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A photograph of a traditional Chinese junk boat with a colorful, multi-colored sail, sailing on a calm body of water at sunset. Two people are visible on the boat. The sky is a mix of blue and orange, and the water reflects the light. In the background, there are dark, silhouetted hills or islands.

# Opportunities and Challenges of China's Renewable Energy Overseas Investment - Case Country Study (The Philippines)



This report was funded and reviewed by the World Wide Fund for Nature (WWF) and completed by the China New energy Investment and Financing Alliance(CNIFA) .

## About World Wide Fund For Nature (WWF)

World Wide Fund For Nature (WWF) is the world’s largest independent conservation NGO with strong international fame. Since its establishment in Swiss in 1961, WWF has gained over 5.2 million supports worldwide and an active global network covering over 100 countries.

WWF is committed to spreading internationally China’s ecology-based civilization. Under the “Belt-and-Road Initiative” and “South-South Cooperation” framework, WWF hopes to promote globally the development of renewable energy and the implementation of low-carbon technology and solutions especially in developing countries.



## About China New Energy Investment and Financing Alliance (CNIFA)

To facilitate the communication and cooperation between new energy industries and financial sectors, promote the information sharing among new energy industries, financial sectors and other stakeholders, and ideally establish financial collaborations and contribute to the development of China’s new energy industry, a number of institutions and organisations jointed founded China New energy Investment and Financing Alliance.

The Alliance has obtained strong support from the National Energy Administration, the financial sector, the new energy industry and other research institutions. Together, these institutions strive to build a professional, effective and fair investment service platform for investment organisations, fund-raising projects and corporations. In particular, they seek to establish communication and matchmaking mechanisms between investment organisations and the new energy industry to facilitate investment and fund-raising, offer guidance to the new energy industry in the process of marketizing and regulation, raise the efficiency of matchmaking and the standard of investment and fund-raising services and facilitate the building of mutual trust, playing a crucial role in promoting the healthy growth of the new energy industry in China.

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# Summary

With the support of the World Wildlife Fund (WWF), China New Energy Assets Investment and Financing Alliance (CNIFA), alongside WWF have finalized the research report on ‘Philippine Renewable Energy (RE) Investment Opportunities and Challenges’. The report mainly focuses on the investment and construction status of RE development in the Philippines, its future planning as well as current investment needs. It also resolves the legal framework of the Philippine RE Law and its related rules, while also analyzing potential opportunities and challenges of Chinese enterprises participating in the RE market in the Philippines.

The main methods adopted in the research report include collecting and analyzing relevant laws and regulations, especially Filipino Renewable Energy Laws and associated rules. At the same time, the CNIFA carries out field research and in-depth discussion with enterprises and experts, as well as comparing and learning from the successful experience of China’s RE development. For companies interested in participating in RE investments in the Philippines, the report outlines the basic contours and context of RE development and indicates any potential issues, sharing both successful experiences and failures of domestic companies. The research also provides relevant data and cases for research institutions, consults companies and other social organizations to better understand the market environment and development potential of RE in the Philippines.

This report is aimed at providing valuable data and information for nurturing the development of RE in the Philippines. This is alongside attracting more investors to consider market investment opportunities to promote active participation of all parties in the market. Due to time constraints and the limited level of authors, there are some inevitable inadequacies in the research report. Thus, constructive criticism from readers is welcomed to help improve studies in the future. In addition, publishers of the report hope to use this as an opportunity to expand cooperation networks. This would be in order to contribute to clean energy investments in the Philippines and other countries along the Belt and Road.





# CHAPTER I

## STATUS, OPPORTUNITIES AND CHALLENGES OF RENEWABLE ENERGY DEVELOPMENT IN THE PHILIPPINES



# 1.1 Introduction to the Philippines

The Philippines is located in the south-eastern part of Asia and to its east is bordered by the Philippine Sea, the South China Sea to the west, and the Celebes Sea to the south. With a total area of 299,700 km<sup>2</sup>, there are more than 7,000 islands of varying size in the Philippines. 11 major islands such as Luzon Island, Mindanao Island and Samar Island account for 96% of the country's total area, with the coastline being roughly 18,533km long.

The Philippines is divided into three major parts; Luzon, Visayas and Mindanao. There are 17 districts including the Capital Region, the Cordillera Administrative Region, and the Muslim Autonomous Region of Mindanao. In total there are 82 provinces, 135 cities and 1493 administrative cities. The capital is the metropolitan Manila, which consists of 17 districts with a total area of 638 km<sup>2</sup> and a population of 15 million people. The second largest city in the Philippines is Cebu, located in the central part of the Visayas, with an urban population of approximately 5 million people.

As of 2017, the Philippines has a population of approximately 104 million people, which makes it the 12<sup>th</sup> largest country in the world. In recent years, the Philippines has experienced a population growth rate of nearly 1.9%, which is the highest in Asia. The urban population of the Philippines accounts for 51% of the total population. Due to regional differences in development, the population distribution in the Philippines is very uneven. Manila has a high population density, while some provinces in northern Luzon have low population densities.

Of late, the Filipino political situation has been relatively stable and the economy has undergone rapid development. The GDP growth rate in the past five years has exceeded 6% on average. The world's three major investment rating agencies, Standard & Poor's, Moody's, and Fitch have successively upgraded the Philippines' sovereign credit rating to the level of investment grade. Therefore, foreign investment is optimistic about the Philippines' economic and market prospects. According to the Handbook of Country Risk (2018) published by China Export & Credit Insurance Corporation, the sovereign credit risk rating of the Philippines currently stands at BBB, which is a medium-low level. And the national risk rating is four, which is also a medium-low level. The overall investment risk rating level of the Philippines is essentially on par with Thailand and India.

