International Energy Agency

Southeast Asia Energy Outlook

Webinar

11 December 2019

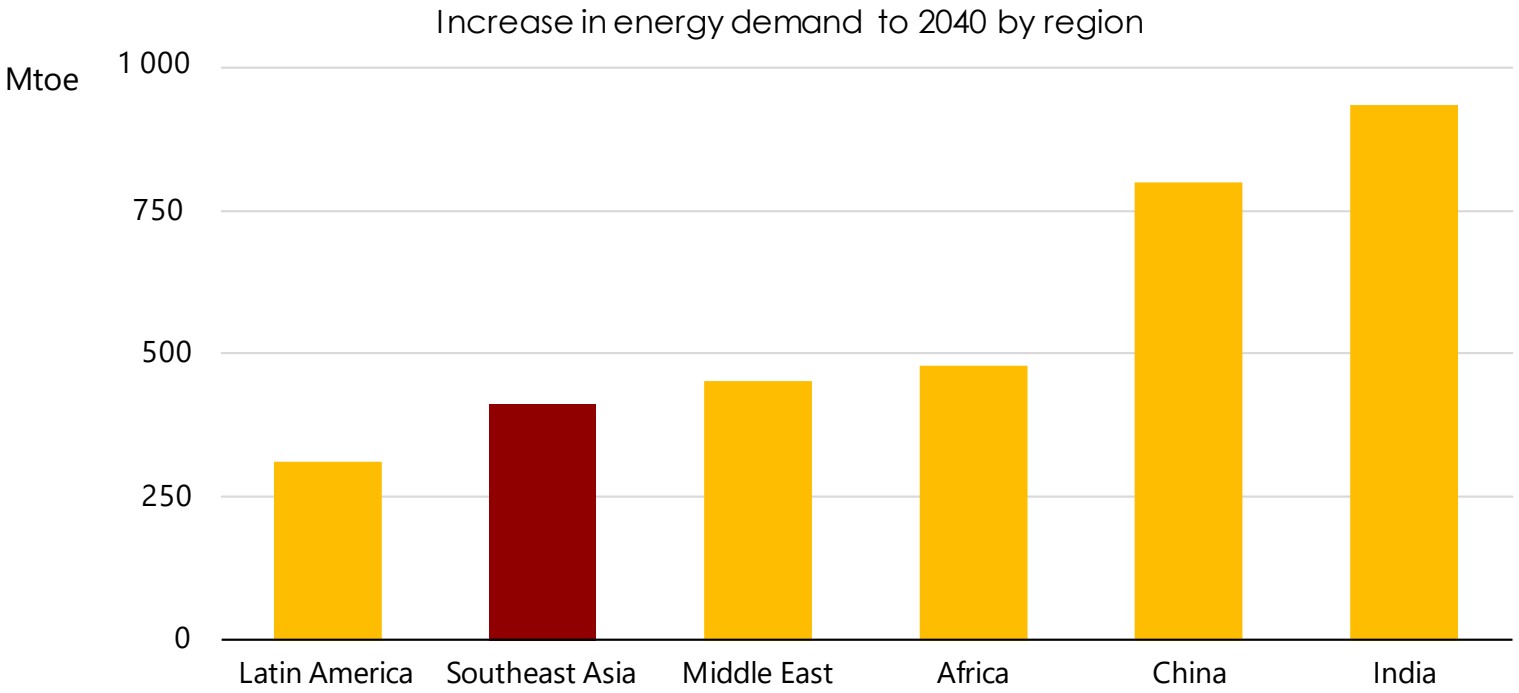
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Southeast Asia Outlook 2019

- Fourth edition of the IEA *Southeast Asia Energy Outlook*, free to download from the IEA website at: https://www.iea.org/southeastasia2019/
- The 2019 edition has three focus areas, reflecting the priorities for IEA-ASEAN cooperation discussed at ministerial level in Singapore in October 2018
  - Future of cooling in Southeast Asia
    additional detail at https://www.iea.org/southeastasiacooling2019/
  - Regional electricity trade / integration of renewables
    additional detail at https://webstore.iea.org/asean-renewable-energy-integration-analysis
  - Power sector investment
- The *Southeast Asia Energy Outlook* does not forecast what will happen; it explores different possible futures:
  - What if we reflect today's policy intentions and targets? This is the Stated Policies Scenario (STEPS)
  - What if we meet sustainable energy goals in full? This is the Sustainable Development Scenario (SDS)

