



Introduction of the Asia Zero Emission Center

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June 6th, 2025 at the Asia Clean Energy Forum

ERIA is an international organisation that was established by an agreement of the leaders of 16 East Asia Summit (EAS) member countries. Its main role is to **conduct research and policy analyses** to facilitate the ASEAN Economic Community (AEC) building and to support wider regional community building.

Governing Board

Governor:

Ramon M. Lopez
(former DTI Secretary)

Board Members:

One representative from each country,
with a term of three years



Secretariat

President:

Tetsuya Watanabe

Staff:

165 as of July 2024



Member States

Brunei Darussalam, Cambodia,
Indonesia, Lao PDR, Malaysia,
Myanmar, the Philippines, Singapore,
Thailand,
Viet Nam, Japan, China, South Korea,
India, Australia, and New Zealand

Asia Zero Emission Center

Empowering Asia's Sustainable Future: Collaborate, Innovate, and Lead the Pathways to Zero

The Center will serve as a **platform** to share information, conduct studies on policies, facilitate stakeholders' engagement and help AZEC partner countries develop visions, roadmaps, or policies towards decarbonization to promote energy transitions.

Strategic research programs in the Center

Decarbonisation Roadmap

Serve as objective and practical reference points for setting targets, timelines, and identifying key drivers towards carbon neutrality, to support each country to develop strategies and plans for promoting energy transitions.

Sector Specific Actions

Provide detailed insights into the key sectors and technologies essential for achieving decarbonization, focusing on Power, Mobility, and Industry sectors, as well as cross-sectoral themes such as fuels, CCUS, and critical minerals.

- **Power: Power Grid i.e. ASEAN Power Grid**
- **Mobility: Future Mobility i.e. Masterplan for ASEAN-Japan Next Generation Vehicle Industry Strategy**
- **Industry: Energy Efficient Equipment i.e. Heat pumps and small once-through boilers**
- **Cross sectoral : Hydrogen and Ammonia, Biofuel/Biomass, Natural Gas as a Transition Fuel, CCUS/Carbon Recycling, and Critical Mineral**

Market Enablers

Focus on coordinating market structures so that necessary technologies can be evaluated properly and attract sufficient investments in a sustainable way.

- **Green/Transition Finance i.e. Asia Transition Finance Study Group**
- **Carbon Market**



