

Japan's Energy Policy for Net-Zero Emission Society by 2050

WATANABE Masashi

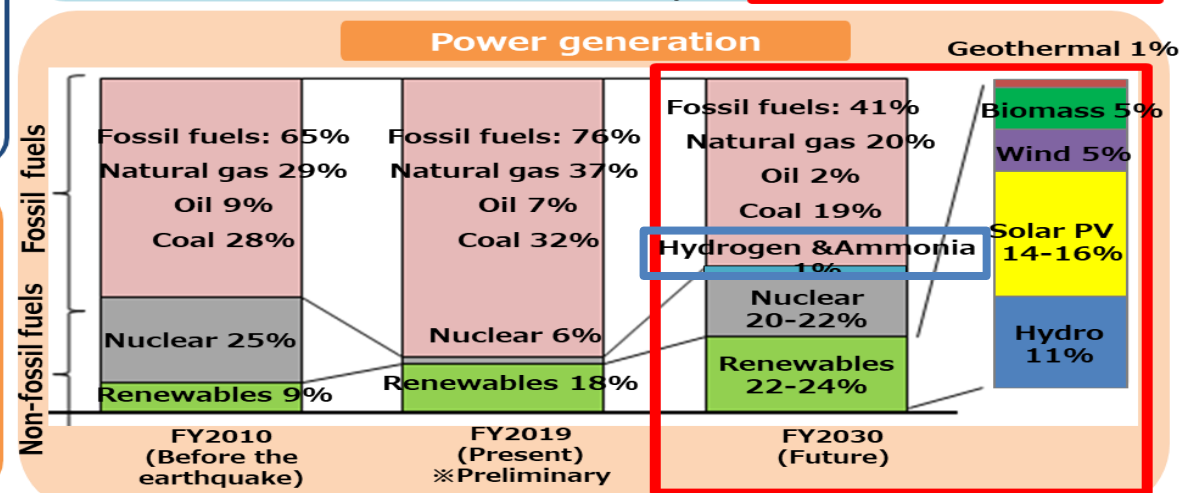
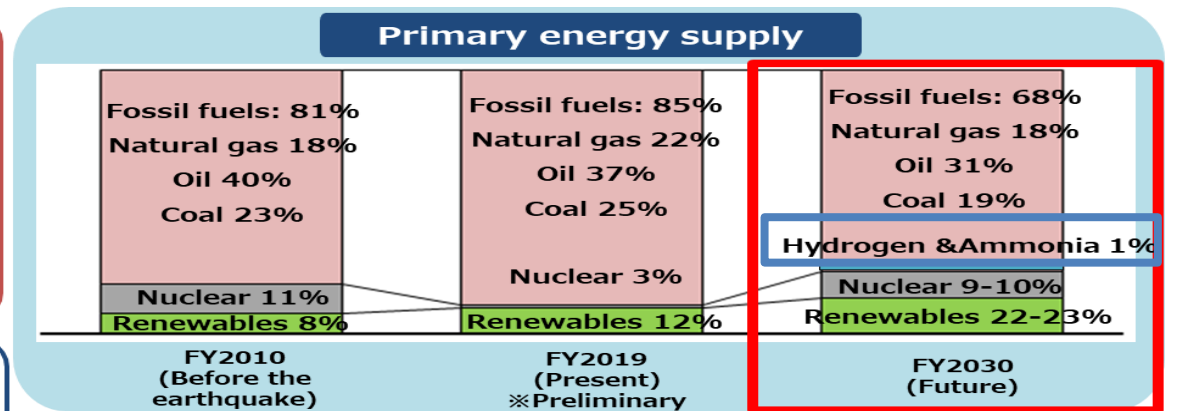
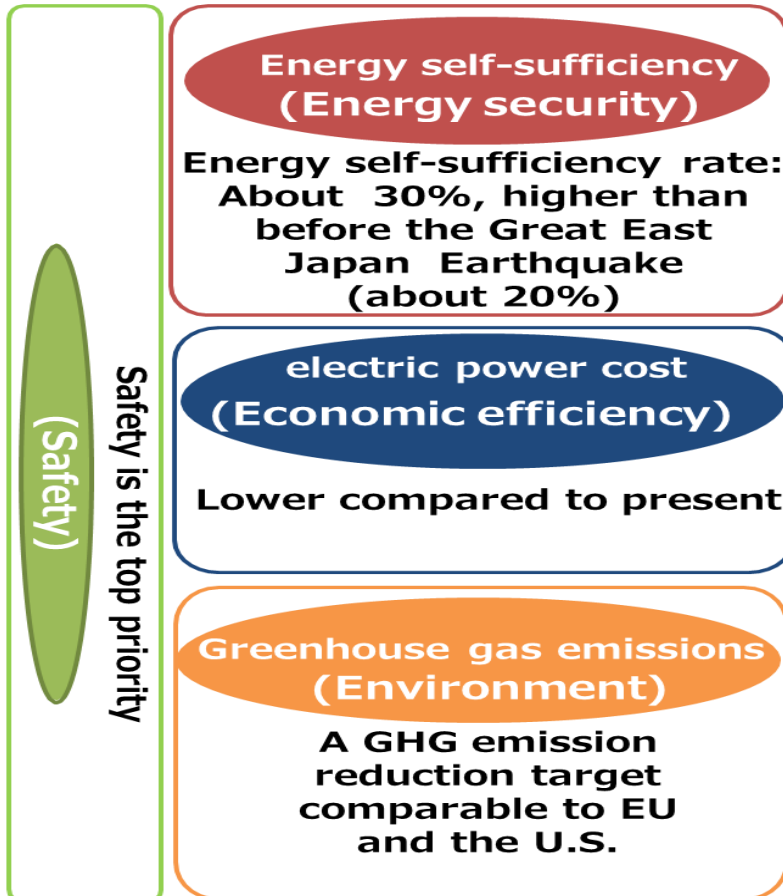
**Director, Russia, Central Asia and Caucasus
Ministry of Economy, Trade and Industry**

