Climate Integrate

Climate Integrate Report

What's GX-ETS？

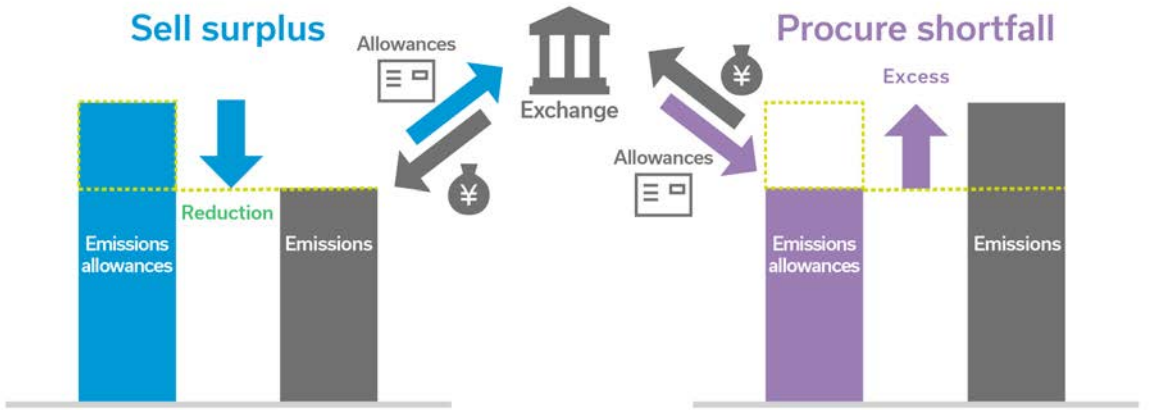
Kimiko Hirata
Executive Director
Climate Integrate