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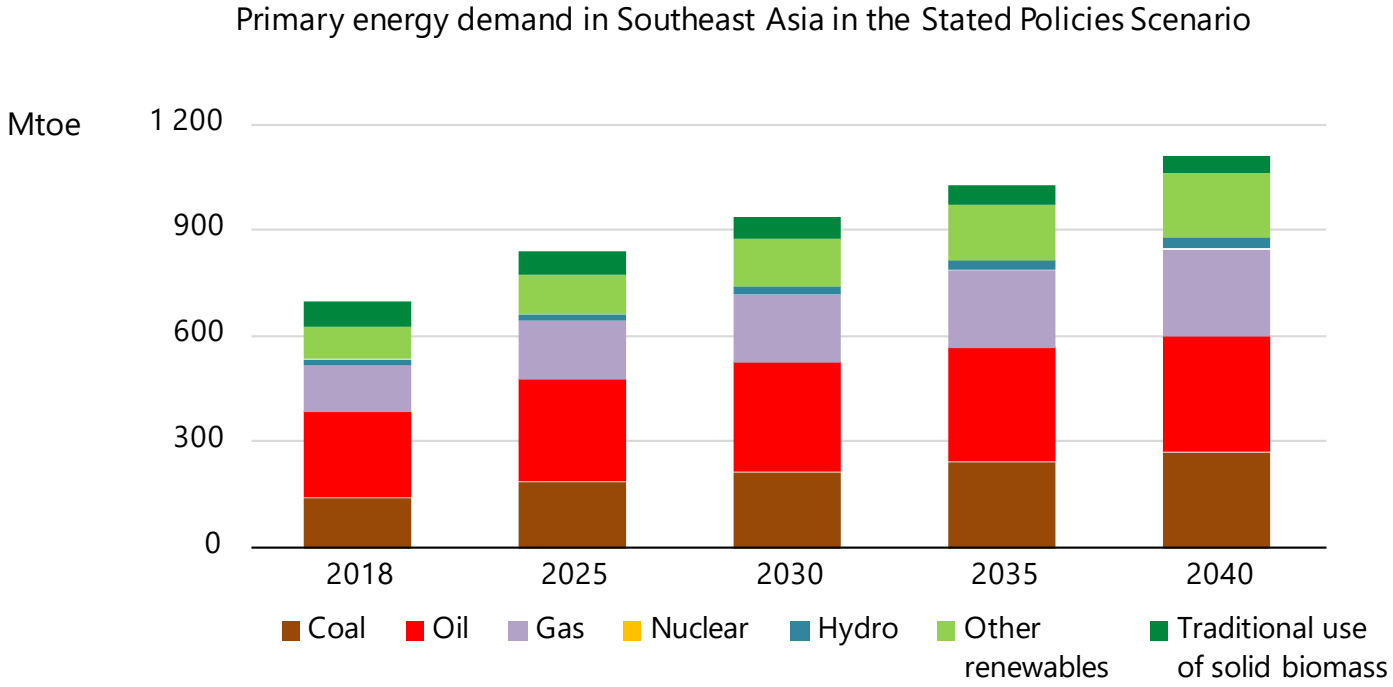
Southeast Asia is a major force in global energy…



Based on today's policy settings, the pace of energy demand growth in Southeast Asia to 2040 is double the global average, spurred by rising incomes, industrialisation and a rising urban population

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… mobilising all fuels and technologies to meet rising demand

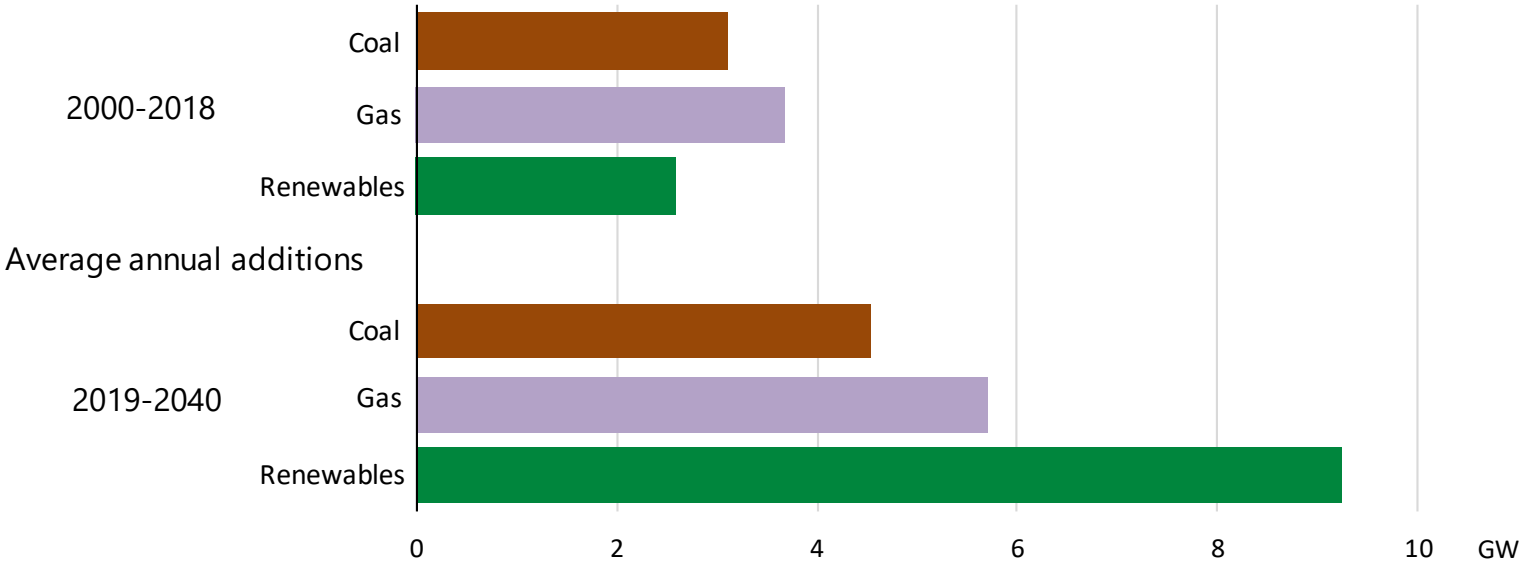


The region's longstanding reliance on oil, coal and natural gas is diluted only slightly by increased deployment of modern renewable technologies over the coming decades

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Power sector transformation is happening, but very gradually

