JAPAN
TEN YEARS AFTER THE PARIS AGREEMENT: PROGRESS AND CHALLENGES CLIMATE POLICY

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THE ROLE OF A LONG-TERM PERSPECTIVE

Commitment to long-term goal

In his policy speech at the National Diet on October 26, 2020, then-Prime Minister Yoshihide Suga declared that Japan would aim to achieve carbon neutrality by 2050. In April 2021, at the Leaders Summit on Climate, he stated, "Japan aims to reduce its greenhouse gas emissions by 46 % in fiscal year 2030 from fiscal year 2013 levels, setting an ambitious target which is aligned with the long-term goal of achieving net-zero by 2050." In May 2021, the Act on Promotion of Global Warming Countermeasures[1] was amended to reflect this ambition. In October 2021, Japan submitted its updated fiscal year (FY) 2030 Nationally Determined Contribution (NDC) and its Long-Term Low Emission Development Strategy (LT-LEDS) to the United Nations Framework Convention on Climate Change (UNFCCC), reaffirming its commitment to achieving carbon neutrality by 2050.

1 Enacted in 1998 in response to the adoption of the Kyoto Protocol in 1997.

On February 18, 2025, Japan submitted a new NDC to the UNFCCC, setting targets: a 60% reduction in greenhouse gas (GHG) emissions by 2035 and a 73% reduction by 2040, in line with the linear pathway toward net-zero emissions by 2050.

Figure 1 shows the trend in GHG emissions from 2005 to 2023, along with the reduction targets for 2030, 2035, 2040, and 2050.

Discussions on the quality of carbon net-zero commitments

To develop the NDC for the period after 2030, two important meetings were held: the meeting of the Joint Working Group of the advisory bodies to the Ministry of the Environment (MOE) and the Ministry of Economy, Trade and Industry (METI), and the meeting of the Basic Subcommittee of METI's Advisory Committee for Natural Resources and Energy.

At the 6th meeting of the Joint Working Group on 25 Nov. 2024, a "linear GHG reduction" pathway was proposed by the secretariat to ensure predictability and economic compatibility, though some stakeholders called for deeper cuts.

At the 66th meeting of the Basic Subcommittee on December 3, 2024, discussions were held on the energy mix needed to achieve a linear reduction in GHG emissions toward 2050. Various model-based scenarios were considered, including contributions from the AIM (Asia-Pacific Integrated Model).

After asking for public comment process, in February 2025, the Cabinet approved the 7th Strategic Energy Plan[2], Green Transformation (GX) 2040 Vision, and the Global Warming Countermeasures Plan, and submitted the Japan's 2035/2040 NDC to the UNFCCC.

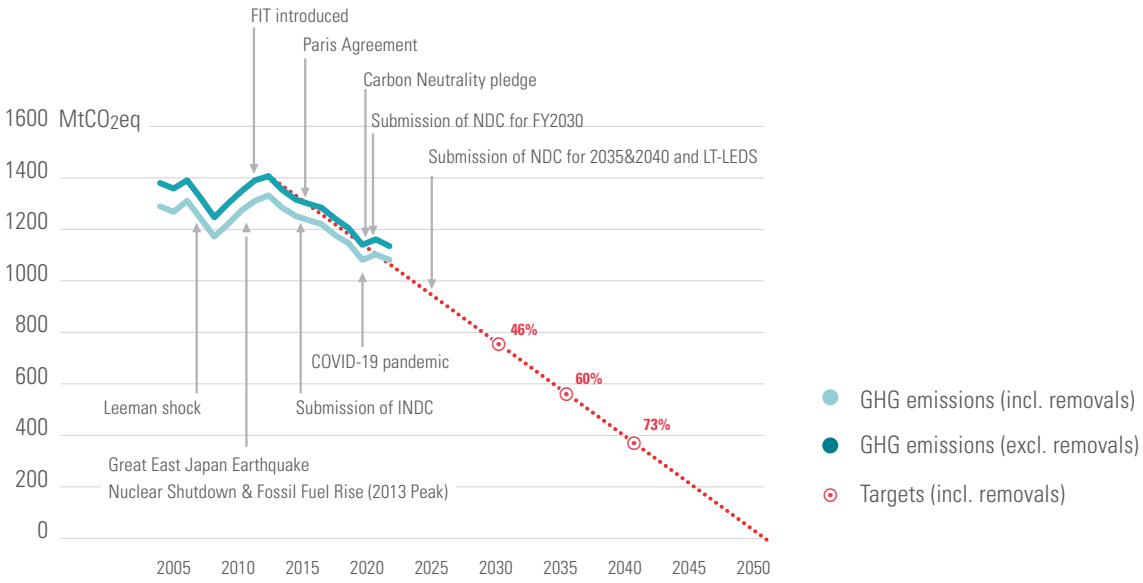
In May 2025, the revised GX Promotion Act[3] was enacted, legally mandating participation in the GX-Emission Trading System (ETS), Japan's national emissions trading scheme, from FY 2026. Additional frameworks, like the Regional Decarbonization Roadmap and Green Innovation Fund, support the net-zero transition.

