International Energy Agency

Investment in Reliable, Sustainable and Affordable Power in Southeast Asia

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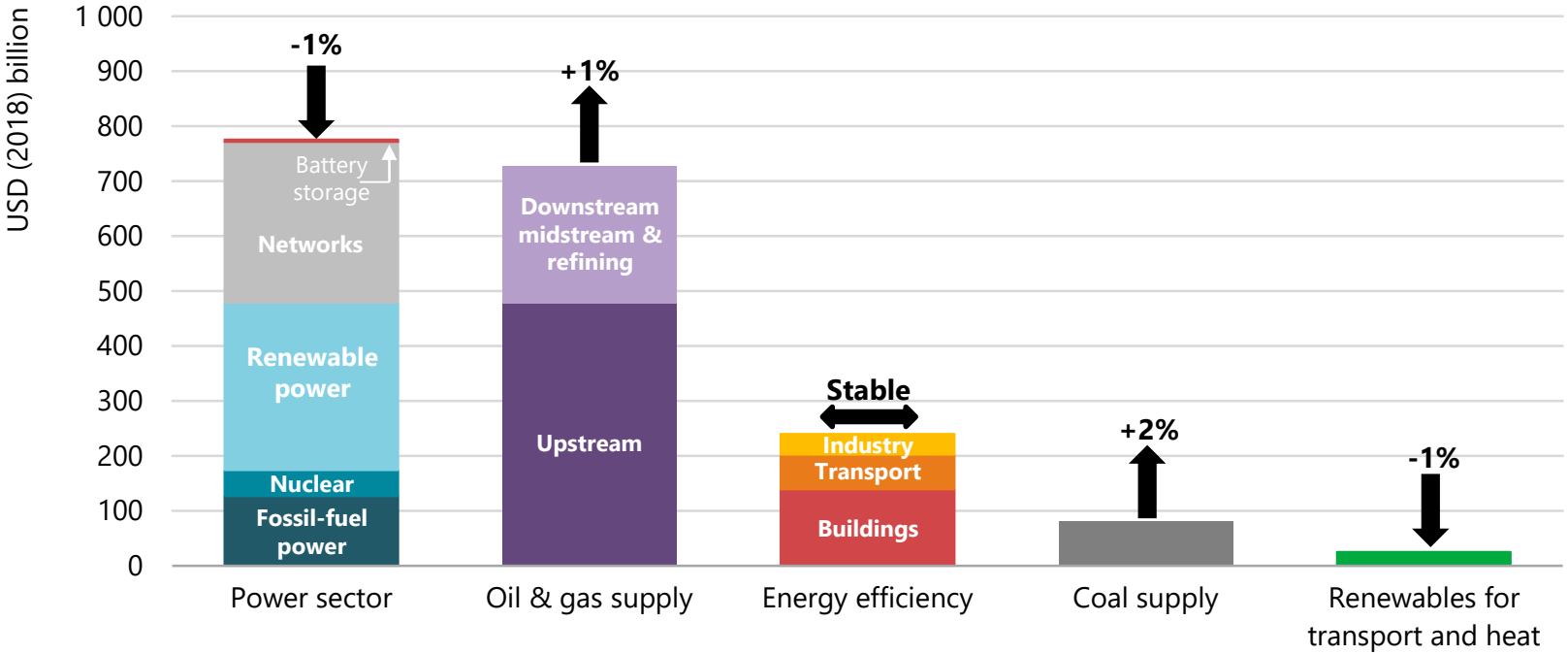
Global energy investment today

