

# Japanese Carbon Neutral Strategies for Green Transformation: *Carbon Pricing Update*

*Japan Update at ANU*

September 4<sup>th</sup> , 2024

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This research is supported by KAKENHI Grant  
Number 21H04945.



WASEDA University

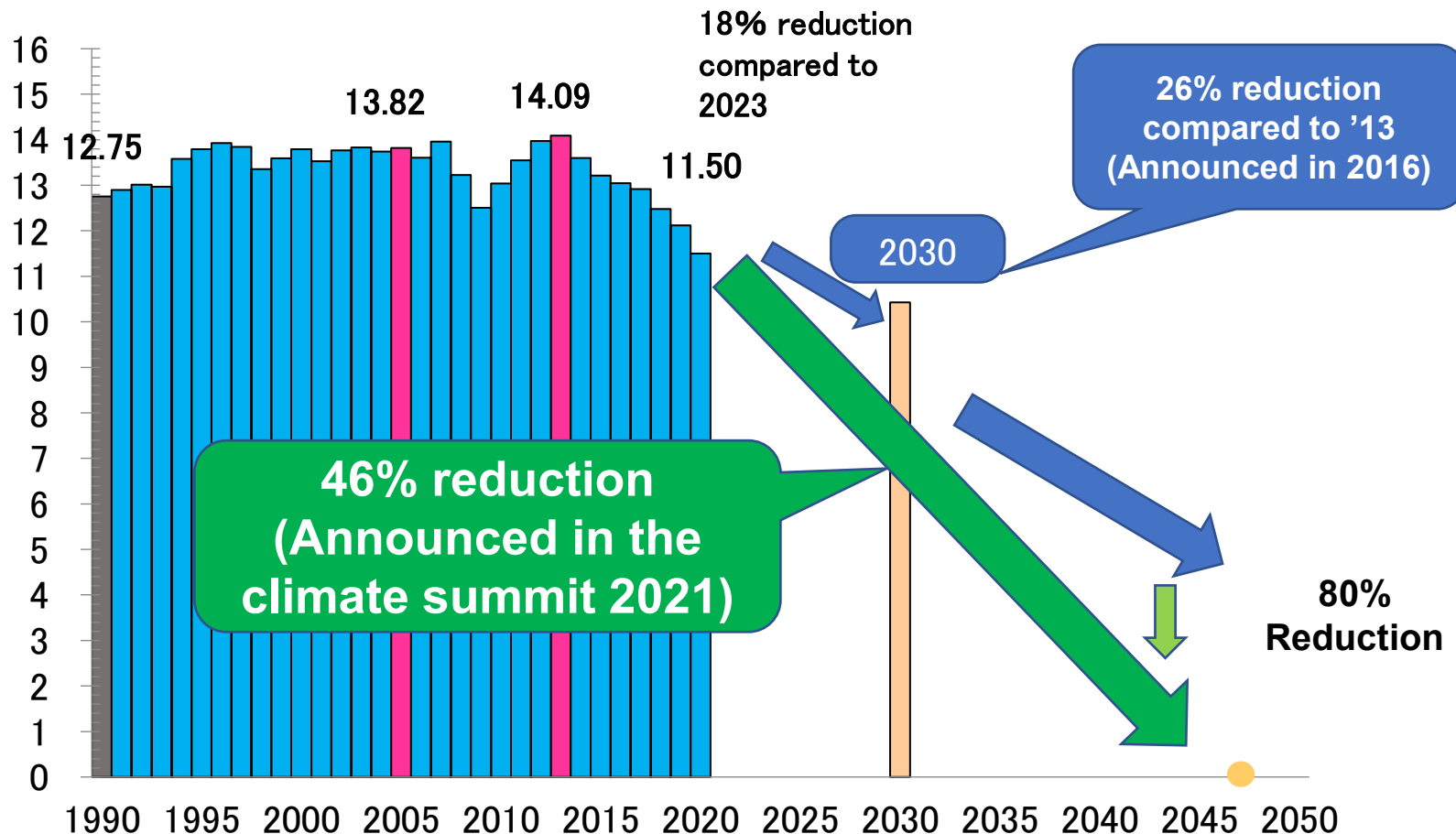
# Content

1. Carbon Neutral Policy and Target
2. Japanese CP before CN Announcement
  1. Tokyo/Saitama ETS
  2. (small) Carbon Tax
3. Japanese CP after CN Announcement
  1. GX-ETS
  2. Green Transformation (GX) Act
4. Conclusion

# 1. Carbon Neutral Policy and Target

# Japanese GHG Emission/Target & INDC

GHG Emission  
(Billion CO<sub>2</sub> ton)



(Source) [go.jp/gio/aboutghg/index.html#e](https://www.go.jp/gio/aboutghg/index.html#e)  
(2022/11/16 Accessed)

Ministry of the Environment

“Carbon Neutrality Declaration”  
by Prime Minister Suga in 2020

## 2. Japanese CP before the CN Announcement

# Carbon Pricing (CP)

1. What is carbon pricing?

① **Putting a price on CO<sub>2</sub> emissions**

② Incorporating environmental issues (such as climate change) into the market

Environmental issues (market failures) into the market !

