Securing Energy by Responding to Climate Change

October, 2024

Hirotaka Ishii
General Manager of Washington, D.C. office
Japan Organization for Metals and Energy Security

Japan's goals and strategies (Carbon Neutrality)

■ Speech by Prime Minister KISHIDA Fumio at the Guildhall in London (2022.5.5)

【Goals】

✓ Japan will achieve its international commitments to **carbon neutrality by 2050** and to **reduce greenhouse gas emissions by 46% by 2030**, while ensuring a stable energy supply.

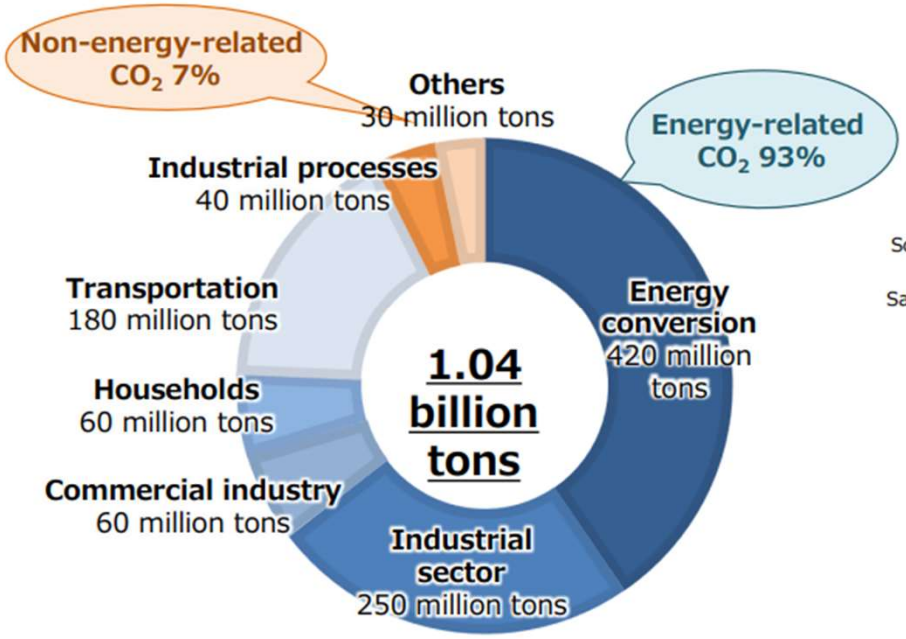
✓ To achieve these goals, **150 trillion yen in new investments** will be raised over the next decade through public-private collaboration, including 17 trillion yen in fiscal 2030.

Source: METI

Japan's CO2 emissions

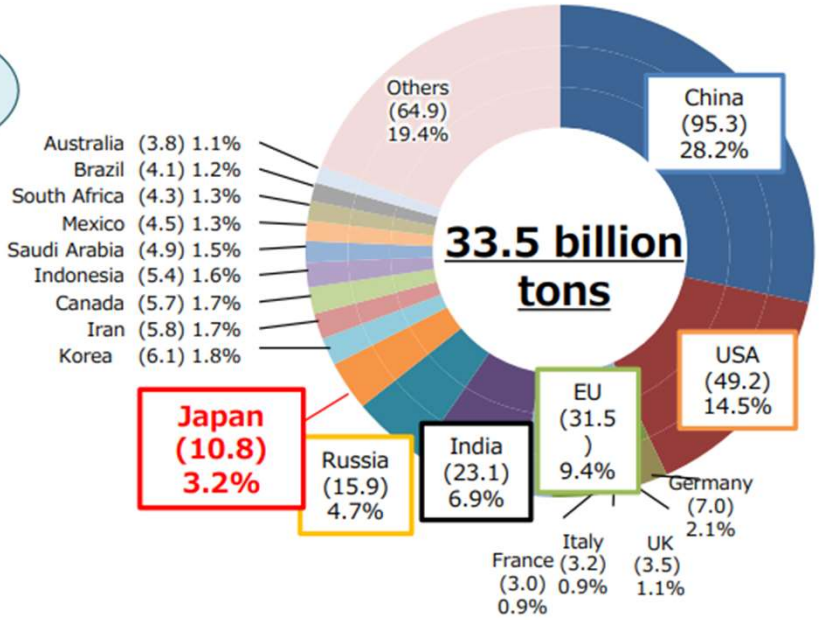
- In Japan, CO2 emissions from **power sector accounts for 40%**. Emission reduction from Industrial and other sectors are crucial towards carbon neutral.
- Japan will contribute to global emission reduction by providing solution for ourselves and beyond.