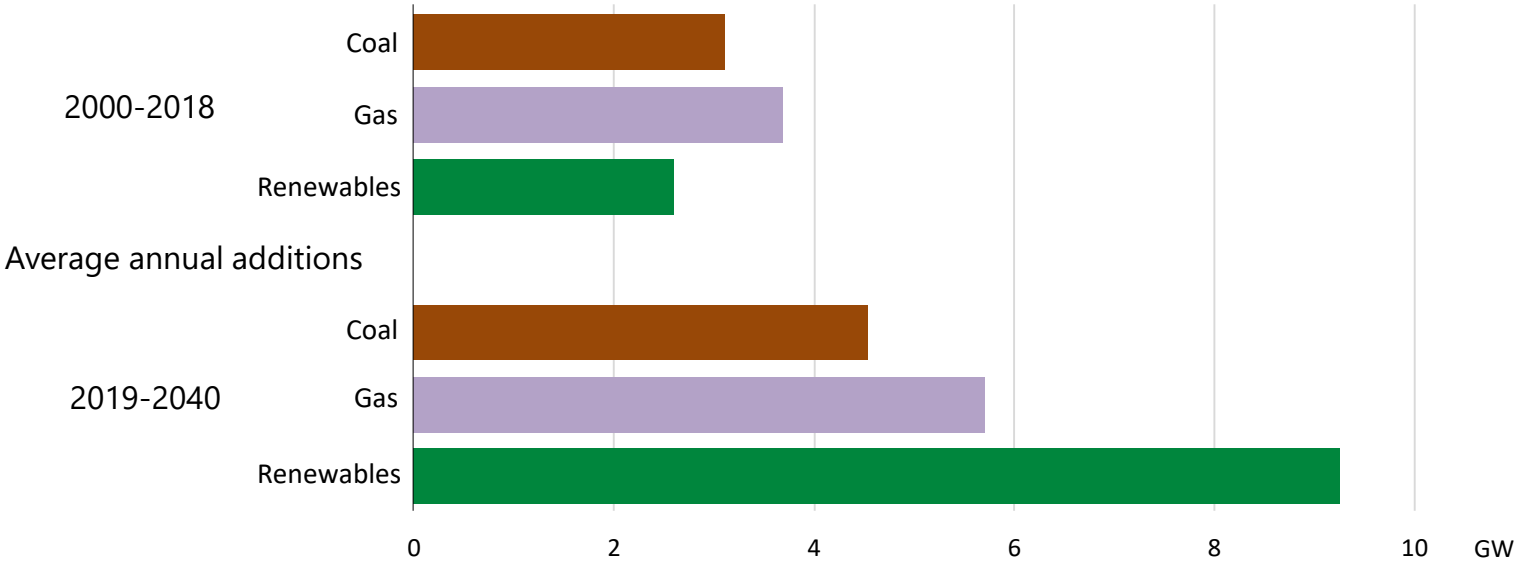
Global energy investment in 2018 and change compared to 2017



Energy investment was over USD 1.8 trillion in 2018. A rise in fossil fuel supply investment offset lower power and stable efficiency spend. Power was the largest sector for the third year in a row.

Power sector transformation in Southeast Asia is happening, gradually

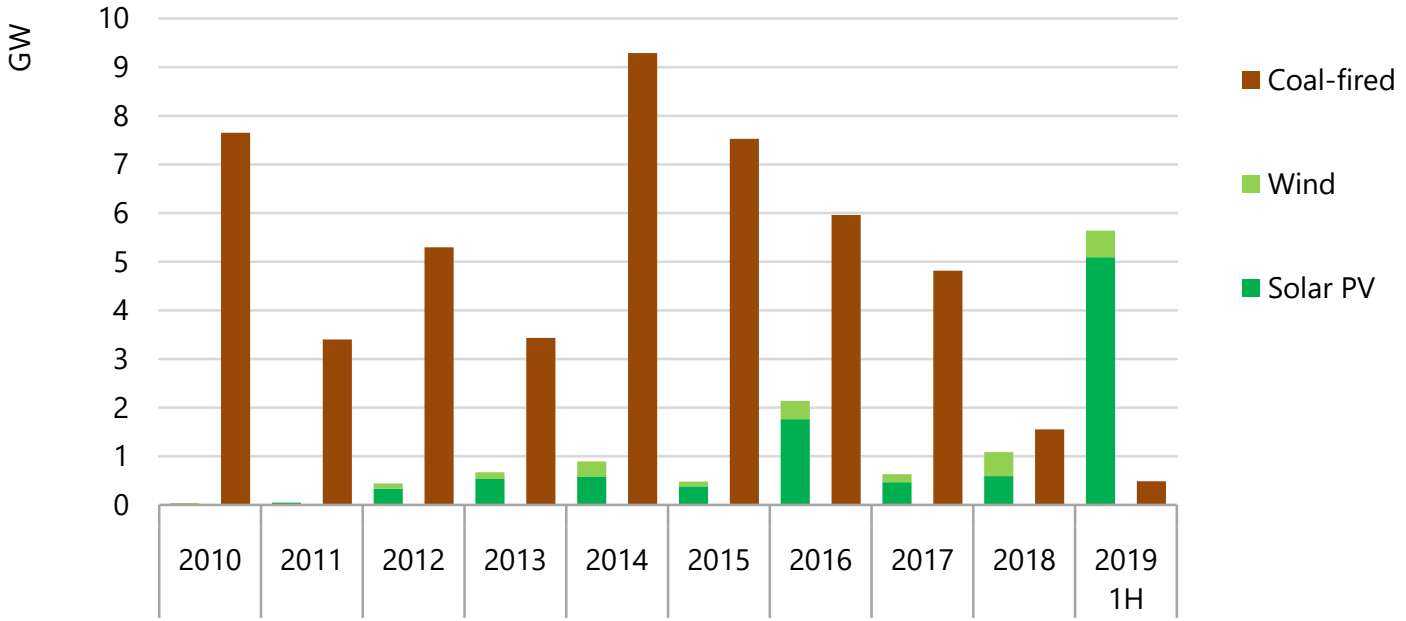
Southeast Asia's average annual net capacity additions by type in the Stated Policies Scenario