2. Method

① **Carbon tax**

- Using a tax, similar to fossil fuel tax in Japan
- Revenue can be used for other purposes

CP was not popular among the Japanese industry

② **Emission Trading System (ETS)**

- Create a market for emission allowances, cap & trade
- Ex: EU ETS, China ETS, Korea ETS, Tokyo and Saitama ETS
- **Confirmed emission reduction**

CP's strongest argument

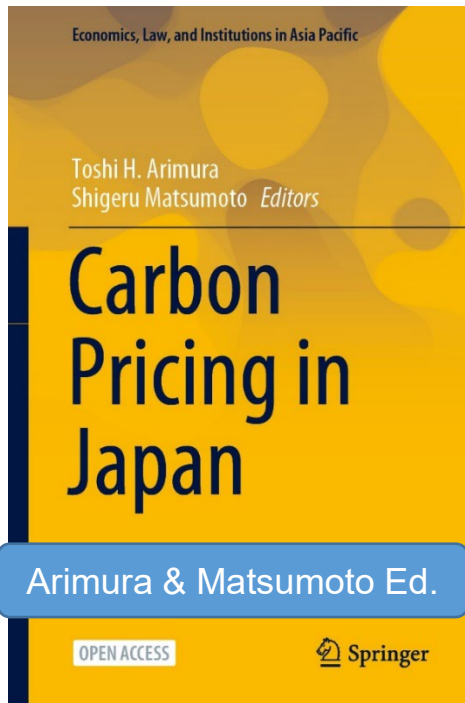
③ (Voluntary) **Carbon Credit Market**

3. **Merits : emission reduction with minimal social costs**

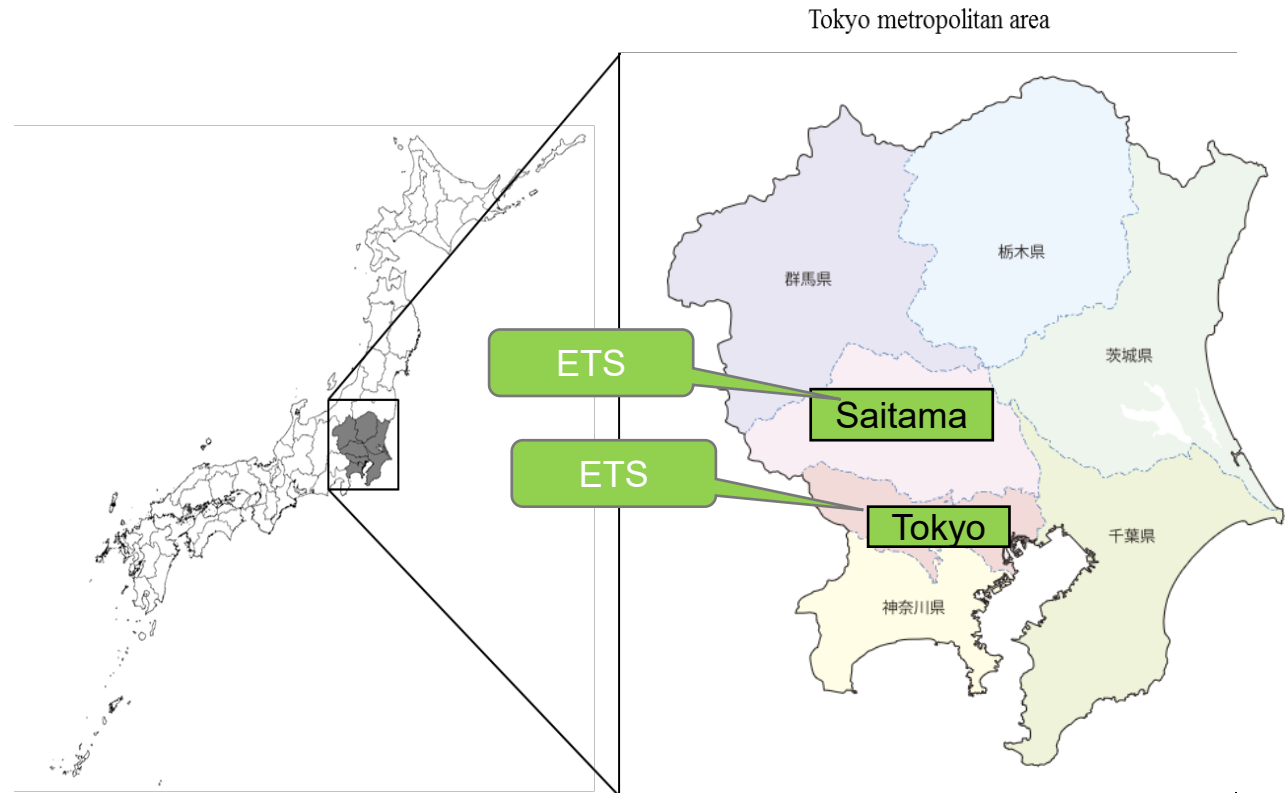
- Promoting efficient allocation of resources thanks to pricing incentives.
- Firms and consumers unconsciously move towards carbon neutrality (CN)!