March 19, 2026

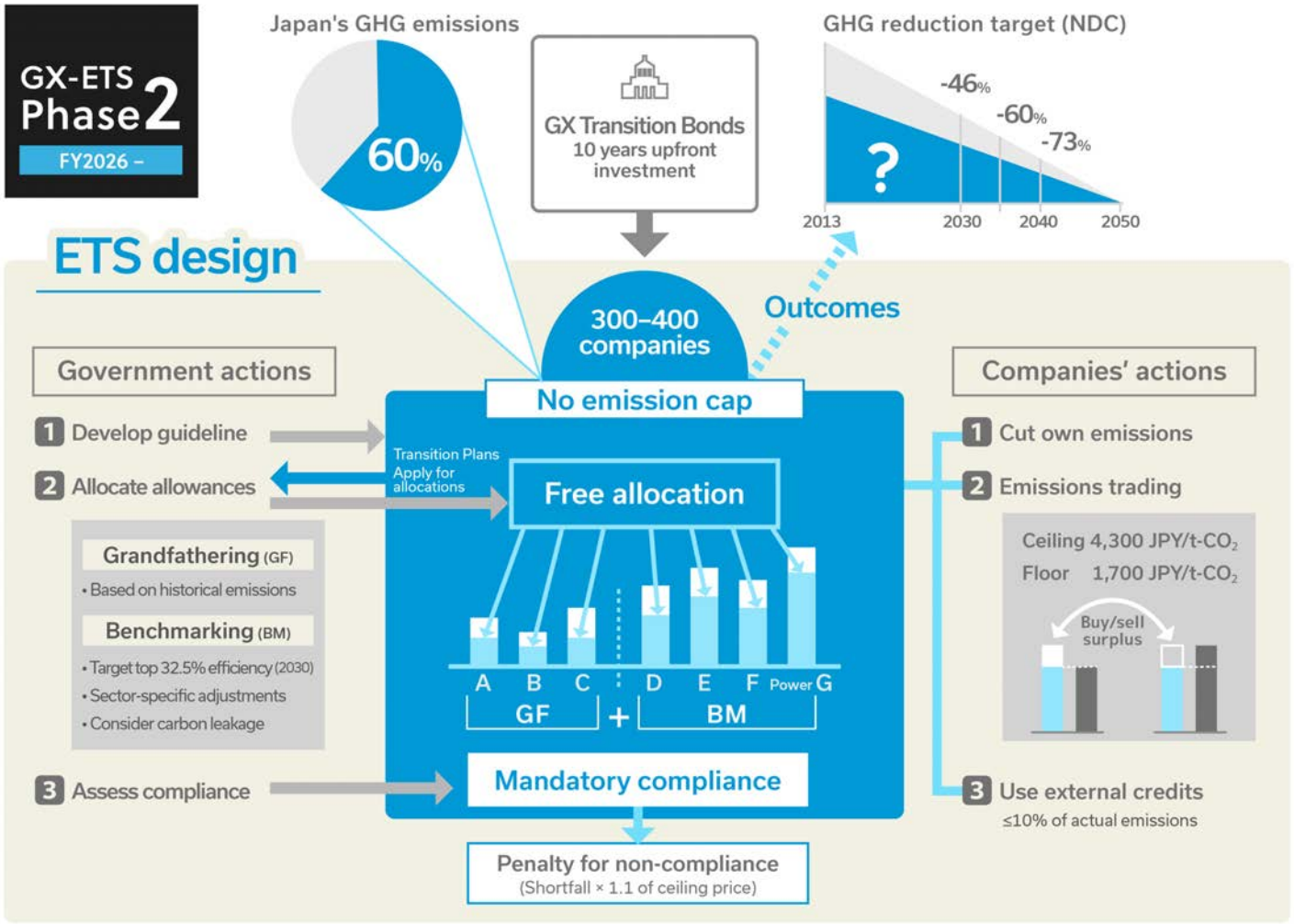
GX-ETS – Unique mechanism

- How does it contribute to GHG reduction?
- How does carbon pricing work?
- What kind of changes will it bring to Japan?

Figure 1. Emissions Trading System (ETS) Mechanism



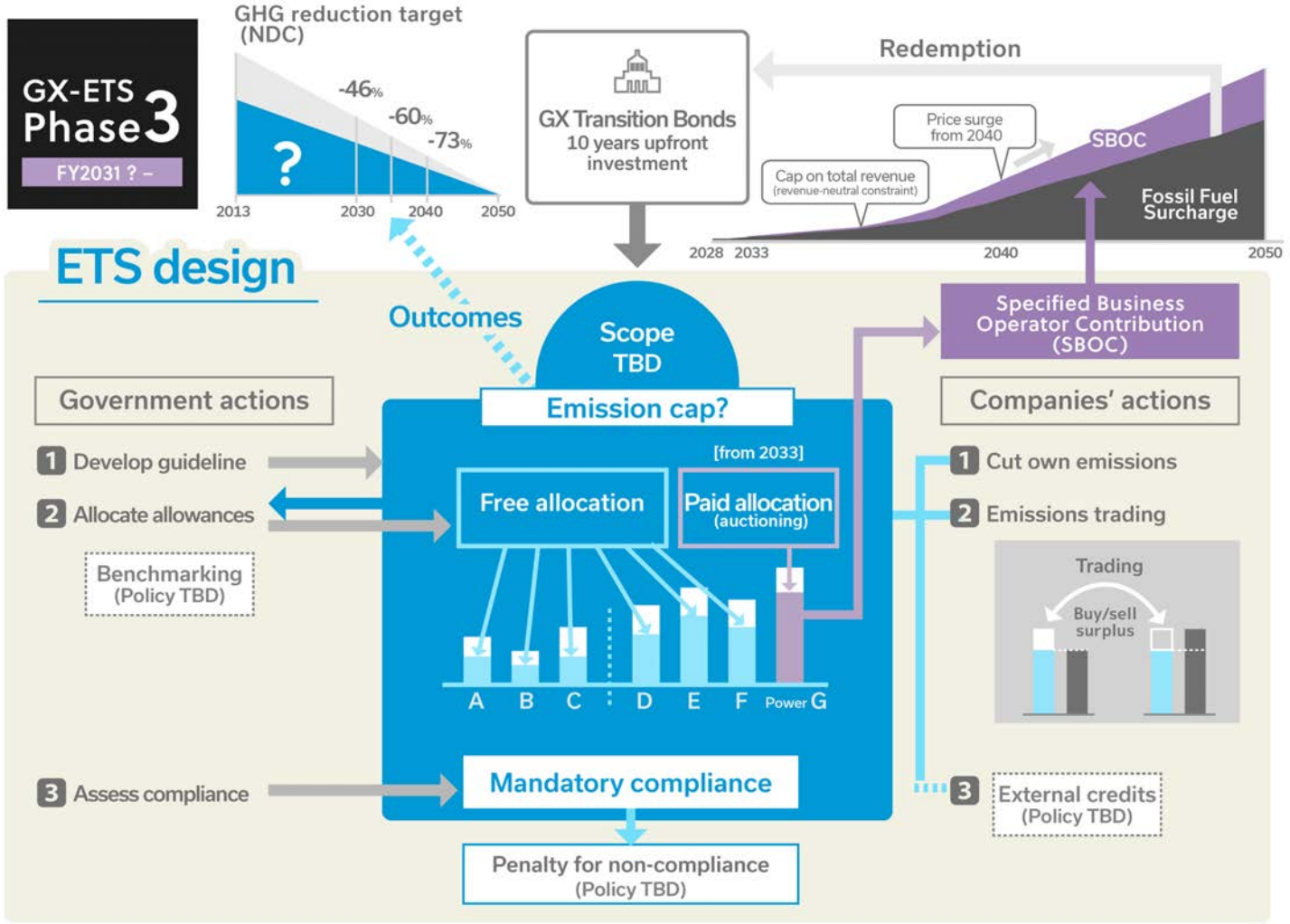
Source: Prepared by Climate Integrate based on METI website


