## ASIA CLEAN ENERGY FORUM 2025

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# The 'Development Dividend' of the ASEAN Power Grid

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Intelligent Energy Systems

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## **Interconnectors as infrastructure assets:** the framework to define the 'development dividend'



## Scope of the Research covers interconnections between 8 countries in Southeast Asia



12 interconnectors across the North and South Power Systems			
Νο	Connection	Existing 2025 Capacity <i>(MW)</i>	Additional Capacity Modelled <i>(MW)</i>
1	Peninsular Malaysia – Singapore	525	525
2	Thailand – Peninsular Malaysia	380	663
3	Peninsular Malaysia – Sumatera	-	600
4	Thailand – Lao PDR	995	700
5	Lao PDR – Vietnam	-	625
6	Thailand – Myanmar	-	1262
7	Vietnam – Cambodia	220	1,153
8	Lao PDR – Cambodia	516	325
9	Thailand – Cambodia	250	1,315
10	Sumatera – Singapore	-	4,533
11	Lao PDR – Myanmar	30	600
12	Singapore – Cambodia	-	1200
	Total	2,916	13,504

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#### RE\_TRADE scenario, 2040

## **Singapore- Sumatra: Clean Power at Scale**



## Thailand –Lao PDR: Diversification

Lao PDR - Thailand



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**RE TRADE scenario**, 2040

## Key Benefits of RE\_TRADE : Energy becomes a Profitable Export

#### Energy Trade Becomes a Fiscal Asset — Not Just a Technical Fix

- Cross-border electricity trade increases fivefold under RE\_TRADE.
- The result is a surge in **clean electricity export revenue**, with tangible national development implications:



**+196**\$million/year trade with Malaysia & Cambodia



 In short: energy becomes tradable — and profitable. For many countries, power exports could rival agricultural or fossil export revenue.

#### WATCHPOINTS

Export revenues must be **equitably shared** between project developers, communities, and governments



**Interconnectors are enablers, not end-goals:** they unlock the value of surplus renewables. Align grid and RE planning — don't treat them as separate pipelines.



If exports are not matched by new RE build, domestic fossil plants may be used to supply exports. This can **raise CO<sub>2</sub> emissions** 



## Key Benefits of RE\_TRADE : Regional Security Through Interconnections

## <sup>3</sup> RE\_TRADE Makes Energy Security Regional, Not National

In the BASE scenario, countries build and maintain standalone systems — with high spinning reserves, fossil peakers, and capacity redundancies. In RE\_TRADE, countries share reserves, diversify supply, and optimise dispatch regionally:

- Costs of Spinning reserves fall by up to 25%, especially in Thailand, Singapore, and Cambodia
- Interconnectors meet 20–30% of peak demand in countries like Singapore and Cambodia — providing instantaneous reserves and a range of grid ancillary services
- Seasonal and daily balancing becomes routine: e.g., Lao hydro fills Thai shortfalls; Malaysia solar exports offset Singapore LNG; Cambodia imports Thai peaking power during dry periods





## **Final Thoughts: Delivering the Dividend**



Investment Toolkit Align grid and RE planning — don't treat them as separate pipelines.

How do we structure the incentives and commercial frameworks? To reward early movers and protect fairness — across governments, communities, and developers

Finance at scale: What role can development finance play? Blending capital, sharing risk, and making sure these investments scale.



## Thank



## The four scenarios

4 interconnector scenarios were simulated where RE\_TRADE showed the highest increase in RE generation, with the most reduction in LCOE and Emissions



## Key Benefits of RE\_TRADE : Lowest Cost, Highest Value

#### **RE\_TRADE** is ASEAN's Lowest-Cost Scenario — and the Highest-Value Investment

- The Renewables + Trade scenario delivers the lowest levelised cost of electricity (LCOE) by 2040; \$34.4/MWh in RE\_TRADE, compared to \$37.9/MWh in baseline.
- More importantly, RE\_TRADE yields net cost savings at the system level:
  - \$13 billion/year in avoided fossil fuel costs, as solar, hydro, and wind replace expensive coal and LNG
  - **\$7 billion/year increase in annual CAPEX and maintenance cost requirements,** as expanding cross-border trade requires greater investments in clean energy infrastructure.



- These savings depend on delivery: grid buildout and financing
- Up to \$62 bn in additional investment required by 2040, relative to the baseline



Governments may need to regulate export volumes, ringfence power for domestic use, or reinvest trade revenues in local affordability (e.g. subsidies, grid upgrades).