Japan's CO_2 emissions (2020)



(Source)
Created from Greenhouse Gas Inventory Office

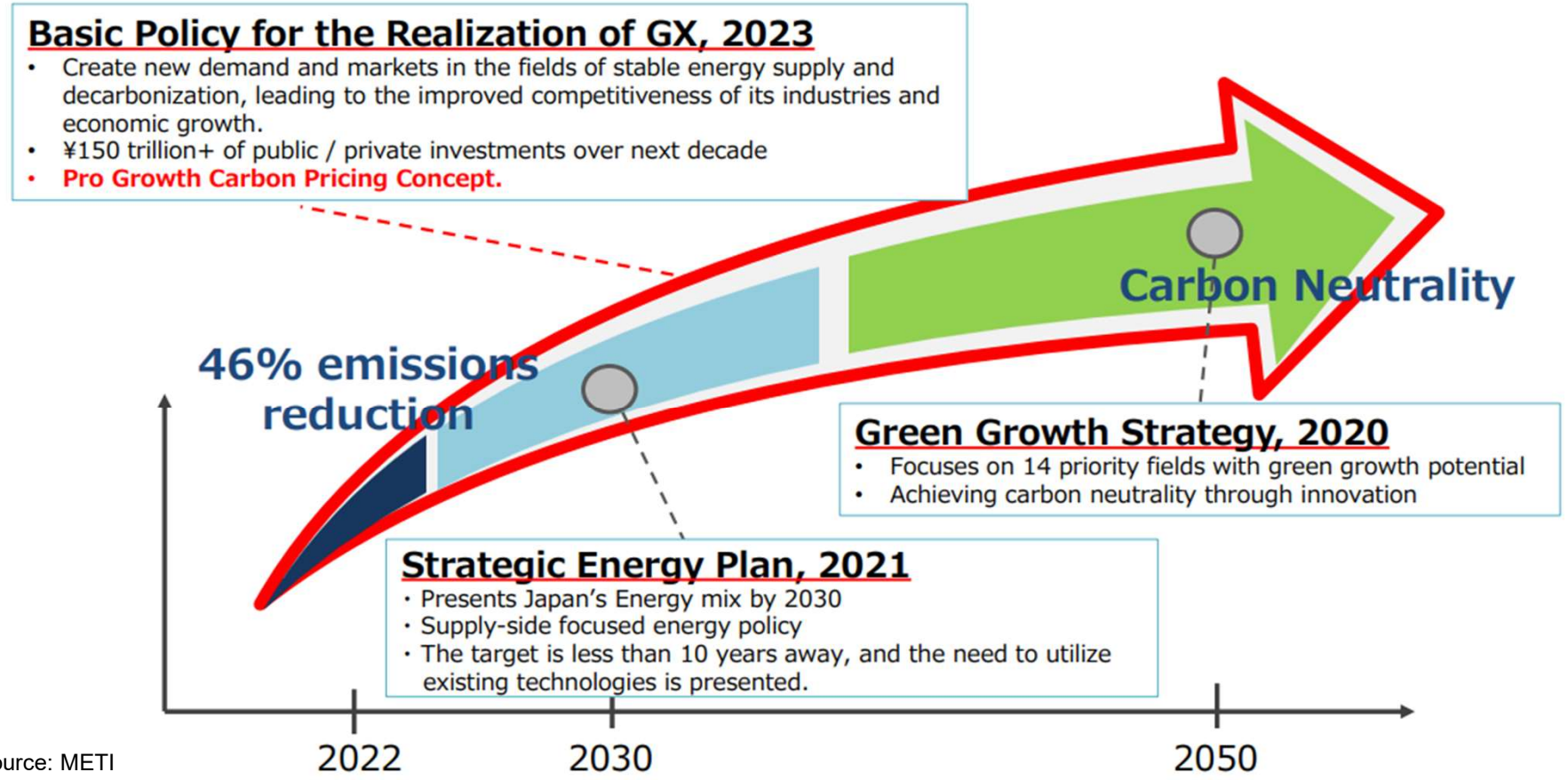
Global energy-related CO2 emissions (2020)