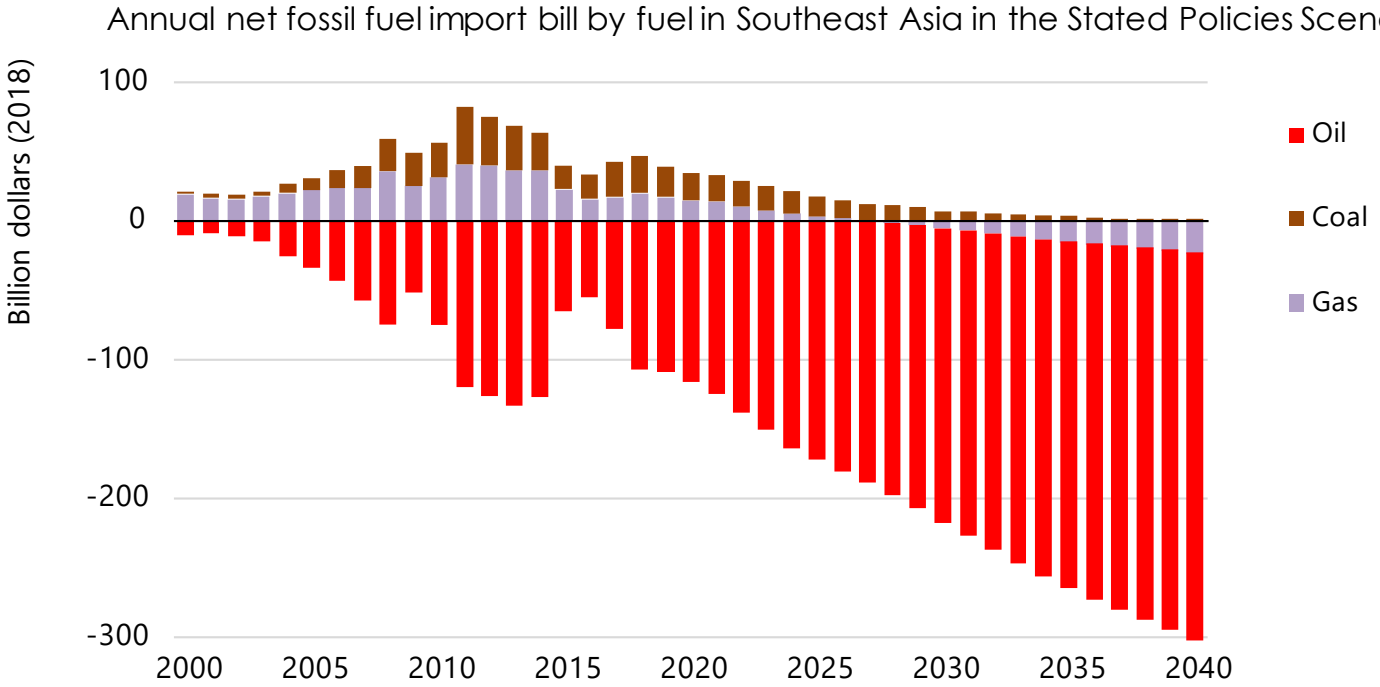
Southeast Asia's average annual net capacity additions by type in the Stated Policies Scenario



Policy support and investor appetite for renewable electricity projects are picking up but, as things stand, the growth in renewables would cover only about a third of rapid overall growth in electricity demand.

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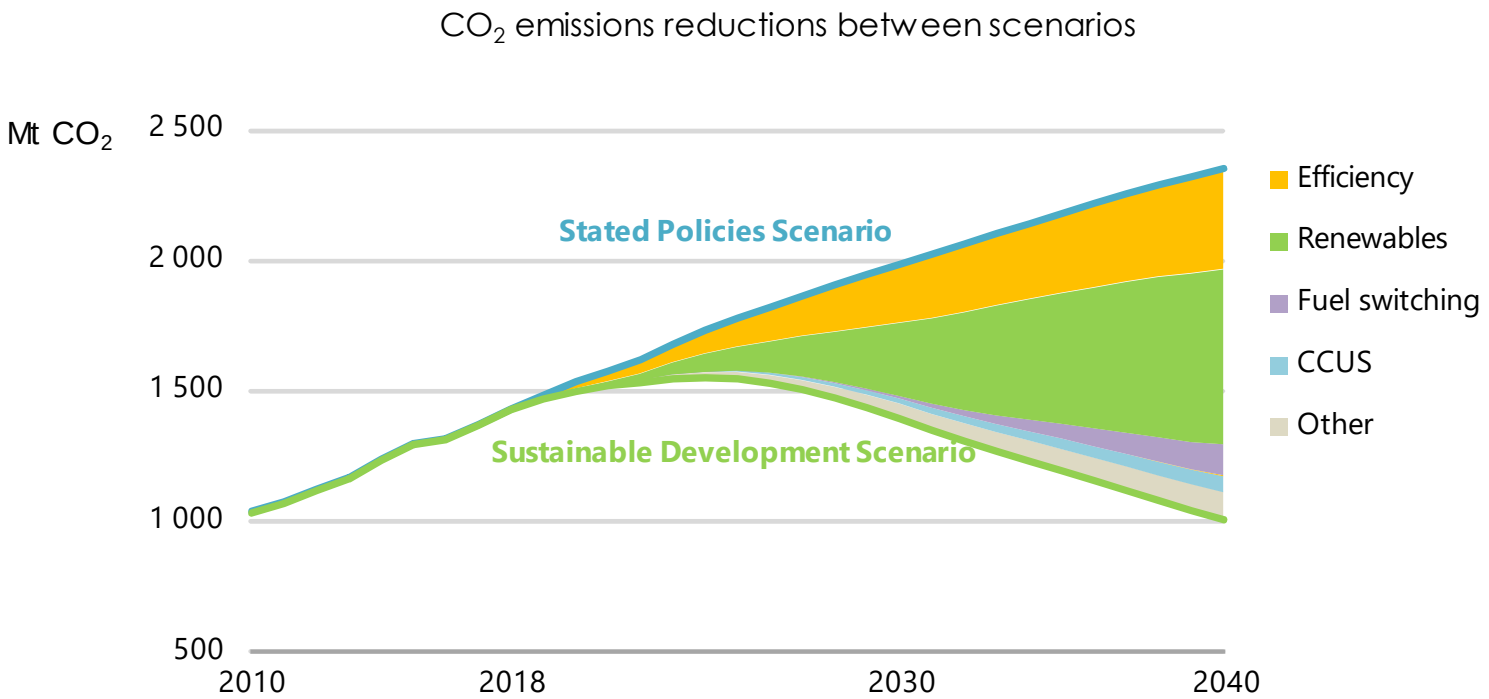
Today's policy settings push energy imports deep into the red