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.

Signs of an inflection point in 2019?

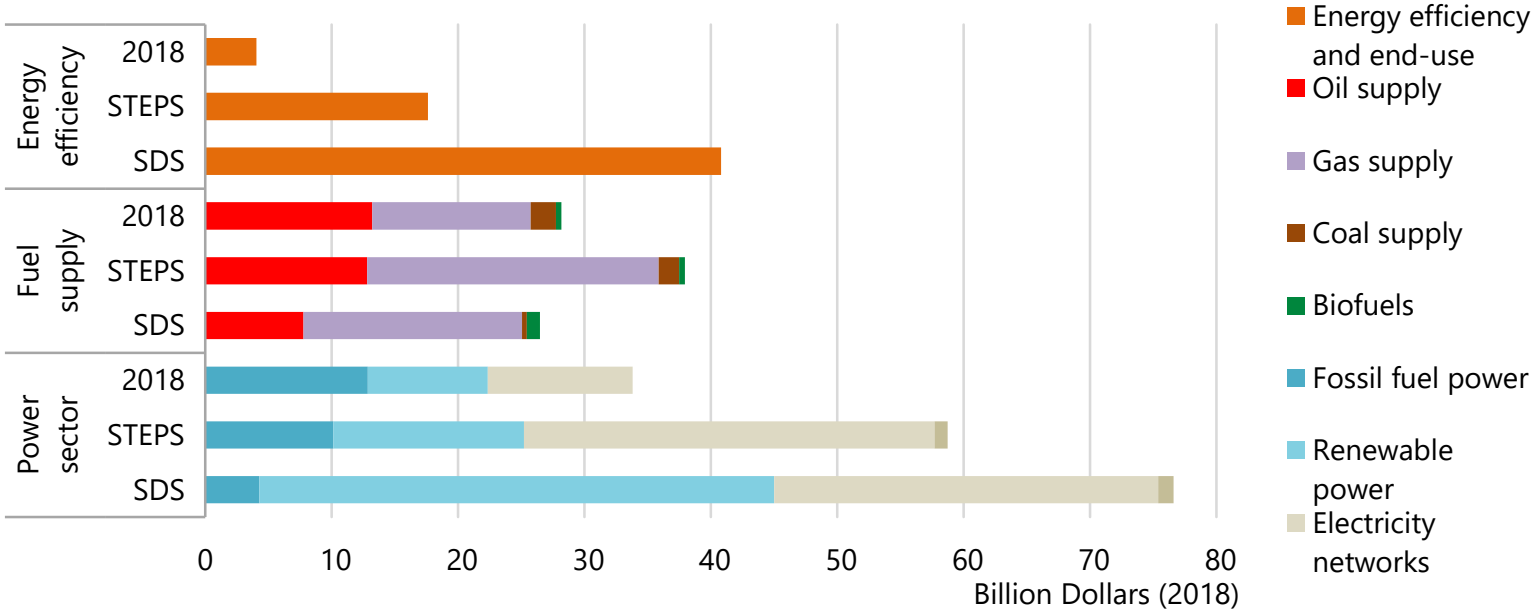
Final investment decisions for coal-fired capacity, and solar PV and wind capacity additions in Southeast Asia



A trend in some policy plans to boost the future share of renewables-based capacity and generation, typically at the expense of coal, is starting to become visible in near-term project developments.

