



INVESTMENT OPPORTUNITIES IN THE PHILIPPINE ENERGY SECTOR



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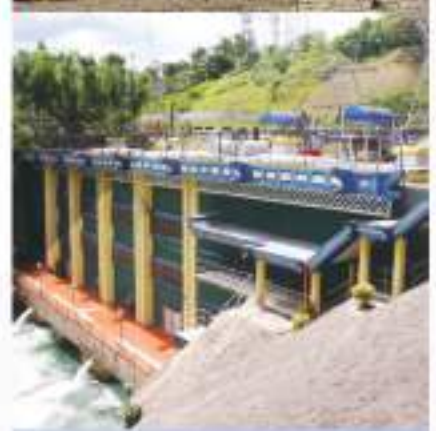
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EXECUTIVE SUMMARY



Alfonso G. Cusi
Energy Secretary, Philippines

The Duterte's Administration is moving towards the speedy development and implementation of infrastructure to increase the country's global competitiveness. In line with this, the Department of Energy (DOE) is pursuing initiatives to ensure affordable, reliable, modern and sustainable energy. The country envisions that 43 GW additional capacity will be required by 2040 to meet the growing power demand.

KEY STRATEGIES

The DOE intends to implement consumer-based and investor-friendly policies coupled with the three-pronged approach driven by incentives, investments and innovation to achieve energy security and sustainability. Investments will play a vital role in realizing the infrastructure goals. With the existing supportive regulatory framework, competitive incentives and transparent market structure, the Philippine energy sector is open and ready for business.

INVESTMENT FACILITATION

In addition to our efforts in creating a conducive investment climate, we have prioritized reforms to streamline the regulatory process in the approval of energy projects. Recently, Executive Order No. 30, a series of 2017 created the Energy Investment Coordinating Council (EICC) which will ensure a simpler and faster process with the removal of existing hurdles to private-sector investment.

INVESTMENTS IN THE ENERGY SECTOR

The Philippine Energy Sector adopts a technology neutral policy and encourages investors to be part of the country's energy development to fuel the dreams and aspiration of the next generation.

DOE'S PRIORITY PROGRAMS

The DOE is focused on the implementation of a 9-Point Agenda consisting of consumer first policies, reliability of energy supply and affordability of tariffs.



01

100% ELECTRIFICATION BY 2022

Achieve a 100% national and regional electrification rate by 2022, especially in Mindanao and off-grid areas, by improving energy supplies and upgrading transmission infrastructure.



02

TECHNOLOGY NEUTRAL APPROACH

Energy priorities to be steered towards a reliable and optimal mix of energy that is 70% Baseload, 20% Mid-Merit and 10% Peaking; for affordable and reliable supplies.



03

POWER TO MEET DEMAND NEEDS BY 2030

Institutionalizing a 25% reserve requirement to ensure that we are on track to reliably meet the 17,338MW in additional capacity required by 2030 to meet our growth needs. And further 43,765MW is needed for 2040



04

LNG NEEDS FOR ANTICIPATED DEPLETION

Implementation of LNG projects to safeguard against the anticipated depletion of the Malampaya gas facility in 2024.



05

COMPLETION OF TRANSMISSION PROJECTS BY 2020

Improving access and distribution systems by fast tracking interconnection projects such as Visayas-Mindanao and for the small island provinces.



06

AFFORDABILITY, CHOICE AND TRANSPARENCY

Introducing RCOA to create a pro-consumer distribution framework for choice of their energy source and supplier with no captive customers for distribution units to pass-on generation charges by 2020.



07

STREAMLINING DOMESTIC POLICY TO CUT RED TAPE

Developing a framework that will eliminate delays and red-tape to streamline the development of generation and transmission projects by 2020.



08

DELIVERY OF PSALM PRIVATIZATION

Privatization of PSALM assets to ensure we are on track to meet our mandated goals prior to the end of its corporate life in 2026.



09

MORE EFFICIENT POWER USE

Promoting efficient use of electricity among consumers, especially off-grid areas through a nationwide multi-media information education and communication (IEC) campaign.

PROFILE OF THE PHILIPPINES

In a report titled "Positive Outlook for Asean and India Amid North Asia Weakness," BMI Research said the Philippines would exhibit **growth outperformance** in the near term amid improved business environment coupled with a growing young population and the Duterte administration's infrastructure buildup.



The Philippines will be **the fastest-growing ASEAN-6 economy in 2017**, growing at 6.5%

(Standard Chartered Global Research)