GX-ETS Phase 2
FY2026 –
Japan's GHG emissions
60%
GX Transition Bonds
10 years upfront investment
GHG reduction target (NDC)
-46%
-60%
-73%
?
2013
2030
2040
2050
ETS design
300–400 companies
Outcomes
Government actions
1 Develop guideline
2 Allocate allowances
Grandfathering (GF)
• Based on historical emissions
Benchmarking (BM)
• Target top 32.5% efficiency (2030)
• Sector-specific adjustments
• Consider carbon leakage
3 Assess compliance
No emission cap
Transition Plans
Apply for allocations
Free allocation
A B C D E F Power G
GF + BM
Mandatory compliance
Penalty for non-compliance
(Shortfall × 1.1 of ceiling price)
Companies' actions
1 Cut own emissions
2 Emissions trading
Ceiling 4,300 JPY/t-CO2
Floor 1,700 JPY/t-CO2
Buy/sell surplus
3 Use external credits
≤10% of actual emissions

GX-ETS Phase 2

- Mandatory participation
- **Covers 60% of Japan's GHG emissions**
- 300 – 400 companies
- **No overall reduction targets for covered entities: NDC contribution unclear**
- Free allocation to all entities
- In principle, top-efficiency benchmarks by industry
- Various adjustments and considerations by industry
- Price range: 1700 (floor) – 4300 (ceiling) JPY / t-CO_2
- Allows use of 10% credit (offset) of actual emissions

