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# The hidden hurdles behind building SE Asia's RM423b super grid

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The Malaysian Reserve, Malaysia



Monsoon Wind Power Project in Dak Cheung, Laos. An interconnected grid could boost the GDP of every SE Asian country by between 0.8 pots and 4.6 pots

A project in the mountains of Laos is bringing the region one step closer to a vast, interconnected energy network

# by KANUPRIYA KAPOOR & SING YEE ONG

THE hardest part of building a wind farm along the misty ridges of southern Laos wasn't hauling 25-tonne blades up mountain roads or laying 71km of cables in thick vegetation. It wasn't even removing unexploded

Instead, it was bureaucracy that kept engineering veteran Nat Hutanuswar up at night — the delicate diplomacy and seemingly endless paperwork required for neighbour ing South-East Asian (Se Asian) nations to share clean electricity. It was, he said, like "elimbine a ceries of Everente".

After more than a decade of government talks, blodiversity surveys and finacial negotiations, Hutanuwair's Monsoc Wind started exporting power to Vietnal last month. Its 133 turbines bring a het rogeneous region of 700 million people or step closer to a long-awaited super grid-a vast, interconnected power network th will eventually carry clean energy from the expansive north to densely populated islant to the south.

# An Encouraging Milestone

Part of the ambition behind the grid it fuelled by environmental concerns. SR Asi is a major driver of coal growth and breaking that dependence on fossil fuels — vital for the world to avoid the worst climate-changs scenarios — requires a single network tha allows inexpensive, clean power to flow.

Reliable green electricity is also critical for a region that aims to succeed China as the factory of the world, attracting billions from major manufacturers with weighty elimate commitments, from Apple Ine to Samsung Electronics Co. An interconnected grid could boost the GDP of every SE Asian country by between 0.8 percentage points (ppts) and 4.6mpts, according to a 15E funded study.

Sophys, according to a Ost-inated study.
Yet executing that vision has proved complex ASEAN—the grouping of 10 nations that is the region's main political organisation and a key proponent of the super grid—has long struggled with diverging priorities and troub to according to the control of the super grid—has long struggled with diverging priorities and troub to according to the desired to the super grid—has long struggled with diverging priorities and troub to according to the super grid—has long struggled with diverging priorities.

nds to avoid bold decisions.

It has no framework for cross-border

# SE Asia's super grid takes shape



Source: ASEAN Center for Energy; Monsoon Wind; SunCable; Bloombe

energy deals, leaving developers alone to navigate a matrix of varying technical specifications and local political hurdles. And that's before considering the outlay, an investment that would require at least US\$100 billion (RM423 billion) by 2043, according to the Asian Development Bank (ADB), roughly a

All of this makes Monsoon Wind an encouraging milestone, and evidence that a push is finally in motion to connect countries from Myanmar to the scattered islands of the

"We want this to be a role model for crossborder renewable energy (RE) exchange," said Hutanuwart, the COO of Bangkok-based renewables developer Impact Electrons Slam. "If we start with bilateral deals like our project, we can showcase how to make

it work."

There is heartening movement elsewhere too, with a 30km cable due to connect Malaysia's hydropower-rich Sarawak state to neighbouring Sabah by October. That will eventually link up with the rest of the Island of Borneo, including Indonesia's provinces and Brunei, and then with peninsular Malays.

sia across the South China Sea.

These are small wins, but the industry is celebrating. Hutanuwatr still spends his days poring over paperwork in a make shift office or driving over rough terrain to inspect wind furbines, but he hosted a team party in June to mark the completion of the Monsoon Wind farm. With a bottle of beer in hand, dressed in Jeans and a hoodic embla zoned with the project name, he addressed a cheerful crowd of workers, recalling the first visit to pitch the idea of importing power to

"They looked at us like we were crazy," the 56-year-old said, smiling. The utility insisted be secure approvals from both Vietnam's prime minister and the Laos National Assembly—no small feat in countries where decisions are not always transparent or swift.

"We now have expertise in negotiating with a range of difficult stakeholders," he declared, before joining a mund of karaoke.

