Cross-border electricity trade:

The case of ASEAN

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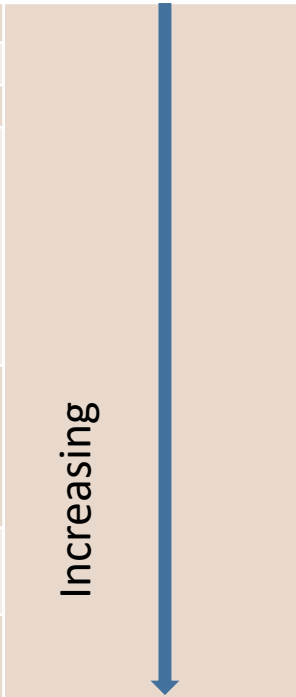
Apr 2022

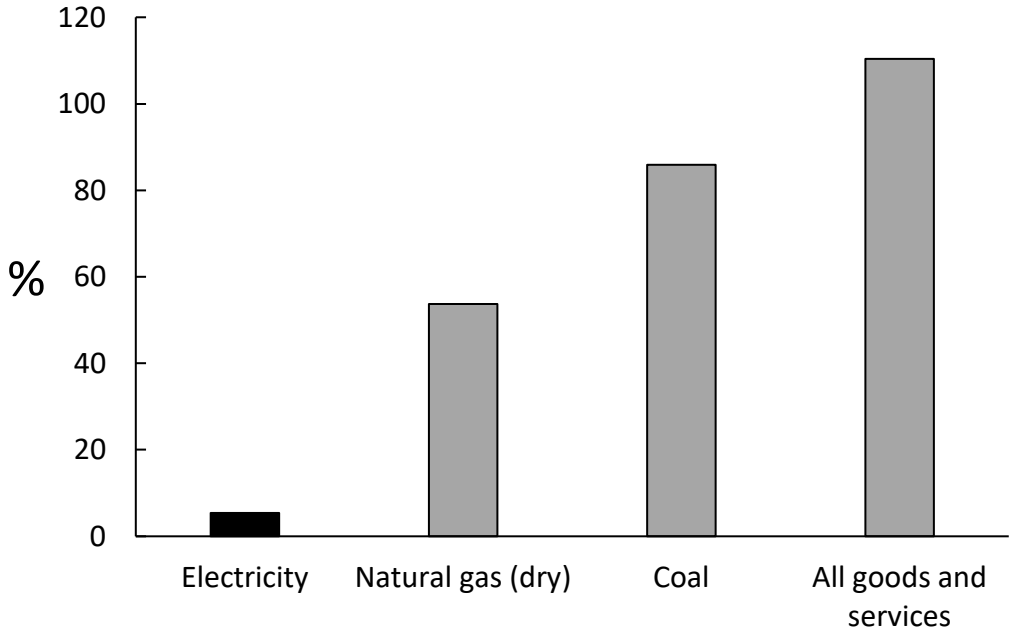
Benefits of cross-border electricity trade

- Cost saving
- More smoothing out effects
- More renewable power uptake
- More electricity access for remote areas

Cross-border electricity trade models

Trade model	Trade mode	Example	Degree of integration and complexity
Bilateral	Unidirectional	Thailand imports from Lao PDR	
	Bidirectional	Lao PDR ↔ Vietnam	
Multilateral	Unidirectional involving a transit country	Lao PDR exports to Malaysia via Thailand	
	Multidirectional among differentiated markets	Southern African Power Pool	
	Multidirectional among harmonized markets	European Union Internal Energy Market	
Unified	Unified market structure, differentiated operations	Nord Pool	
	Unified market and operations	Australian National Electricity Market	

ASEAN cross border electricity trade has been limited



Openness index by product for ASEAN, 2016

Cross-border electricity trade is tiny relative to trade in either dry natural gas, coal, or across the economy as a whole

ASEAN Power Grid progress

- Initiated in 1997
- Slow and limited
- Majority of power trade has been bilateral between neighbours, mainly among Mekong countries
- Far from full multilateral, multidirectional trading

Progress in APG interconnection projects

Project code	Interconnection	Capacity as of December 2020 (MW)
North system		
9	Thailand-Lao PDR phase 1	5,427
10	Lao PDR-Vietnam phase 1	538
11	Thailand-Myanmar	-
12	Vietnam-Cambodia	200
13	Lao PDR-Cambodia	200
14	Thailand-Cambodia	230
South system		
1	Peninsular Malaysia-Singapore	525
2	Thailand-Peninsular Malaysia	300
3	Sarawak-Peninsular Malaysia	-
4	Peninsular Malaysia-Sumatra	-
5	Batam-Singapore	-
16	Singapore-Sumatra	-
East system		
6	Sarawak-West Kalimantan	230
7	Philippines-Sabah	-
8	Sarawak-Sabah-Brunei	-
15	East Sabah-East Kalimantan	-

Barriers to multilateral and unified trade models

Desire for self sufficiency

Associated with sovereignty and nationalism

Example: Indonesia's regulations allow for the possibility of electricity imports, but prioritise national generation capacity

Limited willingness to rely on foreign electricity sources: national security concerns

Example: Singapore opts to rely on imported LNG to power 95% electricity generation rather than importing electricity

The trust required for cross-border trade remains underdeveloped

Technical and institutional barriers

- Geographic dispersion
- High diversity in standards, specifications, and protocols for electricity transmission and distribution
- Reluctance to share information
- Resistance from incumbent utilities: risks of losing monopoly power, bankrupt when prices converge

