



PHILIPPINES



COUNTRY OVERVIEW

Until the start of the COVID-19 pandemic in 2020, the Philippines had a fast-growing economy, with 6.4% annual growth rates and had experienced almost twenty years of uninterrupted growth. Over the course of the pandemic, the Philippines registered its worst growth ever, currently nearly - 10%, with over 4 million unemployed, many people who were forced to take pay cuts, and massive disruptions to the schooling system.

Compounding these problems, the country suffered numerous forced power shortages, and rolling blackouts, due to supply issues within the energy system. The country was too dependent on deliveries of fossil fuel oil, which was disrupted due to the pandemic, and renewables provided only patchy service, both geographically, as well as during particular seasons, when there is no backup. There is now strong support for greater investments into renewable energies to ensure that these critical problems do not occur again. In fact, in 2020, the country's installed renewable energy (RE) capacity increased by 16%.

Even before the pandemic, the Philippines had major problems with waste, due to rapid urbanisation and inadequate waste management practices. The country has a vast consumption of single-use plastics and was listed by the World Bank as the third-biggest contributor to ocean plastic on the planet. The Philippines' government has recognised these issues and there are now encouraging signs within the waste collection and recycling sectors.



SECTOR OVERVIEW

Renewable energy

The Philippines has been heavily dependent on fossil fuels for many years, and is still today, a net importer of fossil fuel, importing large quantities of coal to supplement their domestic production, but almost entirely dependent on imported oil. This makes the country vulnerable to price changes, and supply constraints, such as those experienced during the COVID-19 pandemic. The effects of climate change, creating rising sea levels, changing weather patterns, and extreme weather events, are highly likely to exacerbate these issues, forcing the Philippines to take serious steps to support alternative fuel sources.

The Philippines has an ambitious renewable energy target of 15.3 gigawatts (GW) by 2030 – almost three times the 5,438 MW installed capacity in 2010. At that time, renewable energy sources contributed 29.24% of total energy demand. By 2018, the last year where full figures are available, the Philippines was on 23 GW from renewables although electricity demand had increased significantly faster and renewable energy contributed less than a quarter of the total. By 2040, the Philippines would require about an additional 43 GW of energy capacity, which means that sustainable solutions are urgently needed.

The largest renewable energy source in the Philippines is **geothermal energy**, due to the country's location on the Pacific Ring of Fire. Ranked third in the world to the USA and Indonesia, the International Renewable Energy Agency estimates that the country has a net installed geothermal energy capacity of 1.9 GW and can potentially increase this to 2.1 GW by 2025. After many years of relatively stagnant growth, the Philippines launched a new set of exploration surveys in June 2018 to find new geothermal sites, to supplement the seven existing geothermal fields in the country. According to ThinkGeoEnergy, the long-term plan is to nearly double the capacity by 2040, phasing out coal in the process, and letting geothermal energy take up to 40% of the total demand. One of the challenges is that while geothermal energy is cheap and safe, the process of finding it and developing the site is extremely expensive, costing up to US\$ 8 million each, with no guarantee of success, making it attractive only to larger companies.

With one of the highest sunshine hours in the world and up to 7kWh per m² during peak times, the Philippines has an extremely high potential for **solar energy**, which is expected to rise significantly in the coming years. Due to its fragmented geography, many islands and rural regions are powered via generator-based mini-grids, reliant on imported diesel oil. Due to grid instability and maintenance, inadequate capacity, and increasing fuel costs, there are many blackouts and unplanned power cuts. Off-grid electrification using solar energy, which is cheap and quick to install is therefore expected to be a good opportunity.

Small-scale solar photovoltaic (PV) has grown quickly in residential and industrial sectors in the Philippines, as PV technology costs have fallen significantly, and due to the introduction of net metering. However, growth has started to slow down, due to perceived administrative, financial, and legal difficulties, which hinder small businesses and house owners from installing rooftop systems.

