilege to operate a bonded manufacturing/ trading warehouse subject to custom rules and regulations.

OIL AND GAS

Presidential Decree (PD) No. 87 or the Oil Exploration and Development Act of 1972 provides the legal basis for the exploration and development of indigenous petroleum resources in the country by authorizing the grant of service contracts entered into through public bidding or through negotiations.

- Exemption from payment of tariff duties and compensating tax on the importation of machinery and equipment, and spare parts and all materials required for petroleum operations;
- Reimbursement of operating expenses of up to 70% of gross proceeds from production with carry-forward of unrecovered costs;
- Service fee of up to 40% of net production income;

- FPIA of up to 7.5% of the gross proceeds for service contract with minimum Filipino company participation of 15%;
- Exemption from all taxes except income tax;
- Easy repatriation of investments and profits;
- Income tax obligation paid out of government's share;
- Special income tax of 8% gross Philippine income for subcontractors; and,
- Free market determination of crude oil prices, i.e., prices realized in a transaction between independent persons dealing at arm-length.

COAL

P.D. 1174 amending P.D. 972, otherwise known as "The Coal Development Act of 1976" provides for the following incentives to prospective coal operators:

- Recovery of operating expenses not exceeding 90% of the gross proceeds from production in any year with carry forward of unrecovered cost;
- Special allowance of up to 40% of the net proceeds;
- Exemption from all taxes except income tax;
- Exemption from payment of tariff duties and compensating tax on the importation of machinery, equipment, spare parts and all materials for coal operations;
- Entry of alien technical and specialized personnel; and,
- Right of ingress to and egress from the COC area.

RENEWABLE ENERGY

R.A. 9513 or "An Act promoting the development, utilization and commercialization of renewable energy resources and for other purposes" provides for the following incentives both for power and non-power applications. Incentives will be in proportion to and to the extent of the RE component.

Incentives for Renewable Energy Projects and Activities

- Income tax holiday for the first seven (7) years of its commercial operations;
- Duty-free importation of RE machinery,

equipment and materials including control and communication equipment within the first ten (10) years upon the issuance of a certification of an RE developer;

- Special realty tax rates on equipment and machinery, and other improvements of a Registered RE Developer actually and exclusively used for RE facilities shall not exceed 1.5% of their original cost less accumulated normal depreciation or net book value;
- Net operating loss of the RE Developer during the first three (3) years from the start of the commercial operation which had not been previously deducted from gross income for the next seven (7) consecutive taxable years immediately following the year of such loss (NOLCO);
- Corporate tax rate. After seven (7) years of ITH, all RE Developers shall pay a corporate tax of 10% on its net taxable income;
- Accelerated Depreciation of plant, machinery and equipment may be applied if the project fails to receive an ITH before full operation;
- Zero Percent Value-Added Tax Rate. The sale of fuel or power generated from renewable sources of energy such as, but not limited to, biomass, solar, wind, hydropower, geothermal, ocean energy and other emerging energy sources using technologies such as fuel cells and hydrogen fuels, shall be subject to 0% VAT. Purchases of local supply of goods, properties and services needed by RE developers in the development, construction and installation of its plant facility as well as exploration and development of RE resources and its conversion into power shall be entitled to zero-rated value added tax;
- Tax Exemption of Carbon Credits. All proceeds from the sale of carbon emission credits shall be exempt from any and all taxes;
- Cash Incentive of Renewable Energy Developers for Missionary Electrification. An RE Developer established after the effectivity of this Act, shall be entitled to a cash generation-based incentive per kilowatt-hour rate generated, equivalent to 50% of the universal charge for power needed to service missionary areas where it operates the same, to be chargeable against the universal charge for missionary electrification; and,
- Tax Credit on Domestic Capital Equipment and Services. A tax equivalent to 100% of the value of the VAT and custom duties that would have been paid on the RE machinery, equipment, materials and parts had these items been imported shall be given to an RE

operating contract holder who purchases from a domestic manufacturer.

Exemption from the Universal Charge

Power and electricity generated through the RES for the generator's own consumption and/or for free distribution in the off-grid areas shall be exempted from the payment of the Universal Charge.