In 2016, Rodrigo Duterte from Mindanao in the southern Philippines was

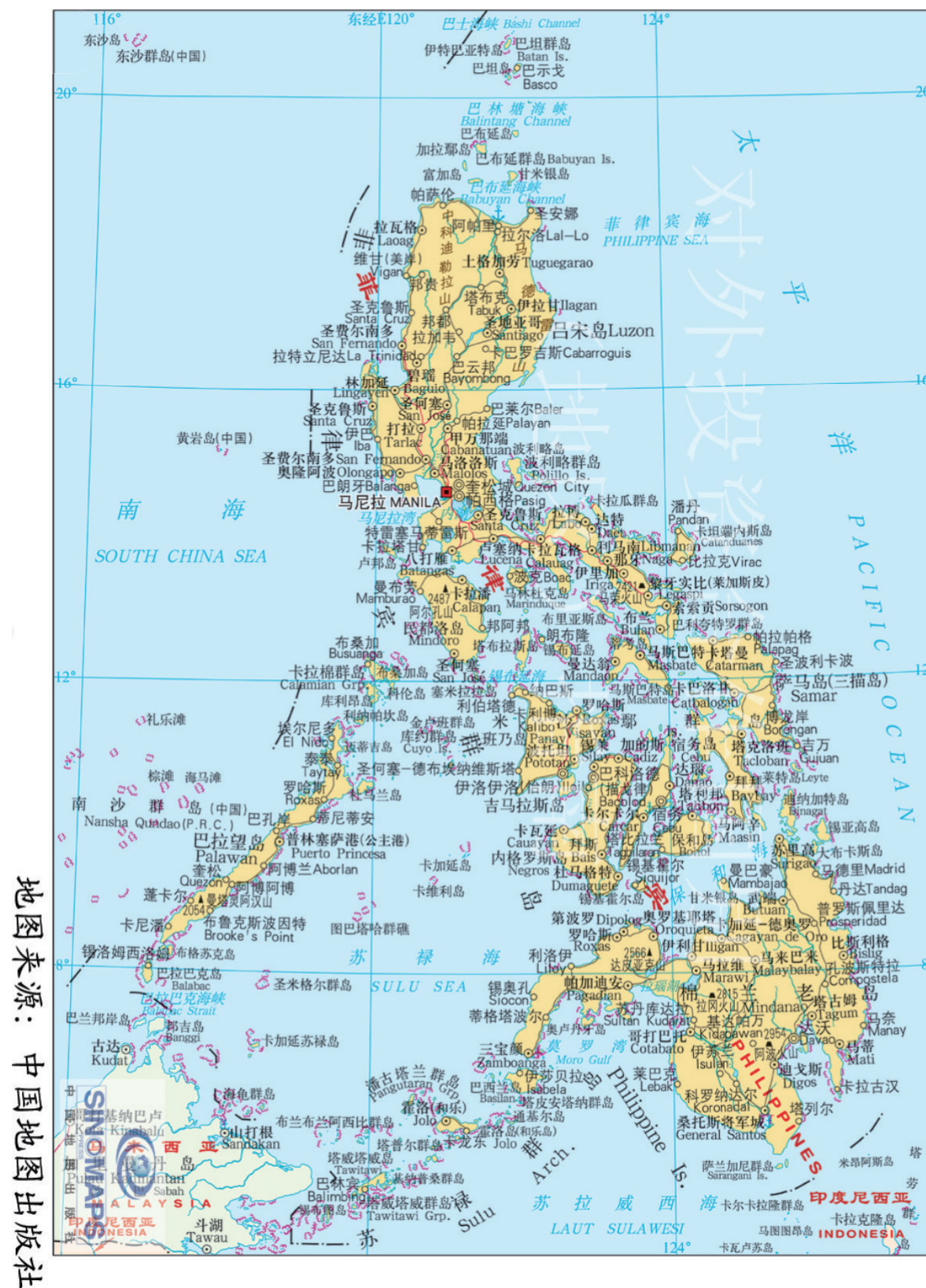


Figure 1: Map of the Philippines

地图来源：中国地图出版社



elected the 16th President of the Republic of the Philippines. After taking office, President Duterte emphasized a social development path featured by the rule of law and fairness, proposed an economic plan with poverty reduction as his main goal, and advocated the improvement of infrastructure and the popularization of basic education and energy supply. Diplomatically, Duterte has pursued an independent foreign policy, with reduced dependence on Western countries, especially the United States, while improving relations with China, Russia and other Eastern countries.

In October 2016, President Duterte paid a state visit to China. More recently, in November 2018, President Xi Jinping completed a state visit to the Philippines and during his visit; President Xi held talks with President Duterte. The two heads of state unanimously decided to establish a comprehensive strategic cooperative relationship between China and the Philippines, and China-Philippine relations have subsequently peaked.

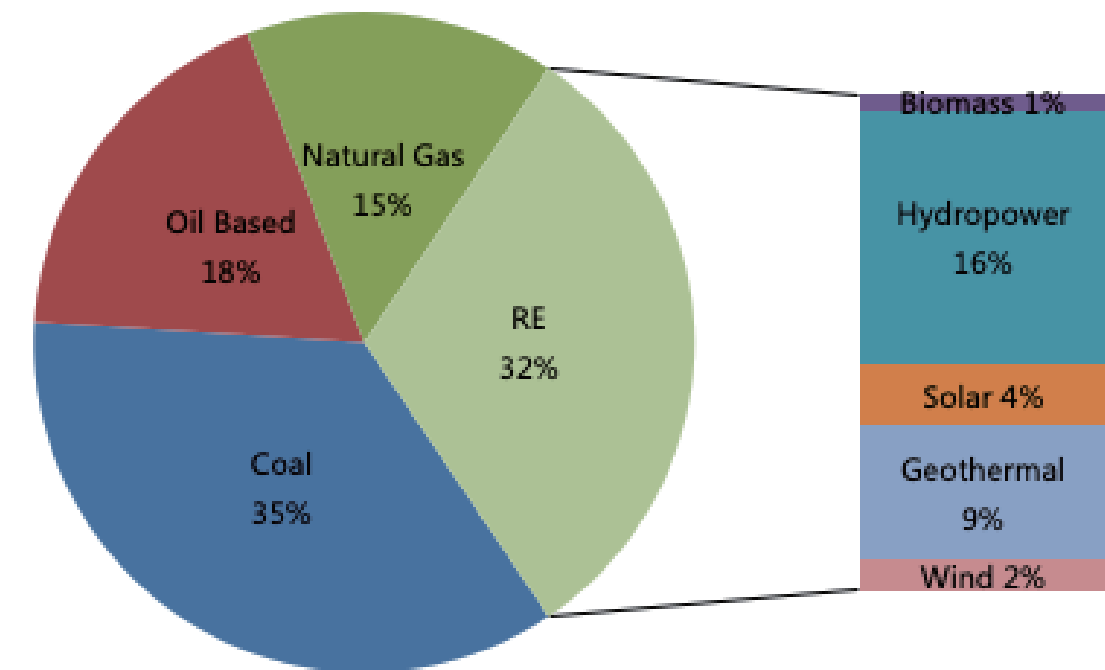
## 1.2 Philippine Energy Structure and Current Status and Goals of Renewable Energy

Shortages of electricity in the Philippines are relatively common and the cost of generating electricity generation is relatively high. On top of that, the price of electricity is one of the highest in the world, relatively speaking. At the end of 2016, the Philippine industrial power price stood at 5.84 pesos/kWh (RMB 0.75/kWh), and commercial and household prices were 7.49 pesos/kWh (RMB 0.96/kWh) and 8.9 pesos/kWh (RMB 1.14/kWh). Industrial electricity prices are equal to Singapore's, while commercial and household electricity prices are even higher than that of Singapore's.

For power installation, according to the latest statistics of its DoE, in 2017 the Philippines added 835MW of capacity to boost their outage to a total of 22,730MW. Compared with 2016, the newly installed capacity is 835MW, and the total power generation in 2017 was 94,379GWh (or 94.379 billion kWh).

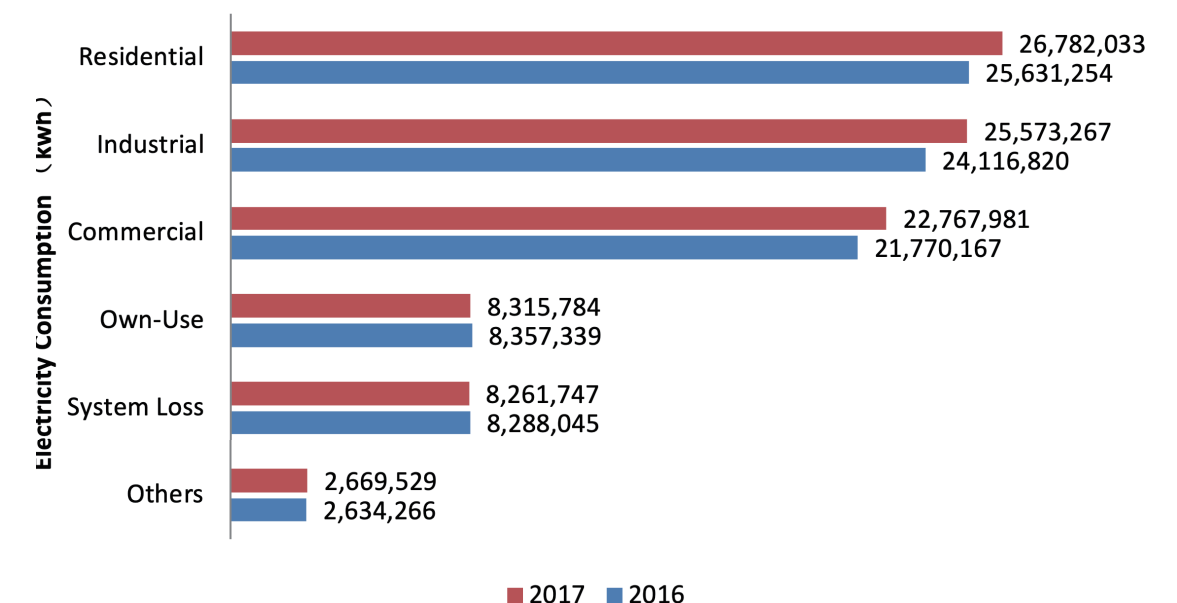
Among the 22,730MW power capacity; coal-fired capacity accounts for 8,049MW, oil-based power makes up 4,154MW, while 3,447MW comes from natural gas, 7,080MW from renewable energy (including geothermal equaling 1,916MW, hydropower 3,627MW, biomass power 224MW, solar 886MW and wind 427MW). In 2017, the Philippines added 835MW of power installed capacity, which included 630MW from coal, 77MW from oil-based power, 1MW from hydropower and 127MW from solar.