- **Free allocation, adjustments/considerations, low price ⇨ weak incentives?**

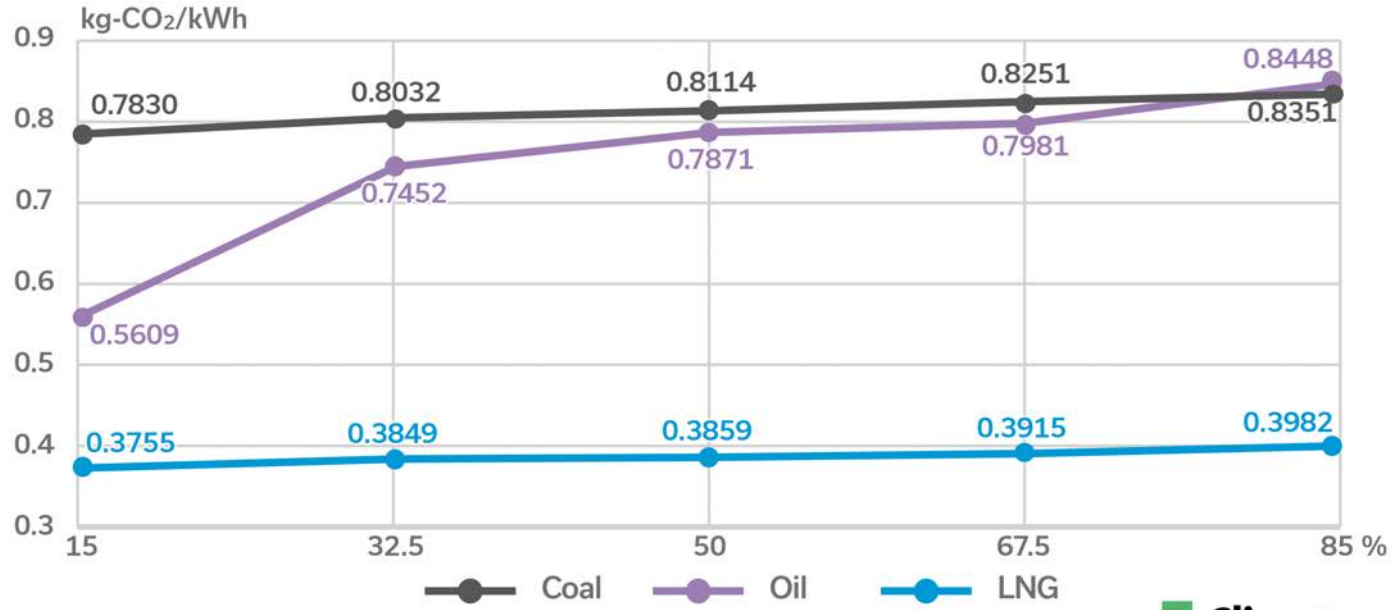

GX-ETS Phase 3
FY2031 ? –
GHG reduction target (NDC)
-46%
-60%
-73%
?
2013
2030
2040
2050
GX Transition Bonds
10 years upfront investment
Redemption
Price surge from 2040
SBOC
Cap on total revenue
(revenue-neutral constraint)
Fossil Fuel Surcharge
2028
2033
2040
2050
ETS design
Outcomes
Scope TBD
Specified Business Operator Contribution (SBOC)
Government actions
Companies' actions
Emission cap?
[from 2033]
1 Develop guideline
2 Allocate allowances
Free allocation
Paid allocation (auctioning)
Benchmarking (Policy TBD)
1 Cut own emissions
2 Emissions trading
Trading
Buy/sell surplus
A B C D E F Power G
3 Assess compliance
Mandatory compliance
3 External credits (Policy TBD)
Penalty for non-compliance (Policy TBD)

GX-ETS Phase 3

- Paid allocation for power sector (from 2033)
- Other sectors continue to receive free allcation
- Revenue from paid allocation will be used to repay GX transition bonds
- Annual revenues from fossil fuel surcharge and specified business operator contributions (from paid allocation) are capped at the level of revenue losses from the petroleum and coal tax, and FIT surcharge
- Carbon price will remain low until around 2035
- Risk of insufficient funds for repaying GX transition bonds in the early stages

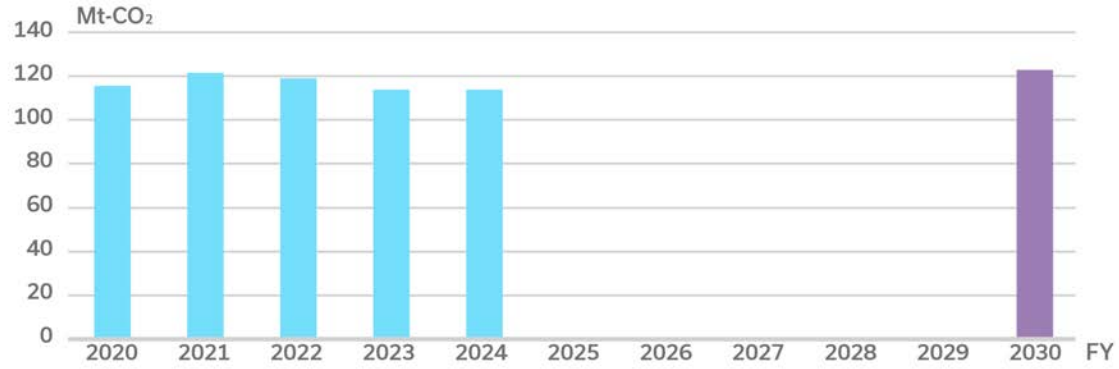
Analysis 1) Phase 2 benchmark: CO_2 reduction impacts

