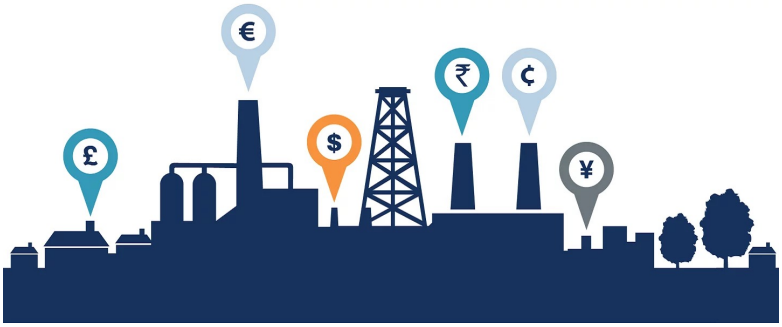
Understanding Carbon Pricing in Japan

—What is Japan going to challenge?



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Historical/Background Aspects of Japan's Carbon Pricing

1997 A strong battle between Env. Agency and MITI/industry
⇒ Keidanren Voluntary Action Plan (currently Carbon Neutral Action Plan)

2001 MITI → METI; Environment Agency → MoE

2003 METI's "Special account for energy measures" shared w/ MoE [politically essential]

2005–13 JVETS (Japan Voluntary ETS) driven by subsidy [MoE]

2008–12 Trial Integrated ETS/Credits consistent w/ Keidanren's initiative [METI/MoE]

(2010, 11 Tokyo and Saitama's ETS launched)

2012– "Tax for global warming measures" → energy (esp. climate) policy budget
(¥289/tCO_2=€1.8/tCO_2 now; together with other energy taxes)

⋮

▶ 2022– GX Economic Transition Bond for 10 years

2023–25 GX-ETS Pilot

2026– GX-ETS Full-scale phase

Carbon pricing as the funding instrument of the GX Strategy

< a few tens of Euros/tCO_2 (?)

2028 Carbon levy → Redemption of GX Economic Transition Bond (–2050)

2033– GX-ETS Auctioning for power generation sector → GX Transition Bond

Comparison b/w Theoretical and Japan's Carbon Pricing

Theory (main purpose)

- Emission reductions by the price effect.
- Common price per tCO_2 → Optimal/least cost as a whole.
- Companies/market searches/finds and materialize from lower cost options (not specified by the Gov't).

By-product

- A revenue-raising instrument for the Gov't (to do something).
- Packaging with the expenditure strategy, typically finances climate measures (for RD&D of unproven techs and/or diffusion of proven techs).

Little emphasis on these aspects…
(no specific estimation of this effect)

150 trillion yen (1 trillion Euro) is needed over the next 10 years to realise the blueprint for priority technology areas.
← Initial funding allowance in the form of government bonds with carbon pricing as the redemption source by 2050.

Quick-start is needed for success

"Industrial Policy" rather than domestic climate policy (nor energy policy)

The industry sector agrees with this approach.

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)

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

https://grjapan.com/sites/default/files/content/articles/files/gr_japan_overview_of_gx_plans_january_2023.pdf

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 inves • Promote **climate-related disclosure** based on IS • JCM Global Match to promote matchmaking fo

INITIAL INVESTMENT PLAN

Japan

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

GX-ETS
— Challenging the lessons learned from the history of ETSs

Lessons Learned from history of ETSs	GX-ETS (esp., its Pilot until 2025)
Only a regulatory framework with strict/rigid compliance rules can work as environmental regulation as well as market utilization.	Voluntary participation; voluntary targets setting; no penalty; 'comply or explain'. (But auctioning will be introduced for power generation sector from 2033)
Mandatory regulation is the true driver.	Participants can enjoy governmental support.
Complicated system doesn't work.	4 pledged targets (Scope 1 & 2)×(2025, 2030) AND another benchmarking 'target' (for Scope 1) consistent with Japan's NDC for credit generation.
Only cap-and-trade (allowance) type works. Crediting schemes complement cap-and-trade as its driver. A sole crediting scheme did not work.	Credit (ex post) type without a cap (although market liquidity is considered to be important).
The main market players are private companies.	Probably, external credit (J-credit) will be the main commodity traded. Half of them are owned by METI.

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

METI's Genes and Its Pride of Place

Ministry of Economy, Trade and Industry (not for Environment)
intrinsically prioritizes the **industrial policy** supported by the energy policy

Intrinsically and historically, METI wants that Japan (esp., its industry sector) will follow the blueprint it draws.
(*inconsistent with the concept that market determines what to be chosen and implemented…*)

Let Japan's manufactures dominate 'global' markets in new tech areas in a coming carbon-constrained economy for Japan's tomorrow.

≫

How to introduce/make use of technologies that will contribute to future CO_2 reductions in Japan.

Quick start; Strong support for unproven techs; Mother domestic market is needed first; Invites Asian countries to introduce H_2/ammonia power generation (to create market), …

Past failures…

- Semiconductors, Liquid crystal display, PV panel, Wind power, Li-Ion battery,…