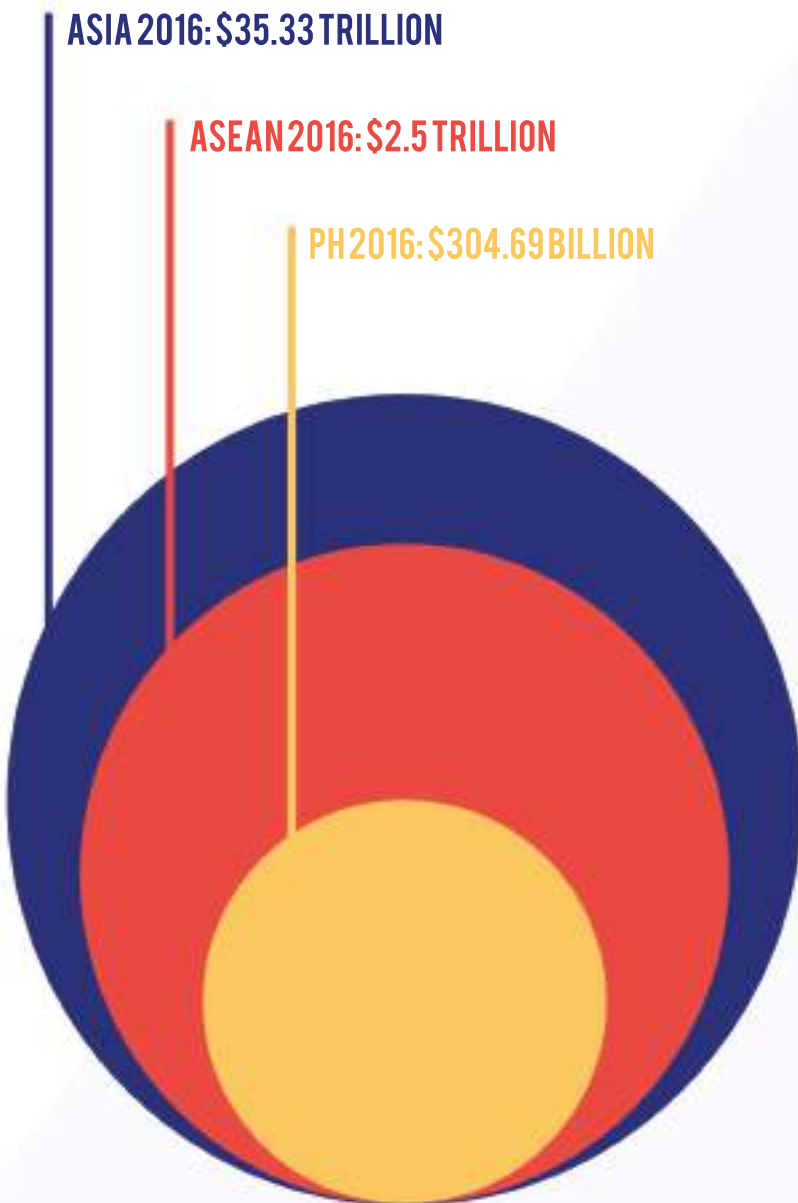
2nd fastest growing economy in **Asia and the Pacific region**
10th fastest growing economy **in the World**

(World Bank 2016)

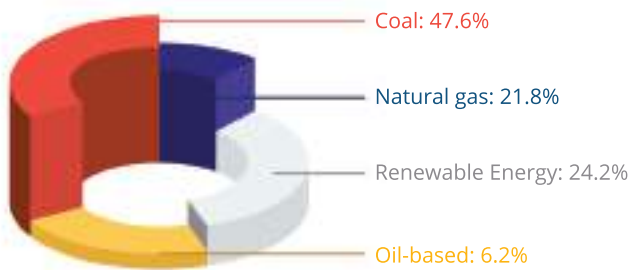


Population size: 103 million with 64.7% labour force participation

(World Bank 2016)

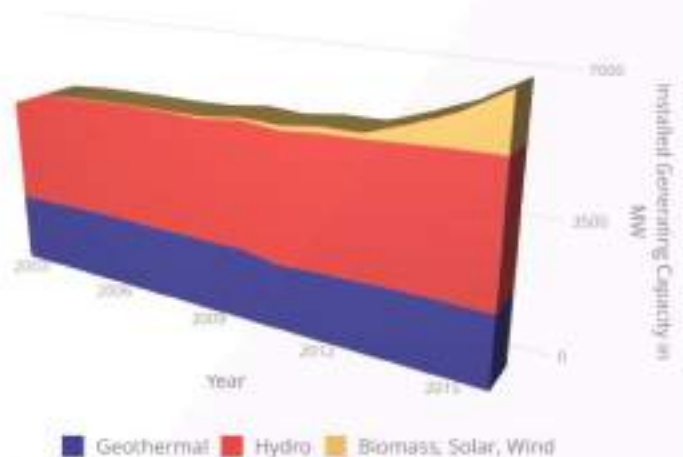


ENERGY MIX AND TOP POWER PRODUCERS



CURRENT ENERGY MIX BY SOURCE

The Philippines is leading the way on environmental sustainability worldwide (Trilemma Index, World Energy Council, 2016).



Share of Renewable Energy Power Sources (2003-2016)

The 2012-2030 Philippine Energy Plan estimates that renewable energy sources' contribution to the country's total power mix will grow by an **annual average of 3.2%** and comprise a **37.1% share**.

The Philippines is already **the world's second largest producer of geothermal energy**, with an untapped resource potential of **2,600 MW**.

There is an **untapped potential of 70,000MW for wind energy** and **13,097MW for hydropower**.

In 2016, **cumulative oil production** stood at of **75 million** barrels a day. **2,178 million** barrels remain **undiscovered**.



FIRST GEN
3,470MW
(16.3%)

First Gen is a power generation company in the Philippines owned by the Lopez Group. Included in the company's portfolio are the Philippines' largest geothermal facility, wind power project and natural gas power plants.



