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Japan Energy Newsletter

**Japan Electric Power
Information Center, U.S.A.**

1 Cabinet Presents the Government Sectoral GX Investment Proposal for the Next 10 Years¹

On November 22, 2023, the Cabinet Office of Japan announced a sectoral strategic proposal that describes its intended investments in multiple promising fields in the next ten years. The proposal presents an investment strategy for Green Transformation (GX), which the government will finalize by the end of the year. Several energy-related sectors were selected for investments, including next-generation renewable energy (floating offshore wind energy and next-generation solar cells), storage batteries, hydrogen (including ammonia), carbon capture and storage (CCS), sustainable aviation fuel (SAF), and nuclear power (next-generation reactors).

The proposal indicates the strategies for each field, along with the estimated amount of public-private investment in the next ten years. The government plans to call for applicable business operators to participate in the GX League² and commit to reducing their emissions and strengthening Japan's overall industrial competitiveness.

Background

The Expert Working Group for the Realization of GX was set up on September 28, 2023, during a Cabinet Office GX executive meeting chaired by Prime Minister Kishida. The working group's purpose is to formulate a specific "sectoral investment strategy" for the next ten years and a "first five-year action plan" to achieve carbon neutrality by 2050. Prior to the most recent meeting on November 22, the Cabinet held meetings four times from October 5 to November 16, discussing various issues related to manufacturing, transportation, living, resource recycling, semiconductors, and energy and examining action plans for investment promotion measures.

Discussion Focus

During the recent fifth meeting on November 22, several investment strategies and their estimated investment target were proposed. The investment strategies for energy-related sectors are:

- 1) Next-generation Renewable Energy (next-generation solar power generation (Perovskite Solar Cell) and floating offshore wind power)
 - Target Amount of Public-private Investment for the Next ten years (Investment Target): 31 trillion yen or more (20 trillion yen for renewable energy and 11 trillion yen for next-generation interconnection transmission systems).
 - Direction of GX: Establishing the mass production capacity of perovskite solar cells and promoting demand growth. Aiming to strengthen industrial

¹ https://www.meti.go.jp/shingikai/sankoshin/shin_kijiku/pdf/018_04_00.pdf

² The GX League is an initiative in which companies/businesses voluntarily participate in the effort to achieve 2050 carbon neutrality. It is a framework that will drive Japan's overall GX through emissions trading aimed at ambitious emissions reduction targets, rulemaking to reduce emissions throughout the supply chain, market creation initiatives, etc.

competitiveness and the early introduction of offshore wind power, including floating wind power.

- Investment Promotion Measures: Providing support for research & development (R&D), supply chain development, and the initial introduction of the perovskites solar cell through Feed-in Tariff (FIT) and Feed-in-Premium (FIP) systems. Providing financial assistance for the development of a wide-area interconnection system.

2) Storage batteries

- Investment Target: 7 trillion yen or more for battery manufacturing. An additional 3 trillion yen will be invested in commercialization.
- Direction of GX: Establishing a domestic manufacturing base and accelerating the technological development of all-solid-state batteries.
- Investment Promotion Measures: Financial support for investments in domestic manufacturing equipment, production incentives, and R&D/commercialization.

3) Hydrogen (including ammonia, synthetic methane, and synthetic fuel)

- Investment Target: 7 trillion yen or more.
- Direction of GX: Investing intensively in building a hydrogen supply chain and developing the legal framework necessary to accelerate the use of advanced fuels. Promoting R&D activities with capital investments.
- Investment Promotion Measures: Mobilizing investments in various aspects such as hydrogen hub development, the expansion of water electrolytic device production capabilities, the deployment of large-scale hydrogen stations, commercial fuel cell vehicles, etc.

4) CCS

- Investment Target: 4 trillion yen or more.
- Direction of GX: Improving the business environment for the start of business by 2030. Building a value chain for the separation, capture, transport, and storage of carbon dioxide (CO₂).
- Investment Promotion Measures: Support advanced CCS projects and conduct R&D to reduce costs. Developing areas suitable for CCS.

