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Carbon neutrality and solar's role in ASEAN nations

The Paris Agreement has been signed by all ASEAN nations and almost all members have declared a carbon emissions reduction target. The diversity in ASEAN's readiness for energy transition is reflected in the wide-ranging nationally determined contribution targets set for reducing greenhouse gases. An immediate quick win for the renewable energy transition is the harnessing of solar power from an abundance of resources in the region.

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Rooftop solar power is cost competitive in serving concentrated demand across cities and industrial parks in ASEAN, as well as demand in remote areas.

Image: Constant Energy

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A key milestone has recently been made by Indonesia, the fourth largest coal producer in the world, which announced the cessation of new-build coal power plants from 2023. This announcement is an encouraging sign that sustainable development and growth are underway in the Association of Southeast Asian Nations (ASEAN), and that countries should collectively build on the momentum in driving the low-carbon transition sooner.

From boardrooms to courtrooms around the world, we have witnessed an increased pace along the sustainability pathway. ASEAN can accelerate its transition towards a sustainable global economy through a combination of positive policies, mechanisms, and stakeholders' responses that include net-zero goals, carbon markets, smart urbanization, sustainable funding, and resource optimization.

ASEAN's status on carbon neutrality

According to a [report by the International Energy Agency \(IEA\)](#), energy demand in Southeast Asia will grow by 60% over the next two decades. The power sector will be responsible for just under half of the region's carbon dioxide emissions in 2040, up from 42% in 2019.

Climate change is a huge concern for ASEAN as the [Philippines, Myanmar, and Vietnam are ranked in the top 10 globally](#) in terms of how badly they will be affected by climate change. In many ASEAN nations, rising sea-levels pose worrisome threats to low-lying coastal cities, and extensive agricultural lands are at risk of floods.

To propel the growth trajectory of green efforts, ASEAN should commit to net-zero and carbon neutrality goals sooner. With carbon neutrality having an effect on de-risking and enhancing the competitiveness of businesses, this will increase attractiveness for foreign direct investments and promote the growth of [green finance](#).

While goals and appropriate mechanisms must be set, the pathway towards carbon neutrality will

Harnessing solar power

An immediate quick win of energy transition is the harnessing of solar power from an abundance of resources in the region. Governments in ASEAN have prioritized solar power as the alternative fuel to displace fossil fuel in recent power development plans. In particular, rooftop solar power and other distributed power resources have its merits of providing energy resilience in the community, limiting energy transmission loss, and overcoming the broader challenge of integrating more renewable energy to support the pathway towards carbon neutrality.

Rooftop solar power is cost competitive in serving concentrated demand across cities and industrial parks in ASEAN, as well as demand in remote areas. Adequate regulatory policies and incentives including net-metering will be required to encourage supply from producers and pro-environmental consumers to step up on rooftop solar panel deployment, and potentially promote behavioral changes to conserve energy, thereby feeding excess power back to the grid.

To further optimize the integration of renewable energy, governments should encourage investments in other supporting energy solutions, such as utility-scale or behind-the-meter energy storage.

Importance of carbon markets

Navigating the carbon neutrality route will require ASEAN to develop a concerted carbon market, starting with the implementation of carbon taxes and mechanisms to support a net-zero pathway.

In ASEAN, the carbon market is in its early stages, with only [Singapore having an economy-wide carbon tax implemented](#). Vietnam recently passed the [revised Law on Environmental Protection](#) that will legalize an emission trading scheme, taking effect on January 1, 2022. Other ASEAN nations are also gravitating towards the same direction – [Thailand is considering enacting a carbon market](#), and Indonesia has drawn up proposals for the [implementation of carbon tax](#).

In Europe, [carbon prices have more than doubled](#) from a year ago as carbon emission regulations continue to tighten. Drawing this as a reference point for ASEAN, increased pressure on corporates to make green commitments and transparency in reporting can further ensure efficiency in the carbon market.


Smarter cities play an integral role

As ASEAN urbanizes, governments should implement the concept of smart city development to optimize outcomes – limiting carbon footprints through the efficient use of resources.


