

EGEEC 66 & EGNRET 64 Joint Meeting

Enhancing Resilience of Energy Systems in Alignment with BCG Economy Model

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Status of NDC 3.0 Submissions to the UNFCCC Secretariat



At present, there are 195 Parties to the Paris Agreement, and 129 countries have already submitted their NDC 3.0 to the secretariat of the UNFCCC.

<p>Brazil</p> <ul style="list-style-type: none"> • Net Zero 2050 • Target to reduce GHG emissions by 59–67% by 2035 	<p>UK</p> <ul style="list-style-type: none"> • Net Zero 2050 • Target to reduce GHG emissions by 81% by 2035 	<p>USA</p> <ul style="list-style-type: none"> • Net Zero 2050 • Target to reduce GHG emissions by 61–66% by 2035 <p>Withdrawn from the Paris Agreement on 7 Jan 2026</p>	<p>Japan</p> <ul style="list-style-type: none"> • Net Zero 2050 • Target to reduce GHG emissions by 60% by 2035 and 73% by 2040 	<p>China</p> <ul style="list-style-type: none"> • Net Zero 2060 • Target to reduce GHG emissions by 7–11% by 2035 under an absolute emissions target 	<p>South Korea</p> <ul style="list-style-type: none"> • Net Zero 2050 • Target to reduce GHG emissions by 53–61% by 2035
<ul style="list-style-type: none"> • Net Zero 2050 • Target to reduce net GHG emissions by 62–70% 	<ul style="list-style-type: none"> • Net Zero 2050 • Target to reduce emissions by 66.25% to 72.5% compared with 1990 levels 	<ul style="list-style-type: none"> • Net Zero 2050 • Target to reduce GHG emissions by 40–50% by 2035 	<ul style="list-style-type: none"> • Net Zero 2050 • Target to reduce GHG emissions by 66.25–72.5% by 2035 	<ul style="list-style-type: none"> • Net Zero 2050 • Target to reduce GHG emissions to 364–404 MtCO₂e (Uncon.) and 332–363 MtCO₂e (Con.) 	<ul style="list-style-type: none"> • Net Zero 2050 • Target to reduce GHG emissions by at least 65% by 2035 compared with 1990 levels
<p>Australia</p>	<p>EU</p>	<p>Canada</p>	<p>Germany</p>	<p>Mexico</p>	<p>Switzerland</p>





Net-Zero Commitments in SE Asia



Thailand

- Net Zero 2050
- Submitted NDC 3.0
- Absolute GHG emission reduction
- Economy-wide

Singapore

- Net Zero 2050
- Submitted NDC 3.0
- Absolute GHG emission reduction
- Economy-wide

Malaysia

- Net Zero 2050
- According to the Twelfth Malaysia Plan
- Absolute GHG emission reduction
- Economy-wide

Vietnam

- Net Zero 2050
- According to the statement at COP 26
- Business as Usual (BAU)
- Economy-wide

Lao PDR

- Net Zero 2050
- Under NDC 2.0
- Absolute GHG emission reduction
- Economy-wide

Brunei

- Net Zero 2050
- According to the statement at COP 26
- Business as Usual (BAU)
- Economy-wide

- Net Zero 2050
- Submitted NDC 3.0
- Business as Usual (BAU)
- Economy-wide

Cambodia

- Net Zero 2040
- Through the Net Zero Target for Forestry and Other Land Use
- Sector: LULUCF
- Business as Usual (BAU)

Myanmar

- Net Zero 2060
- Submitted NDC 3.0
- Absolute GHG emission reduction
- Economy-wide

