

Japan's Approach to Carbon Neutrality



Ministry of Economy Trade and Industry, JAPAN

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- **Clean Energy Strategy Interim Report (Outline)**
- **EU Taxonomy and Japan's Climate Finance Policy**

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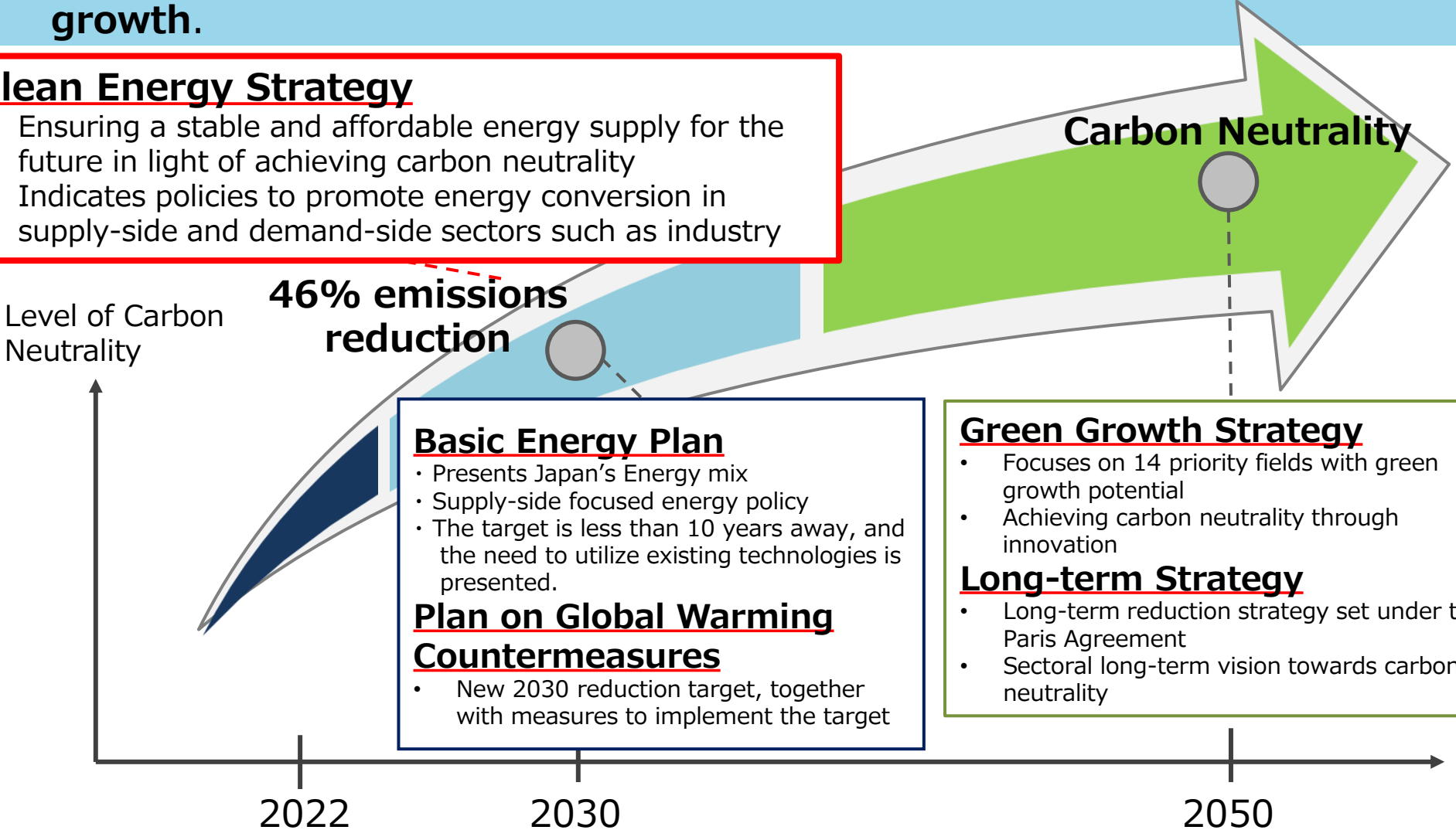
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Clean Energy Strategy in Japan's Climate Policy

● To achieve carbon neutrality in 2050 and 46% emissions reduction in 2030, the **Clean Energy Strategy** will draw a comprehensive and feasible pathway rather than focusing on specific timeframes to ensure a stable and affordable energy supply in the future and lead to further economic growth.