ABOITIZ
3,350MW
(15.7%)

Aboitiz is a leading hydroelectric power generation company. They own and manage the Visayan Electric Company Inc. (VECO) and Cebu Private Power Corporation (CPPC).



SAN MIGUEL CORPORATION
2,625MW
(12.3%)

SMC is a pioneer in some of the largest coal, natural gas, and hydroelectric power plants in the country. It also owns the San Roque Corporation and San Miguel Global Power company.



TESTIMONIAL SN POWER

"We are very happy with the way the privatization auctions were conducted, and how EPIRA and the WESM Market improved transparency. The investment program helped us get power plant projects off the ground. I also regard the tax incentive programs and concession regulations set up to handle the renewable energy business to be quite competitive. Discussions with local and central government have always been comprehensive and fruitful. It is easy to get meetings with central people among the authorities when we have special issues to discuss. We believe in the future growth of the Philippine market, and have several projects under development that hopefully will lead to a new major investment decision within a short time."

Norwegian hydropower leader and Europe's largest generator of renewable energy.

Acquired and upgraded 360MW Magat hydroelectric dam to 380MW.

Successful bids for Ambuklao and Binga Power plants, both upgraded from 75MW to 105MW in 2011 and 100MW to 140MW in 2013 respectively.

Rehabilitated the 360MW MARIIS dam in 2016 and the new 8.5MW MARIIS Canal.

Tor I. Stokke
President, SN Power Philippines

CASE STUDY: GEOHERMAL SUCCESS

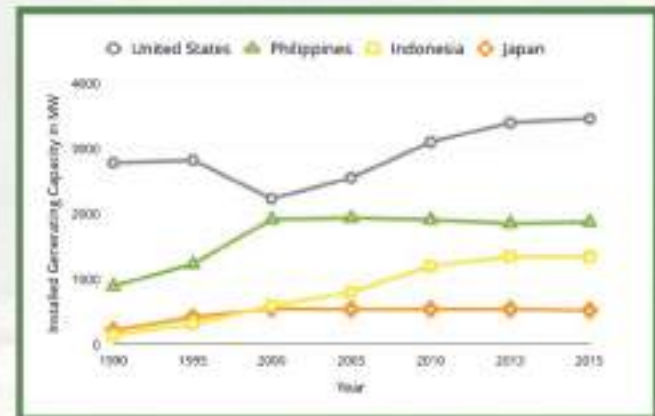
The geothermal power era in the Philippines began in the early 1960s. Dr. Arturo P. Alcaraz, the father of the Philippine geothermal development, investigated the Tiwi hot springs and the Albay boiling pools in 1962. However, little progress was made in developing geothermal energy sources as there was no urgent need to diversify the energy mix.

The unprecedented 1970s oil price shock wrecked many economies, including import-dependant countries like the Philippines. Soaring energy prices exacerbated a desperate need for new and affordable energy sources. The Philippine National Oil Company (PNOC) moved quickly to address the issue by establishing the Energy Development Corporation (EDC) in 1976 to explore, delineate and develop indigenous resources in the country.

In 1979, the first plant to generate electricity using geothermal energy was a 2.5kW plant in Barangay Cale, Tiwi, Albay. 5 years later, combined installed capacity stood at 890MW, making the Philippines the second largest geothermal producer in the world. The plants in MakBan, Tiwi, Tongonan and Painpinon supplied about 20% of the country's electric needs.

Recognizing the potential in geothermal energy, the government enacted 2 laws to enhance business mobility. In 1990, the Build, Operate, Transfer (BOT) law introduced concessions and project financing, as well as greater autonomy for private entities. Subsequently, the Electric Power Industry Reform Act (EPIRA) liberalized the power market in 2001. Together, they facilitated an expansion of the geothermal energy production in the Philippines.

Presently, geothermal energy is the largest renewable source of power generation with 1,916MW of installed capacity, making up 8.9% of total share of installed generating capacity. The success story of geothermal energy in the Philippines is made possible through a collaborative process of public-private partnerships and a dynamic vision for long term sustainability.



GEOHERMAL ENERGY WORLDWIDE



TESTIMONIAL SHELL

"Shell has been present in the Philippines for over a century, and its track record is a testament to the business and social opportunities present. The inauguration of the 1,000th Shell retail station in Eton, Sta. Rosa, Laguna marks the company's strong foothold in the country. The Shell Business Operations (SBO) in Manila has grown from less than 50 staff in 2004 to more than 3,500 employees in 2015, making it the biggest of six Shell Business Operations across the globe.

Among the major investments include:

The Malampaya Deep Water Gas-to-Power Project

Upgrading our oil refining facility in Tabangao, Batangas

The North Mindanao Import Facility (NMIF) in Cagayan De Oro (CDO)

We are looking forward to doing more business not only in the Philippines, but with a stronger, more integrated ASEAN."

Cesar G. Romero
Chairman, Shell Companies in the Philippines

WHY THE PHILIPPINES

The Philippines offers an exciting and growing energy landscape. It is of utmost importance for us to provide investors with a supportive business climate in order to improve the provision of energy to Filipinos nationwide.