Figure 2: Philippine Power Structure (2017)



In terms of power consumption, the Philippines used 94.38 billion kWh of electricity in 2017, an increase of 3.9% compared with 2016. Residential, industrial and commercial electricity accounted for 28.38%, 27.10% and 24.13% of the total electricity consumption, respectively.

Figure 3: Electricity consumption in the Philippines (2016 & 2017)





To alleviate power shortage, the development and optimization of the use of RE has become a core issue in the field of sustainable energy development in the Philippines. The Philippine DOE also published documents such as 'Philippines Energy Plan 2012-2030' and 'Philippines Energy Plan 2017-2040,' which clearly proposed the future development goals of RE. By 2030, RE will account for 50% of the total power capacity in the Philippines, and the installed capacity of RE will rise to 15.4GW. By 2040, the installed RE capacity will increase to at least 20GW.

### 1.3 Potential and Obstacles to Developing Renewable Energy in the Philippines - Resources, Policy, Finance, Technology

Traditional energy reserves in the Philippines are scarce and oil and coal rely heavily on imports. Nonetheless, the development potential of RE is huge. According to reports, the geothermal potential in the Philippines is greater than 4,000MW and wind power will reach 76,000MW, hydropower 10,000MW, ocean energy approximately 170,000MW and biomass about 500MW (including only bagasse and rice husk). Meanwhile, solar radiation resources will reach 5kWh/ m /day.

The announcement and implementation of The Philippine Electric Power Industry Reform Act of 2001 (RA9136) and The Renewable Energy Act of 2008 (RA9513) provided policy support and guaranteed the rapid development of the RE industry in the Philippines. Subsequently, the Philippine Energy Regulatory Commission successively issued the "Renewable Energy Feed-in-Tariff System Rules", "Renewable Energy Net-Metering Rules" and 'The Renewable Portfolio Standards Rules and Guidelines' along with other supporting policies. The DoE also approved measures with regards to renewable energy feed-in-tariffs and installation goals. This was in order to provide development motivation and policy guarantees for the implementation of the Renewable Energy Law.

The Renewable Energy Act of 2008 has brought positive change in promoting the development of RE, while also attracting a significant amount of investment since being enacted. A number of international financial institutions have committed to financial support for the development of RE in the Philippines. For





example in 2010, the Asian Development Bank (ADB) announced that it would provide the Philippines with a \$1 billion loan to promote RE development. In 2015, the Philippines also received a \$1 billion loan from the US Export-Import Bank for the development of LNG and RE. Additionally, in 2016, the World Bank approved two cumulative amounts of \$67 million to support RE projects. In early 2019, ADB President Takehiko Nakao stated at a press conference in Manila that the ADB is now considering increasing its loan to the Philippines from \$1.5 billion to \$2.5 billion over the next three years.

At the same time, several local banks in the Philippines have begun to favor RE projects. For example, the Development Bank of the Philippines has proposed the Green Financing Program (GFP) to provide a national green development strategy through funding and technical assistance. The Development Bank of the Philippines also provides loan services for RE projects for up to 15 years (including the maximum five-year grace period). This support will cover 80% to 90% of total investments in projects, and loan interest rates will be implemented based on market rates. At the end of June 2018, the outstanding loan from GFP equated to 14.11 billion pesos, equivalent to \$300 million (1.8 billion RMB).

At present global RE technology, which is led by solar PV and wind power has advanced rapidly and costs of core components have dropped substantially. In numerous countries and regions with more developed resources, costs for RE generation are already equal to that of coal power generation. In the future, in accordance with the rapid development of the renewable energy industry; marginal cost advantages, flexible application scenarios, distributed generation and other features will become more and more prominent. As a country with severe energy shortages, the Philippines has relatively few coal resources and many islands are left limited by this fact. Thus, renewable energy will surely assume a more important strategic position. However, it should be noted that the Philippines still has certain problems in the process of developing a RE industry system and these challenges must first be overcome.

Firstly, the foundation of RE development in the Philippines is relatively weak. In recent years, the Philippines have focused its attention on the development of downstream power stations, and have made a decent degree of progress. However, it has not formed a corresponding upstream and downstream production system to support industries. Key equipment still relies on imports and localized production capacity remains severely insufficient. Ultimately, there is no competitive advantage in the competition of core technologies such as solar PV and wind power.

Secondly, the Philippine government's fiscal capability is fragile. The strength and stability of subsidies is weak for renewable energy resources which have relatively high generation costs, such as geothermal or ocean energy. In addition, in the Philippines, specific research and statistics that focus on the distribution of RE resources are rare. This is especially with regards to technical data accumulation, and operational and maintenance experiences. This is particularly the case in specific climatic environments, such as with the high temperature, high humidity, vast island networks, and prevalent typhoons present. A lot of preliminary work still needs to be carried out before commercial development becomes widespread as there are still certain technical risks.

Thirdly, the Philippine Constitution stipulates that foreign investment can only take up to 40% of shares of energy exploration, development and utilization projects, thus giving some local corporate protection. At present, the development of geothermal energy resources, hydropower, solar energy and other resources in the Philippines are mainly occupied by domestic companies such as PNOC-EDC, Aboitiz and Solar Philippines.

By law foreign investment must cooperate with such companies. Due to the restriction on the maximum shareholding ratio of foreign capital, overseas RE companies have certain commercial concerns about investing in the Philippines.



