Carbon Neutrality Policy Updates in ASEAN

The 33rd "Clean Coal Day in Japan" International Symposium

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Decarbonization in ASEAN Energy Sector is Guided by APAEC

ASEAN Center for Energy Role

Catalyst

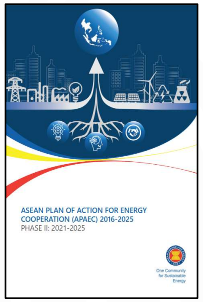
To unify and strengthen ASEAN Energy Cooperation by providing platform for sharing, policy advisory, best practices, capacity building.

Knowledge Hub

To provide a knowledge repository for ASEAN Member States (AMS) and services through data Management, publication, dissemination.

Think Tank

To assist AMS on research and identifying practical & specific solution policies, legal & regulatory framework, technologies, innovative Solutions



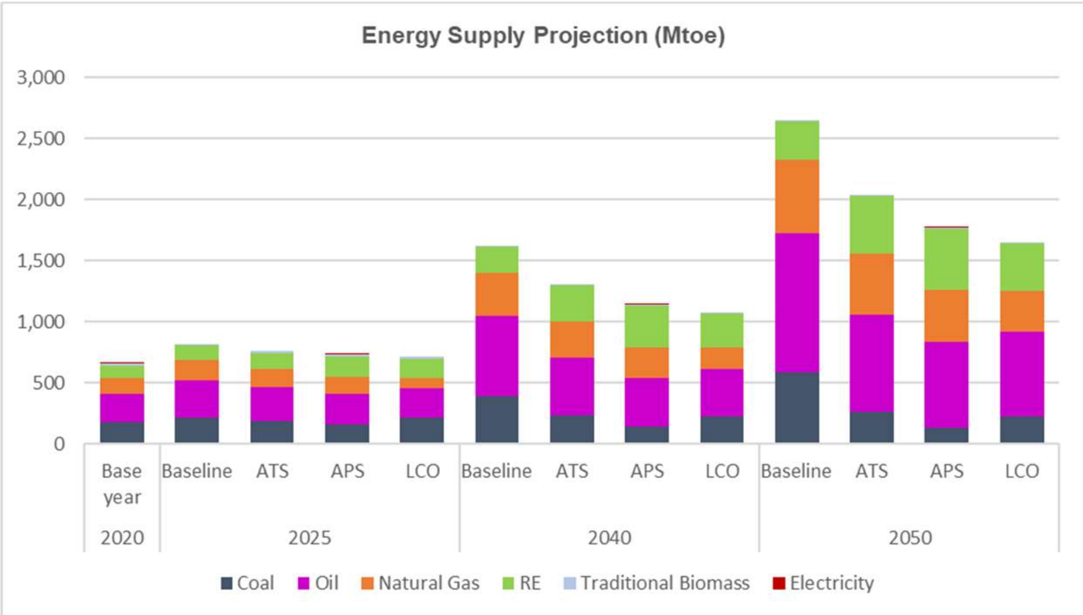
Enhancing Energy Connectivity and Market Integration in ASEAN to Achieve Energy Security, Accessibility, Affordability & Sustainability for All

Accelerating Energy Transition and Strengthening Energy Resilience Through Greater Innovation and Cooperation

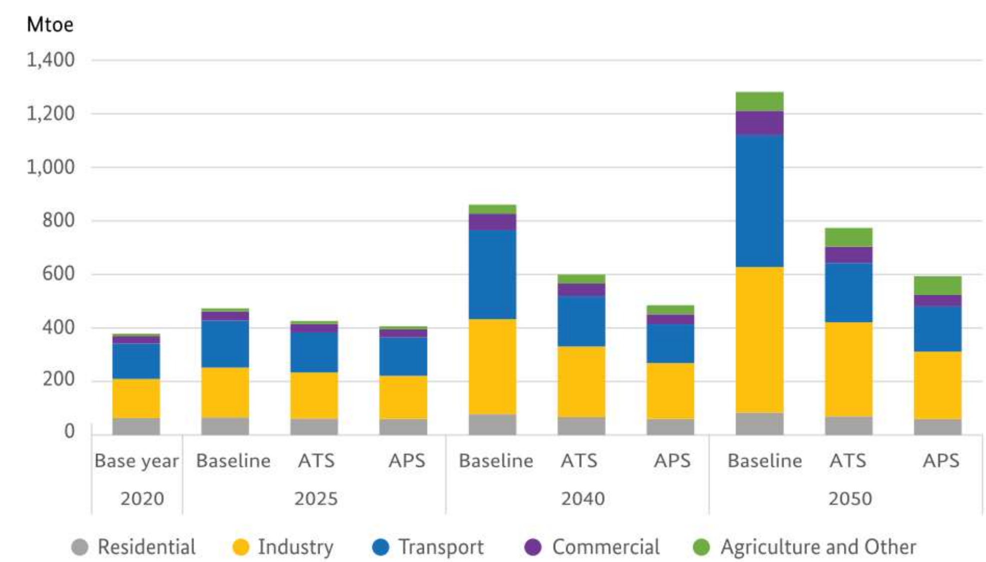
ASEAN Plan of Action for Energy Cooperation (APAEC) Phase II (2016-2025)