Indonesia

- Business as Usual (BAU)
- Economy-wide

Philippines

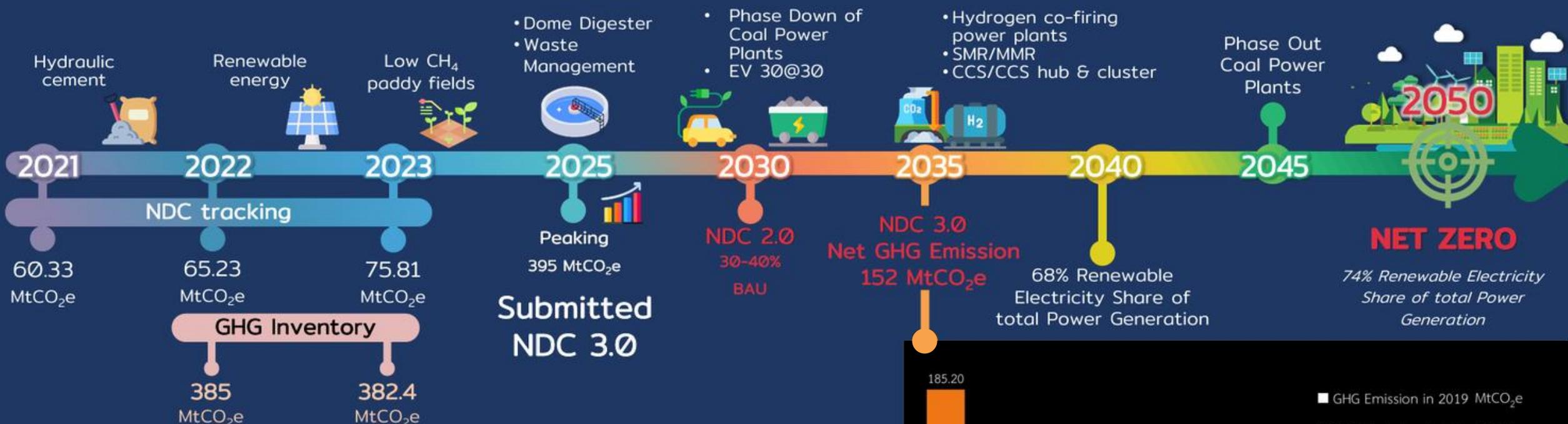
- Business as Usual (BAU)
- Promotes renewable energy and increases forest area

Timor-Leste





Thailand's Next Move : Net-Zero 2050



NDC Action Plan 2021 -2030

**The Cabinet approved on December 11, 2024.*

Domestic 184.8 MtCO₂e (33.3%)

Support 35.7 MtCO₂e (6.7%)

Article 6 of the Paris Agreement Maximum of 3%

- Consider retaining at least 10% of cumulative carbon credits during the transfer period
- Deduct this amount from the carbon credits to be transferred in the final year (NDC target year).



Energy



Transport



IPPU



Waste



Agriculture



124.6 MtCO₂e (22.5%)



45.6 MtCO₂e (8.2%)



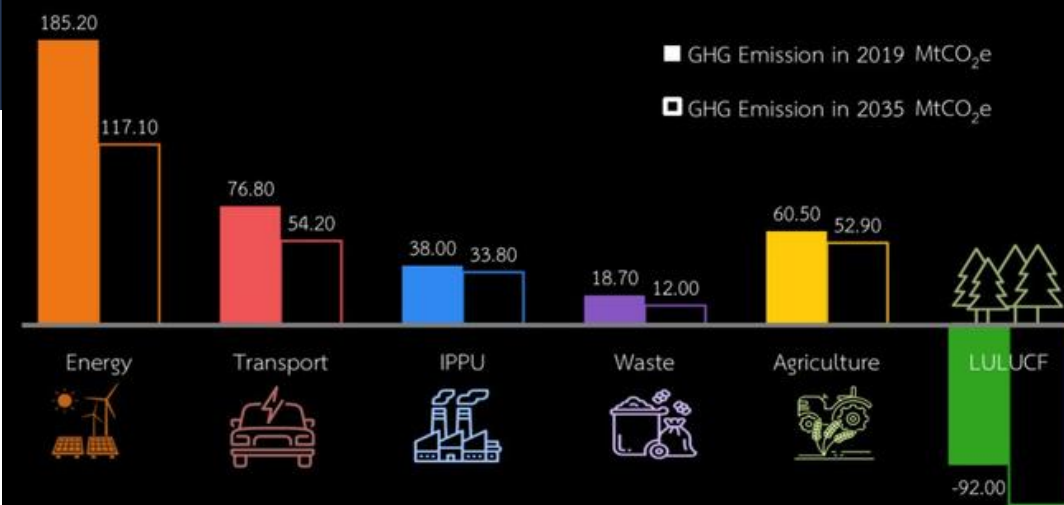
1.4 MtCO₂e (0.3%)



9.1 MtCO₂e (1.6%)



4.1 MtCO₂e (0.7%)



**The Cabinet approved NDC 3.0 on November 4, 2025, and has submitted it to the UNFCCC Secretariat.*

APEC's Sustainability Framework under the Putrajaya Vision 2040

CORE DIRECTION

- Reaffirms APEC's commitment to **strong, balanced, secure, sustainable and inclusive growth** in the Asia-Pacific.
- Positions the **Bangkok Goals** as a roadmap to advance sustainability and inclusion through the **Bio-Circular-Green (BCG) Economy model**.
- Emphasizes the use of **technology, innovation, resource efficiency, and waste reduction** to support long-term prosperity.

