

Provisional translation



京都大学  
KYOTO UNIVERSITY

シンポジウム「2035年日本の電力脱炭素化に向けた戦略」/  
Symposium “2035 Decarbonization of Japan’s power system”

# Comments

March 1, 2023

Akasaka Intercity Conference 4F Amphitheater / online  
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# Significance of the 2035 Report

- Presented new finding (past studies on next page) in quantitative study on energy shift in Japan
- Presented clean energy can supply to 90% of Japan's total power consumption in 2035
- Solar will be dominant for the time being, but wind will expand massively in late 2020's and early 2030's
- Benefits not just environmental but also economical
  - 1) Decreasing energy cost (wholesale price)
  - 2) Net increase in exports thanks to reduced reliance on fossil fuels
  - 3) Contributions to economic growth and security
- Policy proposals

# Quantitative studies on energy shift in Japan

- 李秀澈・何彦旻・昔宣希・諸富徹・平田仁子・Chewpreecha, U. (2021)「日本の2050年カーボンニュートラルの実現がエネルギー構成及びマクロ経済へ与える影響分析- E3MEマクロ計量経済モデルを用いた分析-」京都大学大学院経済学研究科再生可能エネルギー経済学講座ディスカッションペーパーNo.32([http://www.econ.kyoto-u.ac.jp/renewable\\_energy/stage2/contents/dp032.html](http://www.econ.kyoto-u.ac.jp/renewable_energy/stage2/contents/dp032.html)).
