

Electricity Energy Transition in Thailand

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cigre

For power system expertise

TNC-CIGRE July 14, 2021

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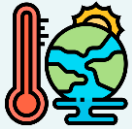
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Global Trend: Carbon Neutrality



Climate change



Rising of Global Temperature



Net Zero
Greenhouse Gas Emissions



Clean and Green Energy

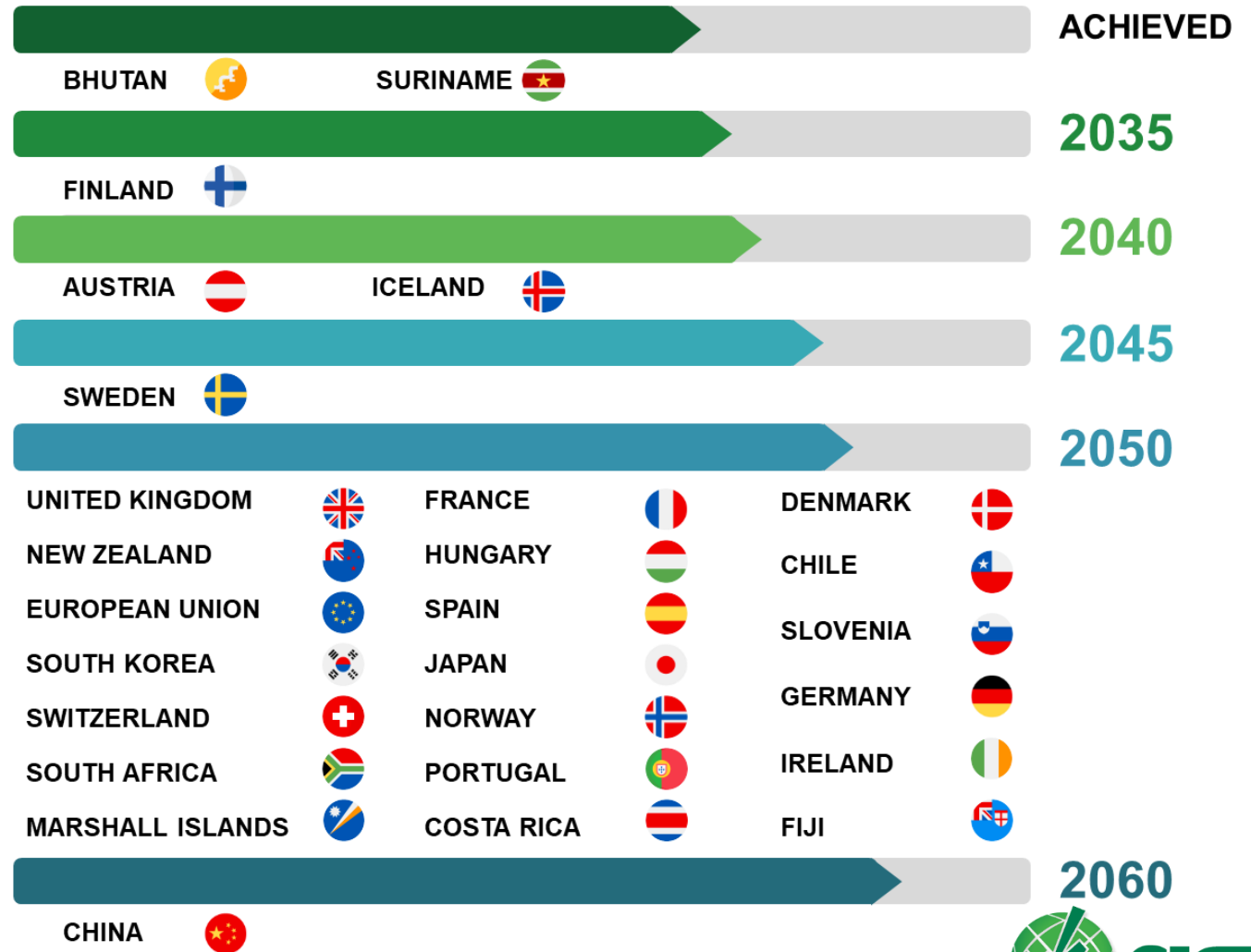
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Global Trend

Energy Policies of Thailand

EGAT Highlight Projects

NET ZERO EMISSIONS RACE



Global Trend: Carbon Neutrality

Global Trend

Energy Policies of Thailand

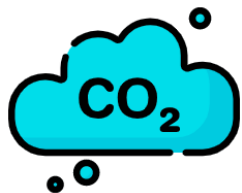
EGAT Highlight Projects

6 – Guideline from Ministry of Energy for GHG Emissions Reduction in Thailand



1

Low Carbon



2

Electric
Vehicles



3

Waste
Management



4

Low-Carbon
Products
and Services



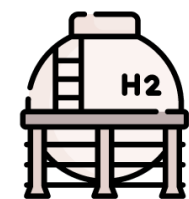
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Zero Burn and
Smart Farming



6

Capturing, Storing,
Utilizing and
Hydrogen Technology



4D1E Policy

01

Decarbonization

To promote RE, generate and consume power from solar energy, biomass, and biogas, including energy sector to absorb excess agricultural products for carbon reduction.