# Regional Carbon Pricing in Japan (before 2020)

Open Access



We examined the effectiveness of Tokyo/Saitama ETs



*Tokyo/Saitama  
Emissions Trading Schemes*

# Subnational ETSs in Japan

## Tokyo ETS

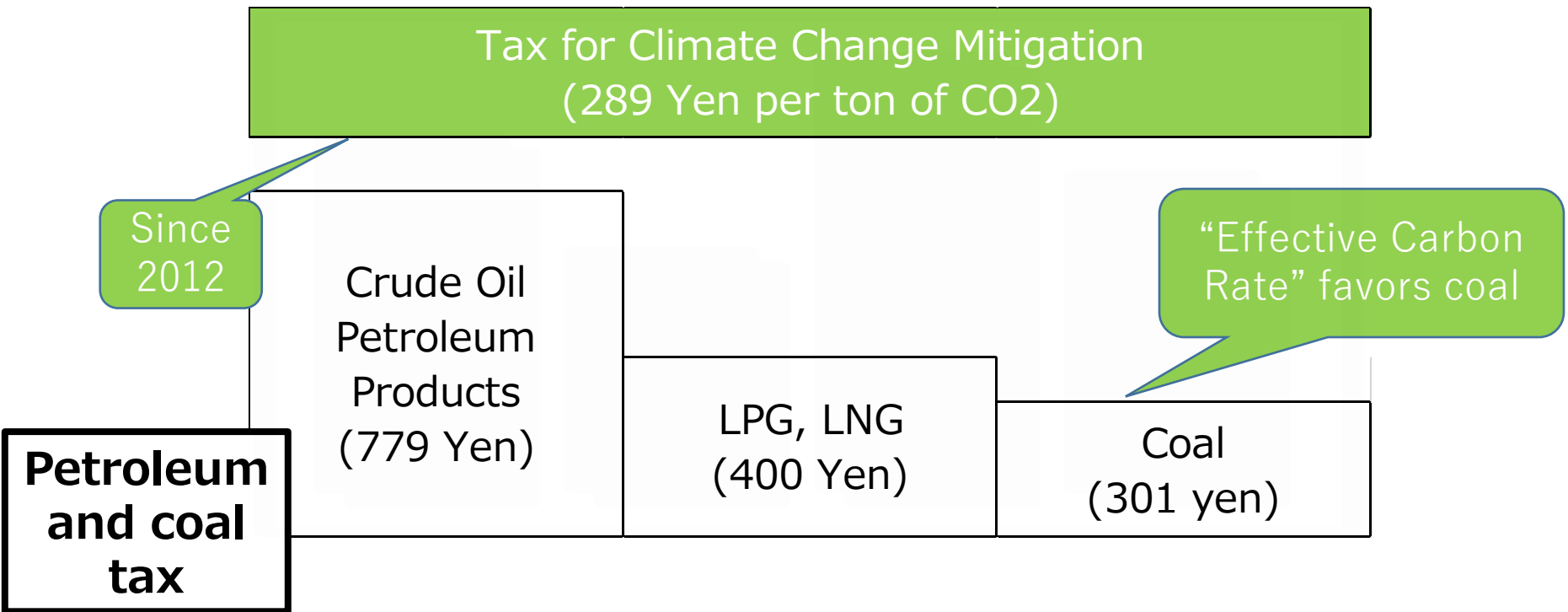
## Saitama ETS

|  | Office Buildings                                  | Manufacturing | Office Buildings                                  | Manufacturing |
|--|---|---------------|---|---------------|
| Phase I<br>T:2010-2014<br>S:2011-2014                    | 8%  | 6%            | 8%  | 6%            |
| Phase II<br>(2015-2019)                                  | 17%   | 15%           | 15%   | 13%           |
| Phase III<br>(2020-2023)                                 | 27%   | 25%           | 22%   | 20%           |
| Sector   | Manufacturing                                     | Commercial    | Manufacturing                                     | Commercial    |
| Number of Facilities                                     | 1,300<br>(Commercial Building : 80%)              |               | 600<br>(Manufacturing Plant : 70%)                |               |
