On behalf of

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

of the Federal Republic of Germany

CASE for Southeast Asia

Decarbonization – understanding the gaps and challenges for Southeast Asia

Energy Transition Dialogue 2022 ASEAN Outlook for Zero Carbon Energy

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09 February 2022

Southeast Asia (SEA) countries need coherent net zero path to meet Paris 1.5 degrees target

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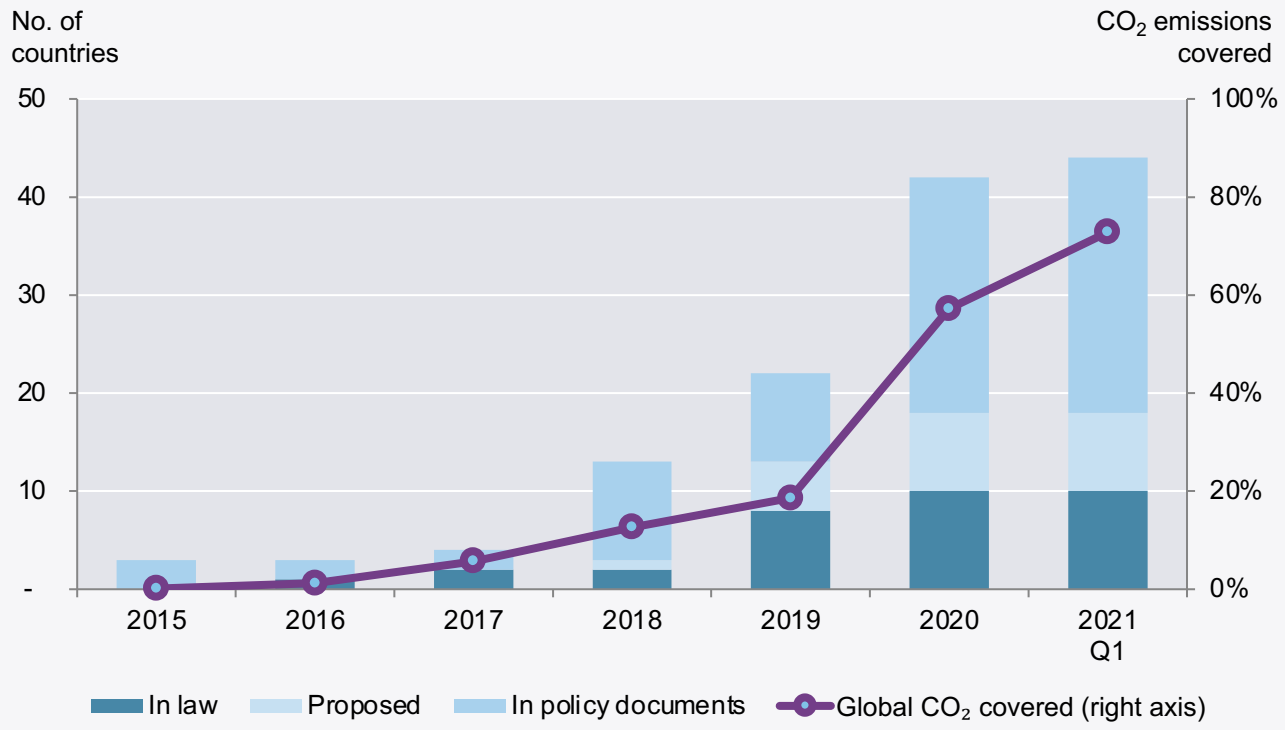
Carbon net zero pledges and share of global CO2 emissions covered



IEA, 2021

- → Around 80% of the primary energy mix in SEA still comes from fossil fuel (coal, natural gas and oil), which means SEA's greenhouse gas emissions is yet to peak.
- → Coal-fired generation is still expanding in SEA, mostly in Indonesia, Vietnam, and Philippines (IEA, 2020).
- → 8 out of 10 ASEAN member countries have announced their net zero target during COP26, with the earliest in 2050 and the latest in 2065 (ACE, 2021).
- → With the declining cost of renewables and increased concern over emission, SEA's power mix will change. IEA model projected that renewables share in the SEA's power generation will reach 70% by 2040

Electricity generation in Southeast Asia, 2000 – 2020 (1)