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

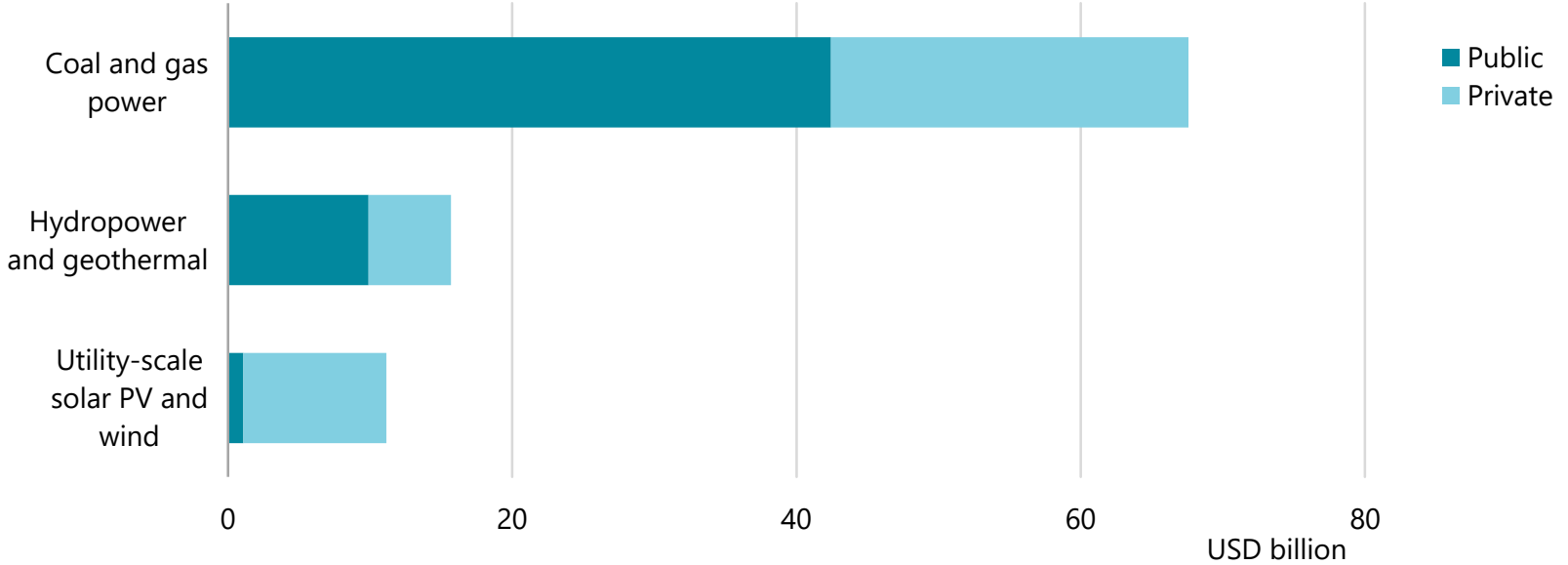
Energy investment in Southeast Asia compared with annual average investment in the Stated Policies (STEPS) and Sustainable Development (SDS) scenarios, 2019-2040



With today's policy settings, investments over the next two decades total $2.6 trillion; in a sustainable pathway they rise to $3.3 trillion, with sizeable reallocation of capital across supply and demand.

State-backed capital has played a key role in investment

Sources of finance for power generation investment in Southeast Asia (by year of FID, 2014-2018)



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.