02

Digitalization

To upgrade the grid to smart grid, support the development of energy storage, strengthen stability for power plants community and large power plants. In order to make Thailand become Energy Hub of ASEAN.

03

Decentralization

To support power distribution via both inside and outside grid. By supporting electricity balancing in all regions.

04

Deregulation

To promote energy related start-ups, revise the regulations of the Energy Conservation and Promotion Fund to support energy business communities.

05

Electrification

To expand the electric vehicle network as well as electric vehicles.



Fossil to RE

2

Role of EGAT in Renewable Energy
EGAT RE Integration plays as a Hybrid Firm (floating solar with hydro approx. 3000MW)



1

Power System Firm
• EGAT Thermal Power Plant Project approx. 5000MW



First Generation



Second Generation

3

Grid Modernization
• **Prosumer:** Focusing on residential solar rooftop
• **RE:** Predicted to reach 28,000 MW in 2037



4

Energy Trading Platform

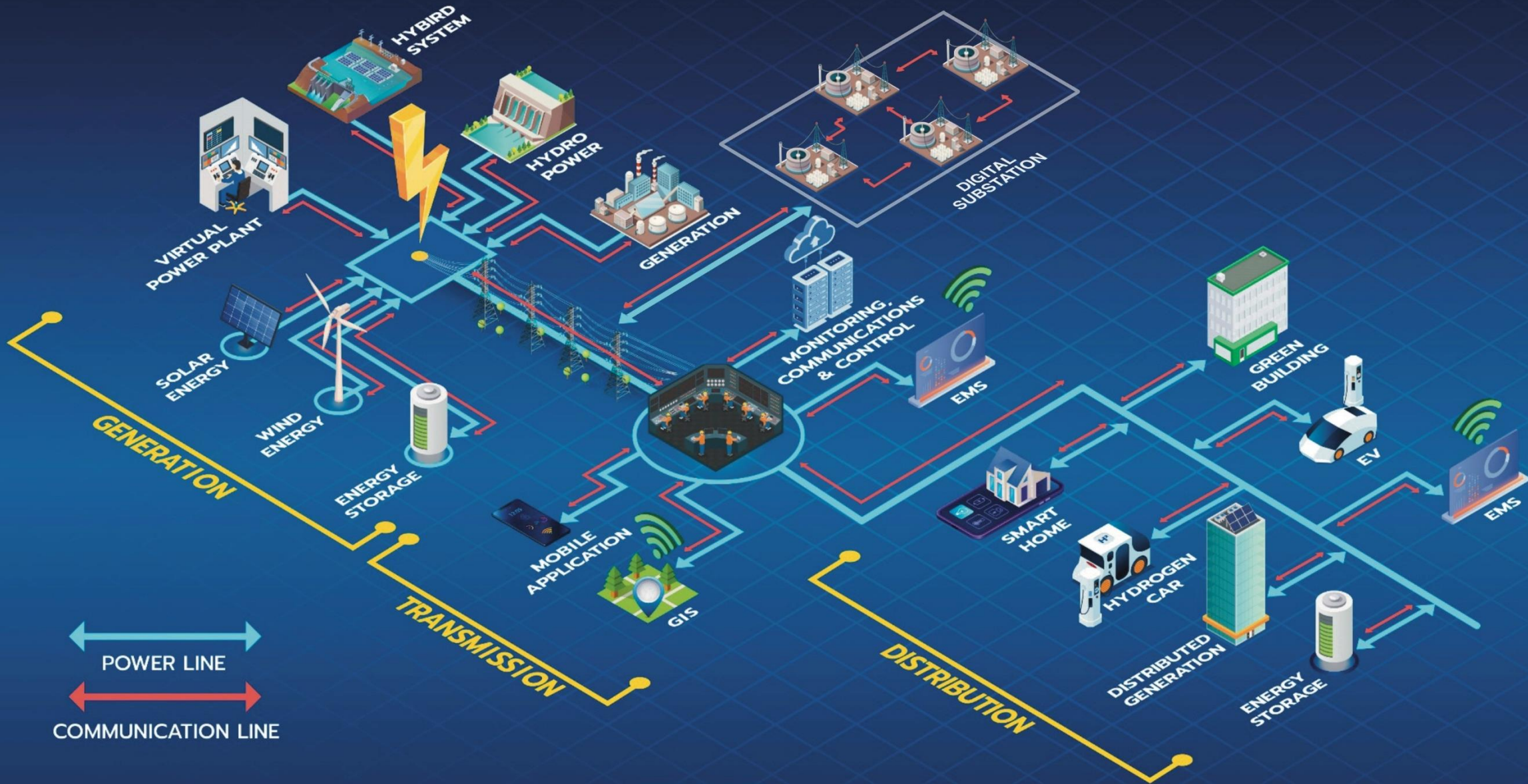
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ASEAN Power Grid
• Bilateral Power Trade
• Multilateral Power Trade