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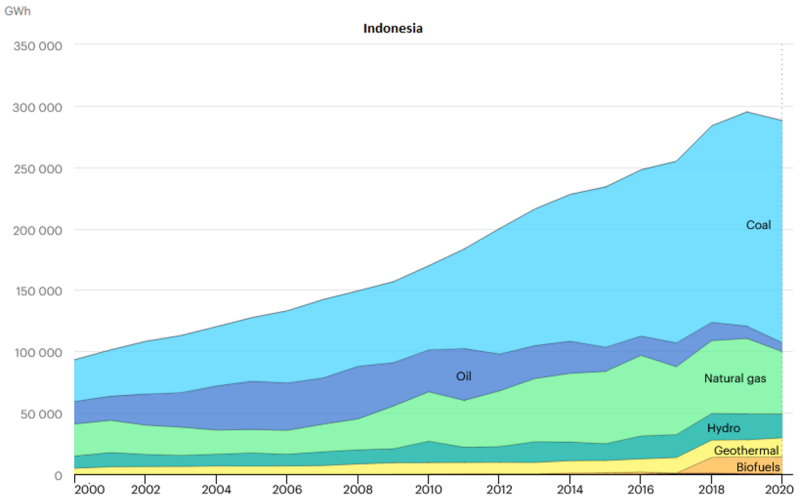

