

APEC Symposium on Pursuing Decarbonization of Fossil Fuels – October 11, 2023

Necessity of Decarbonization of Fossil Fuels for Carbon Neutrality

Reiko Eda

Agency for Natural Resources and Energy, Japan

EGCFE Chair

Climate Change



Trilemma

Economic Growth



Security



Energy transition through various pathways and innovation



G7



**G7 Climate, Energy, and Environment Ministerial,
15-16 April, Sapporo**

**G7 Leaders' Summit
19-21 May, Hiroshima**



Basic Policy for Realization of GX (Green Transformation)

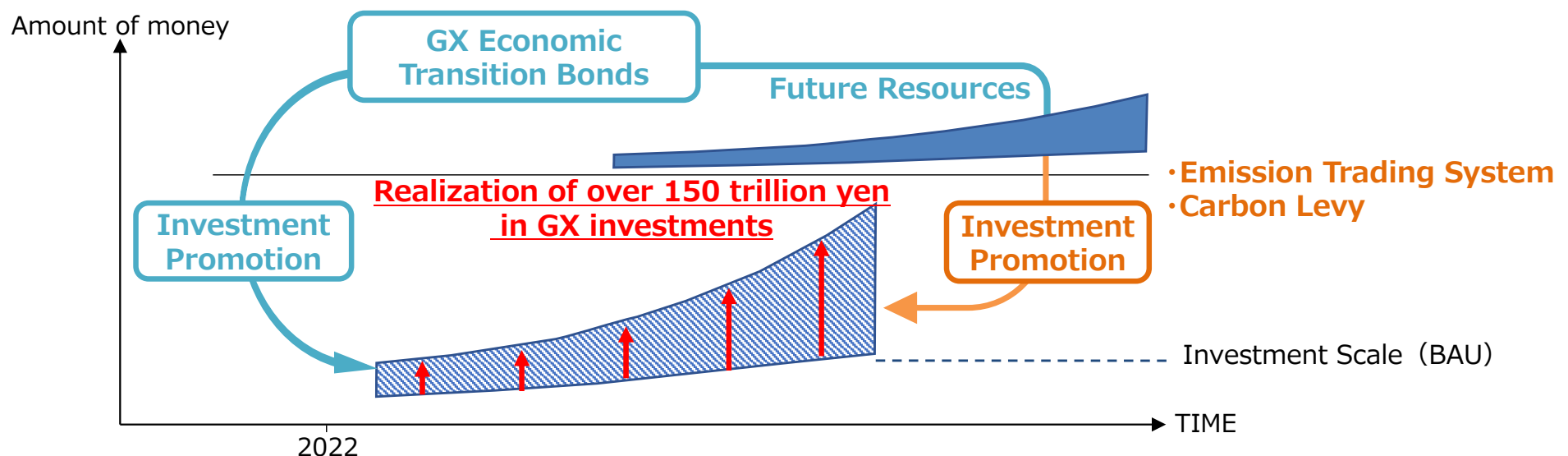
To rebuild a stable supply of energy, measures including promoting drastic shift to decarbonized power sources will be taken.

- **Renewable Energy:** To expand the introduction of renewable energy, a **grid development plan** has been established.
Investment in the next 10 years will be 8 times as much as that in the past 10 years.
- **Nuclear power** : **Replacement** of reactors decided to be decommissioned with next generation innovative reactors.
Review of operating period (40 years + 20-year extension + shutdown period such as inspection)

Government support will be provided for **upfront investment of 20 trillion yen** to achieve carbon neutrality by 2050 while strengthening industrial competitiveness and realizing economic growth, **aiming for more than 150 trillion yen of public and private investment over the next 10 years.**

To promote the GX investment as described above, a "**Growth Oriented Carbon Pricing Concept**" will be embodied and implemented as soon as possible.

- ① **Government support for bold upfront investment** by issuing "**GX Economic Transition Bonds**" (20 trillion yen over the next 10 years)
- ② **Introduction of carbon pricing to give incentives for GX investment**
 - (1) Full-scale operation of **emissions trading system** in high emission industries [from FY2026].
+ Allowance auctioning is phased in gradually to **power generation companies** [from FY2033]
 - (2) Introduction of a **carbon levy** on fossil fuel importers [from FY2028]
- ③ Strengthen financial support through public-private partnership



Highlight of the 2023 Basic Hydrogen Strategy

- To introduce hydrogen having well regard to the **S+3E** principles (**S**afety, **E**nergy security, **E**conomic efficiency, **E**nvironmental compatibility) and industry competitiveness.
- The scope of strategy includes hydrogen and its derivatives such as ammonia, synthetic methane, synthetic fuels, etc., taking into consideration of the challenges and timelines surrounding these products.

Basic Strategy

Expanding Supply

- (a) A new volume target at **12 Mt/p.a. by 2040.**
- (b) Leading to low-carbon hydrogen by introducing:
 - ① **carbon intensity-based criteria**, not “colour” based;
 - ② guiding regulatory requirements.
- (c) Promote domestic production and supply chain. Target share of **electrolysers** (domestic and overseas) that involve Japanese element (including parts and materials) **by 2030 is set around at 15GW.**
- (c) Strengthen relationships with exporting countries, develop transportation technologies and expand financing capabilities.

