ASEAN Power Grid:
Driving Growth & Securing Energy

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Outline

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    b) *Economic Impacts of APG*
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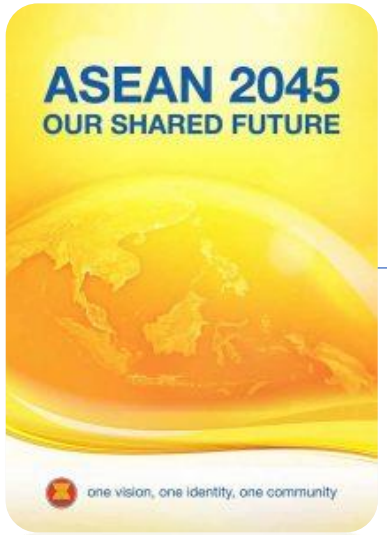
Regional Blueprints
ASEAN Vision 2045 & ASEAN Economic Community (AEC)

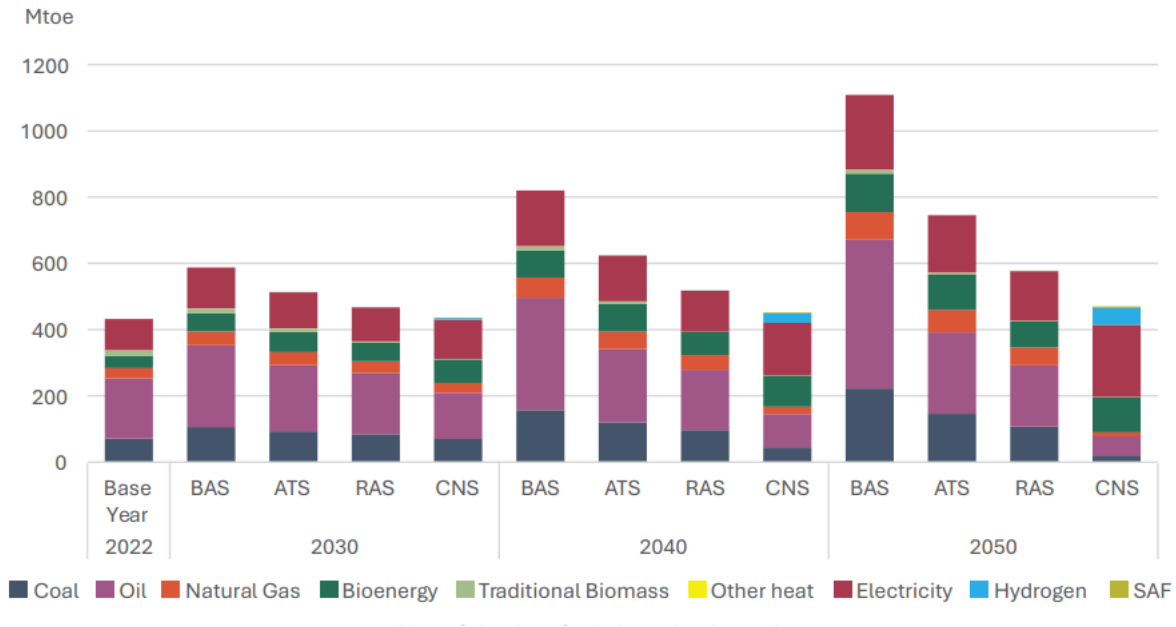


- ASEAN Political Security Community
- ASEAN Economic Community
  - ASEAN Plan of Action for Energy Cooperation (APAEC)
    - ASEAN Power Grid (APG)
- ASEAN Socio-Cultural Community Security
- ASEAN Connectivity

Regional Blueprints

How the APG Fits into Broader ASEAN Energy Targets and the APAEC Framework

- **Rapid Energy Demand Growth:** ASEAN energy demand projected to double by 2050 due to urbanization, population growth, and economic expansion.
- **Diverse Energy Resources:** ASEAN possesses a wide range of energy sources, from fossil fuels to renewables, but unevenly distributed across countries.
- **Need for Regional Cooperation:** Energy security and sustainability necessitate integrated planning and interconnection among ASEAN member states.