Focus	Program Area & Key Strategy
	ASEAN Power Grid: Expand MPT, Grid resiliency and clean & renewable energy integration
	Trans ASEAN Gas Pipeline : Develop Common Gas Market by LNG connectivity and accessibility
	Clean Coal Utilization: Optimize the role of Clean Coal in energy transition
	Energy Efficiency: Reduce energy intensity by 32% in 2025 based on 2005 level
	Renewable Energy: Achieve 23% share of RE in ASEAN energy mix and 35% share of RE in ASEAN installed Capacity
	Regional Energy Policy and Planning: Advance energy policy and accelerate region's energy transition & resilience
	Nuclear Energy: Build human resources capabilities on nuclear technology for power generation

Energy Pathways in ASEAN



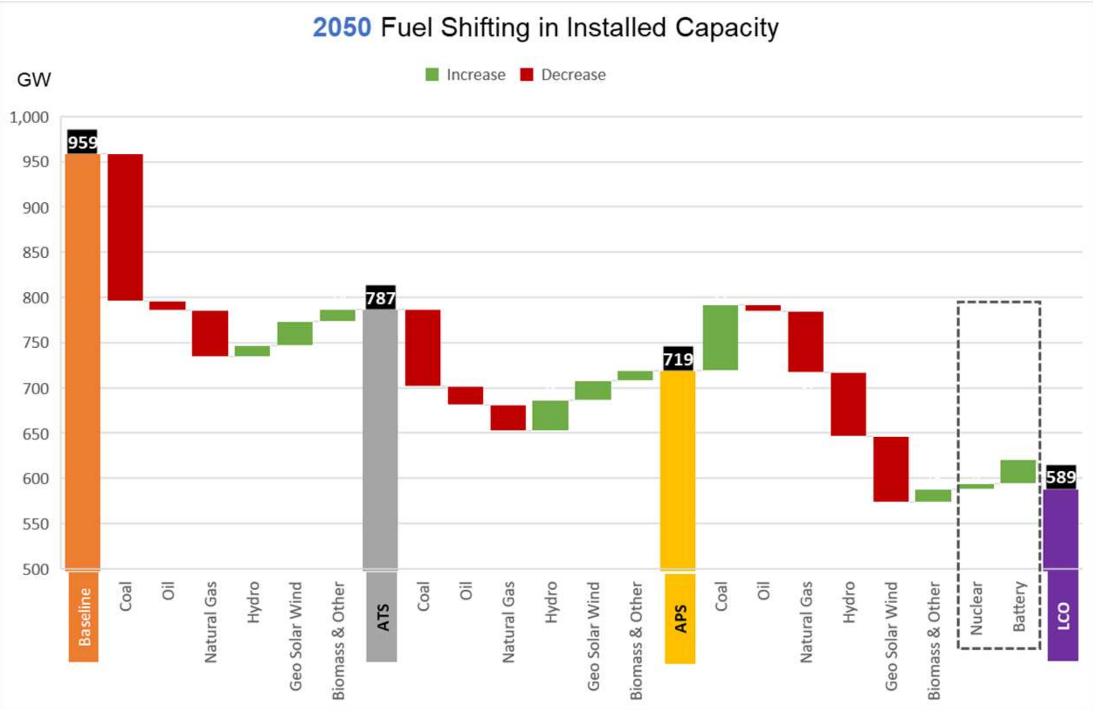
Energy Demand By Sector

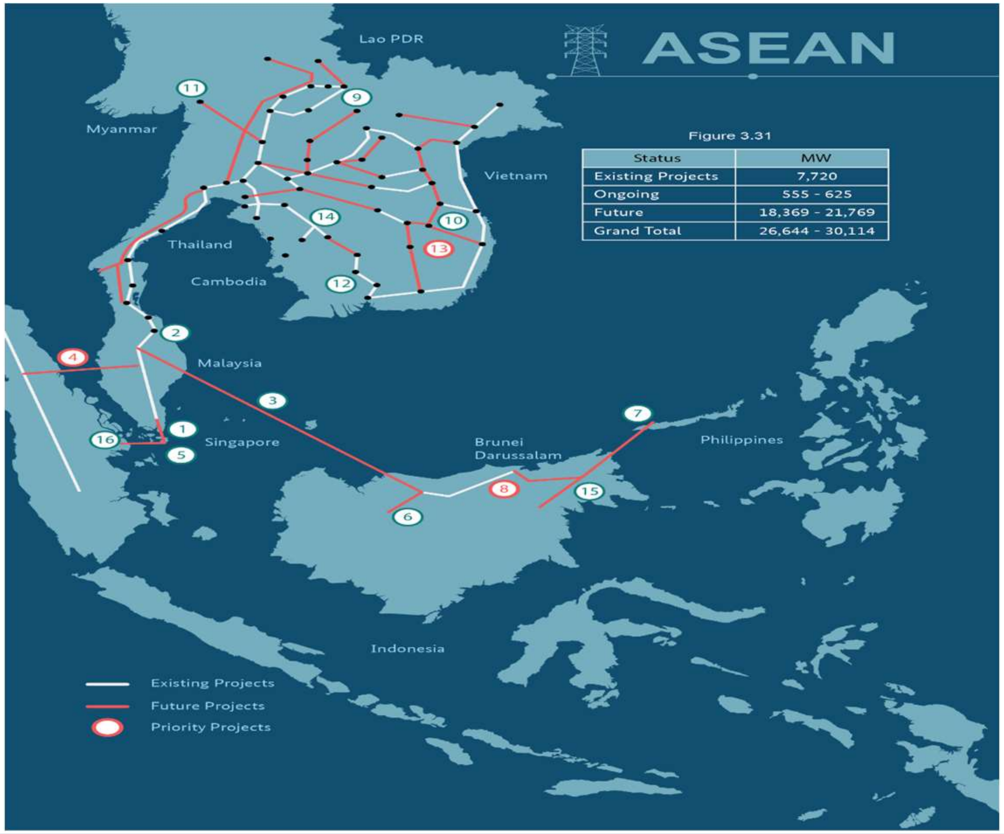


- ❑ Baseline Scenario projected a 4x of energy required to fuel the economic growth from 2020 to 2050. Energy efficiency measures reduce the need of energy to 3x and 2.7x in ATS and APS.
- ❑ LCO Scenario reduces the demand further to 2.5x of 2020.
- ❑ In all scenarios, fossil fuels remain the largest component.

Industry and transport sectors continue to be the highest energy consuming sectors in the region, dominated by oil especially in transport