| <b>Reduction</b>   | <b><u>32% by 2022</u></b>                         |               | <b><u>22% by 2014</u></b>                         |               |
| GDP share  | 18.2% (2014)                                      |               | 4.1% (2014)                                       |               |
| GHG emissions<br>(10 thousands t-CO <sub>2</sub> ; 2014) | 6,716<br>4.9% (% in the total emissions in Japan) |               | 4,250<br>3.1% (% in the total emissions in Japan) |               |

Based on *Arimura et al.(2024)*

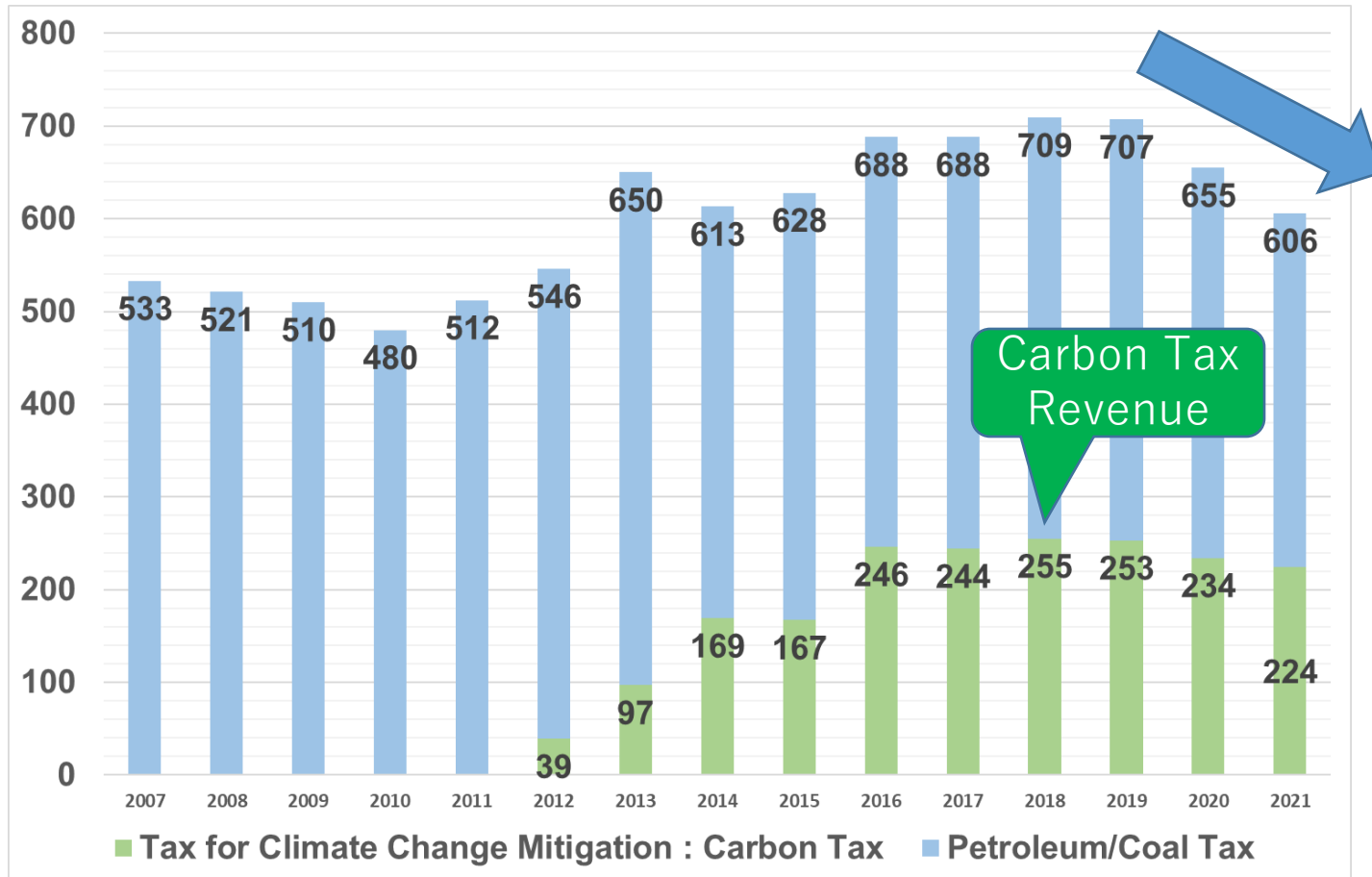


# Current Carbon Tax and Effective Carbon Rate in Japan (Tax Rate per CO2 ton) (for limited fuel type)



Based on the Carbon Pricing Committee under Ministry of the Environment, Japan

# Changes in Carbon Tax Revenue (Billion Yen)



Source: Japanese Ministry of the Environment

# Effective Carbon Rate in Japan

Arimura & Hibiki (2024) "Introduction to Environmental Economics and Policy in Japan"