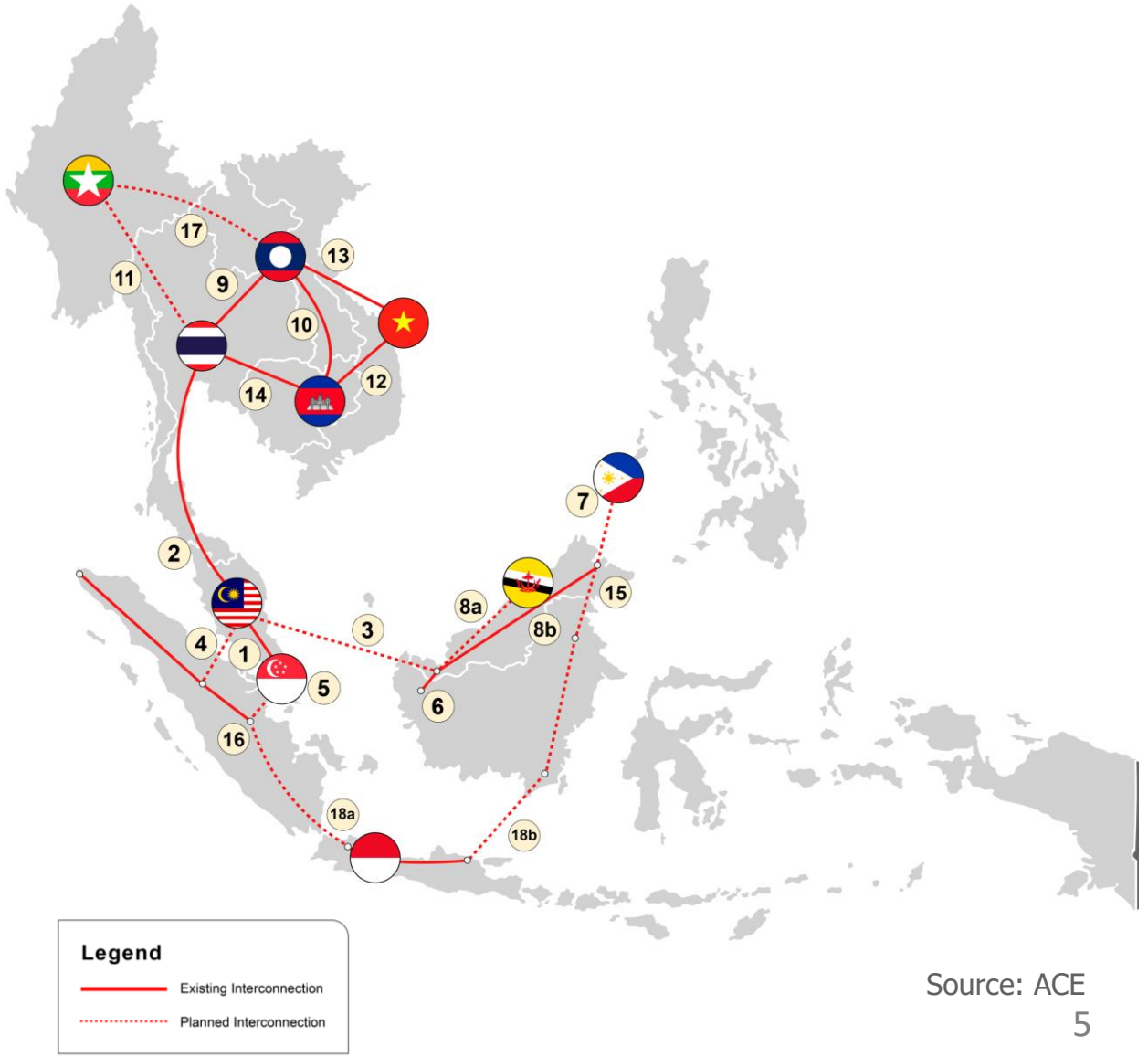
8th ASEAN Energy Outlook

Understanding the ASEAN Power Grid (APG)
Overview

Regional Energy Integration
APG aims to connect ASEAN member states via cross-border electricity trade and interconnections.