Figure 2 shows the process by which the Japan's 2035/2040 NDC was developed.

2 The first plan was approved by the Cabinet in 2003 and has been revised every three to four years.

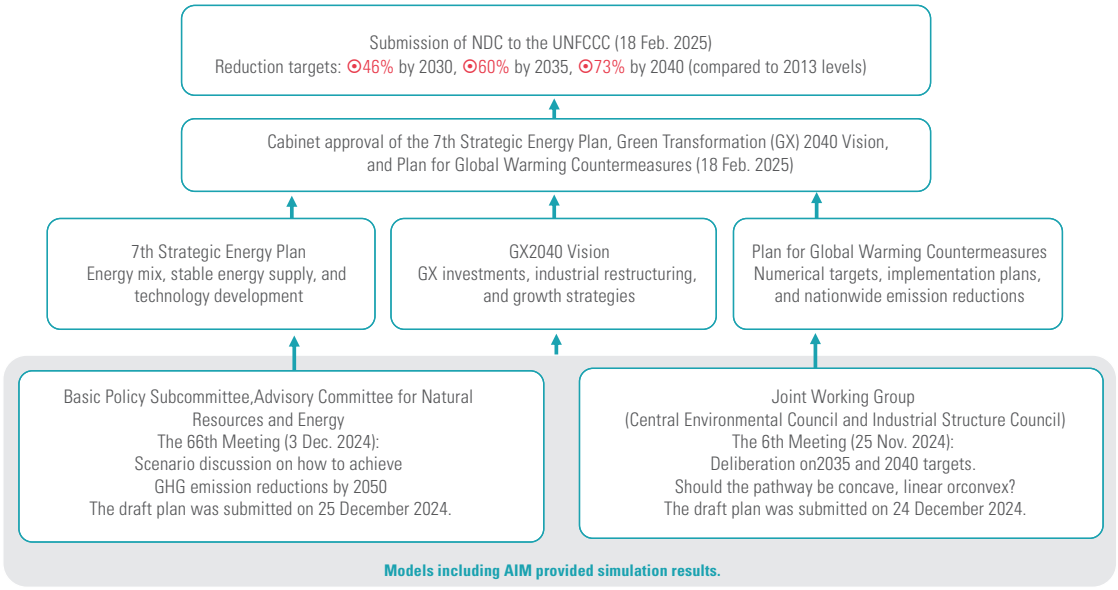
3 Originally enacted by the Japanese Diet in May 2023. Its implementation includes the GX League, launched in 2022 and serving as the pilot phase of the GX-ETS, which involved about 700 companies in FY 2023.

