Japan's Green Transformation (GX) and Transition finance

Ministry of Economy, Trade and Industry, JAPAN

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Global movement towards carbon neutrality (CN)

- Recently, the number of countries who declared carbon neutral target has risen rapidly.
  COP 25: about 26% of Global GDP → Currently: **about 70% of global GDP**
- Accompanied with ESG movements in financial sector, **each firm's and nation's efforts on decarbonization will now directly connect to their competitiveness**.

Nation-Level

Rise in declaration of CN target

COP25 (2019)

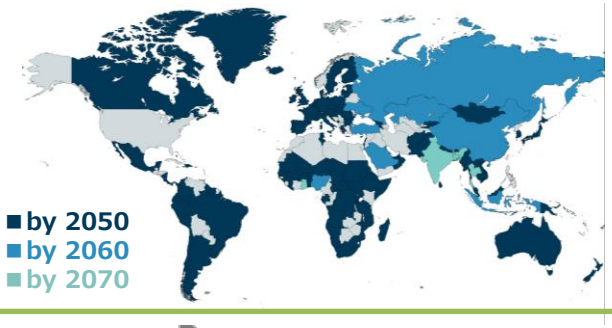
- 121 countries/regions have committed CN target (26% of global GDP)

As of Feb. 2025

- 146 countries/regions have committed CN target (70% of global GDP)

Source: World Bank, World Development Indicators, GDP (constant 2015 US$)

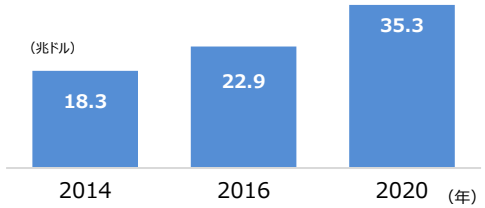
Countries/regions with CN target (as of Feb. 2025)



Financial Sector

Rise in ESG investment

- The amount of ESG investment has risen to $35 trillion globally by 2020



Source: GSIA「Global Sustainable Investment Review」

Disclosure on corporate governance

- Over 2600 financial institutions etc have approved "TCFD", disclosure framework of the impact of climate change on corporate activities.

Business Sector

Decarbonization of supply chain

- Movements among business sector to decarbonize overall supply chain

Global	Microsoft	By 2030
	Apple	By 2030
JP	Ricoh	By 2050
	Kirin	By 2050

→ Carbon neutral

Innovation in the era

- Emergence of new businesses that carbon footprint affects consumer decision, in addition to prices or functions of goods/services.
- Rising opportunities for start-ups in the development and introduction of new decarbonized technologies

More and more companies feel "CN pressures" from every aspect

【Ref】 CN policy now has an implication on trade policy ?

- Taking EU's Carbon Border Adjustment Mechanism(CBAM) as an example, now we may be able to say that **CN policy has an implication on trade policy** as CBAM aims to charge on embedded CO2 emissions of each imported product to avoid carbon leakage/bring equality to the "EU green market".
- **Exporters to EU market have to think about decarbonization, otherwise they will lose its competitiveness**, which is one of the biggest CN pressures for Japanese companies.

EU's Carbon Border Adjustment Mechanism(CBAM)

Target goods: Cement, Iron and Steel, Aluminum, Fertilizers, Electricity, Hydrogen

October 2023: Transitional period
(EU importers required to report CO2 emissions from products)

2026: Phase-in of carbon charge
(pricing introduced along with reduction of free allocation of EU-ETS)

2034: Full-fledged implementation

(Ref) Disclosures by each government

Ref. Increasing Worldwide Government Support toward GX

- Economies are implementing **large-scale, long-term measures to promote investment**.
  - The **EU** has set a goal of achieving **1 trillion euros of investment in 10 years**.
  - The **US** has passed the **Inflation Reduction Act** in August 2022 that provides **369 billion dollars of government support** over the next 10 years.
- Promoting GX investment is now a decisive factor of national and business competitiveness.

Examples of Worldwide GX Investment Promotion by Governments

Area	Goals/Measures	Reduction Target	GDP
EU 2020.1.14	**1 Trillion Euros** of public and private investments in 10 years	**▲55%** in 2030 (base year: 1990)	$17.9 Trillion
US 2022.8.16	**369 Billion Dollars** of government support in 10 year (Inflation Reduction Act)	**▲50-52%** in 2030 (base year: 2005)	$23.0 Trillion
Germany 2020.6.3	**50 Billion Euros** of government support mainly in 2 years	**▲55%** in 2030 (base year: 1990) ※EU-wide goal	$4.2 Trillion
France 2020.9.3	**30 Billion Euros** of government support in 2 years	**▲55%** in 2030 (base year: 1990) ※EU-wide goal	$2.9 Trillion
UK 2021.10.19	**26 Billion Pounds** of government support in 8 years	**▲68%** in 2030 (base year: 1990)	S3.2 Trillion

(Ref) Disclosures by each government, exchange rate as of October 2022

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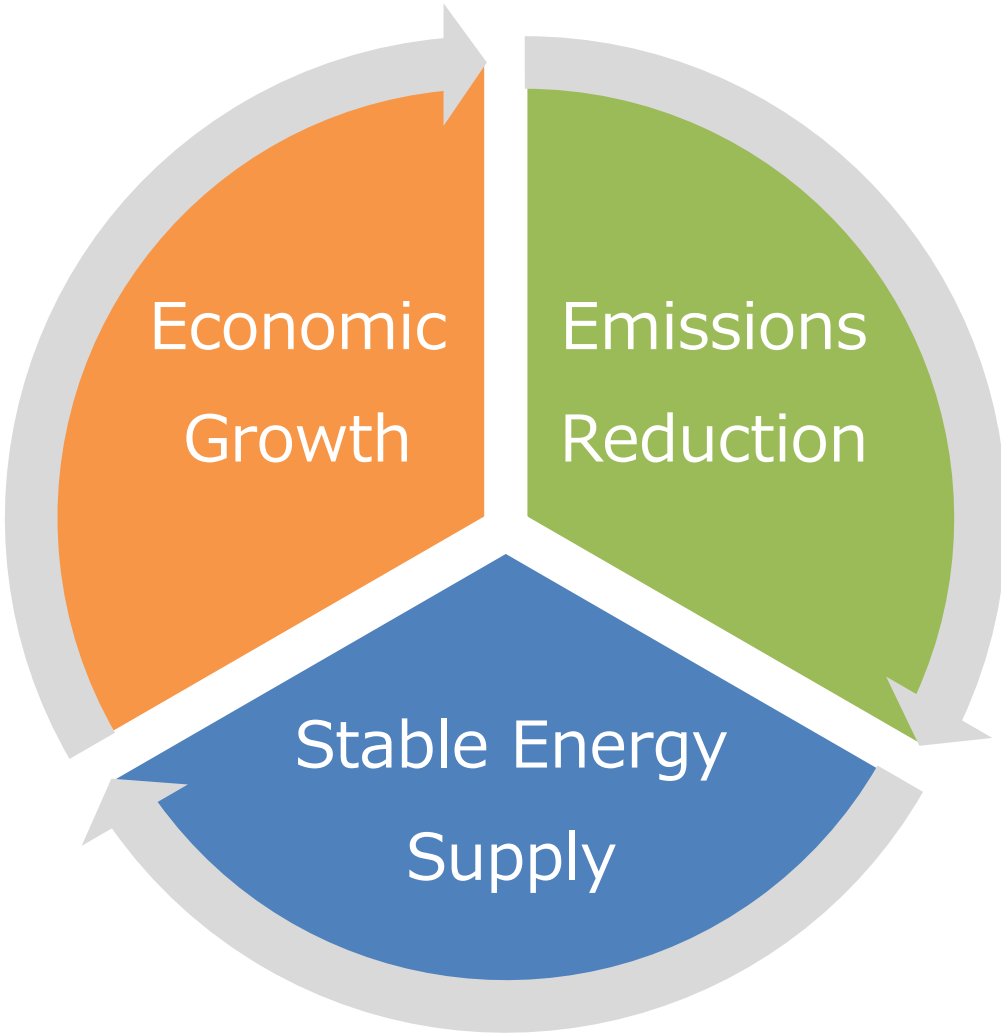
Green Transformation (GX)

- Japan aims to simultaneously achieve three goals: **emissions reduction, stable energy supply, and economic growth**, which is called **Green Transformation (GX).**



Pro-Growth Carbon Pricing Concept

■ In the “Basic Policy for the Realization of GX”, a new concept of "Pro-Growth Carbon Pricing" was introduced as a core of Japan’s GX policy.

1. Japan Climate Transition Bonds (New Type of JGB)

20 Trillion Yen (≒USD133 bil.)
Investment promotion from Japan Climate Transition Bond over 10 years

→

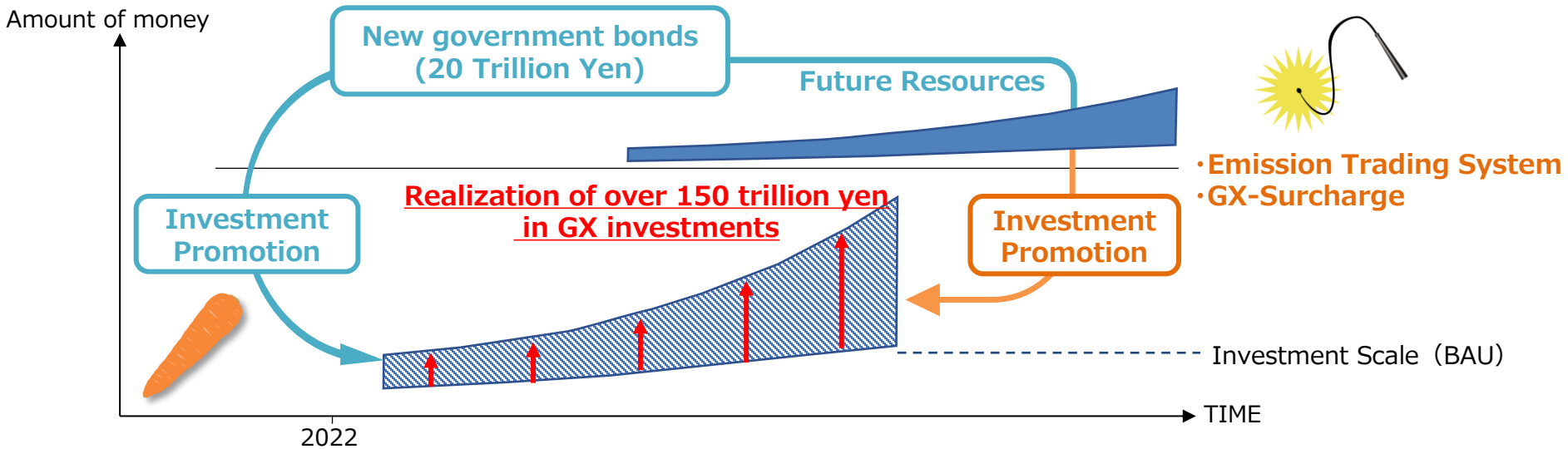
150 Trillion Yen (≒USD1 trillion)
Public Private investment for decarbonization

2. Carbon Pricing

①**Emissions trading system** in high emission industries operating **from FY2026**

+ Allowance auctioning to be phased in gradually to **power generation companies, from FY2033**

②**GX-Surcharge** on fossil fuel supply **from FY2028**



Implementation of GX investment promotion policies

Investment promotion measures are being implemented as below by utilizing funds from the **GX Economy Transition Bond** and in accordance with the **"Sector Specific Investment Strategy"** compiled last year.

Government funds support a variety of products and technology, ranging from **research and development of innovative technology** necessary for carbon neutrality to **implementation of existing technology that serve to achieve transition** towards decarbonization.