## CHAPTER II

# DEVELOPMENT AND INVESTMENT NEEDS OF RENEWABLE ENERGY IN THE PHILIPPINES

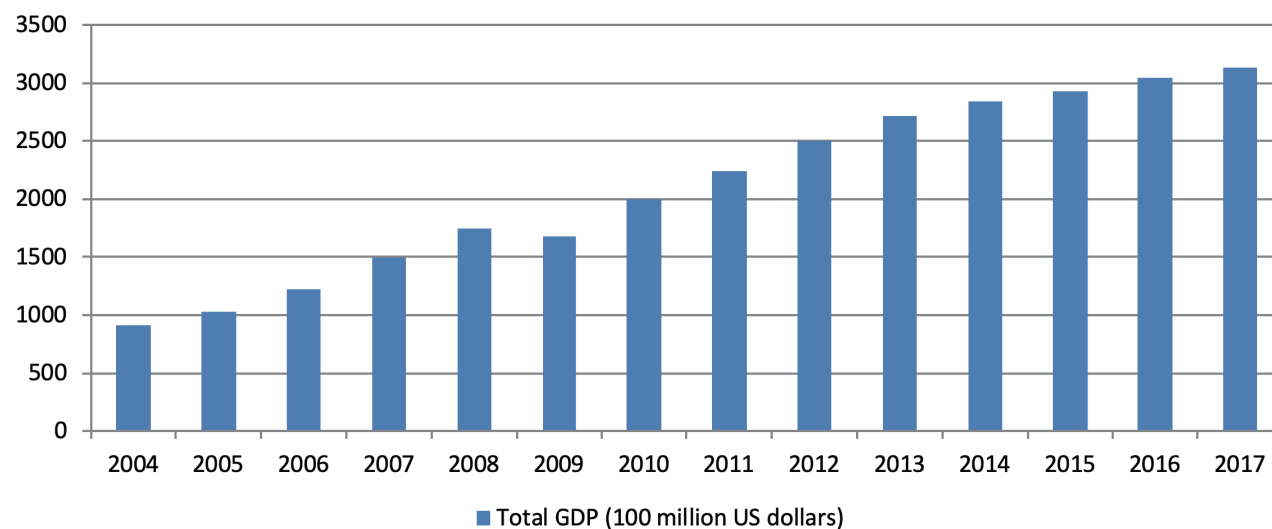




## 2.1 Renewable Energy Development Needs Based on National Energy Planning and Climate Targets

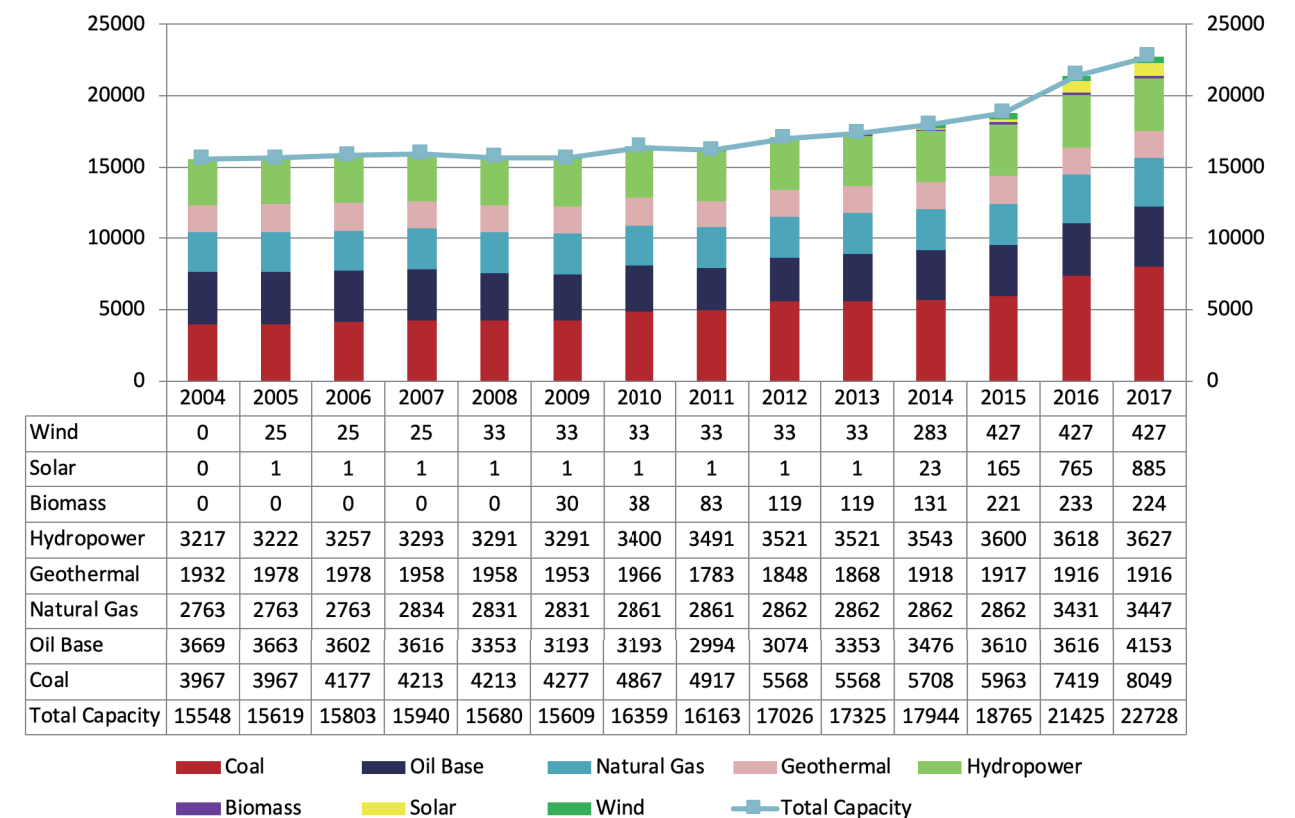
From 2003 to 2017, there have been ups and downs in the economic development of the Philippines. Despite this, the average annual economic growth rate has reached more than 5%. Especially since 2012, the Filipino economy has achieved rapid growth and annual economic growth rate currently lies between 6% to 7.5%, making it one of the fastest growing countries in Asia.

Figure 4: Total GDP of the Philippines (2004-2017)



The rapid economic growth has increased the demand for a stable supply of energy and electricity. However, according to the statistics of the Philippine DoE, power installation was slower from 2004 to 2017, only increasing from 15,548MW to 22,728MW. This could not meet the demand of the rapid economic development, resulting in a serious shortage of electricity and subsequent high cost. Therefore, the Philippine government urgently needs to increase its investment in power facilities and follow up with the implementation of its power infrastructure, to increase the national power generation.

Figure 5: Philippine Power Capacity (2004-2017), BNEF



In October 2015, the Philippines submitted the country's first Nationally Determined Contribution (NDC) to the United Nations Framework Convention on Climate Change. The Philippines proposed in the document that it plans to reduce greenhouse gas emissions by 70% from 2000 to 2030 relative to the standard emissions scenario (or baseline scenario). Although the Philippine climate target does not clearly specify the installed capacity, power generation or ratio targets for RE, the Philippines has proposed to strengthen the use of RE by enacting the Renewable Energy Law 2018. This is to promote the energy department's climate mitigation action. At the same time, the Philippines has raised the need for technology input and assistance in improving grid efficiency, setting energy efficiency standards, developing cost-effective RE and improving the efficiency of traditional power generation technologies as a means to strengthen the country's climate action. According to the Climate Action Tracker, the Philippine Climate Change Committee is currently in the process of revising its climate goals.



The existing power shortage has increased the Philippines' emphasis on RE development. The Philippine Energy Plan (2012-2030) and the Philippine Energy Plan (2017-2040) clearly propose that an installed capacity of RE will increase to 15.4GW by 2030 and at least 20GW by 2040. By increasing the installed capacity of RE, the Philippines is helping to achieve a stable supply of domestic electricity and power coverage in islands without electricity. The Philippine DoE also intends to implement relevant energy investment policies to facilitate consumers' access to electricity services and to encourage investors. A three-pronged approach of incentives, investment and innovation is adopted to achieve national energy security and sustainable development. According to the Renewables 2018 Global Status Report released by REN 21 in June 2018, the Philippines is ambitious about developing RE power, and proposes that, by 2020, RE capacity will account for 40% of the country's total power generation and by 2050, complete coverage. After experiencing rapid growth in RE installations from 2013 to 2017, the growth rate of RE has slowed down in the past three years. The RE national development has shifted from being 'subsidy-driven' to 'market-driven'. The Renewable Energy Act of 2008 (RA9513) provides legal guarantee for the project, but prices of key equipment such as solar PV and wind power are affected by global market changes. It is estimated that in around 2020, the global solar PV and wind power industry cost will have a competitive advantage over coal. Consequently, the newly installed capacity of RE in the Philippines will surely usher in a new era.

## 2.2 Investment Needs for Renewable Energy in the Philippines

After taking office, the Duterte government has been working on increasing the global competitiveness of the Philippines by promoting the development of their infrastructure. And the DoE is taking various measures to establish a cheap, reliable, modern and sustainable energy system. The Philippines has proposed a new vision of adding at least 13GW of renewable energy capacity by 2040, in order to meet the country's growing power needs. To increase the RE installed capacity from 7GW to at least 20GW by 2040 it is estimated that the Philippines will need to invest at least \$20 billion, which will continue to promote the domestic RE development for the next 20 years.

In addition to striving to create a favorable investment environment and attracting investment in RE, the Philippine government has implemented reforms that simplify energy project approval and regulatory procedures. In 2017, the Philippines established the Energy Investment Coordination Committee (EICC) in accordance with Executive Order No. 30 signed by the President. The committee was led by a representative from the Philippine DoE to unify, integrate and simplify the regulatory process and create a simpler and faster approval process. The committee required government agencies to take action within 30 days after receiving project permit applications. If no feedback or reasonable explanations are given within this time frame, the project will be licensed by default, which would subsequently reduce restrictions and obstacles to private enterprise investment.

In addition, the Filipino government also announced that they would strengthen infrastructure through improving power grid transmission and distribution networks, to provide protection for investors. This includes the National Transmission and Distribution Corporation, where they will invest \$2 billion to build at least 6 domestic transmission and distribution lines. Alongside this, the Philippine Power Grid Corporation and ABB Group have signed a \$27 million agreement to purchase 18 smart grid transformers to improve the transmission capacity and reliability of the Philippine Grid. The Philippines MERALCO company plans to purchase 3.3 million units of smart meters before 2024 to achieve automatic power metering, while the US GE will invest in a 500kV transmission line and substation in Bataan, with the aim to achieving better power dispatching.