Figure 1. Trends in Japan's Greenhouse Gas Emissions and the 2050 Target



Source: National Institute for Environmental Studies, Greenhouse Gas Inventory Report 2024. https://cger.nies.go.jp/publications/report/i171/

Figure 2. Japan's 2035/2040 NDC Development Process



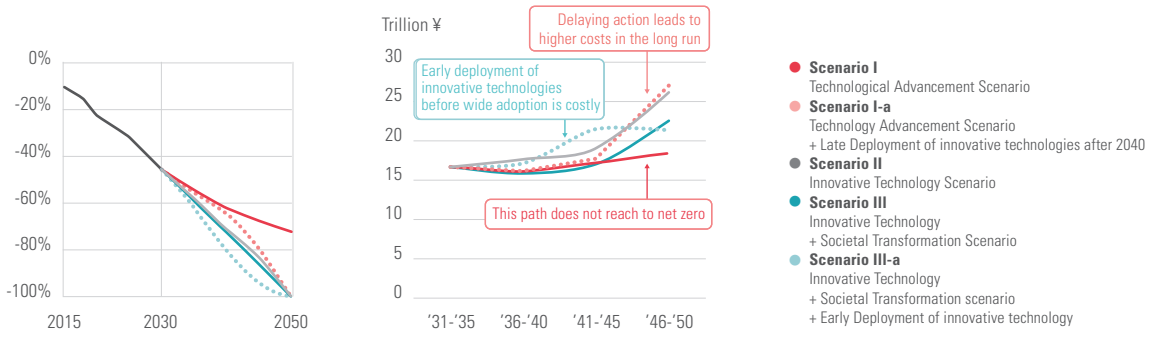
Scenario analysis of Japan's transition pathways using the AIM

Using the AIM, five scenarios were analyzed to explore GHG emission pathways and associated costs for Japan's decarbonization by 2050 (**Figure 3**), and presented at the 6th meeting of the Joint Working Group. The scenarios are:

- Scenario I: Technological Advancement Scenario
- Scenario I-a: Technological Advancement + Late Deployment of Innovative Technologies after 2040
- Scenario II: Innovative Technology Scenario
- Scenario III: Innovative Technology + Societal Transformation
- Scenario III-a: Innovative Technology + Societal Transformation + Early Deployment of Innovative Technology

In Scenario I, where the deployment of innovative technologies does not progress significantly by 2050, a considerable level of emissions remains in 2050. In Scenario I-a, postponing innovative technology deployment until after 2040 delays electrification and energy efficiency gains,

Figure 3. Scenario analysis of net-zero pathways using the AIM model



a. GHG emissions pathways

b. Estimated costs of installing and operating energy equipment

Source: Hibino G, Ashina S, Masui T (2025) 2nd additional analysis of GHG emission pathways realizing a decarbonized society in 2050 in Japan. Discussion Paper Series, Social Systems Division, NIES. https://www.nies.go.jp/social/publications/dp/pdf/2025-01.pdf

increasing reliance on low-carbon fuels such as hydrogen-based fuels and sharply driving up costs after 2040.

Conversely, Scenario III-a, which combines early deployment of innovative technologies with social transformation, achieves substantial emissions reductions. However, introducing technologies before they are widely available in the market results in steep cost increases after 2030, followed by a decline in costs around or after 2045.

Across all scenarios, demand-side emissions reductions play a decisive role in achieving overall targets.

Long-term targets in climate policy

Japan's 2050 carbon neutrality target has provided clear direction and policy consistency, sending a strong signal to investors and innovators. The GX2040 Vision further outlines concrete pathways toward these long-term goals and promotes collaboration among industry, government, and civil society. These long-term commitments not only enhance Japan's role in global climate action but also open opportunities for sustainable economic growth and technological advancement.

JAPAN'S PROGRESS IN CLIMATE CHANGE POLICY

Japan has expanded renewable energy deployment through the Renewable Energy Special Measures Act[4] — including feed-in tariff (FIT, started in 2012) and feed-in premium (FIP, introduced in 2020 and fully implemented since 2022) schemes — along with improved grid connection rules.

Energy efficiency has advanced under the Act on Rationalizing Energy Use[5] and Building Energy Efficiency Act[6], which include regulations on energy efficiency and energy-saving performance of automobiles, appliances, and buildings.

