

Laos has safeguards to cut environmental and social impact of exporting power to S'pore: EMA

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SINGAPORE - Laos has safeguards that will help to reduce the environmental and social impacts of hydropower projects in the country, from where Singapore is importing renewable energy.

Mr Ralph Foong, deputy chief executive of the energy planning and development division at the Energy Market Authority (EMA), said: "One of the safeguards includes requiring all hydropower projects to undertake a comprehensive environment and social impact assessment, and to have impact management and monitoring plans before construction."

He added: "The projects should also avoid and mitigate losses to natural conserved habitat areas. Developers must develop sustainable biodiversity management plans."

Mr Foong was responding to queries from The Straits Times on how EMA evaluates a potential renewable energy source for the Republic.

On June 23, Singapore's Keppel Electric [began importing renewable energy from Laotian state-owned utility Electricite du Laos](#) via Thailand and Malaysia.

Up to 100 megawatts (MW) of hydropower from Laos will be brought here using existing interconnectors under the Lao PDR-Thailand-Malaysia-Singapore Power Integration Project.

The 100MW account for about 1.5 per cent of Singapore's peak electricity demand in 2020. This could power around 144,000 four-room Housing Board flats for a year.

But international conservation groups have long raised concerns about the impacts of hydropower dams on biodiversity and the communities living around these structures, since their construction can affect the movement of fish.

Dams can also cause the release of methane, a greenhouse gas more potent than carbon dioxide over shorter timescales.

Fishing communities have lost significant income due to a decline in catch, said Ms Pianporn Deetes from International Rivers, a global non-profit group that campaigns to protect rivers and defend the rights of communities that depend on them.

Hydropower dams are a "false climate solution", she said, as the impacts of such structures affect mainly the river communities. Benefits, however, accrue to developers and financiers of such projects.

"Communities are displaced from their homes and denied access to lands, forests and rivers critical for their lives and livelihoods," Ms Deetes added.

She said environmental and social impact assessments to date have been of poor quality, often downplaying the extent and scale of adverse impacts.

Professor Lu Xi Xi, a geographer at the National University of Singapore who studies rivers, said builders often claim hydropower is clean or green as environmental assessments have been done. But the cumulative impacts on communities and the environment are often underestimated, he noted.

Prof Lu added that Singapore's purchase of hydropower could encourage the construction of more dams.

Mr Samuel Chua, a research assistant who works with Prof Lu, said [last month's \(June\) sighting of a 300kg Mekong stingray](#) -

touted as the world's largest freshwater fish - shows that the Mekong river still holds many secrets that are worth preserving.

But the Mekong ecosystem is still poorly understood, he added.

While the exact dams in Laos that Singapore is importing energy from have not been revealed, Ms Deetes said there are many large-scale hydropower dams in that country that are affecting the ecological integrity and health of the Mekong.

Mr Chua added: "Singapore can play a larger role by being involved right at the planning stage, so necessary 'sustainable' designs are incorporated into the dam straight away."

There are wildlife-friendly options that can be used in dams, such as fish passages or ladders, although these may not be effective for larger creatures, Prof Lu said.

EMA's Mr Foong said the import of electricity from Laos will help the Republic assess and test the technical and regulatory frameworks that need to be in place, without compromising on overall power system reliability.

EMA will manage security and reliability risks by diversifying energy sources, including encouraging a variety of sources for electricity imports, he added.

"Electricity imports will be sourced from low-carbon or renewable sources," he said.

Going forward, importers of renewable energy will be asked to submit certificates to EMA regularly for verification purposes, he added. Such certificates show that units of electricity are generated from renewable energy sources.

The Republic in October 2021 announced plans to [import around 30 per cent of its electricity from low-carbon sources](#), such as renewable energy plants, by 2035, to reduce the carbon footprint of its power sector. Currently, more than 95 per cent of Singapore's energy comes from burning natural gas, a fossil fuel.

The Republic has also announced plans to import electricity from other sources.

EMA is, for example, working with power generation company PacificLight Power on a pilot to import 100MW from a solar farm in Pulau Bulan, Indonesia.