- Lee, S., He, Y. Suk, S. Morotomi, T. and U. Chewpreecha (2022), “Impact on the power mix and economy of Japan under a 2050 carbon-neutral scenario: Analysis using the E3ME macro-econometric model”, *Climate Policy*, 22(7), pp.823-833(<https://www.tandfonline.com/doi/abs/10.1080/14693062.2022.2061406?journalCode=tcpo20>).
- Renewable Energy Institute, Agora Energiewende, and LUT University (2021), *Renewable pathways to climate-neutral Japan: Study on behalf of Renewable Energy Institute and Agora Energiewende* (<https://www.renewable-ei.org/en/activities/reports/20210309.php>).

# Factors for further research

- Power demand will further decline considerably ?
  - Subject to population decline, production base, electrification
  - Possibility of the government's push to increase supply producing adverse effects
- Nuclear power plants may not operate as much as assumption in this study?
- Potential for grid expansion and rule changes
- Aside from supply side study, research needed to incorporate potential of demand response  
Unique decarbonization scenario by GOJ/Industry ~ extension of coal- and gas-fired power + Ammonia ▪ Hydrogen co-firing + CCS
- Whether what kind of role hydrogen will or will not play in future is also key point

**【Reference】**

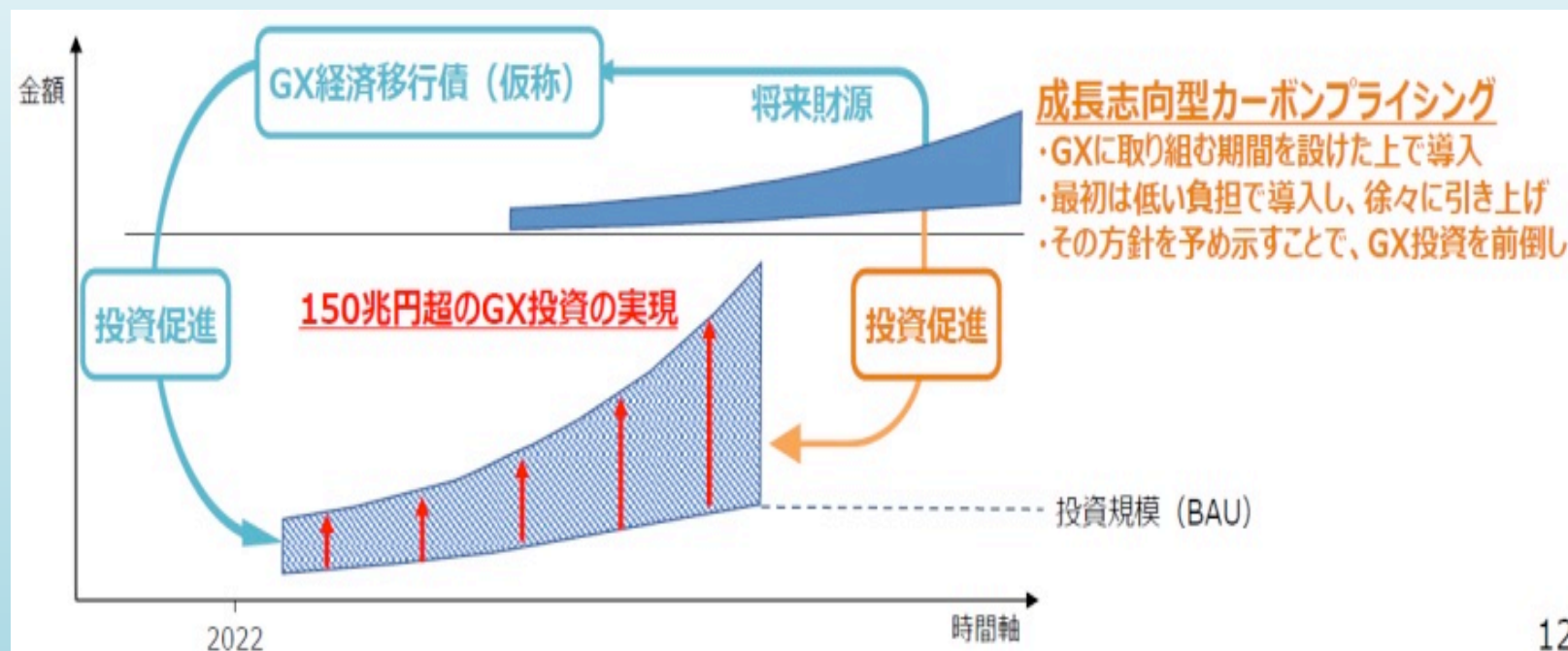
**Proposals for Carbon Pricing at GX  
Meeting**