Figure 8. Power generation emissions intensities by fuel



Source: Prepared by Climate Integrate based on METI document

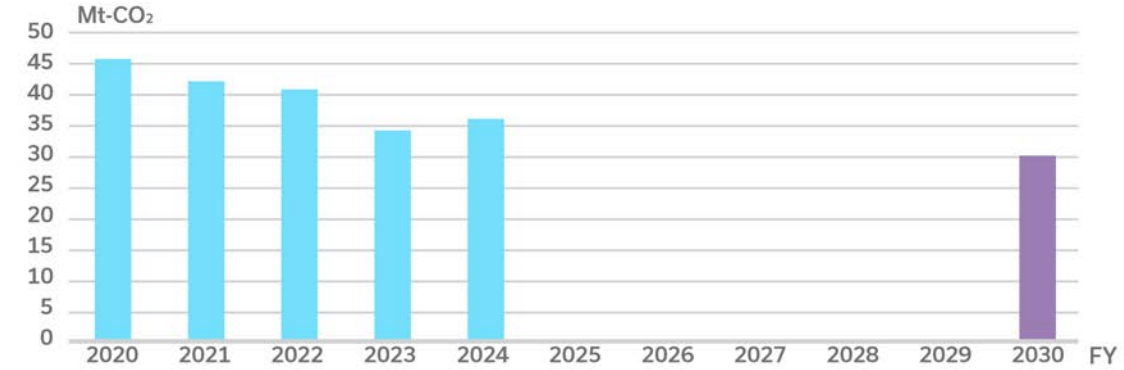
Figure 9. JERA's actual and estimated emissions*



* Domestic scope 1 emissions

Source: Prepared by Climate Integrate based on JERA Group Integrated Report 2025

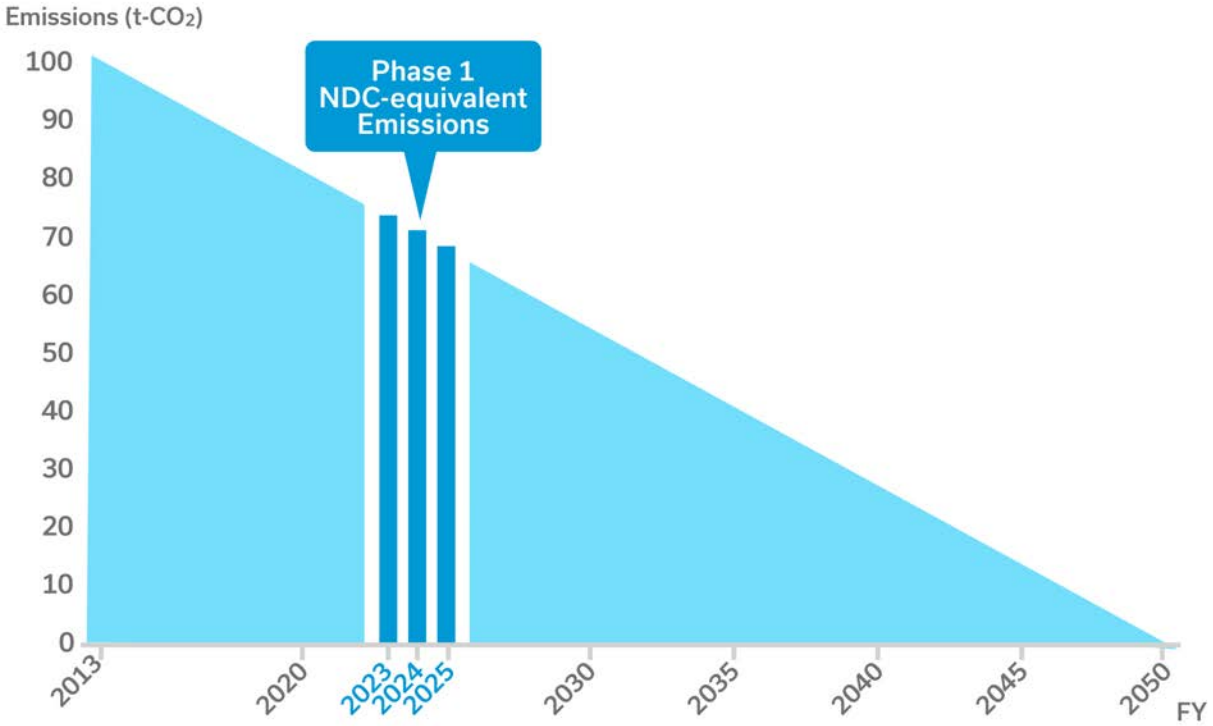
Figure 10. J-POWER's actual and estimated emissions*



