Supporting Southeast Asia's green energy transition

Opportunities for renewable energy firms in the region

EDB SINGAPORE

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Introduction

Southeast Asia is undergoing a significant clean energy transition, shifting from fossil fuels to renewable sources of energy. The region is poised to be the world's fourth largest economy by 2030, with a growing population of over 660 million[01] and a collective GDP of US$3.6 trillion.[02] This economic expansion has led to a surge in energy demand, with projections indicating a 42% increase by 2030.[03] Currently, fossil fuels account for 75% of the region's generation.[04] To ensure energy security and meet climate goals, Southeast Asia is accelerating renewable energy deployment.

The green energy transition relies on accelerating the rollout of renewables. For Southeast Asia to meet net zero targets, renewable capacity additions for solar and onshore wind power must increase seven to 12 times by 2030–2050, to 36 Gigawatts(GW) and 12 GW per annum, respectively.*[05]

Opportunities for renewables deployment in the region are growing. The Association of Southeast Asian Nations (ASEAN) has pledged to increase its share of renewable energy to 23% and its installed renewable energy capacity to 35% by 2025. However, there is potential to raise the renewables share in final energy to an impressive 65% by 2050,[06] opening opportunities for renewable energy developers to support the region in meeting this demand. Solar and wind energy are expected to play a major role, together supplying over 50% of total electricity generation under the Announced Pledges Scenario (APS).[07]

Climate financing opportunities in Southeast Asia are also on the rise. Supportive national policies and demand for clean energy solutions have made Southeast Asia an attractive market for green investment opportunities. Green capital inflow reached US$6.3 billion in 2023, for which the power sector represented the largest investment category.[08] Additionally, the Asian Development Bank allocated US$3.7 billion to climate and mitigation projects in the region, including renewables.[09] Unlocking Southeast Asia's green economy has the potential to generate an additional US$300 billion annually by 2030, with the power sector alone contributing US$90 billion,[10] creating further opportunities for renewable energy services to benefit from the growing demand.

This report provides an overview of Southeast Asia's progress in the clean energy transition, outlining the region's priorities for achieving its targets and highlighting opportunities for renewable energy service providers and developers within Singapore's supportive ecosystem.

* Compared to 2018–2021 average.

Southeast Asia's progress in renewable energy

Most countries in Southeast Asia have committed to reducing their emissions and aim to hit net zero targets by 2050. In the near term, focus will be on increasing the share of renewables in the primary energy mix, with most regional targets set for 2030.

NDC commitments and renewable energy per country[11] [12] [13]

	Commitments to net zero emissions by	Date of NDC sub-mission	NDC commitments* ● unconditional ● conditional	Renewable energy mix target[14]
Brunei Darussalam	2050	Dec 2020	● **~20%**	**30%** generation by 2030
Cambodia	(2050 +)	Dec 2020	● **~42%**	**25%** generation by 2030
Indonesia	2060	Sep 2022	● **~32%** ● **~43%**	**34%** generation by 2030
Laos PDR	2050	May 2021	● **~60%** ● **~67%**	**20%** consumption by 2025**
Malaysia	2050	Jul 2021	● **~45%**	**~40%** capacity by 2035
Myanmar	NA	Aug 2021	● **~245 mio. tCO_2eq** ● **~415 mio. tCO_2eq**	**>39%** generation by 2030
Philippines	NA	Apr 2021	● **~3%** ● **~72%**	**~35%** generation by 2030
Singapore	2050	Nov 2022	**60 $MtCO_2eq$** absolute target emission level by 2030	**2 GWp** solar by 2030, **4 GW** low-carbon imports by 2035
Thailand	2065	Nov 2022	● **~30%** ● **~40%** by 2030	**30%** consumption by 2037
Vietnam	2050	Sep 2020	● **~16%** ● **~44%**	**~47%** generation by 2030 (if G7 pledges met under JETP***; otherwise **31%**)

Corporate commitments to sustainability are also rising

The clean energy transition is increasingly supported by the private-sector, with more companies setting corporate-level targets than ever before. Between 2019 and 2024, the number of companies in Southeast Asia setting science-based climate targets (SBTi) grew from just nine in 2009, to 128 in 2024.[15] Among the top 100 emitters, 20 announced corporate-level environmental roadmaps to stay on track to reach 2030 targets.[16]

Across Asia, the number of RE100 compliant companies has also grown, with 130 headquartered in the Asia-Pacific (APAC) region by 2021, up from just nine in 2016 and 102 in 2020.[17] Additionally, optimism about contributions to the energy transition is rising in the APAC region; in 2024, 55% of executives reported being more optimistic compared to the previous year, while only 12% felt less optimistic.[18]