The Philippines leaped by 12 spots to be **58th** of 186 countries in **2017's Index of Economic Freedom**.

In the **2017 World Bank-IFC: Doing Business Report**, the Philippines rose to place in the top 100 countries. Since 2011, the country has rocketed 49 spots in the Doing Business Report.



01 | INNOVATION

INCENTIVES | 02

03 | OPEN MARKET

INFRASTRUCTURE | 04

INNOVATION

We are always striving to discover new technologies in sustainable extraction and the move towards more renewable sources. Our international conventions, like the Energy Smart Philippines, adds dimensions to industrial advancement for innovation and investors alike.

Some of our latest developments are:

PV DIESEL HYBRID SYSTEM

Development of renewable energy-diesel hybrid power systems such as solar-diesel hybrid power system in generating electricity for off-grid areas. Some systems use a combination of diesel gensets and PV panels, micro wind turbines or biomass that are completed with energy storage systems to ensure access to affordable, reliable and sustainable power.

GREEN BONDS

Asian Development Bank green bonds, rated triple A, are issued to mobilize financing for climate change and mitigation projects and initiatives in the Asia-Pacific region. The Philippines has shown its commitment to the program by supporting the issuance of a local currency bond by Aboitiz Power Corp that became known as the first bond in Asia to be certified as a "Climate Bond".

SMART GRID

Introduction of the smart grid and the deployment of energy storage solutions provide opportunities for scaling up the penetration of renewable energy on the grid and utilizing renewable energy in the expansion of electrification in off-grid.

INCENTIVES

Our financial incentives are intended to aid and streamline investment initiatives.

An eligible company is entitled to the following incentives:

- Income tax holiday
- Exemption from taxes on imported spare parts
- Tax credits
- Employment of foreign nationals
- Simplification of customs procedures

SPECIAL ECONOMIC ZONES

Special Economic Zones (SEZs) are self-sustaining and progressive, designed as independent communities with minimum government interference and favorable entitlements.

Notable SEZs include the Subic Special Economic and Freeport Zone (SSEFZ) and Clark Special Economic and Freeport Zone (CSEFZ) with a total land area of 99,000 hectares.

RENEWABLE PORTFOLIO STANDARD (RPS)

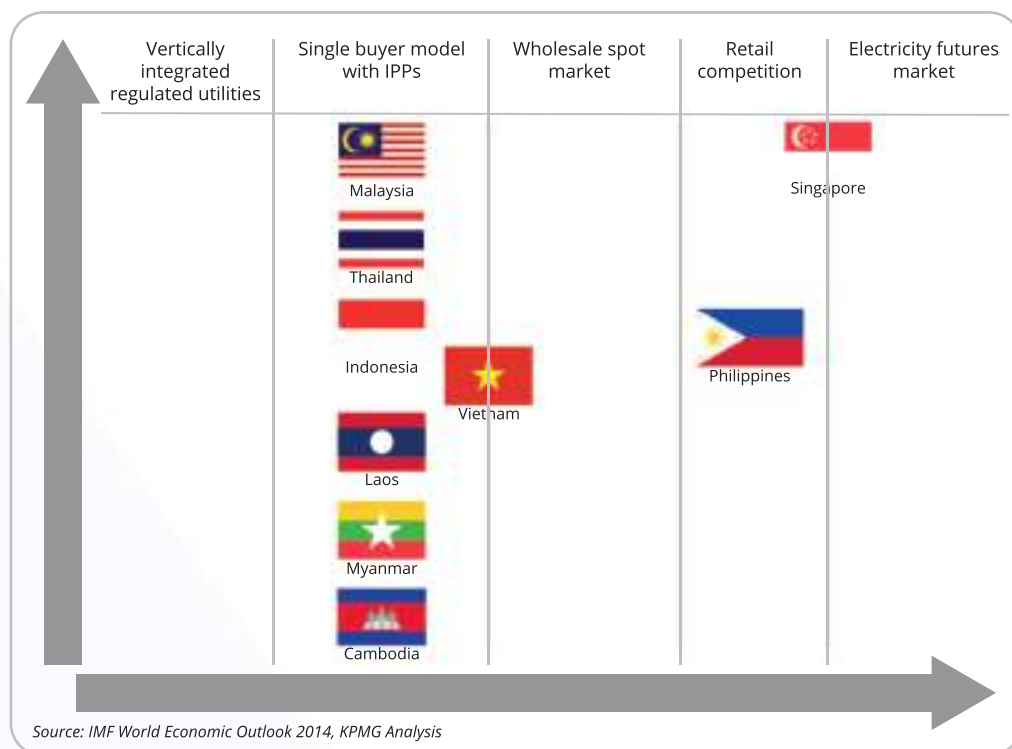
The RPS is a fixed percentage of electricity that would be required to be sourced from renewable energy sources. The aim is to increase the portion of renewables in the energy mix to 35% by 2030.

GREEN ENERGY OPTION

The Green Energy Option Program (GEOP) is a mechanism which shall provide end-users the option to choose RE resources as their source of energy. All electric power industry participants from transmission to distribution are mandated to provide physical and commercial arrangements to enable end-users to exercise the GEOP.

