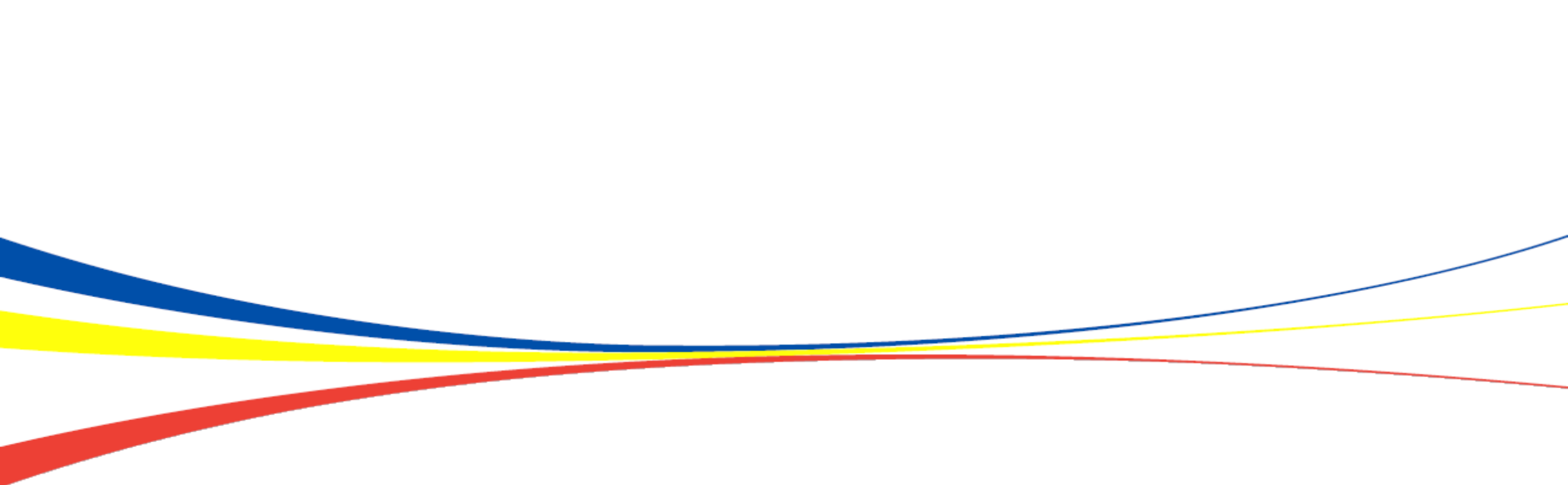




ASEAN Power System Transformation and ASEAN-China Way Forward on Low Carbon Energy Transition

New Type of Power System Enabling a highly Efficient, Safe and Low-Carbon Energy Future - Insights from China and ASEAN
Singapore International Energy Week (SIEW), 26 October 2023

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**One Community
for Sustainable
Energy**



Introduction

Established on 1 January 1999, the ASEAN Centre for Energy (ACE) is an intergovernmental organisation within the Association of Southeast Asian Nations' (ASEAN) structure that represents the 10 ASEAN Member States' (AMS) interests in the energy sector.



ACE shall accelerate the integration of **energy strategies** within ASEAN by providing relevant information and expertise to ensure the necessary energy policies and programmes are in **harmony** with the **economic growth** and the **environmental sustainability** for the region.



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 on:

- Policies
- Legal & Regulatory Frameworks
- Technologies
- Innovative Solutions

Regional blueprint for the energy cooperation in the ASEAN

ASEAN Plan of Action for Energy Cooperation (APAEC) 2016-2025 Phase 2: 2021-2025

- Theme: “Enhancing Energy Connectivity and Market Integration in ASEAN to Achieve Energy Security, Accessibility, Affordability and Sustainability for All”.
- Sub-theme: “Accelerating Energy Transition and Strengthening Energy Resilience through Greater Innovation and Cooperation.”