Innovative Technology	**¥2.8T**	・Green Innovation Fund: **Perovskite solar cells**, **Hydrogen reduction blast furnace**, **Ammonia only-fired gas turbine**, etc.
Hard-to-Abate	**¥1.3T**	・Innovative Electric Furnace (reduces emissions by 50+%), Chemical Recycling, Biomass Refinery, CCUS, etc.
Lifestyle-Related GX	**¥2.0T**	・Reform to **insulated windows, energy-efficient heat pumps, clean vehicles and batteries, etc.**
Hydrogen and Energy	**¥4.0T**	・Support towards **hydrogen** with focus on cost difference, supply chain building of **floating wind turbines** (in addition to FIT)
SMEs, Startups	**¥1.0T**	・Energy saving of **SMEs** ・Support for **GX startups**
Other Areas	**¥1.1T**	・Power semiconductors (¥430B), Batteries (¥500B), Circular economy (¥30B), Debt guarantee by GX Promotion Organization (¥120B)

As of December 2023

Breakdown of “Investment Promotion Measures”

- To enhance the predictability for businesses and maximize GX investments:
  1) At the end of 2023, government compiled a sectoral investment strategy for the next 10 years.
  2) Within these strategies, **develop a “5-year Action Plan” focusing on achieving carbon neutrality by 2050.**
- The GX Implementation Council and the expertise of specialists will be utilized to compile these plans and implement specific measures based on them.

Energy Supply Side: Approx. 50 trillion yen~

<GX in the Energy Transformation Sectors>

- Renewable Energy[*1] : Approx. 20tn yen~
- Next-generation Networks[*1]: Approx. 11tn yen~ (Grid and balancing capabilities)
- Next-generation innovative reactors: Approx. 1tn yen~
- Hydrogen and ammonia: Approx. 7tn yen~
- Carbon recycling fuels: Approx. 3tn yen~
- CCS: Approx. 4tn yen~

And more

Long-term decarbonized power source auctions will be newly established to promote investment in decarbonized power sources.

Energy Demand Side: Approx. 100 trillion yen~

<GX in Sectors related to people's lives> Approximately 60 trillion yen~

- Housing and buildings: Approx. 14tn yen~
- Automobiles and energy storage batteries: Approx. 34tn yen~
- Digital investments for decarbonization purposes: Approx. 12tn yen~

<GX in Industrial Sectors> Approx. 70 trillion yen~

- Materials (Iron and steel, chemical, cement and paper): Approx. 8tn yen~
- Automobiles and energy storage batteries: Approx. 34tn yen~ (repeated)
- Digital investments for decarbonization purposes: Approx. 12tn yen~ (repeated)
- Zero-emission ships (Maritime): Approx. 3tn yen~

And more

Note: The amounts provided are provisional values and have been mechanically calculated based on certain assumptions. They may change in the future, and there may be increases or decreases depending on the progress of projects, etc.

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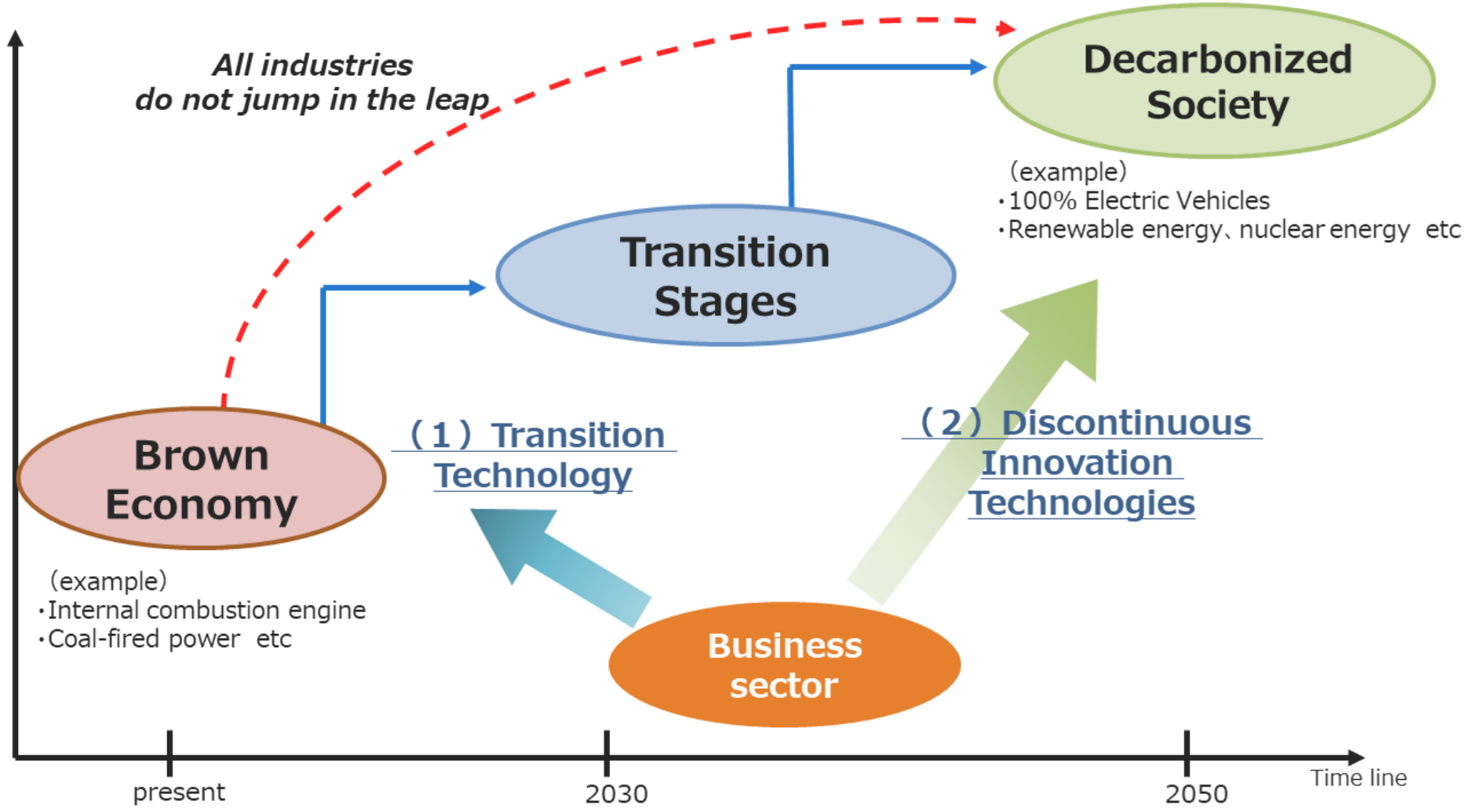
What is transition?

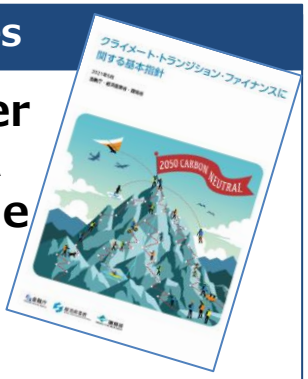
https://www.meti.go.jp/policy/energy_environment/global_warming/transition_finance.html



Japan's 4 step policy tools on Climate Transition Finance

- Although green projects have attracted investment, transition to net zero needs more fund to flow.
- To encourage private finance flow for transition, Japanese government has taken 4-step-policy.
- Companies are expected to show their **credible transition strategy**. They can account for their plan by referring to the technologies and pathway of the roadmap.

1. Basic Guidelines



✓ **METI together with other government offices(FSA and MOE) formulated the Guidelines** to establish transition finance in line with the ICMA transition handbook.

2. Sector Roadmaps

✓ Roadmaps for transition in high-emission sectors - **iron & steel, chemical, electricity, gas, oil, cement and paper & pulp, and automobiles.**

✓ The roadmaps can be referred by companies to formulate its transition strategies and pathways, and by financial industries to evaluate those of clients

3. Model Projects

✓ **30 model projects (with subsidies)** have been chosen from various sectors such as shipping, steel, aviation, chemical, energy and heavy industry sectors.

4. Follow-up Guidance

✓ **Guidance for financiers (especially bond issuers)** in **following up after the issuance** was released in June 2023

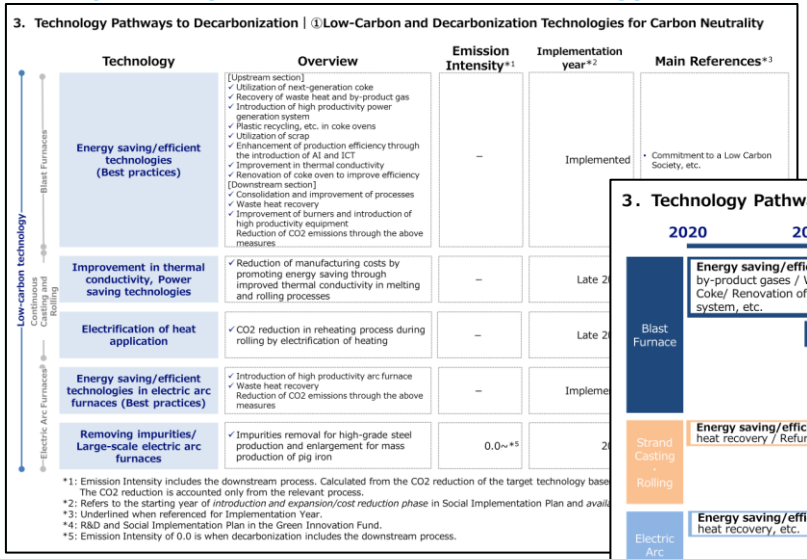
Japan's 4 step policy tools on Climate Transition Finance

Sector-specific roadmaps : Sample ① Iron and Steel

✓ **1. Optionality of decarbonization technology, 2. Development timeline of each decarbonization technology, and 3. CO2 reduction pathway are all there.**

transition_finance_technology_roadmap_iron_and_steel_eng.pdf (meti.go.jp)

Optionality of decarbonization technology



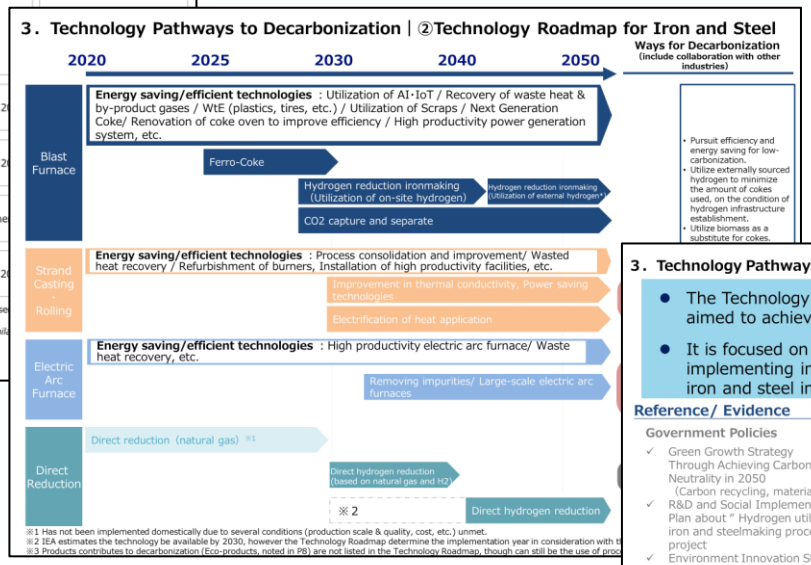
3. Technology Pathways to Decarbonization | ①Low-Carbon and Decarbonization Technologies for Carbon Neutrality