Discussed since 1986, included in APAEC within 1997
Initiated under ASEAN Plan of Action for Energy Cooperation; progressed through several phases of development.

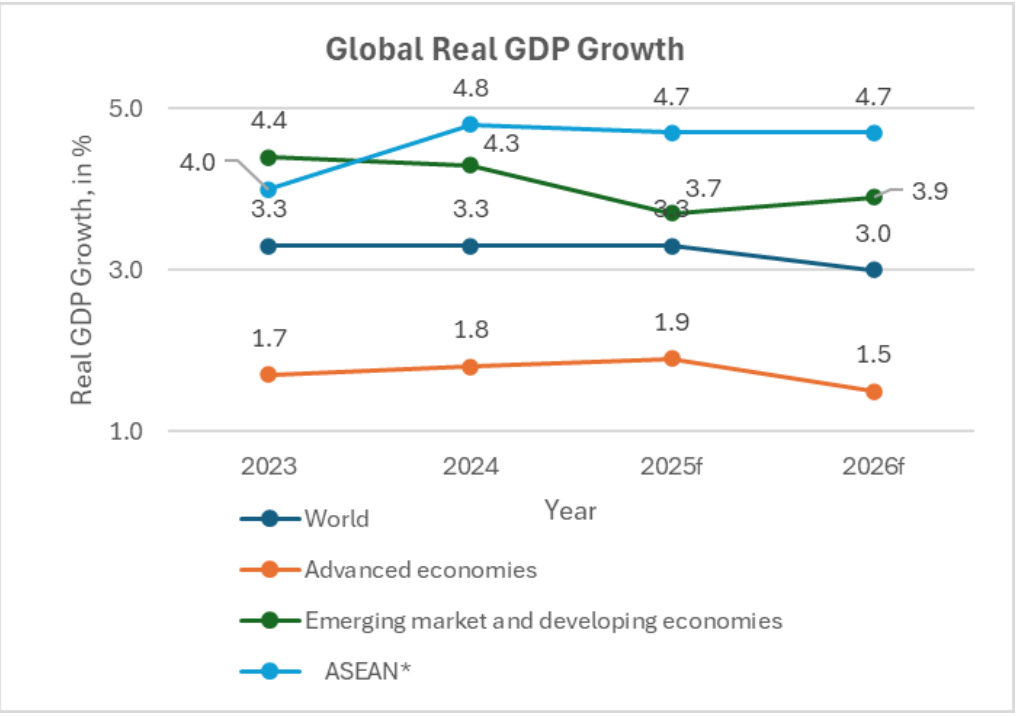
Current Status
Eight (8) out of the 18 grid-to-grid interconnection projects under the ASEAN Power Grid (APG) interconnection lists have been constructed and commercially operated.



Source: ACE

Understanding the ASEAN Power Grid (APG)
Economic Impacts of the APG

Driving Growth and Attracting Investment



Boost to Regional GDP
Cross-border energy trading via APG can add billions to ASEAN's GDP by improving energy efficiency and lowering costs.

Attracting Infrastructure Investment
The APG facilitates large-scale investment in energy infrastructure, with multilateral banks and private sectors as key players.

Lower Electricity Prices
Pooling resources and optimizing generation across borders can significantly reduce electricity costs for consumers.

Sources:
International Monetary Fund. (2025, April). *World Economic Outlook Update, January 2025*, https://www.imf.org/en/Publications/WEO/Issues/2025/04/22/world-economic-outlook-april-2025