Roadmap for enhancing capabilities to attract private investment

Key investment priorities and risks for power markets in Southeast Asia

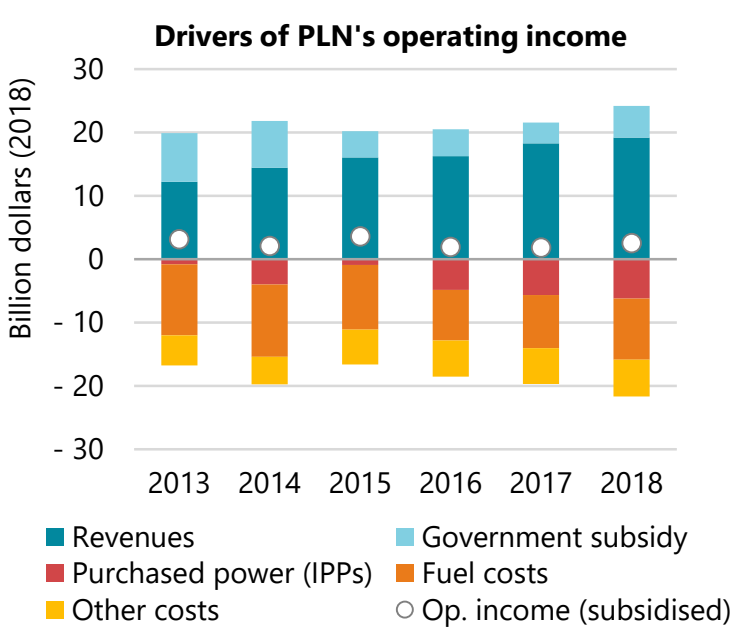
Market	Investment Priorities			
	Financial health of the system	Project bankability	Financing and cost of capital	Integrated approaches
Indonesia	🔴	🔴	🟡	🔴
Malaysia	🟢	🟡	🟢	🟢
Philippines	🟡	🟡	🟡	🟡
Singapore	🟢	🟢	🟢	🟢
Thailand	🟡	🟡	🟢	🟡
Viet Nam	🔴	🔴	🟡	🔴
Other (Cambodia, Lao PDR, Myanmar)	🟡	🔴	🔴	🔴

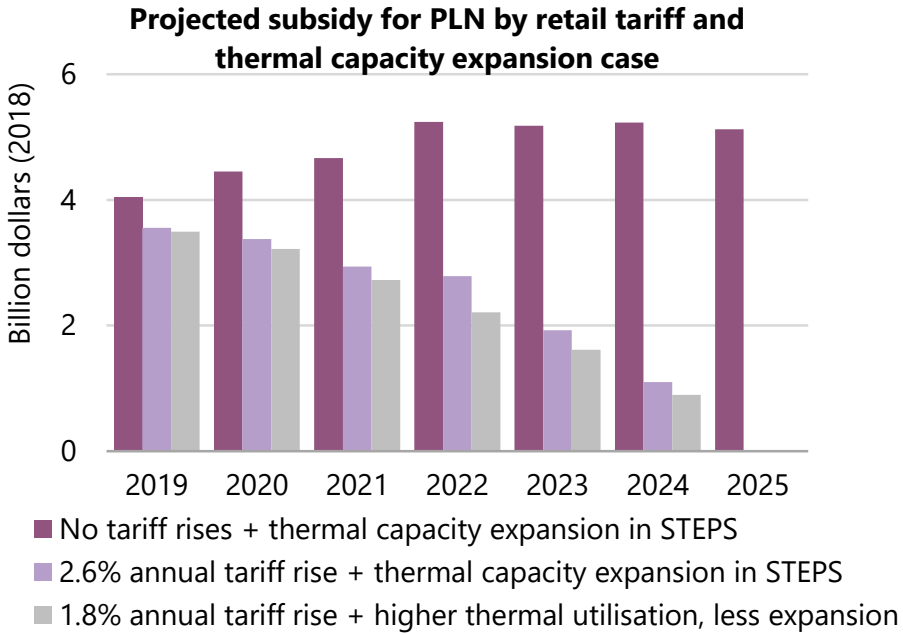
🟢 Low risk/supportive factor for investment 🟡 Potential risk factor/barrier for investment 🔴 High potential risk factor/barrier for investment

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

Financial health of utilities depends on their ability to recover costs

Indonesia state-owned utility, PT PLN (Persero)