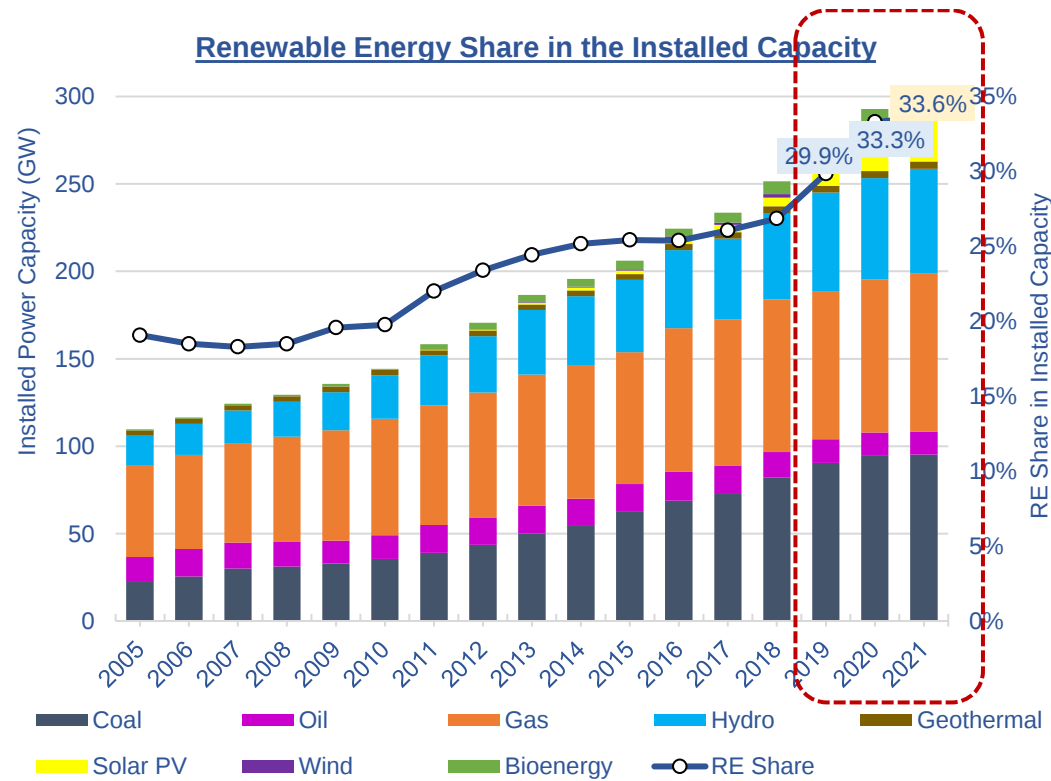


ASEAN PLAN OF ACTION FOR ENERGY
COOPERATION (APAEC) 2016-2025
PHASE II: 2021-2025

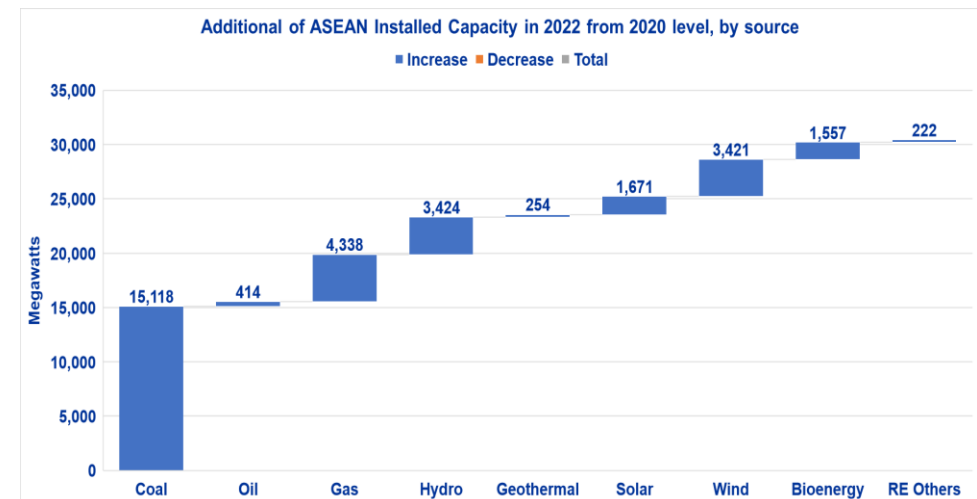


 ASEAN Power Grid	To expand regional multilateral electricity trading, strengthen grid resilience and modernisation, and promote clean and renewable energy integration.	 Energy Efficiency and Conservation	To reduce energy intensity by 32% in 2025 based on 2005 levels and encourage further energy efficiency and conservation efforts, especially in transport and industry sectors.
 Trans-ASEAN Gas Pipeline	To pursue the development of a common gas market for ASEAN by enhancing gas and LNG connectivity and accessibility.	 Renewable Energy	To achieve aspirational target for increasing the component of renewable energy to 23% by 2025 in the ASEAN energy mix, including through increasing the share of RE in installed power capacity to 35% by 2025.
 Coal and Clean Coal Technology	To optimise the role of clean coal technology in facilitating the transition towards sustainable and lower emission development.	 Regional Energy Policy and Planning	To advance energy policy and planning to accelerate the region's energy transition and resilience.
		 Civilian Nuclear Energy	To build human resource capabilities on nuclear science and technology for power generation.