Technology	Overview	Emission Intensity*1	Implementation year*2	Main References*3
Energy saving/efficient technologies (Best practices)	[Upstream section] ✓ Utilization of next-generation coke ✓ Recovery of waste heat and by-product gas ✓ Introduction of high productivity power generation system ✓ Plastic recycling, etc. in coke ovens ✓ Utilization of scrap ✓ Enhancement of production efficiency through the introduction of AI and ICT ✓ Improvement in thermal conductivity ✓ Renovation of coke oven to improve efficiency [Downstream section] ✓ Consolidation and improvement of processes ✓ Waste heat recovery ✓ Improvement of burners and introduction of high productivity equipment Reduction of CO2 emissions through the above measures	–	Implemented	• Commitment to a Low Carbon Society, etc.
Improvement in thermal conductivity, Power saving technologies	✓ Reduction of manufacturing costs by promoting energy saving through improved thermal conductivity in melting and rolling processes	–	Late 2(	
Electrification of heat application	✓ CO2 reduction in reheating process during rolling by electrification of heating	–	Late 2(	
Energy saving/efficient technologies in electric arc furnaces (Best practices)	✓ Introduction of high productivity arc furnace ✓ Waste heat recovery Reduction of CO2 emissions through the above measures	–	Impleme	
Removing impurities/ Large-scale electric arc furnaces	✓ Impurities removal for high-grade steel production and enlargement for mass production of pig iron	0.0~*5	2(	

Low-carbon technology: Blast Furnaces; Continuous Casting and Rolling; Electric Arc Furnaces

*1: Emission Intensity includes the downstream process. Calculated from the CO2 reduction of the target technology base
The CO2 reduction is accounted only from the relevant process.
*2: Refers to the starting year of *introduction and expansion/cost reduction phase* in Social Implementation Plan and *avail*
*3: Underlined when referenced for Implementation Year.
*4: R&D and Social Implementation Plan in the Green Innovation Fund.
*5: Emission Intensity of 0.0 is when decarbonization includes the downstream process.

Development timeline of each decarbonization technology



3. Technology Pathways to Decarbonization | ②Technology Roadmap for Iron and Steel

2020 2025 2030 2040 2050

Ways for Decarbonization (include collaboration with other industries)

Blast Furnace
- Energy saving/efficient technologies : Utilization of AI・IoT / Recovery of waste heat & by-product gases / WtE (plastics, tires, etc.) / Utilization of Scraps / Next Generation Coke/ Renovation of coke oven to improve efficiency / High productivity power generation system, etc.
- Ferro-Coke
- Hydrogen reduction ironmaking (Utilization of on-site hydrogen)
- Hydrogen reduction ironmaking Utilization of external hydrogen*1
- CO2 capture and separate

Strand Casting・Rolling
- Energy saving/efficient technologies : Process consolidation and improvement/ Wasted heat recovery / Refurbishment of burners, Installation of high productivity facilities, etc.
- Improvement in thermal conductivity, Power saving technologies
- Electrification of heat application

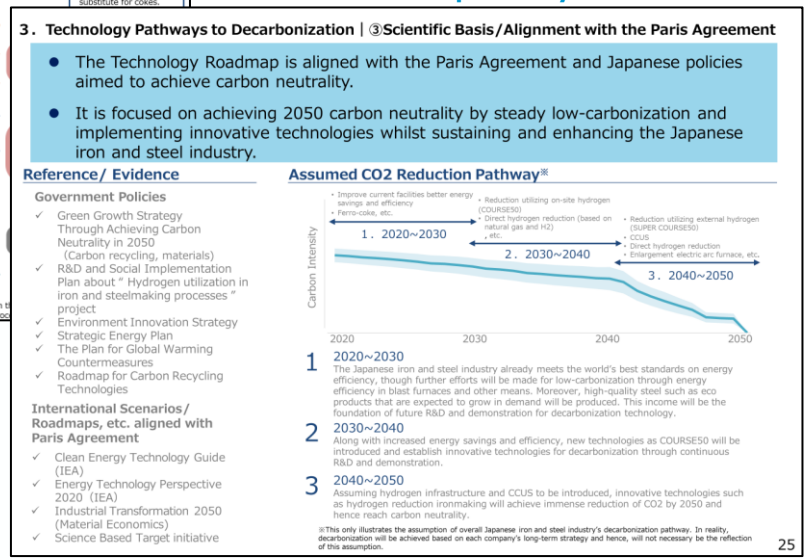
Electric Arc Furnace
- Energy saving/efficient technologies : High productivity electric arc furnace/ Waste heat recovery, etc.
- Removing impurities/ Large-scale electric arc furnaces

Direct Reduction
- Direct reduction (natural gas) *1
- Direct hydrogen reduction (based on natural gas and H2)
- ※2
- Direct hydrogen reduction

Ways for Decarbonization (include collaboration with other industries)
- Pursuit efficiency and energy saving for low-carbonization.
- Utilize externally sourced hydrogen to minimize the amount of cokes used, on the condition of hydrogen infrastructure establishment.
- Utilize biomass as a substitute for cokes.

※1 Has not been implemented domestically due to several conditions (production scale & quality, cost, etc.) unmet.
※2 IEA estimates the technology be available by 2030, however the Technology Roadmap determine the implementation year in consideration with t
※3 Products contributes to decarbonization (Eco-products, noted in P8) are not listed in the Technology Roadmap, though can still be the use of proc

CO2 reduction pathway



3. Technology Pathways to Decarbonization | ③Scientific Basis/Alignment with the Paris Agreement

- The Technology Roadmap is aligned with the Paris Agreement and Japanese policies aimed to achieve carbon neutrality.
- It is focused on achieving 2050 carbon neutrality by steady low-carbonization and implementing innovative technologies whilst sustaining and enhancing the Japanese iron and steel industry.

Reference/ Evidence

Government Policies
- ✓ Green Growth Strategy Through Achieving Carbon Neutrality in 2050 (Carbon recycling, materials)
- ✓ R&D and Social Implementation Plan about " Hydrogen utilization in iron and steelmaking processes " project
- ✓ Environment Innovation Strategy
- ✓ Strategic Energy Plan
- ✓ The Plan for Global Warming Countermeasures
- ✓ Roadmap for Carbon Recycling Technologies

International Scenarios/ Roadmaps, etc. aligned with Paris Agreement
- ✓ Clean Energy Technology Guide (IEA)
- ✓ Energy Technology Perspective 2020 (IEA)
- ✓ Industrial Transformation 2050 (Material Economics)
- ✓ Science Based Target initiative

Assumed CO2 Reduction Pathway※

Carbon Intensity
- 1. 2020~2030: • Improve current facilities better energy savings and efficiency • Ferro-coke, etc.
- 2. 2030~2040: • Reduction utilizing on-site hydrogen (COURSE50) • Direct hydrogen reduction (based on natural gas and H2) , etc.
- 3. 2040~2050: • Reduction utilizing external hydrogen (SUPER COURSE50) • CCUS • Direct hydrogen reduction • Enlargement electric arc furnace, etc.

2020 2030 2040 2050

1 2020~2030
The Japanese iron and steel industry already meets the world's best standards on energy efficiency, though further efforts will be made for low-carbonization through energy efficiency in blast furnaces and other means. Moreover, high-quality steel such as eco products that are expected to grow in demand will be produced. This income will be the foundation of future R&D and demonstration for decarbonization technology.

2 2030~2040
Along with increased energy savings and efficiency, new technologies as COURSE50 will be introduced and establish innovative technologies for decarbonization through continuous R&D and demonstration.

3 2040~2050
Assuming hydrogen infrastructure and CCUS to be introduced, innovative technologies such as hydrogen reduction ironmaking will achieve immense reduction of CO2 by 2050 and hence reach carbon neutrality.

※This only illustrates the assumption of overall Japanese iron and steel industry's decarbonization pathway. In reality, decarbonization will be achieved based on each company's long-term strategy and hence, will not necessary be the reflection of this assumption.

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Japan's 4 step policy tools on Climate Transition Finance

Sector-specific roadmaps : Sample ② Power

✓ **1. Optionality of decarbonization technology, 2. Development timeline of each decarbonization technology, and 3. CO2 reduction pathway are all there.**

transition_finance_technology_roadmap_power_eng.pdf (meti.go.jp)

Optionality of decarbonization technology

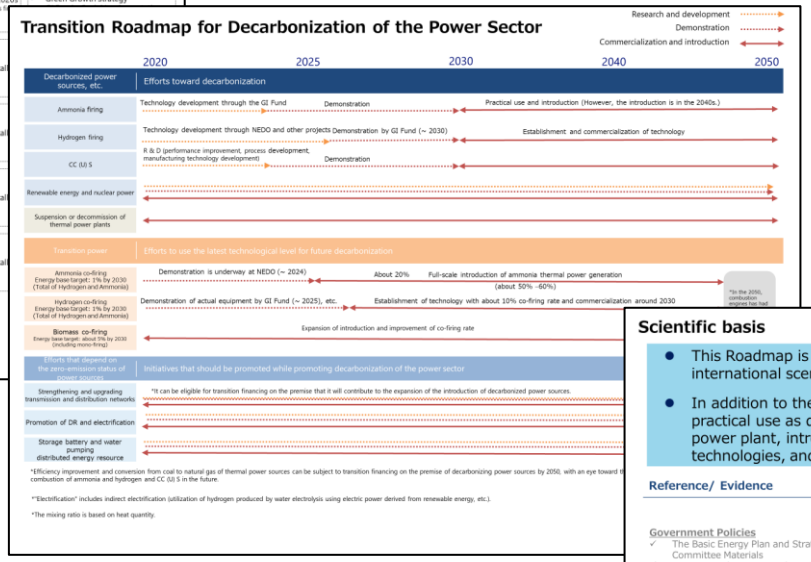
(Reference) Technology Pathways to Decarbonization

Transition Power Sources and Initiatives that depend on the state of zero emission of power sources

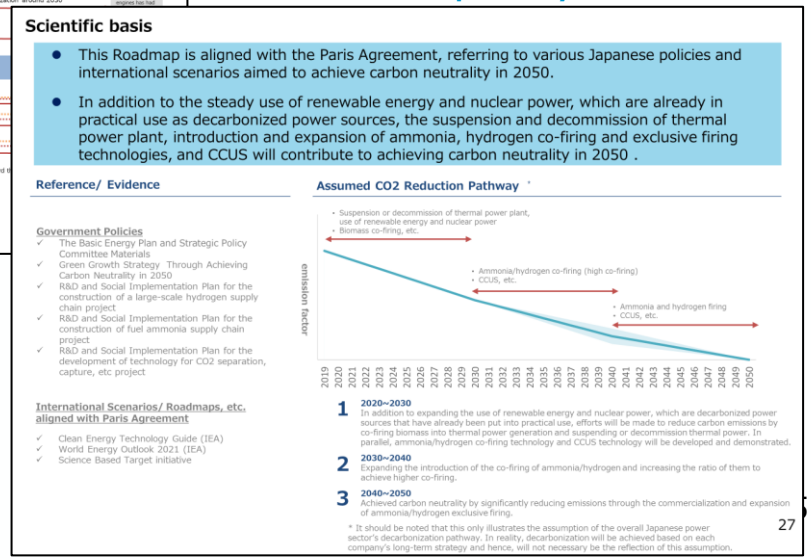
	Technology	Overview	Emission intensity *1	Implementation year *2	Main Reference *3
Transition power	Ammonia co-firing	✓ Ammonia mixed firing in coal fired power plants	(Dependent on Co-firing Rate)	Late 2020s (20% co-firing with coal fired power)	• Strategic Energy Plan • green growth strategy • GI Fund - Social Implementation Plan *4
	Hydrogen co-firing	✓ Hydrogen mixed firing in gas thermal power generation	(Dependent on Co-firing Rate)	Late 2020s (10% Mixed grilling in gas	• Strategic Energy Plan • Green Growth Strategy
	Biomass co-firing	✓ Biomass mixed combustion in coal-fired thermal power plants	(Dependent on Co-firing Rate)	Already install	
Efforts that depend on the zero-emission status of power sources	Strengthening and upgrading transmission and distribution networks	✓ Enhancement of transmission and distribution networks to expand the introduction of renewable energy	-	Already install	
	Promotion of DR and electrification	✓ Demand-side decarbonization initiatives, electrification, etc.	-	Already install	
	Storage battery and water pumping distributed energy resource	✓ Introduction of storage batteries and distributed energy resources that contribute to stability of the system	-	Already install	

*1: Calculated based on the emission factors of the existing technologies and the reduction by the technologies.
*2: For the Social Implementation Plan, referenced the year of the implementation expansion and cost reduction phase started.
*3: The document which mentions implement year are underlined.
*4: R&D and Social Implementation Plan of the Green Innovation Fund.