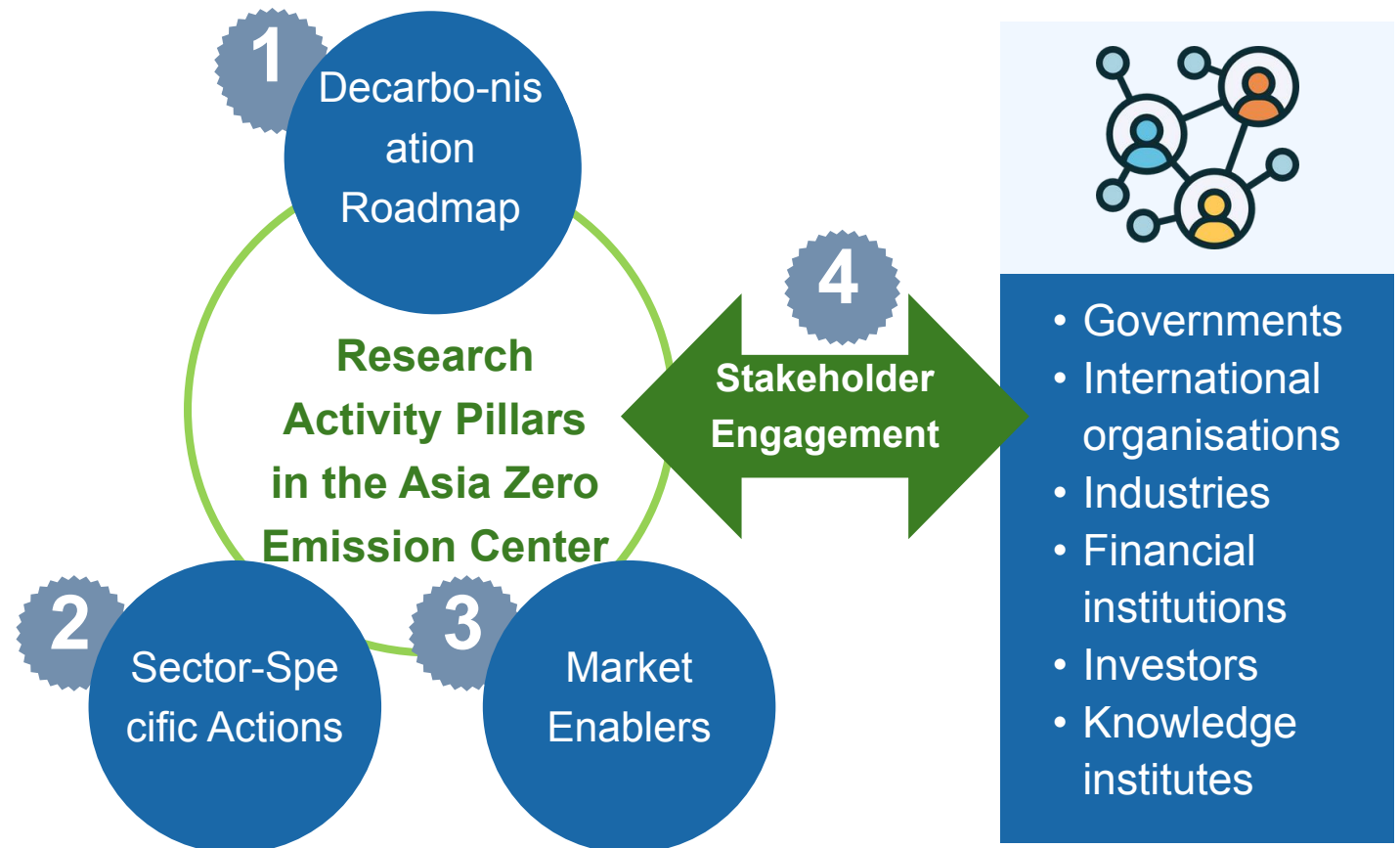
Launch Ceremony of the Asia Zero Emission Center (21st August 2024)



AZEC Advocacy Group Round Table (20th August 2024)

The Activity Pillars of the Asia Zero Emission Center

The Asia Zero Emission Center will develop strategic research programmes in support of **3 activity pillars** while facilitating discussions amongst various entities by stakeholder engagement. The Center serves as a **policy platform** to help AZEC partner countries develop visions, roadmaps, or policies towards



Provide detailed insights into the key sectors and technologies essential for achieving decarbonisation, with a focus on power, mobility, and industry sectors, as well as cross-sectoral themes such as fuels, CCUS, and critical minerals.

Power

Power Grid

- ASEAN Power Grid
- Cybersecurity for grid systems

Mobility

Future Mobility

- Masterplan for ASEAN-Japan Next-Generation Vehicle Industry Strategy

Industry

Energy-Efficient Equipment

- Heat pumps and small once-through boilers
- Opportunities for energy efficiency in industries

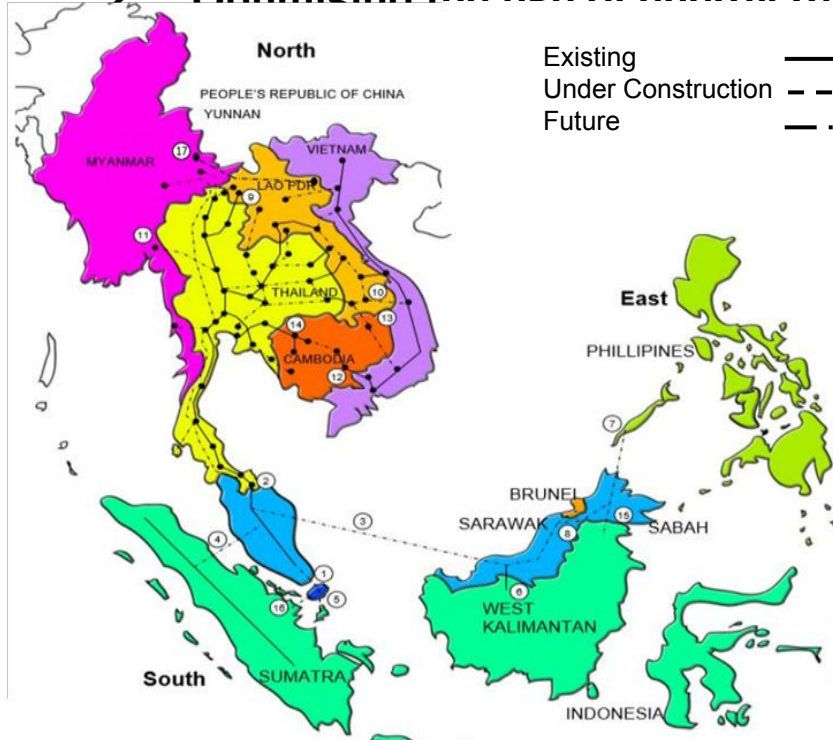
ASEAN Power Grid (APG)

