

# ASIA INVESTMENT RESEARCH

Tracking Global Investment Flows Into China & Asia

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**AIR**

**LAOS**

***POWERING ASEAN GROWTH WITH LOW CARBON ENERGY***



## OVERVIEW

Our prior Asia Investment Research publications to date have focussed on a comprehensive review of inbound investment (including VC/PE growth capital), economic development across key sectors, and most importantly energy transition, and related near term infrastructure development.

However, in light of Laos' 2024 regional energy role and its 2024 leadership of ASEAN we wanted to narrow our focus to energy, as we see this country's (population less than Greater London) efforts to date over the past half decade sending a message to the West on how to "move the needle" on climate change. This includes providing low-cost low carbon energy to its member ASEAN countries to power Southeast Asia's GDP growth.

This paper addresses the business drivers, development of the Laos-Thailand-Malaysia-Singapore Power Integration Project (LTMS-PIP) on a country-by-country basis by ASEAN member as well as China (a full ASEAN and Free Trade dialogue partner) on hydropower, recent major moves by Laos to diversify into wind, and more recently, into solar. We close on how this success of the LTMS-PIP could serve as benchmark to the Brunei-Indonesia-Malaysia-Philippines East ASEAN Growth Area (BIMP-EAGA) in its developing energy platform.



## THE BUSINESS OF ENERGY IN LAOS

Laos, one of the poorest countries in the world, has been developing hydropower capacity along the Mekong River both for domestic energy and export – for income generation - since the early 1970s.

Combining the power of the Mekong River with the fact that more than 70% of the land in Laos consists of mountains and highlands- with many areas suitable for dams – sets the stage for the country to maximise the Mekong River’s estimated capacity of circa 25,000+MWs of hydro, of which 18,000MW could be operational by 2030. Since Laos hydropower contributes over 90% of its domestic electricity consumption, its focus has been to generate and sell electricity to its neighbours.

## ASEAN AND ASEAN OBSERVER COUNTRIES



In 2020, Laos sold US\$1.76 billion of electricity to Thailand, US\$126 million to Malaysia, US\$98.2 million to Cambodia, and US\$65.3 million to Vietnam. In 2022, electricity exports produced over US\$2.3 billion in revenue for Laos, while it spent slightly more than US\$40 million on electricity imports. In 2023, approximately 80% of Laos’ total electricity generation was being exported to neighbouring countries including Thailand, China, Myanmar, Vietnam, Cambodia, and Singapore.

Laos continues to grow its power generation capacity and modernise its power grid. As of February 2024, according to statistics from the Ministry of Energy and Mines, Laos had 94 power plants with a total installed capacity exceeding 11,600 MW by the end of 2023, of which 81 are hydroelectric power plants<sup>(1)</sup>. By 2025, Laos plans to generate 14GWs of hydropower.

Through these efforts of exports to numerous countries in and to develop renewable, Laos has hopes of becoming “the low carbon (battery) of Southeast Asia” in the near future.<sup>(2)</sup>

## EXISTING COUNTRY CLIENTS

### Thailand

Thailand is Laos largest international partner with circa 50% of the electricity generated in Laos being exported to Thailand. Thailand also owns stakes in about half of all such projects, four times the number that China sponsors. It also plans to sponsor 133 more. Thai Utilities is also the largest international client for Laos’ hydroelectricity.

The purchases are part of a 2016 agreement between Thai and Laos governments for energy purchases in which Thailand signed a MOU to buy 9,000MW of electricity from Laos (later extended to 10,500 MWs). In 2019, the Electricity Generating Authority of Thailand (EGAT) bought close to 4,000 MWs of hydroelectricity from Laos, around 10% of Thailand’s installed capacity.

Laos hydropower is also cheaper than any domestic Thai energy source: 30% less expensive than natural gas and almost 80% less than solar. The cost of imported Laos hydropower is around half of the average Thailand’s electricity production cost, subsequently pulling down Thailand’s electricity production costs.<sup>(3)</sup>

The combination of volume and cost advantages have made Laos hydroelectricity an indispensable source of Thailand’s energy security.