October 2023

Japan's net-zero commitment (the 6th Strategic Energy Plan)

- The key theme is to show the path of the energy policy to realize carbon neutrality by 2050 (announced in October 2020), and reduce greenhouse gas emissions by 46% in FY 2030 from its FY 2013 levels.
- On the major premise of safety, efforts will be made for energy security and economic efficiency of energy while promoting climate change countermeasures (S+3E).

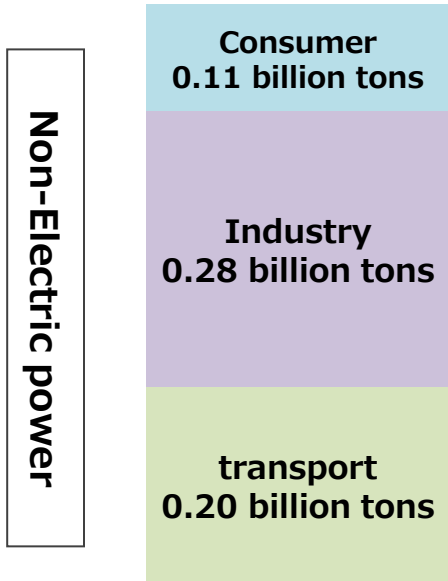
Principles: 3E+ Safety



How Japan plans to realize 2050 Carbon Neutrality

2019

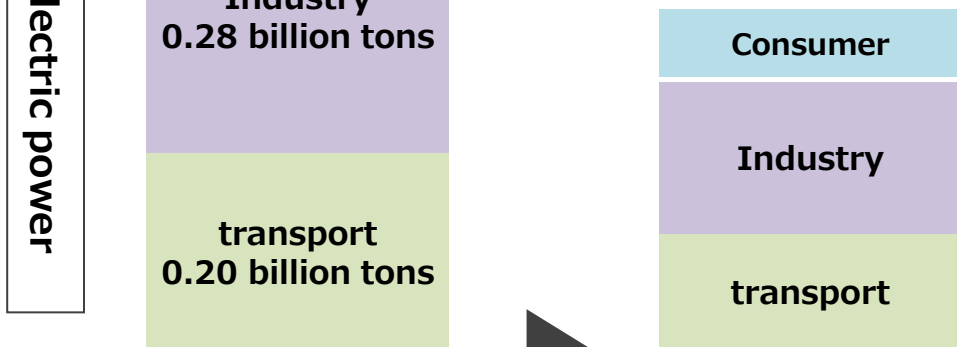
1.03 billion tons
Figures are for energy-derived CO₂.