Southeast Asia faces an energy import bill of over $300 billion/year by 2040, largely due to soaring oil imports; the region would also become a net importer of LNG by the late 2020s

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There is no simple solution to Southeast Asia's rising emissions



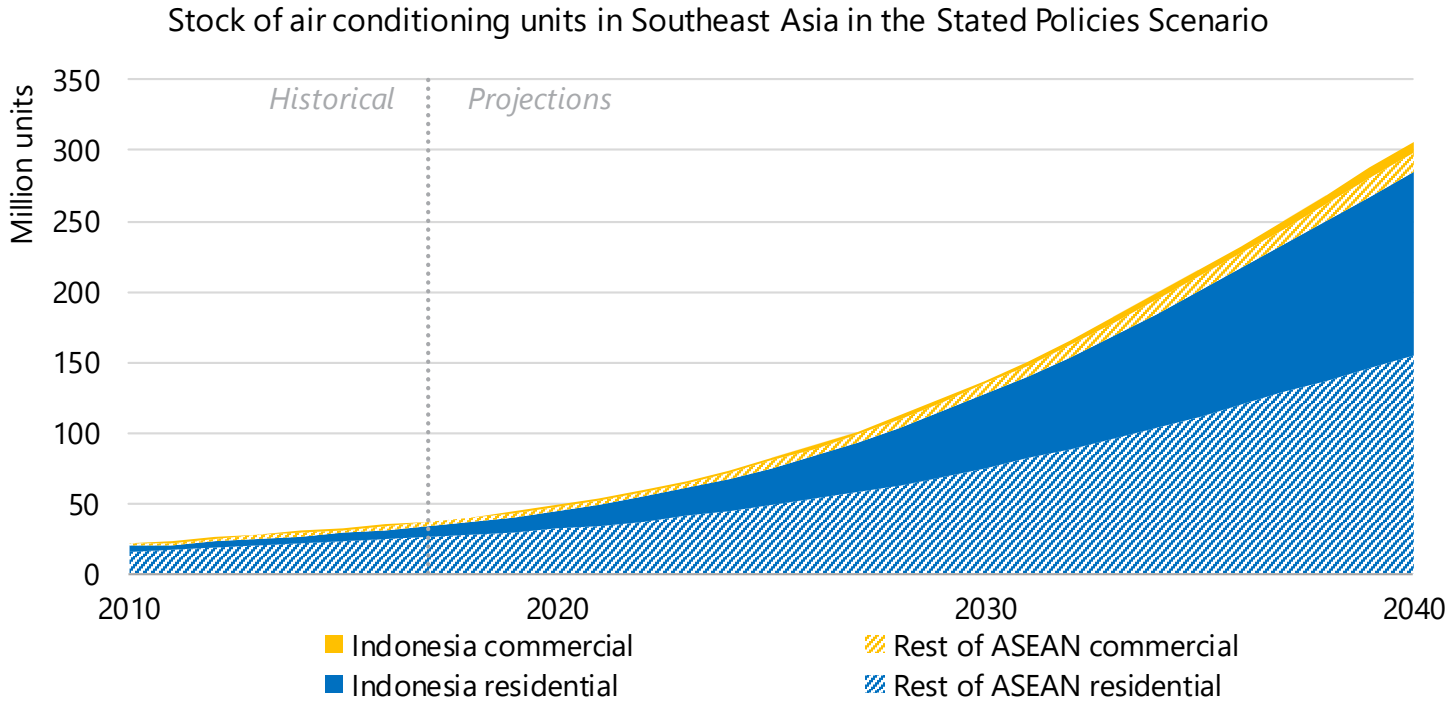
Southeast Asia is on track to achieve full electrification in the early 2030s, but reversing the rising trend for air pollutant and CO_2 emissions would require a major acceleration in energy transitions across all sectors

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Special focus area: Future of Cooling

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The stock of air conditioners in Southeast Asia is rising rapidly



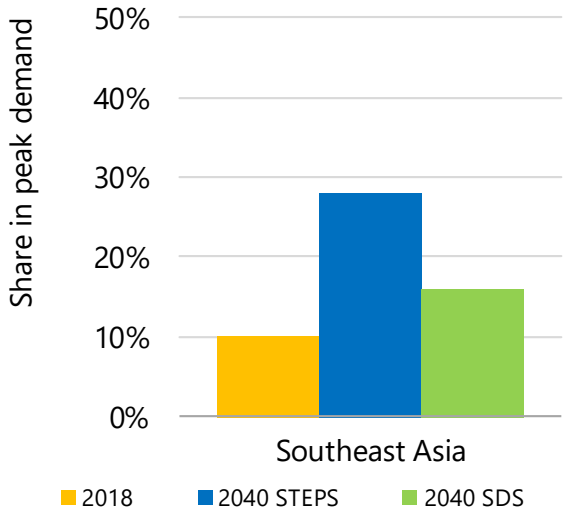
Higher temperatures and, more importantly, higher incomes are driving up AC ownership and use.