KEY ENABLING FACTORS

- Agile regulatory frameworks and enabling business environment
- Capacity building, technology transfer, and workforce upskilling
- Quality infrastructure, finance, innovation, and digitalization
- Multi-stakeholder collaboration across public, private, academic, and regional networks

PRIORITY GOALS

Address environmental and climate challenges

- 1** Promote climate mitigation, adaptation, resilience, clean and low-carbon energy, sustainable food systems, and climate finance.

Advance sustainable and inclusive trade and investment

- 2** Strengthen resilient supply chains, environmental goods and services, ESG practices, and MSME competitiveness.

Promote environmental conservation and biodiversity

- 3** Support marine and coastal protection, tackle IUU fishing, reduce marine debris, and combat illegal logging.

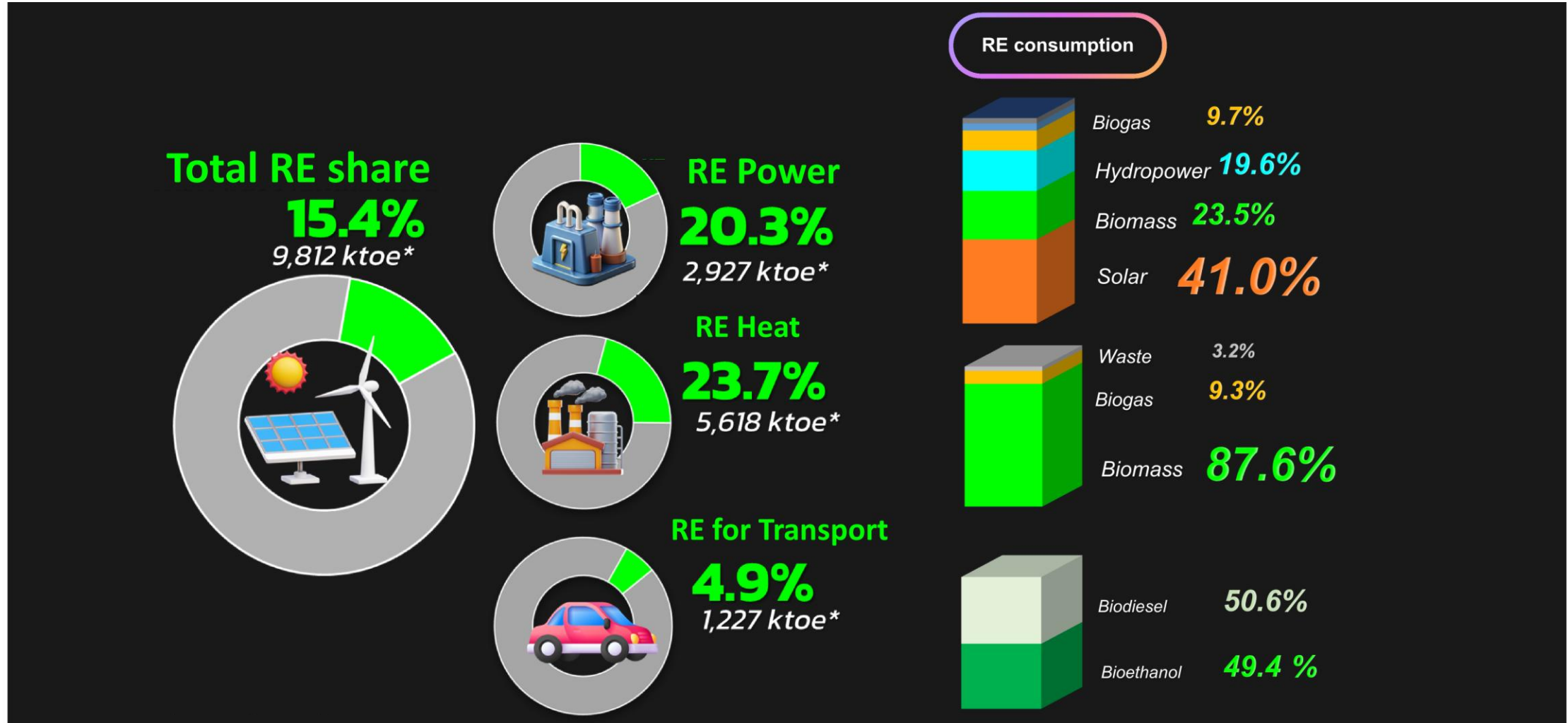
Improve resource efficiency and sustainable waste management

- 4** Accelerate circular economy approaches, sustainable production and consumption, and progress toward zero waste.