Sustainability has become a key feature of urbanization and masterplans for ASEAN's major cities,

For instance, Thailand's smart cities masterplan aims to address the high cost of energy by transitioning towards incorporating renewable energy into the supply, while implementing policies to reduce and reuse waste, as well as deploying other smart solutions like smart grids, district cooling systems, and promoting co-generation facilities.

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Countries should also adopt smart technologies such as Internet of Things, mobile devices, artificial intelligence, and sensors that can increase the efficiency and effectiveness of solving day-to-day issues like traffic management and tracking carbon emissions. ASEAN countries can mitigate environmental risks by deploying such technologies to capture and analyze real-time data, while simulating scenarios to optimize solutions.

With the [establishment of ASEAN Smart Cities Network](#) in 2018, 26 pilot smart cities have been identified, with the objective to improve overall quality of lives through smart and sustainable urban development that is enabled by technology.

Since then, major ASEAN countries have made ambitious development plans: Thailand aims to achieve 100 smart cities by 2024; and Indonesia aims for 100 smart cities in its masterplan. These encouraging smart city trends should continue to expand and encompass sustainability as ASEAN strives to accelerate its economic growth.

The question of funding

According to the Asian Development Bank, for Asia to maintain growth momentum and eradicate poverty while responding to climate change, the [region must invest US\\$1.7 trillion a year in infrastructure through 2030](#). However, only about 2% (US\$40 billion) is expected to be allocated to climate risk adaptation. As [Covid-19](#) puts a further strain on public finances, there are opportunities for public-private partnerships and private investments to drive sustainable development projects.

One encouraging sign is the [rise of corporate power purchase agreements \(PPA\)](#) for renewable energy in ASEAN. In Singapore, Sunseap Group signed PPAs with tech giants such as Facebook and Amazon, to supply 100% renewable energy to power operations in this region.

Non-ASEAN power players have also penetrated the ASEAN market to serve the growing renewable energy demand. Japanese renewable energy startup, Shizen Energy, in partnership with Constant Energy, signed corporate PPAs with Japanese companies operating in Southeast Asia, for example.

As more corporations commit to sustainability and net-zero goals, corporate PPAs and renewable energy investments will continue to grow, which are essential in meeting future carbon neutrality pledges for ASEAN countries.

Notably, a collective initiative from global organizations such as RE100 encourages more commitments to 100% renewable energy and incorporation of low-carbon solutions across supply and value chains. Given the demands to reducing scope 3 emission, which is all indirect emissions in a company's value chain, these suppliers will be required to comply and make the transition towards carbon neutrality.

Reduce, Re-use and Re-cycle

Finally, the involvement of local communities to engage in the activities of "Reduce, Re-use and Re-cycle" is essential. Consumer behavior towards the efficient use of resources and utilization of energy-efficiency technologies can be cultivated. This is seen from a slew of ASEAN programs that encourage switching out of old electric appliances and equipment that are not energy efficient.

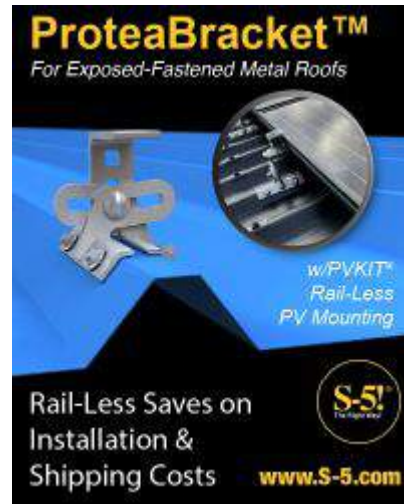
The culture of reusable packaging has also been promoted in Singapore and Malaysia in recent years and discouraging the use of single-use plastics will help reduce carbon footprints and lighten the burden of waste management.

Recycling remains challenging in ASEAN as municipal waste collection and management remain the top concern for waste-to-energy projects, but this will likely improve as more public awareness and educational efforts are being carried out.