# CHAPTER III

## INVESTMENT ENVIRONMENT AND RISK OF RENEWABLE ENERGY IN THE PHILIPPINES





## 3.1 Philippine Renewable Energy Investment Policy

In order to strengthen the development and utilization of RE and improve energy self-sufficiency, the Philippine government has carried out a series of legislative work. The main laws and regulations that have been promulgated include: Geothermal Law (1978), Small Hydropower Law (1991), Ocean Energy, Solar Energy and Wind Energy Law (1997), Power Industry Reform Law (2001), Renewable Energy Policy Framework (2003) and the Biodiesel Act (2006). Among them, the most important aspect in the field of RE is the Renewable Energy Act of 2008 (RA9513), which was established in December 2008. The promulgation and implementation of the Renewable Energy Act of 2008 has become the first and most comprehensive RE legislation in Southeast Asia. It draws on the advanced experience of developing RE in developed countries and provides excellent fiscal and tax incentives for the development and utilization. This law helps accelerate the exploration and development of Philippine RE, reduce the dependency on fossil fuels and the impact of international energy price fluctuations, while also mitigating climate change and promoting the domestic social and economic development of the Philippines. Equally, a good institutional framework has been built and a good example has been set up for RE-related legislation in other Southeast Asian countries.

The Renewable Energy Act of 2008 supports the development of RE mainly through two aspects: fiscal incentives and non-financial incentives.

- i. Fiscal Incentive policy: Through tax relief and other incentives to support renewable energy projects, including;
  - a) Income Tax Holiday (ITH): For the first seven years of its commercial operations, the duly registered RE developer shall be exempt from income taxes levied by the National Government. After seven years of ITH, all RE Developers shall pay a corporate tax of ten percent (10%) of their net taxable income.
  - b) Duty-free Importation of RE machinery, Equipment and Materials. After getting a certification of an RE developer, the importation of machinery and equipment, and materials and parts thereof, including control and communication equipment, shall not be subject to tariff duties.
  - c) Special Realty Tax Rates on Equipment and Machinery: The rates shall not exceed one and a half percent (1.5%).
  - d) Net Operating Loss Carry-Over (NOLOC): The NOLCO of the RE Developer during the first three years from the start of commercial operation which had not been previously offset as deduction from gross

income shall be carried on as a deduction from gross income for the next seven consecutive taxable years.

- e) Accelerated Depreciation: Accelerated depreciation may be applied if and only if the renewable energy project does not apply for income tax relief before it is fully operational.
- f) Zero VAT rate: VAT reduction and exemption can be obtained by selling fuel or electricity generated by renewable energy.
- g) Cash Incentive of RE Developer for Missionary Electrification: A RE developer, established after the effectivity of this Act, shall be entitled to a cash generation-base incentive.
- h) Tax Exemption of Carbon Credits: All proceeds from the sale of carbon emission credits shall be exempted from any tax.
- i) Tax Credit on Domestic Capital Equipment and Services: A tax credit equivalent to 100% of the value of the value added tax and custom duties that would have been paid on the RE machinery, equipment, materials, and parts from domestic manufacturers.
- j) Exemption from Universal fees: Renewable energy project developers use their own electricity, and the electricity provided by the uncovered areas of the power grid is exempt from the fees stipulated in the Electricity Sector Reform Law.

Furthermore, all manufacturers, fabricators and suppliers of locally-produced RE equipment and components that are duly recognized and accredited by the DoE shall be entitled to the incentives provided herein. This includes:

- 1) Tax and Duty-free Importation of Components, Parts and Materials.
- 2) Tax Credit on Domestic Capital Components, Parts and Materials.
- 3) Income Tax Holiday and Exemption for seven years.
- 4) Zero-rated Value-Added Tax Transactions.

### ii. Non-Fiscal Incentive policy:

- a) Renewable Portfolio Standard (RPS). All stakeholders in the electric power industry shall contribute to the growth of the renewable energy industry of the country. The Energy Regulatory Commission (ERC) shall set the minimum percentage of power generation deriving from renewables. Stakeholders who cannot meet the proportional quota requirements will be punished accordingly. The RPS is mainly for grid-connected projects covering the power grids of Luzon, Visayas and Mindanao, and the assessment body covers all power distribution

companies and power generation companies. In 2017, the Philippines passed an act to clarify that 2018 would be the base year for quota assessment, 2019 is an excessive year and 2020 officially enters the compliance year. The RPS also requires that RE power must be increased by at least 1% per year among the total power generation.

b) Feed-In Tariff System: To accelerate the development of emerging RE resources, a feed-in tariff system for electricity produced from wind, solar, ocean, run-of-river hydropower and biomass is hereby mandated. The Feed-In Tariff System shall include, but is not limited to the following:

- √ Priority connections to the grid for electricity generation within the territory of the Philippines.
- √ The priority purchase and transmission of, and payment for, such electricity by the grid system operators.
- √ Determine the fixed tariff to be paid for electricity, which is produced from each type of RE. The mandated number of years for the application of these rates shall not be less than twelve years.
- √ In 2010 the ERC issued the 'Feed-in Tariff Rules' and clearly stated that for RE power plants which meet the requirements and are registered in the Philippines, the fixed feed-in tariff shall be valid for 20 years. After the 20 years of operation, if the power plant is still operational, then electricity prices should be settled according to the current market prices or those they agreed with the government. At the same time, the 'Feed-in Tariff Rules' also stipulate that the ERC will adjust the feed-in tariff every year according to external factors such as Philippine domestic inflation and changes in overseas exchange rates. The Feed-in tariff for a new year should be issued by ERC before January 15th of that year and is applicable to the generation of RE projects that year.

c) Green Energy Option. The DoE shall establish a Green Energy Option program, which provides end-users the option to choose RE resources as their source of energy. The end-users may directly contract RE facilities or their respective distribution utilities to purchase clean power.

d) Net-metering for Renewable Energy. The ERC approved the Resolution No. 9 'Net-Metering Rules' in May, 2013. The established rules apply only to grid-connected power generation systems (or distribution companies connected to the grid). The rules are mainly for customers of distribution network enterprises, who invest in RE power generation facilities (mainly solar photovoltaic power generation) of no more than

100kW for self consumption. Excessive power that has not been used will be delivered to the local distribution network, which will be used to offset the amount of electricity consumed by the end user from the distribution network. It will help the users save electricity bills and protect themselves from rising electricity prices.

In terms of administrative systems, many governmental departments in the Philippines are responsible for the development of RE. Among them, the Philippine DoE is in charge of Philippine domestic energy affairs and the REMB that has been established in DoE is responsible for registration of licenses, subsidy applications and project approvals for RE companies. At the same time, companies that carry out RE business in the Philippines need to register with the Ministry of Trade and Industry, and Bureau of Investment (BOI) before they can enjoy the incentive policies. In addition, in order to promote the implementation of the Philippines' RE policy, the Philippines has also established the National Renewable Energy Committee (NREB) and the Renewable Energy Trust Fund (RETF) within the government. NREB was officially established in September 2009 and is formed by government agencies such as the DoE, the Ministry of Trade and Industry, the Ministry of Finance, the Ministry of Environment and Natural Resources, and state-owned enterprises such as the State Power Corporation, the State Grid Corporation, the National Petroleum Corporation, and the Power Market Corporation. It also consists of representatives from RE companies, financial institutions, NGOs and relevant private companies. The committee is mainly responsible for formulating RPS and feed-in tariff standards, formulating and implementing Philippine RE plans and supervising the use of RETF. Its first chairman is former Energy Minister, Mr. Perez. The source of RETF is legally guaranteed and is mainly used to finance the development and promotion of RE.

a) To develop renewable energy projects in the Philippines, project developers must sign a service agreement with the government through the Ministry of Energy, which occasionally even passes through the president. Through the agreement contract, the renewable energy developer is assumed to have the exclusive right to explore, develop and utilize renewable energy in a specific region within the time limit set by the Philippine Department of Energy. Signing a renewable energy development agreement can be divided into two phases. The first stage is the Pre-Development Stage, which involves the preliminary assessment, feasibility study and financial estimates of projects.

b) Development/Commercial Stage. This stage involves construction, installations and operation of projects required by the development, production or utilization of RE resources.