Prices for PV units are only around 80% of the costs from 2009 and electricity production costs have fallen by around 75% over the same period. The costs of PV production are expected to fall further before 2025, making the sector very competitive compared with other energy types and increasing opportunities within the market, particularly for smaller mini-grid solutions. The government recently removed the Feed-in-Tariffs for solar energy, as the production costs were now so low, that they were no longer necessary to sell PV systems. The market is highly competitive and consolidated, with Solar Philippines Power Project Holdings, Solenergy Systems Inc., Vena Energy, Solaric Corp., and Trina Solar Ltd., holding a large market share.

Biomass energy continues to play an important role in the Philippines' energy supply, with nearly 30% of energy used, coming from biomass, mainly used for household cooking by the rural population. The use of biomass energy allows the use of waste products to create energy, converting a waste material to a product of value and enabling the reintroduction of nutrients to the soil from biochar, or degassed biomass. The World Bank has estimated that the Philippines has around 16 million tons of waste per year from rice, coconut, palm oil, sugar, and wood. Sugar, rice, and coconut alone could produce a combined 150 MW of power for larger grid-systems, for biogas, or biofuels. In 2006, in an effort to reduce the dependency on oil imports, the Philippines introduced the Biofuels Act which mandated the blending of biodiesel and ethanol in all locally distributed diesel (2%) and petrol (10%), with most biofuel coming from sugarcane and coconut oil. One of the largest centres in the country for biomass energy is at Isabela, where the Isabela Biomass Energy Corporation, formed by a consortium of rice farmers, has a 19MW electricity production, powering the local region, and is home to the Green Future consortium bioethanol production from sugarcane.

The sector offers many opportunities to SMEs, due to the decentralised, smaller nature of biomass energy plants, as well as providers of related services along the entire agricultural value chain. This can include e.g., energy resource evaluation and monitoring, harvesting, drying and processing technologies, transport and logistics, and fertiliser and nutrient management.

Waste management

The Philippines has some major challenges with respect to waste management, partially caused by the country's geography, as it is difficult to provide effective waste management services over 7,000 islands where economies of scale are hard to reach. Studies in the country from Philippine Alliance for Recycling and Materials Sustainability (PARMS), show that 70% of the Filipino population has no access to disposal facilities and sanitary landfills, causing waste to leak into the sea.

These problems are also faced by rapidly-growing urban areas. The Philippines Department of Environment and Natural Resources published figures in 2017 showing a total of over 9,000 tons of waste produced each day in Manila alone – of which only 85% was collected, leaving the rest to be washed away, finally ending up in the ocean. The city has three landfill sites which are close to capacity, and the last one is expected to be filled by 2037 at the latest.

While the Philippines enacted the Ecological Solid Waste Management Act in 2000, to convert all open rubbish dumps into sanitary landfill sites, there are still over 500 rubbish dumps in the country. Cities have blamed the high costs of alternative solutions and the challenges of finding suitable sites, as well as too strict regulations.

A major challenge is the spiraling use of plastic packaging not properly disposed of, fuelled by growing middle-class urban populations. According to the World Wide Fund for Nature (WWF) in a report from 2018, nearly three-quarters of all plastic that ends up in the ocean is from waste that was collected for disposal. The report stated that garbage haulers regularly unloaded their trucks directly into water on their way to disposal sites, in order to cut costs, and that many dumpsites were located very close to waterways, allowing also accidental leakage. Over 386,000 tons of waste leak into the ocean every year. There is a low recycling rate for certain plastics, which contributes to increased waste. While high-value plastics like polyethylene terephthalate (PET) and high-density polyethylene (HDPE) are recycled, there is limited infrastructure for the recycling of low-value plastics, such as those used for food sachets. There are currently only five recycling companies in the Philippines, while solid waste generation has steadily increased.