* Domestic scope 1 emissions

Source: Prepared by Climate Integrate based on J-POWER Group Integrated Report 2025

Figure 5. Concept of "NDC-equivalent emissions" in GX-ETS Phase 1

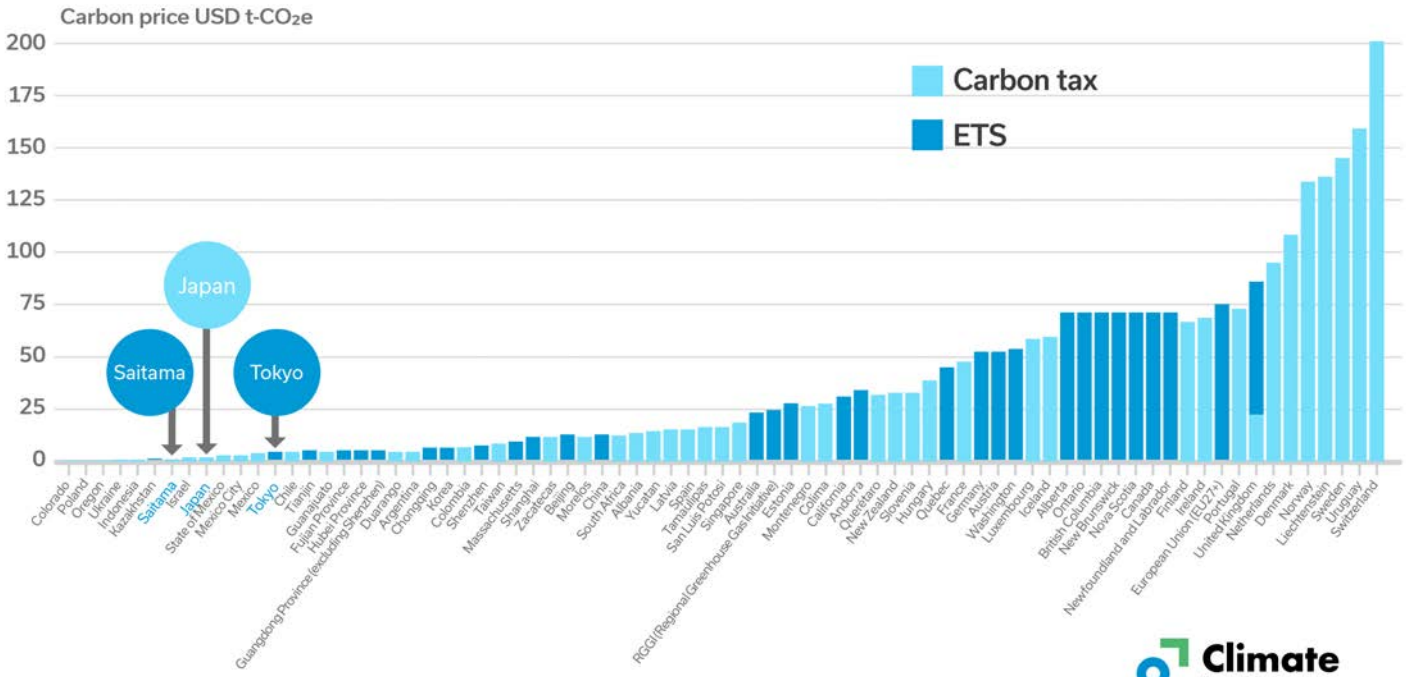


Annual reduction rate from 2013 base year: 100%/(2050-2013) = 2.7%

Prepared by Climate Integrate

Analysis 2) Carbon price: within price range (low)