Toshi H. Arimura  
Akira Hibiki

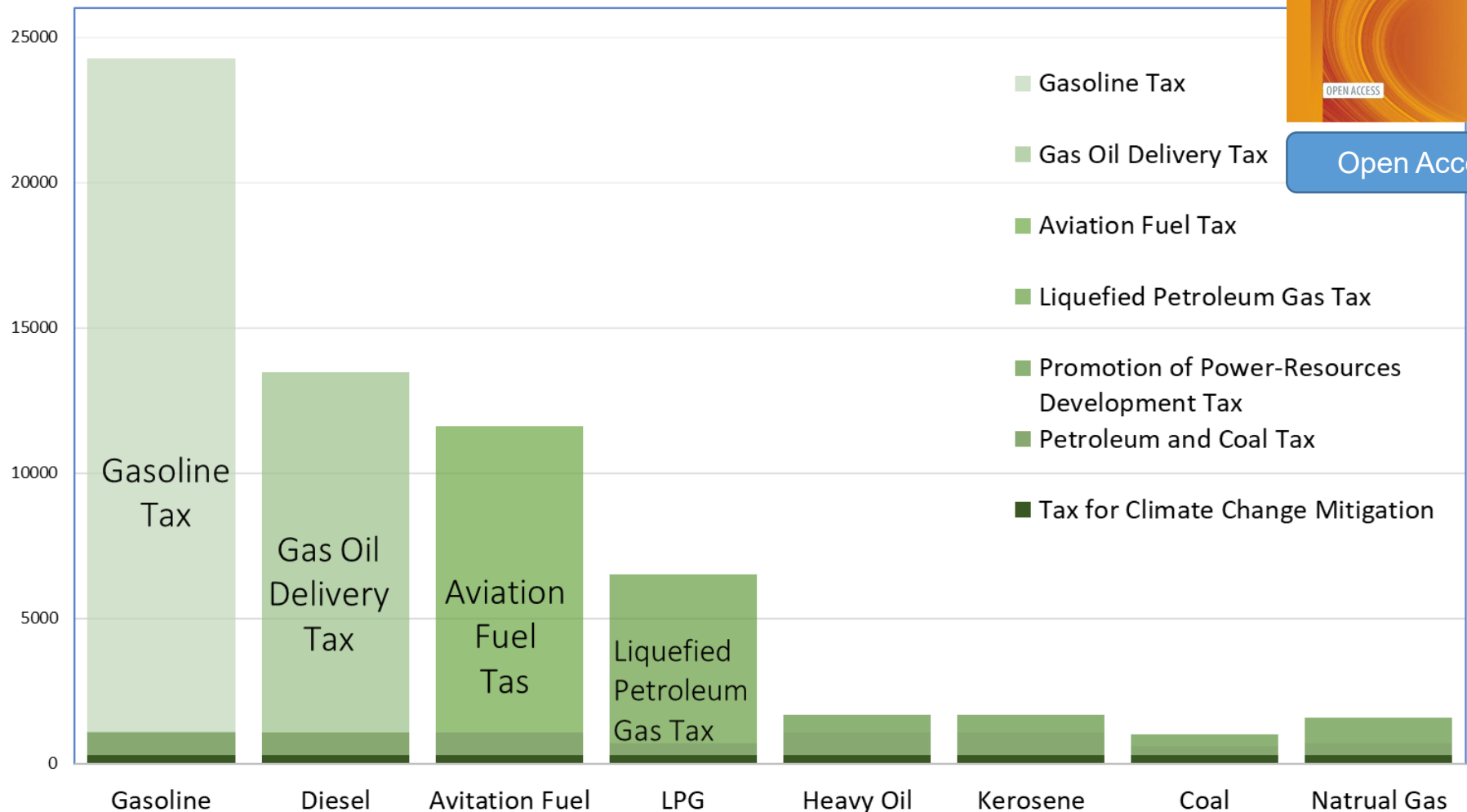
Introduction  
to Environmental  
Economics and  
Policy in Japan