Source: IEA (2019) Southeast Asia Energy Outlook

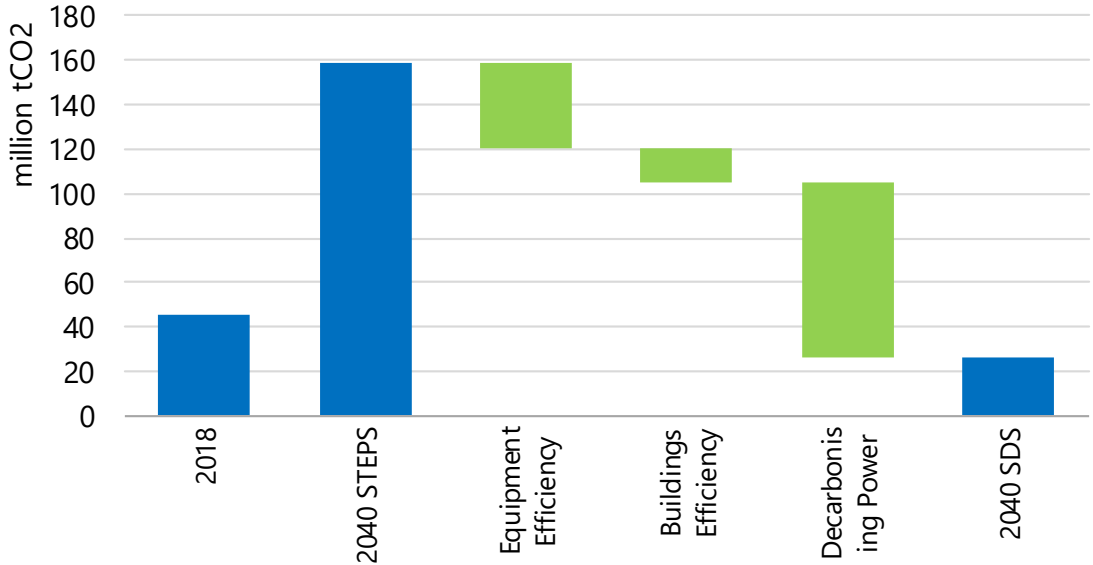
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Rising demand for cooling could strain the region's energy system

Reduction in cooling's share in peak demand in the Sustainable Development Scenario (SDS)



Decomposition of factors for reduction of CO_2 emissions between the Stated Policies (STEPS) and the Sustainable Development (SDS) scenarios

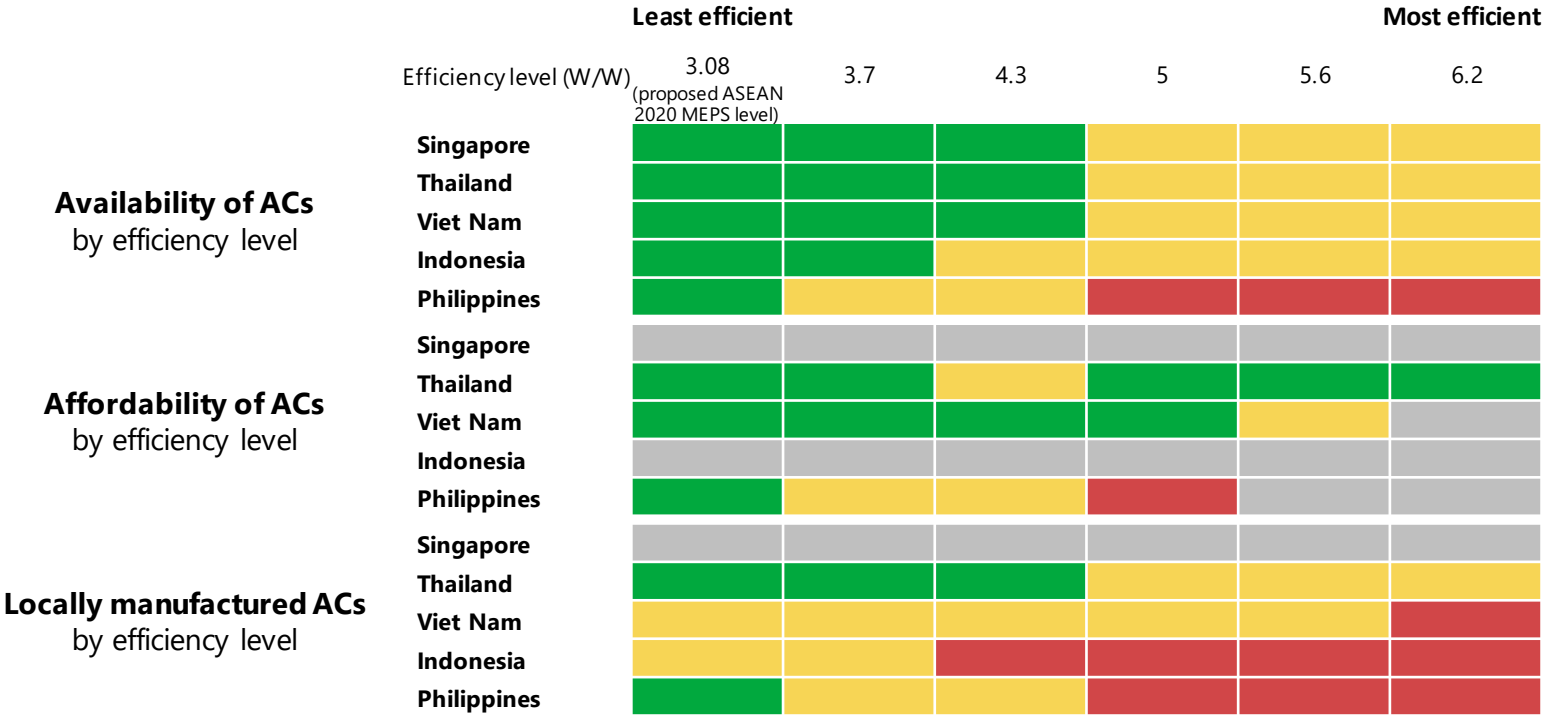


More efficient air conditioners and buildings would bring huge benefits for the region in terms of energy savings, reduction in peak demand, and reduction of carbon emissions.