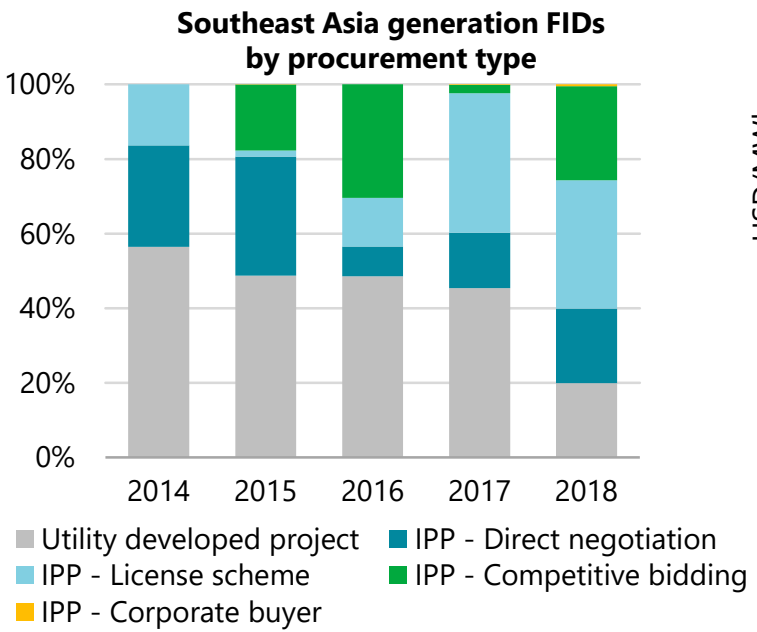


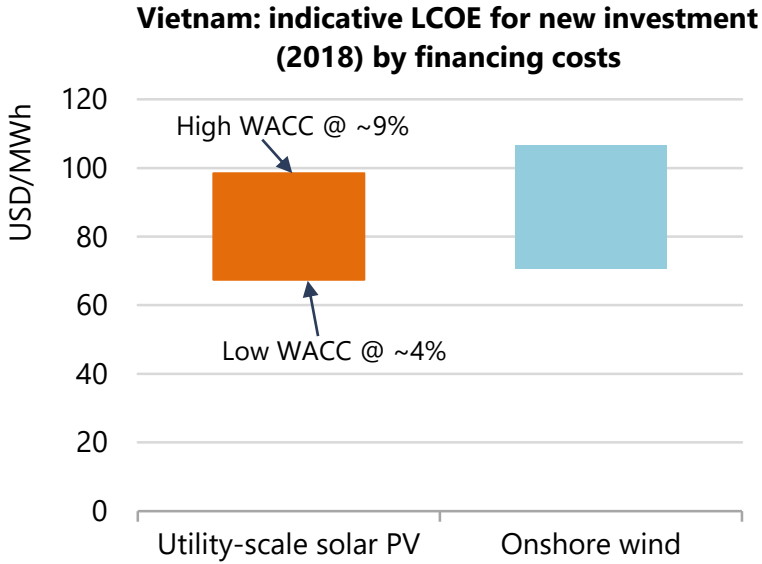


In Indonesia, without efforts to raise retail tariffs or manage rising capacity payments to thermal generators, PLN's subsidy burden continues to rise.

IPPs have been procured mostly through administrative schemes

Generation final investment decisions by procurement type (left) & Vietnam indicative LCOEs by financing costs (right)