EGAT Highlight Projects: Grid – RE Integration

[DECARBONIZATION] [DECENTRALIZATION] [DIGITALIZATION] [ELECTRIFICATION]



EGAT Highlight Projects: Hydro-Floating Solar Hybrid

[DECARBONIZATION]



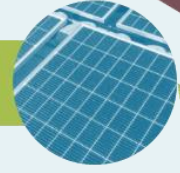
INFRASTRUCTURE

Use of existing EGAT's facility to optimize assets.



PV

Solar Panels: Double Glass



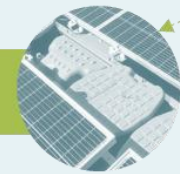
INVERTER

High efficiency with smart technology



FLOATER

HDPE UV Protection



MOORING

Less impact on the environment





POWER SOURCES

Firm Green Energy
Combination between solar and hydro to generate electricity controlled by Energy Management System (EMS)



ENVIRONMENT

- ▶ Reduce CO₂ (0.546 kg/kWh) 
- ▶ Reduce water evaporation (10,222 m³/yr/MW) depend on location 



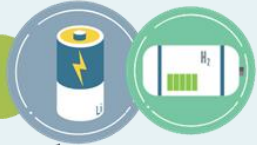
SOCIAL

- ▶ New landmark for community
- ▶ New energy learning Center
- ▶ Water resource management for sustainability



BESS

- ▶ Battery: Li-ion etc.
- ▶ Hydrogen



EGAT Highlight Projects: Pilot Green Energy Trading

[DECARBONIZATION] [DIGITALIZATION] [ELECTRIFICATION]



RE Firm



Non-Firm RE



Energy Storage System



EGAT SOLUTION PROVIDERS



Data Center

Providing services for Data Center with utilities and telecommunication networks



Green Energy Swapping /Balancing Power

To effectively drive the Green Energy Mechanism



EGAT's Highlights: EV Business Solutions

Global Trend

Energy Policies

EGAT's Direction

EGAT's Highlights

[DECARBONIZATION] [DIGITALIZATION] [ELECTRIFICATION]



EleXA



EleX by
EGAT



EGAT
Wallbox



BackEN



Mobile Application
Platform



Charging Station



EGAT Wallbox and
EGAT DC Quick Charger

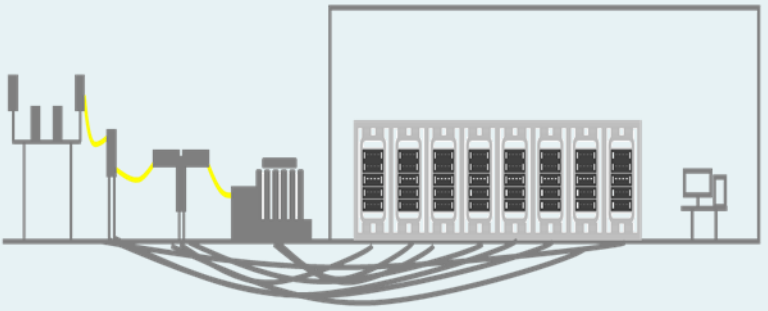


BackEN EGAT Network
Operator Platform

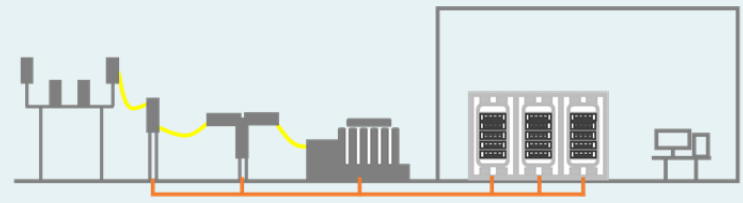
EGAT Highlight Projects: Digital Substation

[DECARBONIZATION] [DIGITALIZATION]

