



# CLEAN ENERGY INVESTMENT ACCELERATOR

## Corporate Clean Energy Purchasing in Southeast Asia Outlook and Opportunities: Vietnam, Indonesia, and the Philippines

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In recent decades, Southeast Asia has become a powerhouse of economic growth, with manufacturing, industrial, and services sectors expanding in the region. Renewable Energy Buyers Alliance (REBA) members with facilities and supply chains in the region face significant economic, structural, and social challenges to achieving their clean energy goals. To address these challenges, the World Resources Institute (WRI), Allotrope Partners, and the U.S. National Renewable Energy Laboratory (NREL) launched the **Clean Energy Investment Accelerator (CEIA)**.

Through in-country engagement, the CEIA:

- Enables private-sector **PURCHASERS**, particularly commercial and industrial companies, to send a strong demand signal and deploy clean energy
- Develops energy demand aggregation models and uses financial tools to grow the clean energy **PIPELINE** and unlock access to finance
- Works with the public sector at national and subnational levels to strengthen **POLICY** and regulatory frameworks to increase clean energy investment and deployment

The CEIA is active in key markets across the globe and is pursuing the following country-specific opportunities in Southeast Asia:

- **Vietnam:** The CEIA is convening the REBA Vietnam Working Group to bring together corporate buyers, developers, investors, and government officials to help companies identify market barriers, recommend solutions, and test innovative clean energy procurement models.
- **Philippines:** The CEIA is advancing municipal policies to encourage clean energy deployment among local businesses and helping electric cooperatives accelerate clean power generation and distribution under the new Renewable Portfolio Standards.
- **Indonesia:** The CEIA is facilitating a series of working group dialogues for corporate purchasers to overcome market barriers, signal mutual aspiration to procure renewables, and advance private sector policy recommendations in cooperation with the Government of Indonesia.



*The enclosed information briefs for Vietnam, the Philippines, and Indonesia provide an overview of clean energy purchasing trends for large buyers in these markets.*

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**Vietnam's** current power market is dominated by fossil fuels and hydropower, although in 2018 utility-scale renewables began attracting significant attention. Prior to 2018, the only non-hydro renewables in Vietnam were 165MW of wind and less than 10MW of distributed solar PV on residential and business rooftops. A new solar feed-in-tariff (FIT) in 2017, paired with a revised wind FIT program in 2018, have invigorated domestic and international investors and project developers. In 2018, the Ministry of Industry and Trade (MoIT) approved 70 utility-scale solar projects for a combined 3GW of capacity to be completed by mid-2019.

While renewable power generation is increasing, the Government of Vietnam continues to express its intention for significant expansion of coal-fired generation. Current power planning suggests a doubling of coal-based generation capacity to 55GW by 2030, which would place Vietnam among the world's top coal power producers.

Opportunities for clean energy investment, to date, have been directly impacted by the monopolistic nature of the power sector, driven by a heavily subsidized, fossil fuel-based electricity market controlled by state-owned Vietnam Electricity (EVN). EVN owns multiple subsidiaries covering the majority of power generation, transmission and distribution in the country. This has created a state-operated energy market with significant influence over PPAs and tariffs.

EVN is experiencing severe financial challenges as electricity tariffs in Vietnam (particularly in industrial sectors) have remained among the lowest in Southeast Asia and are well below cost-recovery levels. As Vietnam rises to a middle-income country, the volume of international donor assistance is expected to decrease. Many experts predict that EVN will need to increase electricity tariffs over the coming years to reach financial sustainability, improve credit worthiness, and attract the scale of private investment needed to transform Vietnam's power sector.

EVN and the Government of Vietnam will be increasingly motivated to partner with the private sector to develop clean energy solutions, as demonstrated by the emerging Direct Power Purchase Agreement (DPPA) pilot program expected to be available to industrial energy users in Vietnam by late 2018 or early 2019.