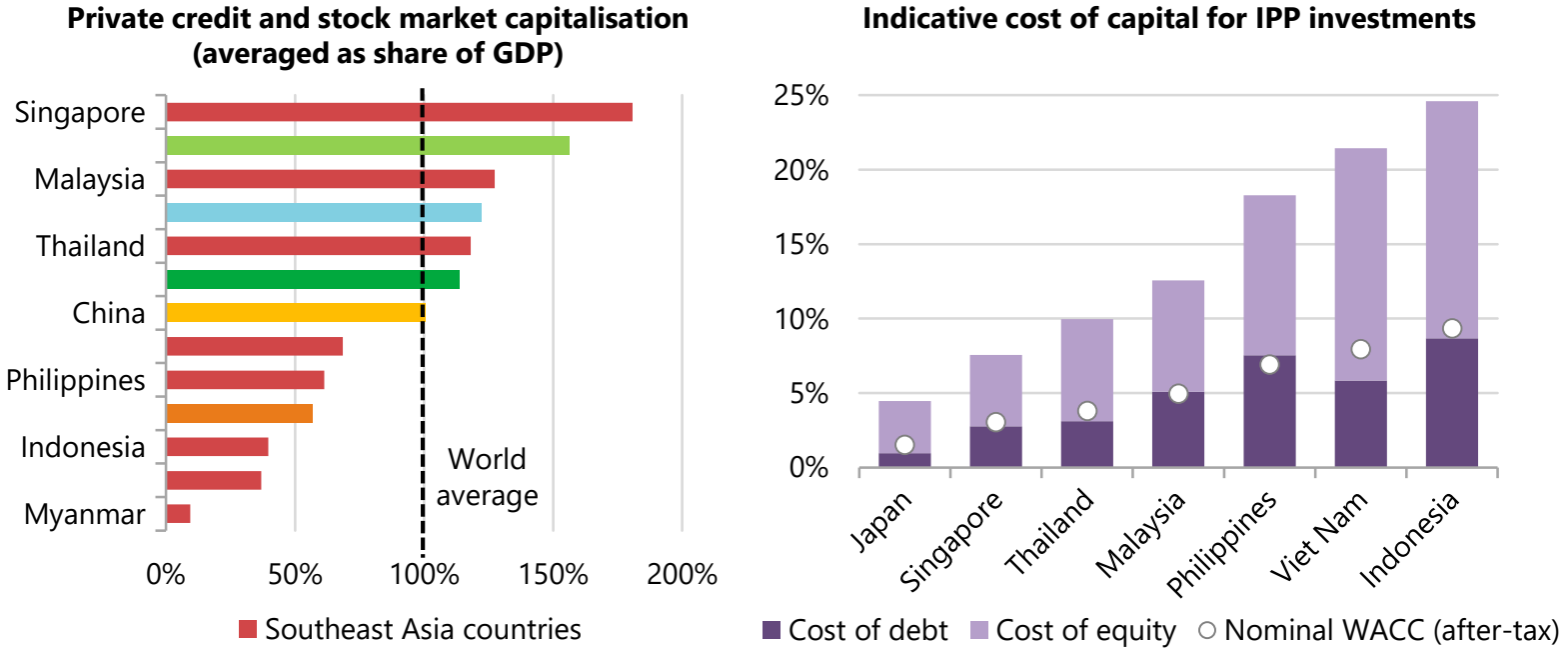


Notes: Average capacity factors = 17% for solar PV and 30% for onshore wind (South central Coast). Projects reflect capital structure of 70% debt/30% equity.

Investment frameworks have evolved considerably, but further reform – e.g. adequate tariff levels, increased competition and improved contracts – would reduce financing costs & enhance investment.

Availability of capital remains an issue in some markets

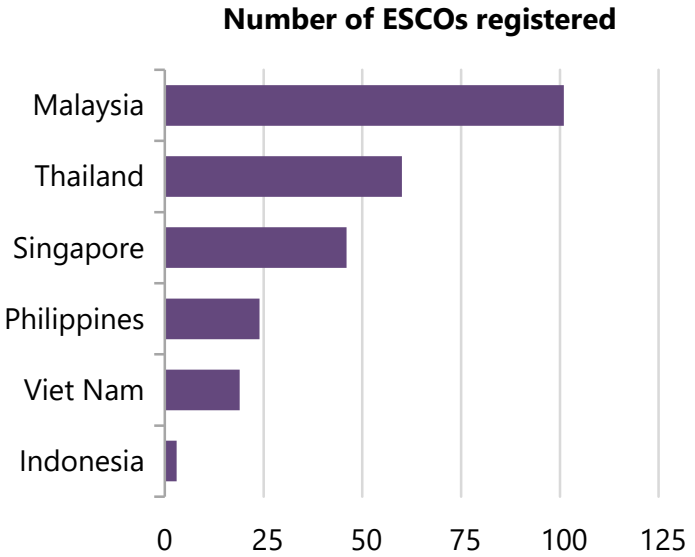
Indicators for private capital availability (left) and IPP financing costs (right) in selected markets

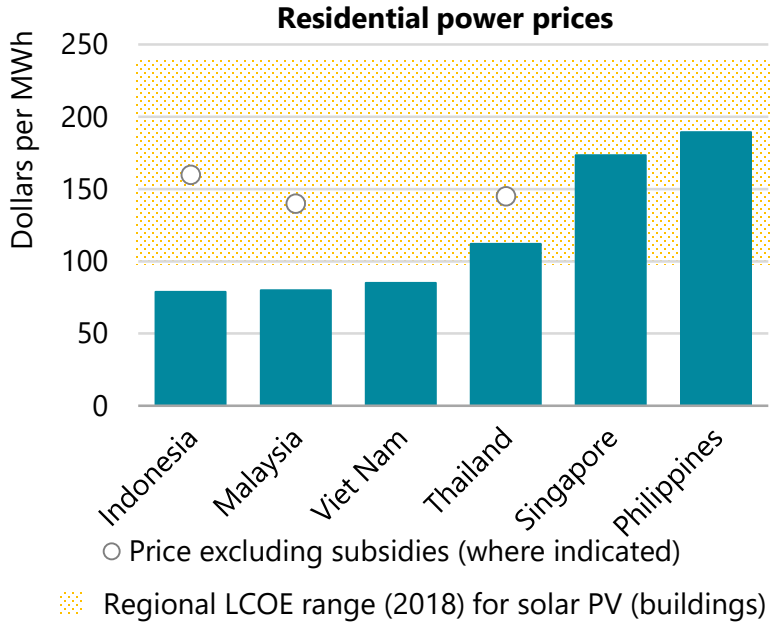


Country risks and financial constraints, combined with underlying energy market and policy conditions and macroeconomic factors can lead to big differences in the cost of financing.