Emerging Technologies: Storage, Nuclear, Interconnection

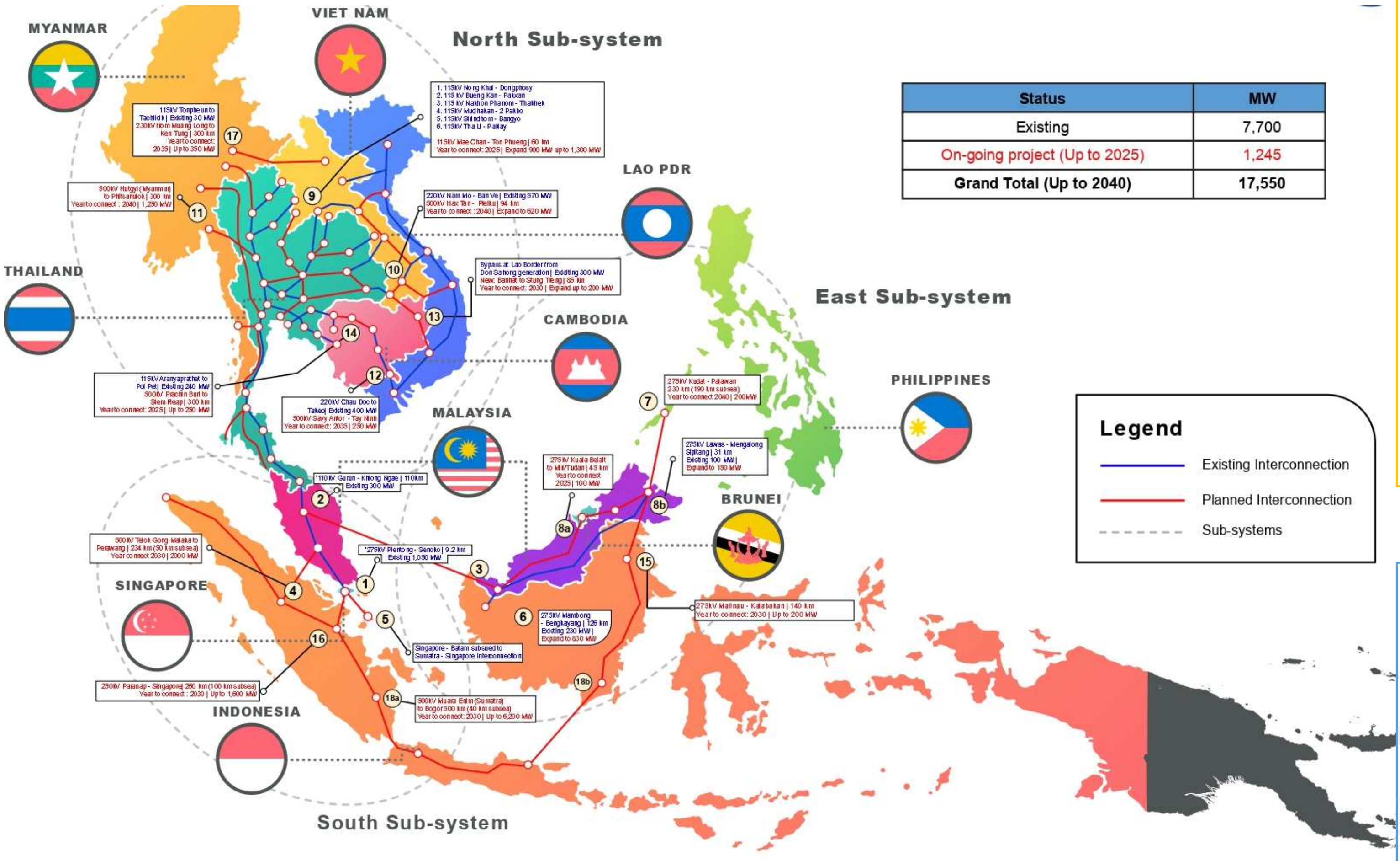




- ❑ As the needs of installed capacity decrease due to energy efficiency, clean energy penetrates the power system.
- ❑ Even with the same level of electricity need in APS, lower installed capacity is required in LCO Scenario. Coal, bioenergy, & nuclear replaces natural gas, hydro, solar & wind with storage penetration.

- ❑ Realisation of ASEAN's cross-border interconnection system with higher penetration of variable renewable energy (solar and wind), under the ASEAN Power Grid.

The ASEAN Power Grid - Work Priorities and Regional Collaboration



Status	MW
Existing	7,700
On-going project (Up to 2025)	1,245
Grand Total (Up to 2040)	**17,550**

Source based: Updated Power Development Plan (PDP) scenario under AIMS III, 2022

Infrastructure Development

- 18 priority interconnection has been identified
- 9 out 18 has been operated
- Several are currently on-going FS: Sumatra –P. Malaysia (new) & Kalimantan – Sabah (new), Thailand – Malaysia (upgrade existing)

Market Development

- Lao PDR – Thailand – Malaysia PIP (2019)
- Lao PDR – Thailand – Malaysia – Singapore PIP (2022)
- Expansion to other subregion