## Renewable Energy Policies and Goals

The Government of Vietnam aims to increase renewable energy (RE) generation to 7% of the nation's electricity mix in 2020 and 10% in 2030. Despite the low level of installed RE to date, the Government of Vietnam has begun to attract significant attention and spur investment through a range of targets and incentives. Notable incentives and programs encouraging RE uptake include:

- **Grid-connected solar PV regulatory framework (Decision 11) establishes a feed-in-tariff of \$0.0935/kWh** and outlines a standard power purchase agreement (PPA) template;
- **The solar net-metering policy as part of Decision 11** enables rooftop solar PV under 1 MW to have streamlined interconnection to the grid and compensation for excess PV-based electricity;
- **Feed-in-tariffs for other renewable resources:** \$0.085/kWh for onshore wind, \$0.098/kWh for off-shore wind, \$0.1005/kWh for solid waste-to-energy, \$0.058/kWh for CHP biomass;

### Country Overview

Vietnam is a country comprised of 330,000 square kilometers of land and a lower-middle-income population of over 90 million, 65% of which lives in rural areas and mountainous regions with limited access to basic services. Due to its political system and robust economic development, Vietnam is considered one of the most productive and stable countries in Southeast Asia. Vietnam's economy has entered a period of rapid industrialization in recent decades, with GDP growth increasing (\$699 to \$2,052 per capita GDP increase from 2005-2014), poverty rate decreasing (15.5% in 2005 to 8.4% in 2014), and energy consumption levels increasing 12% annually from 2006 to 2015. The electrification ratio is 99.2%, up from 73.9% in 1990, with the last rural villages expected to be powered by 2020.

- **A Direct Power Purchase Agreement (DPPA) pilot program**, expected to account for 300-500MW of new RE capacity, will for the first time enable bilateral contracts between private RE generators and industrial energy users;
- **Tax exemptions and reductions**, including import duties, corporate taxes and income taxes; RE projects are also eligible for accelerated depreciation of fixed assets;
- **Stated intention to develop a Sustainable Renewable Energy Fund**, financed by the state budget and environmental fees for fossil fuels.

## Encouraging Signals, Remaining Hurdles

With a growing number of government-driven goals and incentives for RE development, Vietnam has emerged in 2018 as an increasingly attractive market in Southeast Asia for RE project developers and investors. If the National Power Development Plan remains on track and programs such as DPPA and FITs are effective, the country will have more than 3,000MW of solar and 850MW of wind contributing to the energy mix by 2020.

Despite the positive measures to support RE deployment, the investment and policy landscape still requires continued improvement for significant scaling of private investment to occur. For example, utility scale solar support mechanisms are unclear after June 2019 and many investors and project developers are seeking improvements to the solar net-metering program.

## Corporate Procurement

Corporate RE procurement in Vietnam is minimal, with only a handful of commercial and industrial entities procuring RE systems, mostly in the range of 100kWp to 1MWp. Less than 10MW of rooftop solar for commercial and industrial applications are in operation. Lack of corporate investment in RE to date can be primarily attributed to the low price of grid-based electricity, which stems from subsidized fossil fuel and hydropower generation. The fossil fuel-based energy market receives more than \$1 billion per year in subsidies.

Electricity tariffs from EVN for commercial energy users are \$0.11 to \$0.13 per kWh, while industrial ratepayers are more heavily subsidized, paying \$0.065 to \$0.085 per kWh. In addition to the low tariffs for grid-based electricity, CEIA and partner programs have identified a range of barriers that hinder corporate procurement of clean energy, including:

- **A lack of information for corporate buyers on the cost-competitiveness of RE solutions**, which is particularly important in a rapidly changing RE environment like Vietnam;
- **Limited guidance and best practices for prospective corporate buyers**, specifically in project feasibility evaluation, Request for Proposals development, and procurement execution;
- **A lack of suitable debt options for project financing**, given that wind and solar are a new asset class for local banks and some international lenders have reservations about the bankability of PPAs; and
- **Insufficient and unclear incentives and regulations** necessary to satisfy international standards of investors, lenders, and customers. For example, the solar net-metering program announced in 2017 has not yet resulted in significant commercial and industrial rooftop solar investment due to inadequate program implementation guidelines for all stakeholders.