In ASEAN, there is a need to simultaneously achieve: (1) energy security, (2) affordable electricity, and (3) decarbonisation, in response to the growing demand for electricity driven by economic growth and the global shift towards decarbonisation.

APG is expected to bring the following benefits:

1. **Promoting a more efficient, economical, and secure operation of power systems** through the harmonious development of national electricity networks in ASEAN via region-wide interconnections and cross-border trade of electricity.

2. **Optimising the use of energy resources** in the region: integration of RE with high-level of penetration, and required for the expansion of generation capacity.



Cross-border

Existing : 7,720MW
Ongoing : - 625 MW
Future : - 21,769 MW

Sub-regional

- Pilot project by Laos, Thailand, Malaysia, and Singapore (LTMS-PIP)
- Commenced in 2022. 100MW~300MW

Regional

APG Project (recently accomplished)

1. **A Study on an Enabling Agreement Amongst ASEAN Member States for Establishing Multilateral Power Trade (MPT)/ASEAN Power Grid (APG) Institutions**
 - The following functions will play crucial roles in facilitating the development of MPT and APG.
 1. **APG Generation and Transmission Planning Function (AGTP)**,
which oversees system planning, focusing on evaluating system supply reliability and monitoring the condition of each interconnection.
 2. **APG Transmission System Operator Function (ATSO)**,
which focuses on the operation and coordination of the power system interconnections.
 - ERIA has developed a study on **the outline and core content of what should be agreed upon between the ASEAN Member States to support the formation of functions for the**

Key Outcomes

Clarification of the required role of ATSO	
	Security of Supply
	Calculation of Available Transfer Capacities
	Transmission Wheeling Charges and Losses
	System Data Handling
	IT and SCADA Requirements
Clarification of the required role of AGTP	
	Planning Criteria
	Standard Planning Methodologies
	Transmission Expansion Planning
	Database of the Interconnected Power Systems
Roadmap to Establishing Facilitating Institutions	
	The Key Activities/Milestones for developing the ATSO and AGTP

APG Project

(ongoing)

2. APG to Embrace the Integration of New Technologies: Smarter, More Flexible, and More Resilient for a Low-Carbon Energy Transition