Development timeline of each decarbonization technology



CO2 reduction pathway

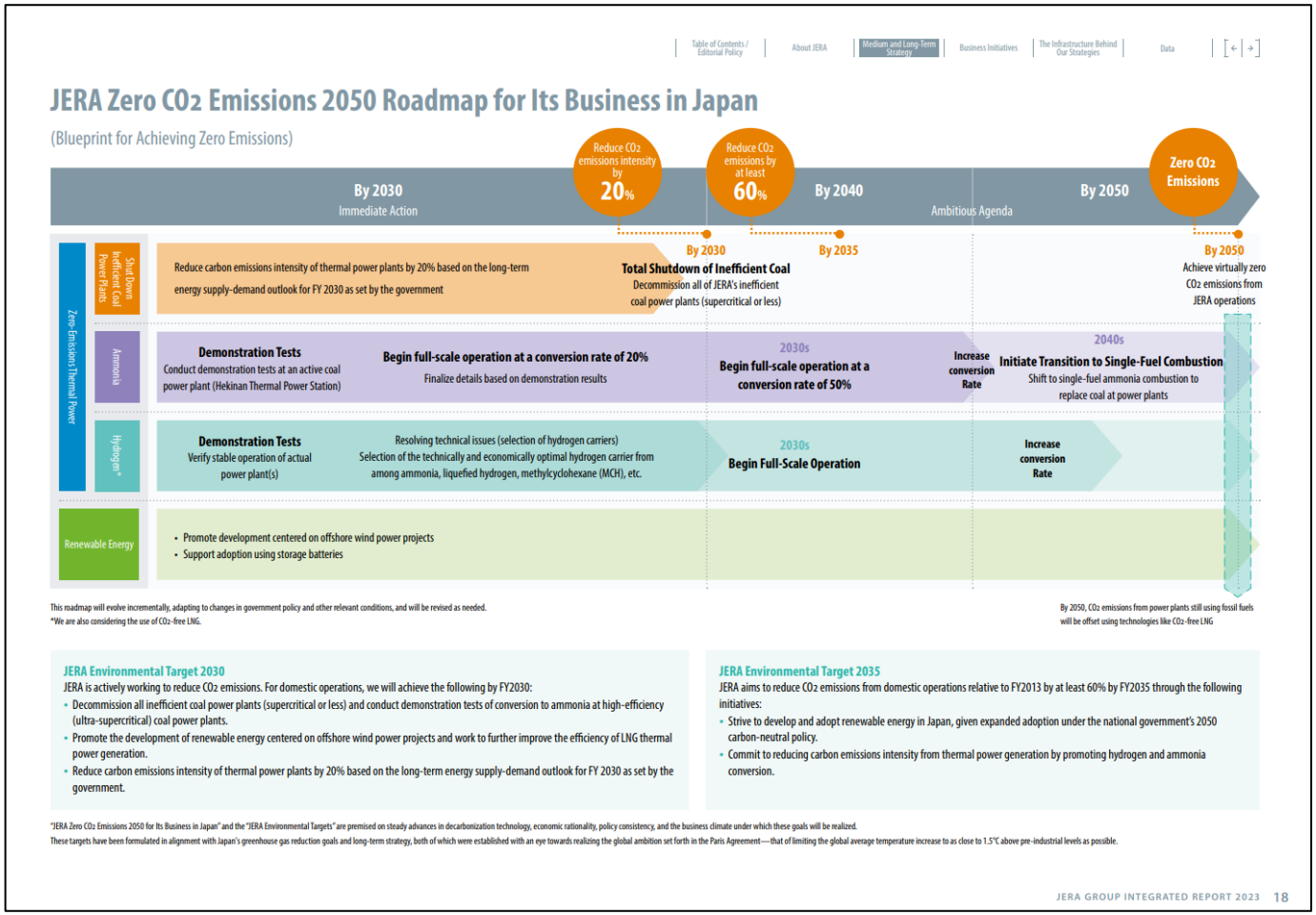


Japan's 4 step policy tools on Climate Transition Finance

Sector-specific roadmaps : Sample ② Power

- ✓ **Use case: JERA (A power generation giant in Japan)**
- ✓ **With its own roadmap, referred to METI's sector-specific roadmap(Power sector), JERA has issued transition finance framework with SPO and carried out a number of transition finance so far.**

https://www.jera.co.jp/static/files/corporate/CCB/JERA_report2023_EN_1115.pdf



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JERA Zero CO_2 Emissions 2050 Roadmap for Its Business in Japan

(Blueprint for Achieving Zero Emissions)

This roadmap will evolve incrementally, adapting to changes in government policy and other relevant conditions, and will be revised as needed.
*We are also considering the use of CO_2-free LNG.

By 2050, CO_2 emissions from power plants still using fossil fuels will be offset using technologies like CO_2-free LNG

JERA Environmental Target 2030

JERA is actively working to reduce CO_2 emissions. For domestic operations, we will achieve the following by FY2030:

- Decommission all inefficient coal power plants (supercritical or less) and conduct demonstration tests of conversion to ammonia at high-efficiency (ultra-supercritical) coal power plants.
- Promote the development of renewable energy centered on offshore wind power projects and work to further improve the efficiency of LNG thermal power generation.
- Reduce carbon emissions intensity of thermal power plants by 20% based on the long-term energy supply-demand outlook for FY 2030 as set by the government.

JERA Environmental Target 2035

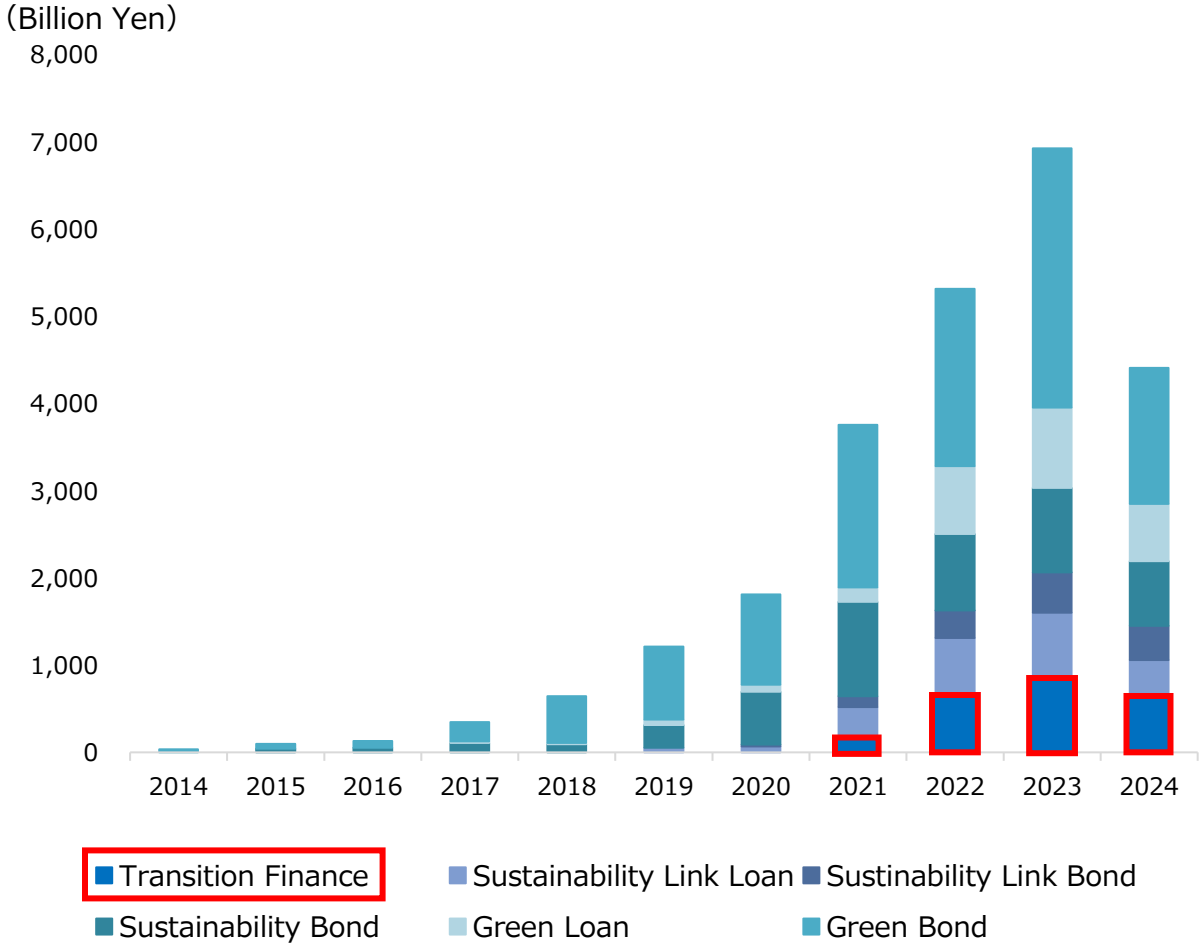
JERA aims to reduce CO_2 emissions from domestic operations relative to FY2013 by at least 60% by FY2035 through the following initiatives:

- Strive to develop and adopt renewable energy in Japan, given expanded adoption under the national government's 2050 carbon-neutral policy.
- Commit to reducing carbon emissions intensity from thermal power generation by promoting hydrogen and ammonia conversion.

"JERA Zero CO_2 Emissions 2050 for Its Business in Japan" and the "JERA Environmental Targets" are premised on steady advances in decarbonization technology, economic rationality, policy consistency, and the business climate under which these goals will be realized.
These targets have been formulated in alignment with Japan's greenhouse gas reduction goals and long-term strategy, both of which were established with an eye towards realizing the global ambition set forth in the Paris Agreement — that of limiting the global average temperature increase to as close to 1.5°C above pre-industrial levels as possible.