2030

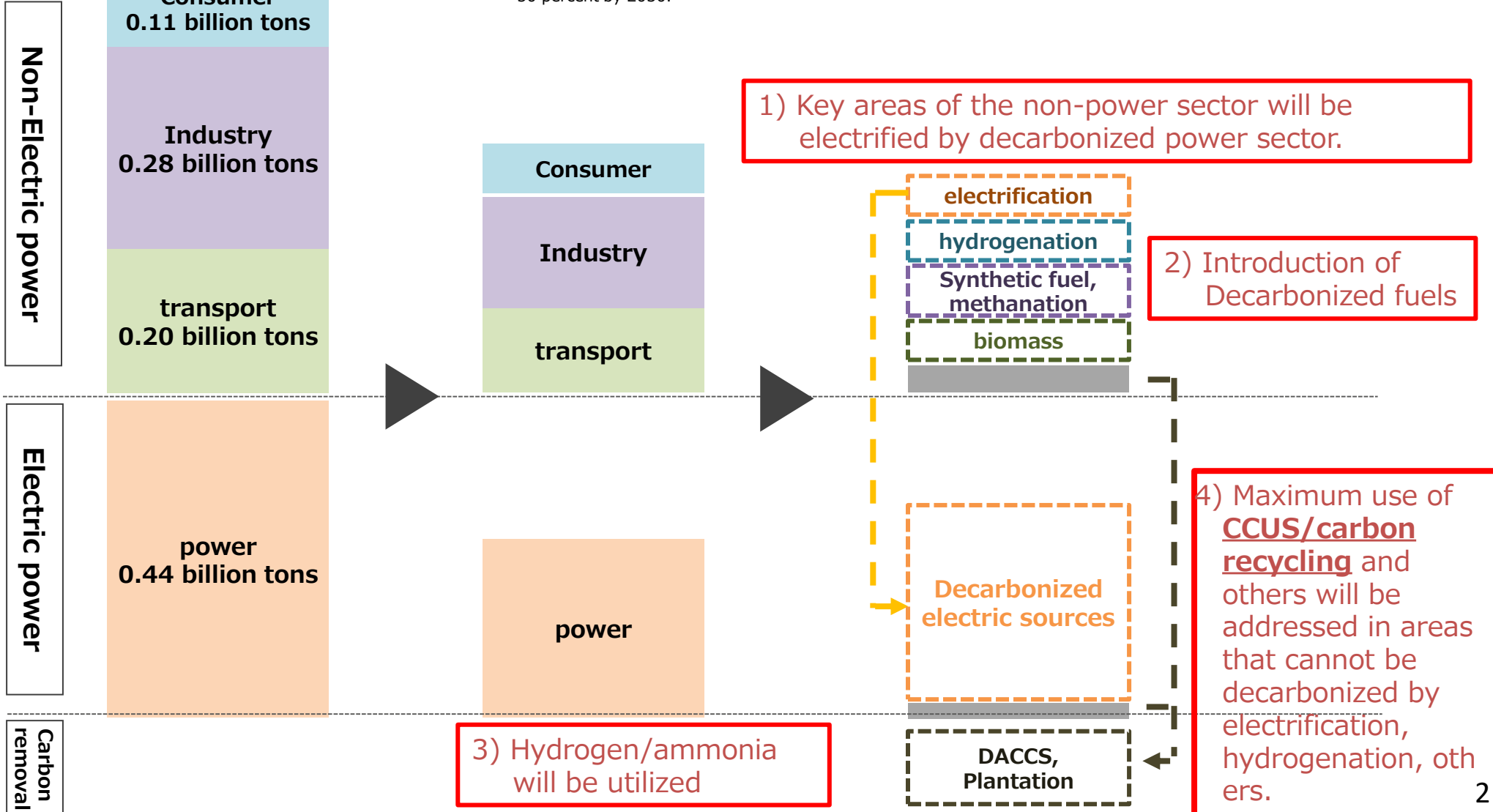
Reduce overall GHG emissions by 46% from 2013 levels

Japan will continue its strenuous efforts to meet the lofty goal of cutting its emissions by 50 percent by 2030.



2050

Emissions and absorption would be virtually zero tons. (▲100%)



6th Strategic Energy Plan (October 2021)

- Toward 2050, efforts in the energy sector (more than 80% of GHG emissions) are important.
- The power sector will pursue innovative technologies such as hydrogen and ammonia power generation and thermal power generation based on carbon storage and reuse through CCUS/carbon recycling.
- In the 6th Strategic Energy Plan (October 2021), hydrogen and ammonia are set to account for 1% of the power supply in 2030.