Further measures are in place to reduce CO_2 emissions in the industrial sector and mitigate non-CO_2 greenhouse gases (see **Table 1**).

Introduced in 2012, Japan's carbon tax has been ¥289 per ton of CO_2 (about USD 2) since 2016, generating approximately ¥220 billion annually (about USD 1.5 billion), both converted at 2025 exchange rates; the revenue figure is based on FY2021 data. This revenue is used for climate change mitigation purposes, including supporting clean energy deployment, energy efficiency

4 Enacted in August 2011 and amended since the adoption of the Paris Agreement to support achievement of Japan's NDCs, including major revisions in 2017 and 2020.

5 Enacted in 1979; since the Paris Agreement, it has promoted integrated measures for CO_2 reduction and renewable energy utilization.

6 Enacted in 2015; it separated and strengthened the building-related provisions of the Energy Conservation Law.

Table 1: Key Drivers of GHG Emissions Reduction in Japan and Associated Challenges

Key Drivers	Policies and Initiatives	Key Challenges
Expanding Renewable Energy	Feed-in Tariff (FIT); Renewable Energy Special Measures Act; FIP scheme; Grid connection rule revisions	Grid integration constraints; Intermittency management; Balancing cost reductions with investment needs
Promoting Energy Efficiency	Energy Conservation Act, including the Top Runner Program, subsidies for ZEH/ZEB with mortgage reductions, and for energy-saving appliances	High upfront costs; Slow uptake in certain sectors; Behavioral change needed to sustain savings
Advancing Low-carbon Industrial Transformation	Support for upfront investments through the use of GX Economic Transition Bonds; GX investment incentives via growth-oriented carbon pricing.	High technology deployment costs; Constrained low-carbon feedstock supply; Managing employment impacts of the transition
Reducing Non-energy Emissions (e.g., F-gases)	Fluorocarbon Emissions Control Act (enforced in 2015); Kigali Amendment compliance (entered into force in 2019); Mandatory refrigerant recovery (institutionalized in 2001)	Difficulties reducing agricultural methane and nitrous oxide; Preventing refrigerant leakage and ensuring recovery; Slow dissemination of low-GWP technologies
Using International Credits	Joint Crediting Mechanism (JCM) under Article 6.2 – Bilateral offset crediting scheme implemented with 30 partner countries (as of 2025); Financial cooperation for credit-generating projects	Ensuring transparency, environmental integrity, and avoidance of double counting; Limited scalability of projects

improvements, and technological development. The GX Transition Bonds, totaling ¥20 trillion (about 133 billion USD), began issuance in FY 2023 and will continue over a ten-year period to accelerate public–private investment in hydrogen, renewable energy, and the decarbonization of heavy industry. To secure a stable repayment source for these bonds, a new carbon levy will be introduced in FY 2028 on fossil fuel supplies. The GX Strategy includes the strengthening of green finance, with green bonds playing a key role in mobilizing funds for climate action and economic growth.

LINKAGES BETWEEN CLIMATE CHANGE AND KEY SOCIAL, ECONOMIC, AND FISCAL ISSUES

Japan's climate policy must address a web of interlinked challenges spanning energy security, economic competitiveness, regional development, climate adaptation, and fiscal sustainability.

Japanese companies are actively participating in international initiatives. As of August 2025, 444 companies worldwide are certified under RE100, including 93 from Japan, placing Japan alongside the United States with the largest number of member companies. As of February 2025, more than 10,000 companies worldwide have obtained SBT certification, of which 1,522 are Japanese companies—the highest number of SBT-certified companies in the world.

The TCFD itself was dissolved in October 2023 and its responsibilities were handed over to the IFRS Foundation's ISSB. As of November 24, 2023, a total of 4,932 companies and organizations worldwide had expressed their support, including 1,488 from Japan. Japan had the largest number of supporting companies in the world, with many Japanese companies actively disclosing information in line with the TCFD framework compared to other countries.

Corporate participation in international initiatives is contributing to the expansion of renewable energy.