# Patchy Progress

Leaders in SE Asia, a region of political, geographic and economic diversity, first loaded the idea of a super grid in the late 1990s, but progress stalled for years due to the absence of a single vision and a patch-

"ASEAN doesn't have the institutions set-up to support this kind of ambitious infra structure project," said Hans Vriens of Singa pore-based political risk advisory firm Vrien & Partners. "The super grid is the perfect excuse to keep going to meetings and talk ine, while actually doing nothing."

ing, while actually doing nothing."

Connections remained limited until a breakthrough 2018 pilot project linked Laos, Thailand, Malaysia and Singapore. That

proved regional power trading was viable. Since then, progress has been tentative at best. In 2021, Malaysia banned sending solar power to neighbours to protect its local industry. It reversed the halt two years later, hoping to take advantage of demand from Singapore. Exporting RE also became a hot political issue in Indônesia, but its projects have recently

The efforts that have succeeded are far too limited to cope with the rapid growth of power demand. Electricity consumption is set to grow 4½ annually through 2035, but annual investment in grid infrastructure needs to more than double to around USS22 billion just to keep pace, according to the International Fnergy Agency [IEA]. Without interconnected networks, a much-needed rapid scale up of renewables will stall.

ASEAN has identified 18 priority grid connection projects that it aims to complete by 2045—formally known as the ASEAN Power Grid—more than half of these super grid projects are still in early planning stages, with time lines tanging from two vears to indefinite.

The lack of an integrated regional power market, plus the absence of harmonised grid codes of the kind seen in the European Union (EU), are a "major barrier" to scaling up connectivity projects, according to Nadhilah Shani of the ASEAN Centre for Papers. Abbit that rises it connects will be a connect will be a connec

governments and developers.

The ASEAN Secretariat did not respond emailed requests for comment.

#### Singapore and the Super Grid

But there is growing official enthusiasm, not least in Singapore — the wealthy financial hub eager to bolster both energy security and green credentials. The island is aiming to import is gigawatts (GW) of low-carbon power from neighbours by 2035, up from nearly zero tuday.

nearty zero today.

Since 2021, it has backed a series of headline-grabbing projects through public tenders: A subsea cable to carry solar power from Indonesia, another to import hydro from Malaysia and a hybrid land-and-sea transmission line to wheel offshore wind from Vietnam. The country began importing thinked the country began importing the property of the country began importing the country began important began in the country began important began in the

The splashiest of all, the SunCable project to bring Australian solar power thousands of kilometres across the sea to Singapore, is estimated at over USS20 billion. Singapore has set up a dedicated state-linked firm to

The city-state's objectives are clear: A country less than half the size of Rhode Island doesn't have space for renewables, so it has no other option than to use its vast wealth to fund projects elsewhere and import the power. Currently dependent on natural gas, it also needs greener energy to support its tech financial and climate leadership ambitions.

"Singapore has contributed directly to regional integration efforts," said a spokes person for the country's Energy Market Authority. It's studying how to enable efficient long-distance transmission and "establish a framework that will facilitate the development of subsea power cables needed

The SE Asian country has become a "champion" of the super grid, said Dinita Setyawati, a senior energy analyst at think tank Ember — and its ambitions could help the region make meaningful advances.

"We're seeing more progress in the past two years alone than in the past 20 years," she said. "If we can have other ASEAN countries on board and take a more active role," then

Back on the Laos border, Hutanuwatr and his team have started sending power to the "backbone" of Vietnam's grid. At its full capacity of 600 megawatts (MW), the project will generate enough to power hundreds of

"These bilateral trades are actually stepping stones that are essential. Then you replicate," said Publo Hevia-Koch, head of the IEA's renewables integration. "It allows ASEAN to benefit incrementally from early-stage trad-

Hutanuwatr credits the project's completion to his team's pragmatism. But Monsoon Wind's success lays bare the difficulties still ahead for those eager to repeat the feat. Every approval, every connection, every agreement

A playbook would make it far easier fo

others to follow, Hutanuwatr argued.

For now, "there are no given solutions," he said, shrugging. "You just have to figure it ou