		(FY2019 ⇒ previous energy mix)	Energy mix in FY2030 (ambitious outlook)	
Energy efficiency improvement		(16.55 million kl ⇒ 50.30 million kl)	62 million kl	
Final energy consumption (without energy conservation)		(350 million kl ⇒ 377 million kl)	350 million kl	
Power generation mix Electricity generated: 1,065 TWh ⇒ Approx. 934 TWh	Renewable energy	(18% ⇒ 22-24%)	36-38%	※If progress is made in utilization and implementation of R&D of renewable energy currently underway, 38% or higher will be aimed at. (details of renewable) solar 14~16% wind 5% geothermal 1% hydropower 11% biomass 5%
	Hydrogen/Ammonia	(0% ⇒ 0%)	1%	
	Nuclear	(6% ⇒ 20-22%)	20-22%	
	LNG	(37% ⇒ 27%)	20%	
	Coal	(32% ⇒ 26%)	19%	
	Oil, etc.	(7% ⇒ 3%)	2%	
(+ non-energy related gases/sinks)			46%	
GHG reduction rate		(14% ⇒ 26%)		

Continuing strenuous efforts in its challenge to meet the lofty goal of cutting its emission by 50%

Green Growth Strategy (Formulated on June 18, 2021)

- Japan will introduce all possible policy measures to support companies' efforts in innovation and investment decisions towards a new carbon neutral society including a 2 trillion yen (=15B USD) Green Innovation Fund.

14 sectors that are expected to grow toward 2050.



1

Offshore wind/solar/geothermal power



2

Hydrogen/fuel ammonia



3

Next-generation heat energy



4

Nuclear



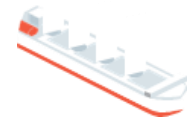
5

Automobile/battery



6

Semiconductor/information and communication



7

Shipping



8

Logistics, people flow, and civil engineering infrastructure



9

Food, agriculture, forestry and fisheries



10

Aircraft



11

Carbon recycling/material



12

Housing and building/next-generation power management



13

Resource circulation-related



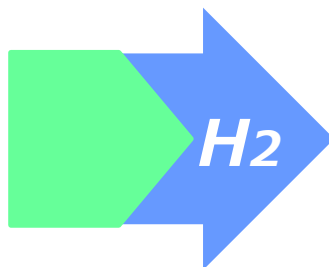
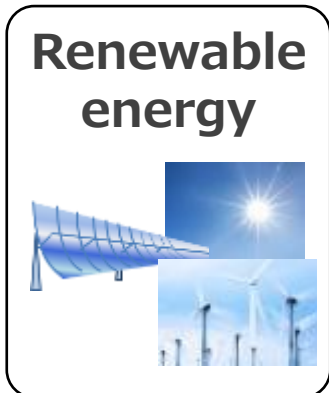
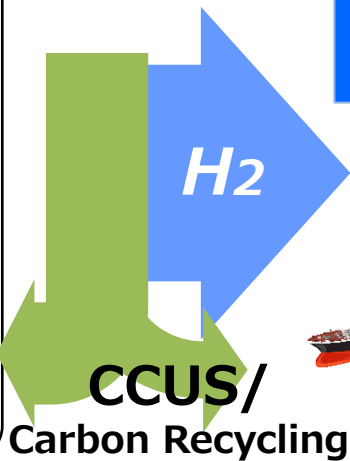
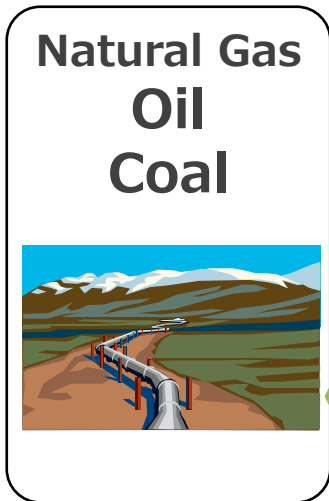
14

Life style-related

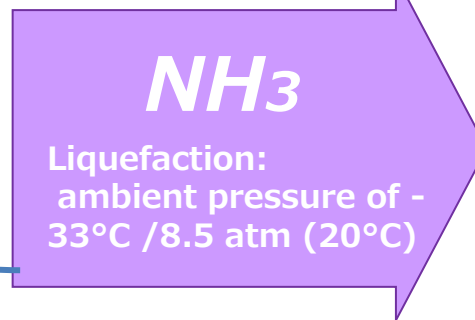
(Reference) Hydrogen and Fuel Ammonia

- Hydrogen does not emit CO2 during combustion and becomes one of the effective fuels for combating global warming. It can be produced from natural gas (fossil fuels) with CO2 offset, or renewable energy.
- Ammonia is not only positioned as one of the hydrogen carriers, but also be used directly for electricity generation as a zero emission fuel like Hydrogen.