Understanding the ASEAN Power Grid (APG)
Technical and Operational Advantages

Grid Stability and Renewable Energy Integration

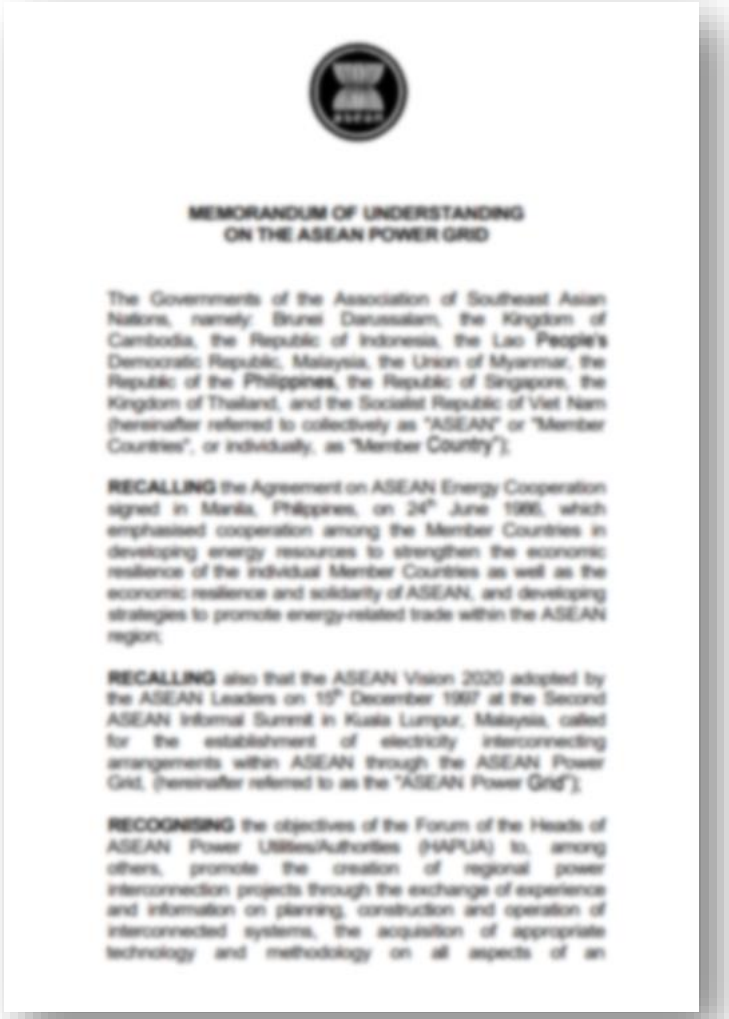
- **Enhanced Grid Reliability:** APG enables real-time balancing of supply and demand across regions, minimizing outages and blackouts.
- **Optimized Energy Dispatch:** Electricity can be sourced from the most efficient generator, regardless of location, lowering operational costs.
- **Facilitates Renewables Integration:** Supports variable renewable energy by providing larger balancing areas and flexible grid capacity.

Source: Unsplash

Understanding the ASEAN Power Grid (APG)

APG Enhanced MoU

- **Holistic Governance:** The MoU will establish an overarching governance model for APG implementation across member states.
- **Stakeholder Coordination:** Framework includes mechanisms to align utilities, regulators, and intergovernmental bodies efficiently.
- **Expanded Infrastructure Scope:** Coverage now extends beyond on-land grid connections to include subsea power cables.
- **Targeted Completion:** Finalization and ratification of the MoU is expected by 2025 to accelerate regional energy integration.



MEMORANDUM OF UNDERSTANDING
ON THE ASEAN POWER GRID

The Governments of the Association of Southeast Asian Nations, namely: Brunei Darussalam, the Kingdom of Cambodia, the Republic of Indonesia, the Lao People's Democratic Republic, Malaysia, the Union of Myanmar, the Republic of the Philippines, the Republic of Singapore, the Kingdom of Thailand, and the Socialist Republic of Viet Nam (hereinafter referred to collectively as "ASEAN" or "Member Countries", or individually, as "Member Country");