(Source) IEA, CO2 Emissions from Fuel Combustion Highlights 2020

Japan's Major Energy-Climate Policy packages

- Government of Japan announced the Basic Policy for the Realization of GX in February 2023. Relevant bills passed the Diet session in May.
- Green Transformation (GX) delivers both **emission reduction** and **economic growth.** Successful GX initiatives enhance competitiveness of companies and nations.



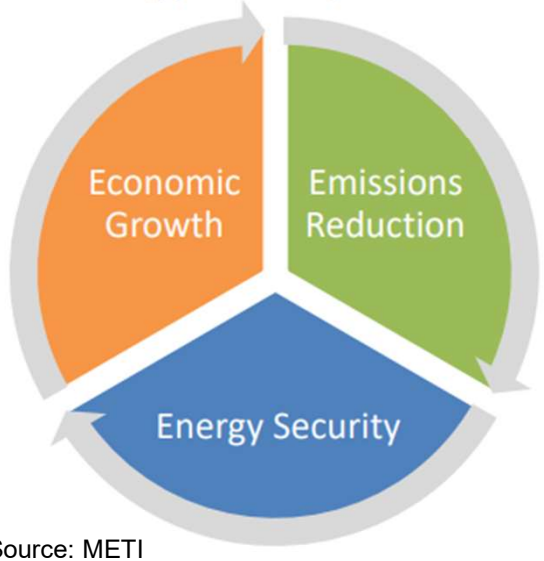
Source: METI

Three Principles of the Green Transformation

Triple breakthrough

Japan aims to simultaneously achieve

- Emissions Reduction
- Economic Growth
- Energy Security

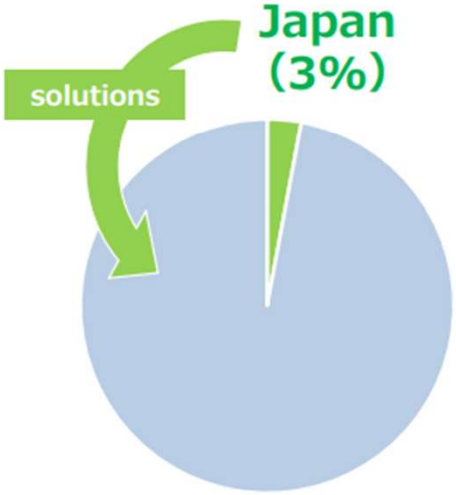


One goal, various pathways

Toward our common goal of achieving net zero, we will make practical energy transitions through various pathways depending on the circumstances of each country.

Solution to the world

Japan will decarbonize itself, but also contribute to global decarbonization by providing solutions outside Japan.



Source: METI

Japan Climate Transition Bond: where the funding is going

Examples of Use of Proceeds

Transformation of the manufacturing industry	✓ Development and introduction of innovative technologies such as hydrogen reduction ironmaking, transition to a carbon circular production system
GX of the transportation sector	✓ Support to the introduction of next-generation vehicles. ✓ Development of next-generation aircraft and zero-emission vessels
Promotion of carbon recycling / CCS	✓ Support to R&D on carbon-recycled fuel
Promotion of energy saving	✓ Introduction of insulated windows
Mainstreaming of renewable energy	✓ Support for next-generation solar cells (perovskite) and floating offshore wind
Next-generation innovative reactor	✓ Next-generation innovative reactors incorporating new safety mechanisms
Promotion of introducing hydrogen and ammonia	✓ Establishment of domestic and international supply chain ✓ R&D and support for hydrogen production from surplus renewable energy
Development of the electricity and gas markets	✓ Promotion of zero-emission thermal power generation ✓ Establishment of submarine DC power transmission