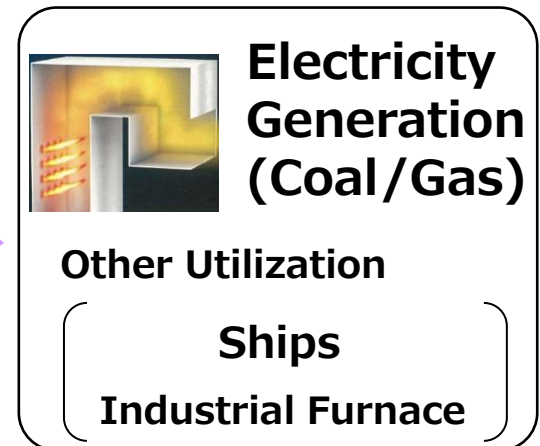
Production



Transportation



Utilization



Act on Promoting Transition to the Decarbonized Growth Economic Structure (GX Promotion Act) (May 2023)

- As competition for investment for the realization of “Green Transformation (GX)” accelerates on a global scale, **Japanese Government has prepared the new act including the following points**, in order to simultaneously realize both international commitments such as Carbon Neutrality by 2050 as well as to strengthen industrial competitiveness & economic growth.

1) Formulation & Implementation of the “GX Promotion Strategy”

2) Issuance of new government bonds

- ✓ **The government will issue GX Economic Transition Bonds for 10 years starting in FY2023 for attracting advanced investment*, in order to realize the “GX Promotion Strategy.”**

* The government will support R&D and capital investments that contribute to the decarbonizing and improving profitability of energy and raw materials, amounting to approximately 20 trillion yen (154 billion USD) over the next 10 years.

- ✓ **The new government bonds will be redeemed by FY2050 through the GX Surcharge (surcharge on fossil fuel supply) and revenues from GX-ETS Auction on the power generation sector.**

3) Introduction of Pro-Growth Carbon Pricing

4) Establishment of the GX Promotion Agency

5) Review & Evaluation

G7 Hiroshima Summit

- In May 19-21, G7 Hiroshima Summit adopted Leaders' Communiqué, following the main message of G7 Ministers' Meeting on Climate, Energy and Environment.
- The Communiqué stated utilization of clean energy technologies for various pathways toward our common goal of net zero.



- ① We emphasize highlight the increased urgency to reduce global GHG emissions by around 43 percent by 2030 and 60 percent by 2035, relative to the 2019 level, in light of its latest findings.
- ② We will globally advance and promote a green transformation, working together to realize transformation of our economies to reach net-zero GHG emissions by 2050 at the latest.
- ③ While acknowledging various pathways according to each country's energy situation, industrial and social structures and geographical conditions, we highlight that these should lead to our common goal of net zero by 2050 at the latest in order to keep a limit of 1.5 °C within reach.
- ④ We take note of initiatives that are intended to support clean energy transition in countries around the world, such as Asia Zero Emission Community (AZEC) initiative
- ⑤ We commit to holistically addressing energy security, the climate crisis, and geopolitical risks.
- ⑥ Same content as G7 in Sapporo for energy conservation, renewable energy, hydrogen, ammonia, nuclear power, CCUS/CR and other clean energy technologies
- ⑦ We reaffirm our commitment to achieving a fully or predominantly decarbonized power sector by 2035. We will work towards ending the construction of new unabated coal fired power generation.
- ⑧ We underline our commitment, in the context of a global effort, to accelerate the phase-out of unabated fossil fuels so as to achieve net zero in energy systems by 2050 , and call on others to join us in taking the same action.

G7 Hiroshima Summit

- ⑨ We stress the important role that increased deliveries of LNG can play, and acknowledge that investment in the sector can be appropriate in response to the current crisis and to address potential gas market shortfalls provoked by the crisis.
- ⑩ We welcome the steady progress of decommissioning work at Tokyo Electric Power Company Holdings (TEPCO)'s Fukushima Daiichi Nuclear Power Station, and Japan's transparent efforts with the International Atomic Energy Agency (IAEA) based on scientific evidence and support the IAEA's independent review.
- ⑪ We welcome the "Five-Point Plan for Critical Mineral Security" and reaffirm the need to build resilient, robust, responsible, and transparent critical mineral supply chains.
- ⑫ We encourage and promote private entities' work to foster innovation contributing to the emission reduction of other entities through decarbonization solutions.
- ⑬ We highlight that transition finance has a significant role in advancing the decarbonization of the economy as a whole.
- ⑭ We welcome the progress of the Industrial Decarbonization Agenda (IDA) that decided to start working on implementation of the new Global Data Collection Framework for steel production and product emissions.
- ⑮ We reaffirm our commitment to a highly decarbonized road sector by 2030, and recognize the range of pathways to approach this goal. We highlight the various actions that each of us is taking to decarbonize our vehicle fleet, including such domestic policies that are designed to achieve 100 percent or the overwhelming penetration of sales of light duty vehicles (LDVs) as zero emission vehicles (ZEV) by 2035 and beyond; to achieve 100 percent electrified vehicles in new passenger car sales by 2035; to promote associated infrastructure and sustainable carbon-neutral fuels including sustainable bio- and synthetic fuels. We note the opportunities that these policies offer to contribute to a highly decarbonized road sector, including progressing towards a share of over 50 percent of zero emission LDVs sold globally by 2030. Considering the findings of the International Energy Agency (IEA)'s Energy Technology Perspective 2023, we also note the opportunity to collectively reduce by at least 50 percent CO2 emissions from G7 vehicle stock by 2035 or earlier relative to the level in 2000 as a halfway point to achieving net zero and to track the progress on a yearly basis.