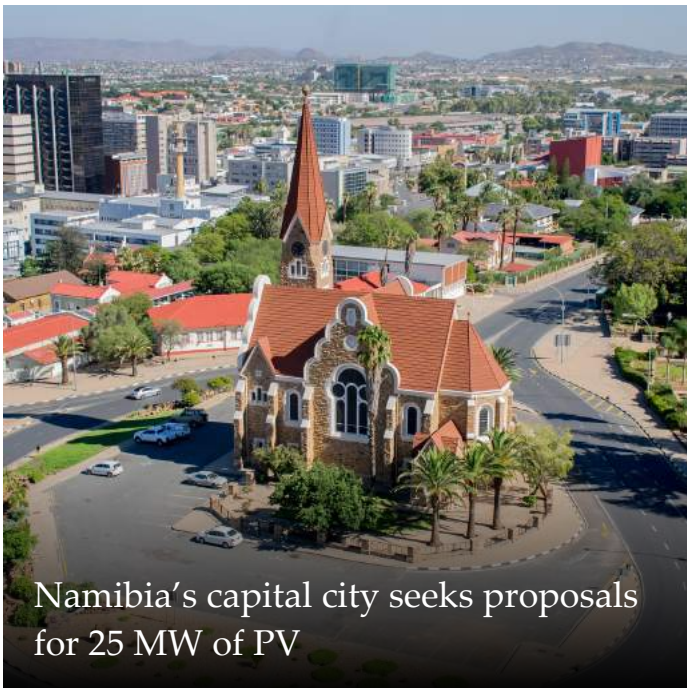
The road towards carbon neutrality is one that requires immediate efforts from a multitude of stakeholders utilizing a broad range of solutions. An ASEAN carbon neutral pathway presents many opportunities for governments, businesses, and consumers to make strategic choices that will ensure economic relevance in years to come, as the changing tides of a greener world will become inevitable.

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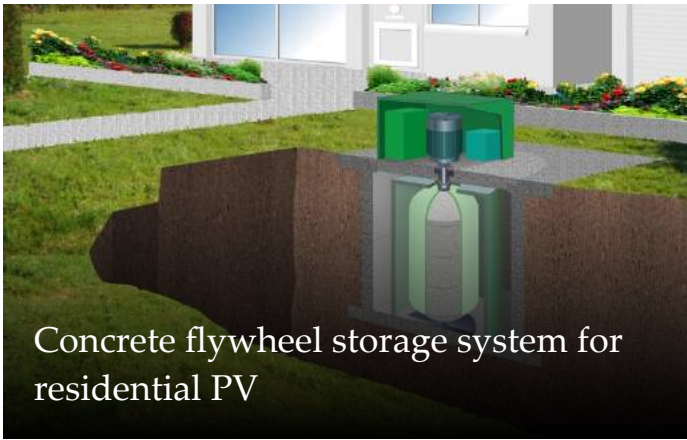
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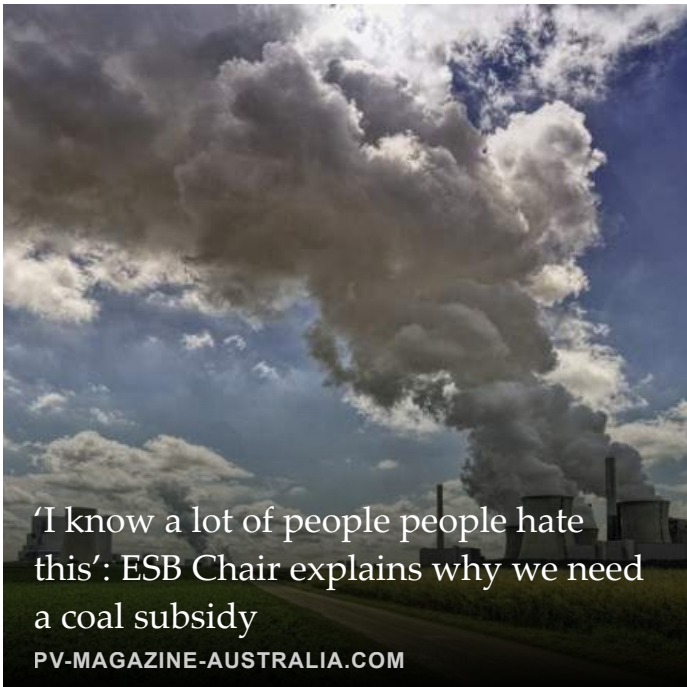


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