Across Japan, municipalities are promoting local production and consumption of renewable energy, for example by establishing local power companies and implementing municipality-led power purchase agreements (PPAs). In addition, many municipalities are introducing regional renewable energy promotion ordinances in conjunction with their Zero Carbon City declarations. Furthermore, citizens and local businesses are increasingly installing and jointly operating solar power systems, supporting the wider adoption of renewable energy at the community level.

Table 2 summarizes the connections between climate change action and key national initiatives.

Table 2: Examples of Linkages Between Climate Change Action and Key Social, Economic, and Fiscal Issues

Theme	Trends	Key Initiatives
Energy Security & Decarbonization	Following the Fukushima nuclear halt, energy imports increased; renewable energy (RE) expanded gradually; the 2022 crisis revived concerns over supply stability.	FIT/FIP schemes; grid connection rule improvements; battery storage pilot projects; demand-side management programs.
Industrial Competitiveness & Carbon Pricing	Gradual shift from strong resistance to acceptance of carbon pricing	GX Economic Transition Bonds; subsidies for low-carbon technologies
Just Transition (JT) in Regional Economies	Renewables create rural jobs; structured JT frameworks remain limited	Local RE cooperatives; employment retraining programs
Climate Adaptation & Vulnerable Populations	More frequent extreme weather events have spurred adaptation planning	National Adaptation Plan (2015, updated 2021); disaster-resilient infrastructure
Green Finance & GX Strategy	Strong growth in green bond issuance; GX strategy links finance to the transition	Green Bond Guidelines (2014, updated 2022); GX Basic Policy
Social Inclusion in Dialogue	Stakeholder engagement expanding slowly	Multi-actor councils including NGOs and labor unions

GOVERNANCE

Inter-Ministerial Processes on Climate Change

Since the Kyoto Protocol, Japan has had a cross-ministerial framework for climate change policy through the Global Warming Prevention Headquarters, established in 1998 and chaired by the Prime Minister with all Cabinet members as participants. This body approved enduring strategies such as the 2002 Outline for Global Warming Countermeasures and subsequent plans.

Since the Paris Agreement, inter-ministerial cooperation has evolved to become more regular and systematic through mechanisms such as the GX Implementation Council, operated by the Cabinet Secretariat and officially established in July 2022. Overarching strategies are now guided by this body, while regular Cabinet-level meetings integrate inputs from MOEJ, METI, Ministry of Land, Infrastructure, Transport and Tourism (MLIT), and other ministries. Key policy documents, including the Plan for Global Warming Countermeasures and the Basic Policy on GX, are jointly developed and supported by working-level coordination teams. Initiatives such as carbon pricing and the designation of decarbonization-leading areas are coordinated through these mechanisms, enabling cross-sectoral dialogue across energy, transportation, and urban policy.

Under the Act on Promotion of Global Warming Countermeasures, prefectures and municipalities are required to endeavor to formulate and implement comprehensive and well-planned measures to reduce greenhouse gas emissions in accordance with the natural and social conditions of their respective areas. Based on this framework, as of June 30, 2025, a total of 1,182 local governments—including the Tokyo Metropolitan Government, Kyoto City, and Yokohama City (comprising 46 prefectures, 655 cities, 22 special wards, 398 towns, and 61 villages)—have declared their commitment to achieving net-zero carbon dioxide emissions by 2050.

Stakeholder Consultation Platforms for Climate Change

Japan has established multiple platforms for stakeholder consultation on climate change. The Headquarters for the Promotion of Climate Change Measures, chaired by the Prime Minister, leads policy direction within the government. The advisory bodies to the Ministry of the Environment (MOE) and the Ministry of Economy, Trade and Industry (METI) to discuss the NDC and the energy mix engage experts, industry, and civil society in advising on policies such as the Plan for Global Warming Countermeasures.

The GX Implementation Council provides a forum for dialogue with the business sector. The GX League[7] brings together companies, research institutions, and local governments through a public-private platform.