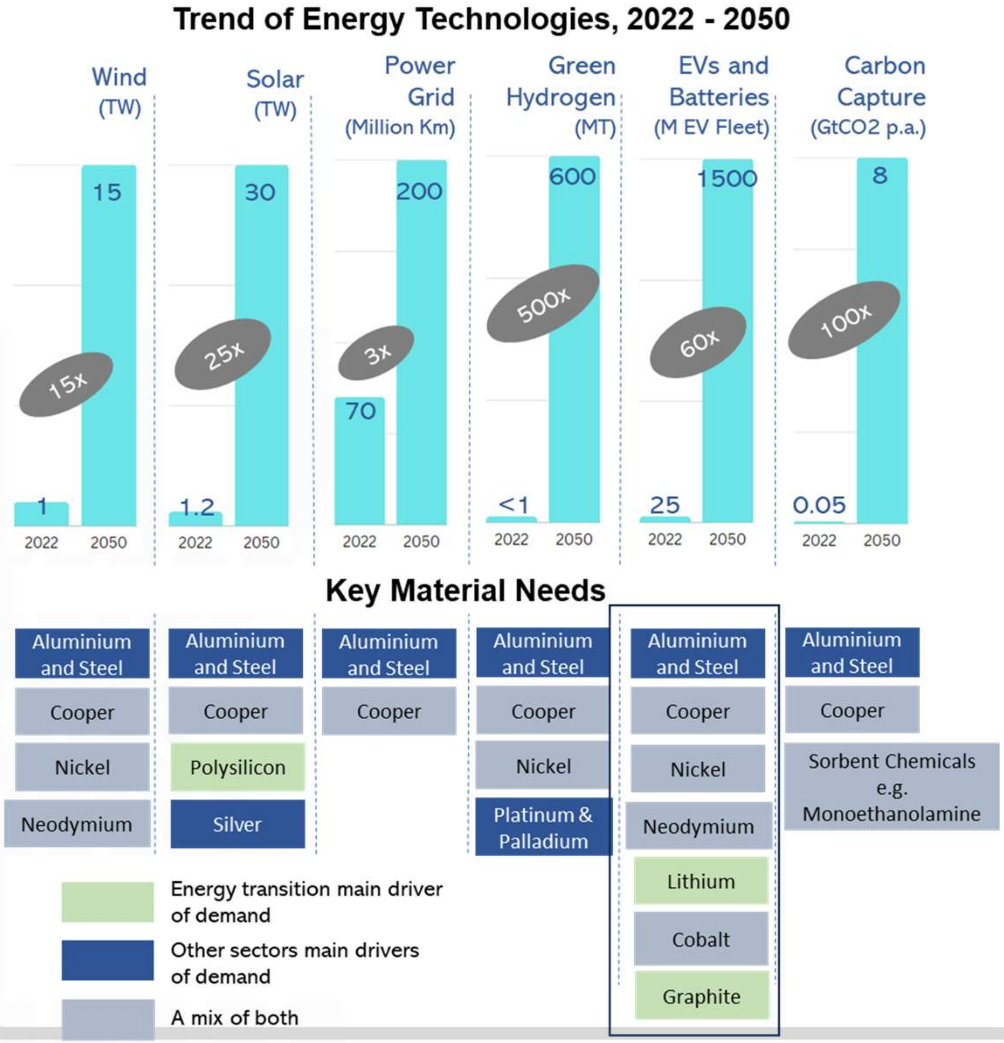
ASEAN Interconnection Master Plan Study (AIMS) III

Phase 1:
Capacity Expansion Planning
(2020, updated in 2022)