IMPLEMENTATION NOTE

APEC committees and sub-fora are tasked with integrating the agenda into their workplans, while Senior Officials monitor progress.

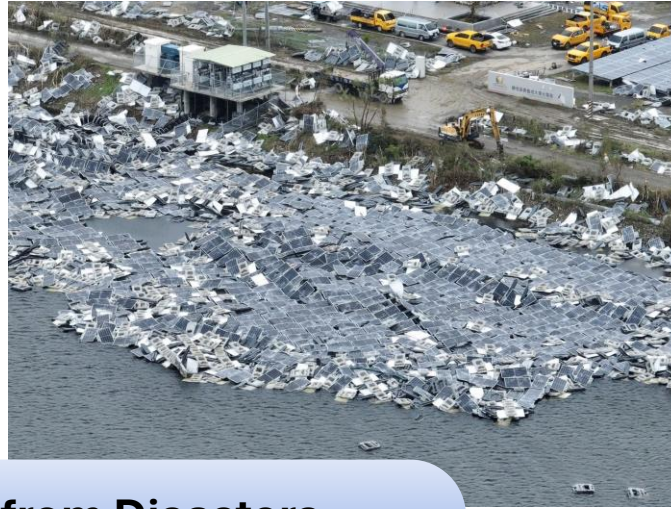
Increase in RE to Support BCG Economy Model