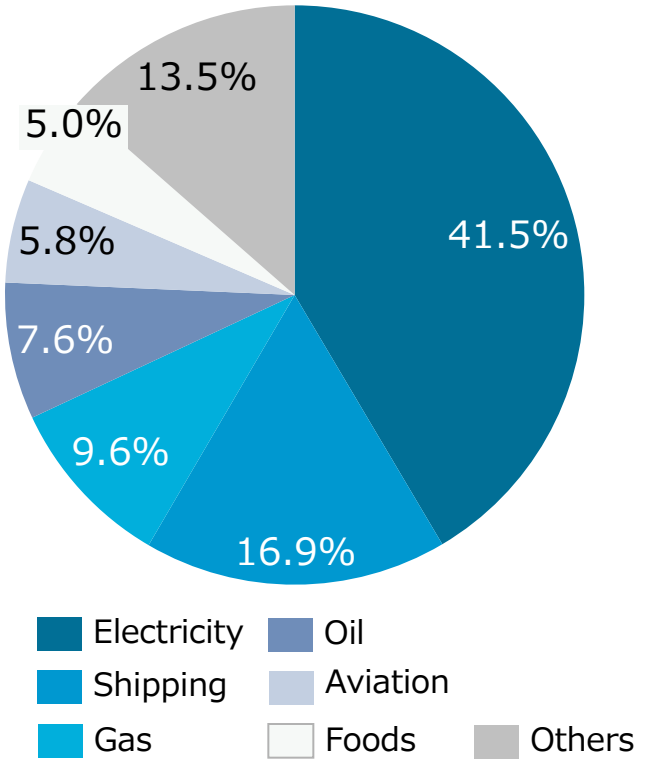
Trends in amount of transition-labeled bonds and loans

- The cumulative amount of transition-labeled bonds and loans has grown to 2.4 trillion JPY(equivalent to USD 15b) by end of 2024. *except for the Japan Climate Transition Bonds



The cumulative amount of transition-labeled bond and loans in Japan (Jan.2021-Dec.2024)

Apprx. 2.4 trillion JPY (equivalent to USD 15b)



Source: MOE “Green Finance Portal” (https://greenfinanceportal.env.go.jp/),
METI ” Transition Finance HP” (https://www.meti.go.jp/policy/energy_environment/global_warming/transition_finance.html) , Other public information.

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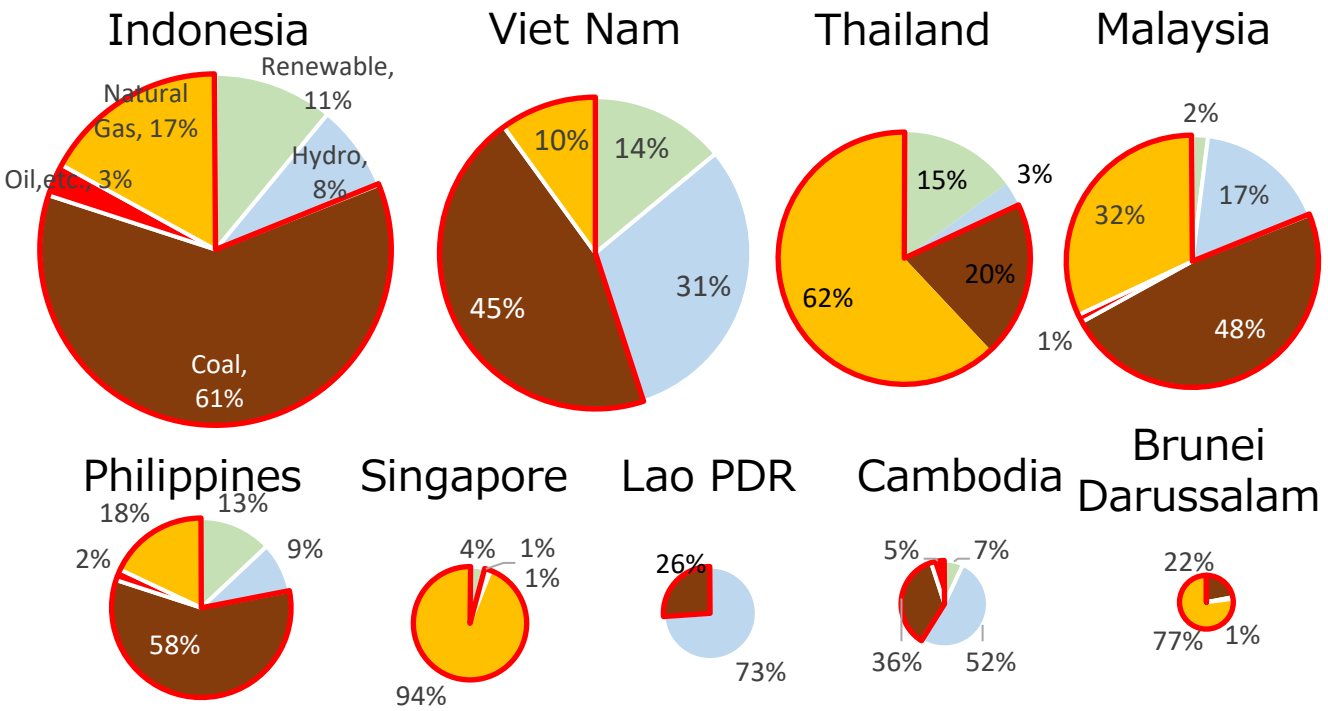
Transition in Asia

- Although **many ASEAN countries** have announced their intention for carbon neutrality, many of which 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

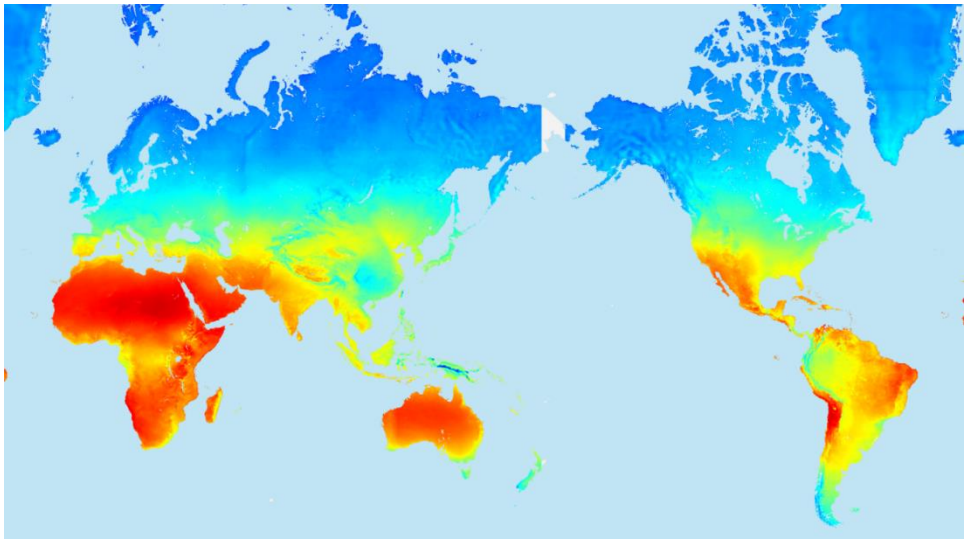
CN goals set by Southeast Asian countries

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.

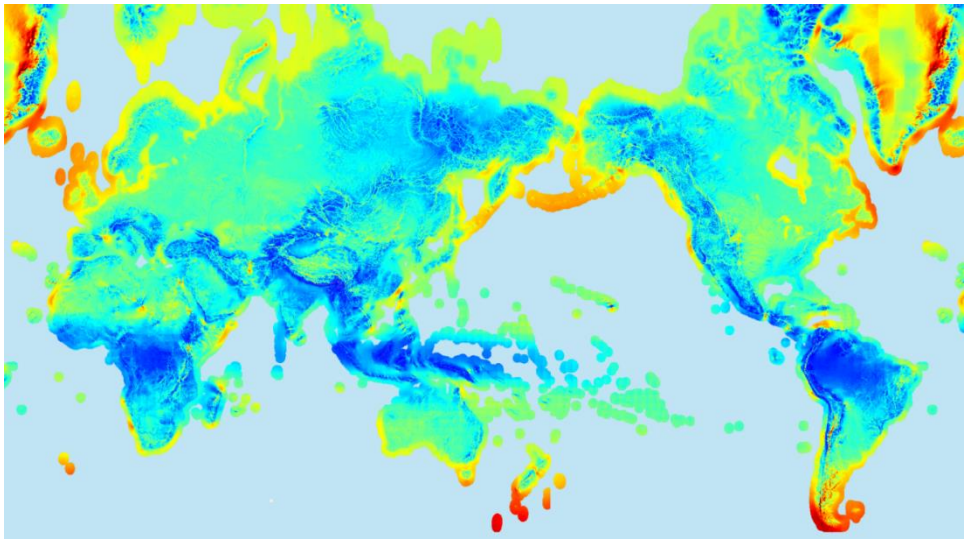
Transition in Asia

Global Distribution of Solar Power Potential



Global annual average global horizontal irradiation

Global Distribution of Wind Power Potential



Global annual average wind speed at 100m height

*Source: "Global Atlas" https://globalatlas.irena.org/

*Ref: How to refer "Global Atlas" https://globalatlas.irena.org/help

Contributing to the Realization of Asia's "Transition"

- In order to address global climate change issues and achieve economic growth, it is extremely important to realize CN in Asia. Social stability, including energy security, is also important. On the other hand, Asia faces **challenges such as limited renewable energy reserves and a surge in electricity demand** in the future.
- Therefore, **it is important to utilize "transition finance" to support the gradual transition to CN as well as green finances.**
- Specifically, it is important to (1) share transition-related technologies, (2) support the formulation of rules related to transition finance, and (3) provide transition funds.

The Importance of Transition in Asia

potential	Asia's emissions are more than half of the ones in the world	By 2050 The size of **the economy is about 3 times***
challenge	Compared to Europe and Africa, **the amount of renewable energy available is small**	Population growth and economic growth will **increase electricity demand by approximately three times by 2050***

Taxonomy
(Limited to those that are already green, etc.)

Transition Paths based on the reality in Asian countries

Examples of Initiatives to Promote "Transition Finance"

Technology

○ Share transition-related technologies with Asia
- Compile a list of technologies to make it easier for financial institutions to provide funds
- Joint demonstration of transition technology

Rule making

○ Establish rules for the Asian version of transition finance
→ Enable Asia to access global funds
(It is estimated that the cumulative amount needed by 2050 is 40 trillion $.)

Execution

○ Provide funds by the Japanese government and private financial institutions for transition technologies and projects such as ammonia, LNG, and CCUS.

⇒ **Achieving economic growth and decarbonization together with Asia**

Source: Created based on IEA's World Energy Outlook 2021, etc.
*Outlook for Southeast Asia

Carry out and finance to current low emission deals

- Japan can contribute to current low emission technologies as well to cope with energy demand growth of the region.
- This is something that transition finance can play a role in.