Source: METI

Three bills on Hydrogen, CCS and Offshore wind

- Toward a decarbonized society, efforts to promote the utilization of clean energy technologies such as **hydrogen, CCS, offshore wind power** are in progress.
- Japanese Cabinet has submitted three bills to the Diet:
  - ① **the Bill for the Act on Promotion of Hydrogen-Based Society*** → **Passed in May**
  - ② **the Bill for the Act on CCS Business***. → **Passed in May**
  - ③ **the Bill for promoting Offshore Wind in EEZ**. → **in session**

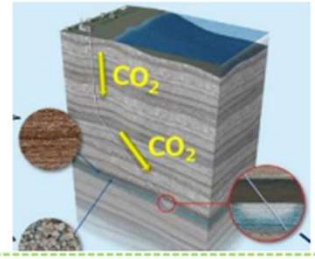
*Provisional Translation

Hydrogen

To promote large-scale introduction of hydrogen and its derivatives such as ammonia, the Bill sets out the framework for:

- **support schemes (i) supplier support focusing on the price gap and (ii) hub development;**
- **regulatory refinement (safety, port and road uses);**
- **voluntary target setting and reporting on low-carbon hydrogen and its derivatives.**

CCS



To enable private companies to start CCS projects in Japan by 2030, the Bill for the Act on CCS covers:

- **the permit system for drilling and CO2 storage**;
- **safety rules for CO2 transportation and storage**, etc.

Offshore Wind

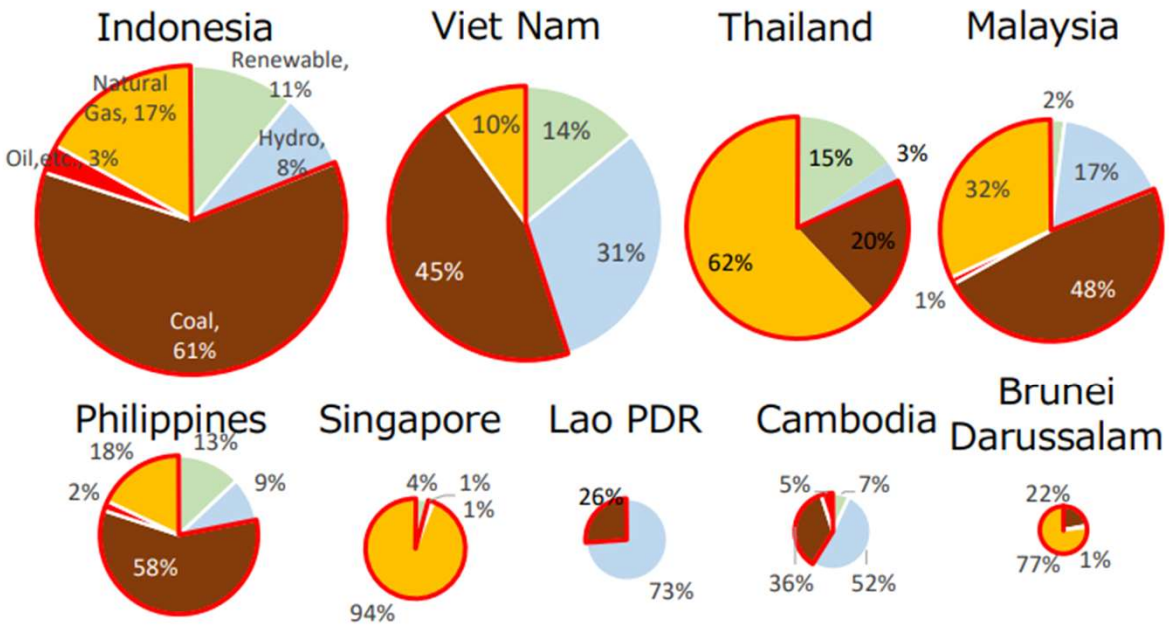
Japan has **the 6th largest Exclusive Economic Zone (EEZ) in the world**. For Japanese target of offshore wind power generation of **10 GW in 2030** and **30-45 GW in 2040**, Japan has started to consider the arrangement of business environment for the development of offshore wind in the EEZ.

Source: METI

Asian transition, how?

- Although **many ASEAN countries** have announced their intention for carbon neutrality, many of them heavily **depend on coal- and natural gas-fired power generation**.
- As the demand for electricity further increases in line with economic growth, **it is essential to steadily promote decarbonization in a practical manner.** To this end, **cooperation through Japanese technology, finance and experiences under AZEC platform are also important**.