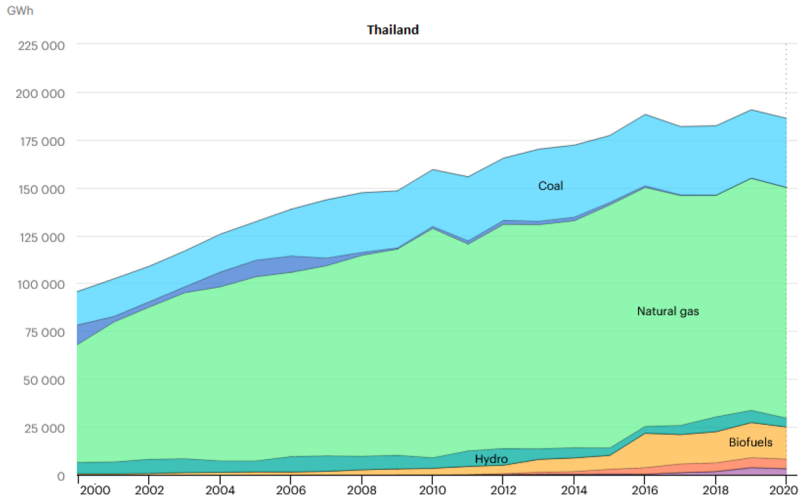

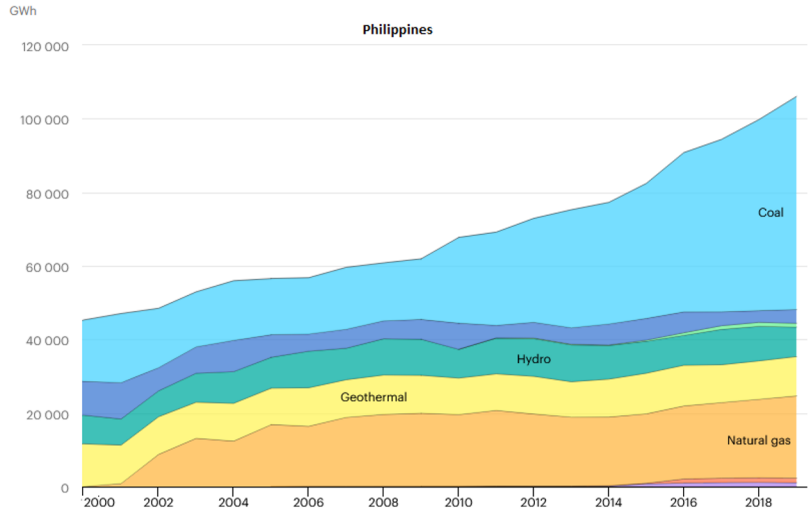

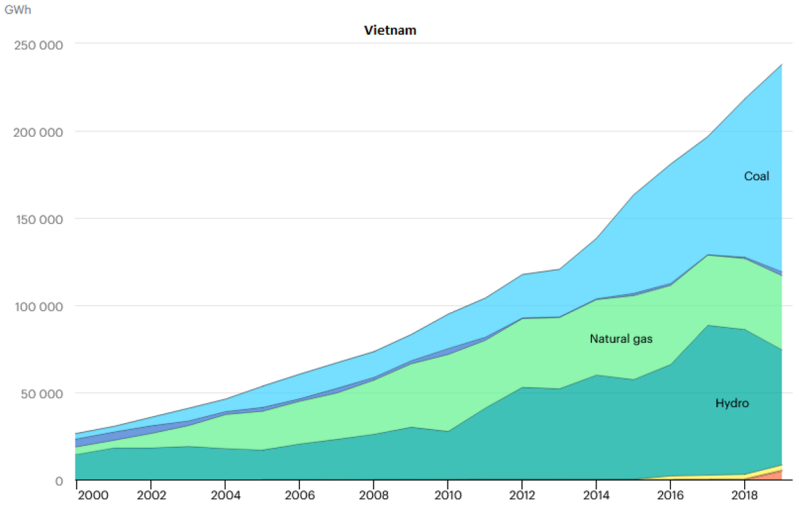

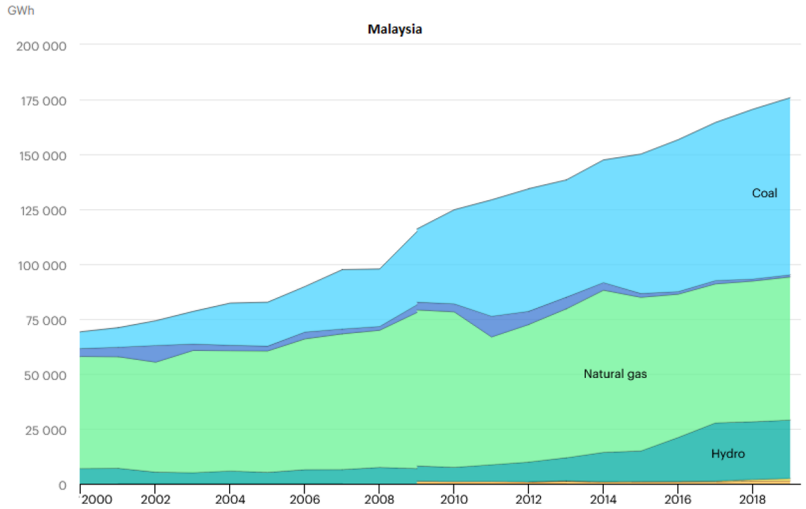

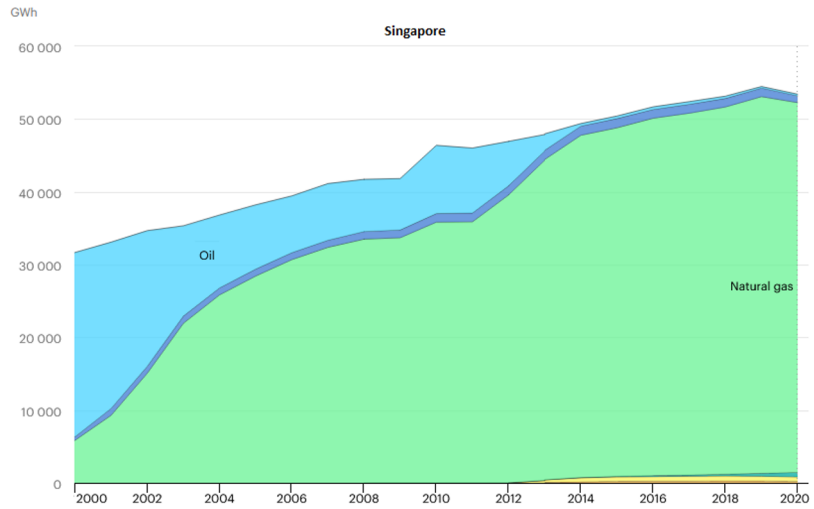

IEA, 2021

Electricity generation in Southeast Asia, 2000 – 2020 (2)