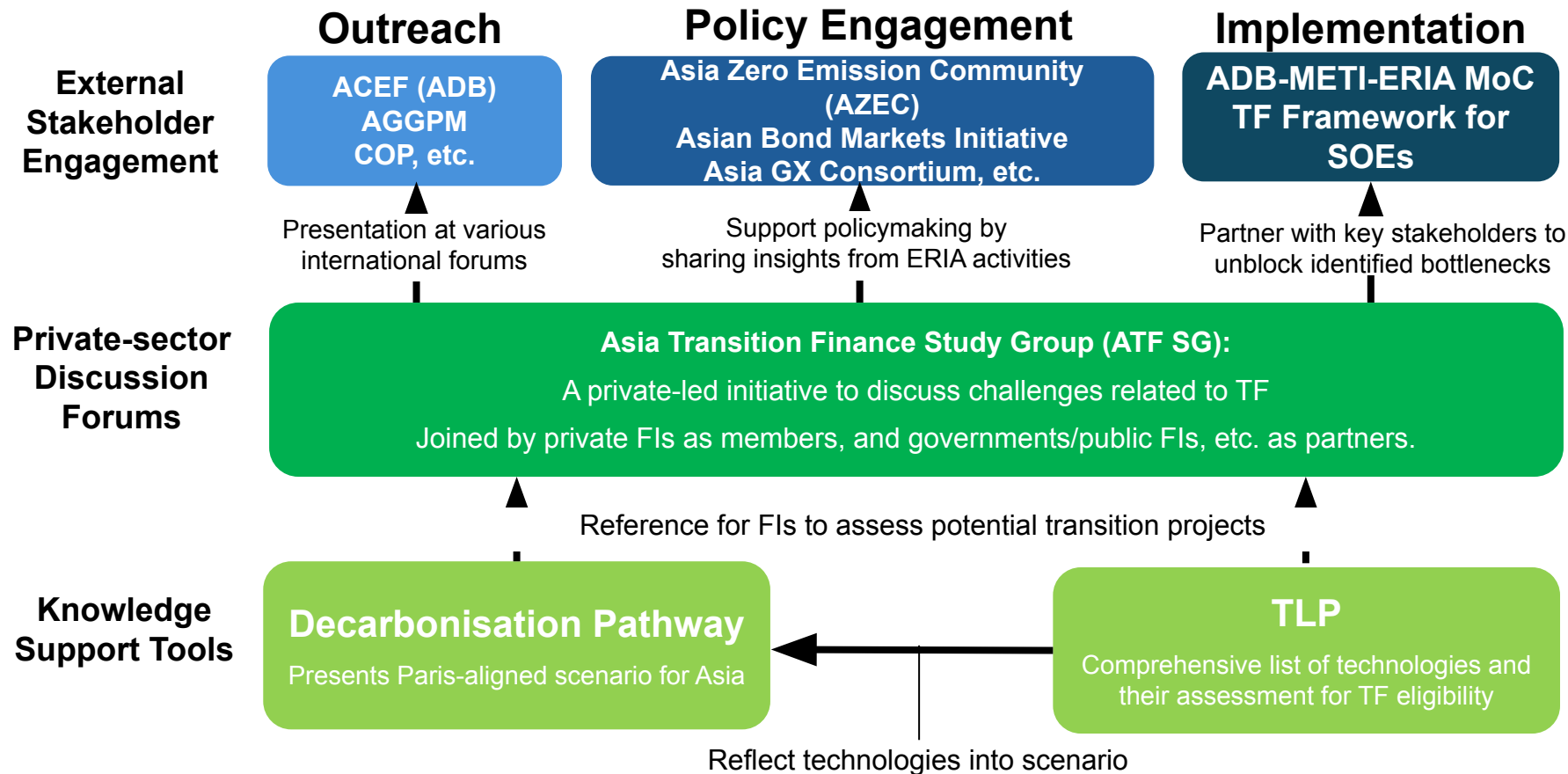
- The APG initiative requires modernisation and integration of transformative technologies.
- For example, the following categories of new technologies can each offer APG with enhanced efficiency or robustness in different aspects.
- The primary objective is to identify such new grid technologies that should be integrated under APG and summarise the challenges and recommendations for their implementation.

Potential new technologies

Category	Technology	Expected Benefits
Supply-Side Technologies (Smart Grid)	Real-time monitoring, data analytics, and advanced control systems	Improving the stability of the power grid and ensuring efficient integration of variable RE
	Information sharing platforms and coordinated operation protocols	Seamless real-time communication and collaborative grid management between interconnected ASEAN countries
AI Applications in the Power Sector	AI-powered demand forecasting	Resource allocation for optimal generation planning and cross-border trade
	AI algorithms	Optimising maintenance schedules by analysing data from sensors across APG to predict potential equipment failures
Smart and Efficient Trading	Blockchain's inherent security and transparency features	Direct peer-to-peer trade between producers and consumers across APG
	Blockchain-based smart contracts	Automated power trading and seamless integration of microgrids and distributed energy resources (DERs)
Innovative Energy Storage Technologies	Energy storage solutions such as batteries and pumped hydro	Improving cross-border grid stability by smoothing out the intermittency of RE
	Battery Electric Vehicles and Vehicle-to-Grid Technology	

Overview of ERIA's Activities on Transition Finance

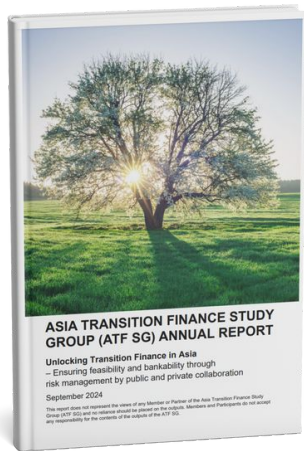
With the Asia Transition Finance Study Group (ATF SG) as the centre of activities, we are promoting stakeholder engagement by providing knowledge support tools and discussion forums.