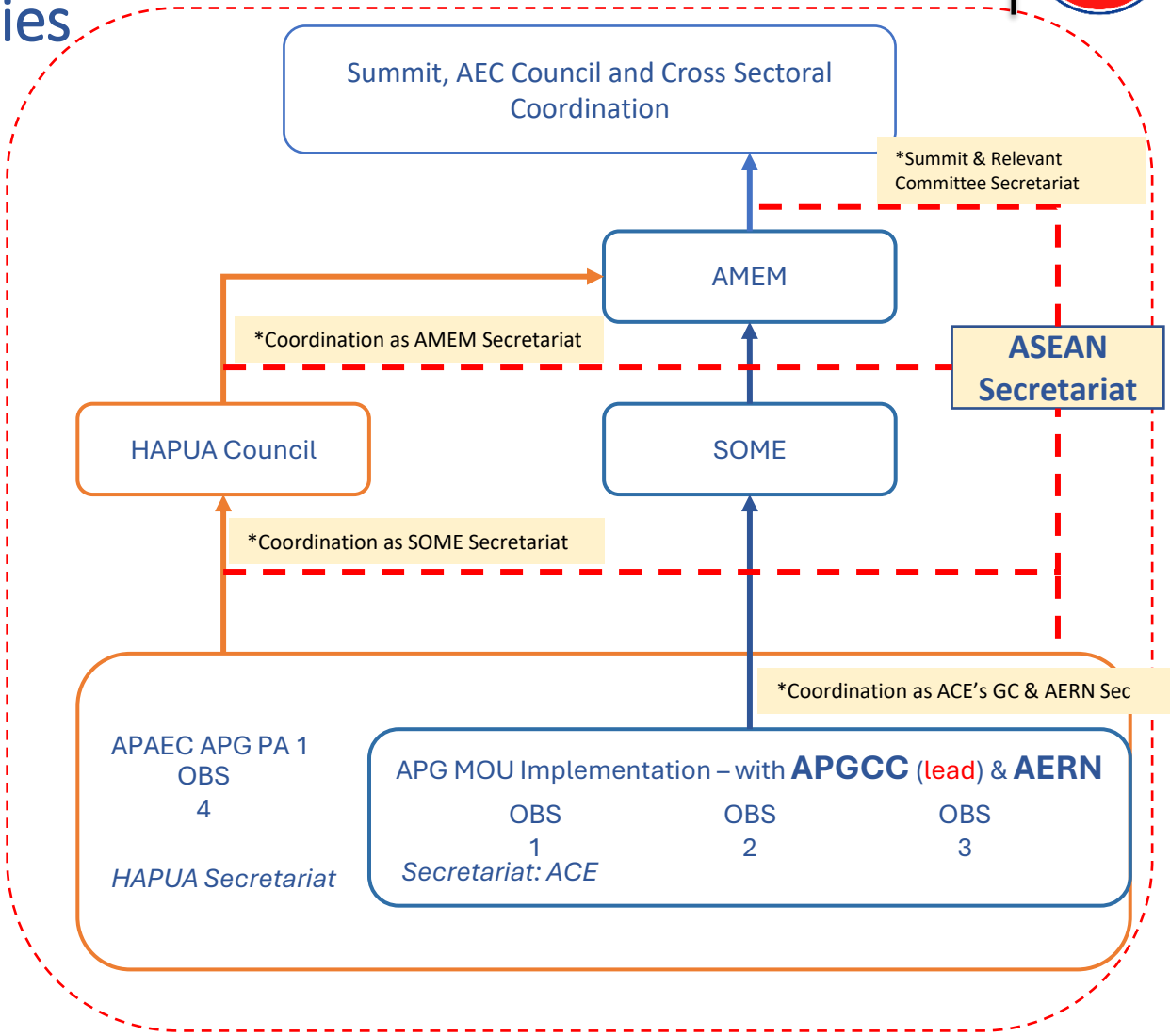
RECALLING the Agreement on ASEAN Energy Cooperation signed in Manila, Philippines, on 24th June 1986, which emphasised cooperation among the Member Countries in developing energy resources to strengthen the economic resilience of the individual Member Countries as well as the economic resilience and solidarity of ASEAN, and developing strategies to promote energy-related trade within the ASEAN region;

RECALLING also that the ASEAN Vision 2020 adopted by the ASEAN Leaders on 15th December 1997 at the Second ASEAN Informal Summit in Kuala Lumpur, Malaysia, called for the establishment of electricity interconnecting arrangements within ASEAN through the ASEAN Power Grid, (hereinafter referred to as the "ASEAN Power Grid");