*The amount of electricity in ASEAN has doubled in the past decade and is expected to triple in the next 3 decades.



(Reference) China: Coal 64%, Natural Gas 3%, India: Coal 72%, Natural Gas 4%

※ The area of the pie chart is proportional to the amount of electricity generated in each country. However, Cambodia and Brunei are approximately four times of the actual area.

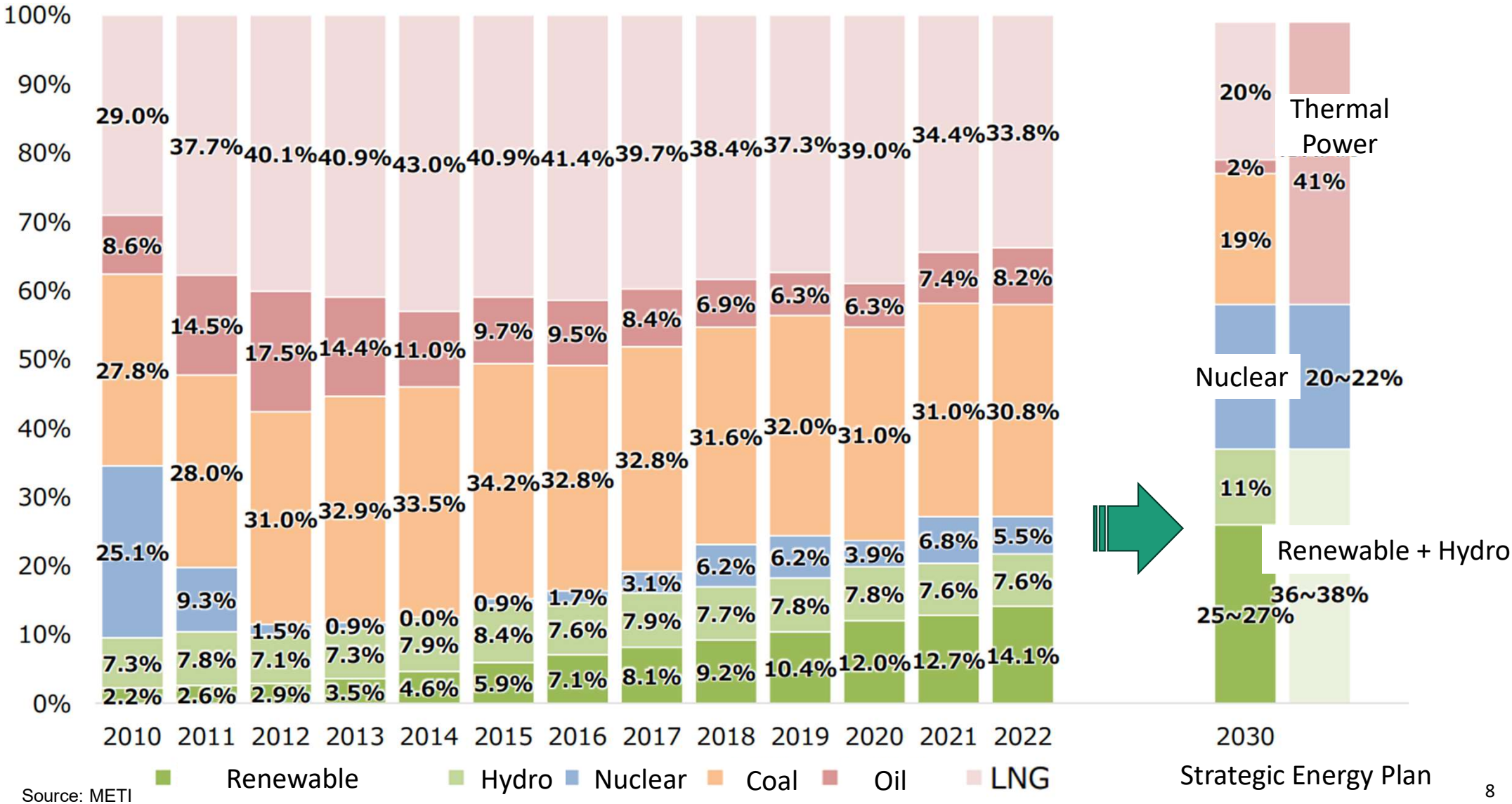
Source : IEA

CN goals set by Southeast Asian countries

Country	CN Target
Indonesia	CN by 2060
Viet Nam	**CN by 2050**
Thailand	CN by 2065 ※If it's only CO2, then by 2050.
Malaysia	**CN by 2050**
Philippines	–
Singapore	**CN by 2050**
Lao PDR	**CN by 2050**
Cambodia	**CN by 2050**
Brunei Darussalam	–
Myanmar	**CN by 2050**

Source : NDCs submitted by each country, etc.