Singapore:

- Competitive wholesale market for electricity
- Reluctant to enter into a contract for a fixed quantity of supply when joining the Lao PDR-Thailand-Malaysia project

Economic barriers

Transaction costs

- Upgrading existing institutions or establishing a new single centralised entity
- Dispute resolution

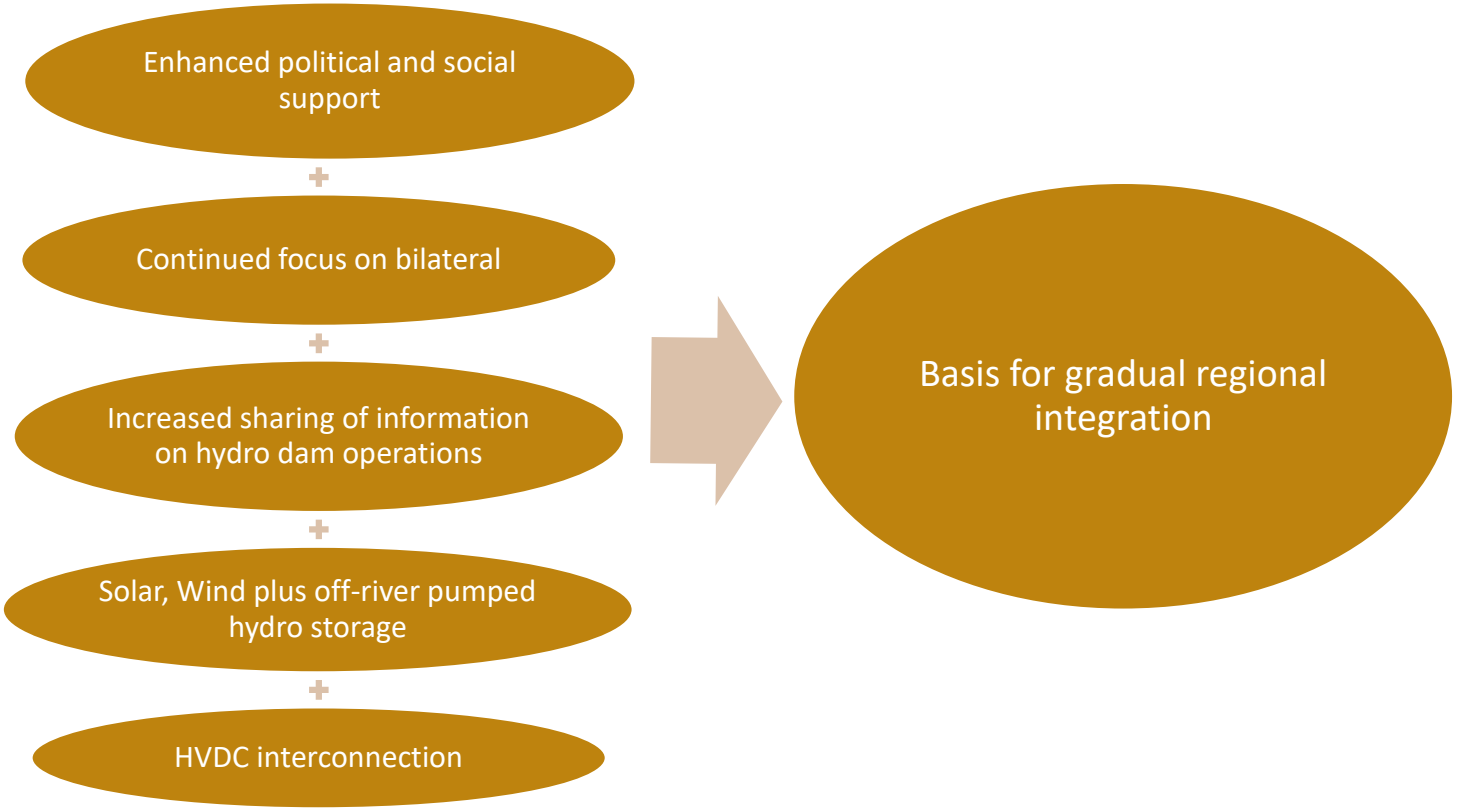
Cost sharing

- Hard to employ “benefits pay” principle
- Not attractive to private investors due to high risks

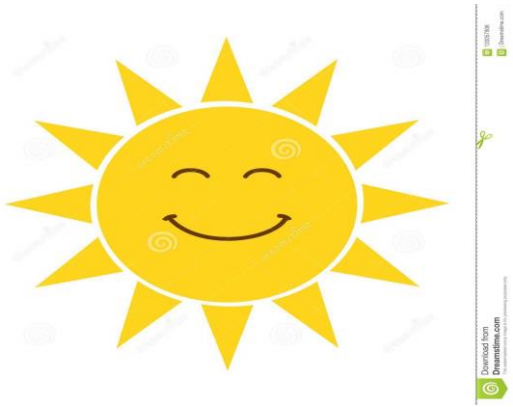
Environmental and social costs of traded hydropower

- Estimated US$ 18 billion by 41 planned hydropower dams in Lower Mekong Basin
- Downstream countries unlikely to support cross-border electricity trade that would incentivize more dams being built upstream

Ways forward



Other solutions in your opinion?



For more info, see a forthcoming journal article:

“Is ASEAN ready to move to multilateral cross-border electricity trade?”

By Thang Nam Do and Paul Burke