Clean Energy Strategy

- Ensuring a stable and affordable energy supply for the future in light of achieving carbon neutrality
- Indicates policies to promote energy conversion in supply-side and demand-side sectors such as industry



Basic Energy Plan

- Presents Japan's Energy mix
- Supply-side focused energy policy
- The target is less than 10 years away, and the need to utilize existing technologies is presented.

Plan on Global Warming Countermeasures

- New 2030 reduction target, together with measures to implement the target

Green Growth Strategy

- Focuses on 14 priority fields with green growth potential
- Achieving carbon neutrality through innovation

Long-term Strategy

- Long-term reduction strategy set under the Paris Agreement
- Sectoral long-term vision towards carbon neutrality

Overview of the Clean Energy Strategy Interim Report

- **Chapter 1** organizes policies to make utmost efforts to ensure energy security while accelerating decarbonization, considering the recent Russian invasion of Ukraine and the tightening supply/demand of electricity.
- **Chapter 2** discusses (1) Industrial green transformation (GX) to couple decarbonization with economic growth and development, (2) Concrete pathways and methods to induce energy structure transition in industry, (3) Efforts toward decarbonization in communities and daily life, and (4) Policies to achieve GX considering the discussions above.

Chapter 1 Ensuring Energy Security

- In light of the crisis in Ukraine and tight supply/demand of electricity, policies are organized to make utmost efforts to ensure energy security by maximizing utilization of power sources with high security and decarbonization effect such as renewable energy and nuclear power, while accelerating efforts towards decarbonization.

Chapter 2

Reforms in economy, society and industrial structure toward a carbon-neutral society

Section 1 Industrial GX starting from energy

- Policy directions to couple decarbonization with economic growth and development by simultaneously realizing transition of energy supply/demand structure
- Organizes challenges and policy responses to respective sectors efforts to GX
- Organizes challenges and policy responses to commercialize technologies required to achieve carbon neutrality, such as CCS/NETs

Section 2: Transition of energy supply/demand structure

- Organizes concrete pathways, methods, and costs for energy structure transition in industry

Section 3: Efforts to decarbonize communities/daily life

- Organizes challenges and policy responses towards decarbonization in communities and daily life, such as encouraging independent efforts by local society and promoting consumer consciousness

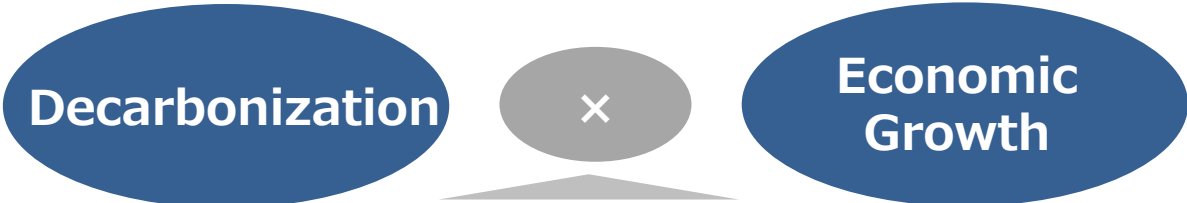
Section 4: Efforts to develop a social system/infrastructure to achieve GX

- Sets out policies to achieve GX considering the discussions above

Developing Social Systems/Infrastructure to achieve GX

Realizing GX

Developing social systems/infrastructure towards GX



5 Pillars

① Budgetary measures

- ✓ Unprecedented scale and period to enhance predictability
- ✓ Introducing new KPIs (e.g., proactiveness in prior investment, environmental effects)

② Regulations/Systems

- ✓ Regulatory measures to create new markets and boost private investment
- ✓ Improving profitability to implement novel energy methods
- ✓ Enhancing predictability for long-term investment projects

③ Financial package

- ✓ Strengthening finance in Transition, Innovation and Green areas.
- ✓ Enhancing information disclosure and market credibility.