OPEN MARKET

The Philippines aims to increase its renewable energy capacity at an annual rate of 1.6% to achieve its targeted share of 35% by the year 2030. The EPIRA, RE Act, and EO 30 have played a role in market liberalization to welcome investments, making it one of the most mature and market-friendly in the region.



ELECTRIC POWER INDUSTRY REFORM ACT 2001 (EPIRA)

EPIRA liberalized the power market and now private companies hold over 60% of the market shares.

WESM and RCOA were established to ensure transparency, promote competition and to maintain captive customers.

RENEWABLE ENERGY ACT 2008 (RE ACT)

The REA aims to accelerate the exploration and development of renewable energy resources as well as to increase the utilization of renewable energy.

This is done by institutionalizing the development of national and local capabilities in the use of renewable energy systems through fiscal and non-fiscal incentives.

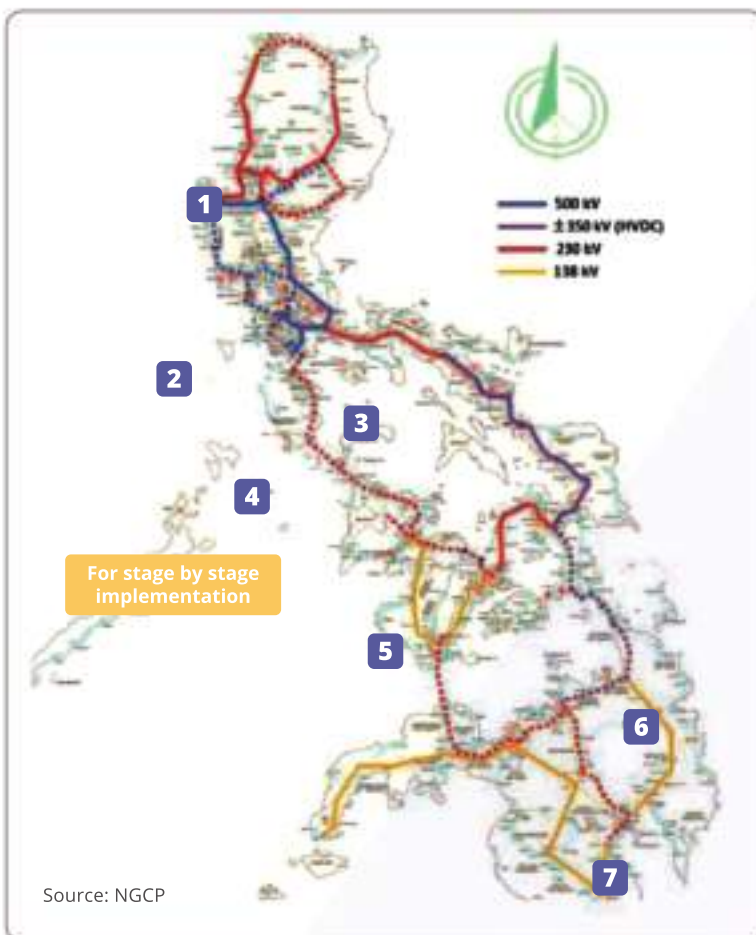
EXECUTIVE ORDER 30

Under the newly created Energy Investment Coordinating Council (EICC), time consuming hurdles and bureaucratic red tape have been eliminated.

Projects over USD70 million will be processed within 30 days and be granted the "Energy Projects of National Significance" or EPNS status.

INFRASTRUCTURE

There is a substantial number of publicly announced infrastructure projects to complement the already comprehensive transmission network in the Philippines, providing a broad range of investment and partnership opportunities.



- Northern Luzon 230 kV Backbone
- Western Luzon 500 kV Backbone
- Metro Manila Luzon 500 kV Backbone Loop
- Batangas-Mindoro Interconnection
- Cebu-Negros-Panay 230 kV Backbone
- Visayas-Mindanao Interconnection
- Energization of the Mindanao Backbone to 230 kV

The National Transmission Corporation (TransCo) is pushing for massive capital spending on at least six transmission line interconnection projects worth USD2 billion. The line-up of projects include the USD1 billion Visayas-Mindanao Interconnection Project (VMIP) and five other transmission line loops, namely: Antique-Mindoro; Bohol-Cebu; Panay-Negros; Davao-Samal Island; and Antique-Romblon.

Additionally, the National Grid Corporation of the Philippines (NGCP) has signed a USD27 million deal with smart grid solutions firm ABB to strengthen the country's grid infrastructure. 18 smart grid transformers will be provided to NGCP, improving its energy distribution and the reliability of its grid network.

MERALCO has also announced that it will implement an automated metering infrastructure project to equip 3.3 million of its customers with smart meters by 2024.

Moreover, US-based conglomerate General Electric Co. (GE) will be constructing a new 500 kV transmission line and substation in Bataan. It is due to be completed by 2018 and will serve as the additional outgoing circuit from Hermosa to San Jose. This will allow simultaneous maximum dispatch of existing power plants.

Marubeni**TESTIMONIAL
MARUBENI**

“Marubeni sees the positive efforts of the Philippine government spearheaded by the DOE in shaping the entry of more foreign investors in Energy Sector and the timely response of the Private Sector to provide reliable and competitive price for electricity consumers.

