Japan

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OVERVIEW OF JAPAN'S GREEN TRANSFORMATION (GX)

January 2023

Green Transformation (GX) - FIVE KEY INITIATIVES

Japan

Green Transformation (GX) refers to the **transformation of the entire economic and social system** from an economy, society, and industrial structure dependent on fossil fuels to "structures driven by clean energy" – the aim of the initiative is to **drive economic growth** and development through emissions mitigation.

Five key initiatives being discussed by the government to achieve **150 trillion JPY (approx. US$1 trillion) of private-public investment to bring about Japan's green transformation (GX)**:

1. **Growth-oriented carbon pricing (including GX transition bonds)**
   "With reference to the state of introduction of carbon pricing internationally, under what principles and with what timing should Japan realise 150 trillion yen's worth of public-private GX investment over the next ten years and introduce systems to **fulfil its international commitments and simultaneously achieve strengthening of domestic industrial competitiveness and economic growth?**"
2. **Integrated regulatory/assistance promotion measures**
   "How should we combine regulations and systems with government funding procured from GX transition bonds In order to **stimulate effective private investment**?"
3. **New financing methods**
   "How should we encourage green financing to realise GX investment? Examples include **expanding the use of transition financing globally, particularly in Asia**, and utlising a combination of public financing and private investment."
4. **International development strategy, including formation of Asia Zero Emissions Community**
5. **Development of GX League** (forum for cooperation between companies, government and academia)
   "Based on international trends and the need to maintain a level playing field for participating companies, with what timing and in what direction should we develop the GX League in a form that increases effectiveness?"

GX COMMITMENTS IN KEY SECTORS

Japan

Sector	Targets / Key Policies in GX Plan
Energy	• To reach **36-38% of renewable energy** in the country's power mix by 2030 • To install **10GW of Offshore Wind Power and 104-118GW Solar Power** by 2030 • To restart **nuclear power** and aim for 20-22% of country's power mix by 2030 • To establish success cases of **ammonia/ hydrogen co-firing** by 2024, so as to support development of supply chain starting 2025, and to achieve lowered costs by 2030 (hydrogen: 30yen/Nm3; ammonia: 10~20yen/Nm3-H2) • To build **CCUS value chain** and capture 120-240 million tonnes of CO2 by 2050
Transport	• To achieve **100% EVs and HEVs by 2035** for new private car sales • To achieve **20~30% EVs in commercial vehicle sales by 2030** • Enhance charging infrastructure by rolling out **150,000 EV chargers** (incl. 30,000 fast chargers) and 1,000 hydrogen stations by 2030 • CO2 emissions cut by 1.8 million tonnes in shipping industry by 2030 through introduction of ammonia/ hydrogen-fuelled ships • Carbon neutral fuels for shipping and aviation sectors by 2050
Built Environment	• **New houses and buildings to be zero emission by 2030** • Promoting LCCM (Life Cycle Carbon Minus) and ZEH/ ZEB (net-zero energy houses/ buildings) with the aim of absorbing 5.6 million tons of CO2 by 2030
Industry	• To expand supply of **green steel** to 10 million tonnes by 2030 • 30% CO2 emission cut in steel industry from 2013 levels by 2030 • To expand supply of **carbon neutral cement** to 2 million tonnes by 2030
Finance	• Regulatory and policy guidance to scale up **blended finance** (covering green, transition and innovation investments) • Promote **climate-related disclosure** based on ISSB and TCFD recommendations • JCM Global Match to promote matchmaking for decarbonisation projects

INITIAL INVESTMENT PLAN

Focus	Approx. 17 Trillion JPY (Annual)	150 Trillion JPY investment in 10 years Examples of planned investments	Investment Cost
Decarbonisation of power supplies	**5 Trillion JPY (Annual)**	• Renewable energy (Implementation through FIT/FIP framework) • Hydrogen, Ammonia (Investment in infrastructure development) • Battery production (For vehicles and fixed-ground use)	2 Trillion JPY 0.3 Trillion JPY 0.6 Trillion JPY
Decarbonisation of manufacturing processes	**2 Trillion JPY (Annual)**	• Decarbonisation of manufacturing processes (e.g., Next-generation manufacturing process technology, carbon neutral power generation facilities) • Installation of industrial heat pumps and cogeneration facilities	1.4 Trillion JPY 0.5 Trillion JPY
End-use sector	**4 Trillion JPY (Annual)**	• Introduction of energy-efficient homes and buildings • Introduction of next-generation vehicles	1.8 Trillion JPY 1.8 Trillion JPY
Infrastructure development	**4 Trillion JPY (Annual)**	• Grid reinforcement cost (Masterplan) • Automobile infrastructure development (Charging station, Hydrogen station) • Digital society infrastructure developments (Semiconductor manufacturing facilities, data centers)	0.5 Trillion JPY 0.2 Trillion JPY 3.5 Trillion JPY
R&D	**2 Trillion JPY (Annual)**	• Carbon recycling (e.g., CCS, methanation, synthetic fuel, SAF) • Development of carbon-neutral manufacturing processes (e.g., hydrogen reduction steelmaking). • Nuclear (R&D on next-generation nuclear plants) • Implementation of advanced CCS projects	0.5 Trillion JPY 0.1 Trillion JPY 0.1 Trillion JPY 0.6 Trillion JPY