## PHILIPPINES

**The Philippines** has experienced strong economic growth for the past four decades, with 6.7% growth in 2017, resulting in increased electricity demand of almost 14,000MW across the three major grids – double the demand in 2000. Despite a significant share of RE (31%, mostly from hydropower), the energy market is dominated by fossil fuels, and the Philippines depends heavily on imported oil for transport and coal for power generation. Unlike most Southeast Asian nations, the Philippines has a liberalized, privatized power market: generation, transmission, distribution, and supply components are separated. Thanks to significant geothermal, biomass, solar, wind and hydro resources, the Philippines has made strong progress in

developing renewables in recent years – the country has nearly 1GW of solar and is the second largest geothermal power producer in the world. RE uptake in recent years can be attributed to significant private sector investment and one of the region's most favorable policy regimes. Furthermore, the Philippines has some of the highest electricity rates in Southeast Asia, meaning the government, utilities, and ratepayers are all incentivized to seek cost-effective energy options.

### Renewable Energy Policies and Goals

Driven by the Renewable Energy Act of 2008 and its blueprint National Renewable Energy Program, the Philippines aims to triple its installed RE capacity by 2030. Notable programs and incentives include:

- **National RE portfolio target** of 15.3GW by 2030;
- **Feed-in-tariffs** have been offered for solar PV, wind, biomass, and run-of-river hydropower;
- **Tax exemptions and reductions (e.g. zero-rated VAT)** for local equipment and services and income tax holidays;
- **The Renewable Portfolio Standards (RPS)** which mandate generators, distribution utilities (DUs), and retail electricity suppliers to source or produce a required percentage of their electricity from eligible RE resources, rising to a 35% RE mix by 2030; and
- **The Green Energy Option Program (GEOP)**, a mechanism to provide commercial and industrial end-users with the option to obtain RE resources from an RE supplier through the distribution network.

### Country Overview

The Philippines is an archipelago of nearly 7,500 islands, with much of the country prone to natural disasters like typhoons and hurricanes. The Philippines has one of the most dynamic economies in the region and high economic growth rates. The poverty rate declined from 10.5% in 2012 to 6.6% in 2015, with the income of the bottom 40% of the nation rapidly increasing. The Philippines reached an 88.8% electrification rate in 2015, but the country still faces challenges to effectively modernize its energy sector to meet the needs of the numerous small island grids.

### Corporate Procurement

Corporate RE procurement in the Philippines has focused primarily on rooftop solar for commercial and industrial entities, including shopping centers and manufacturing facilities. Purchases are mostly through turnkey contracts from local and Asia-based contractors, although commercial arrangements involving third-party investors such as solar leases are slowly gaining momentum. The high cost of grid-based electricity, paired with government incentives like net metering (albeit with capacity limits) and zero-rated VAT on local equipment and services, has led to corporate RE procurement in the Philippines at levels unrivaled by other Southeast Asian countries, except perhaps Thailand.

While the Philippines is seen as a regional leader for decentralized, on-site RE projects like rooftop solar, key barriers remain to further scale deployment of RE. For example:

- **Net metering is restricted to 100kWp installations** for RE-based self-generation;
- **The FIT is not viewed as a long-term, sustainable incentive** and has been criticized by the current administration;
- **Third party financing for on-site RE generation (like direct Solar PPAs) is limited** by current regulations;
- **Delayed implementation of a lower threshold for the Retail Competition and Open Access (RCOA) mechanism**, which would have allowed more end-users to choose power suppliers in an effort to stimulate competition; and
- **Questions relating to technical and financial standing of electric cooperatives** as bankable counterparties in PPAs.