Integrated approaches can meet demand more cost effectively

Energy service companies (ESCOs) registered (left) and average retail residential power prices by market (right)

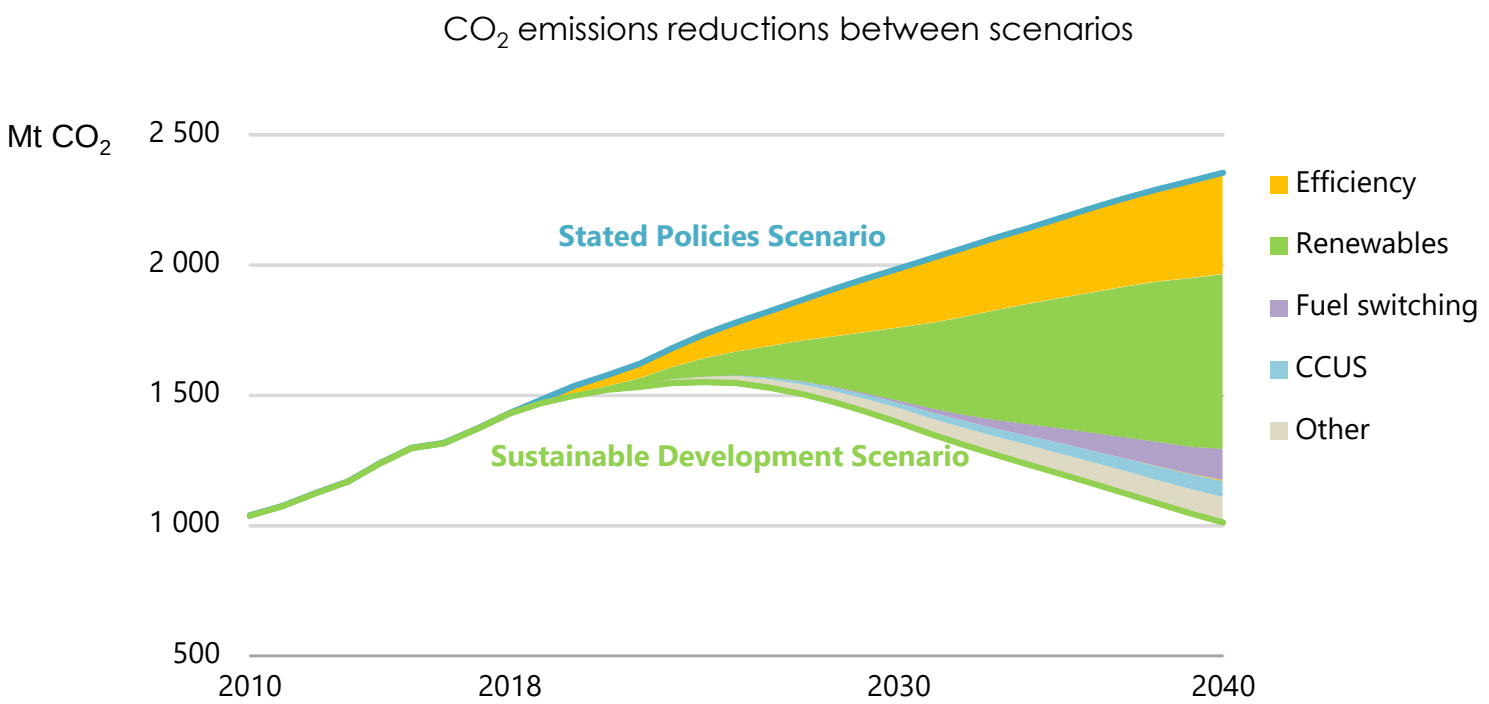




Sources: ASEAN Centre for Energy (2017) for ESCO registrations..

Fewer market barriers, stronger enabling environments and getting prices right would better support investment in small-scale projects, such as efficient cooling and distributed solar PV.

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

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.
- With deepening engagement with ASEAN the IEA is a "key strategic partner in helping the region tackle its energy challenges across all fuels and all technologies."