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More efficient ACs are available, and not always more expensive or imported

Results of air conditioning market analysis in selected Southeast Asian countries



Sources: IEA analysis based on information from CLASP, the Kigali Cooling Efficiency Program and the National registration databases of Indonesia and Singapore

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Special focus area: Regional power trade / Integration of renewables

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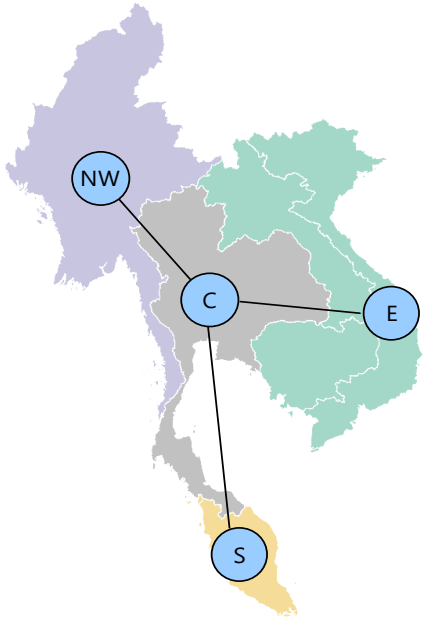
Assessing the value of cross-border interconnections

How can cross-border trade help to accommodate rising shares of variable renewables? This illustrative case study examines trade between four regions in Southeast Asia, which have existing cross-border interconnectors, but trading is, at present, mostly limited to bilateral PPAs:

We examine two scenarios, one in which the share of variable renewables approaches 10% by the 2030s (a representation of the Stated Policies Scenario) and the other in which it exceeds 20% (as in the Sustainable Development Scenario). For each of these scenarios, we model three cases:

- **Bilateral trade (BT)**: the existing model of bilateral trade continues, with no new interconnections
- **Optimised trade (OT)**: power flows are optimised across the regions, with no new interconnections
- **Optimised and expanded trade (OT+)**: power flows are optimised and cross-border transmission capacity is expanded as well

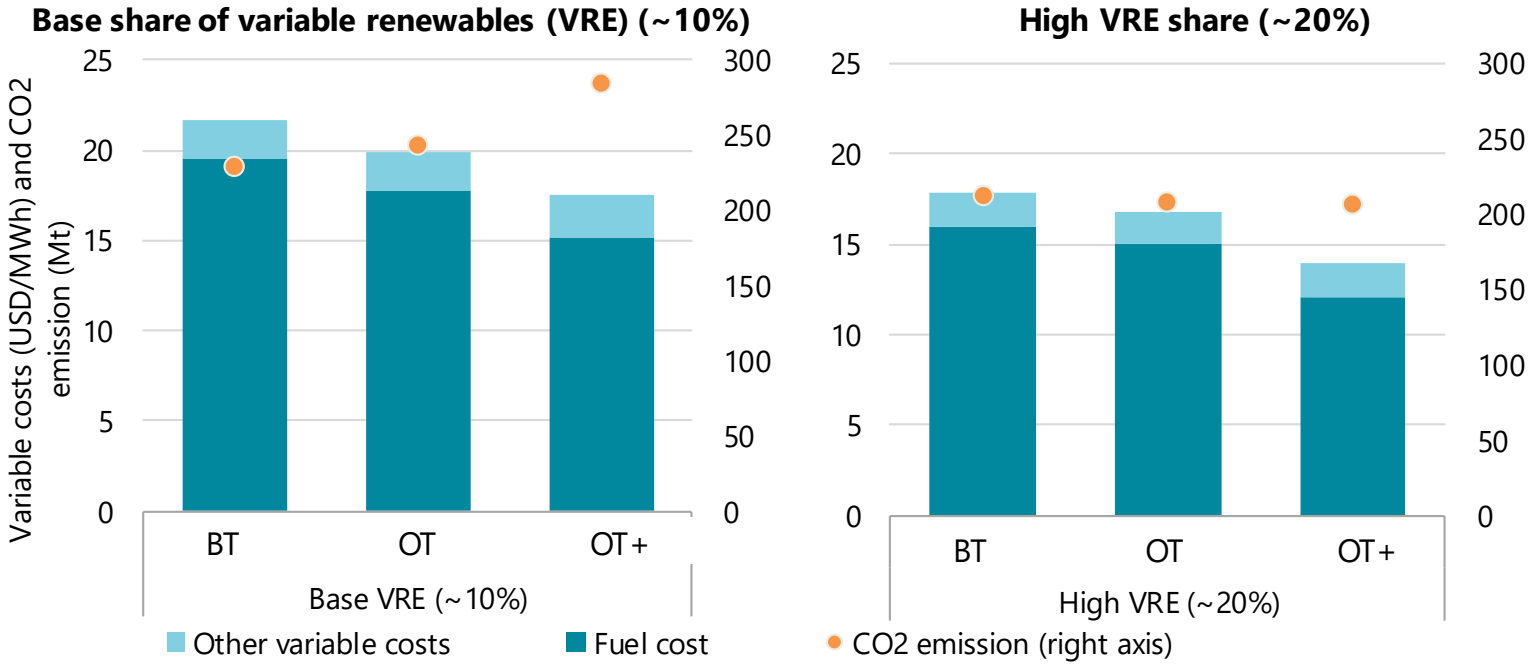
Four selected transmission zones in the case study



C: Central (Thailand); **E**: East (Cambodia, Lao PDR and Viet Nam); **NW**: Northwest (Myanmar); **S**: South (Malaysia and Singapore)

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The value of cross-border interconnectors rises with higher shares of wind & solar



Expanding cross-border trade reduces system costs, but achieving reduced system costs and lower emissions requires a strong alignment between power trade, infrastructure and renewables deployment

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A step-by-step approach to establish multilateral power trading