The RE applicant must be a Filipino or a Filipino corporation with at least 60% of its shares owned by Filipinos. The applicants need to submit a letter of Intent, blocking map and RE application form. This latter document mainly includes legal documents (such as company registration) technical documents (such as performance and industry experience) and financial documents (such as audited financial files for the last two years).

## 3.2 Philippine Renewable Energy Investment Environment

**Policy Environment:** In 2018, the Philippine Energy Regulatory Commission (ERC) was reorganized to facilitate energy-related work. Regarding the status of RE development in the Philippines, the new chairman, Agnes Devanadera<sup>1</sup>, publicly stated that there are currently about 600 energy projects that are still waiting for approval. This existing backlog of project approvals has brought a degree of concern to RE developers and investors. In order to solve the long-standing issue of pending projects, at the end of 2018, Agnes Devanadera<sup>1</sup> proposed the Zero Backlog Program with the goal of resolving the backlog of project approvals within 18 to 24 months. However, as things stand, the plan is merely in the concept stage and no specific implementation method has been proposed. Thus, progress is slower than expected and the issue remains unresolved.

Despite this, the new chairman is displaying an open attitude and willingness to respond directly to the current crop of problems. She is seeking expert advice and expertise from both the Philippines and abroad, while publicly acknowledging the seriousness of the current situation. This willingness has enabled the Philippine energy community to be optimistic about future energy development. As 2018 was the first year of the reorganization of the ERC, they still needed to undergo a period of change and adjustment. Therefore, specific implementation measures for the zero backlog policy are in the process of being researched and formulated. These measures will take some time to adjust, verify and implement, thus evolving from an optimistic mood to actual optimism and action in market investment.

**Feed-in Tariff and installation targets:** In July 2012, the ERC approved the Philippine RE Feed-in Tariffs and total installation targets. These included:

- √ Run-Off-River Hydro; Feed-in Tariff was 5.9Pesos/kWh and the installation target was 250MW. In January 2017 the Feed-in Tariff was lowered to 5.8705 Pesos/kWh while the target remained.
- √ Biomass; Feed-in Tariff was 6.63Pesos/kWh and the installation target was 250MW. In January 2017 the Feed-in Tariff was lowered to 6.5969 Pesos/kWh while the target remained.
- √ Wind; Feed-in Tariff was 8.53Pesos/kWh and the installation target was 200MW. In 2015 the Feed-in Tariff was lowered to 7.40 Pesos/kWh for 200MW and the installation target increased to 400MW, valid until March 15th, 2016.
- √ Solar Power; Feed-in Tariff was 9.68 Pesos/kWh and the installation target was 50MW. In 2015 the Feed-in Tariff was lowered to 8.69 Pesos/kWh for 450MW and the installation target increased to 500MW, valid until March 15<sup>th</sup>, 2016.

The solar power and wind Feed-in Tariff projects were terminated in 2016 and shifted to the PPA. In July 2016, the REC announced the third round of subsidies for solar power and wind energy. The solar power Feed-in Tariff was set at 7.66 pesos per kWh, lower than the 8.69 pesos per kWh in the second round. The expectation was that the newly installed capacity would reach 500MW (including 300MW in the second round of bidding). The Feed-in Tariff of wind energy was set at 6.97 pesos per kWh, lower than the 7.40 pesos per kWh in the second round. Here the expectation was that the installed capacity would also reach 500MW. The mechanisms for declining power prices for solar and wind projects were formed during this period.

**Project distribution and competition** In 2017, the Philippines' RE project investment was mainly focused on solar PV, with a total of 127MW being mainly distributed in the Luzon and Visaya regions. The grid coverage was vast and the terrain flat, thus benefitting the development of solar PV projects. Although Mindanao also has a large extent of grid coverage, the topography is mountainous with volcanoes and fault lines, thus being unfavorable for solar PV.

- √ In 2017, Luzon built 6 new solar PV projects with an installed capacity of 62MW. Among them, the Sta. Rita Phase project was large-scale, with an installed capacity of 32MW, which was developed and operated by Jobin-Sqm Inc. (JOBIN). In addition, the Mariveles Solar project was installed at 18MW and operated by Next Generation Power Technology Corporation. Projects have also been completed to generate power by CW Marketing & Development Corporation (CW), SPARC Solar Powered Agri-Rural Communities Corporation and Bosung Solartec, Inc. (BOSUNG).

<sup>1</sup>The new chairman of ERC, Agnes Devanadera, officially took up her duties in December 2017 and her term will last until July 10, 2022.

- √ In 2017, two new solar PV projects have been implemented in Visaya with an installed capacity of 66MW, which mainly include the 60MW project developed and operated by First Toledo Solar Energy Corporation (FTSEC). The other 6MW Cosmo Solar project were mainly developed and operated by Cosmo Solar Energy, Inc.

The wind and solar PV projects in the Philippines are concentrated in Luzon and Visaya. By the end of 2017, wind power installed capacity totaled 427MW and solar PV accumulative installed capacity was 885MW. However, since 2015, as the cumulative installed capacity of wind has exceeded the target of 400MW, no new wind projects have been put into operation in the Philippines. Therefore, solar PV generation has been vigorously developed instead. After the Feed-in Tariff policy in 2016, the bidding PPA led to a decline in prices, which led to a reduction in project investment returns and slowing solar PV capacity additions.

In general, the Philippine wind and solar PV market has broad prospects, but the cumulative installed capacity is barely over 1GW, so it is difficult to attract enterprises for its strategical layout. The overall market vitality is lower than that of India, Thailand and Vietnam. After the completion of Feed-in Tariff targets, the bidding PPA model requires that the prices of key equipment should be reduced to meet the investment company's requirements. However, the steady decline of key equipment in solar PV and wind in 2016-2018 did not meet this requirement, which resulted in the slow development of new projects in the Philippines.

Luzon currently has planned about 3.3GW of solar PV generation and 1.3GW of wind power, while Visaya has planned 800MW solar PV and 1.4GW for wind. These projects are mainly developed by companies such as Solar Philippines, Inc., Energy Development Corporation and Greenergy Solutions, Inc. In the future, Chinese enterprises must cooperate with and even compete with these enterprises regardless of investment or advanced engineering fields or techniques.

### 3.3 Philippine Renewable Energy Investment Risk Analysis

**Political Risks** According to the Global Corruption Perceptions Index released by the NGO 'Transparency International', which monitors global corruption, the Philippines ranked 101st and 111th in 2016 and 2017, respectively. The domestic political and business environment is still relatively unstable with problems such

as corruption, bureaucracy issues, and administrative inefficiency. These factors have combined to lead to a deterioration of the overall political and business effectiveness in the Philippines. The Philippine ERC corruption incident is an example of such problems. At the same time, the political and economic structure of the Philippines has a long and complex history. Some family relationships continue to expand their influence and coverage through alliances and marriages and assert a strong political influence on local governments. This indiscriminate family power has cast a layer of uncertainty on the investment environment of the Philippines.

**Investment Risk** The Philippine constitution stipulates that foreign investment can only occupy up to 40% of the shares of energy exploration, development and utilization projects. At present, the development of geothermal energy, hydropower, solar energy and other resources in the Philippines is mainly owned by domestic companies such as PNOC-EDC, Aboitiz, and Solar Philippines. Foreign capital is required by law to cooperate with domestic enterprises. They also need to work closely with local enterprises on subsequent development, approval, certification and other aspects to achieve success in completing projects.