Establishment of Ministerial Economic and Energy Dialogue of the “Central Asia plus Japan Dialogue”

- The five Central Asian countries are well-positioned to take advantage of Japan's decarbonization technologies for potential energy and infrastructure projects, utilizing JCM (Joint Crediting Mechanism).
- On 26th September, “Ministerial Economic and Energy Dialogue” was newly established. The ministers agreed to hold discussions on accelerating energy transition projects using the JCM and public-private financing. A joint statement was issued as an outcome of the discussions.



Summary of Dialogue

Date: **26th September (Day after GX Week Plenary)**

Venue: **Ministry of Economy, Trade and Industry in Tokyo, Japan**

Participants (tentative):

Nishimura Yasutoshi,

Minister of Economy, Trade and Industry, Japan

H.E. Yerlan Nyssanbayev

Minister of Ecology and Natural Resources of the Republic of Kazakhstan

H.E. Melis Turgunbaev

Minister of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic

H.E. Daler Juma

Minister of Energy and Water Resources of Tajikistan

H.E. Maksat Babayev

State Minister of Turkmenistan, Chairman of State Concern "Turkmengas"

H.E. Jurabek Mirzamakhmudov,

Minister of Energy of the Republic of Uzbekistan

Outline of the Joint Statement

1. Participants welcomed the establishment of a Ministerial Economic and Energy Dialogue within the historic "Central Asia plus Japan" Dialogue framework.
2. The five countries and Japan firmly maintained their commitment to the temperature target of the Paris Agreement in order to combat climate change.
3. The five countries and Japan confirmed cooperation and collaboration on the following:
 - (1) Accelerating consideration of net zero goal by 2050 or later taking advantage of energy transition technologies to achieve the goal, while recognizing various pathways according to each country's situation.
 - (2) Accelerating preparation, development or utilization of a road map toward net zero goal by 2050 or later.
 - (3) Promoting implementation of the JCM including the formation of specific JCM projects.
 - (4) Encouraging the public-private finance for realizing energy transition projects.

Asia Energy Transition Initiative (AETI)

- “Asia Energy Transition Initiative (AETI)” supports the realisation of various and pragmatic energy transitions in Asia through 5 pillars of activities.
- It supports wide range of countries in Asia, including Southeast Asia, South Asia, Central Asia, and Middle East.

1. Support for country-level energy transition roadmaps



2. Promotion of Asia Transition Finance



3. US\$10 billion financial support for various projects

- (e.g.) Renewable Energy, Energy Efficiency, LNG, CCUS etc.



4. Technology development and deployment, utilizing the achievement of “Green Innovation Fund”

- (e.g.) Offshore wind, Fuel-ammonia, Hydrogen etc.