OPEN ACCESS

Springer

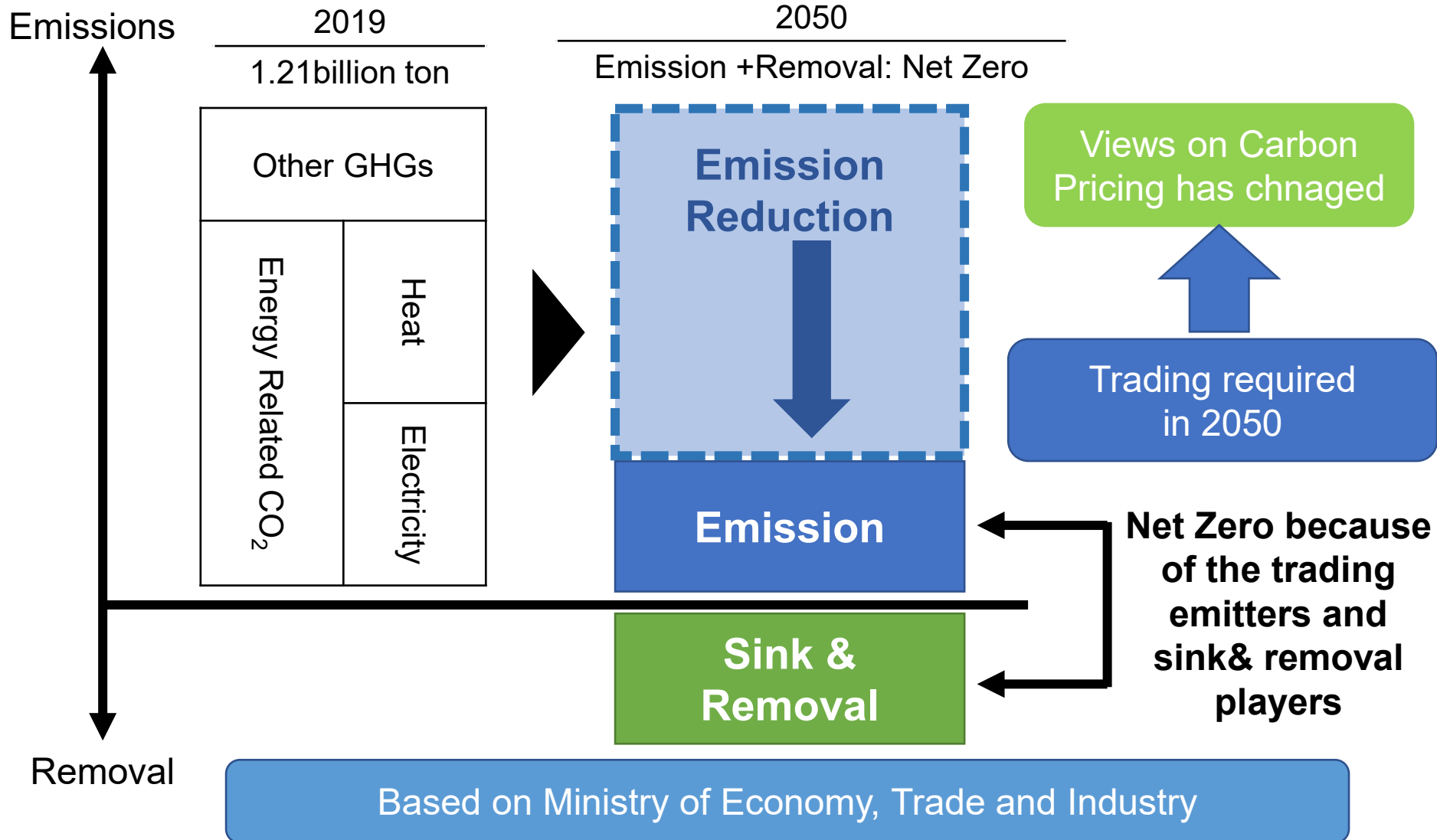
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Yen per CO<sub>2</sub> ton



# 3. Japanese CP after the CN Announcement

# Japanese Carbon Neutrality in 2050



# Voluntary ETS & Carbon Market *GX League*(2023-)

ESG Investment & Financial Sector

Participation by individual firm (not by industrial associations)

**【GX League】**  
Firms with an ambitious GHG emission target can participate in this GX league. They pledge their goal/targets and deliver emission reductions.

Tokyo Stock Exchange (2023-)

Carbon Credit Trading

**Carbon Credit Market**

J-credit  
(Japanese Domestic Offset Scheme)

Joint Crediting Mechanism  
(International Credit by Japanese Government)

Other Voluntary credits

Create a single market of voluntary credits, which helps increasing the supply of credits with quality.