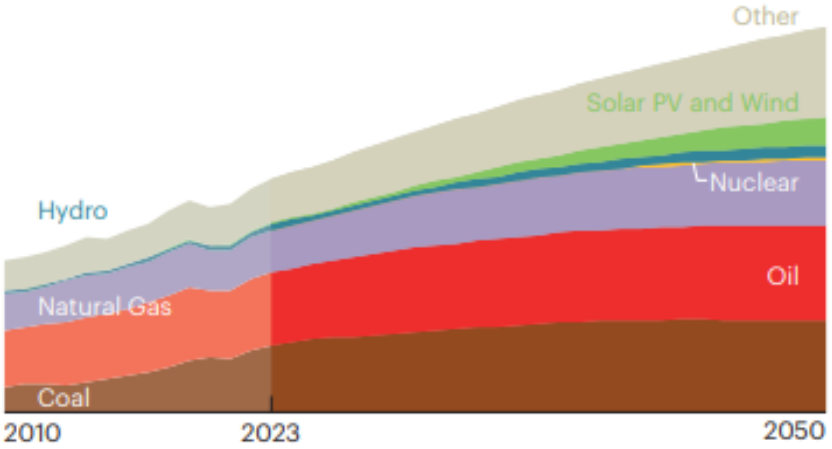
6.10 Southeast Asia

Population Million people: 2023 **685**, 2050 **787**

GDP Trillion USD (2023, PPP): 2023 **11.2**, 2050 **29.9**

Energy demand in the Stated Policies Scenario

60 EJ

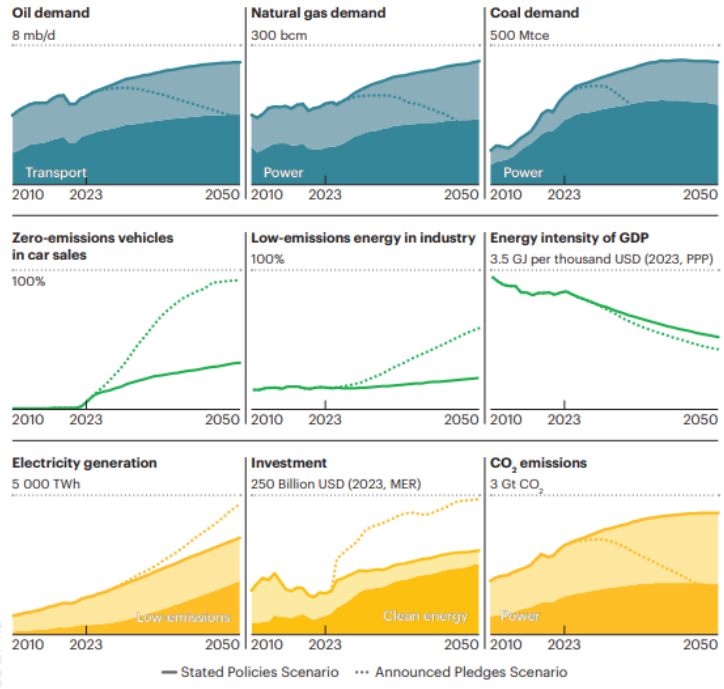


8 out of 10
Countries with net zero or carbon neutrality targets by 2050-2065

2045-2056
Target phase-out of coal from power generation in Malaysia, Thailand, Indonesia and Viet Nam

23%
Target share of renewable energy in total energy supply by 2025 under the ASEAN Plan of Action for Energy Cooperation

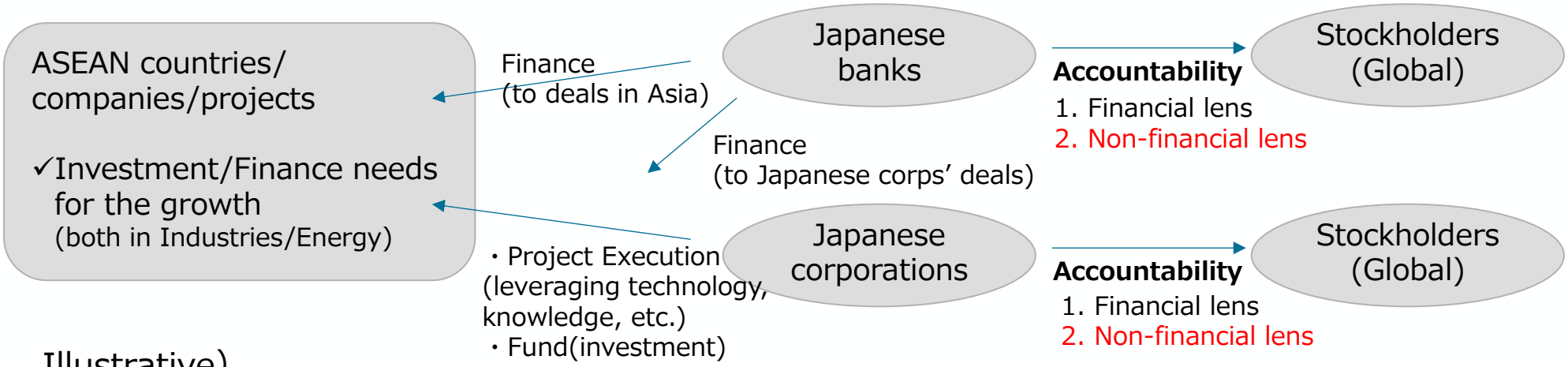
35.5 Billion USD
Total funding raised through Just Energy Transition Partnerships in Indonesia and Viet Nam to support their energy transitions



World Energy Outlook 2024 P.284

Pressures from stockholders

Need more information on transition strategy as corporations have accountability for stockholders especially for grid and fossil fuel related deals.



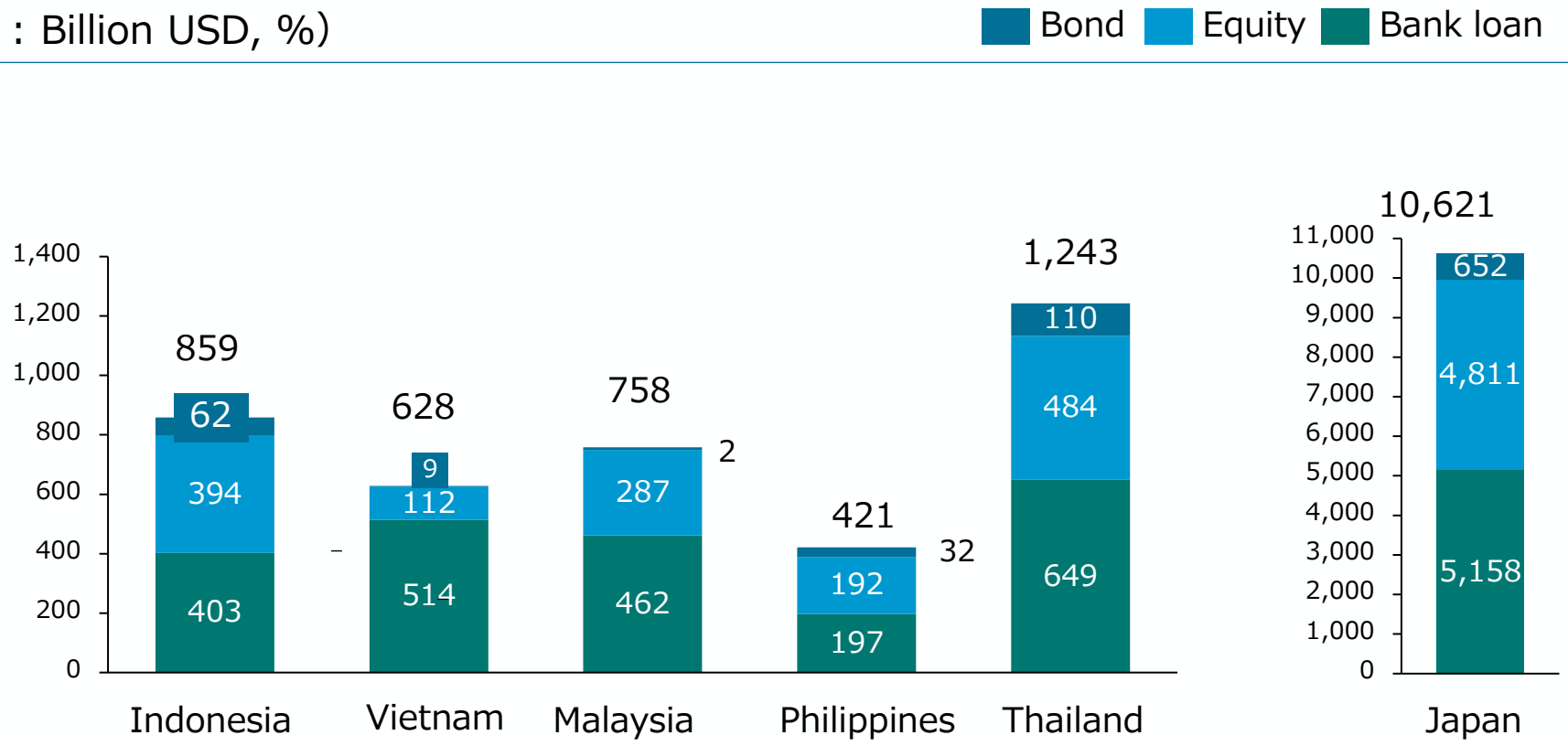
Illustrative)

	Financial Bankability	Non-Financial Bankability
New technologies	△ : government support needed &need more time to develop	○
Fossil Fuels	○	△ : 2050CN, carbon lock-in
Grids	△	△: some say Grids used for fossil fuel generated electricity are not eligible
Energy-efficiency	○	○
Renewables	○	○

Finance market in ASEAN

Loan dominates against bonds in the region from the perspective of corporations operating in ASEAN

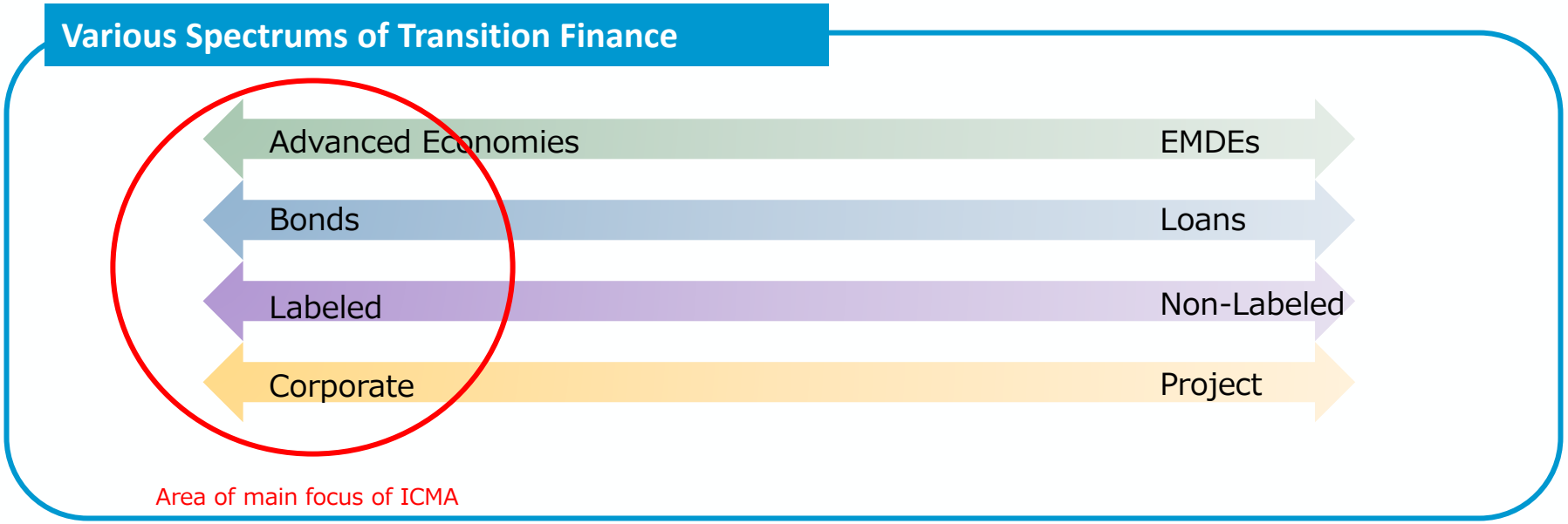
Unit：Billion USD, %)



Ref. OECD(2024) Corporate Bond Markets in Asia CHALLENGES AND OPPORTUNITIES FOR GROWTH COIMPANIES

Spectrum of Transition Finance

- **International Capital Market Association(ICMA)'s Standards are for large companies in advanced economies which want to show their progressive efforts through labeled finance**
- **Need for broadening the scope of transition finance to include EMDEs, loans, non-labeled finance**
  Especially if transition finance is to be positioned as a tool to facilitate finance to EMDEs, ways of thinking other than the ICMA standards are needed



Organizing the Scope of Transition Finance

To conclude …

20 trillion Yen investment support	**150 trillion Yen** public and private investment	**Transition Finance market** for high-emitting sectors

Government-made-Sector roadmaps are the key for companies' **credible transition strategy**

⇒ **<u>METI and Japanese companies will contribute to ASEAN by developing GX technologies</u>**

For the moment …
⇒ **<u>We will contribute to current low emission technologies as well</u>**.