5. Human resource development, knowledge sharing and rule-making on decarbonization technologies

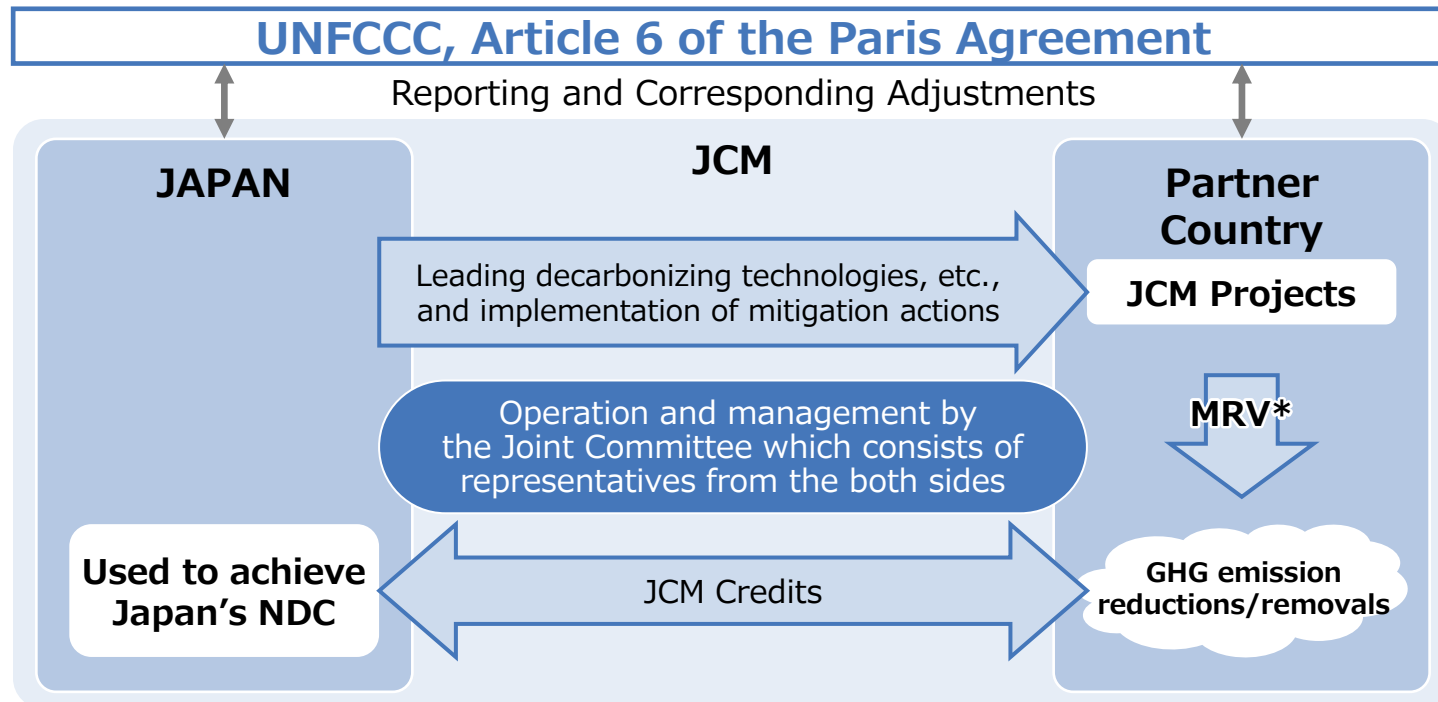
- Capacity building of decarbonization technologies for 1,000 people in Asian countries
- Hold workshops and seminars related to energy transition
- Asia CCUS network