Carbon Credit Report (June 2022)

Based on METI's resources (Presenter's Comments in Blue).

# Green Transformation (GX) Act in Japan (May 2023)

## 1. Japan Climate **Transition Bond** (FY2023-)

First Transition Bond

- ✓ Funding for R&D and Innovation  
(**20 trillion** yen in 10 years)

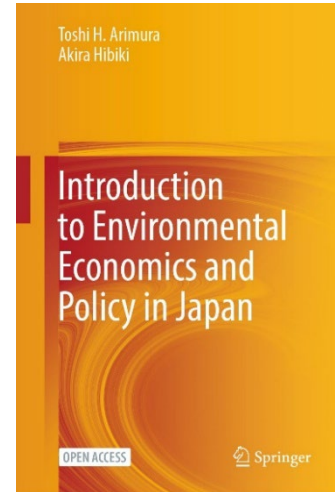
## 1. Carbon Pricing

### A) An Emissions Trading Scheme (GX-ETS)

- I. Phase I: 2023-2025 (Though voluntary, it covers more than half of the emission. Required for access to TB)
- II. Phase II: 2026- (Mandatory) (Planned)
- III. Auction after 2033 in the power sector (Planned)

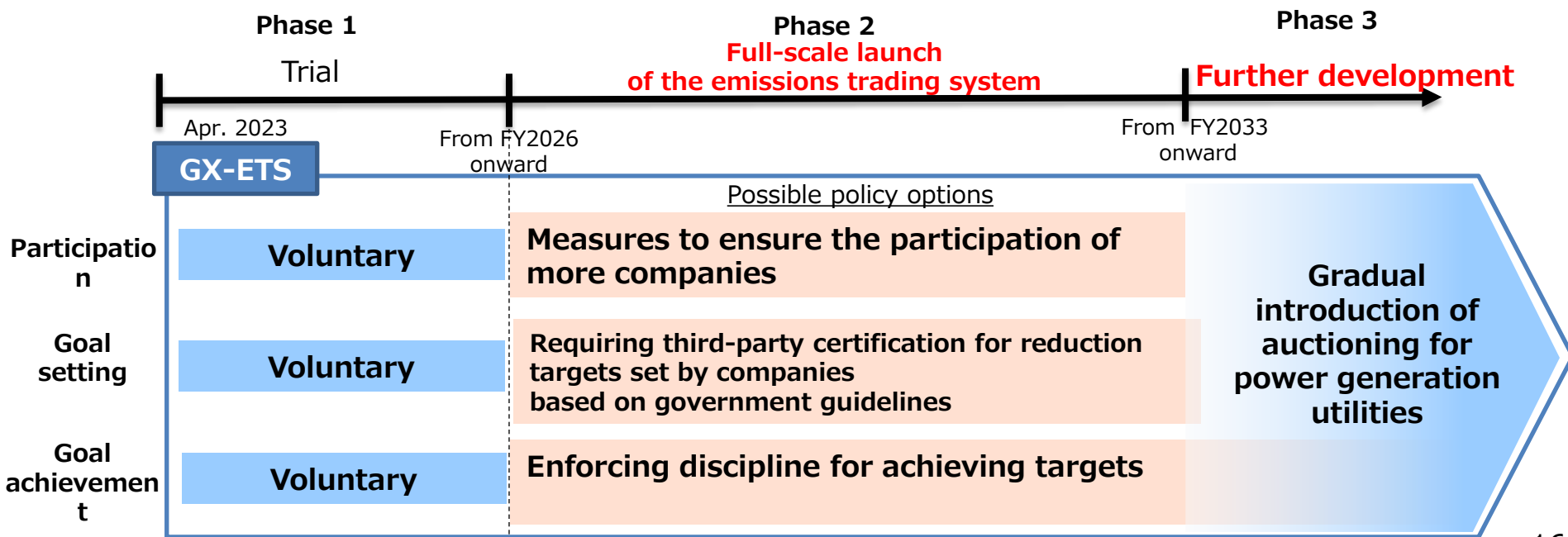
### B) Carbon Surcharge (carbon tax)

- Charges on the imported fossil fuels (similar to current oil and petroleum tax) after 2028



# Gradual development of GX-ETS

- **Full scale operation of emission trading system** will start from 2026FY, with encouraging wider participation and enforcing discipline.