Marubeni is ready to expand its power portfolio and be a partner in contributing dependable service and progress to the country.”

Some of Marubeni’s biggest projects include:

**345MW San Roque
Multi-Purpose Hydro Plant**

**1,218MW Sual Coal-Fired
Plant**

**1,251MW Ilijan Natural
Gas-Fired Plant**

Marubeni Corporation

INVESTMENT OPPORTUNITIES

MERCHANT PLANTS

Meeting Baseload Demands

A ready transmission network in all 3 regions, consisting of 121 electricity cooperatives (ECs) which are regulated and supervised by the National Electrification Administration (NEA) as well as 23 private distribution utilities. Additionally, the Luzon and Visayas transmission grids are interconnected by submarine cables with a capacity of 440MW.

EXPLORATION

Development of Indigenous Resources

The DOE continues to encourage private sector participation in the exploration and development of indigenous coal, petroleum and natural gas through the Philippine Conventional Contracting Program (PCECP). The country's sedimentary basins with a total area of 709,000 square kilometers provide a potential recoverable reserves of 95.53 mbb of oil, 3,220.70 bcf of gas and 118.90 mmb of condensate. Total resource potential of 2.36 billion metric tons coal located in various coal basins nationwide.

NATURAL GAS

LNG as Transition Fuel

Viewed as the transition fuel of the future, LNG is a reliable energy source to complete renewable energy. The DOE is set to issue the Philippine Natural Gas Regulations (PNGR). This issuance will provide a comprehensive policy framework that will cover the entire natural gas value chain from retail to wholesale supply. Competition is a key driver in the policy with the aim for reasonable price for natural gas. Additionally, the Batangas Integrated LNG Import Terminal is being pursued as a safeguard against the expected Malampaya depletion by 2024.