* % reduction in GHG emissions, by 2030

** Target has not been revised since 2011.

*** Just Energy Transition Partnership.

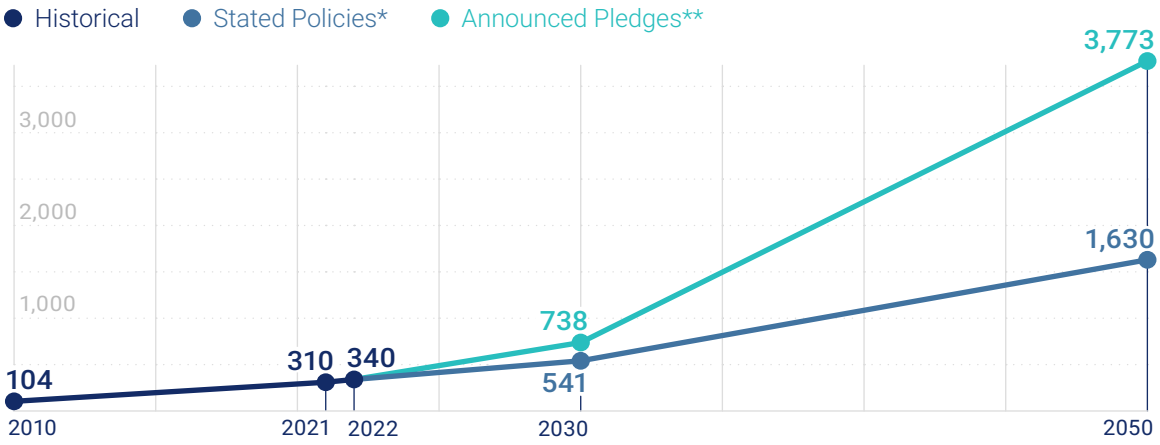
Opportunities for renewable energy services in Southeast Asia

As energy demand and the need for energy security increase, Southeast Asia is accelerating the deployment of renewables, creating significant opportunities for project developers to drive the region's energy transition.

To achieve its renewable energy targets, Southeast Asia is moving away from fossil fuels to cleaner sources such as solar, wind, hydropower, geothermal, and biomass. In the near term (through 2030), the focus will be on developing frameworks and policies to expand renewables capacity, increasing investment, and reducing reliance on coal.[19]

As capacity accelerates, priorities will shift to integrating wind and solar PV into power grids, with the share of electricity generated by these sources projected to rise from 20% in 2030 to 50% in 2050 under the APS - a substantial increase from 5% in 2022.[20]

Renewables generation in Southeast Asia by scenario, in terawatt hours (TwH)[21]



Connecting regional power grids is key to improving renewables integration

Developing a reliable electricity infrastructure is essential for integrating renewables and strengthening Southeast Asia's energy security. The ASEAN Power Grid initiative plays a pivotal role in enhancing electricity connectivity across the region, allowing countries to share resources, stabilise intermittent supply, and improve reliability.

A key milestone in this effort is the Laos PDR-Thailand-Malaysia-Singapore Power Integration Project (LTMS-PIP), ASEAN's first multilateral cross-border electricity trade. The project enabled up to 100 megawatts (MW) of renewable hydropower to be traded from Laos PDR to Singapore via Thailand and Malaysia using existing interconnectors, with Singapore receiving its first renewable energy import on June 23, 2022.[22]

The initiative presents potential for developers to enhance and expand the scope in key areas such as building interconnectors, advancing smart grid technologies, and providing grid management services. With grid investments expected to quadruple from US$10 billion in 2022 to US$40 billion by 2050 under the APS[23], the ASEAN Power Grid opens avenues for businesses to engage in developing transmission infrastructure, modernising grids, and implementing technologies that help create an integrated and resilient energy landscape in Southeast Asia.

* Stated policies: scenario based on the latest policy settings, including energy, climate and related industrial policies.

** Announced pledges: a scenario in which all countries were to hit their aspirational targets, including national and regional net zero emissions pledges, on time and in full.