To better cope with stakeholders who are keen on carbon lock-in, keys are…
- **For Asia to have clear long-term transition strategy such as sector specific roadmaps**
- **For Asia to announce how specific deals contribute to the strategy**

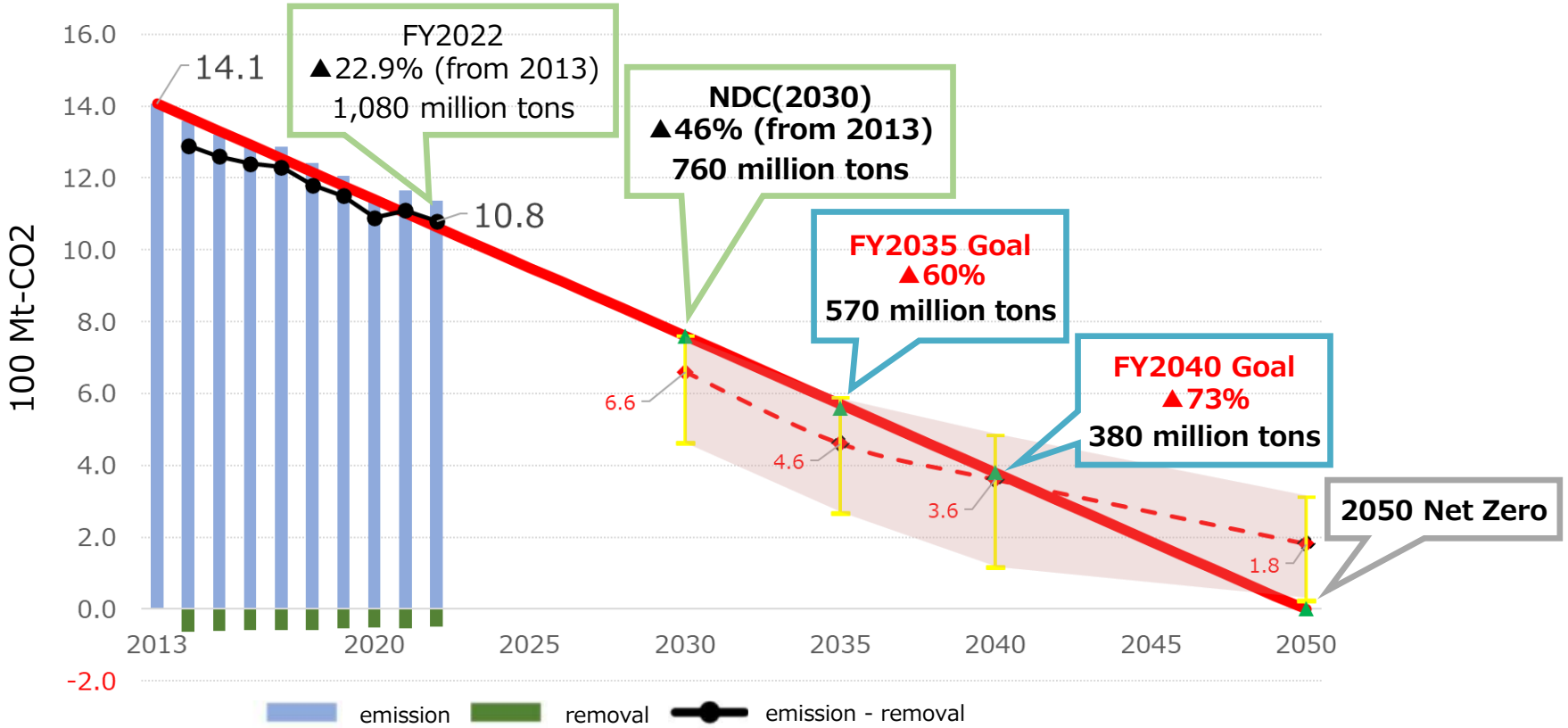
as many Japanese corporations have some commitment related to CN.

(This summer, our public private working group will publish a report on this matter)

Reference

【Ref.】Japan's Progress Toward Net Zero by 2050

- In line with the 1.5°C target, Japan is continuing to challenge itself to reduce emissions by 46% in FY2030 compared to FY2013 and to achieve a higher level of 50%.
- Over 20% reduction so far. **Japan is steadily reducing emissions toward the 2050 target and has continued to be on track with its goals.**



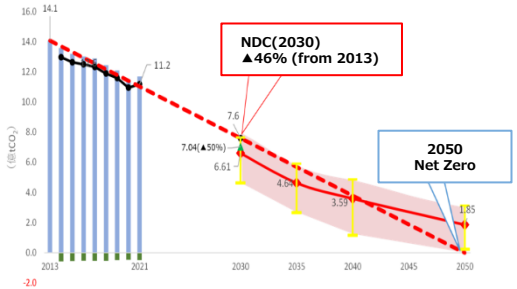
*1: The range of red bands in the figure above is a hypothetical allocation of the global greenhouse gas emission reduction (%) to Japan in the 1.5C pathway indicated in the Integrated Report of the IPCC Sixth Assessment Report released in March 2023.

*2: In this report, the path to limit the temperature to 1.5° C is shown as a wide path, taking into account the uncertainty of the model, so emissions as of 2030, 2035, 2040, and 2050 are indicated by the yellow line. In addition, the representative values are shown as solid red lines.

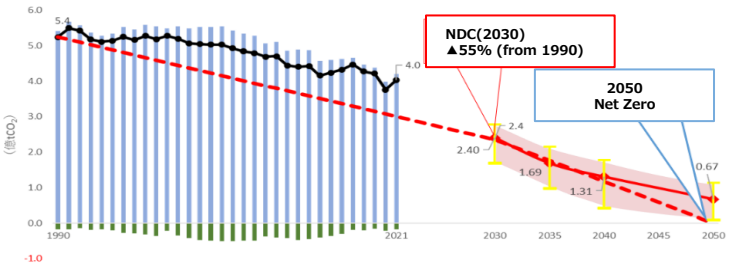
【Ref.】Progress of emissions reductions of G7 members

■ Japan's emissions reduction is on track with its NDC.

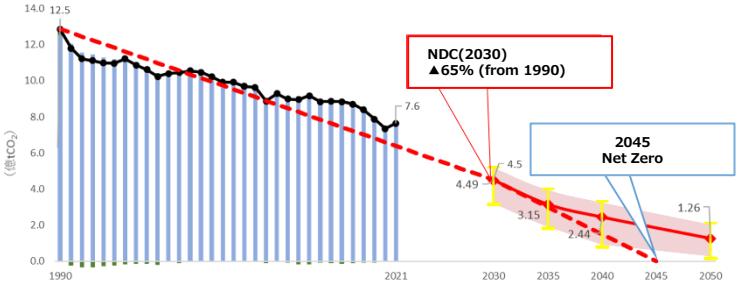
Japan



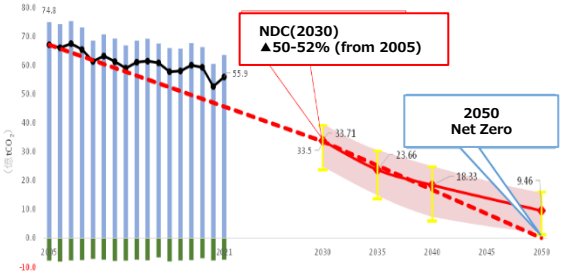
France



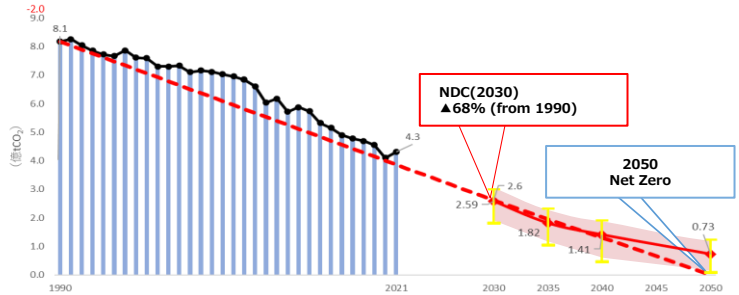
Germany



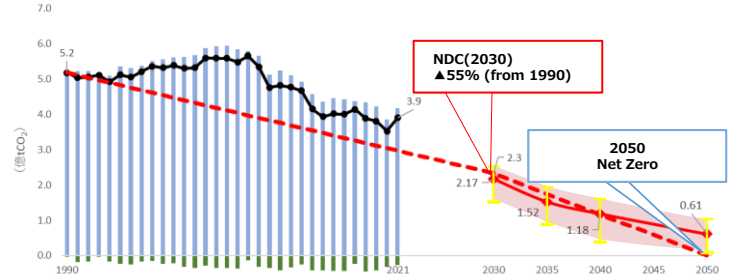
US



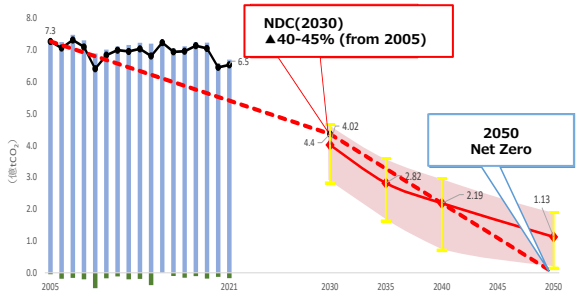
UK



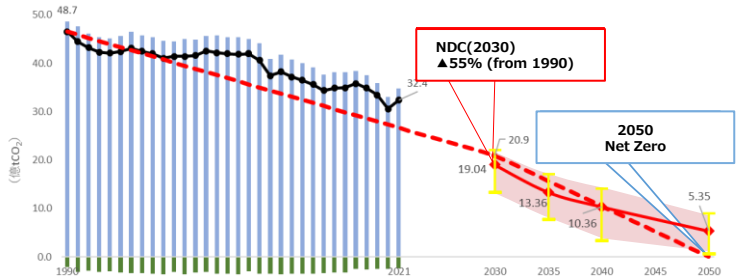
Italy



Canada



EU



emissions　removal　emissions - removal　One of 1.5 IPCC modeled pathways (representative point)　Range of IPCC 1.5 pathways

2nd AZEC Ministerial Meeting, 21st Aug. 2024

- Reaffirming **1. Triple breakthrough, i. climate change, ii. economic growth, iii. security, simultaneously** and **2. One goal, Various pathways towards carbon neutrality/net-zero emission, considering each country's circumstances**

Policy Coordination in the AZEC

Welcomed Three Sectors Initiatives, Power, Transport and Industry

Launched the Asia Zero Emission Center in ERIA (Economic Research Institute for ASEAN and East Asia)

Business Engagement in the AZEC

Published about 70 MOUs towards the 2nd AZEC Ministerial Meeting

With **more than 300 business leaders**, Discussed solutions to introduce renewable energy, to facilitate decarbonization in power plants, and to promote finance towards energy transitions, at the Business Forum