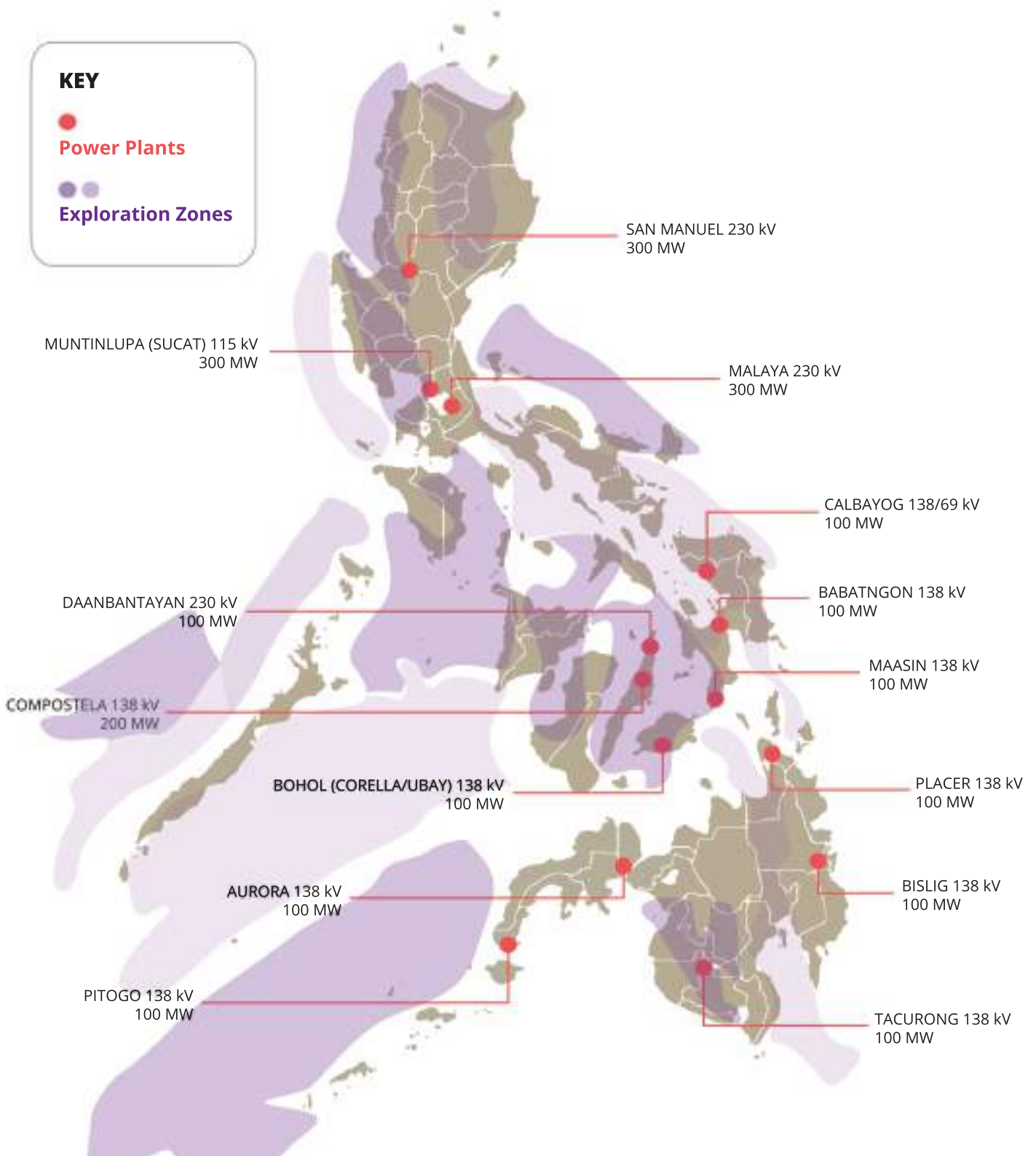
INVESTMENT OPPORTUNITIES

| Energy Project | Mode | Main Document Required | Ownership Requirement |
|---|---|---|---------------------------|
| Petroleum Exploration, Development and Production | Philippine Energy Conventional Energy Contracting Program | Petroleum Service Contract | Up to 100% Foreign |
| Coal Exploration, Development and Production | Philippine Energy Conventional Energy Contracting Program | Coal Operating Contract | 60% Filipino; 40% Foreign |
| Renewable Energy Development | Open and Competitive Selection Process | Renewable Energy Service Contract Biomass Renewable Energy Operating Service Contract Geothermal Service Contract Solar Energy Service Contract Hydropower Service Contract Ocean Power Service Contract Wind Energy Service Contract | 60% Filipino; 40% Foreign |
| | Direct Negotiation | | |
| Power Plant | Nomination | | Up to 100% Foreign |

IDEAL LOCATIONS

This section identifies the substations where new power plants may connect without the need for any significant transmission reinforcement. These recommended connection points, however, should be viewed from a transmission planning perspective and are based on the capability of the existing grid.

Areas shaded in purple have been earmarked for oil exploration.





TESTIMONIAL AC ENERGY

"Philippines has one of the highest growth rates in the region and power supply must keep up with the country's progress. Meanwhile, EPIRA empowers the private sector to drive such investments. AC Energy is committed to be a significant part of the private sector led investments in the power sector"

18MW solar farm in Bais, Negros Oriental

81MW wind farm in Pagudpud, Ilocos Norte and 52MW wind farm in Bangui, Ilocos Norte

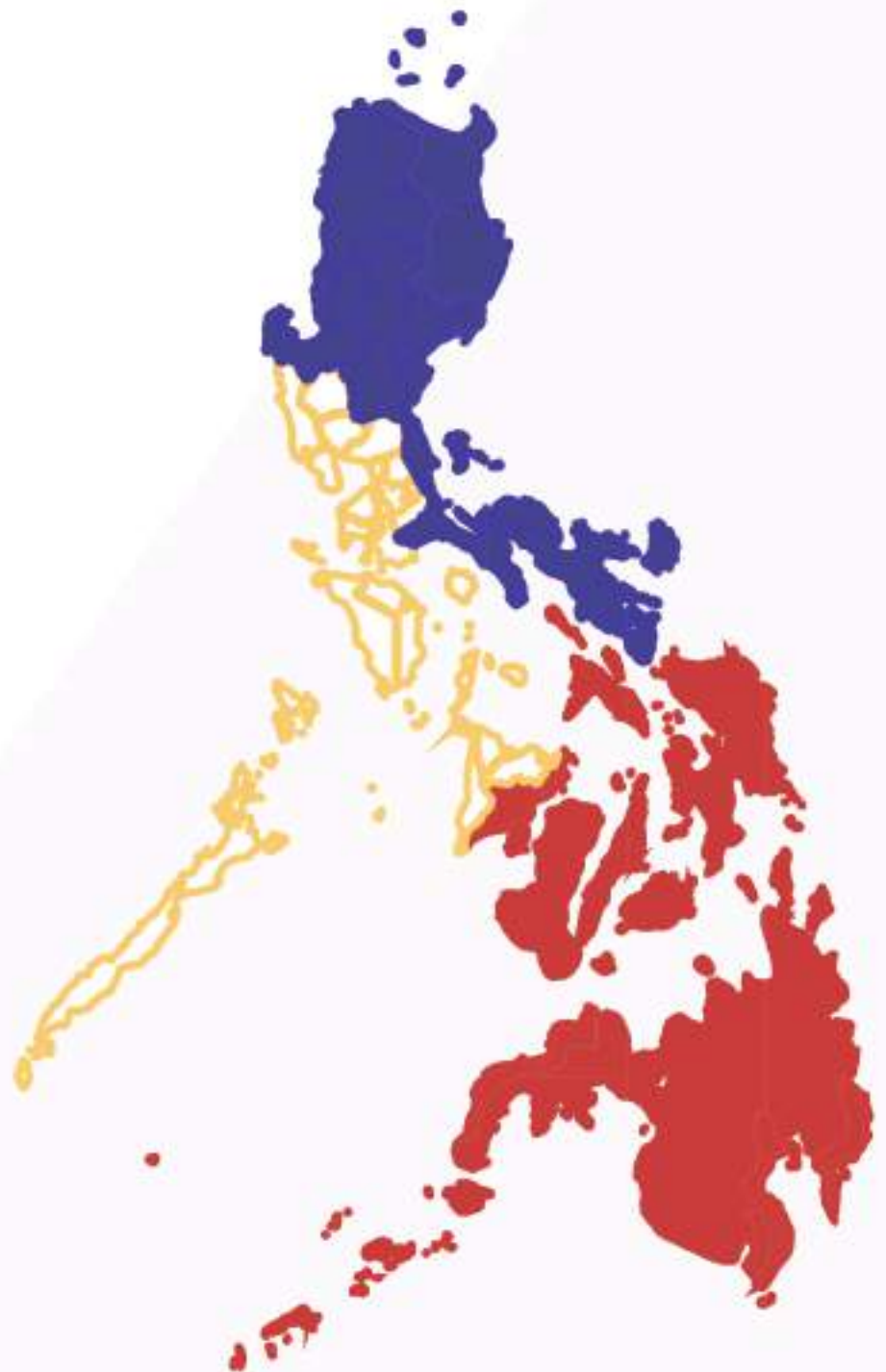
Effectively meets daytime power requirements of Bais, Dumaguete and Cebu.