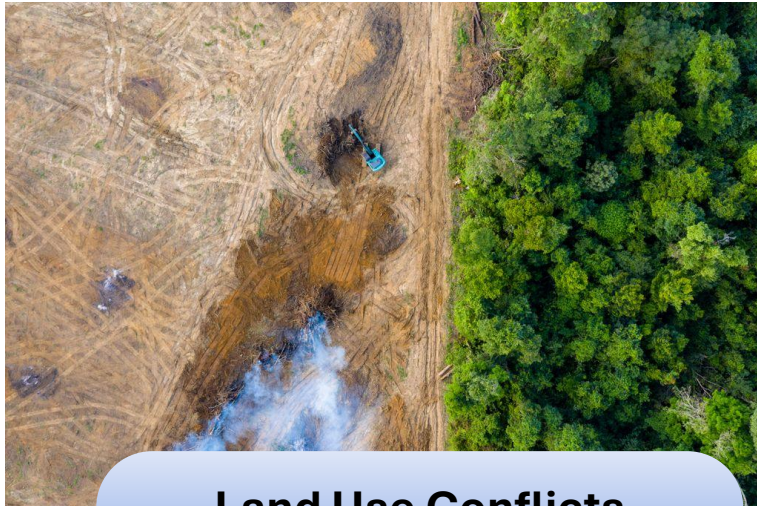
Emerging Risks from Increasing RE Share



Severe Impact from Disasters



Battery Safety Issues

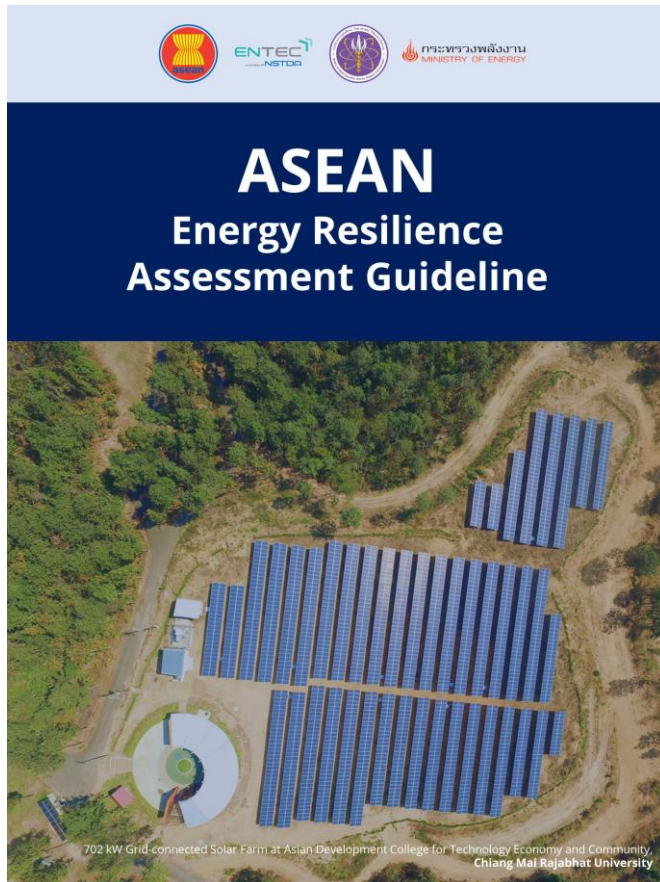


Land Use Conflicts



Grid Instability

ASEAN Energy Resilience Assessment Guideline



Guideline Approval and Endorsement

- On 4 October 2022, **Sub-Committee on Sustainable Energy Research (SCSER)** endorsed the ASEAN Energy Resilience Assessment Guideline for its development.
- On 19 October 2022, **ASEAN Committee on Science, Technology, and Innovation (COSTI)** approved the ASEAN Energy Resilience Assessment Guideline for its recognition at the 82nd Meeting of ASEAN Committee on Science, Technology, and Innovation (COSTI-82)

Guideline Unofficial Update

- On 26 January 2026, National Energy Technology Center (ENTEC) **updated contents including risk concept, risk/impact chain, and adaptive resilience curve** on the ASEAN Energy Resilience Assessment Guideline and **re-created a brief version** to support trainings.

Development of the Guideline

Four Pilot Energy Resilience Assessments | renewable energy types, various power plants and location



702-kW on-grid solar power plant at CMRU, Chiang Mai | state-owned power plant



4.9-MW on-grid biomass power plant at Ban Khao Noi, Phitsanulok | commercial power plant



100-kW microgrid at Ban Pha Dan, Lamphun | rural microgrid



Biogas power plant with 60-kVA generator at Ban Kham Khaen, Khon Kaen | community plant

Application of the Guideline



Universiti Teknologi MARA (UiTM)

50MW_{AC} large-scale solar photovoltaic power plant in Gambang, Malaysia



2.8MW_{AC} solar rooftop and solar integrated carpark in UiTM Penang, Malaysia

Application of the Guideline



25MW_{AC} large-scale solar photovoltaic power plant in Pasir Gudang, Malaysia



1.6MW_{AC} solar rooftop and solar integrated carpark in UiTM Terengganu, Malaysia



Article

Adaptive Resilience Curve: Examining Adaptability for Resilient Energy Infrastructure

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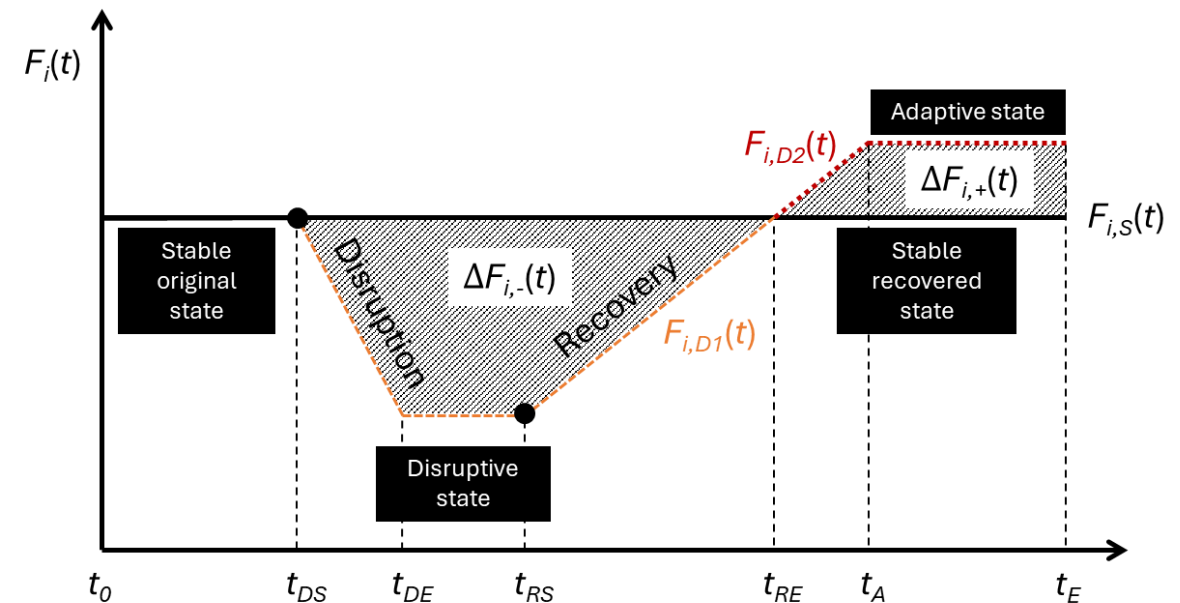
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Abstract