Region- and sector-specific platforms have also emerged, including the Climate Change Adaptation Information Platform (A-PLAT) by NIES and the Zero Carbon City Network, a coalition of carbon-neutral municipalities.

INTERNATIONAL COOPERATION

Some of Japan's international cooperation initiatives in Asia predate the Paris Agreement, while others emerged afterward. The Joint Crediting Mechanism (JCM), initiated in 2011, has served as a formal Article 6.2 mechanism since the adoption of the rulebook at COP26 in 2021.

In contrast, the Green Growth Strategy (Cabinet-approved in 2020) and the Asia Zero Emissions Community (AZEC, first leaders' meeting in 2023) were designed after the Paris Agreement to align with long-term decarbonization goals. As of May 2025, the JCM is implemented in 30 partner countries, with 80 registered projects, of which 37 have generated GHG reduction credits. As of Oct 2024, AZEC has led to 121 memoranda of understanding covering renewable energy, hydrogen, and ammonia supply chains, backed

7 Launched by METI in 2022 and operating at full scale since FY 2023, the GX League is a voluntary corporate platform that serves as the pilot phase of the GX-ETS, scheduled to become mandatory in FY 2026 under the GX Promotion Act.

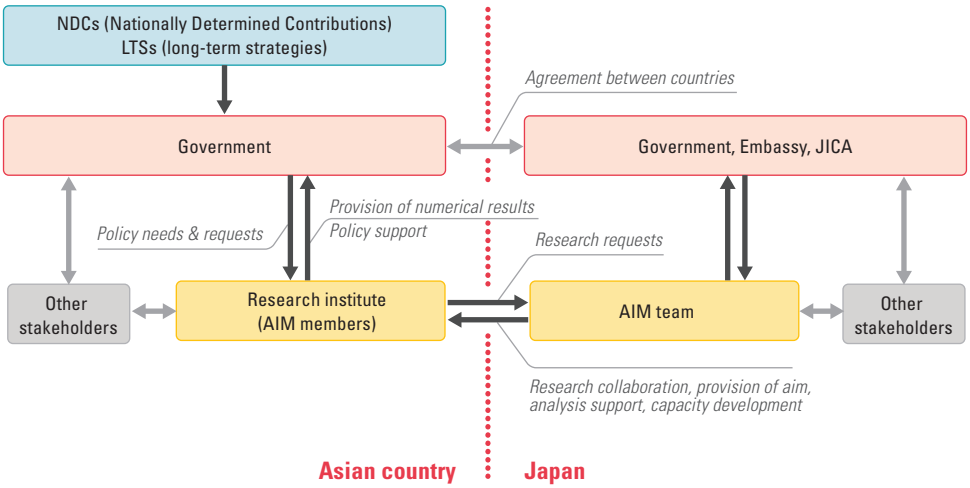
by Japanese technical and financial assistance. Green bonds and transition finance have also mobilized substantial capital for low-carbon infrastructure across the region.

These efforts are driven by integrated financing and technology transfer, public–private collaboration, and alignment with international rules.

The development of NDCs and long-term strategies in each country requires close collaboration between researchers and governments. The AIM team has supported capacity building in various countries and facilitated knowledge sharing through international workshops. Recently, partnerships have been strengthened with MOEJ, the Japan International Cooperation Agency (JICA), and Japanese embassies abroad, reinforcing Japan's international cooperation efforts.

Figure 4 illustrates the ideal framework of cooperation between Japan and Asian countries. In countries such as Thailand and Indonesia, the AIM is being used to analyze NDCs and Long-Term Low Emission Development Strategies (LT-LEDS).

Figure 4. Scheme for supporting scenario analysis of long-term strategies in Japan and partner countries using the AIM model



Source: Hibino and Masui (2023) Development of AIM (Asia–Pacific Integrated Model) and its contribution to policy making for the realization of decarbonized societies in Asia. Sustainability Science, Special Feature, Accelerating Actions for Leveraging a Climate-Neutral, Sustainable Society. https://doi.org/10.1007/s11625-023-01393-2