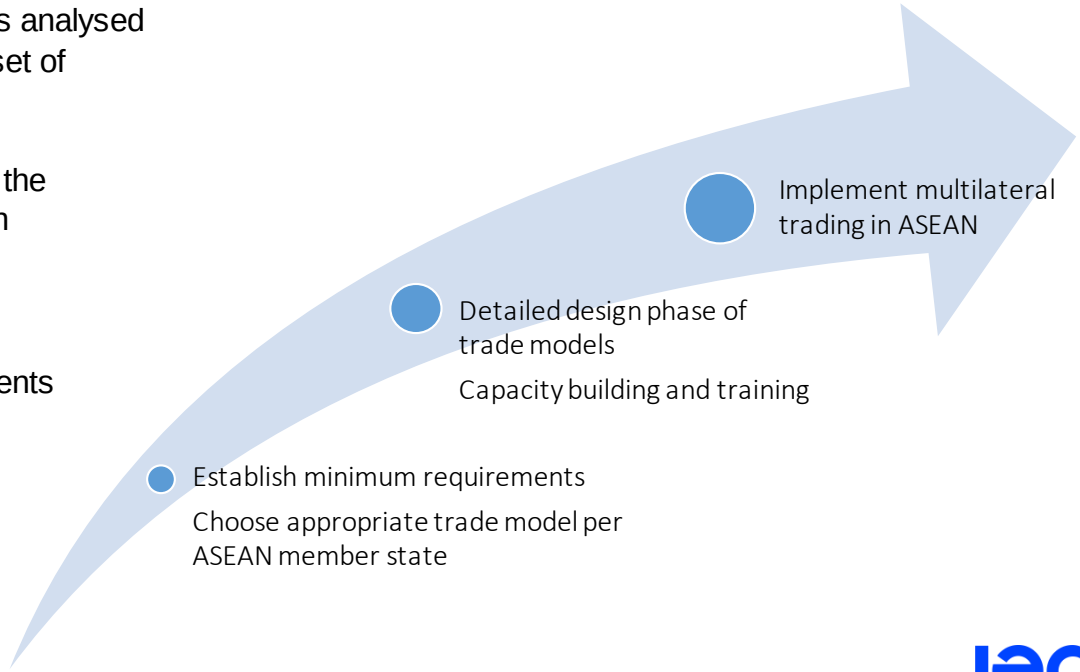
Southeast Asia has made significant progress in developing the ASEAN Power Grid, but more work is necessary to establish multilateral trading.

As part of its cooperation with ASEAN, the IEA has analysed international best practices and has developed a set of concrete recommendations

A key principle guiding these recommendations is the principle of voluntary, step-by-step implementation

Three phases are critical:

1. Establishing and meeting minimum requirements (policy, technical, institutional)
2. Designing trade models
3. Implementation of trade models



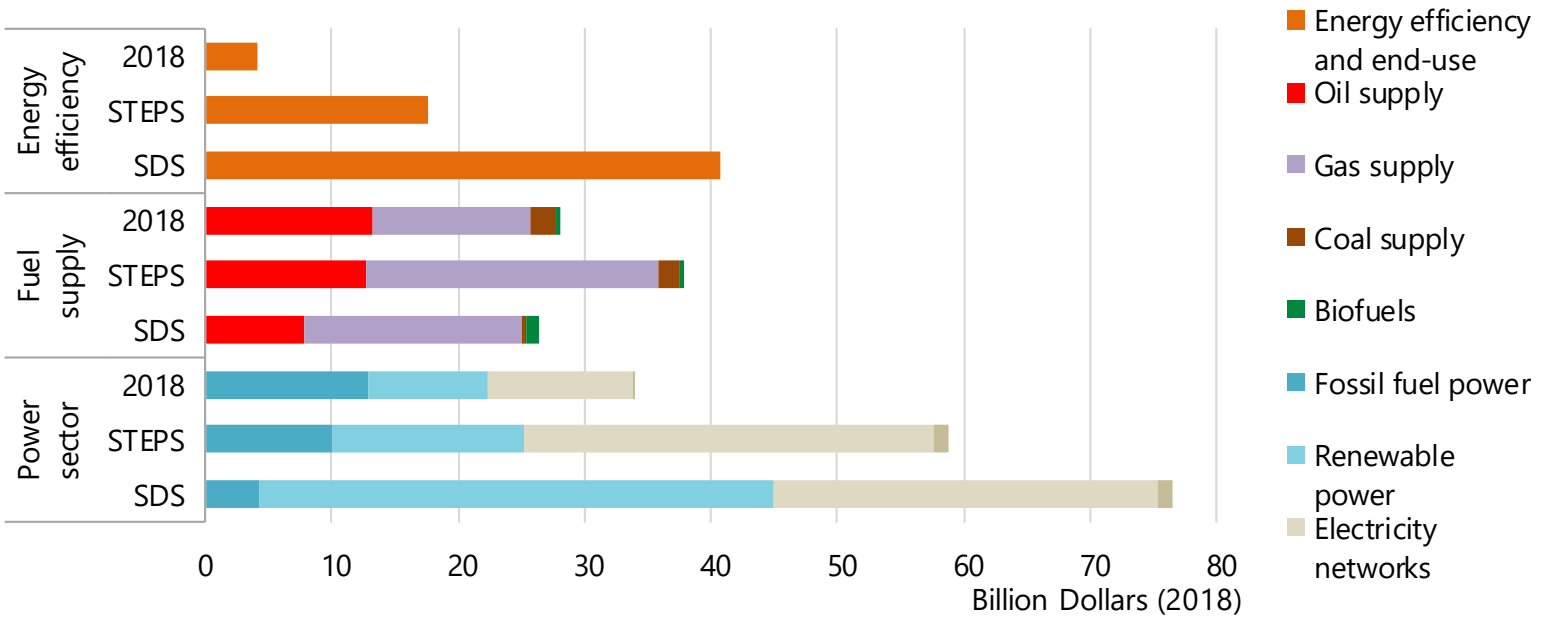
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Special focus area: Power sector investment

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Under any pathway, investment in Southeast Asia needs to step up