1) GROWTH-ORIENTED CARBON PRICING

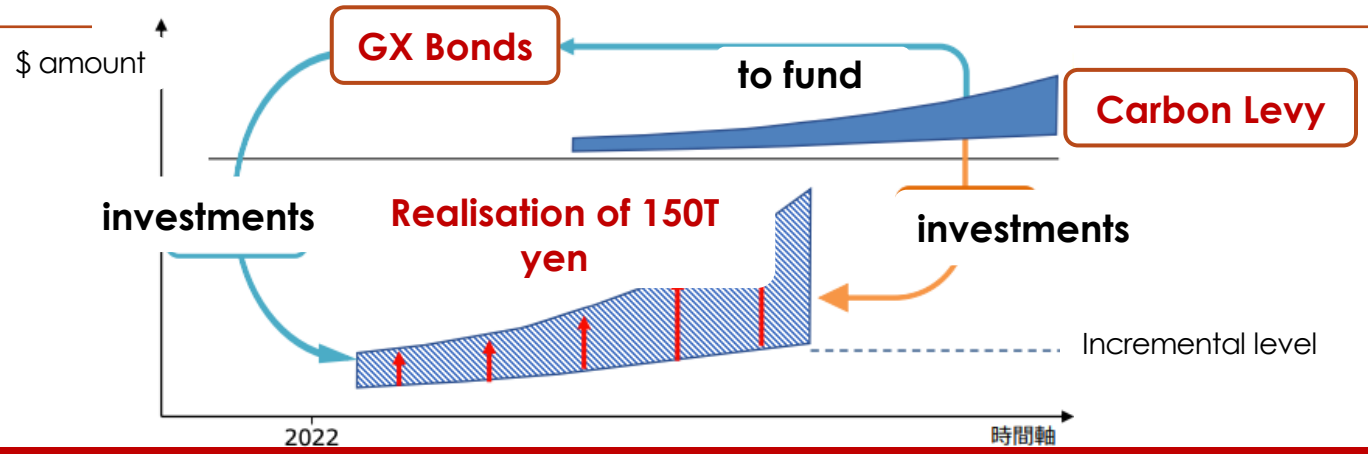
- In order to realise the 150 trillion yen of investments needed for GX, as well as to fulfil international commitments and to maintain industrial competitiveness, the concept of "growth-oriented carbon pricing" has been designed consisting of two pillars:

Pillar 1: Upfront investment support

- **GX Transition Bonds** will be issued to provide bold upfront investment support for industry decarbonisation. The bond will be backed by financial resources generated from the introduction of carbon pricing.