Participation in GX-ETS is required for access to the funding

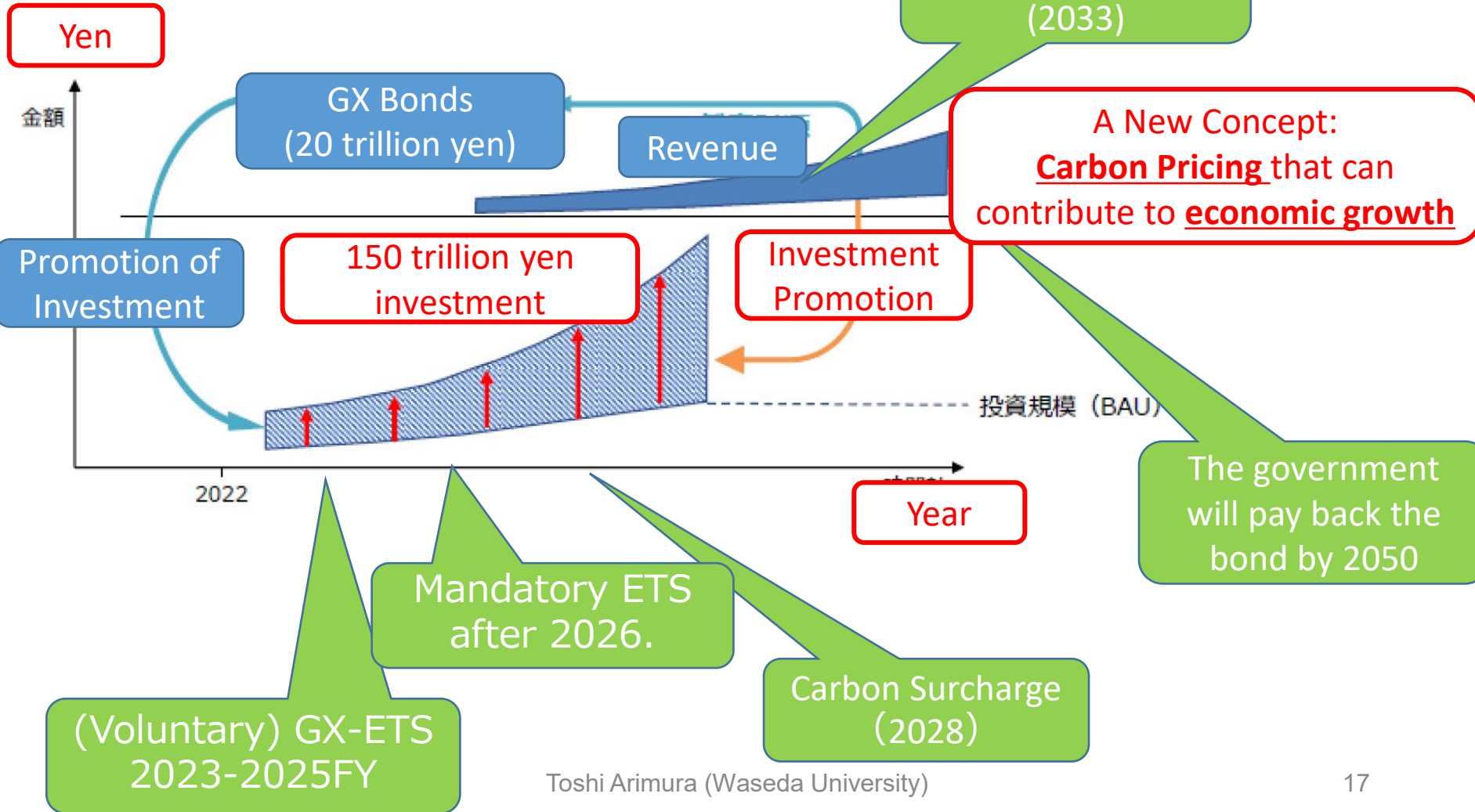
The design of mandatory ETS is now discussed and will be concluded in 2024.

My Comments in Green



# Timing of Various Policy Instruments under GX

My comments on the 2022 December Meeting on GX at the Cabinet



# Carbon Levy after 2028 (Tax Rate per CO2 ton)

Carbon Surcharge after 2028

Tax for Climate Change Mitigation  
(289 Yen per ton of CO2)

Since  
2012

Crude Oil  
Petroleum  
Products  
(779 Yen)

LPG, LNG  
(400 Yen)

Coal  
(301 yen)

**Petroleum  
and coal  
tax**

Based on the Carbon Pricing Committee under Ministry of the Environment, Japan

# Conclusion

1. Japanese national-level climate policy was characterized by a voluntary approach before CN announcement.
2. Though the regional ETSs have been successful, the role of the financial sector was limited.
3. After the CN announcement, CP is becoming a major policy instrument under GX law.
4. GX-ETS, led by METI, started on a voluntary basis and will become mandatory.
5. The role of the financial sectors is becoming important
  1. A carbon market at the Tokyo Stock Exchange.
  2. The first Climate Transition bonds

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**Thanks!**