Source: IEA

Opportunities for renewable energy services in Southeast Asia

Regional policies and targets open opportunities for developers to support renewable energy capacity development and accelerate emissions reduction

Developers are seizing opportunities from policies designed to increase renewable energy adoption. For example, Singapore set a solar deployment target of 2 GW by 2030 and low-carbon electricity imports of up to 4 GW by 2035, which would supply around 30% of the nation's electricity.[24] Major renewables players including Adaro Solar, EDP Renewables, and Keppel-Infrastructure expressed interest in meeting this demand. In response, the Energy Market Authority (EMA) granted conditional approvals to seven companies, collectively exceeding the original 4 GW target. Building on this momentum, Singapore has raised its target to 6 GW. As of September 2024, the EMA has awarded conditional approval to 10 projects to import low-carbon electricity from Australia, Cambodia, Indonesia, and Vietnam.[25]

Boost in climate funding powers Southeast Asia's renewables transition

Supportive policies and the rising demand for clean energy solutions are attracting significant investment to the region. The UN Environment Programme estimated a US$3 trillion green investment market opportunity for ASEAN from 2016 to 2030 - 37 times the size of the 2016 global green bond market.[26] Private investors are already responding, with green investments rising by 20% in 2023, bringing total green capital inflows to US$6.3 billion, with power (including solar and wind) as the largest category.[27]

Various funding programs are further fuelling this growth. In 2023, the Asian Development Bank committed over a third of its climate funding to Southeast Asia, allocating US$10.75 billion for climate adaptation and mitigation projects, including renewables.[28] The Monetary Authority of Singapore (MAS) is also partnering with financial sector stakeholders to promote sustainable financing in Asia and support the green economy, including developing a green bond market in Singapore and launching the **Financing Asia's Transition Partnership (FAST-P).**

What is FAST-P?
FAST-P is a blended finance platform aiming to mobilise up to US$5 billion for green and energy transition projects in Asia. Investment targets are coal phase-out for renewables, mature technology projects such as scaling renewable energy and electric vehicle infrastructure, and emerging technologies like hydrogen use and carbon capture. Partnerships have already formed between MAS and many reputable players including Allied Climate Partners, the International Finance Corporation, Temasek Holdings, and others.

How Singapore's supportive ecosystem unlocks renewable energy potential

Singapore is committed to leading the energy transition in Southeast Asia through its collaborative ecosystem that supports renewable energy projects. Our ambition is to become the centre for renewables services in the APAC region, by developing talent and supporting companies to expand in Asia. Singapore is already home to over 100 headquarters of local and multinational clean energy companies, and a vast number of sustainability services and renewable developers. **Establishing a presence in Singapore gives local and international companies access to a network of attractive partnerships and investment opportunities in the Asia region.**

Singapore's vibrant renewable energy ecosystem

Project developers

sembcorp

- **Sembcorp**'s gross renewables capacity has quadrupled to 12 GW since 2021, now 61% of its energy profile.[29] As part of its ambition to reach 25 GW by 2028, it commissioned Southeast Asia's largest Energy Storage System (ESS) together with EMA, featuring a maximum storage capacity of 285-megawatt hour (MWh).[30]

VENA ENERGY

- **Vena Energy** aims to export 2.5 TWh of electricity to Singapore annually by 2030 through the construction of a 2 GW battery and solar project in Indonesia.[31] The project aims to supply energy comparable to 5% of Singapore's total energy usage in 2021.[32]

- **AC Energy** • **APAC** • **ENGIE**
- **EDP Renewables** • **Keppel Ltd**
- **NEFIN** • **TotalEnergies**

Renewable Energy Certificates (RECs) Exchanges

GoNetZero™

- **GoNetZero's** REC trading platform launch in Singapore was supported by EDB[33]

- **REDEX**

Renewable energy technology providers

Life Is On | Schneider Electric

- **Schneider Electric** invested S$110 million in its 'Hub Asia' distribution centre as part of the company's continued expansion in Singapore and the region.[34]

- **REC Group** • **Trina Solar** • **Univers**

Asset management firms

Decarbonization Partners

BlackRock. | TEMASEK

- **Decarbonization Partners** is a joint venture between **Temasek** and **BlackRock,** focusing on late-stage venture capital and early growth private equity investments in next-generation companies that provide solutions and technologies to help accelerate global efforts to achieve a net-zero global economy by 2050. The partnership has attracted $1.40 billion in capital from over 30 institutional investors across North America, Europe, and Asia Pacific.[35]

- **Brookfield** • **I squared capital**
- **Macquarie**

Research institutes

- **Energy Research Institute @ NTU (ERI@N)**
- **Solar Energy Research Institute of Singapore (SERIS)**

Banks

DBS

- **DBS Bank** was the Sole Financial Advisor to Taiya Renewable Energy for the formation of its joint venture with EDF Renewables, aiming to bid for the development of a 440-megawatt offshore wind farm project in Taiwan's Phase-3 Zonal Development tender in 2022.[36]

