ASEAN Pathway to Decarbonisation

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Ambitious Targets for 2030

- 1 **Indonesia**. PLN Business Plan seeks to add 40.6GW of new generation capacity by 2030. Of this, 52% will come from clean power (expansion target excludes Sabah & Sirawak) If realized, the share of RE will be 34% by 2030.
- 2 **Malaysia**. According to Peninsular Generation Development Plan, the share of RE in the energy mix is poised to increase to 29% by 2039, up from 17% in 2021. This is about 20% share of RE in 2030.
- 3 **Philippines.** In the Energy Plan 2020-2040, the share of renewable generation from 21% in 2021, will increase to 35% in 2030, and 50% in 2040.
- 4 **Thailand.** The plan is to add about 56GW new capacity by 2037, of which 37% come from RE. This means RE share will be 26% in 2030, and possibly 50% by 2050.
- 5 **Vietnam**. In the publication of the Vietnam Initiative for Energy Transition, it is estimated that about 30% of electricity will be generated from RE in 2030.

Additional Capacity : Renewable Energy

	2022	2030
Indonesia	18%	29%
Malaysia	18%	20%
Philippines	21%	35%
Thailand	14%	26%
Vietnam	28%	30%

Ambitious Targets Across Southeast Asia…

Opportunities in ASEAN

1. Myanmar, Cambodia, Laos and Sarawak have water resources for hydropower
2. Indonesia and Philippines have geothermal opportunities
3. Laos, Thailand and Vietnam have very good wind resources
4. Indonesia, Malaysia and Thailand offer bioenergy

*All ASEAN countries have excellent solar resources with Philippines &

Singapore having excellent opportunities for floating solar and off-shore wind due to its geographical characteristics and limitations

Issue #1 : Limited Investments

- To support the ambitious target for decarbonization, enormous financial support needs to deployed in ASEAN countries.

  Indonesia. A significant ramp up of annual investments in renewable energy would be required. From USD2billion per year, the amount needed will jump to about USD10billion per year to reach its 2030 target.

- **Philippines**. Achieving the planned expansion of RE until 2030, it will need a total investment of USD28billion over a period of 7 years.
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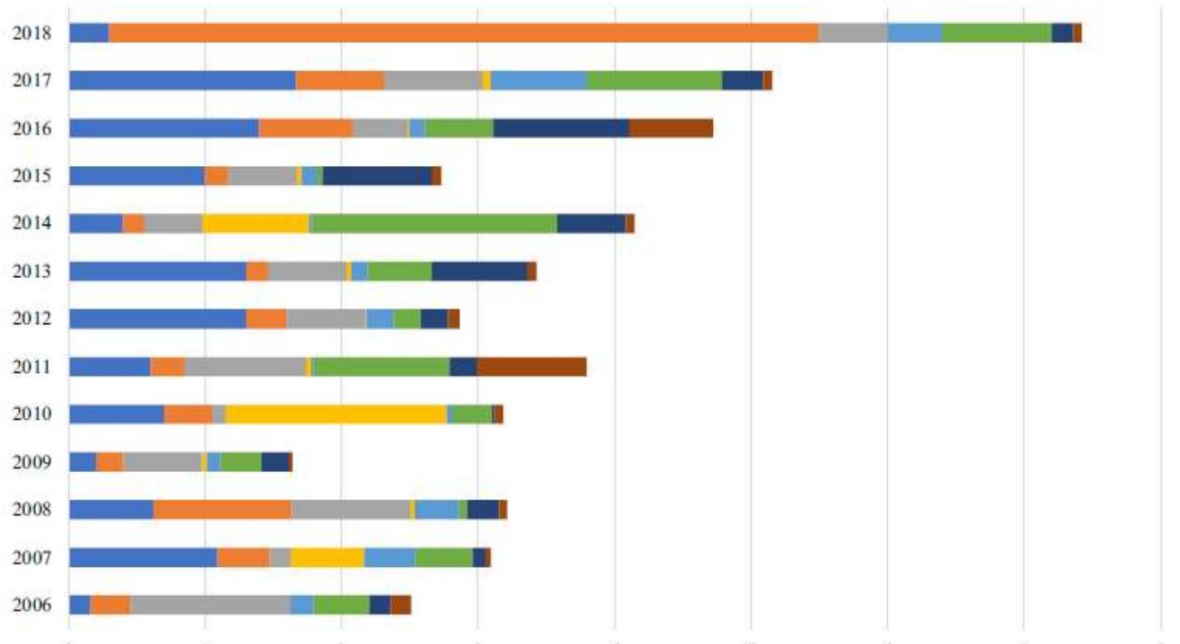
Issue # 1 : Limited Investments

Figure 2: Annual renewable investment in Southeast Asia (USD billion): 2006-2018



INVESTMENT NEEDS FOR MORE AMBITIOUS TRANSITIONS

Investment needs for a 1.5-aligned transition pathway analysed by IRENA

Segment	Total investment up to 2030	Average annual investment up to 2030
Solar power	USD156 billion	USD13 billion
Hydro	USD 56 billion	USD 5 billion
Other renewables	USD 90 billion	USD 8 billion
Total clean power	**USD302 billion**	**USD25 billion**
Cross-border transmission	USD 13 billion	USD 1 billion
National grids	USD 92 billion	USD 8 billion
Distribution networks	USD 69 billion	USD 6 billion
Energy storage	USD 8 billion	USD0.7 billion
Total infrastructure	**USD182 billion**	**USD15 billion**

Source: IRENA (2022) Renewable Energy Outlook for ASEAN

Key Issue # 2: Excess Fossil Fuel Capacity Slows Down Decarbonisation

- The existence of a strong coal and gas reserve in selected ASEAN countries affects the clean power transition in a major way.