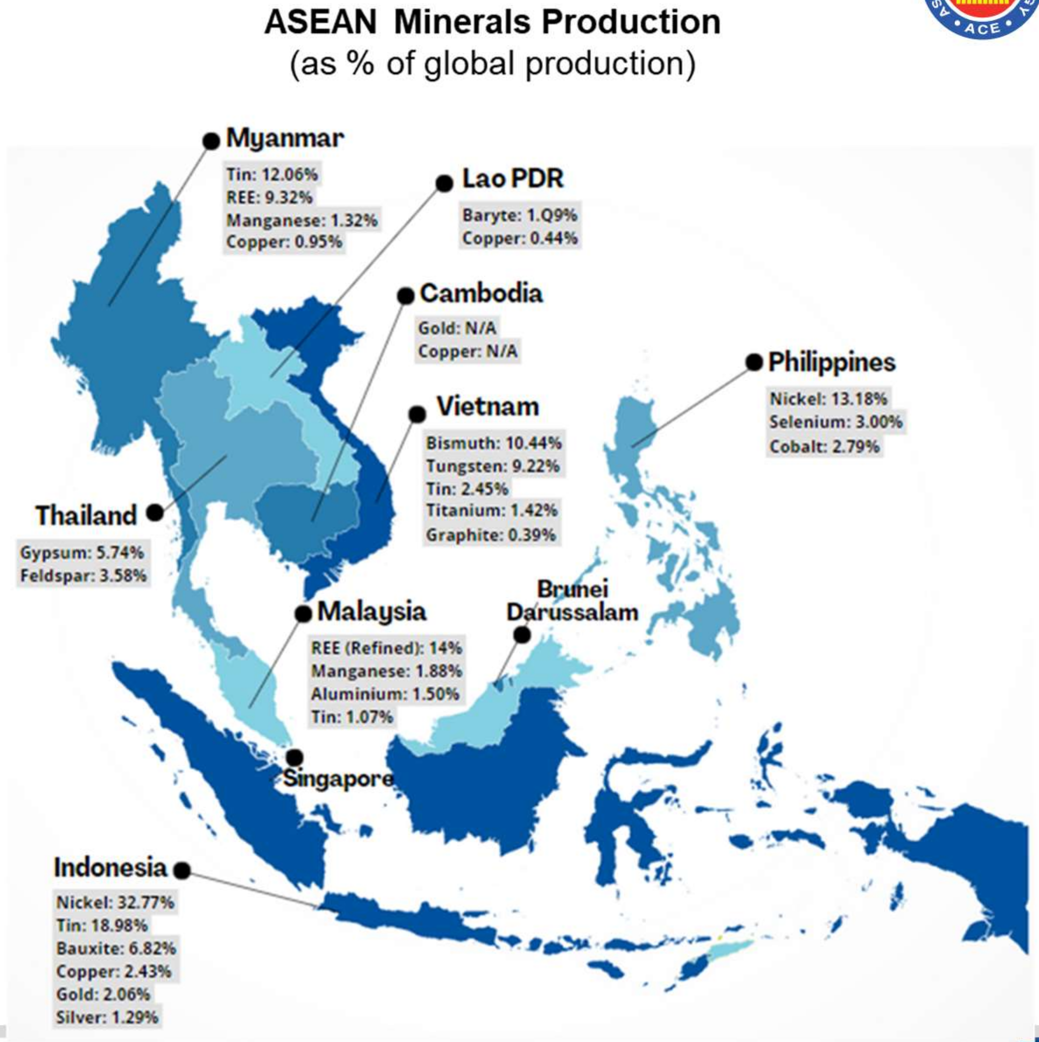
Phase 2:
Grid Performance Analysis
(2020, updated in 2022)

Phase 3:
Multilateral Market Analysis
(2024)

Key Factors: Critical Minerals



Source: Energy Transitions Commission – July 2023



Source: Mineral Supply Data from USGS Minerals Commodities Summaries 2022

Key Factors: Investment and Financing

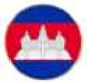
Investment Needs until 2050

	AEO7: ATS	2nd REO2: 1.5S
Investment – Power	879 billion	2,834 - 3,723 billion
Investment – All Energy		6,318 - 7,391 billion
RE in Elect. Generation	50.4%	90%
Electricity Share in TFEC	25.5%	52%

*) *2nd RE Outlook investment need covers 2018-2050*

- ❑ IEA Southeast Asia Energy Outlook 2022, annual energy investment in Sustainable Development Scenario (SDS) is USD 190 billion by 2030
- ❑ In comparison, 2nd RE Outlook 1.5S is USD 192-224 billion (all energy) and USD 55-113 billion (power)
- ❑ In comparison, AEO7 ATS is USD 30 billion (power)

Net Zero Target and Carbon Pricing as Financing Mechanism

Countries	Net Zero Target	Carbon Pricing in Climate Change Policy	Carbon Tax	Emissions Trading System (ETS)	Carbon Credit
	Net Zero 2050	√	×	×	×
	Carbon Neutral 2050	×	×	×	√
	Net Zero 2060 or sooner	√	×	√	√
	Net Zero 2050	×	×	×	√
	Carbon Neutral 2050	√	×	×	√
	Net Zero from forestry and other land use 2040	×	×	×	√
	No target set	√	×	×	√
	Net Zero 2050	√	√	×	√
	Carbon Neutral 2050; Net Zero 2065	√	×	×	√
	Net Zero 2050	√	×	×	√