Creating Demand

- (a) **Power generation**
A wide range of use in power sector, including co-firing and single-firing.
- (b) **Fuel cells**
Deploy FC stack technology in a variety of applications such as commercial vehicles, rolling stocks, vessels, heavy-duties, agri machinery as well as use for decarbonising ports and airports.
- (c) **Industrial use**
Heat use such as boilers and other equipment in the hard-to-abate factories. Develop technologies to utilise as raw material in the fields of steel and chemicals.
- (d) **Home use**
Promote high performance and low-cost residential FC.

To introduce various support schemes with a view to setting up large-scale, resilient supply chains:

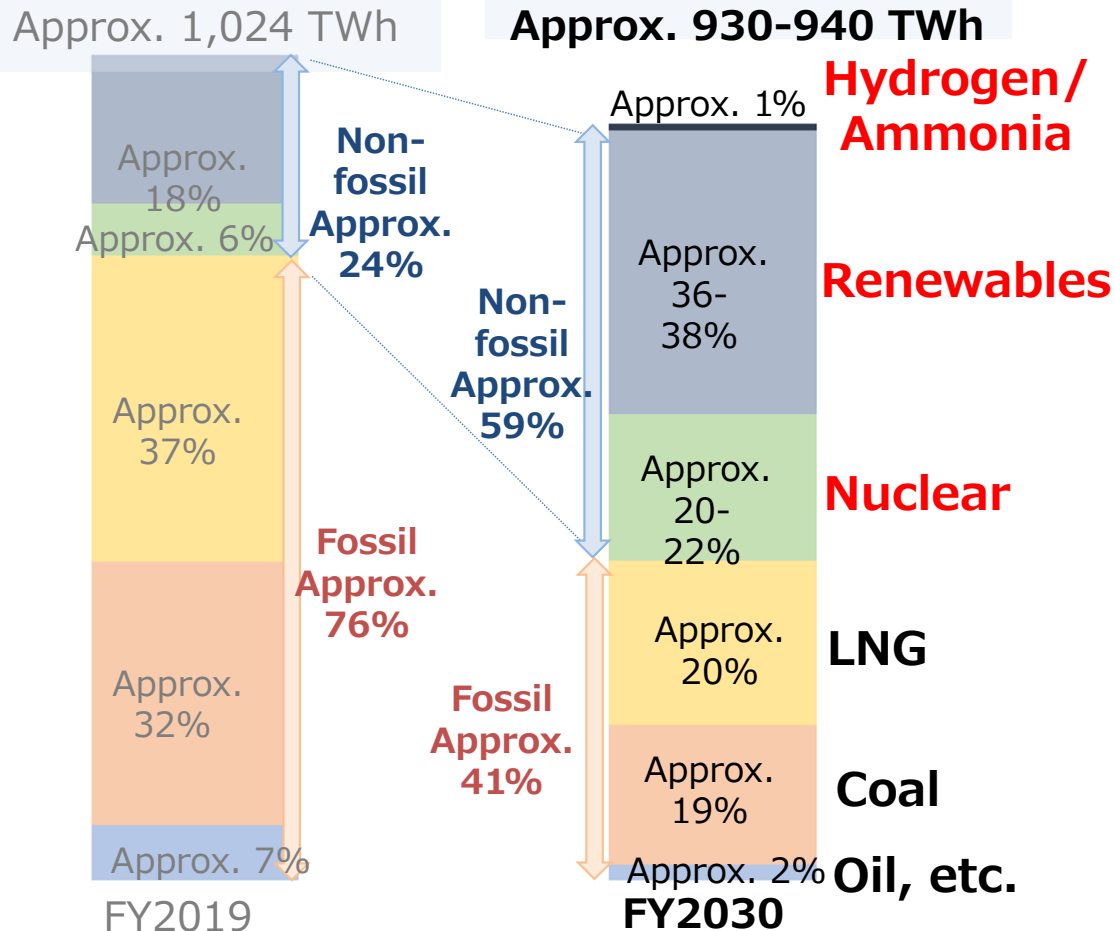
- a. **Producer support scheme (price gap subsidy)**
- b. **Cluster development support**

Others:

- ① Promote regional use and consumption and engage local governments
- ② Assist innovative R&D
- ③ Cross-border cooperation for standardisation and other activities
- ④ Raise public awareness and acceptance

Strategic Energy Plan -Policy responses for 2030-

Electricity mix



- Maximum introduction of renewables as primary power sources.
- Further pursuit of thorough energy efficiency
- Restart of nuclear power plants with safety as a top priority.
- On the major premise of ensuring energy security, thermal power in the electricity mix will be lowered as much as possible.
- Innovation in the thermal power by means of hydrogen /ammonia - fired power generation and CCUS/Carbon Recycling will be pursued.