Our activities (ATF SG, TLP, and Decarbonisation Pathway) are featured in the 'ASEAN Transition Finance Guidance'

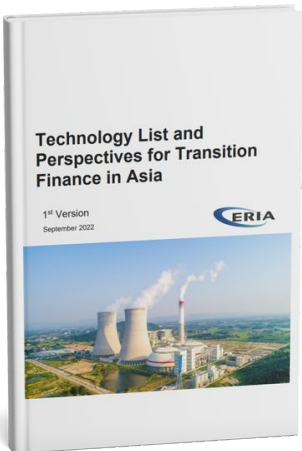


Transition Finance: Recent Outcomes



Asia Transition Finance Study Group (ATF SG) Annual Report

- In 2024, the Study Group focused on how to make transition projects feasible and bankable, which was the fundamental issue identified through past activities.
- This report introduces the risk landscape of transition projects and shares potential risk allocation methodologies, including blended finance, insurance, and hypothetical case studies of risk management.



Technology List and Perspectives (TLP) for Transition Finance in Asia

- TLP provides a fact-based overview and a framework for assessing the suitability of transition technologies for financing.
- Expanding the sector and technology coverage of the first version, the second version provides a comprehensive list of potential sustainable and transition technologies across all sectors for both energy-related and non-energy related emissions.

Aligning with the **ASEAN Community Vision 2045 Agenda**

ERIA's Vision: To harmonise carbon pricing policies across ASEAN

- Lead the development of guidelines for harmonised carbon pricing systems
- Build technical capacity for carbon trading and market development
- Facilitate knowledge sharing and promote best practices across member states

Focus Areas:

- Policy harmonisation, carbon accounting, monitoring and verification systems, and stakeholder engagement

Accelerating ASEAN's decarbonization: holistic and sustainable approach to energy transition

Challenges to be Addressed

Addressing insufficient investment attractiveness and increasing pressure to disclose financed emissions

Addressing delay in expansion of VRE

Addressing energy security concerns

Addressing locked-in emissions from conventional assets

Necessary Investment Themes



Scaling up renewables
Continued focus on maximizing adoption of zero emission



Building enabling green infrastructure
Building critical infrastructure and storage for sustainable growth and energy security



Decarbonising high-emitting and hard to abate assets
Supporting the transition to low-carbon operations for high-emitting assets across Power and Industry

Continued green growth by itself is not enough to fulfill all four necessary requirements

It is necessary to deploy **all three investment themes jointly**:

- Scaling up renewables
- Building green infrastructure
- Decarbonizing high-emitting and hard to abate assets

ERIA's Activities in Meeting the ASEAN Community Vision 2045

Carbon Trading Guidelines

- Harmonisation of carbon pricing and trading mechanisms across ASEAN
- Integration of carbon pricing into national and regional climate strategies
- Fostering carbon market development and tradeable carbon credits

Key Components:

- Sectoral emission caps and pricing mechanisms
- Monitoring, reporting, and verification (MRV) systems
- Carbon accounting and compliance

frameworks

Transition Finance

Framework

- Promoting transition finance frameworks and engage stakeholders.
- Building technical capacity for implementing carbon pricing and sharing best practices.
- Promoting risk mitigation strategies, including insurance and public-private financial collaboration

Scenario Development for

Decarbonisation

- Defining decarbonisation scenarios highlight challenges for financial institutions, balancing environmental and economic sustainability.
- Interpretation of global scenario—how to align with Global Net-Zero Goal and country-specific Nationally Determined Contributions (NDCs)



Our Aspiration

**Empowering Asia's Sustainable
Future:**

Collaborate, Innovate, and Lead the
Pathways ~~to Zero~~ Emissions