ASEAN is progressing to add more renewable capacity

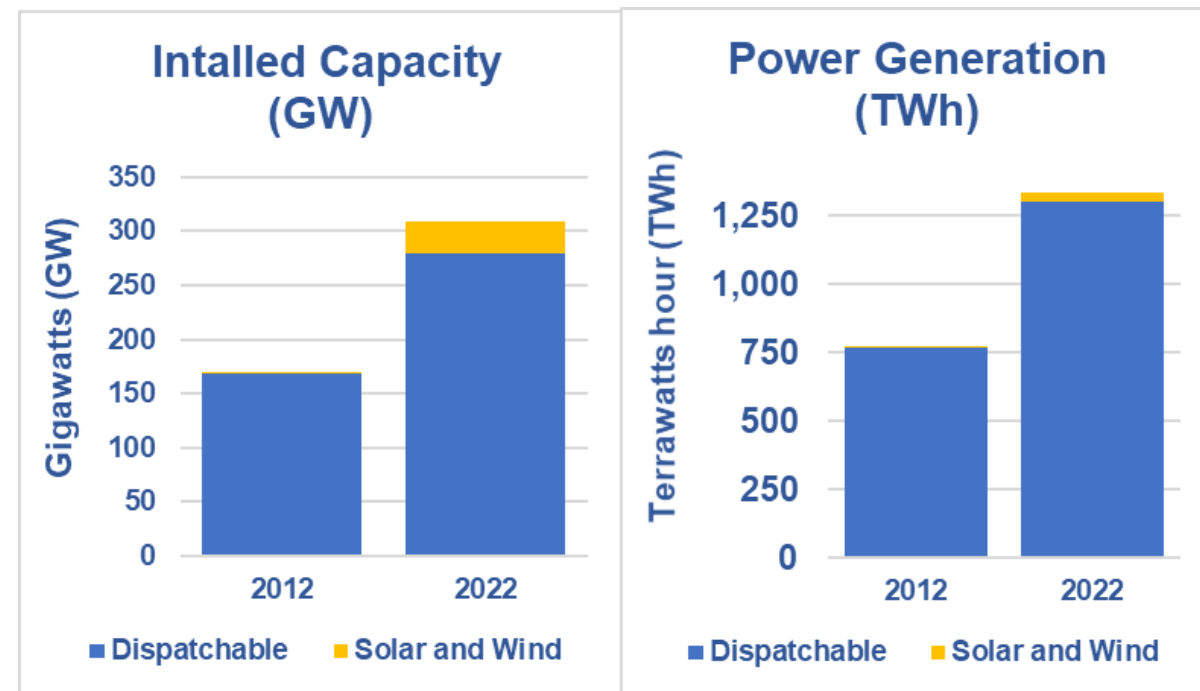


On track to go beyond **35% renewable energy in the installed capacity by 2025** but must carefully address the short-term disruption.