## Future Hydro Growth – Additional Large Dams – Pak Beng Dam

Hydropower growth in capacity is being driven by large future dams, the largest of which is Pak Beng Dam in northwestern Laos’ Bokeo province in northern Laos. The US\$1.9 billion, 912MW dam – a joint investment between China’s Datang Overseas Investment (developer) and Gulf Energy Development of Thailand (Thailand) – is the

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#### Footnotes:

- (1) <https://www.recessary.com/en/news/asean-market/laos-biggest-wind-power-project-mayprovide-excess-electricity-vietnam>
- (2) [https://climatecompatiblegrowth.com/wp-content/uploads/How-can-Lao-PDR-become-theLow-Carbon-Battery-of-Asia\\_COP27-Policy-Brief.pdf](https://climatecompatiblegrowth.com/wp-content/uploads/How-can-Lao-PDR-become-theLow-Carbon-Battery-of-Asia_COP27-Policy-Brief.pdf)
- (3) <https://earthjournalism.net/stories/locked-in-why-thailand-buys-electricity-from-laos>

fourth-largest dam the Laos government has planned for the Mekong River. Once operational, 95% of the generated electricity will be sold to Thailand, the remainder being for Laos domestic consumption.

During 2023, the Pak Beng Dam was one of three Mekong River mainstream dam projects which completed review processes and are eligible to begin construction. In September 2023, Pak Beng Dam developers signed a PPA with EGAT, which will allow construction to begin once it issues a report on the social impact of the project.<sup>(4)</sup>

## 2024

In February 2024, the Xekong 4 Power Company Limited (XK4) and EGAT signed a PPA for the Xekong 4A and 4B hydropower project in southern Laos. Under the agreement, EGAT will purchase all electricity generated by the project (355MW) for a period of 27 years, starting from its scheduled commercial operation date in 2033. Construction works are expected to commence in 2025.

The Xekong 4A and 4B Hydroelectric Power Project, located on the Xekong River in Xekong province, is poised to be a game-changer in the energy sector of southern Laos.<sup>(5)</sup> The Xekong river's potential for hydroelectric power was first explored in a MoU signed in 2015. Investors are the Ratch Group (Thailand) and B.Grimm Power (Thailand).

## Malaysia



In September 2017, Laos signed an agreement with Thailand and Malaysia to sell 100MW of electricity to Malaysia using a power transmission system in Thailand: actual delivery of electricity began in 2018.

The deal represented a significant step for Laos energy exports and helped realize an important step in the ASEAN Power Grid which was first discussed at an informal ASEAN summit in late 1997. It was also expected that Malaysia might consider selling to Singapore some of the electricity it acquires from Laos and that the power-grid integration by Thailand, Malaysia and Laos would encourage other ASEAN member states to head in the same direction.<sup>(6)</sup>

In September 2019, Laos, Malaysia, and Thailand agreed to expand a trilateral power deal raising the capacity from 100 to 300 MWs. The trilateral deal between Thailand, Malaysia and Laos is part of a plan by Thailand to become the centre of the regions power grid.<sup>(7)</sup>

In September 2023, Tenaga Nasional (TNB), a leading Malaysian electricity utility firm, and EDL signed an MOU which outlines their joint efforts in exploring investment opportunities and securing PPA for renewable power projects both within Laos as well as bolster the interconnectivity of power grids within the ASEAN (such as Laos-Thailand-Malaysia Power Integration Project).