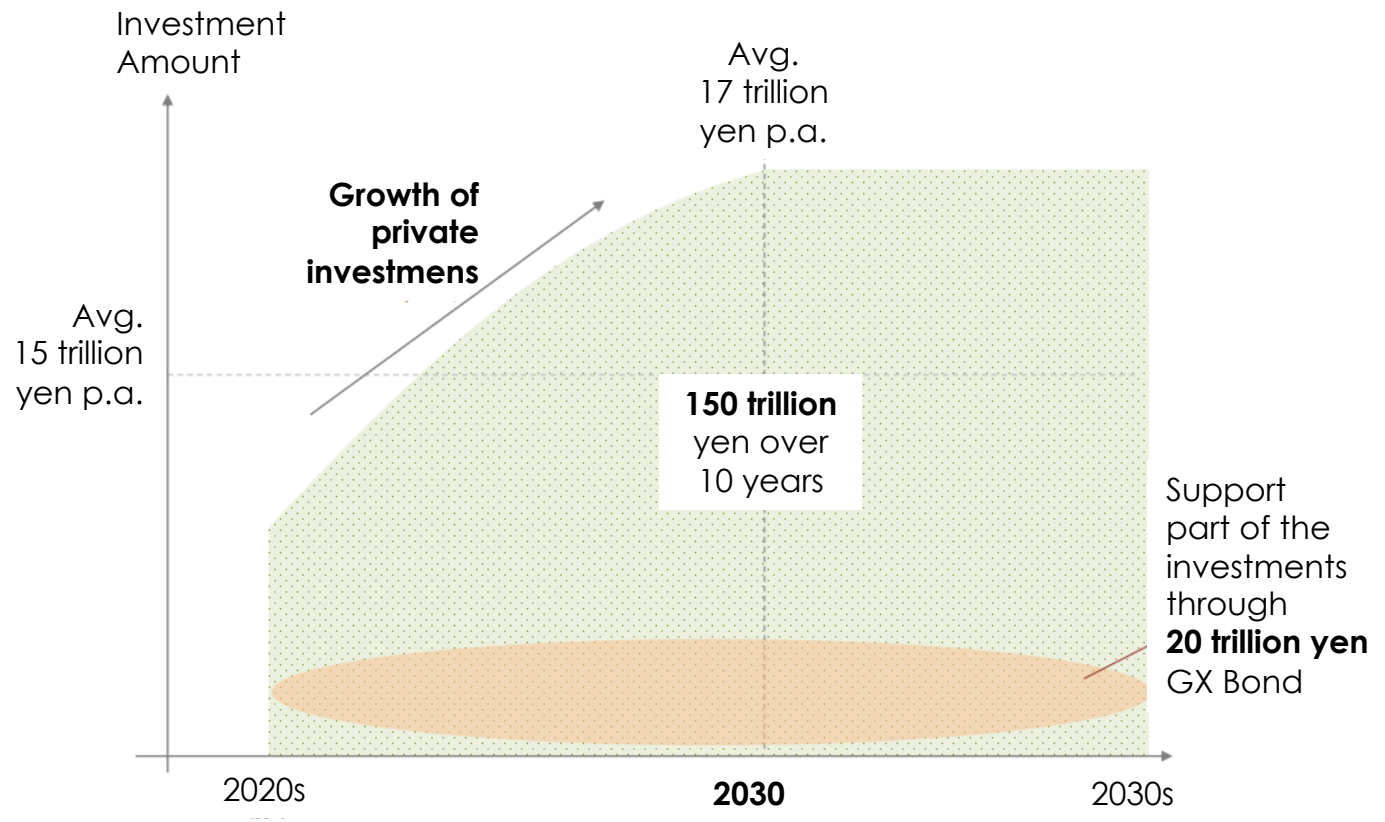
Pillar 2: Measures to promote emission reductions

- The **Carbon Levy**, targeting **fossil fuel importers** such as power, oil and gas companies, will be introduced at an affordable rate at the beginning and the price will be reviewed annually with a gradual increase to incentivise GX investments to reduce reliance on fossil fuels
- An **Emission Trading Scheme (GX-ETS)** will be implemented in phases for **sectors with high emissions**, first through the **launch of voluntary trading among GX League**.
- **Auctioning of allowances**, like the ETS in EU, will be introduced in the future for electric power companies to expedite decarbonisation of the power sector



GX TRANSITION BONDS

- The government plans to raise **20 trillion yen (US$144 billion)** through **issuing sovereign bonds as pump-priming** to spur private investments that match up with the 150 trillion yen needed to achieving decarbonisation goals
- These were announced in May by Kishida as a "**new type of sovereign debt**" with details being worked out this year. It is understood these are not being issued as standard green bonds to increase flexibility with the use of proceeds.
- There is no concrete information available yet on how the 20 trillion yen will be invested, but the initial plan included **technologies that fall under the objectives of a transition bond** (i.e. technologies still in development such as ammonia, hydrogen, CCS/CCUS etc.) where private sector engagement is yet to be substantial.
- METI intends to complete redemption of GX bonds by 2050 with **carbon pricing revenues**.
- The government is also considering financial instruments, such as **equity investment and debt guarantees** for GX investments, which are likely to involve sectors with higher business risks.



2) INTEGRATED REGULATORY SUPPORT

- In order to stimulate and incentivise private investments in GX, the government is setting **long-term targets/ commitments** as a priming tool, and supportive measures will be implemented through the **integration of regulatory updates and systematic support**.
- Public financial support will be prioritised for **areas where investments are difficult to be undertaken solely by private sector**, and where investments will contribute to both increasing industrial competitiveness and emission reductions.