④ Step-by-step development of the GX League

Attract investment

Domestic market

- ✓ Proper and timely follow-ups
- ✓ Conduct voluntary emissions trading
- ✓ Step-by-step development towards a system which promotes both emissions reduction and investment

⑤ Global strategy (Asia Zero Emission Community)

International Market

- ✓ Cooperation with Asian countries to enhance decarbonization/energy security and with developed countries for innovation.
- ✓ Further development of AETI (Asia Energy Transition Initiative)
- ✓ Public climate finance to developing countries in line with the Paris Agreement
- ✓ Lead international discussions on difference in carbon intensity

Common bases

Develop operational environment towards digitalization

Create and implement innovation

Support researchers and promote school/recurrent education

Promote decarbonization in communities and daily life, and circular economy

Investment required for decarbonization

Investments related to decarbonization in major sectors are calculated on certain assumptions. As a result, investment required to achieve carbon neutrality by 2050 is estimated to be 17 trillion yen in FY2030 alone, totaling 150 trillion yen over the coming 10 years.

Decarbonization investment	17 trillion yen /year		150 trillion yen over 10 years	Trillion yen
Decarbonization of power sources /fuel transition	5 trillion yen	<ul style="list-style-type: none"> ✓Renewable energy ✓Hydrogen/ammonia ✓Manufacturing storage batteries 		2.0 0.3 0.6
Decarbonization of manufacturing processes	2 trillion yen	<ul style="list-style-type: none"> ✓Energy efficiency improvement/decarbonization in manufacturing processes ✓Introduction of industrial heat pumps and co-generation systems 		1.4 0.5
End use	4 trillion yen	<ul style="list-style-type: none"> ✓Introduction of houses/buildings with high energy efficiency ✓Introduction of next-generation automobiles 		1.8 1.8
Infrastructure	4 trillion yen	<ul style="list-style-type: none"> ✓Reinforcement of power systems ✓Development of infrastructure for electrified vehicles ✓Measures to address digitalization 		0.5 0.2 3.5
R&D	2 trillion yen	<ul style="list-style-type: none"> ✓Carbon recycling ✓Development of manufacturing processes conducive to carbon neutrality ✓Nuclear power ✓Implementation of leading-edge CCS projects 		0.5 0.1 0.1 0.6

Japan's Clean Energy Strategy Interim Report -Financial package-

- In order to promote corporate investment in Green Transformation (GX), **we will strengthen our financial functions in the three areas; Green, Transition, and Innovation, and underpin financial environment by enhancing information disclosure and improving market credibility.**
- In particular, we will **enhance the issuance support system for Green, expand the area of sector-specific roadmap and develop guidance for engagement utilizing the roadmap for Transition,** and establish a **new cooperative framework for Innovation,** including risk sharing between the public sector, companies and financial institutions. In addition, we will enhance information disclosure, improve the credibility of ESG assessment organizations, and develop an infrastructure for data distribution.