RECOGNISING the objectives of the Forum of the Heads of ASEAN Power Utilities/Authorities (HAPUA) to, among others, promote the creation of regional power interconnection projects through the exchange of experience and information on planning, construction and operation of interconnected systems, the acquisition of appropriate technology and methodology on all aspects of an

Understanding the ASEAN Power Grid (APG)
Roles and Responsibilities of related APG Bodies

- **AMEM and SOME:** ASEAN Ministers on Energy Meeting (AMEM) and Senior Officials on Energy Meeting (SOME) set regional policies for APG development and integration.
- **APGCC – Lead and Coordinate:** Composed of national energy policy bodies, APGCC oversees APG MOU execution, coordinates APG stakeholders, and monitors progress.
- **AERN – Regulatory Backbone:** Provides regulatory support to APGCC, ensuring viable, interoperable, and efficient power market integration.
- **HAPUA:** planning & operating infrastructures
- **ACE**: APG Secretariat
- **ASEAN Secretariat**: Overall secretariat role for Summit, AMEM, SOME, AERN and monitor ACE as Governing Board.



Case Study

Lao PDR–Thailand–Malaysia–Singapore Power Integration Project

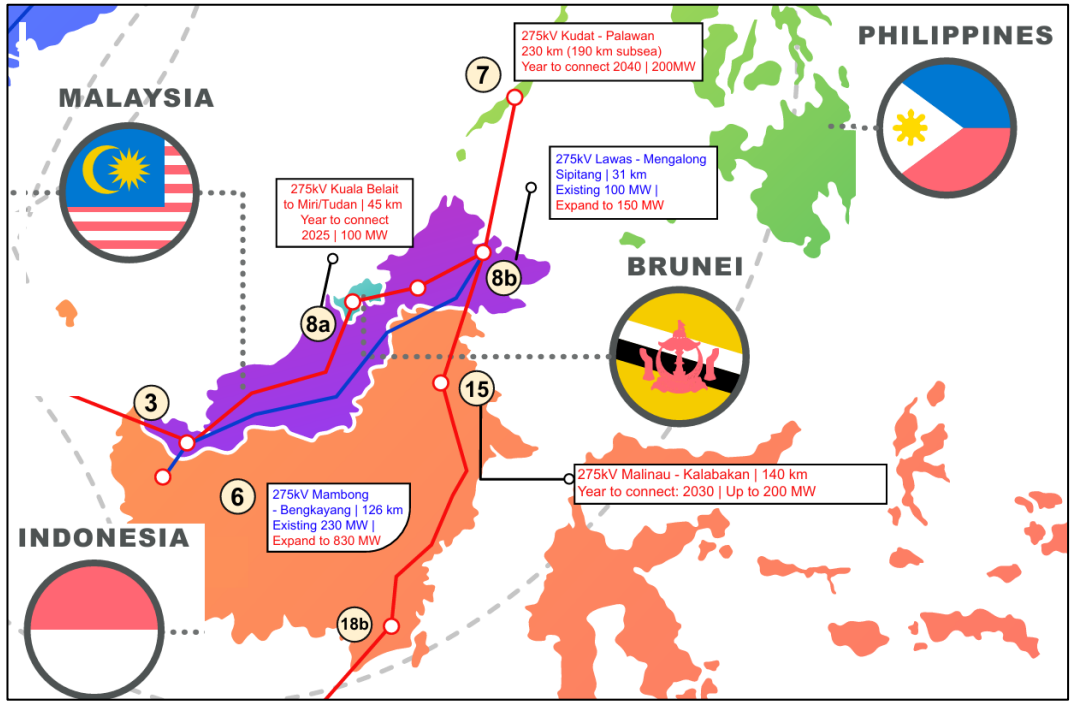
Source: HAPUA

Hydropower Export
Lao PDR exports hydropower to Singapore via Thailand and Malaysia's transmission infrastructure.

Proof of Concept for APG
Demonstrates technical feasibility and economic benefits of interconnected electricity markets in ASEAN.