The ASEAN Power Grid (APG) initiative, first identified as an area of cooperation for ASEAN in 1999, aims to expand cross-border electricity interconnections to create an integrated regional electricity grid system. The Lao PDR-Thailand-Malaysia-Singapore Power Integration Project (LTMS-PIP), which came into operation in 2022, is the first multilateral cross-border electricity trading initiative in the region. It is seen as a pathfinder project that moves the region one step closer to the APG.<sup>(8)</sup>

The projected figure for renewable energy exports from Laos to Malaysia is anticipated to reach 200 MW in 2025 with a trade value of US\$101 million, potentially growing to 1,000MW beyond 2030 with a trade value of US\$500 million.<sup>(9)</sup>

The partnership with TNB aims to generate annual returns of MYR460 million to MYR2.3 billion (US\$97 million to US\$485 million) for TNB starting in 2025.<sup>(10)</sup>

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### Footnotes:

- (4) <https://www.benarnews.org/english/news/thai/laos-dam-mekong-thai-power-deal09212023151235.html>  
(5) <https://www.thestar.com.my/aseanplus/aseanplus-news/2024/01/01/laos-and-thailand-signs-historic-power-purchase-agreement-for-xekong-4a-and-4b-hydroelectric-project>  
(6) [https://kpl.gov.la/EN/detail.aspx?id=28389#:~:text=Sep%2027%2C%202017-,\(KPL\)%20Laos%20signed%20on%20Sep%2027%20a%20tripartite%20electricity%2D,commence%20on%20August%201%2C%202018.](https://kpl.gov.la/EN/detail.aspx?id=28389#:~:text=Sep%2027%2C%202017-,(KPL)%20Laos%20signed%20on%20Sep%2027%20a%20tripartite%20electricity%2D,commence%20on%20August%201%2C%202018.)  
(7) <https://www.rfa.org/english/news/laos/asean-energy-09062019165748.html>  
(8) <https://www.iseas.edu.sg/wp-content/uploads/2023/11/2023-LTMS-PIP-Policy-Report-FAV2-Online.pdf>  
(9) <https://senecaesg.com/insights/malaysia-laos-to-promote-cross-border-renewable-energytrade/#:~:text=According%20to%20TNB%2C%20the%20projected,a%20trade%20value%20of%20USD500m.>  
(10) <https://technode.global/2023/08/07/malysias-tnb-partners-laos-edl-to-boost-crossborder-renewable-energy-trade/>

## Cambodia



In September 2019, Laos signed an agreement with Electricité du Cambodge (EdC) to sell 200MW of electricity to Cambodia until 2021. Previously, Laos announced plans of increasing electricity exports to other countries in the Greater Mekong Subregion (GMS) in the next 6 years: including 9 GW to Thailand, 5GW to Vietnam and 500MW to Myanmar.

Under the GMS Economic Cooperation Program, the proposed Cross-Border Power Trade and Distribution Project helps Laos develop priority power interconnections with neighbouring countries in the subregion and increase cross-border power trade. The project will also expand access to low-cost, reliable power in rural areas.

In the meantime, EdC agreed to buy 80MW of electricity from Thailand to fill the shortage in supply during the prolonged dry season. Cambodia was then suffering from daily power disruptions.<sup>(11)</sup>

In January 2023, Laos launched a 500KV power transmission line linking a power substation at a village in its southern Champasak province to the border area of Cambodia. EDL said the power transmission line and the substation are part of a national project, which has used modern techniques with a high investment value and represents an important achievement for Laos strategy to export electricity to neighbouring countries, especially Cambodia.<sup>(12)</sup>

This energy collaboration can also be viewed in a larger context of regional cooperation. In October 2023, Lao President supported Hun Manet's initiative on Cambodia-Laos-Vietnam trilateral tourism cooperation, "Three Countries One Destination" which was launched at the 3<sup>rd</sup> Belt and Road Forum in Beijing.<sup>(13)</sup>

In January 2024, Cambodia and Laos reiterated their commitment to cooperate in the energy sector ahead of the planned visit by Prime Minister Hun Manet to Vientiane in late March. To help power its rapidly expanding economy, Cambodia imports around 25% of its power requirement from countries such as Laos, Vietnam, and Thailand. From Laos, Cambodia currently imports around 445 MW, and the power trade is expected to reach 6,000 MW by 2030.