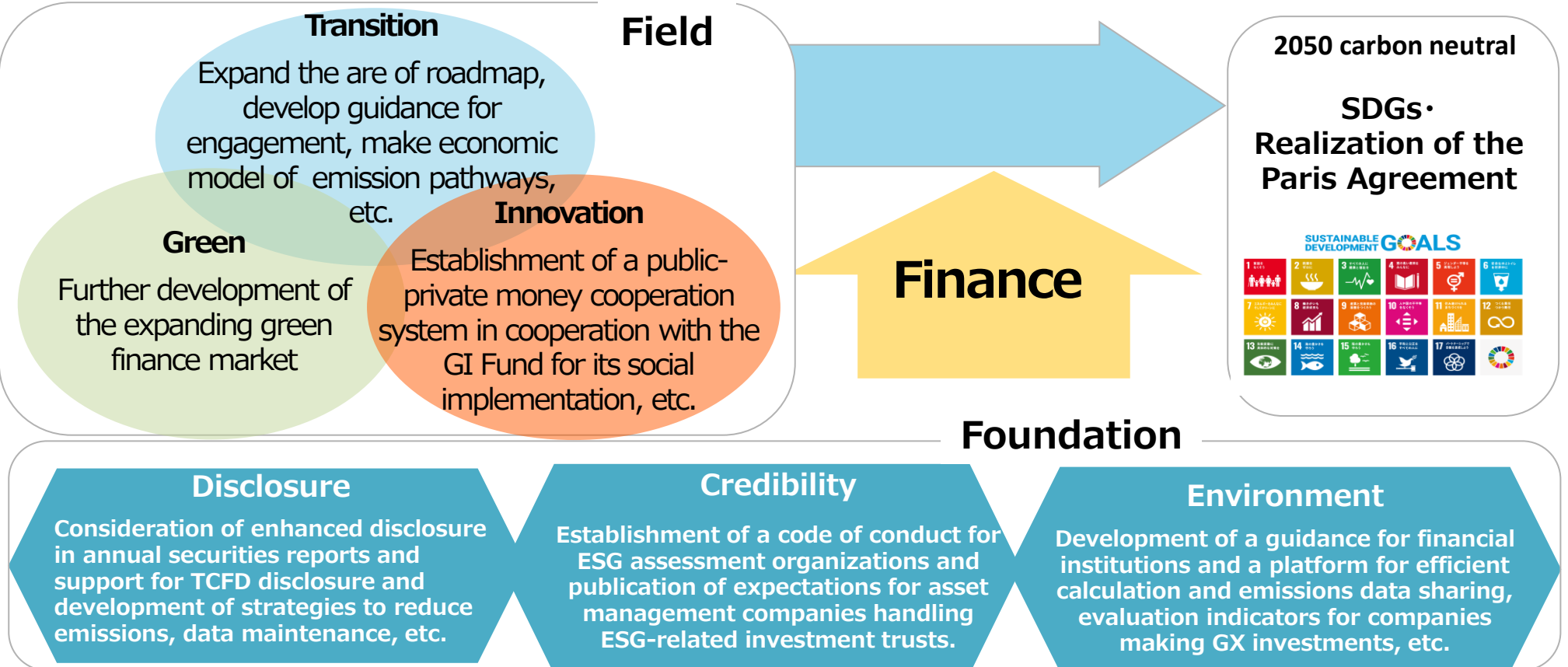


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EU Taxonomy and Criteria in Major Sectors

- In April 2021, the European Commission adopted the delegated act of the Taxonomy Criteria. After public comments, the revised criteria was adopted by the European Council/Parliament in January 2022, though it was not possible to include natural gas and nuclear energy. **Thresholds for taxonomy eligibility are indicated** for key sectors such as steel.
- **In February 2022, the European Commission released a draft delegated act covering nuclear and gas activities. After consultations with member states and experts, the Delegated Act was adopted by the European Council/Parliament in July 2022 and is scheduled to enter into force in January 2023.**

Sector	Threshold	Eligibility
Steel	<ul style="list-style-type: none"> • Threshold is set by averaging the performance of the most efficient facilities (top 10%) in terms of CO2 emissions within the same manufacturing process. • *(Reference) Benchmarks in Japan: Top 31% for High alloy steel Top 16% for Carbon Steel 	<ul style="list-style-type: none"> - Intermediate products (hot metal, sintered ore, coke, cast iron) produced by highly efficient blast furnace methods - Electric furnace steel (large scrap ratio)
Natural Gas	<ul style="list-style-type: none"> • The life-cycle GHG emissions from the generation of electricity using fossil gaseous fuels are lower than 100 g CO2e/kWh • Direct GHG emissions of the activity are lower than 270g CO2e/kWh of the output energy, or annual direct GHG emissions of the activity do not exceed an average of 550kgCO2e/kW of the facility's capacity over 20 years • Additional conditions such as limiting the project to reconstruction of existing power plants • *Even the most efficient power plants in Japan is 320 gCO2e/kWh, so hydrogen co-firing and CCUS are required. 	<p>Eligible under certain conditions. The Delegated act was adopted in July 2022 by the European Parliament/Council.</p>
Nuclear	<ul style="list-style-type: none"> • Construction and safe operation of new nuclear installations for which the construction permit has been issued by 2045 • Modification of existing nuclear installations for the purposes of extension, authorized by competent authorities by 2040 • Additional conditions regarding radioactive waste management, such as funding and treatment plans 	<p>Eligible under certain conditions. The Delegated act was adopted in July 2022 by the European Parliament/Council.</p>