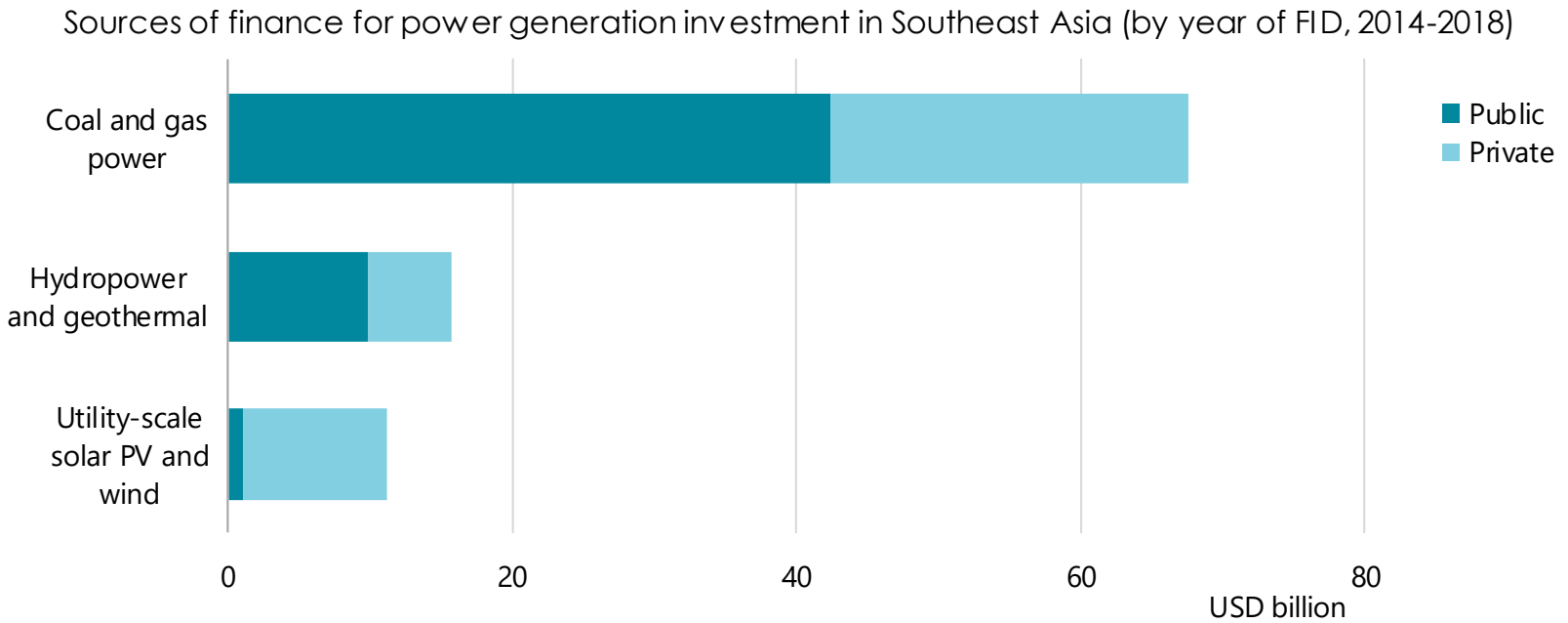
Energy investment in Southeast Asia compared with annual average investment in the Stated Policies (STEPS) and Sustainable Development (SDS) scenarios, 2019-2040



With today's policy settings, investments over the next two decades total $2.5 trillion; in a sustainable pathway they rise to $3.2 trillion, with sizeable reallocation of capital across supply and demand

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State-backed capital has played a key role in investment



Notes: FID = final investment decision. Includes only utility-scale projects ≥ 25 megawatts. Public finance includes the participation of state-owned enterprises, development finance institutions, export-credit agencies and other public entities.

Funding for over three-quarters of generation investment has come from sources within the region. But public and domestic sources alone cannot cover the sizeable investment needs ahead

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Roadmap for enhancing capabilities to attract private investment

Key investment priorities and risks for power markets in Southeast Asia

Market	Investment Priorities			
	Financial health of the utilities	Procurement and project bankability	Financing and cost of capital	Integrated approaches with demand side
Indonesia	High potential risk factor/barrier for investment	High potential risk factor/barrier for investment	Potential risk factor/barrier for investment	High potential risk factor/barrier for investment
Malaysia	Low risk/supportive factor for investment	Potential risk factor/barrier for investment	Low risk/supportive factor for investment	Low risk/supportive factor for investment
Philippines	Potential risk factor/barrier for investment	Potential risk factor/barrier for investment	Potential risk factor/barrier for investment	Potential risk factor/barrier for investment
Singapore	Low risk/supportive factor for investment	Low risk/supportive factor for investment	Low risk/supportive factor for investment	Low risk/supportive factor for investment
Thailand	Potential risk factor/barrier for investment	Potential risk factor/barrier for investment	Low risk/supportive factor for investment	Potential risk factor/barrier for investment
Viet Nam	High potential risk factor/barrier for investment	High potential risk factor/barrier for investment	Potential risk factor/barrier for investment	High potential risk factor/barrier for investment
Other (Cambodia, Lao PDR, Myanmar)	Potential risk factor/barrier for investment	High potential risk factor/barrier for investment	High potential risk factor/barrier for investment	High potential risk factor/barrier for investment

Low risk/supportive factor for investment Potential risk factor/barrier for investment High potential risk factor/barrier for investment

Reducing risks and improving policy and market approaches around four priority areas is critical to meet future power investment needs

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Conclusions

- Southeast Asia is increasingly influential in global energy trends, but will need to adapt its energy development model to new energy security and sustainability challenges.
- The prospect of rising dependence on imported fuels presents a range of hazards that can be mitigated by the pursuit of a more efficient, diversified energy mix
- Whichever pathway the region takes, meeting Southeast Asia's energy needs and priorities will require higher levels of investment, including enhanced efforts to attract private capital.
- There is no single solution to turn emissions trends around: renewables, efficiency & a host of innovative technologies, including storage & CCUS, are all required
- The deepening engagement with ASEAN confirms the Agency as a "key strategic partner in helping the region tackle its energy challenges across all fuels and all technologies."

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