AC Energy Holding

HOW TO INVEST

Please direct all queries, proposals and requests for information and meetings relative to investment opportunities involving Energy activities and projects in partnership with the Philippine government thru:

Investment Promotion Office
Energy Center, Rizal Drive
Tel. Nos. (+632) 840-2255
Email: doe_ipo@yahoo.com
Website: www.doe.gov.ph



RELEVANT AGENCIES AND CONTACTS

BOARD OF INVESTMENT (BOI)

Industry & Investments Building
385 Sen. Gil J. Puyat Avenue
Makati City
Tel Nos: (632)
897-5582/890-9332
Fax No.: (632) 896-7342
website: www.boi.gov.ph

CIVIL AVIATION AUTHORITY OF THE PHILIPPINES (CAAP)

1300 MIA Road
Pasay City
Tel. Nos.: (632)
879-9223/879-9217
website: www.caap.gov.ph

DEPARTMENT OF AGRICULTURE (DA)

Elliptical Road, Diliman, Quezon City
Tel. No.: (632) 929-1522
website: www.da.gov.ph

DEPARTMENT OF AGRARIAN REFORM (DAR)

Elliptical Road, Diliman, Quezon City
Tel. Nos.: (632)
480-6080/928-7031
website: www.dar.gov.ph

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES (DENR)

Visayas Avenue, Diliman, Quezon City
Tel. Nos.: (632) 929-6626;
988-3367 (VoIP)
website: www.denr.gov.ph

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES – FOREST MANAGEMENT BUREAU (DENR-FMB)

DENR Compound, Visayas Avenue, Diliman, Quezon City
Tel. No.: (632) 927-4788
Fax No.: (632) 920-0374
e-mail: fmb@denr.gov.ph
or fmbdenr@mozcom.com
website: www.forestry.denr.gov.ph

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES – ENVIRONMENT MANAGEMENT BUREAU (DENR-EMB)

DENR Compound, Visayas Avenue, Diliman, Quezon City
Tel. Nos.: (632) 928-3725
e-mail: mail@emb.gov.ph
website: www.emb.gov.ph

DEPARTMENT OF ENERGY (DOE)

Energy Center, Rizal Drive Bonifacio Global City, Taguig
Trunkline: (632) 479-2900
website: www.doe.gov.ph
Electric Power Industry Management Bureau (EPIMB)
Tel. No.: (632) 840-2120
Energy Utilization Management Bureau (EUMB)
Tel. No.: (632) 840-2089
Energy Resource Development Bureau (ERDB)
Tel. No.: (632) 840-2068
Oil Industry Management Bureau (OIMB)
Tel. No.: (632)
840-2114/840-2095

ENERGY REGULATORY COMMISSION (ERC)

16th Floor Pacific Center Building
San Miguel Ave., Ortigas Center
Pasig City
Tel. Nos.: (632)
683-0282/914-5000
website: www.erc.gov.ph

NATIONAL GRID CORPORATION OF THE PHILIPPINES (NGCP)

Quezon Avenue corner BIR Road, Diliman, Quezon City
Tel. No.: (632) 981-2100
Email: corpcomm@ngcp.ph
Website: www.ngcp.ph

NATIONAL COMMISSION ON INDIGENOUS PEOPLE (NCIP)

2nd Floor N de la Merced Building
Corner West and Quezon Avenue
Quezon City
Tel. No.: 373-9787
Website: www.ncip.gov.ph

NATIONAL WATER RESOURCES BOARD (NWRB)

8th Floor, NIA Building, EDSA, Diliman, Quezon City
Tel. Nos.: (632)
928-2365/920-2641
Fax No.: (632) 920-2724
e-mail: nwrphil@gmail.com
website: www.nwr.gov.ph

PHILIPPINE ELECTRICITY MARKET CORPORATION (PEMC)

9th & 18th Floors Robinsons Equitable Tower, ADB Avenue Ortigas Center,
Pasig City Direct line:
(632) 633-3918
Trunk line:
(632) 631-8734 local 200
Fax: (632) 636-0802 and
(632) 631-8734 loc. 298
e-mail: info@wesm.ph
website: www.wesm.ph

SECURITIES AND EXCHANGE COMMISSION (SEC)

SEC Building, EDSA, Greenhills, Mandaluyong City
Telephone:
584-5343/584-0923 loc. 286
e-mail:
website: <http://www.sec.gov.ph>