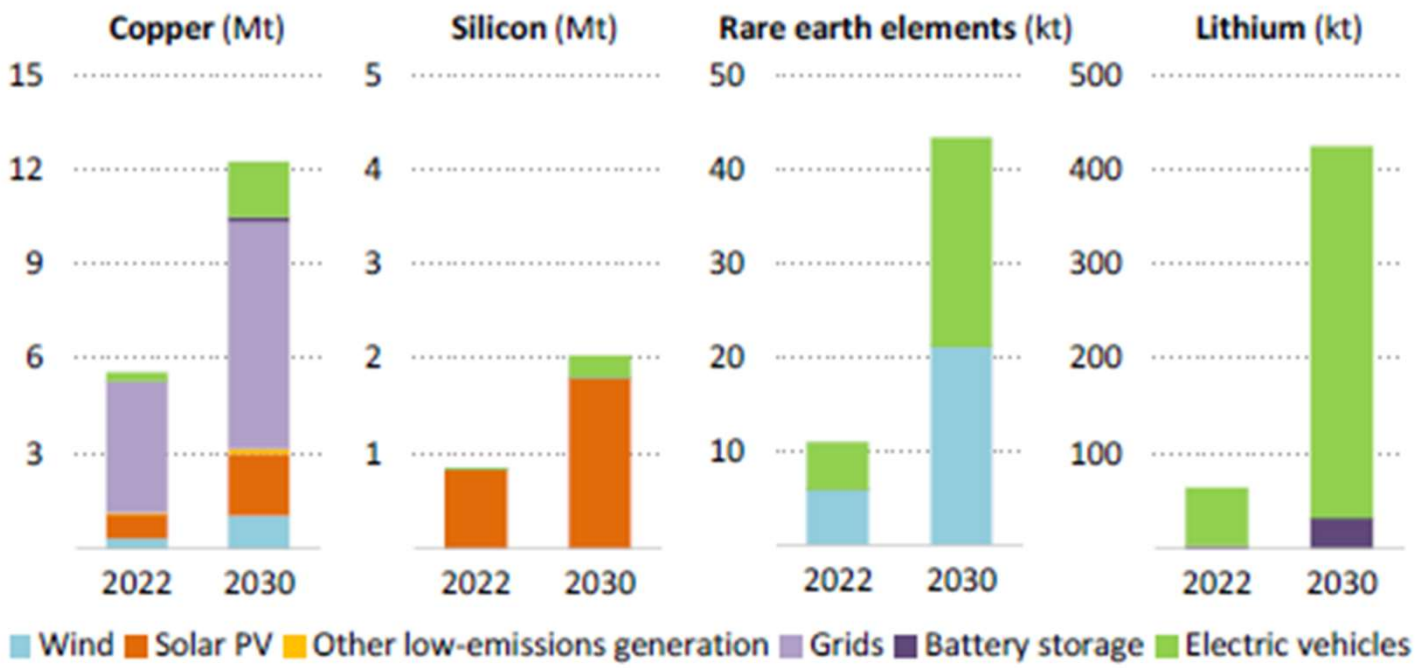
Japan's Power Generation Mix



Source: METI

Demand for Critical Minerals

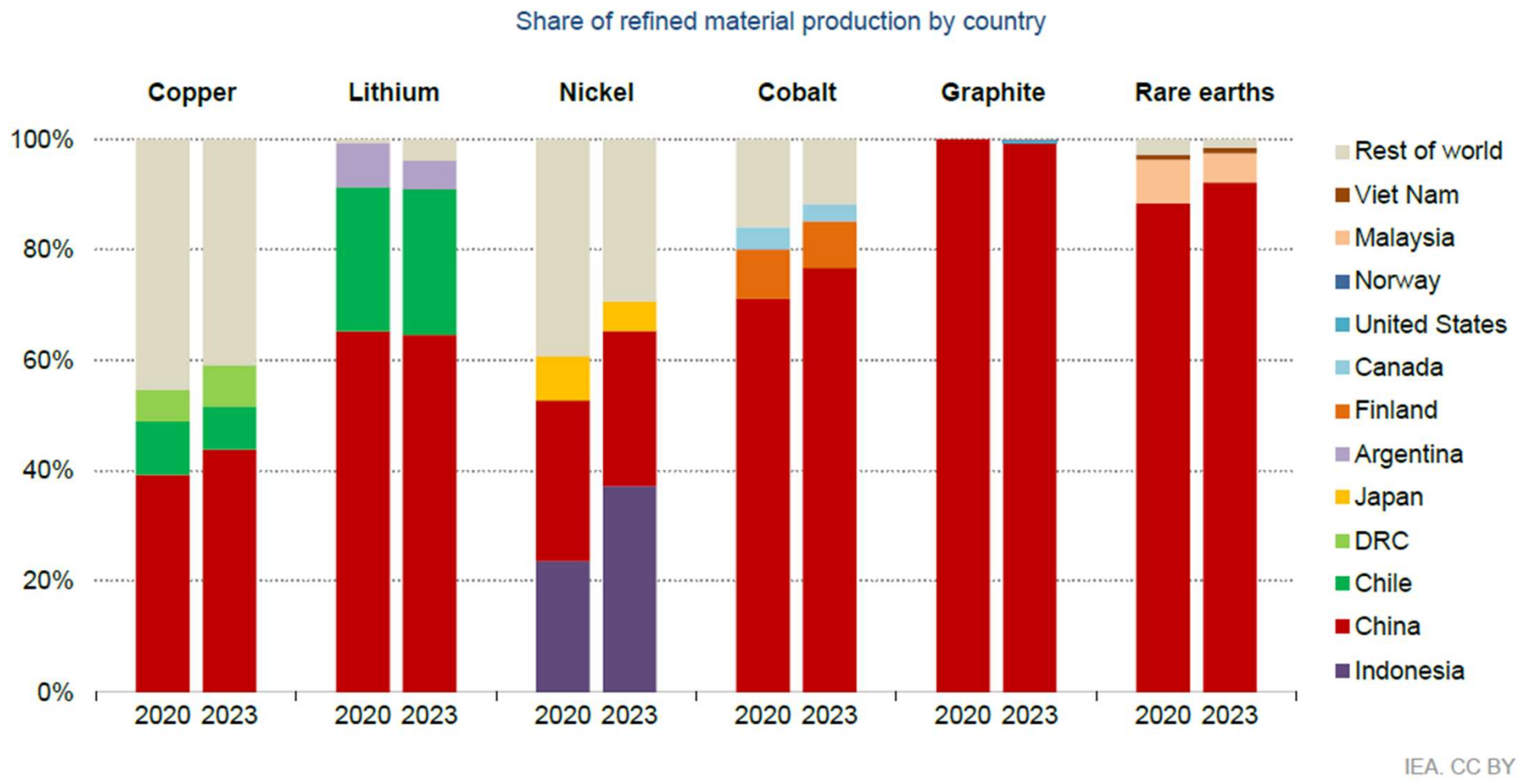
Figure 1.27 ▹ Demand for critical minerals for selected clean electricity supply and electrification technologies in the APS, 2022 and 2030



Electrification raises demand for key critical minerals by two- to seven-times by 2030

Notes: Mt = million tonnes; kt = kilotonnes. Battery storage is limited to utility-scale systems.

Dependence on China for Critical Minerals



Note: Graphite is based on spherical graphite for battery grade. Rare earths are magnet rare earths only.

The Basic Viewpoint of the Energy Policy

S + 3E

Safety +

- ✓ Energy Security
- ✓ Economic Efficiency
- ✓ Environment