Japan's 3-step-policy on Climate Transition Finance

- Although green projects have been attracting investment, more investments need to support transition to net zero.
- To encourage private finance flow for transition, Japanese government take 3-step-policy. (1) **Basic Guidelines** in line with ICMA transition handbook, (2) **Sector Roadmaps** which show technology options for carbon neutrality and (3) **Model Projects** to secure a good quality of practices without washing.
- As required by Basic Guidelines, companies are expected to show their transition strategy. They can account for their plan by referring to the technologies and pathway of the roadmap.

1. Basic Guidelines

- ✓ Financial Services Agency, Ministry of Environment and METI formulated the Guidelines to establish transition finance in line with the ICMA transition handbook.

Four Key Elements

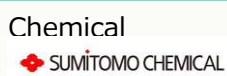
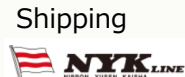
1. Strategy and Governance
2. Environmental Materiality
3. Science-based Strategies Targets & Pathways
4. Transparency

2. Sector Roadmaps

- ✓ An Annex to the Basic Guidelines to show a pathway of technologies to achieve CN by 2050
- ✓ In 7 sectors: **iron & steel, chemical, electricity, gas, oil, cement and paper & pulp.** (Automobiles to be released in 2022)
- ✓ The roadmaps can be referred by companies to formulate their strategies and pathways and by financial entities to evaluate those of clients

3. Model Projects

- ✓ 12 model projects from shipping, steel, aviation, chemical, energy and heavy industry sectors, total **USD 2.5 billion**



Transition Finance: Summary of Sector Roadmap

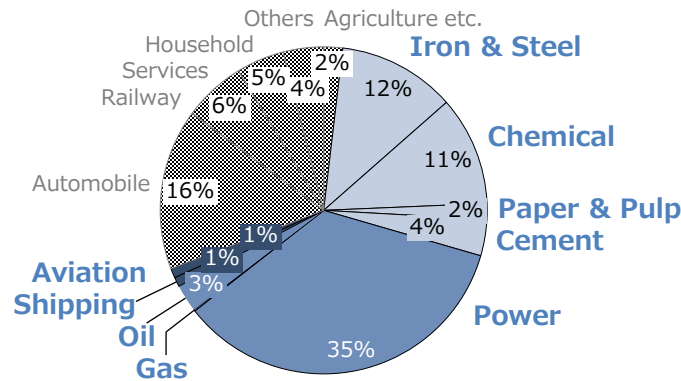
The technology roadmap realizes carbon neutrality with credibility in three aspects.

1

Comprehensive

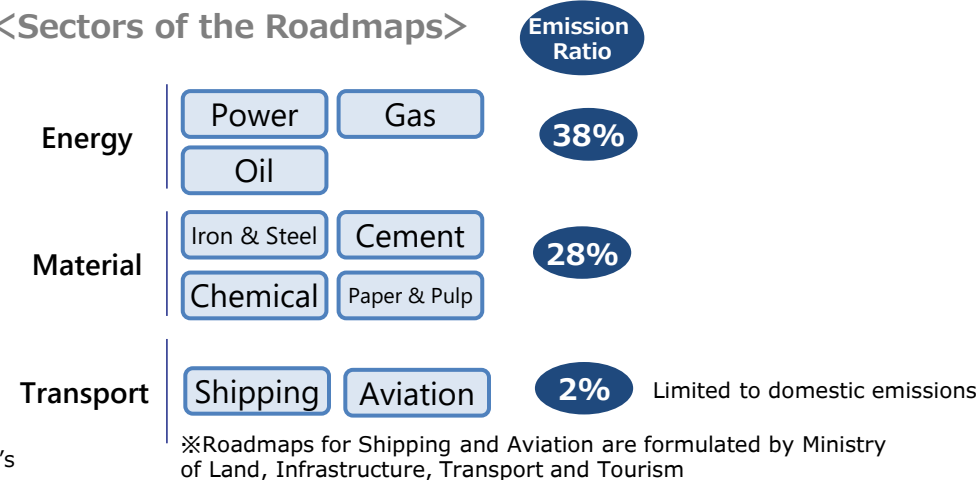
Covering approx. 70% of CO2 emissions in Japan