First Multilateral Electricity Trade
The LTMS-PIP marks the first successful cross-border multilateral electricity trading in ASEAN.

Case Study
Brunei–Indonesia–Malaysia–Philippines



Source: HAPUA

Strategic Challenges and Coordination
Diverse geography and regulatory environments necessitate multi-phase coordination and infrastructure investment.

Renewable Energy Potential
Philippines and Indonesia to integrate geothermal, solar, and hydro energy resources across borders.

Cross-Border Integration Planning
Focus on interconnections between Borneo regions to enhance energy sharing and reliability.

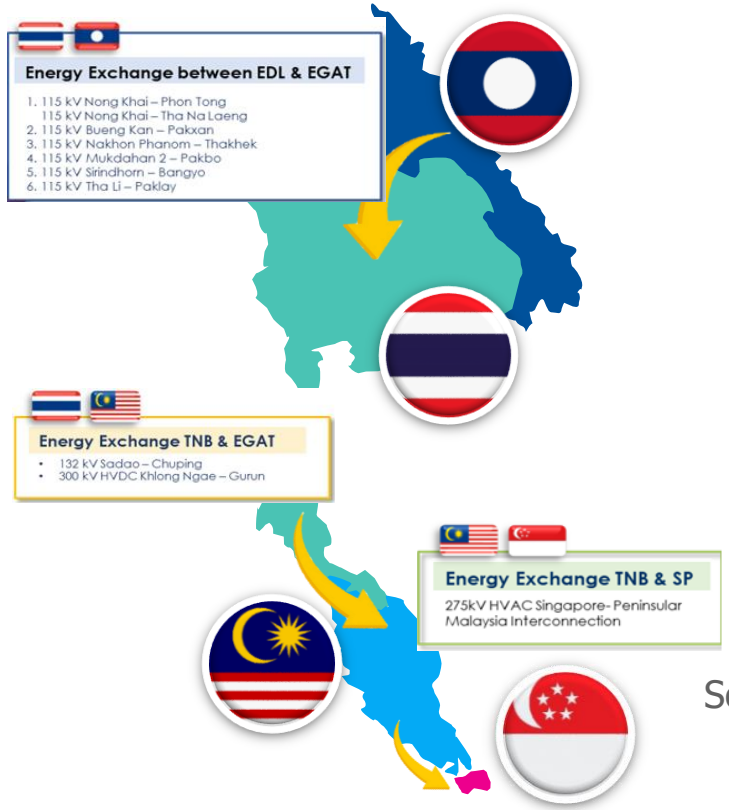
Case Study:
Lessons from LTMS Phase I

Key Challenges and Strategic Insights

- **Complex Regulatory Alignment:** Harmonizing legal and regulatory frameworks across four countries proved intricate and time-consuming.
- **Transmission and Technical Hurdles:** Coordinating grid operations across national boundaries required robust technical standards and real-time coordination.
- **Success Factors Identified:** Strong political will, stakeholder trust, and pre-existing infrastructure were critical enablers of success.

LTMS-PIP Phase 1 (2022-2024)

The project utilised the APG to trade 100 MW of hydropower to Singapore, enabling **a total of 266 GWh traded electricity** over the course of 2 years.



Source: ACE

Overall Challenges and Enablers in developing grid-to-grid interconnection projects

Challenges		Enablers
High-level political commitment	• Developing APG interconnections **requires joint efforts and resource-sharing** between the countries to assess the technical and economic feasibility and mutual benefits.	**Regional planning (AIMS)** and **feasibility studies** to assess the technical and economic feasibility as well as the benefits
Lack of a strong regional mandate	• Unlike the EU, the AMS rely on **bottom-up cooperation**, making interconnection efforts dependent on bilateral trust and shared needs.	**High-level directives and joint agreement** to develop APG infrastructure (Enhanced APG MOU)
Financing and implementation challenges	• As most of the AMS power market structure are vertically-integrated, the AMS **rely on utility-to-utility and regulated financing model** for cross-border interconnection projects.	Explore **broader financing options** (e.g., concessional or climate financing) and **innovative business model** (e.g., private merchant, cap and floor)