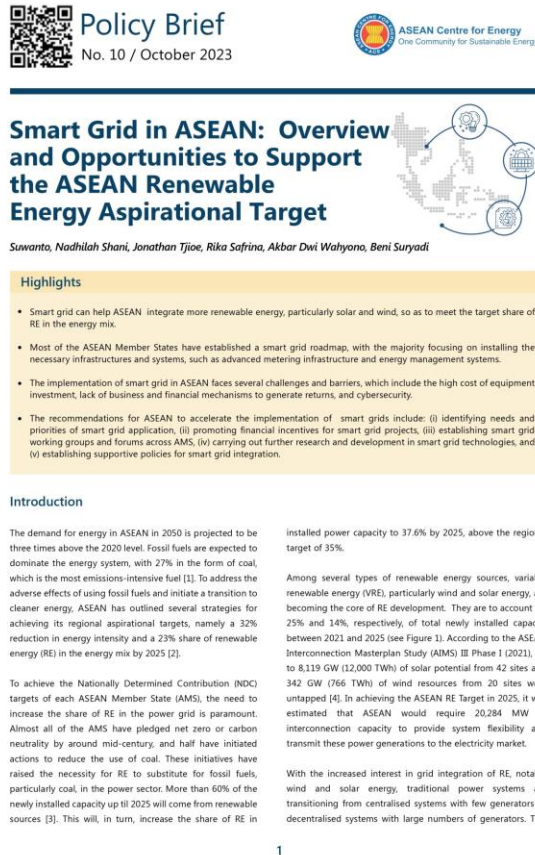


But more is needed to translate capacity into generation

- Even though RE share in installed capacity reached 33.08%, the RE share in power generation was only at 24.71% level
- In 2012 the majority of installed capacity, approximately 99.86% was comprised of energy sources that could be readily dispatched. This dominance also evident in the energy generated with over 99.92%.
- A decade later, solar and wind energy saw massive expansion with their share in installed capacity around 29 GW (almost 125 times to the levels seen in 2012). By 2022, wind and solar energy accounted for roughly 9.76% of the total installed capacity. However, their contribution to the total electricity generation was only 2.4%.

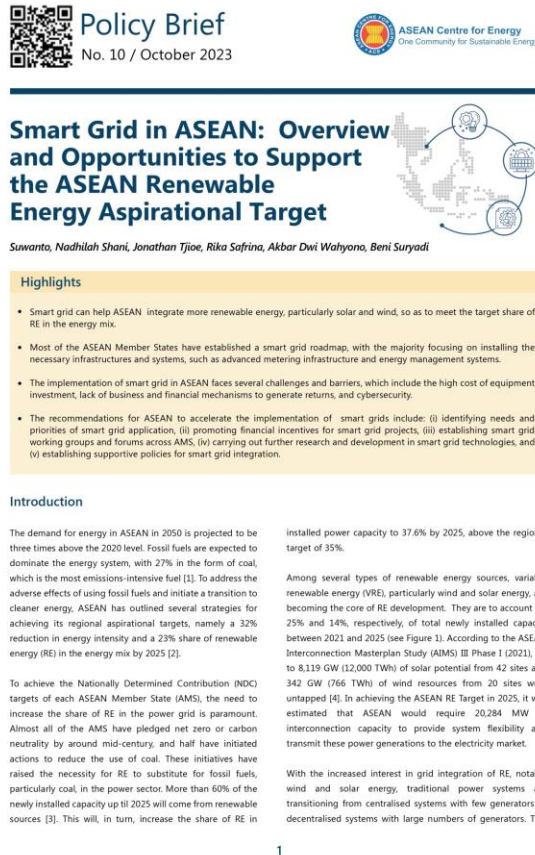


Smart Grid to improve flexibility of the power system



- With the increased interest in grid integration of RE, notably wind and solar energy, traditional power systems are transitioning from centralised systems with few generators to decentralised systems with large numbers of generators.
- This evolution has resulted in a higher degree of complexity, especially at the grid level. Moreover, due to variable power output and the typical installation of VRE on the lower voltage level, effective coordination and optimization become crucial, especially considering the high number of units involved.
- Therefore, traditional power grids need to shift to a modernised power grid where intelligent monitoring, control and supply-demand optimisation are possible to efficiently deliver sustainable, economic and secured electricity supplies.

Opportunity to Support the ASEAN Renewable Energy Target



- Smart grid can help ASEAN integrate more renewable energy, particularly solar and wind, so as to meet the target share of RE in the energy mix.
- Most of the ASEAN Member States have established a smart grid roadmap, with the majority focusing on installing the necessary infrastructures and systems, such as advanced metering infrastructure and energy management systems.
- The implementation of smart grid in ASEAN faces several challenges and barriers, which include the high cost of equipment investment, lack of business and financial mechanisms to generate returns, and cybersecurity.
- The recommendations for ASEAN to accelerate the implementation of smart grids include: (i) identifying needs and priorities of smart grid application, (ii) promoting financial incentives for smart grid projects, (iii) establishing smart grid working groups and forums across AMS, (iv) carrying out further research and development in smart grid technologies, and (v) establishing supportive policies for smart grid integration

ASEAN-China Cooperation on Low Carbon Energy Transition



ASEAN China Clean Energy Cooperation Center (ACCEC)





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