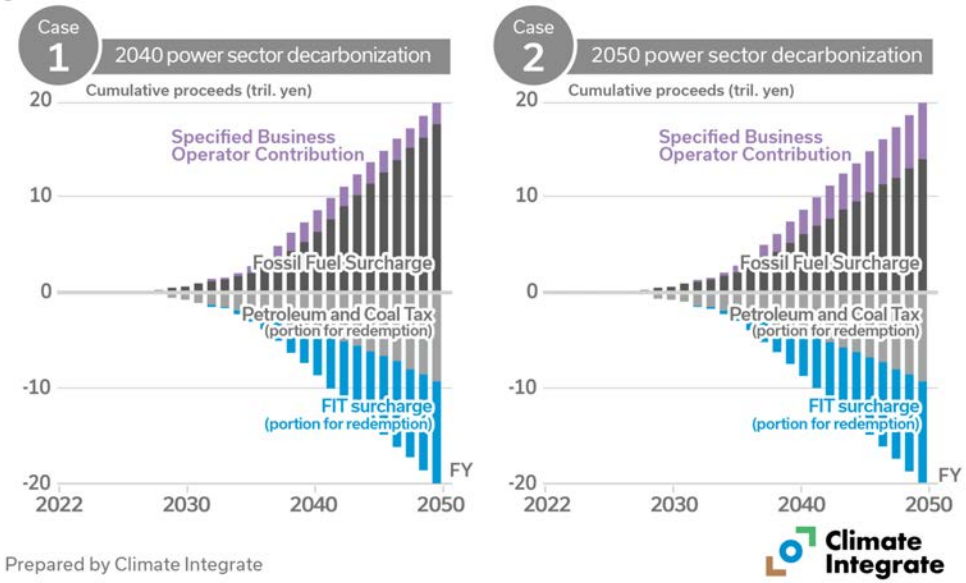
Figure 2. Prices and coverage across ETS and carbon taxes, as of April 1, 2025



Source: Prepared by Climate Integrate based on World Bank "State and Trends of Carbon Pricing 2025"

Analysis 3) Phase 3 Total of levies and charges

Figure 11. Cumulative proceeds of levies and charges (Estimation)



Prepared by Climate Integrate

Table 6. GX Transition Bond redemption and estimated collection amounts*

(Units: billion yen)

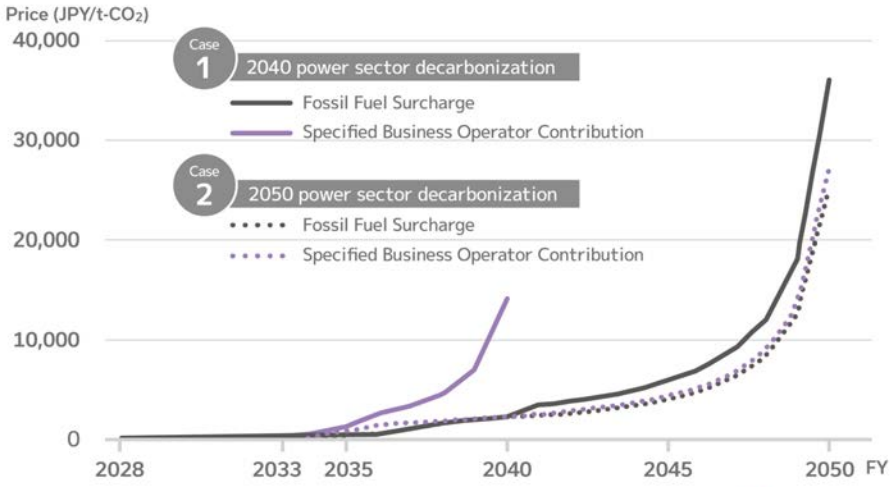
Auction date	Term	Redemption date	Issuance amount	Cumulative issuance (FY)	Estimated cumulative collection (FY)	Difference (shortfall)
2024/2/27	5	2028/12/20	800	800	142	-658
2024/7/18	5	2029/6/20	350			
2025/1/29	5	2029/6/20	350	1,499	308	-1,191
2025/7/15	5	2030/6/20	300			
2026/1/26	5	2030/12/20	300	2,099	497	-1,602
2024/2/14	10	2033/12/20	800			
2024/5/28	10	2034/3/20	350			
2024/10/22	10	2034/3/20	350	3,598	1,243	-2,355
2025/10/21	10	2035/9/20	300			
2026/3 (plan)	10	2036/3**	Approx. 300	4,198	2,175	-2,023

* For each GX Transition Bond, the cumulative collection amount up to that fiscal year is compared with the cumulative principal amount required by that point.
** Estimated based on the auction date and term as it is before auction date.

