

Energy transition: Challenges and Opportunities in ASEAN

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With You Today



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Andrew Craig is part of the Infrastructure Advisory team in KPMG Singapore and has been advising clients on energy markets across the ASEAN region for close to 10 years.

At KPMG we support our clients across the whole of project lifecycles, including:

- Strategy, Market Entry, Market Forecasts and Planning
- Policy and Regulatory Analysis
- Feasibility Assessment
- Structuring, Financing, and Divestment
- Procurement
- Asset Management and Infratech

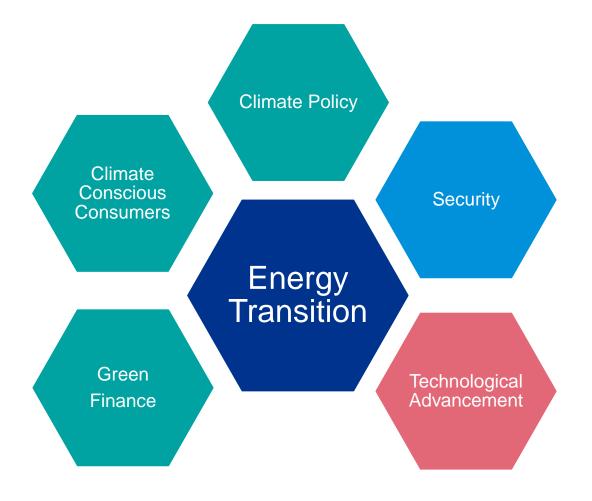




Energy transition is gathering pace due to alignment of different drivers

Climate

- Top down policy and government targets (e.g. NDCs)
- Commercial and residential consumers demanding clean power
- Impact investors seeking green projects and/or ESG restrictions on finance



Security

Global events and commodity price volatility driving demand for stable indigenous supply

Technological Advancement

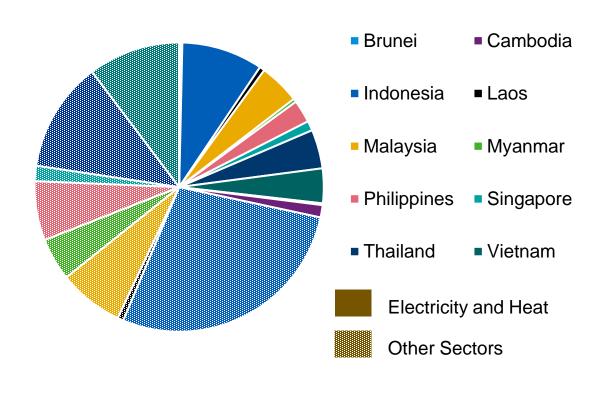
- Variable Renewable Energy ("VRE") beneath grid parity in many jurisdictions
- Digital technology allowing for demand side participation and prosumer models





Power sector is a major source of emissions in ASEAN and will need to be tackled

GHG Emissions from Electricity vs. Other Sectors



Key Issues/Considerations

High Coal Capacity

Low RE Deployment (especially VRE)

Limited EE and Demand Side Management

Low Use of Decentralized Power

Low Connectivity

Significant number of coal plants with long remaining lifetimes

With the exception of some success stories (e.g. Vietnam), RE deployment is low compared to global benchmarks

Limited use of EE (e.g. appliances, buildings street lights) and 'smart' price signals

Behind the meter prosumers often face regulatory uncertainty in many jurisdictions

Power grids tend to be isolated/little cross border trade allowing resources to be shared

Source: KPMG analysis based on CAIT data



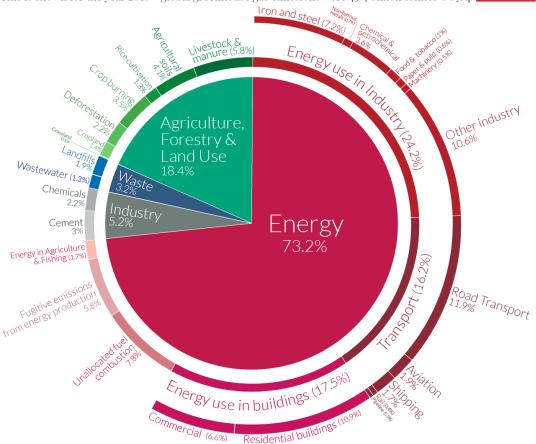


....However, whole energy sector needs to be addressed to have a meaningful impact.....

Global greenhouse gas emissions by sector

Our World in Data





Potential Drivers of Decarbonisation

Electrification

Electrification of transport (particularly personal vehicles and mass transit) and some industrial processes in combination with RE development

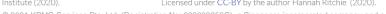
Energy Efficiency

Energy efficiency of industrial processes

Hard to abate sectors

Use of green/blue hydrogen (e.g. iron/steel production, chemicals, fertilizer and heavy transport)

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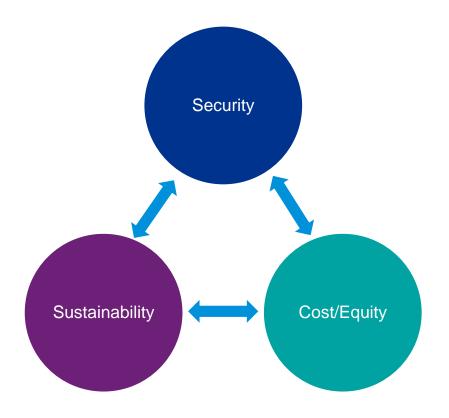






Facilitating and funding a Just Energy Transition means finding ways to overcome the energy trilemma-support is being made available....

Energy Trilemma



Key Financing Support

Multilateral Financing and Assistance

ESG Investment

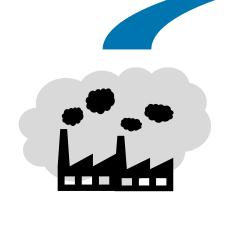
Bilateral Support

Carbon Finance (Article 6)





Energy Transition in ASEAN is already providing opportunities which are only likely to grow



Accelerate Coal Phase Out	Retirement of plants under ADB ETM and/or co-firing of biomass or ammonia
Increased RE Deployment	Sub USD4 cent/kWh tariffs under auction in Cambodia and Malaysia showing RE can be economical
Greater connectivity	LTMS interconnection project and first 100MW. Potential for integration of SG with Indonesia (and Australia) under EMA import tender
Decentralization of supply	C.9GW of rooftop power added in Vietnam in 2020. Strong investment in regional rooftop platforms for C&I players
Increased Energy Efficiency	ESCO models becoming more prevalent alongside wider policy efforts to enshrine EE (e.g. government procurement, harmonization of standards)
Electric Mobility	Strong plans for rollout of EV in most ASEAN nations, including buses, four wheelers and two wheelers
Green and Blue H2	Pilot green or blue hydrogen production and consumption projects in most ASEAN nations (e.g. Pertamina in Indonesia, Petronas and ENEOS in Malaysia)



Thank You!



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