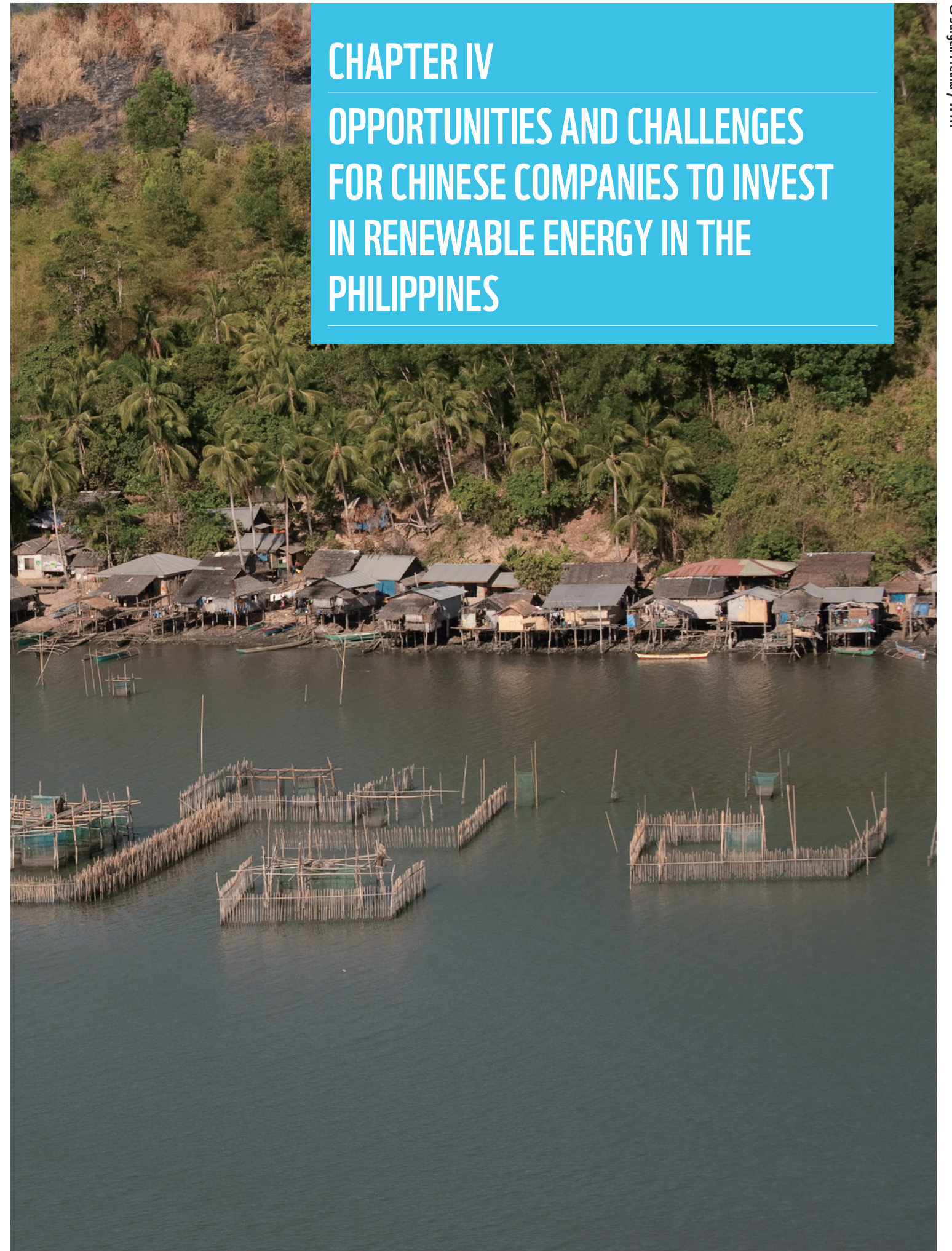
**Social Risks** The Philippines' National Comprehensive Protected Areas System Act, the Aboriginal Human Rights Act and other related laws constitute some obstacles to the development of RE in local areas. Additionally, local communities and residents may be biased against and even hostile towards energy development. Moreover, Filipino land is privately owned. Solar PV and wind projects require land cooperation and leases during the development and construction process. It may cause disputes with landowners and local residents, due to problems with land cooperation and rental prices. The disruption could even go as far as local residents' stopping work, and if such issues are not adequately and promptly dealt with, they will bring significant risks to the project and investment.

**Financial and Foreign Exchange Risk** The Philippine peso has been relatively stable against the US dollar in the past three years, although a slight depreciation was apparent. The exchange rate dropped from 0.0215:1 at the beginning of 2016 to around 0.0185:1 at the end of 2018. Thus, the Philippine peso de-valued by about 14% against the US dollar. In 2018, due to US interest rate hikes, intensified Sino-US trade disputes and the unfavorable international market environment, the main economic indicators of the Philippines fluctuated greatly. Alongside this inflation rate pressure continued to rise, and a deficit in balance of payments rose sharply, bringing a negative effect to its economy. There are several financial foreign exchange risks of investing in and holding RE projects in the Philippine for over 20 years, but risks can be effectively managed if settlements are through foreign exchange hedging instruments or in US dollars.

**Technical Risks** Technology reserves in the field of RE are underdeveloped in the Philippines and the government's fiscal capability is not strong. Specific information on the distribution of RE resources is lacking in investigation and research. The current data is primitive and overly vague. If commercial development is required, investors must carry out significant preliminary work before investment. In addition, the Philippines' RE testing certification requirements, standard system management and technical indicators required for grid-connected operation are also incomplete. There are technical risks in terms of product adaptability. At the same time, the Philippines is located in the tropics. The climate is extremely hot, humid and can experience numerous typhoons. After completing power stations, there are certain risks in technology and in the cost of operation and maintenance.

## CHAPTER IV

# OPPORTUNITIES AND CHALLENGES FOR CHINESE COMPANIES TO INVEST IN RENEWABLE ENERGY IN THE PHILIPPINES





## 4.1 China's Renewable Energy Cooperation Projects in the Philippines

After taking office, Duterte actively improved relations with China and effectively eased the tension between China and the Philippines. At present, China is the Philippines' largest trading partner, the largest source of imports and the fourth largest export destination. In November 2018, during China's President Xi Jinping visit to the Philippines, he witnessed the signing of a number of bilateral cooperation documents between China and the Philippines. This included the Memorandum of Understanding Jointly Promoting the Construction of the Belt and Road Initiative and the Memorandum of Understanding on Oil and Gas Development Cooperation. The cooperation between the two countries has once again reached a new pivotal stage.

In terms of investment in RE projects, Chinese companies currently hold few power plants, and mainly rely on products sales and EPC engineering services.

In the Solar PV sector:

- √ In 2014, 250kW PV inverter that was developed by Hunan CSR Zhuzhou won the bid for the Manila solar PV plant.
- √ In 2015, CSUN-Solar International Limited, a subsidiary of Nanjing Zhongdian Photovoltaic Co., Ltd., signed an agreement with the Philippine developer YH Green Energy Inc. to build a 14.5MW solar PV plant in the Philippines as an EPC provider.
- √ In 2015, JA Solar, a Chinese solar PV module manufacturer provided products for 70% of the parts required in a 132.5MW project in Cadiz City in the Negros Occidental Province of the Philippines, while Trina Solar supplied the remaining parts.
- √ Wuxi Suntech also supplied all of the PV module equipment for the 8.5MW solar PV project in Valenzuela.
- √ In 2016, the Chinese company Baowei became the exclusive stand supplier of the 63.3MW solar PV plant developed by Solar Philippines in Calatagan. The also provided related services such as stent test, professional packaging, logistics design and bracket pre-installation.
- √ Xiamen Clenergy also provided stands for the largest commercial rooftop solar PV station in Pampanga Province.

√ With regards to investment and the development of solar PV projects, Chinese companies ET Solar and Hareon Solar have signed joint development agreements with a number of companies in the Philippines.

√ In 2015, ET Solar signed a 70MW PV plant cooperation agreement with GATE SOLAR PHILIPPINES CORP., a renewable energy developer. As a joint developer and investor, ET will provide investment and financing, technical support, and a complete set of solution services, which will cover the life cycle management of power plants.

√ In 2017, ET solar also entered into a strategic partnership with the Filipino energy company Vivant, setting up a joint venture 'ET Vivant Solar' for the Philippine rooftop PV market.