Source: Prepared by Climate Integrate based on Ministry of Finance website

Analysis 4) Phase 3 Carbon price of levies and charges

Figure 12. Unit price trends of levies and charges (Estimation)



Prepared by Climate Integrate

Table 7. Carbon price trend scenarios*

(Units: JPY/t-CO_2)

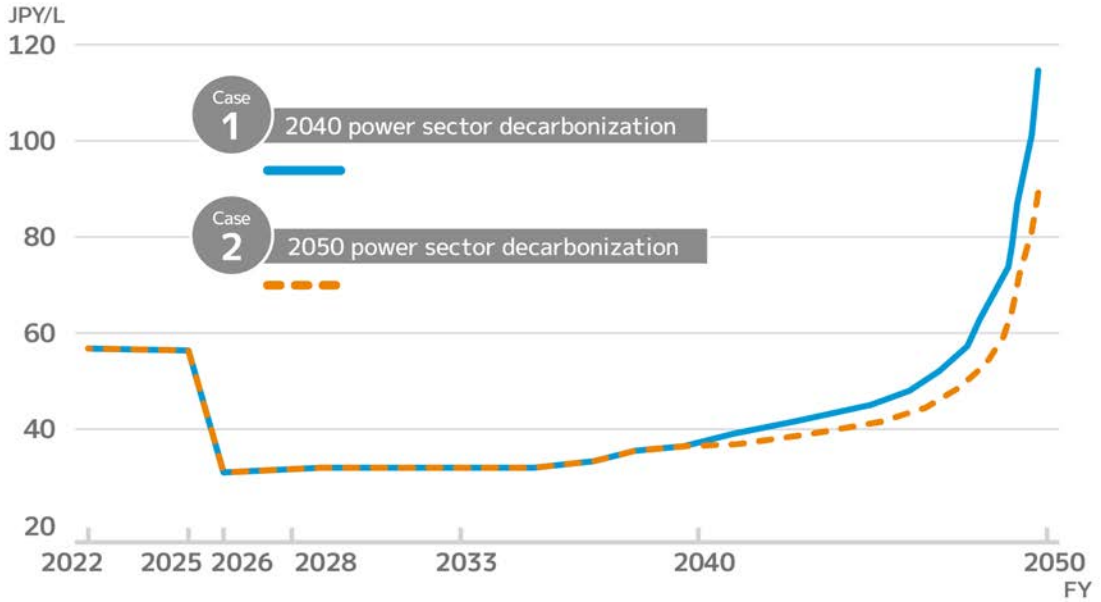
FY	Case 1: Power sector decarbonization by 2040		Case 2: Power sector decarbonization by 2050		Ref. IEA net zero scenarios (developed countries)
	Fossil Fuel Surcharge	Specified Business Operator Contribution	Fossil Fuel Surcharge	Specified Business Operator Contribution	
2030	244	-	244	-	Approx.21,000
2035	547	1,441	547	1,015	
2040	2,296	14,149	2,296	2,460	Approx.31,000
2045	6,015	-	4,210	4,511	
2050	36,087	-	25,261	27,065	Approx.38,000

* Allocation (auctioning) share of ETS is assumed to cover 30% of redemption funds

Source: Prepared by Climate Integrate based on Table B.2 of IEA "World Energy Outlook 2022."

Analysis 5) Gasoline tax and fossil fuel surcharge

Figure 13. Price trends for gasoline tax and fossil fuel surcharge



Prepared by Climate Integrate

Based on the emission factor (carbon emission factor for volatile oil) from the MoE's mandatory accounting and reporting system for greenhouse gases, the emissions per liter of gasoline is calculated at 0.00229 t-CO_2 per liter.

Future outlook for GX-ETS

- Encourage corporate action
- High transparency
- Carbon budget perspective + alignment with NDC
- Incentives to promote early reductions
- Carbon pricing with a sufficient price signal
- Pricing with the Carbon Border Adjustment Mechanism (CBAM) in mind
- Power sector decarbonization by 2040
- Review Phase 2 in 2028
- Reconsider the “invest now, charge later” framework deferring the burden
- Economy-wide decarbonization and stakeholders' benefits