At present, Laos supplies electricity via a 115kV transmission line between its Champassak province and Stung Treng province in Cambodia, and the new 500-kilovolt transmission line will help ease the transfer of electricity.

Cambodia generates electricity from hydropower dams, coal-fired units, diesel-consuming plants, solar energy parks, and biomass power units, and aims to adopt natural gas, LNG, or hydrogen as a fuel for power production.

In Cambodia, the electricity supply has recorded an average annual growth of 1,770 GWh between December 2004 and December 2022. The per capita consumption of electricity in Cambodia is 353 KWh. While electricity to Cambodia from Vietnam is transported through high voltage lines to Phnom Penh, from Thailand it goes through Banteay Meanchey, Battambang and Siem Reap lines.<sup>(14)</sup>

## Singapore



In July 2022, Singapore began to import renewable energy from Laos, transmitted through Thailand and Malaysia into Singapore, according to Singapore's Energy Market Authority (EMA). The development follows the execution of a PPA between Keppel Electric (Singapore) and EDL back in September 2021 which stated that up to 100MW of renewable energy will be imported via the Laos-Thailand-Malaysia-Singapore power integration project (LTMS-PIP). It is the first multilateral cross-border electricity trade involving four ASEAN countries, as well as being the first renewable energy import into Singapore.

The imported power capacity equals about 1.5% of Singapore's peak electricity demand in 2020, or enough to power approximately 144,000 four-room HDB flats for a year.

### Footnotes:

(11) <https://greatermekong.org/lao-pdr-export-200mw-cambodia>

(12) [http://www.china.org.cn/world/Off\\_the\\_Wire/2023-01/05/content\\_85042138.htm](http://www.china.org.cn/world/Off_the_Wire/2023-01/05/content_85042138.htm)

(13) <https://www.khmertimeskh.com/501379106/lao-president-supports-hun-manets-initiativeon-cambodia-laos-vietnam-trilateral-tourism-cooperation-three-countries-one-destination/>

(14) <https://www.khmertimeskh.com/501423449/cambodia-laos-reiterate-energycooperation/#:~:text=scaled%20new%20heightsAs%20part%20of%20efforts%20to%20meet%20the%20growing%20demand%20for,reach%206%2C000%20MW%20by%202030>

The LTMS-PIP is one of the trials that the EMA has been working on as part of its goal to import up to 4 GW of low carbon electricity by 2035 which will account for approximately 30% of Singapore's electricity supply in a year (announced in October 2021). Keppel Electric is the first entity to receive a licence from the EMA as an electricity importer, although the EMA also plans to import electricity from other sources.<sup>(15)</sup>

The renewable power imports from Laos could help Singapore get rid of its reliance on natural gas and move toward net-zero carbon emission. At present, around 95% of Singapore's electricity output is generated from natural gas. The country plans to leverage solar power, regional power grids, and other low-carbon alternatives such as carbon capture, utilization, and storage (CCUS) technologies to realize its climate commitment to net-zero emissions by or around mid-century).

In this regard, in October 2023, Singapore announced conditional approval for Sembcorp Utilities to import 1.2GW of electricity from Vietnam. The imported electricity will be transmitted from Vietnam via new subsea cables that will cover approximately 1,000 km. This follows on from EMA's September conditional approval to import 2GW of solar power from Indonesia.<sup>(16)</sup>

## Vietnam



In September 2022, Vietnam announced that it was set to import at least 3,000-5,000 MWs of electricity from Laos in the 2020-2025 and 2025-2030 periods as per a MoU signed by Executives EVN and EDL, the two main operators of electricity generation and transmission in the two countries.