√ In 2016, Hareon Solar signed a MOU with Philippine company Sun Asia, beginning formal cooperation in the joint development of the Victorias PV plant project in southern Philippines.

In the Wind sector:

√ In early 2017, Xidian International Philippines Branch of China Xidian and a Singapore consortium planned to cooperate with the aim of building a new 232MW wind and solar power project in Ilocos Norte, Philippines, with an investment totaling \$500 million. The 132MW wind power project is located in the Burgos region of North Ilocos Province. And the 100MW solar PV power project is located in the Pasuquin area of the province. China Qingdao Hengshun Zhongsheng Group Co., Ltd. obtained the general contracting business. Goldwind received orders for 53 units of GW109/2500 direct-drive wind turbines for the project, for operation and maintenance. In 2017, shipments of 16 units were completed with a cumulative capacity of 40MW.



Year	Project	Solar or Wind	Chinese Company	Cooperation	Capacity (MW)
2014	Manila solar PV plant	Solar PV	CSR Zhuzhou	Inverters provider	-
2015	YHGreen Energy Incorporated solar PV plant	Solar PV	CSUN-Solar	EPC	14.5
2015	Cadiz City solar PV plant	Solar PV	JA Solar and Trina Solar	PV model provider	132.5
2015	Valenzuela solar PV plant	Solar PV	Wuxi Suntech	PV model provider	8.5
2015	GATE SOLAR PHILIPPINES CORP. 70MW solar PV plant	Solar PV	ET Solar	Investment Agreement	70
2016	Calatagan solar PV plant	Solar PV	BaoWei	Stands and EPC provider	63.3
2016	Pampanga solar PV plant	Solar PV	Xiamen Clenergy	Stands provider	2.88
2016	Victorias solar PV plant	Solar PV	Hareon Solar	MOU	-
2017	Vivant solar PV plant	Solar PV	ET Solar	Establish a joint venture company ET Vivant Solar	-
2017	Ilocos Norte Wind and solar PV plant	Solar PV and Wind	Qingdao Hengshun Zhongsheng Group	EPC	232
			Goldwind	Wind turbine provider	132

Table 1 :Chinese companies participate in RE projects in the Philippines

Furthermore, in 2009, the State Grid of China and the local partner of the Philippine State Grid Corporation took over the Philippine National Transmission Network. State Grid, as a major shareholder and technical support provider, obtained the franchise operation rights of the Philippine national transmission network for 25 years. The Philippine State Grid Corporation is a joint venture, which was established by China State Grid Corporation, the Philippines Montero Power Grid Resources Company and Karaka High Power Company. Among them, State Grid Corporation holds 40% of the shares. During the 10-year operational period, the Philippine national transmission network generally performed well, and it has provided invaluable experience and practical cases for Chinese enterprises to invest in the Philippines.

## 4.2 Opportunities and Obstacles for Chinese Companies to Invest in Renewable Energy Projects in the Philippines

- Opportunities:
  - i. Since the appointment of President Duterte, the Philippines has implemented a proactive fiscal policy and a prudent monetary policy, vigorously promoting the construction of infrastructure, while also focusing on curbing inflation. Although there is naturally a certain volatility in the short-term market, there has been no change in the fundamentals of economic growth. It is expected that under the present circumstances the Philippines is likely to continue to maintain a high rate of economic growth in the future. Due to an insufficient energy supply, the domestic electricity price in the Philippines is the highest in the ASEAN region, which provides an effective external environment for investing in RE projects. In addition, China-Philippines bilateral relations have improved after the visits of President Xi Jinping to the Philippines in 2018, Premier Li Keqiang's visit in 2017 and Duterte's three visits to China after he took office. The Philippines has become one of the important partners of China's "One Belt, One Road" strategy.
  - ii. The Philippines has listed climate change as being an essential focus for the government. It has promoted the development of the RE industry to the national strategic level, promulgated and implemented the Renewable Energy ACT, and established the ERC and RE Management Bureau. Government agencies such as the bureau have formulated RE implementation rules to promote such development. Driven by the positive environment for RE development in the Philippines, China's RE companies have actively participated in the construction of RE projects in the Philippines through various channels, and have accumulated important practical experience and corporate cooperation networks to formulate the next step.
  - iii. The Philippine RE Feed-in Tariff policy has driven investment and enabled it to reach a certain scale. However, after the completion of installation targets, the further development of RE power under the PPA model will require a higher level of competition for PV module and wind turbine prices. In 2018, China's domestic PV module and wind turbine prices declined, which provided the product guarantee for future Chinese companies to participate in the Philippines' RE PPA bidding.



- Obstacles:
  - i The political situation in the Philippines is stable, but in the process of implementing policies and bills via government agencies, there are always existing uncertainties. These include the long-term and large backlog of applications of the ERC. In addition, the Philippine government is not always effective and the government's administrative efficiency is relatively low. In 2019, the Philippines will hold mid-term elections, and relevant energy government agencies may subsequently undergo adjustments. The new leaders will also bring certain uncertainty to the smooth progress of future projects.
  - ii. Most of the RE resources in the Philippines are owned by local companies. Overseas investors can only hold shares of up to 40%. Therefore, the joint development with local companies is a must when investing in RE in the Philippines. These obstacles are not small challenges for Chinese enterprise in learning how to better cooperate with local enterprises to develop, build and operate RE projects for 20 years.
  - iii. In the actual project development process, issues involving land, approval procedures, and enterprise employment may also pose certain challenges. Filipino land can be privately owned while solar PV plant projects occupy large areas, so it is therefore necessary to negotiate land leases with multiple landowners. At the same time, the local government's procedures for project development are not always timely and the work efficiency tends to be low, resulting in slow progress. Additionally, a shortage of skilled workers in local areas is another unfavorable factor for projects to move forward efficiently. Project financing also faces a long and tedious evaluation period while the efficiency of foreign banks is relatively low as well. Domestic banking policies have the added risk of varying changes.

## 4.3 Suggestions

At present, the Philippine RE market has entered a 'subsidy-free and market-oriented' stage. Chinese companies have accumulated a certain degree of successful experience in project investment and development alongside operational management, providing new market opportunities for Chinese manufacturers. They hold technological competitiveness and have large-scale cost advantages.

This study proposes the following recommendations for Chinese companies to actively participate in the RE market in the Philippines:

Firstly, shifting from product sales to holding assets. From 2015 to 2016, along with a flurry of installations ahead of the end of the solar PV Feed-in Tariff policy, many companies in China participated in the supply of PV products in the Philippines. During this time they gathered initial experience in participating in the RE project. Although investing in and holding Philippine RE projects is small, in the future, together with China's PV producers investing factories overseas (current production lines are built in Vietnam, Thailand, Malaysia) they will gradually shift to hold new energy assets. On top of this, deepening the cooperation with local governments and enterprises, taking advantage of localization, and continuing to invest in renewable energy projects in the Philippines after exiting the subsidy policy.

Secondly, participating in the construction of projects assisted by China or other international organizations. In 2017, during Premier Li Keqiang's visit to the Philippines, China pledged to provide \$7.34 billion in loans and assistance for the construction of infrastructure. Participation in the building of RE projects will help to increase the visibility and soft power of Chinese companies. In addition, the World Bank is actively promoting the construction of power projects in Filipino islands and non-electrified areas. Chinese enterprises will also actively participate in corresponding projects, and consider adopting appropriate donation equipment. This would be in order to strengthen cooperation with local companies for enhancing their influence.

Thirdly, giving full access to the role of NGOs. Taking advantage of the NGO's flexible, professional and direct access to the general public and supporting NGO public welfare activities. This is so local governments and the public can better understand Chinese enterprises, improving their corporate visibility and image, thereby ensuring the safety of domestic enterprises who invest in the Philippines.

Lastly, proactively participating in RE exhibitions and conferences in the Philippines. Every year, the Philippine International Power Energy Exhibition is held along with the Manila Solar New Energy Exhibition. Active participation in exhibitions will help keep abreast of Filipino RE information, communicating with partners and discovering more project opportunities.



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# Opportunities and Challenges of China's Renewable Energy Overseas Investment

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