13th APEC Energy Ministerial Meeting

15-16 August, Seattle

- The first Energy Ministerial Meeting in eight years.
- Participants held discussions mainly on three issues:
 - [i] Power Sector Decarbonization
 - [ii] Accelerating Methane Abatement
 - [iii] Supporting a Just Energy Transition
- The Chair's statement was compiled.
- Inclusion of the phrase **"various pathways"**



**Asia-Pacific
Economic Cooperation**

AZEC Ministerial Meeting

- On 4 March 2023, METI hosted Asia Zero Emissions Community (AZEC) Ministerial Meeting.
- Minister Nishimura, Minister of Economy, Trade and Industry of Japan, who chaired the meeting, made remarks on the importance of decarbonization in Asia, AZEC concept, and Japan's specific efforts.



Participating economies (in alphabetical order)

Australia; Brunei Darussalam; Cambodia; Indonesia; Japan; Laos; Malaysia; The Philippines; Singapore; Thailand; Viet Nam

Participating international organizations (in alphabetical order)

Economic Research Institute for ASEAN and East Asia (ERIA)

International Energy Agency (IEA)

Policies to promote clean fossil energy in APEC (1)

Economies	Programs/Policies	Goal
United States	The Inflation Reduction Act, which is intended to promote alternative fuels	<ul style="list-style-type: none"> • Extension of Tax Credits for Biodiesel and Renewable Diesel • Extension of Tax Credit for Alternative Fuels • Extension of Second-Generation Biofuel Incentives • Clean Fuel Production Credit
Canada	Federal and provincial regulations to reduce methane emissions (fugitives, venting and flaring) in the oil and gas sector	Achieve methane reduction targets: 40 to 45% below 2012 levels by 2025 and 75% below 2012 levels by 2030.
Canada	Carbon price rising to 130 USD per tonne by 2030, up from 50 USD now	Affect business decisions and consumer behavior to investment in CCUS, biofuels, renewables and low-carbon energy carriers.
Canada	Clean fuel standard (liquid fuels)	Reduce carbon intensity of gasoline, diesel by 15% below 2016 levels by 2030.
Canada	Fund CCUS research; CCUS investment tax credits for eligible equipment	Encourage decarbonization research and investment.
Canada	Hydrogen Strategy	Set out short-, mid- and long-term goals for developing a hydrogen industry in Canada. No specific policy support thus far.
Canada	Provincial renewable natural gas (RNG) blending mandates (e.g., landfill methane)	B.C. mandating a 15% RNG blend by 2030. Quebec mandating a 5% blend by 2025 and 10% by 2030.

Policies to promote clean fossil energy in APEC (2)

Economies	Programs/Policies	Goal
Singapore	National Hydrogen Strategy	Establishes five activities to foster the development of hydrogen technologies and the global hydrogen supply chain.
Singapore	Fund research into emerging low-carbon alternatives	Fund studies and demonstration projects to research and foster the development of low-carbon hydrogen CCUS projects.
Singapore	Carbon price rising from 4 USD per tonne now to 35 to 60 USD per tonne in 2030	Affect business decisions and consumer behavior to investment in CCUS, biofuels, renewables and low-carbon energy carriers.
Australia	Australia's National Hydrogen Strategy	Designed to establish Australia's hydrogen industry as a major global player by 2030.
Australia	Emissions Reduction Fund (ERF)	The government will purchase lowest cost abatement (in the form of Australian carbon credit units (ACCUs)).
China	Action Plan for Carbon Dioxide Peaking Before 2030	<ul style="list-style-type: none"> Promote advanced bio-liquid fuels, sustainable aviation fuels, and other alternatives. Improve the energy efficiency of end-use fuel products.

Policies to promote clean fossil energy in APEC (3)

Economies	Programs/Policies	Goal
Thailand	The Thailand Board of Investment's Investment Promotion Packages (notification no. Sor. 7/2564)(Nov 2021)	Natural gas separation plants and petrochemical production facilities implementing CCUS will be granted 8-year corporate income tax exemption.
Thailand	Biofuel blending mandate (introduced in 2007)	<ul style="list-style-type: none"> E20 as the primary gasohol by 2037. Biodiesel blend rate is adjusted based on domestic supplies and energy prices.
Korea	Eco-friendly Biofuel Development Measures (Oct 2022)	Expand domestic biofuels by adopting marine biofuel by 2025, sustainable aviation fuel by 2026 and raising its 2030 biofuels blending mandate in the diesel pool.
Japan	2050 Carbon Neutral and 2030 Climate Goal	<ul style="list-style-type: none"> Reduce greenhouse gas emissions to net-zero by 2050 . Reduce its GHG emissions by 46 percent in FY 2030 from its FY 2013 levels. National Hydrogen Policy
Japan	Basic Policy for Realization of GX(Green Transformation)	<ul style="list-style-type: none"> "GX Economic Transition Bonds" (20 trillion yen over the next 10 years) Introduction of carbon pricing to give incentives for GX investment Strengthen financial support through public-private partnership