Enhancing Industry Competitiveness / Economic Growth		Reducing Emissions
• Growth investments for **technological/ business innovations** where international/ domestic demand is growing • **Advance technologies** that contribute to reducing reliance on fossil fuels and improving business profitability • **Supply–side investments** to support initial introduction of **key commodities** where a nationwide market is envisaged	✖	• **Technological R&D** to support long-term domestic emission cuts • **Capital investments** for equipment that contribute to direct emissions reduction • **Demand-side support** for key products where there is nationwide demand for long-term emissions reduction

3) NEW FINANCING METHOD – TRANSITION FINANCE

The Japanese government has stressed the importance of adopting transitional technologies to maximise emissions reduction because:

- **Not all countries, regions, and industries can decarbonise at once** in terms of both technology and cost available
- While there is a global trend for climate-related disclosure to include GHG emissions amounts and divestments from large emitters, such **divestment would impede the decarbonisation efforts of hard-to-abate industries**
- There is a **booming energy demand** from population and economic growth in Asia, **but renewable energy sources and capacity are limited** (compared to Europe/Africa)

Transition finance is a new financing approach that aims to support companies to undertake long-term changes to become carbon neutral. The government will promote transition finance through:

- **Technology Diffusion**:
  to build success cases of transition technologies and promote market expansion in Asia
- **International Rule-making**:
  to develop transition finance guidance materials taking conditions in Asia into account; and
  to acknowledge short-term increases in emissions to achieving long term decarbonisation
- **Investment Support**:
  to expand financial support for transition technologies/projects such as ammonia, LNG, CCUS

4) INTERNATIONAL DEVELOPMENT STRATEGY

- METI stressed that as many Asian countries share similar challenges of uneven distribution of renewable energy sources, it is important to ensure energy security and promote decarbonisation initiatives in a realistic manner
- The following strategies are set out to influence developments globally and regionally:

GLOBAL	ASIA

• **Development of Green Markets**
  ○ Expand the market for green products (green steel, green plastic, carbon neutral fuel (CNF), industrial heat pumps etc.) on a global scale through establishing international definitions, frameworks and evaluation standards
  ○ Nurture positive recognition for the emissions avoided by corporates
• **Collaboration for Innovation**
  ○ Lead discussions in areas where Japan has a technological advantage, such as carbon dioxide removal (CDR) technologies, next generation nuclear reactors, through US-Japan bilateral cooperation and other international partnerships
	• **Asia Zero Emissions Community (AZEC)** as a regional platform
	  ○ Accelerate formulation of clean energy projects (through building hydrogen and ammonia supply chain for co-firing)
	  ○ Garner interest in transition finance around the world through leading public investments in transition projects
	• **Joint Crediting Mechanism (JCM)**: to reach 30 partnership countries by 2025 and expand CCS projects
	• **Asia Energy Transition Initiative (AETI)**
	  ○ Support SE Asian countries in drawing up roadmaps for energy transitions
	  ○ US$10 billion of financial support for technology development and deployment (renewables, LNG, CCUS, ammonia, hydrogen etc.)
	  ○ Capacity building and knowledge sharing through Asia CCUS network

ASIA ZERO EMISSIONS COMMUNITY (AZEC)

- Leveraging Japan's resources and experience, AZEC is a **cooperation platform** to help partner countries in Asia achieve energy transition and decarbonisation through policy coordination and integrated support on technology, finance and human resources.
- **Direct Assistance:**
  - **Financial support** through the Japan Bank for International Cooperation (JBIC) and Nippon Export and Investment Insurance (NEXI)
  - Support to **formulate roadmaps** for long-term policies for carbon neutrality
  - Expansion of **transition finance** in Asia
  - Development and case-building for **decarbonisation technologies** (renewable energy, energy efficiency, hydrogen, ammonia, biomass, CCUS etc.)
  - **Capacity building** and knowledge transfer
- **Policy Coordination**:
  - Maximising **deployment of renewable energy**
  - **Developing standards** for decarbonisation technologies (energy efficiency and energy management)
  - Developing potential for utilising biomass, hydrogen and ammonia in thermal power generation
  - Effective use of electricity grid and **energy cooperation**
- First MoU under the AZEC framework between **Japan and Indonesia was signed in November 2022**: NEXI will provide financing insurance of up to USD 500 million to PLN (Indonesian state-owned electric utility company) to support renewable energy and power grid improvements