# Instruction from PM Kishida for designing detailed CP schemes

- On Oct. 26, PM Kishida instructed compiling detailed schemes for CP at GX meeting
- From discussions on whether or not CP should be introduced to discussions on detailed schemes
- Conditions for “carbon pricing for growth” presented
  - 1) Hybrid between surcharges and emissions trading
  - 2) CP should be implemented in ways so that total public burden related to energy should not increase in mid- to long-term
  - 3) Support for investment should be provided using GX transition bonds
  - 4) Pursue “growth” and “environment” by accelerating domestic decarbonization investment and meeting robust decarbonization demand in Asia

# What is "Growth-oriented" Carbon Pricing ?

図 「成長志向型カーボンプライシング」のイメージ



[出所] 経済産業省産業構造審議会資料「GXを実現するための政策イニシアティブの具体化について」(事務局提出資料), スライド12枚目.

([https://www.meti.go.jp/shingikai/sankoshin/sangyo\\_gijutsu/green\\_transformation/pdf/010\\_01\\_00.pdf](https://www.meti.go.jp/shingikai/sankoshin/sangyo_gijutsu/green_transformation/pdf/010_01_00.pdf)).

# What “growth-oriented” CP means

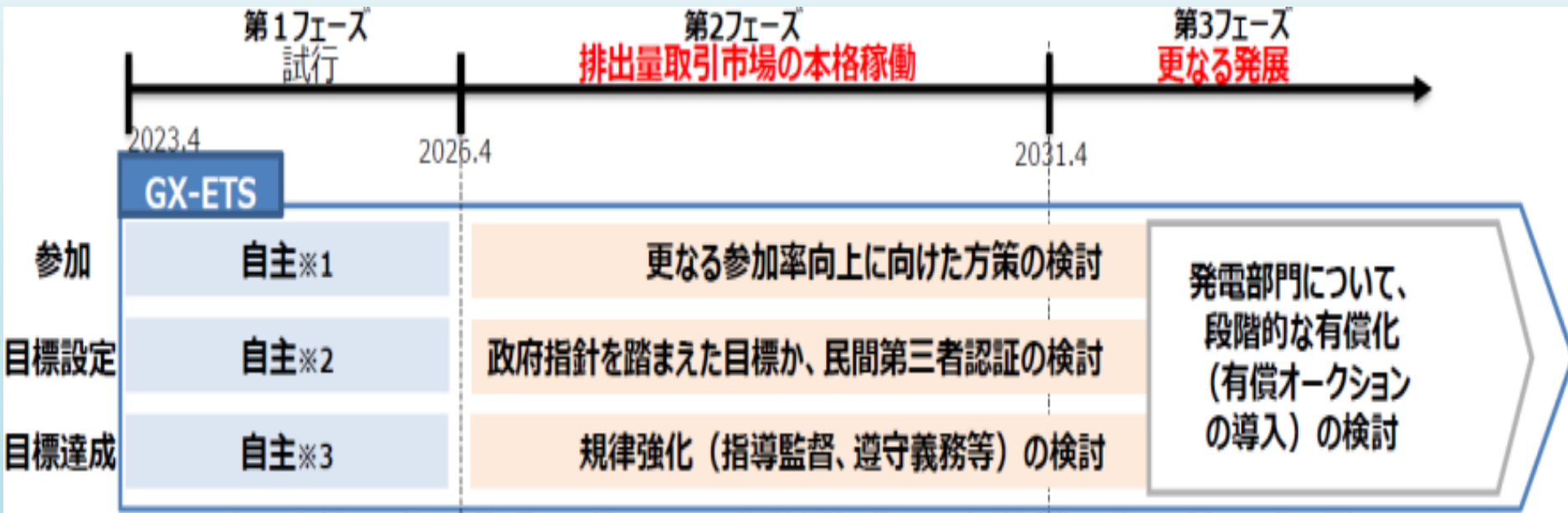
- 【1】 April 2023: Start of voluntary emissions trading trial (GX-ETS)
- 【2】 Govt to support corporate decarbonization efforts with funding from GX transition bonds
- 【3】 Carbon emission surcharges to be introduced years later targeting all emitters, with plans to use revenues for GX transition bonds
- 【4】 Carbon surcharges will be increased in stages to the extent it will not boost the total public burdens on energy
- 【5】 Japan’s economic growth by exporting decarbonization technologies, products ▪ services to countries in Asia



# Emissions trading

- 1st phase: 3 yrs (April 2023 ~ ), voluntary participation and targets (no penalty for not achieving targets)
- 2<sup>nd</sup> phase (April 2025)  
Under consideration: Higher participation rates, mandatory targets (penalties)
- 3<sup>rd</sup> phase (April 2031) Under consideration: auctions targeting electricity producers
- Above measures appeared to be modeled after EU to step up efforts in stages

図 GX-ETS の段階的発展のイメージ



※1 2022年3月末時点で、我が国CO<sub>2</sub>排出量の4割以上を占める440社が基本構想に賛同。9月から追加募集を開始し、現時点で577社まで増加。  
 ※2 2050年カーボンニュートラルと総合的な目標（2030年度及び中間目標（2025年度）時点での目標排出量）を開示  
 ※3 目標達成に向け、排出量取引を行わない場合は、その旨公表（Comply or Explain）

[出所] 同上，スライド19枚目。

# Differences with EU ETS

【1】EU ETS: mandatory participation by companies, Japan voluntary

【2】EU ETS: Total volume of emissions set for each industry and allocations are made accordingly. Japan: companies set their own reduction targets, this does not guarantee reductions will reach necessary level

【3】EU ETS: High penalties for failing to reach target, Japan: no targets, no guarantee for compliance