EVN, the biggest electricity producer and sole power distributor in Vietnam, at that time provided electricity to nine locations in the Vietnam-Laos border areas, with an annual power sales of 50 million kWh, across numerous Laotian localities. The Vietnamese state utility had signed 18 PPAs to buy electricity from 23 projects in Laos.<sup>(17)</sup>

In August 2022, Laos and Vietnam had signed MoUs targeting exports of 8,148 MW from Laos to Vietnam by 2030. Laos also signed contracts with EVN to implement 25 projects with a combined capacity of 2,180MWs. In January 2024, EVN signed 19 contracts to buy electricity from 26 Laos hydropower plants with a total capacity of 2.689 MW.

By 2025, power export is likely to reach 3,000 MW via a planned 220 kV interconnector between the two countries and in the long term (up to 2030). The export quantum will be enhanced to 5,000 MW via a proposed 500 kV transmission line which is currently under study.<sup>(18)</sup>

## Myanmar



In December 2023, during the bilateral meeting on Myanmar-Laos Energy Cooperation, the following key points were made:

- Myanmar will need 14,542 MW of electricity by 2030. To meet these requirements, Myanmar needs to explore enhancing both domestic the cross-border electricity import as a priority, including cooperation with China and Thailand in order to fulfill the electricity requirements as quickly as possible.
- The Mekong Hydropower project can generate more than 500 MW of electricity with an urgent need for a feasibility study. Moreover, it can promote regional integration among the countries.
- It is necessary to initiate the implementation of the Myanmar-Laos cross-border power line project in a short time frame. The government of Laos and Myanmar will also assist conducting the joint feasibility study for the implementation of the project.<sup>(19)</sup>

On 26 December, the Union Minister and party studied the construction site of a hydropower project in Mekong River that can generate 1,460 MW including Navigation Lock System.<sup>(20)</sup>

### Footnotes:

(15) <https://www.pinsentmasons.com/out-law/news/singapore-starts-importing-renewableenergy-from-laos-via-thailand-and-malaysia>

(16) <https://www.reuters.com/business/energy/singapore-expands-low-carbon-power-importagreements-2023-10-24/>

(17) <https://theinvestor.vn/vietnam-to-import-8000-mw-of-electricity-from-laosd1714.html/>

(18) <https://greatermekong.org/lao-pdr-ramps-electricity-exports-viet-nam>

(19) <https://www.gnlm.com.mm/myanmar-laos-ink-mou-amendment-on-power-cooperationnotice-to-proceed-ntp-for-cross-border-power-project/>

(20) <https://infosheet.org/node/5503>

## Brunei



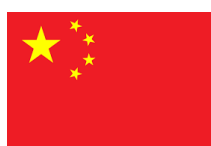
In October 2022, Brunei Darussalam and Laos signed MoUs on agricultural and energy cooperation. Their leaders also agreed that food and supply chain security was particularly relevant amidst geopolitical uncertainties.

The MoU on Agricultural Cooperation –aims to facilitate and develop cooperation and collaboration in the fields of agriculture including agrifood, agro-technology, productivity, standards and other forms of cooperation relating to agricultural activities.

The MoU on Energy Cooperation- aims to facilitate and enhance energy cooperation between the two countries, enabling relevant entities to enter into commercially and financially viable arrangements - specifically the potential of export and import of petroleum and petroleum products; the potential of renewable and alternative energy development including the respective technologies.<sup>(21)</sup>

## OTHERS

### China



China is not of part of ASEAN but is a full dialogue and free trade partner with multiple additional trade, investment, and security agreements with ASEAN.

China has been a long-term investor and partner in developing Mekong hydropower dating back decades. By the end of 2013, China's cumulative investment in Laos stood at US\$5.1 billion, surpassing both Thailand and Vietnam (this amount is prior to the railway). According to the American Enterprise Institute, Chinese companies invested an additional US\$3.2 billion in Laos' energy sector during the period March 2018-March 2023. More recently, China decided to cycle some of this energy back into China.