5) DEVELOPMENT OF GX LEAGUE

- Established in April 2022, the GX League is a network of **550+ Japanese companies** (accounting for 40% of Japan's emissions) that are committed to :
  - **Voluntary emissions reduction** with clear targets for 2030 and a roadmap for carbon neutrality by 2050
  - Lead **decarbonisation of the supply chain**
  - Support **creation of green markets** through green procurement
- Management team for the league consists of officials from **METI,** representatives from **Nomura Research Institute (NRI)** and **Hakuhodo** (second largest advertising firm in Japan)
- A Business Working Group has been launched under the league to **facilitate market creation and rule-making** on green business, such as developing certification systems
- The GX League will be piloted as **Japan's first emissions trading system** due to operate as an exchange-based market for the **voluntary trading** of carbon credits:

Phase 1 (2023)	Phase 2 (2026)	Phase 3 (2030s)
• Pivotal voluntary emission cuts	• Launch of emissions trading • Obligatory emissions cuts with designated targets • Comply or explain	• Auctioning of allowances

GX ROADMAP FOR NEXT 10 YEARS

Japan

Integrated regulatory/ assistance promotion measures

Assistance

- Integrated measures to stimulates public-private investment (i.e. long-term/multi-year assistance, target sectors achieve stronger industrial competitiveness/ economic growth x reductions in emissions)

Up-front investments in existing technologies → Support commercialisation of new technologies

Regulation / system

Strengthen regulations, promote decarbonisation and create demand for new industries by revising various systems (i.e. Strengthen standards and expand scope of *Energy Conservation Act*, *Sophisticated Methods of Energy Supply Act*, *Building Energy Efficiency Act*, introduce public procurement)

Growth-oriented carbon pricing

GX emissions trading System

[2023~] Trial Launch Period
- Already accounts for 40% of Japan's CO2 emissions
- Set to commence full operations in FY2023

[2026~] Full operation of emissions trading market
- Implement measures to increase participation rate
- Requirements for targets to be based on government guidelines and approval by private third party organisation
- Strengthen regulatory system (monitoring, compliance)

[2033~] Further development
- Gradual introduction of charges [on CO2 emissions] in power generation sector
- Explore introduction of auction system for charges

Carbon Levies

[2028~] Carbon Levy
- Introduction of proportional carbon levy on fossil fuel importers

Redemption of GX transition bonds

GX transition bonds

Issue GX transition bonds to support government funding over next ten years

Realise over 150 trillion JPY of private-public investment over the next 10 years

New financing methods

Domestic

Development and Implementation of Blended Finance (green financing, transition financing, innovation financing)

Improve conditions of sustainable finance market (create guidance for financial institutions, guidelines for impact investments, strengthen financing for local communities/ SMEs)

Overseas

Improve conditions for promoting transition financing (enhance/disseminate sector-specific roadmaps, adjust calculation/publication of financed emissions)

Stregnthening supply of risk money through public private investments to support industry transition and innovation

International strategy

Asia

Encourage realistic energy transition by realising formation of AZEC (Asia Zero Emission Community) (i.e. accelerated development of AETI (Asian Energy Transition Initiative), promotion of JCM (Joint Crediting Mechanism), energy cooperation with other nations (bilateral, multilateral frameworks)

Global

Take lead in efforts to form green market, cooperation on innovation (i.e. establishing internation evaluation methods for green products, constructing new value axis to assess corporate contribution to emissions reduction)

Political Stakeholders involved in GX

Japan

GX Implementation Council in the Cabinet

Chair

KISHIDA Fumio, Prime Minister

Vice Chairs

NISHIMURA Yasutoshi,
Minister of Economy, Trade and Industry (METI);
Minister for Green Transformation (GX)

MATSUNO Hirokazu,
Cabinet Chief Secretary

Ministerial Members

NISHIMURA Akihiro,
Minister for The Environment (MOE)

SUZUKI Shunichi,
Minister of Finance (MOF)

HAYASHI Yoshimasa,
Minister for Foreign Affairs (MOFA)

Industry Stakeholders / Expert Panelists

- Japan Business Federation (Keidanren)
- Japan Chamber of Commerce and Industry
- Japan Consumers' Association
- Japanese Trade Union Confederation
- National Institute for Environmental Studies (NIES)
- Expert panelists from corporates

Liberal Democratic Party Headquarters for realising GX

ASO Taro
Chief Advisor
Ex-Prime Minister

SUGA Yoshihide
Chief Advisor
Ex-Prime Minister

HAGIUDA Koichi
Director-General
Ex-METI

INOUE Shinji
Secretary-General
Ex-MOE