Basic Concept of the JCM

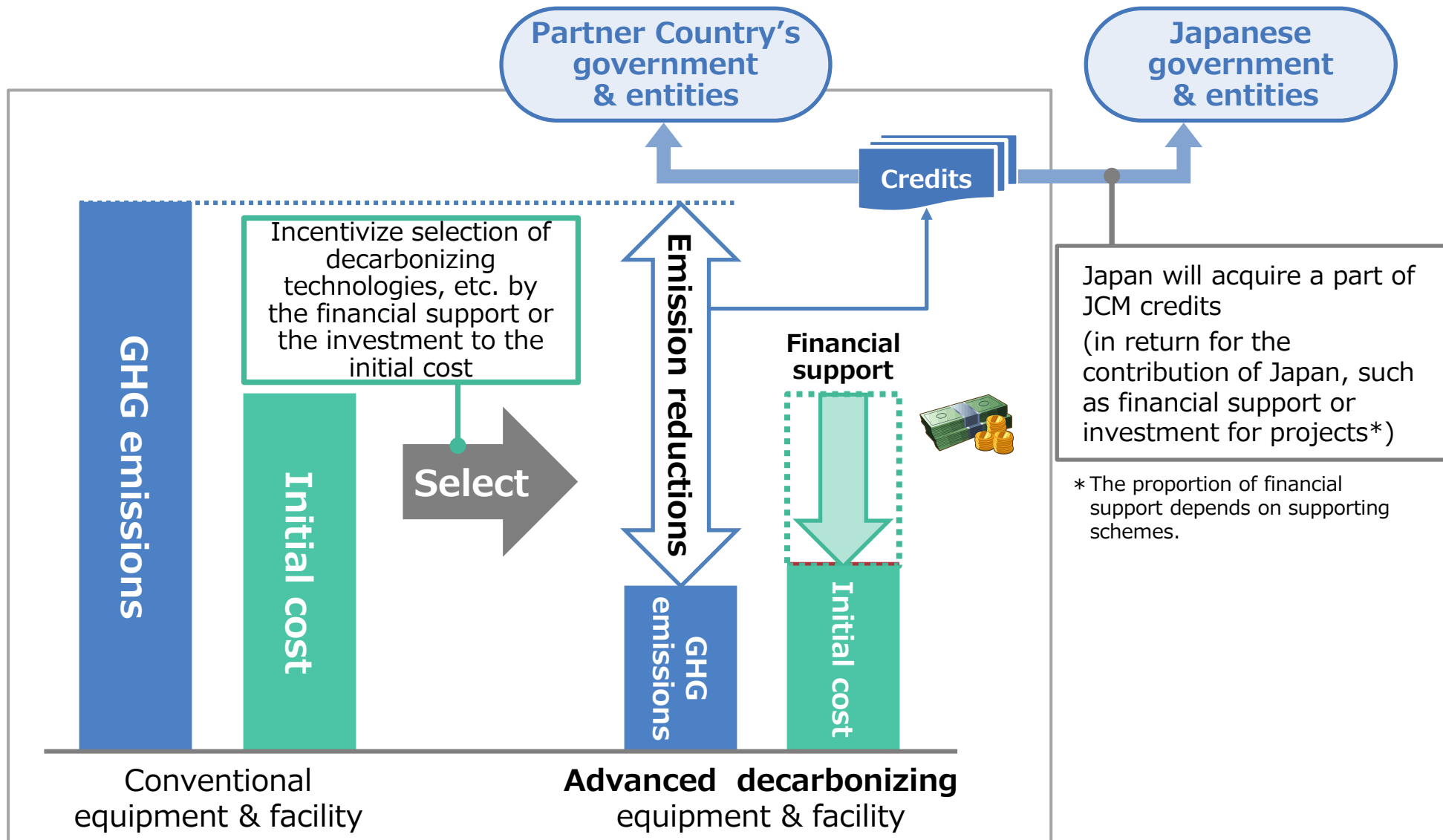
11

- Facilitate diffusion of leading decarbonizing technologies and infrastructure, etc., through investment by Japanese entities, thereby contributing to GHG emission reductions or removals and sustainable development in partner countries.
- Contribute to the achievement of both countries' NDCs while ensuring the avoidance of double counting through corresponding adjustments.
- Implement the JCM consistent with the guidance on cooperative approaches, referred to in Article 6, paragraph 2 of the Paris Agreement.



*measurement, reporting and verification

Contribution from Japan (example)



JCM Partner Countries (27 countries)



Mongolia
Jan. 8, 201 (Ulaanbaatar)



Bangladesh
Mar. 19, 2013 (Dhaka)



Ethiopia
May. 27, 2013 (Addis Ababa)



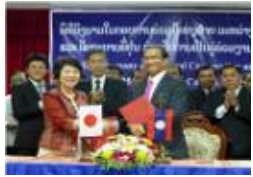
Kenya
Jun. 12, 2013 (Nairobi)



Maldives
Jun. 29, 2013 (Okinawa)



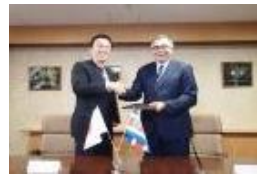
Viet Nam
Jul. 2, 2013 (Hanoi)



Lao PDR
Aug. 7, 2013 (Vientiane)



Indonesia
Aug. 26, 2013 (Jakarta)



Costa Rica
Dec. 9, 2013 (Tokyo)



Palau
Jan. 13, 2014 (Ngerulmud)



Cambodia
Apr. 11, 2014 (Phnom Penh)



Mexico
Jul. 25, 2014 (Mexico City)



Saudi Arabia
May. 13, 2015



Chile
May. 26, 2015 (Santiago)



Myanmar
Sep. 16, 2015 (Nay Pyi Taw)



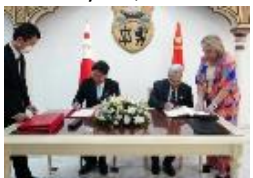
Thailand
Nov. 19, 2015 (Tokyo)



Philippines
Jan. 12, 2017 (Manila)



Senegal
Aug. 25, 2022 (Dakar)



Tunisia
Aug. 26, 2022 (Tunis)



Azerbaijan
Sept. 5, 2022 (Baku)



Moldova
Sept. 6, 2022 (Chisinau)



Georgia
Sept. 13, 2022 (Tbilisi)



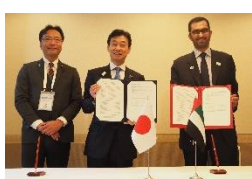
Sri Lanka
Oct. 10, 2022 (Colombo)



Uzbekistan
Oct. 25, 2022 (Tashkent)



Papua New Guinea
Nov. 18, 2022 (Sharm-el-Sheikh)



United Arab Emirates
Apr. 16, 2023 (Sapporo)



Kyrgyz Republic
July. 6, 2023 (Bishkek)

Thank you for your attention!

Назар аударғаныңызға рақмет!