Conventional Substation



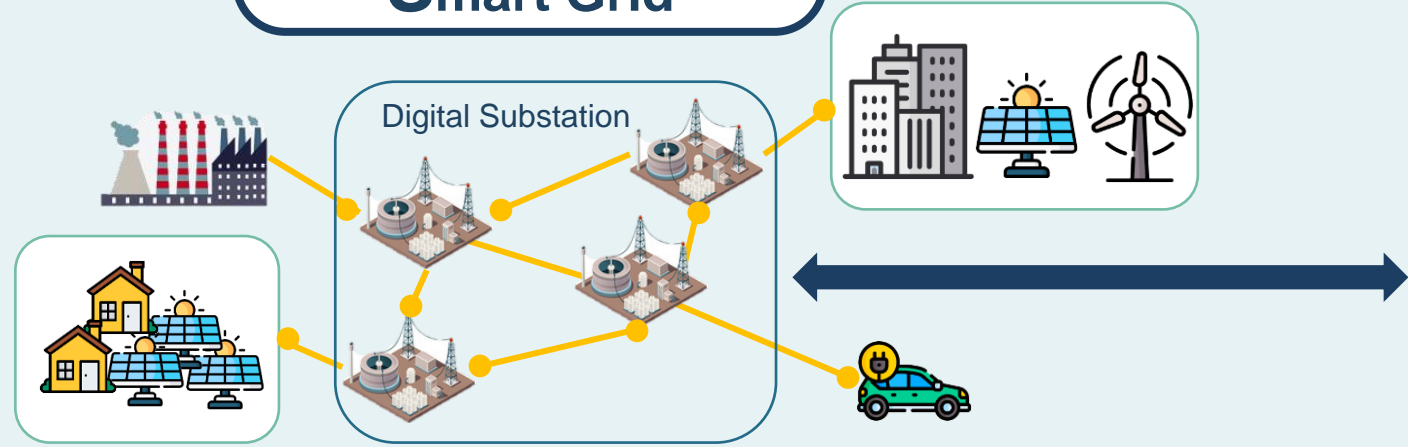
Digital Substation



Benefits of Digital Substation

- 01 Enhanced grid management
- 02 Improved asset management
- 03 Less installation time
- 04 Cost reduction

Smart Grid



Solutions

Enhance Grid Management/
Energy Management



EGAT Highlight Projects: Grid Connectivity

[DEREGULATION]

Strategic multilateral connectivity



- **LTM+S**
Laos PDR – Thailand – Malaysia + Singapore
- **ACMECS**
Aeyawadee-Chaopraya-Mekong Economic Cooperation Strategy
- **LTMM**
Laos PDR – Thailand – Myanmar
- **Cambodia**
- **GMS**
Greater Mekong Subregion
- **BIMSTEC**
Bay of Bengal Initiative for Multisectoral Technical and Economic Cooperation

Infrastructure

- East-west corridor
- 500 kV cross country

Regional power market

- **RPTCC**
Regional Power Trade Coordination Committee
- **ASEAN Power pool**
EGAT is ready to be the center of electricity management in ASEAN.

Benefits

- Energy Security
- Energy Access
- Investment Cost Saving
- Energy Resource Sharing
- Integration of RE
- Long-term Decarbonization

EGAT Highlight Projects: EGAT Reforestation Project

- Trees were planted in the area of **468,662 rai*** by EGAT
- More than **13.6 million tons of CO₂** accumulated or **453,645 tCO₂** annually have been absorbed



"We realized the importance of forest"

*1 Rai = 0.395 Acre

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Global Trend

Energy Policies of Thailand

EGAT Highlight Projects

(DECARBONIZATION)



- Up to **1,000,000 rai*** under Reforestation Project will be launched this year by EGAT

EGAT Highlight Projects: Energy Efficiency Label No.5



- Promoting the energy efficiency labeling for **22 products**
- Comprising the total of **435 million** labels

- The electricity of **31,868 million kWh** was accumulated saved (more than 3,400 million Baht was reduced from electricity bill annually)
- The avoided carbon dioxide emissions with the amount of **17.8 million tons CO₂** was achieved (111.3 million trees equivalent)



EGAT Highlight Projects: The Green Learning Room Project

Global Trend

Energy Policies of Thailand

EGAT Highlight Projects

(DECARBONIZATION)

*A Better World and Energy Efficiency
Starts with a Small but Big-hearted Persons*



Creating Positive Attitude

- 1 Energy conservation education and engagement
- 2 Creating shared values from school to communities
- 3 Promoting energy & resources efficiency
- 4 Developing energy awareness and behavioral change

464 schools in Thailand - EGAT has been providing knowledge on energy efficiency and environmental conservation activities to children, youth, and teachers.



Thank You