<Breakdown of Japan's CO2 emissions>



(Source) Comprehensive Energy Statistics and Japan's National Greenhouse Gas Emissions

<Sectors of the Roadmaps>



2

Ambitious

Carbon neutrality by 2050

1. Targeting Net-Zero

Roadmap aims to realize carbon neutrality by 2050

2. Science based/alignment with the Paris Agreement

Deliberation by experts of technologies and environment and representatives from finance sector

3. Living document

To be updated by technological progress

3

Feasible

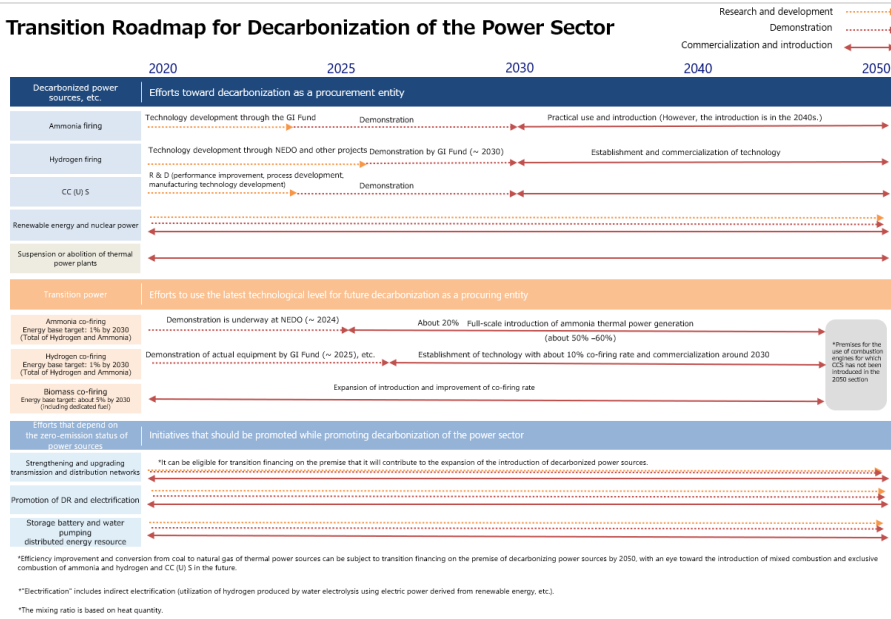
Transition is realized by the implementation of the policies

Feasibility is ensured by supporting various policies such as NDC (46%-reduction by 2030), Long-term Strategy, Green Growth Strategy, Basic Energy Plan, and R&D and social implementation plans in the Green Innovation Fund. Moreover, these policies are also intended to enhance international competitiveness of Japanese companies.