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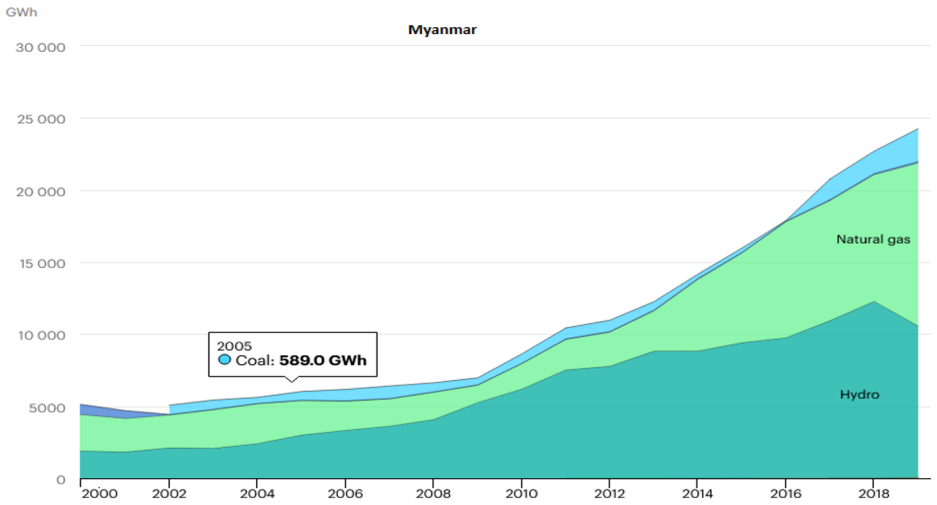