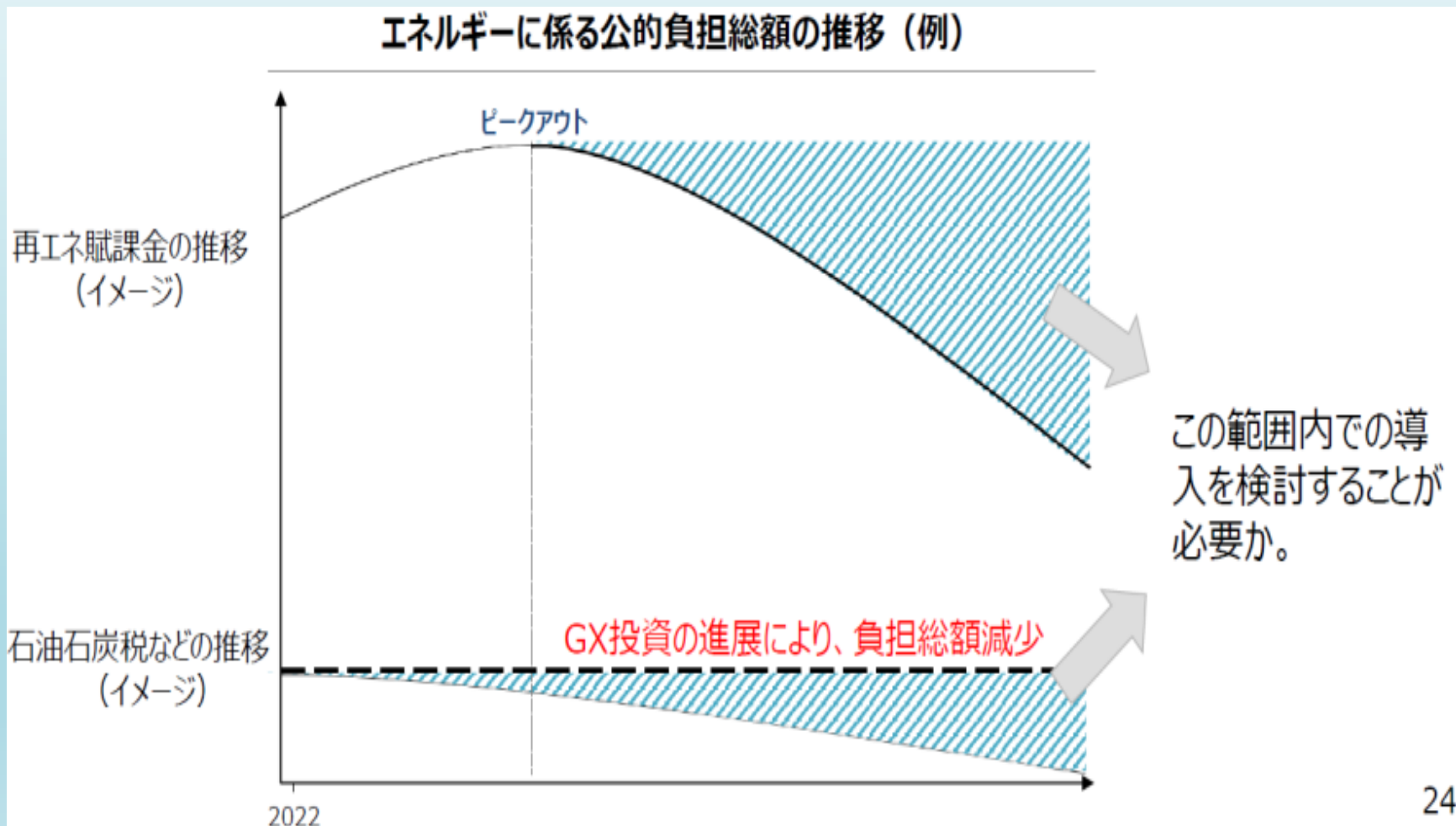
➤ If results of 1st phase are not promising, measures such as introduction of scheme to control total emissions and framework to penalize companies not meeting targets would be needed during the 2<sup>nd</sup> phase

➤ Participation by all companies meeting a certain criteria should be mandatory so that those taking part in the ETS will not be disadvantaged vs. those not taking part.

# Carbon emission surcharges

- Why is it called surcharges, not carbon tax?
  - “Tax” goes to coffers managed by MOF, while surcharges will be used for support of corporate decarbonization efforts as source of GX transition bonds (managed by MOF)
  - “Tax” is subject to discussions at Govt Tax Research Commission and ruling parties’ tax research commission, plans need to be agreed and require amendment to law. “Surcharges” could avoid the usual tax reform process, do not require amendment to law, allowing for speedy and flexible implementation
- ①Emissions trading, ②Support for corporate decarbonization efforts ③ Issuance of GX transition bonds as a source ( for ②) and surcharges. These are all part of a package
- Surcharges may be implemented on the same point as petroleum and coal tax (levied on domestic producers and importers of fossil fuels)
- Japan relies nearly 100% on imported fossil fuels, so if surcharge is implemented targeting here, it is possible to impose burden comprehensively
- Conflict with Japan’s global warming tax?

# Increase in surcharges in stages



[出所] 同上, スライド24枚目.

# Assessment

- Designed by METI in such a way that implementing CP will not hit industries
- Overall scheme is acceptable by industries: surcharges at levels to contain energy related public burdens, corporate support proceeds with issuance of GX transition bonds
- “Realistic” proposal with voluntary system for emissions trading and voluntary goal (respectful of Keidanren’s voluntary action plan)
- On the other hand, for emission trading, voluntary framework will continue thru 2026, auctions for power sector not introduced until 2031, surcharges to begin in 2028. This may not contribute to achieving Japan’s 2030 GHG reduction goal
- Level of surcharges is not set from the perspective of climate change, but set rather as a financial source, and is capped