Payment of Transmission Charges

A registered RE Developer producing power and electricity from an intermittent RE resource may opt to pay the transmission and wheeling charges of TransCo or its successors-in-interest on a per kilowatt-hour basis at cost equivalent to the average per kilowatt-hour rate of all other electricity transmitted through the grid.

Hybrid and Cogeneration Systems

The tax exemptions and/or incentives shall be availed of by registered RE Developer of hybrid and cogeneration systems utilizing both RE sources and conventional energy: Provided however that the tax exemptions and incentives shall apply only to the equipment, machinery and/or devices utilizing RE resources.

Intermittent RE Resources

TRANSCO or its successors-in-interest, in consultation with stakeholders, shall determine the maximum penetration limit of the intermittent RE-based power plants to the Grid, through technical and economic analysis. Qualified and registered RE generating units with intermittent RE resources shall be considered "must dispatch" based on available energy and shall enjoy the benefit of priority dispatch. All provisions under the WESM rules, Distribution and Grid Codes which do not allow "must dispatch" status for intermittent RE resources shall be deemed amended or modified.

Incentives for RE Commercialization

All manufacturers, fabricators and suppliers of locally-produced RE equipment and components duly recognized and accredited by the DOE, in consultation with DOST, DOF and DTI, shall, upon registration with the BOI, be entitled to the following privileges:

BIOFUELS

- Tax and Duty-free Importation of Components, Parts and Materials. All shipments necessary for the manufacture and/or fabrication of RE equipment and components shall be exempted from importation tariff and duties and VAT;
- Tax Credit on Domestic Capital Components, Parts and Materials. A tax equivalent to 100% of the amount of the VAT and custom duties that would have been paid on the components, parts and materials had these items been imported shall be given to an RE equipment manufacturer, fabricator, and supplier for the manufacture, fabrication and sale of the RE equipment;
- Zero-rated VAT transactions. All manufacturers, fabricators and suppliers of locally produced renewable energy equipment shall be subject to zero-rated VAT on its transactions with local suppliers of goods, properties and services; and
- Income Tax Holiday and Exemption. For seven (7) years starting from the date of recognition/accreditation, an RE manufacturer, fabricator and supplier of RE equipment shall be fully exempt from income taxes levied on net income derived only from the sale of RE equipment, machinery, parts and services.

Incentives for Farmers Engaged in the Plantation of Biomass Resources

For a period of ten (10) years after the effectivity of this Act, all individuals and entities engaged in the plantation of crops and trees used as biomass resources such as but not limited to jatropha, coconut, and sugarcane, as certified by the DOE, shall be entitled duty-free importation and be exempted from VAT on all types of agricultural inputs, equipment, machinery such as, but not limited to, fertilizer, insecticide, pesticide, tractor, trailers, trucks, farm implements and machinery, harvesters, threshers, hybrid seeds, genetic materials, sprayers, packaging machinery and materials, bulkhandling facilities, such as conveyors and mini-loaders, weighing scales, harvesting equipment, and spare parts of all agricultural equipment.

Tax Rebate for Purchase of RE Components

To encourage the adoption of RE technologies, the DOF, in consultation with DOST, DOE, and DTI, shall provide rebates for all or part of tax paid for the purchase of RE equipment for residential, industrial, or community use. The DOF shall also prescribe the appropriate period for granting the tax rebates.

R.A. 9367 known as the "Biofuels Act of 2006" provides that production, distribution and use of locally-produced biofuels at and above the minimum mandated blends, without prejudice to enjoying applicable incentives and benefits under existing laws, rules and regulations, the following additional incentives are hereby provided under this Act:

- Income tax holiday;
- Exemption from taxes and duties on imported spare parts;
- Exemption from wharfage dues and export tax, duty, impost and fees;
- Modified duty rate for capital equipment under E.O. 528;
- Tax credits;
- Specific tax on local or imported biofuels component, per liter of volume shall be zero. The gasoline and diesel fuel component shall remain subject to the prevailing specific tax rates.
- The sale of raw material used in the production of biofuels such as, but not limited to, coconut, jatropha, sugarcane, cassava, corn and sweet sorghum shall be exempt from the value added tax (VAT);
- All water effluents, such as, but not limited to distillery slops from the production of biofuels used as liquid fertilizer and for other agricultural purposes are considered "reuse", and are therefore exempt from wastewater charges under the system provided under Sec. 13 of RA 9275, also known as the Philippine Clean Water Act; and
- Financial Assistance. Government financial institutions, such as DBP, LBP, Quedancor and other government institutions providing financial services shall, in accordance with and to the extent allowed by the enabling provisions of their respective charters or applicable law, accord high priority to extend financing to Filipino citizens or entities, at least sixty percent of the capital stock of which belongs to citizens of the Philippines that shall engage in activities involving production, storage, handling and transport of biofuel and biofuel feedstock, including the blending of biofuels with petroleum, as certified by the DOE.

COMPRESSED NATURAL GAS

Section 5 of E.O. 290 "Implementing the NGVPPT" provides for the following privileges and incentives that may be availed of by NGVPPT participants:

- Preferential and exclusive franchises from the Land Transportation Franchising Regulatory Board (LTFRB) for NGVs to newly opened routes;
- Issuance by the Land Transportation Office (LTO) Certificates of Compliance with Emissions Standards to NGVs;
- Income tax holiday for pioneering projects qualifying under the BOI Investments Priorities Plan;
- 1% rate of duty on imported NGVs, NGV engines and other NGV industry related equipment, facilities, parts and components as certified by the DOE;
- Accelerated issuance by the DENR of Environmental Compliance Certificate (ECC) for NGV facilities and refueling stations;
- Affordable and commercially tenable financial packages from Government Financing Institutions (GFIs); and
- Manpower development and capability building through training and technology transfer programs;
- Attractive CNG prices which translate to a discount to diesel prices; and,

NATURAL GAS

Under P.D. 87, otherwise known as "The Oil Exploration and Development Act of 1972", the following incentives may be availed of by prospective service contractors in the natural gas industry, to wit:

- Service fee of up to 40% of net production income;
- Reimbursement of operating expenses of up to 70% of gross production income with carry-forward of unrecovered cost;
- 7.5% participation incentive allowance for local investors;
- Exemption from all taxes except income tax;
- Exemption from payment of tariff duties and compensating tax on the importation of machinery and equipment, and spare parts and all materials required for operations subject to the conditions that said machinery, equipment, and spare parts and materials of comparable price and quality are not manufactured domestically;

- Tax and duty-free importation of materials and equipment; and
- Entry of alien technical and specialized personnel (including the immediate members of their families), who may exercise their professions solely for the operation of the contractor.

DOWNSTREAM OIL

Section 9, Chapter II of R.A. 8479, or "An Act Deregulating The Downstream Oil Industry, and For Other Purposes" provides that persons with new investments as determined by the DOE and registered with the BOI in refining, storage, marketing and distribution of petroleum products shall be extended the same incentives granted to BOI-registered enterprises engaged in a preferred area of investments pursuant to E.O. 226, or the Omnibus Investments Code of 1987, thus:

- Income tax holiday for 5 years from the date of commercial operation;
- Tax credit on domestic capital equipment;
- Unrestricted use of consigned equipment;
- Exemption from taxes and duties on imported spare parts;
- Exemption from contractor's tax;
- Exemption from real property tax on production, equipment or machineries;
- Minimum tax and duty of 3% and value-added tax (VAT) on imported capital equipment;
- Wharfage dues and export tax exemption;
- Additional deduction on labor expense; and,
- Employment of foreign nationals.

INCENTIVES FOR PEZA REGISTERED COMPANY

- 4 to 8 years income tax holiday (ITH)
- Special 5% tax rate on gross income after ITH;
- Tax and duty exemption on imported capital equipment;
- Exemption from 12% input VAT on allowable local purchase of goods and services;
- Exemption from wharfage dues; and
- Employment of foreign nationals



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