Australian firm Sun Cable also has plans to [send electricity to Singapore through subsea cables](#) from a vast desert solar power station south of Darwin in the Northern Territory.

Mr Foong said EMA is actively involved in regional discussions to support further interconnectivity.

"We remain on track to achieve our (2035 target). Where technically feasible, we will work with importers to commence delivery of the imported electricity from as early as 2027 onwards to allow us to progressively scale up our imports," he said.

[pic on next page]

How Singapore imports electricity from Laos

Last month, Singapore began importing renewable energy from Laos via Thailand and Malaysia. This first cross-border electricity trade could pave the way for a regional grid. If Singapore can access renewable energy resources in the region, this would help cut its reliance on fossil fuels for electricity, and thus its carbon footprint. [AUDREY TAN](#) and [LIM KAILI](#) explain how energy imports work.



ABOUT THE PROJECT

September 2021
Singapore firm Keppel Electric and Laotian state-owned utility Electricite du Laos signed an agreement to explore the import of renewable energy into Singapore.

The first electricity import under the project started on **June 23**.

Total distance between Vientiane and Singapore via Thailand and Malaysia is more than **2,000km**.

Under the project, up to **100 megawatts** will be imported into Singapore.

This is equivalent to about **1.5%** of Singapore's peak electricity demand in 2020.

Singapore eventually plans to import around **30%** of its electricity from low-carbon sources by 2035.

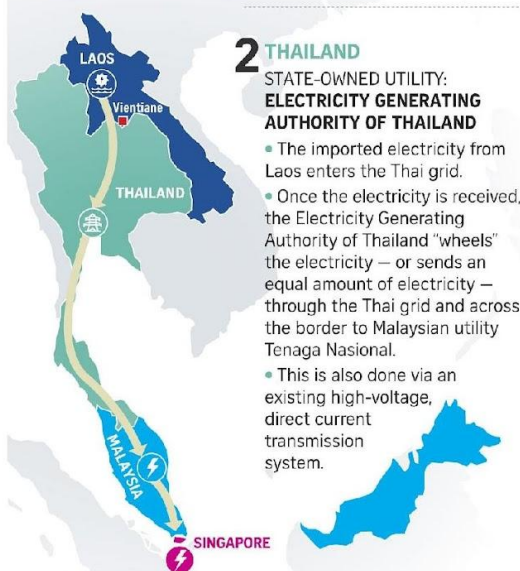
1 LAOS

Existing hydropower dams around Vientiane generate electricity.

- The dams generate electricity when river water turns the blades in a turbine hooked up to a generator.

- The hydropower-generated electricity is transmitted from Laos' electricity grid to Thailand's via high-voltage, alternating current systems using existing cables.
- This process of transferring electricity generated within the borders of one country to an external operator is called "wheeling". Usually, wheeling charges are imposed every time electricity crosses borders.

STATE-OWNED UTILITY:
ELECTRICITE DU LAOS



2 THAILAND

STATE-OWNED UTILITY:
ELECTRICITY GENERATING AUTHORITY OF THAILAND

- The imported electricity from Laos enters the Thai grid.
- Once the electricity is received, the Electricity Generating Authority of Thailand "wheels" the electricity — or sends an equal amount of electricity — through the Thai grid and across the border to Malaysian utility Tenaga Nasional.
- This is also done via an existing high-voltage, direct current transmission system.

3 MALAYSIA

UTILITY: **TENAGA NASIONAL**

- Once the Malaysian utility company receives the imported electricity, it "wheels" the same quantity of energy across the border into Singapore's electricity grid.
- Singapore and Malaysia are connected by a high-voltage, alternating current system. This system is usually used for shorter distances as overall costs of electricity transmission are lower.
- Keppel Electric and Electricite du Laos have an initial two-year power purchase agreement to buy the green energy.
- The wheeling charges at the Laos-Thailand and Thailand-Malaysia borders are commercially agreed on between Electricite du Laos and the utilities in those countries.

4 SINGAPORE

RECEIVING COMPANY: **KEPPEL ELECTRIC**