In October 2022, a MoU for a six-month feasibility study for clean energy comprehensive project in the three northern Laos provinces of Phongsaly, Luang Namtha and Oudomxay was signed by leaders from all Laos provinces, China General Nuclear (CGN) and the Chinese government. At the signing, CGN's president stated that it had 72 million KWs in China, an installed capacity of 30 million KWs, including 1 million KWs in overseas in ASEAN, Egypt, France, and Brazil.<sup>(22)</sup>

## 2023 EXPANSION

In March 2023, EDLT and China Southern Power Grid (CSPG) signed a US\$2 billion BOT deal which allows the JV to build, manage and control the Laos power grid for a 25-year concession period. After 25 years, the business will be transferred to the Laos government.

While CSPG owns majority control of the JV, both countries share control of powerline network as follows:

CSPG of the high-voltage power line network (greater than 230 KV), while EDLT retains control of powerlines under 230 KV.<sup>(23)</sup>

In September 2023, CGN signed a project development agreement with the government of Laos to develop a renewable energy base in the north of Laos which will incorporate wind, solar, hydro and energy storage capabilities, and will feed into an existing power line that transfers power generated in Laos to China's Yunnan province, and a second planned 500kV power line between the two.<sup>(24)</sup>

In March 2024, CGN Group announced that construction of the largest single new energy project in Southeast Asia, based in Laos, would begin in June. The project will become the first overseas clean energy base to send electricity

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#### Footnotes:

(21) <https://thebruneian.news/2022/10/31/brunei-lao-sign-mous-on-agriculture-and-energycooperation/>

(22) <https://kpl.gov.la/En/Detail.aspx?id=69544>

(23) [https://www.voanews.com/a/east-asia-pacific\\_laos-grants-25-year-concession-chinesecompany-manage-power-grid/6203453.html](https://www.voanews.com/a/east-asia-pacific_laos-grants-25-year-concession-chinesecompany-manage-power-grid/6203453.html)

(24) <https://www.reuters.com/business/energy/china-general-nuclear-enters-agreementdevelop-renewable-energy-base-laos-2023-09-18/>

back to China. The first phase will be a 1 million KW photovoltaic project. It will start simultaneously with the building of CSP Grid's China-Laos 500kilovolt transmission line for transferring the power to China.<sup>(25)</sup>

## LAOS: OTHER RENEWABLES



As discussed earlier, the majority of the power generated in Laos is sold to neighbouring Thailand, and Vietnam, collectively accounting for 30% of its exports by value. In addition, Laos started power exports to Singapore in 2022 and began building transmission infrastructure recently for selling electricity to Cambodia.

Electricity demand in Vietnam was increasing by 10%/year before COVID. By some estimates, demand will rise fivefold by 2050. Large-scale blackouts hit Hanoi and other areas in 2022, and more outages are expected as the economy roars back to life from the COVID-19 pandemic.

Laos has thus begun actively pursuing other forms of renewable energy – the most active to date being wind. By year end 2022, a proposal for a 250 MW Vietnamese-backed wind farm has been under consideration. At least 10 projects are thought to be in the planning stages nationwide.

## WIND

While hydropower currently accounts for about 70% of total electricity generation output in Laos, by 2024 Laos also had circa 10 onshore wind power projects with a total design capacity of 3.6 GW in planning stages.<sup>(26)</sup>

We set out data on two of Laos planned wind farms, collectively representing over 2GW of power over time:

### Monsoon Wind Farm/Mitsubishi Thailand JV

The first wind farm in Laos; and the largest in Southeast Asia. In June 2021, Mitsubishi Corporation (MC) reached an agreement to invest in Impact Energy Asia Development Limited (IEAD), the Thai based developer of a 600MW capacity onshore wind farm project in Laos. MC will invest through an intermediate holding company together with a group company of Impact Electrons Siam in Thailand.

The onshore wind farm will be located in Sekong and Attapeu Provinces in southern Laos. The wind park will be equipped with 133 units of Envision's EN-171 turbines of 4.51 MW each. Once up and running, the machines will be generating more than 1,700 MWh of electricity per year. The wind farm will be the first wind farm in Laos and the largest in Southeast Asia.