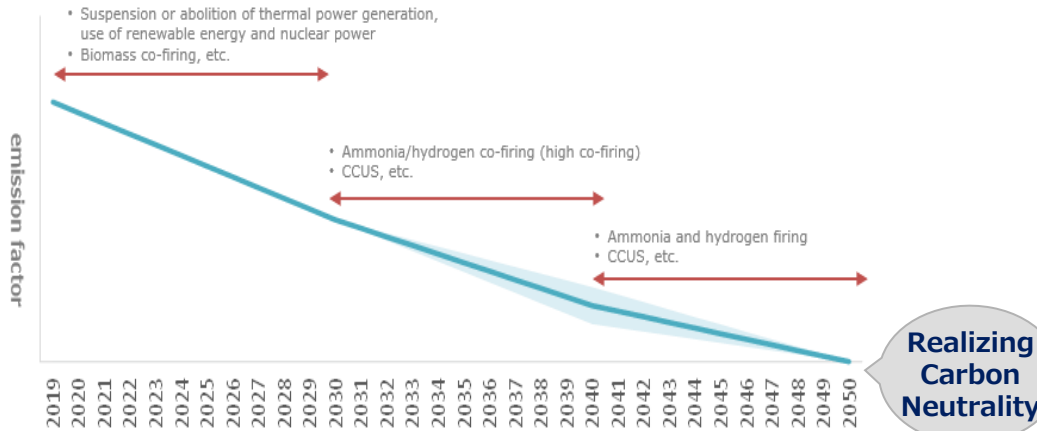
Roadmap Examples: Power and Iron/Steel

Power

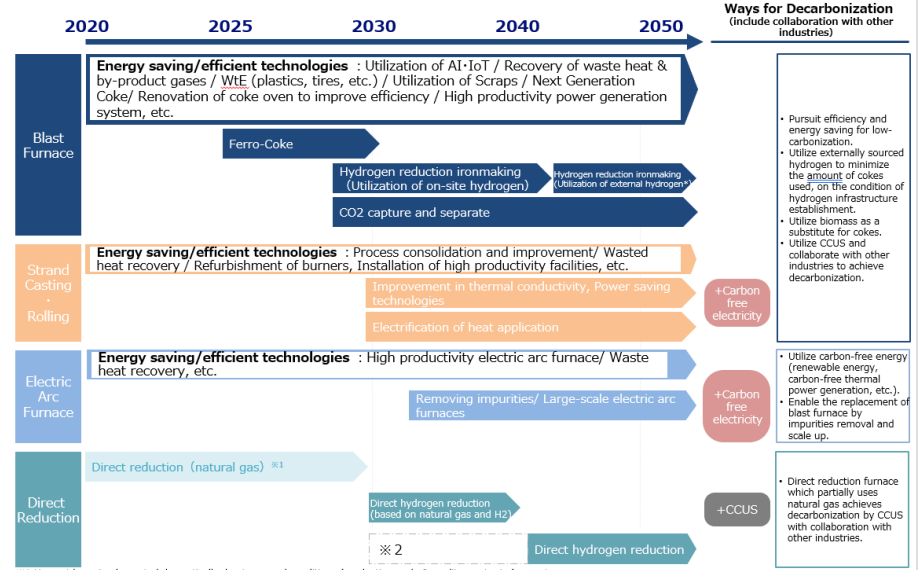
Transition Roadmap for Decarbonization of the Power Sector



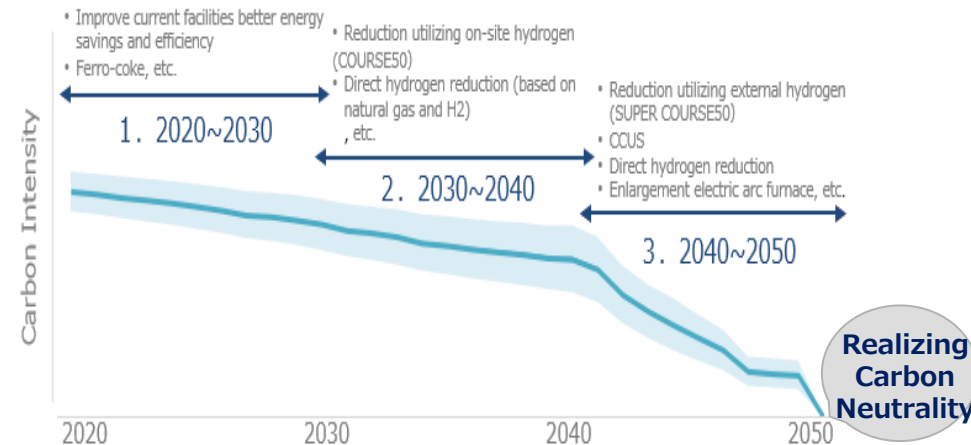
Assumed CO2 Reduction Pathway*



Iron & Steel



Assumed CO2 Reduction Pathway*



Iron & Steel

https://www.meti.go.jp/policy/energy_environment/global_warming/transition/transition_finance_technology_roadmap_iron_and_steel_eng.pdf

Asia Transition Finance Study Group

- Asia Transition Finance Study Group was established by private financial institutions in September 2021 to explore the concept of Asia Transition Finance (ATF).
- The ATF Study Group released an interim summary in April 2022 and final recommendations is expected in September 2022.

Category	Participants	(x) # of confirmed participants
Core members	<p>Commercial banks (19)</p>	
Observers	<p>Development banks, ECAs and others (7)</p>	
	<p>Public agencies (16 from 7 countries)</p>	