  Indonesia. The added capacity of RE of about 30GW will result in excessive coal reserve.

  Malaysia. The current reserve of gas and coal is at 52%.

- **Vietnam**. The additional coal capacity planned of 13Gw in 2030 will result in a 60% share of fossil fuel.

- **Thailand**. The existing oversupply of power generation capacity which is at 54 percent, will reduce the offtake of renewables.

Issue #3 : Weak Grid infrastructure

- To realize the ambitious decarbonization goals of ASEAN countries, it is suggested that the interconnection infrastructure in the region be strengthened. An ASEAN Power Grid blueprint was developed to begin regional discussions and cross-border electricity transactions.

- This proposed integrated grid would allow high level variable renewable energy to be absorbed by grid.
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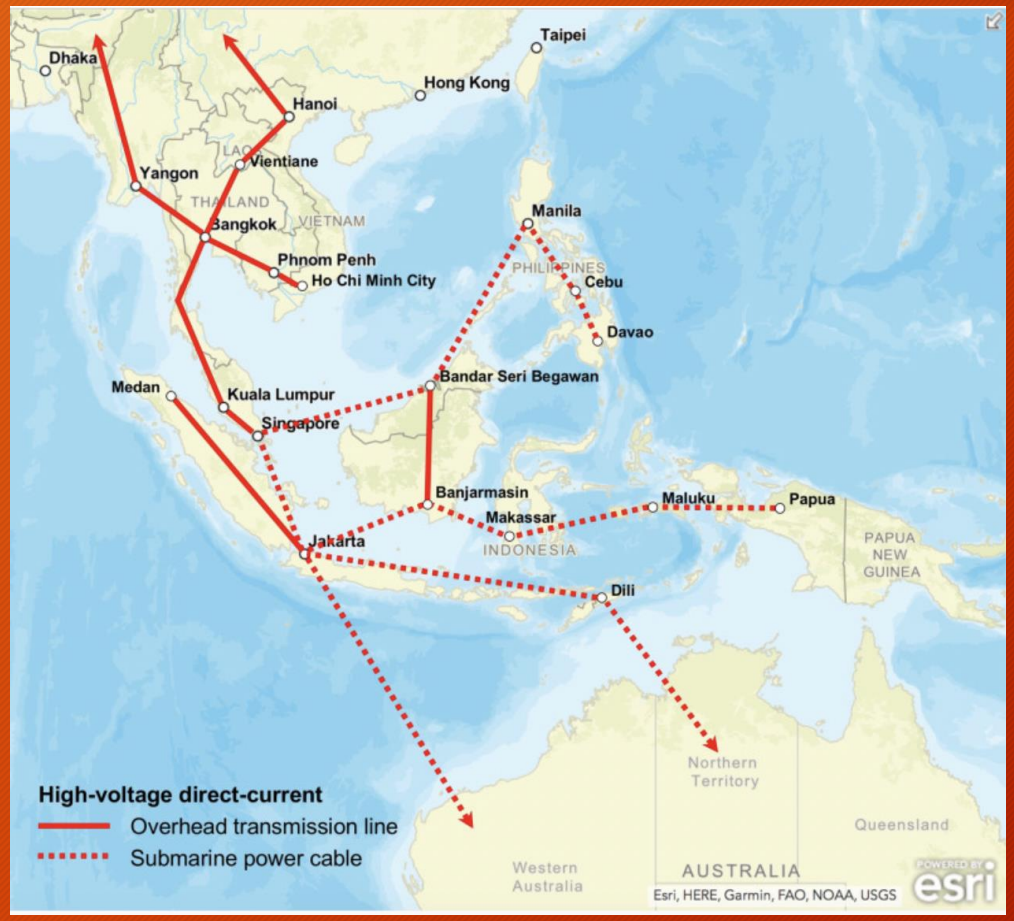
Issue #4 : Centralized Supply Chain

- Given the ambitious decarbonization target, ASEAN countries have to develop a more efficient supply chain.
- Currently, only Vietnam and Malaysia have a local supply chain.
- Exploring ways to lower the cost of clean energy technologies will improve the competitiveness of renewable energy.
- The production of floaters locally, as solar-on-water technologies scale up, offer a promising option that will significantly reduce the cost of installation. The Philippines, given its geographical characteristics, can be developed as producer of floaters.
- Malaysia, Philippines and Singapore can offer design & engineering services.

Way Forward : One ASEAN Grid



Way Forward

1. Storage solutions to address Grid stability
2. Hybrid solutions where renewables are paired with storage technologies will accelerate energy transitions
3. Investment in OneASEAN grid
4. Creating innovative financing mechanisms – green bonds
5. Closer China Cooperation
   4.1 BRI as the channel for mobilizing Chinese Capital
   4.2 China Plus private sector to de-risk capital deployment
   4.3 China Plus multiteral and regional agencies (ADB & WB)
   4.4 China Plus ASEAN for regional hub (Philippines for floaters, Vietnam & Malaysia for modules, etc)

Thank You….

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