The output of the Monsoon wind farm will be delivered from Laos to Central Vietnam through a dedicated 500-kV power transmission line to Vietnam. The plant will be run through a 25-year power purchase agreement (PPA) with Vietnam Electricity (EVN).<sup>(27)</sup>

In April 2022, Envision Group (China) announced a Letter of Intent (LoI) to supply turbines for the project with its developer IEAD, a JV with Impact Wind Investment Ltd and renewable energy firm BCPG Public Co Ltd.

Separately, plans are in progress for the development of the Xekong project that envisages a 1,000-MW extension of the Monsoon wind park. IEAD's affiliate, Impact Electrons Siam Company Limited (IES), obtained exclusive rights from the government of Laos to conduct a feasibility study and preliminary environment impact assessment for Xekong.<sup>(28)</sup>

In April 2023, IEAD reached financial close on the Monsoon Wind Power development, thus construction could begin. The project has a total cost of US\$950 million. A US\$692 million loan agreement was signed with the JICA,

Footnotes:

(25) <https://www.caixinglobal.com/2024-03-22/cgn-to-start-building-southeast-asiaslargest-clean-energy-facility-in-laos-102177935.html>

(26) <https://asia.nikkei.com/Business/Energy/Southeast-Asia-s-battery-Laos-embraces-windpower-to-sustain-energy-exports>

(27) <https://www.mitsubishicorp.com/jp/en/pr/archive/2021/html/0000047264.html>

(28) <https://renewablesnow.com/news/envision-turbines-picked-for-600-mw-wind-project-inlaos-779724/>



ADB, Sumitomo Mitsui Banking, and other lenders. Other partners in the project are ACEN Renewables International, STP&I Public, BCPG Public, Impact Electron Siam, and SMP Consultation Sole.<sup>(29)</sup>

IEAD is owned by BCPG (45%) and Impact Electrons Siam (31%) of Thailand, and Mitsubishi (24%). Envision Energy and PowerChina are undertaking the construction, operation, and maintenance of the project. Monsoon Wind's construction was launched in May, with its commissioning planned for 2025. The project comes with plans for a dedicated 500-kV transmission line.<sup>(30)</sup>

In November 2023, EPC contractor PowerChina (China) announced that the first turbine was installed at the 600MW Monsoon cross-border wind project in Laos that will transmit power to Vietnam.

The plan is to deliver 5GW of electricity from Laos to Vietnam by the end of this decade. In addition, this onshore wind facility is expected to contribute to Vietnam's target of eliminating Laos carbon emissions by 27% by 2030.<sup>(31)</sup>

## AMI Savannakhet Wind Farm (Ayala)

In February 2024, The Laos government signed a Project Development Agreement (PDA) in collaboration with SVARE (Savan Vayu Renewable Energy) to develop Laos largest wind power project. It is located in Savannakhet Province in southern Laos and near Quang Binh Province in central Vietnam. SVARE is estimated to have installed capacity of 1,200MW, at a cost of circa US\$2 billion and is expected to be operational by early 2026. This project is not only the largest wind farm in Laos but also one of the largest in Asia outside of China.

Quang Binh AMI Renewables (Vietnam partner) signed a PDA with the Laos government for this project in July 2023. Quang Binh AMI Renewables previously collaborated with AC Energy (ACEN), a subsidiary of the Philippines' largest conglomerate Ayala Corporation, through a JV to develop a wind farm in Quang Binh Province, Vietnam. With a capacity of 252 MW, it is considered to be Ayala Group's largest investment in Vietnam.<sup>(32)</sup>

## Solar/Ammonia



Over the past year, Laos has begun to diversify into solar/floating solar and producing ammonia from excess hydropower. While it is still early days, some progress has already been seen:

- In September 2023, SolarSpace, a China-based PV cell and module manufacturer, announced the first phase of a 5GW high-efficiency solar cell plant in Laos which will manufacture high efficiency cells. The factory is SolarSpace's first PV manufacturing plant in Laos and its latest overseas manufacturing facility (recently 1.2 GW solar module factory in Cambodia).<sup>(33)</sup>
- The Laos Government and the Nam Theun 2 hydropower plant shareholders signed a project development agreement for the 240 MW Nam Theun 2 Floating Solar PV project. This project (which involves EDF France), set to begin operation in 2024, would become one of the largest hybrid floating solar projects in the world.<sup>(34)</sup>
- In January 2024, Tsubame BHB (Japan), Agri Laos and State Enterprise for Agriculture Service (SAS) signed an agreement to develop a renewable ammonia and low carbon fertiliser project using surplus Laos hydropower. Tsubame BHB has been discussing a hydro to ammonia project on a small scale for a few years before the 2024 launch.<sup>(35)</sup>

### Footnotes:

(29) <https://www.nenergybusiness.com/news/mitsubishi-secures-692m-financing-monsoonwind-power-project-laos/#>

(30) <https://www.investmentmonitor.ai/news/construction-starts-on-laos-onshore-windfarm/?cf-view&cf-closed>

(31) Ibid

(32) <https://www.recessary.com/en/news/asean-market/laos-biggest-wind-power-project-mayprovide-excess-electricity-vietnam>

(33) <https://www.pv-magazine.com/2023/09/27/solarspace-launches-first-phase-of-5-gw-pvfactory-in-laos/>

(34) <https://laotiantimes.com/2023/12/13/uk-australia-boost-laos-green-energy-with-floating-solar-workshop/#:~:text=The%20UK%20is%20committed%20to,for%20Nam%20Theun%202%2DSolar>

(35) <https://www.ammoniaenergy.org/articles/tsubame-bhb-renewable-ammonia-and-lowcarbon-fertiliser-in-laos/>

## BIMP EGA – LEVERAGING LTMS-PIP PROGRESS

Brunei, Indonesia, Malaysia, and the Philippines created the East ASEAN Growth Area (BIMP-EAGA) to shift economic activities from resource extraction and to facilitate value-added production, focusing on industries that adopt clean and green technologies.

These countries are planning to connect their power grids and trade electricity as early as 2025. The power grid integration initiative was launched in Indonesia in August 2022. It was decided that pilot project, called the Brunei, Indonesia, Malaysia, the Philippines Power Integration Project (BIMP-PIP) will study cross-border power trade among their countries and assess the technical, policy, regulatory, legal, commercial, and capacity building issues.

The ministers from the 10 member ASEAN states welcomed the BIMP-PIP as a potential multilateral power trading project and said the Laos-Thailand-Malaysia-Singapore Power Integration Project (LTMS-PIP) could serve as a model for addressing technical, legal, and financial issues of multilateral electricity trade.<sup>(36)</sup>

## CONCLUSION

It is very clear that Laos has built a high growth energy generation and sales business involving low carbon energy designed to help its ASEAN partners power GDP growth. In addition, other Laos accomplishments to date include:

- LTMS-PIP was the first multilateral cross-border electricity trade involving four ASEAN countries (Laos, Thailand, Malaysia and Singapore), as well as and the first renewable energy import into Singapore.
- The 600 MW Monsoon wind farm (Mitsubishi-Japan) is the first wind farm in Laos and currently the largest in Southeast Asia.
- The 1,200 MW SVARE wind farm (Ayala-Philippines) will not only become the largest wind farm in Laos but also one of the largest in Asia outside of China.
- The 240 MW Nam Theun 2 Floating Solar PV project (EDF –France), set to begin operation in 2024, would become one of the largest hybrid floating solar projects in the world.
- In March 2024, CGN Group announced the construction of a renewable energy base in Laos. The 1 million kw photovoltaic project, combined with a 500 KV transmission line for transferring the power to China, makes this the largest single new energy project in Southeast Asia.

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Footnote:

(36) <https://www.bimp-ega.asia/article/bimp-ega-countries-eye-electricity-trade-2025>