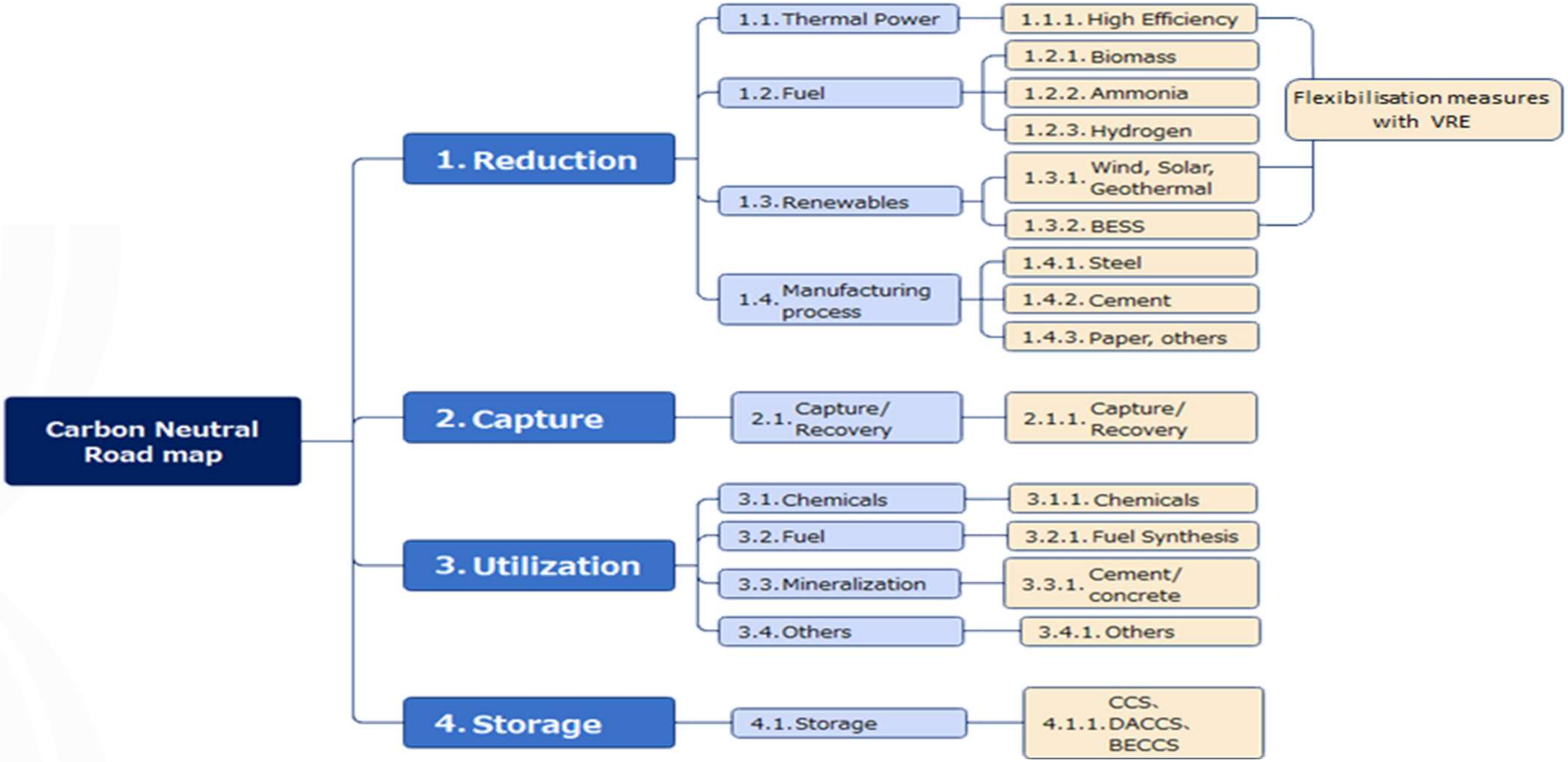
In the context of ASEAN countries, carbon pricing is widely recognized as a key instrument for climate change mitigation within their respective climate policies or national climate reports. Nearly all these nations are at various stages of engagement with carbon pricing policies, ranging from assessment and design to implementation.

As of now, the only operational ETS within ASEAN is Indonesia's, launched in February 2023. This ETS specifically targets emissions from coal-fired power plants. On the other hand, Singapore introduced a carbon tax in 2019, marking another significant step in the region's carbon pricing initiatives.

Regarding the carbon market, almost all AMS are involved in carbon credit activities, which are predominantly voluntary. This widespread participation highlights the region's commitment to exploring diverse approaches to carbon management and climate change mitigation.

Source: ACE, "Progress of Carbon Pricing in ASEAN to Support the Shift Towards a Low Carbon Economy" (2024)

Transition Technology (and Financing)



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Thank You