**Indonesia** is the largest energy user among ASEAN nations, due to its continued economic development, population growth, and urbanization. The country is expected to triple its electricity consumption by 2030, while the transport and industrial sectors are expected to double their energy demands between now and 2030. More than 95% of Indonesia's primary energy mix is non-renewable due to its abundant fossil fuel reserves: 46% oil, 31% coal and 18% gas. However, Indonesia also has significant potential for RE, most notably hydropower, solar PV, and geothermal.

## Renewable Energy Policies and Goals

Indonesia has set significant RE goals, targeting an increase from the current 5% to 23% of total primary energy supply by 2025, and 31% by 2050. The state-owned electricity company (PLN), as the single off-taker, will need to bring 45-48 GW of renewables online by 2025 to meet Indonesia's 23% target. Notable incentives and programs encouraging RE uptake include:

- **Feed-in-tariffs for renewable power** issued by the Ministry of Energy and Mineral Resources (MEMR) which are indexed to local production costs of the different regions of the country;
- **A regulation on joint-use of transmission lines** aiming to allow independent power producers to conduct a form of power wheeling using PLN's existing transmission and distribution networks to encourage additional power supply;
- **Net metering for household and commercial solar**, allowing excess solar electricity to be fed into the grid and credited by PLN; and
- **Tax exemptions and reductions**, including import duties, corporate taxes and income taxes; RE projects are also eligible for accelerated depreciation of fixed assets.

### Country Overview

Indonesia is comprised of 18,000 islands and has a population of over 255 million, making it the world's fourth largest country. It is the largest economy in Southeast Asia, and averaged 5% GDP growth from 2013-2016. The country has seen a growing middle income population and an overall rise in per capita income, resulting in implications for increasing electricity demand.

## Corporate Procurement

Corporate procurement of RE in Indonesia has emerged in recent years. The hotel and tourism sector, as well as manufacturing and real estate sectors have been the primary corporate entities procuring RE, for purposes including future electricity price hedging, energy security, and corporate social responsibility. Despite the emergence of a power wheeling mechanism, few, if any, companies have utilized this approach due to lack of policy clarity. Asset purchases and private on-site generation (captive power) have been the primary options for corporates to add renewables to their energy mix. Although corporate procurement has accelerated and Indonesia's regulatory structure is becoming more conducive to RE, there are still significant barriers hindering procurement, including:

- **RE project developers must offer extremely low PPA pricing**, per the updated 2017 feed-in-tariff regulation, particularly in western regions where PLN's local power production cost of fossil fuel-based generation are subsidized (e.g. Rp. 800 (USD 0.06) per kWh in Java);
- **Current tax incentives are limited in scope** and are only applied to RE projects involving PLN as the off-taker;
- **Application of parallel operation charges create barriers for solar** by inflicting additional charges on solar PV rooftop installations that are interconnected with the PLN system using net metering;
- **A lack of access to suitable project financing**, particularly through local banks and lenders;
- **Complicated permitting procedures** are required by multiple agencies, adding to project development costs and creating delays; and
- **Grid integration and other technical challenges** associated with adding decentralized solutions to the power mix; largely due to the archipelagic, diffuse nature of PLN's distribution systems. Not all regions' transmission and distribution systems have developed equally.



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*Harnessing private sector demand  
to scale clean energy deployment in emerging markets*

Contact Us:



WORLD  
RESOURCES  
INSTITUTE

Alex Perera, [aperera@wri.org](mailto:aperera@wri.org)



Rachel Ross, [rpr@allotropepartners.com](mailto:rpr@allotropepartners.com)



Bethany Speer, [Bethany.Speer@nrel.gov](mailto:Bethany.Speer@nrel.gov)

Learn more at [www.cleanenergyinvest.org](http://www.cleanenergyinvest.org)