There are many opportunities for SMEs in the waste disposal and management sectors, from improved landfill systems, waste to energy conversion, improved sorting of household and industrial waste, and more effective recycling solutions. Solving the problems at source offers many opportunities for SMEs, especially for those who can supply biodegradable or reusable packaging with the same food safety characteristics as plastic.



REGULATION

To reduce the country's reliance on fossil fuels, the uncertainty due to fluctuating fuel prices, and the negative effects of pollution and climate change, the Congress of the Philippines passed legislations in a range of fields. This includes acts to support the use of renewable energy such as the Electric Power Industry Reform Act (2001), the Biofuels Act (2006), which encourages the use of biomass fuels, the Renewable Energy Act (2008), and the Climate Change Act (2009), both of which form the legal basis for mitigating climate change through sustainable development. Through the Renewable Energy Act, incentives in the form of income tax holiday, realty tax cap, and subsidized corporate income tax are given to the renewable energy sector.

In operational terms, the Philippines Department of Energy has formulated the National Renewable Energy Programme (NREP), which sets a series of strategic building blocks to help the Philippines achieve its renewable energy goals. This is a holistic plan, rather than a series of fragmented individual ones, which includes indicative interim targets until 2030. The targets are challenging and entail detailed planning, financing, and construction of large numbers of renewable energy systems and plants.

Originally put into effect in 2008, the Green Energy Option Program (GEOP) national renewable energy law was designed to transform the energy system in the Philippines by allowing both commercial and industrial energy users to select 100% renewable energy. The aim was that the GEOP would promote renewable, green energy as the default option, reducing the reliance on fossil fuels. The law remained unfortunately unenforced for over a decade. However, in July 2021, a group of leading companies in the Philippines, headed by Toyota Motor Philippines released a joint statement of support, asking for the full implementation of the programme. One of the supporters was AC Energy, the energy division of Ayala Group, the oldest conglomerate in the country, which recently launched plans to divest entirely from coal and become the largest listed renewable energy provider in Southeast Asia. The joint statement was supported by a bipartisan list of politicians from both the current Philippines government and the opposition, demonstrating the united, positive support for the programme, irrespective of political position.

Another piece of legislation introduced recently, promoting the use of renewable energy, is the Renewable Portfolio Standards (RPS). The RPS requires that electric power industry participants, increase their share of renewable energy by 1% per year, in order to reach the 35% target by 2030. Combined with the GEOP, this is expected to push a steady growth in renewable energy opportunities.

There is pending legislation in the Congress of the Philippines for several new initiatives including laws to require increased use of waste-to-energy solutions, and roll-out of electric vehicle charging networks.

Waste management is governed by the Ecological Solid Waste Management Act of 2000, although implementation is very much at the local government level, with responsibility even given down to the Barangay level.



MARKET ENTRY

The Department of Energy has estimated that the Philippines needs a minimum of US\$ 121 billion of investments in renewable energy between 2020 and 2040 if the country is to achieve its Clean Energy Scenario (CES) targets. This does not include system costs for improvement of reliability, transmission and distribution requirements, energy storage, and other ancillary services. The DOE aims to increase additional capacity in renewable energy by 10,000 MW by 2040, with 35% of energy from renewables by 2030 and 50% by 2040.

The DOE has recently confirmed that foreign-owned companies can be involved in the energy and utility sectors when discussing large-scale exploration, development, and utilisation of geothermal projects in the Philippines. While these specifically refer to projects with an initial investment of US\$ 50 million capitalisation, it is recognised to cover also smaller investment opportunities. Relevant tenders can be found on the DOE website.

While the Philippines allows market access to foreign-owned companies, most successful companies work together with a Filipino partner, which can be an advantage when navigating local bureaucracy and legislation.

The electricity sector is fully privatised, with one major company, Meralco, having an 80% share of the market, with the remaining 20% divided between regional organisations and cooperatives. There is a need for improved energy solutions and new equipment, but purchase decisions are often made solely on price, favouring low-cost production.