2nd AZEC Ministerial Meeting

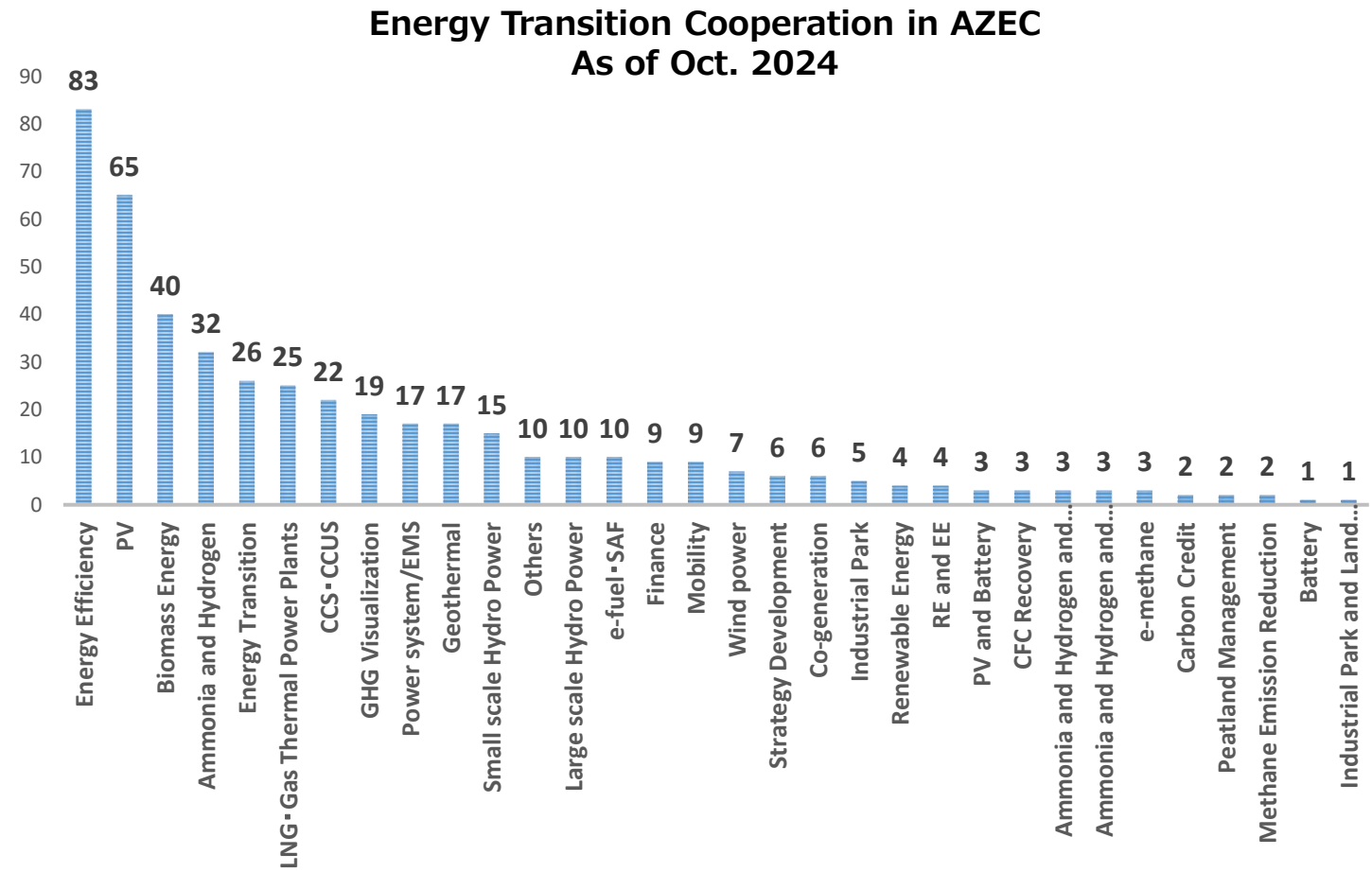
Launch Ceremony for AZE Center

MOU Ceremony

Business forum

Energy Transition Cooperation in AZEC

- Energy Transition Projects and MoUs among AZEC partners in EE, RE, Hydrogen/Ammonia, Sustainable Fuels, CCUS, Natural Gas, Industrial Parks



(Sources)
AZEC Progress report : https://www.meti.go.jp/press/2023/12/20231218004/20231218004-3.pdf
MOUs towards AZEC leaders meeting : https://www.meti.go.jp/press/2023/12/20231218004/20231218004-9.pdf

MOC among METI, ADB, and ERIA on Technology and Transition Finance for Practical Energy Transition in Asia (signed on Aug. 21st, 2024)

- **Outline** : The MOC is to confirm the future collaboration among METI, ADB, and ERIA on technology and transition finance for whole-of-economy transitions in Asia including the energy sector.
- **Prospects** : With a focus on technology and transition finance as key enablers, the three parties will deepen mutual understanding, identify and promote tangible future cooperations to accelerate the whole-of-economy transitions. The three parties will hold regular working groups to promote the cooperation.

: Capability and Contribution

ERIA
Economic Research Institute for ASEAN and East Asia

- ✓ Asia Transition Finance Study Group(ATF SG)
- ✓ Decarbonization roadmap
- ✓ Technology list

METI
Ministry of Economy, Trade and Industry

- ✓ AZEC
- ✓ Green Transformation(GX)
- ✓ Transition Finance

Decarbonization Technology × **Transition Finance**

ADB ASIAN DEVELOPMENT BANK

- ✓ Knowledge sharing
- ✓ Technical advice
- ✓ Capacity building
- ✓ Transition Finance

Accelerate Energy Transitions in Asia

Overview of Japan Climate Transition Bond

Japan Climate Transition Bond

Japan Climate Transition Bond Framework

- Published date: Nov 2023
- Inter-government committee
  (Cabinet Secretariat, FSA, MOF, METI, MOE)
- Second party opinion: JCR, DNV

First Issuance
Feb 2024
(1.6 trillion yen)

Transition Strategy "GX Promotion Strategy"

- Achieve net zero and economic growth
  - Japan's NDC, in line with Paris agreement: 46% reduction in GHG emission by 2030 (compared to 2013 levels) and carbon neutrality by 2050
  - Science based target through "Sector Specific Roadmaps" (8 sector), "Policy roadmap" (22 areas)

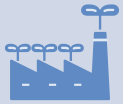
Use of Proceeds

- "Eligibility Criteria" and "Representative Use of Proceeds" covers various sector to bring whole-of-economy decarbonization (such as energy efficiency, transformation of the manufacturing industry, and renewable energy)

Reporting

- Annual reporting of "Allocation reporting" (from FY2024) and "Impact reporting" (from FY 2025)

Overview of the Climate Transition Bond Framework ②
“Classification of Use of Proceeds”

	Major categories	Eligibility Criteria	Representative Use of Proceeds (Eligible Projects)
1	Energy efficiency 	Promotion of thorough energy efficiency improvement	- Promote the spread of energy-efficient appliances
		Houses and buildings	- Support for building new houses and buildings with high energy efficiency and retrofitting to improve energy efficiency
		Digital investment aimed at decarbonization	- Facilitating the development of and investment in energy efficient semiconductors, photonics electronics convergence technologies, etc.
		Battery industry	- Investments in plants manufacturing batteries together with their material and components
2	Renewable energy 	Making renewable energy a major power source	- Floating offshore wind - Next-generation solar cells (perovskite)
		Infrastructure	- Development of cities and communities that will help decarbonization
3	Low-carbon and Decarbonized energy 	Utilization of nuclear power	- Next-generation advanced reactors with built-in new safety mechanisms
		Establishing electricity and gas markets to achieve carbon neutrality	- Promoting zero-emission thermal power - Development of submarine DC transmission systems, etc.
4	Clean transportation 	GX in transport sector	- Support for the introduction of next-generation vehicle - Developing demonstration aircraft by 2030s and spreading the use of zero-emissions ships, etc.
		Infrastructure (repeat)	- Development of cities and communities that will help decarbonization
5	Circular economy adapted products, production technologies and processes 	Restructuring the manufacturing industry (fuel and feedstocks transition)	- Development and introduction of innovative technologies such as hydrogen reduction for steelmaking - Conversion to Carbon-Recycling production systems
		Facilitating introduction of hydrogen and ammonia	- Building supply chain both in domestically and internationally - Research and development as well as the introduction support of both production and usage of hydrogen derived from excess renewable energy sources
		Carbon Recycling and CCS	- Support for research and development of Carbon Recycling fuel
6	Environmentally sustainable management of living natural resources and land use and Circular economy 	Food, agriculture, forestry, and fisheries	- Decarbonization of agriculture, forestry and fisheries
		Resource circulation	- Investment to accelerate the resource circulation such as plastics, metals, sustainable aviation fuel (SAF), etc

Ref. Second Party Opinions

■ The Government of Japan obtained SPOs from two external reviewers, DNV and JCR. The external reviewers assessed and evaluated the alignment with international standards such as the Green Bond Principles.

<Overview of External Reviewers>

- DNV : Established in 1864 (Headquartered in Oslo, Norway). An international external reviewer with 300 offices in 100 countries, including Japan. DNV has the most experiences in providing SPOs for transition bonds.
- JCR (Japan Credit Rating Agency) : Established in 1985 (Headquartered in Tokyo). One of Japan's leading external reviewers. JCR has started independent evaluation services for green bonds and other sustainable financing instruments in 2017 and has provided a lot of SPOs for transition bonds.

DNV

- DNV confirmed that the issuer's framework aligns with the requirements of the use of proceeds transition bond format, as outlined in the **"Climate Transition Finance Handbook" and the "Green Bond Principles"**.
- DNV evaluated the framework as enabling capital raising and investment for both new and/or existing projects that bring environmental benefits, so that **providing investment opportunities necessary for transition finance to be implemented with transparency and reliability**.
- DNV evaluated the issuer's climate transition strategy as being in line with **the Paris Agreement, with a long-term terget of carbon neutrality by 2050 and a mid-term target of 46% reduction in GHG emission by 2030 and as science-based strategy**.
- DNV evaluated that the management of proceeds is in an appropriate manner, including separate management from other accounts.

JCR

- Overall Evaluation : **Green 1 (T)(F) (the highest evaluation)**

【Greenness/Transitional Evaluation : gt1(F) /
Management, Operation and Transparency Evaluation : m1(F)】

- JCR confirmed that the issuer's framework meets **the standards for items required by the "Green Bond Principles" and the "Climate Transition Finance Handbook", etc**.
- JCR evaluated the **GX promotion measures, which are selected as the use of proceeds in the framework**, as important initiatives for achieving carbon neutrality by 2050 and a mid-term target of the 46% reduction in GHG emission by 2030, **contributing significantly to the realization of a decarbonized society in Japan**.
- JCR evaluated the issuer's high level of transparency, including the **improvement of the roadmap for the next 10 years and the formulation of a five-year action plan**.

Ref. CBI Certification

- CBI（Climate Bond Initiative）is an international NPO promoting the mobilization of capital for climate action, who have set the Climate Bond Standards.
- The first issuance of the Japan Climate Transition Bonds (1.6 trillion JPY issued in Feb 2024) received CBI certification.

CBI(Climate Bonds Initiative)

- NPO founded in 2012 based in London. Aims to mobilize 100 trillion dollars of the bond market for climate action and published the Climate Bond Standards. Issues reports on the green bond market, relevant policies, and provides consulting.

- The CBI certification scheme is a labelling scheme for issuers, assets or other debt instruments to ensure their consistency with the goals of the Paris Agreement. Requirements on the use-of-proceeds, governance, reporting, etc. are described in detail.

CBI Certification for First Issuance of JCTBs

- JCR conducted the verification for the CBI certification process and released the CBI Verification Report on February 8th, 2024.
- The report states that the planned use-of-proceeds* for the first issuance (1.6 trillion JPY) adhere to the CBS.
  *confirmed alignment for roughly 95% of projects, excluding those without CBI criteria。

<CBI Press Release>

"[The GX Plan] underscores Japan's commitment to its 2030 greenhouse gas (GHG) reduction goals, and to its vision for carbon neutrality by 2050. The Bond is Certified under the Climate Bonds Standard, offering investors assurance on the environmental objectives of the use of the proceeds and signifying alignment with best practice global standards."

(Comment from CBI CEO Sean Kidney)

"This bond shows clearly how governments, and others, can raise funds to invest in that transition. It marks a significant milestone in transition finance."