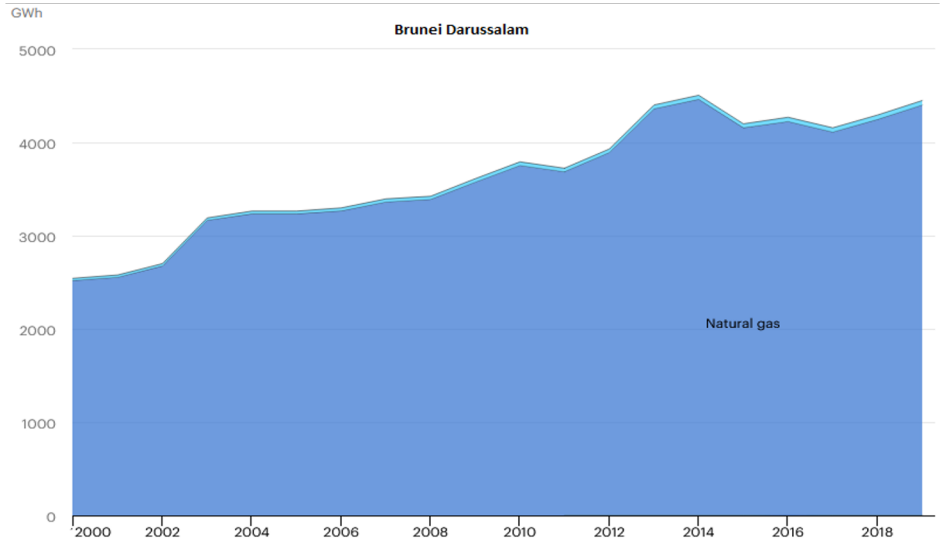

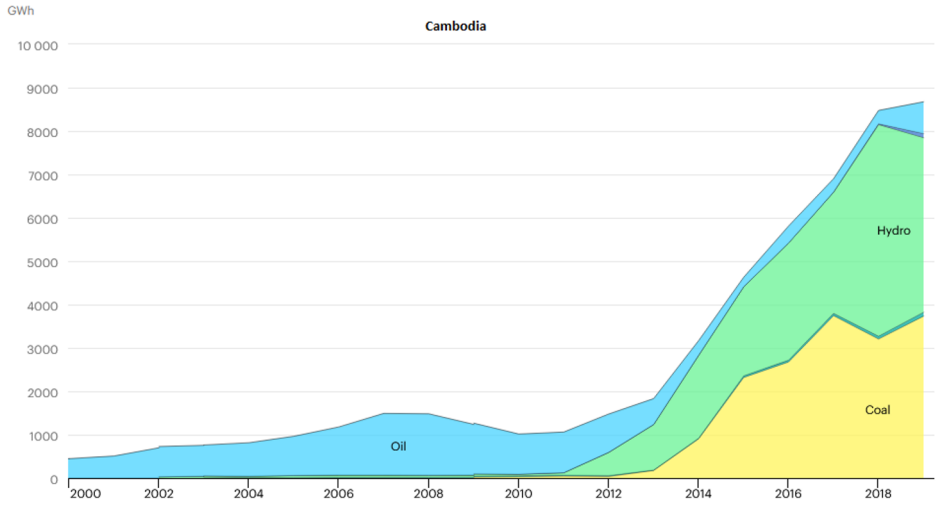

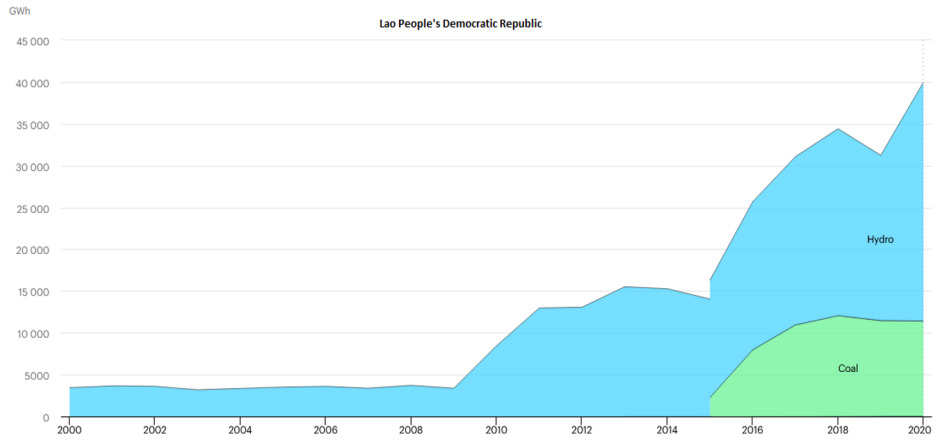

IEA, 2021

Key challenges for energy transition based on CASE's Research & Assessment Framework (RAF):

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Research and Assessment Framework

Top-down
Focuses on challenges related to regional integration and cooperation

Synthesis
Identifies regional key challenges and synergies between country and regional activities

Bottom-up
Combines and consolidates individual country analyses

Identify

Key Challenges

- **Policy Planning and Alignment**
- **Fossil lock-in & energy security perception**
- **Investment Challenges**
- **Grid and market integration challenges**
- **Capacity building & knowledge sharing**
- **Actors & Institutions**

Policy challenges

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Policy Planning and Alignment

- The **absence of coordinated long-term policy visions** or 'roadmap' for renewables significantly impacts all other dimensions relevant to the transition.
- Government silo structures lead to **lack of ownership of the energy transition process**.

Fossil lock-in and perception of energy security

- Country driven processes focusing on countries' energy security limit **regional interaction and collaboration**.
- Fossil-fuels still considered as main components of energy security. **Renewable energy continue to be perceived as unreliable and to increase consumer power prices**.

Actors and Institutions

- Poor coordination between the **ecosystem of stakeholders** that shapes the discourse and action on the energy transition lead to a **lack of consistent and clear messaging** on energy transition topics.
- Institutional inertia due to overreliance on government action or dominant players creates a powerful barrier to mobilising energy transition dialogue

Non-technical challenges

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Capacity building & knowledge sharing

- Low knowledge sharing, lack of available data and limited capacity building opportunities are key non-technical challenges.
- The lack of independent ‘knowledge holder’ for the energy transition means that a lot of expertise is imported from outside the ASEAN region, and consequently **may not be fully aligned with national or regional interests**.

Investment challenges

- **High cost of capital** remains a significant barrier for renewable energy deployment across the region.
- Renewable energy investments are **perceived as high risk** due **underlying policy barriers** e.g., regulatory, licensing and market inefficiencies. Stop-and-go policies increase developer risks.
- Local financial institutions have a relatively **weak technical understanding of renewable energy project-based finance**. The resulting gap of alternative financial derisking instruments constrains renewable energy deployment.

Grid and market challenges

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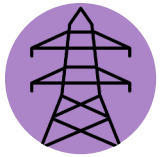

Grid and regional market integration challenges

- **The benefits of a regional grid are not yet well shared**: Regional grid integration could be a regional solution to accommodate higher shares of renewables in all ASEAN countries.
- VRE grid integration challenges will appear separately in each country as shares of variable renewables increase.
- Current policy planning, market design and system operations in the region are not always based on **updated processes and assumptions** which represent additional barriers to the integration of renewables (e.g. prevailing idea of grid management with baseloads)

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Thank You