UOB

- **UOB** developed U-Solar, Asia's first financing platform to forge partnerships within the solar PV industry.[37] [38]

- **BNP Paribas** • **OCBC** • **SMBC**

Professional services

- **BCG** • **Deloitte** • **EY** • **KPMG**
- **McKinsey & Company** • **PwC Singapore**

EPC companies (Engineering, Procurement and Construction)

- **Energetix Cutech**

Legal services

- **Allen & Gledhill** • **Baker McKenzie**
- **Clifford Chance** • **Rajah & Tann**

Technical consultancies and advisories

- **DNV** • **Infra Asia**

This infographic presents a non-exhaustive overview of businesses within Singapore's Renewable Energy ecosystem, as of 2 February 2025, and does not represent a comprehensive list of all businesses in the ecosystem

Supporting companies from Singapore to Asia

Singapore's robust ecosystem makes it a hub for renewable energy development in Southeast Asia. With a strategic location, innovative financing, and top talent, it offers unparalleled advantages for companies expanding into the region. Supported by EDB, companies are leveraging Singapore to meet clean energy demand and drive the energy transition.

Access to regional markets and key decision-makers

Singapore's proximity within a three-hour flight radius of Southeast Asian economies enables easy access to decision-makers responsible for off-taking renewable energy in the region. Its similar time zones also make it an ideal base for connecting to the APAC region.

World-class talent and expertise

Ranked number 1 in the region and number 2 globally for talent competitiveness[39], Singapore provides a pool of green-skilled professionals, including engineers, sustainability consultants, energy analysts, and green finance experts.

A thriving green financing ecosystem

Through Singapore's strong green finance ecosystem, developers have access to capital including green bonds, loans, and blended finance initiatives. The country's attractive tax policies and trusted legal framework further enhance its appeal as a hub for the region's renewable energy operations.

Leadership in R&D and innovation

Singapore is a trusted testbed for innovation, exemplified by REIDS, a world-class renewable energy platform for designing and testing sustainable energy solutions. With over 480 clean energy patent applications since 2010[40], companies can benefit from an environment that fosters innovation.

Case study: Public-private partnership makes corporate venture NaviX Solutions' critical power and cooling infrastructure 'as-a-service' possible

NaviX Solutions offers full lifecycle management for enterprise power and cooling assets. Partnering with Schneider Electric and EDB, they interviewed over 150 companies to critical asset challenges This led to a new as-a-service model that reduces risks and costs while enhancing efficiency with strategic digital energy management solutions.[42]

The rich talent pool, innovation centres, and availability of capital drove EDP Renewables to choose Singapore for their APAC operations:

"Our investment strategy is for the long term. We develop, build, own and operate projects as well as sell energy directly, partnering with corporate off-takers. And Singapore is home to many credible industry players in APAC with strong commitments to carbon neutrality."

Pedro Vasconcelos,
CEO, EDP Renewables APAC

Case study: Climate and sustainability innovation hub

In 2022, BCG established its first Climate and Sustainability hub for Innovation in Asia from Singapore. Supported by EDB, the hub brought BCG's expertise to the APAC region to drive climate action and change through partnerships, and supporting local talent development.[41]

Case study: Research collaboration for solar industry transformation

In June 2023, the National University of Singapore (NUS), SERIS, and REC Solar launched the REC@NUS R&D Laboratory, a US$77 million initiative supported by EDB. Combining PV research and solar technology expertise, it aims to develop efficient, sustainable, and affordable solar solutions to transform the global solar industry and accelerate the energy transition.[43]

What is next for you

We hope to have brought you one step closer to understanding the demand and opportunities for renewable energy services in Southeast Asia to support in the transition to a low-carbon future.

The conversation does not end here. At EDB, we partner with you to make your Southeast Asia expansion plans a reality. For companies looking to set up and expand from Singapore, we can:

- **Facilitate your set-up in Singapore** with provision of guidance and information on setting up, and relevant service providers.
- **Facilitate connections to partners** such as government agencies, research institutes, industry partners, Sustainable Energy Association of Singapore, and international organisation to explore collaboration.
- **Explore possible incentive support** to expand your renewable project development, management, financing and R&D capabilities in Singapore.

Ready to take the next step and/or have questions?
Reach out to us *here.*

Here are other resources that may be helpful to you:
- To discover the growing opportunities in the regional energy transition, visit our **website** *here*.
- Follow us on our **social channels:**

Endnotes

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