One key aspect of the Global Goal on Adaptation is to examine transformational adaptation at different scales and sectors. While there are several adaptation assessment frameworks in the energy sector, there is still room for further development to properly capture and quantify the adaptability of energy infrastructure against climate change. Therefore, this study aims to define a definition for the adaptability of resilient energy infrastructure and develop the adaptive resilience curve to quantify it. The study hypothesized and confirmed definition boundaries for the resilience, adaptation, and adaptability of resilient energy infrastructure and an adaptive resilience curve. Definitions of resilience and adaptation are often interchangeably used, yet differences were found. Common keywords extracted from definitions of resilience and adaptation were utilized to define the adaptability of resilient energy infrastructure. The adaptive resilience curve was formulated, borrowing attributes from concepts contributing to adaptability, including global catastrophic risk, beyond design basis accident, and foresight. The definition for the adaptability of resilient energy infrastructure sets a common ground for the understanding of the concept, on which the adaptive resilience curve is developed to facilitate its visualization and quantification. The adaptive resilience curve can capture temporal change in the adaptability of resilient energy infrastructure under multiple scenarios using multiple figures-of-merit.

Keywords: adaptive resilience curve; definition; resilience; adaptation; energy infrastructure



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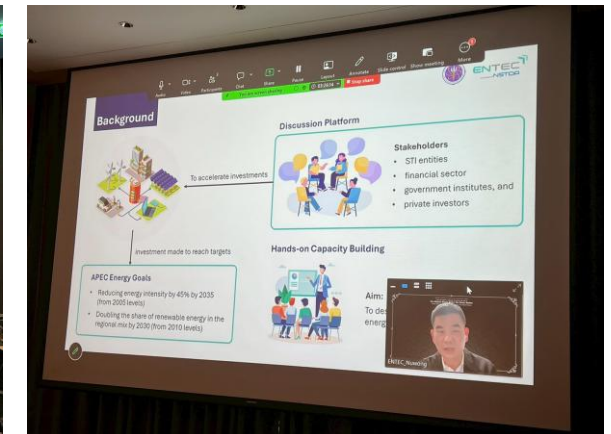
Received: 29 July 2025

Revised: 6 September 2025

Project on Energy Resilience | PPSTI 103 2025A

- **Project Title:** Capacity Building to Accelerate Investment on Energy Resilient Infrastructure towards APEC Energy Goals
- **APEC Forum:** Policy Partnership on Science Technology and Innovation (PPSTI)
- **Co-Proposing Forum:** Energy Working Group (EWG)
- **Fund Source:** APEC Support Fund (ASF): Energy Efficiency, Low Carbon and Energy Resiliency Measures (EELCER)
- **Proposing Economy:** Thailand
- **Co-Sponsoring Economies:** Indonesia; Japan; Korea; Chinese Taipei; Viet Nam; (Chile)
- **Budget:** 92,448 USD (APEC Funding) + 14,000 USD (Self-Funding) = 106,448 USD

- **Name:** APEC Forum on Capacity Building to Accelerate Investment on Energy Resilient Infrastructure towards APEC Energy Goals
- **Objectives of the forum**
 1. To align stakeholder expectations, and inform subsequent project implementation
 2. To strengthen collaborative engagement for EWG-PPSTI cross-fora cooperation
- **Venue, date and time:** Burirom Meeting room, Amari Bangkok Hotel on March 30, 2026, at 13:30-17:00
- **Co-hosts:** EGNRET Secretariat; Department of Alternative Energy Development and Efficiency (DEDE), Thailand; and National Energy Technology Center (ENTEC), Thailand
- **Number of participating participants and economies:** 20 participants from 6 economies



Concluding Remarks

Current global trend on **increase renewable energy share** in power generation align well with **Bangkok Goals on BCG Economy**.

Risks faced by renewable energy systems are different from those in conventional fossil fuel power plants.

ASEAN Energy Resilience Assessment Guideline was developed and can contribute to resilience enhancement of energy systems in APEC economies.

Thank You

for your attention

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