SMEs interested in accessing the Filipino market with new environmental products are advised to contact an Intellectual Property (IP) lawyer beforehand. The country operates on a first-to-file basis, meaning that the first person to file a patent in the Philippines will own the rights within the country once the application is granted. Both utility models and patents are allowed in the Philippines, offering different terms of protection and professional guidance is strongly recommended.

Networking opportunities and partner searches can be found on:

- Renewable Energy Association of the Philippines: <https://www.facebook.com/1REAP>
- Solid Waste Management Association of the Philippines: <https://swapp.com.ph/>
- Philippines Chamber of Commerce: <https://www.philippinechamber.com/>

Important trade fairs include:

- <https://www.waterphilippinesexpo.com/>
- <https://www.terrapinn.com/virtual/future-energy-show-philippines/index.stm>
- <https://www.philenergyexpo.com/>



RECOMMENDATIONS AND TRENDS

Investing in renewable energy, and waste management should be one of the Philippines' priorities in order to continue its development, particularly in a post-pandemic world, where alarming weaknesses have been discovered in societal structures. According to the International Renewable Energy Agency (IRENA), every dollar invested into renewable energy has a return on investment of 3-8 times. According to the Philippine Electricity Market Corporation (PEMC) report, Renewable Energy (RE) investments have already saved the Philippines PHP4.04 billion. Furthermore, the widespread adoption of renewable energy solutions creates jobs and generates income along the entire supply chain. A report by McKinsey from May 2020, showed that government spending on renewables and energy efficiency is three times more effective at creating employment than the same investment in fossil fuels.

Moving to more cleantech solutions helps to protect against climate change, reducing the country's share of carbon emissions by an impressive 2.8 million tons, and making it less reliant on external, imported fossil fuels. Since the country consists of over 7,000 islands, smaller, decentralised renewable energy systems, which are not dependent on the transport of fuel can further reduce environmental impacts, while contributing to energy security. Local energy systems, particularly if backed up by battery storage, can provide rapid backup power during natural disasters, making the country more resilient.

For years, the World Wide Fund for Nature (WWF) Philippines has advocated the shift to renewable energy, with its study on Building Momentum for Low Carbon Development emphasising the viability of the Philippines to shift, since the country hosts vast resources for renewable energy. Renewable energy provides particular benefits for smaller, rural locations and islands, providing electricity connectivity for consumers, without depending on logistically challenging transmission networks, which are not only expensive to establish, but are also susceptible to natural disasters as the Philippines has frequent earthquakes and typhoons. Bringing reliable, safe, and clean energy to all areas of the Philippines can also help reduce urbanisation and the accompanying issues of transport and waste management.

Overall, the Philippines has ambitious targets for green transition, in a wide variety of cleantech sectors. While the geothermal sector, is mainly of interest to larger, well-capitalised companies, there are plenty of opportunities within the cleantech sectors in general in other areas.

Within solar power, the market is expected to grow for both smaller rooftop systems and larger plants, although prices are highly competitive with lower margins. Within biomass energy, there is considerable room for expansion, particularly in rural, agricultural areas, where there is a ready source of biomass. There is already strong governmental support to expand biofuels and a larger demand than the Philippines can supply, as well as strong demand for decentralised mini-grid solutions.

Waste management is another huge challenge with serious upgrading needed across nearly the entire country, with opportunities for SMEs in site design and management, sorting and handling systems, recycling technologies, and downstream recycling markets.

In summary, although entering the Philippines cleantech market can be bureaucratic, there are many opportunities for SMEs, particularly in close cooperation with local Filipino companies. The country still needs to improve and streamline the regulatory framework of renewables and reduce the red tape that many companies believe hinders the development of the cleantech sector, but there are encouraging signs that changes are finally being made. The Philippines offers a lot of market potential, with considerable resources to be used across many sectors, for many years to come.



CLEANTECH SECTOR BRIEF