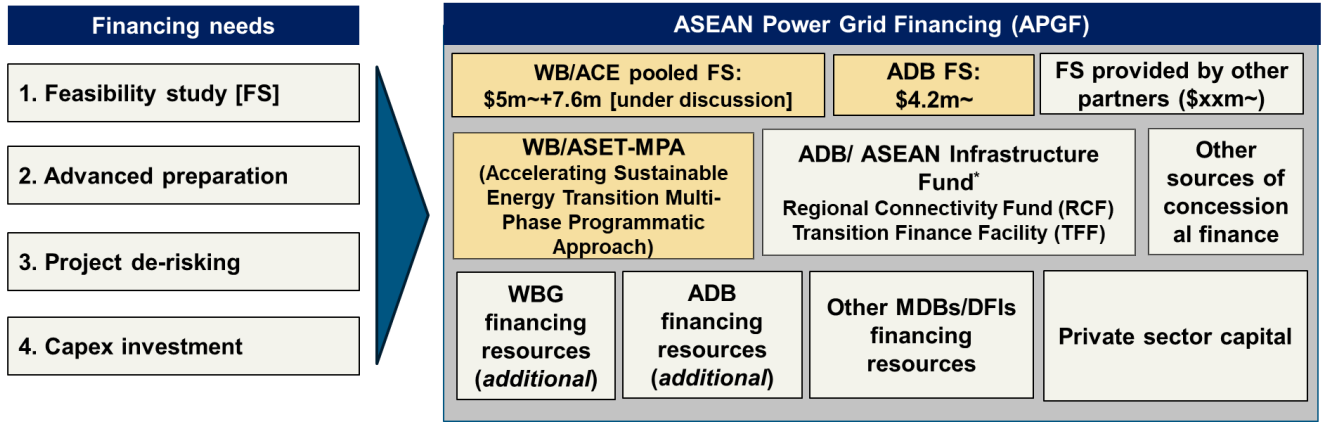
Source: ACE

APG Financing Facility

A Critical Mechanism to Unlock Investment

- **Dedicated Financing Platform:** The APG Financing Facility serves as a coordinated funding mechanism for cross-border energy projects.
- **De-Risking Investments:** Provides guarantees, blended finance, and support to lower financial risks for private sector participants.
- **Mobilizing Regional Capital:** Facilitates contributions from ASEAN states, multilateral banks, and climate funds to build transmission links.

Proposed APG Financing (APGF) framework: "End-to-End" Support



ADB & WB During ASEAN Finance Ministers and Central Bank Governor Meeting, April 2025

APG Financing Facility
Ministerial Coordination (AMEM, AFMGM & AEM)

The formulation of APGF will involve multiple stakeholders, such as the Energy Ministry, the Finance Ministry and the Economic Ministry, given the economic impact and significant amount of private capital mobilisation required.

Expected Outcomes:

1. Update on the ASEAN Power Grid Financing Facility (APGF):
Progress on the development of the APGF, including coordination efforts, institutional setup, and engagement with financing partners.

2. Coordination Mechanism:
Ongoing establishment of coordination to support implementation and serve as a contact point for stakeholders.

3. Capital Mobilisation:
Joint efforts by partners to mobilise global financing for regional power infrastructure.

OBJECTIVE

*Ministerial Interface Meeting will **highlight the importance of APG** and **high-level support** to generate a collective action towards **mobilising required funds for the APG***

Future Prospects and Recommendations

Accelerating ASEAN Power Grid Implementation

- **Innovative Financing Models:** Leverage green bonds, public-private partnerships, and multilateral funding to finance infrastructure.
- **Regional Cooperation and Capacity Building:** Foster technical and institutional collaboration to enhance planning and implementation efficiency.
- **Strategic Necessity**: The APG is vital for energy security, economic growth, and sustainable development across Southeast Asia.
- **Unified Regional Commitment**: Strong political will, institutional coordination, and stakeholder engagement are essential for success.

Source: Google Images

THANK YOU

ONE VISION, ONE IDENTITY, ONE COMMUNITY

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