5) SAF

- Investment Target: 1 trillion yen or more.
- Direction of GX: Building large-scale SAF manufacturing facilities, strengthening the supply chain, and developing and commercializing SAF manufacturing technologies derived from non-edible raw materials.
- Investment Promotion Measures: Support capital investments, R&D, and certification acquisition.

6) Nuclear Power

- Investment Target: 1 trillion yen or more.
- Direction of GX: Developing and building next-generation innovative reactor technologies incorporating new safety measures.
- Investment Promotion Measures: Promoting R&D and supporting the supply chain establishment.

2 The Agency for Natural Resources and Energy Discusses the Decarbonization of City Gas³

On November 9, 2023, the Ministry of Economy, Trade and Industry (METI) and the Agency for Natural Resources and Energy (ANRE) held the 7th Working Group for the Carbon Neutralization of City Gas (GW). The first GW was held in February 2023, and six further meetings took place through June 2023. At the seventh meeting in November, based upon the interim report compiled in June, there were discussions about whether applicable regulations and systems should be developed to move forward with the decarbonization of city gas. Other topics discussed during the meeting included proactive investment support measures utilizing GX Economic Transition Bonds.

General Overview of Interim Report

METI and ANRE have held seven discussions since February 2023 to promote the carbon neutralization of city gas as part of Japan's initiatives to achieve carbon neutrality by 2050 while ensuring a stable energy supply. In June 2023, they put together an "Interim Report on Carbon Neutralization of City Gas."

The 6th Basic Energy Plan, which was approved by the Cabinet in October 2021 and was designed to achieve carbon neutrality by 2050, states that "In 2030, the existing natural gas pipeline infrastructure should be mixed with 1% synthetic methane, along with other measures, to achieve 5% of the gas being carbon neutral. By 2050, 90% synthetic methane will be injected into the existing infrastructure to make it 100% carbon neutral, incorporated with other solutions."

The interim report broadly categorizes the following two ways to achieve carbon neutrality in city gas by 2050:

- 1) Shifting the supplied gas to an environmentally friendly type of gas
 - Shifting to the following types of gas: synthetic methane (e-methane), which is produced by synthesizing CO₂ and hydrogen; biomethane, which is produced by separating CO₂ from biogas generated by methane fermentation of organic waste, etc., and hydrogen.
- 2) Introducing other technologies to achieve carbon neutrality
 - Utilizing CCUS/carbon recycling and carbon credits.

In particular, the plan involves gradually replacing the major composition of city gas—methane from LNG—with synthetic methane and biomethane. Through this process, the plan aims to achieve carbon neutrality without changing supply infrastructure or demand-side facilities and equipment. It also aims to supply hydrogen to customers through specialized distribution pipelines and tank trucks. Regarding synthetic methane, it was deemed necessary to provide support for the development of manufacturing technology and to consider measures to promote the introduction of synthetic methane considering the cost difference with LNG.

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https://www.meti.go.jp/shingikai/enecho/denryoku_gas/denryoku_gas/gas_jigyo_wg/pdf/032_03_00.pdf

Synthetic methane emits CO₂ when it is burned, but because it uses recovered CO₂ as a raw material, it doesn't generate additional fossil fuel-derived CO₂ emissions. However, there are no clear regulations regarding the handling of CO₂ emissions during combustion. As such, it is critical to sort out the how these emissions are treated in relation to emissions reduction at both the national level and the corporate activity level, and to develop and adjust the regulatory systems.⁴

Discussions at the 7th meeting

Since the announcement of the interim report, discussions have been progressing around proactive investment support using GX Economic Transition Bonds for hydrogen, which is the raw material for synthetic methane, and chemicals related to its production.

At the recent meeting, topics of discussion included 1) the creation of an environment that contributes to achieving carbon neutrality and reducing synthetic methane emissions; 2) regulations and systems providing support measures and assisting with the acceleration of the achievement of the goals; and 3) appropriate, effective approaches and regulations/systems that should be considered for market creation and expansion.

In addition, participants in the meeting noted the need to build an appropriate system design for handling synthetic methane emissions reductions while also providing generous support to promote the use of synthetic methane and biomethane.

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https://www.meti.go.jp/shingikai/enecho/denryoku_gas/denryoku_gas/gas_jigyo_wg/pdf/20230619_1.pdf

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