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NEW INDUSTRIAL POLICIES: LESSONS FOR THE EU AND THE CLEAN INDUSTRIAL DEAL

Case study: New industrial policy in Japan

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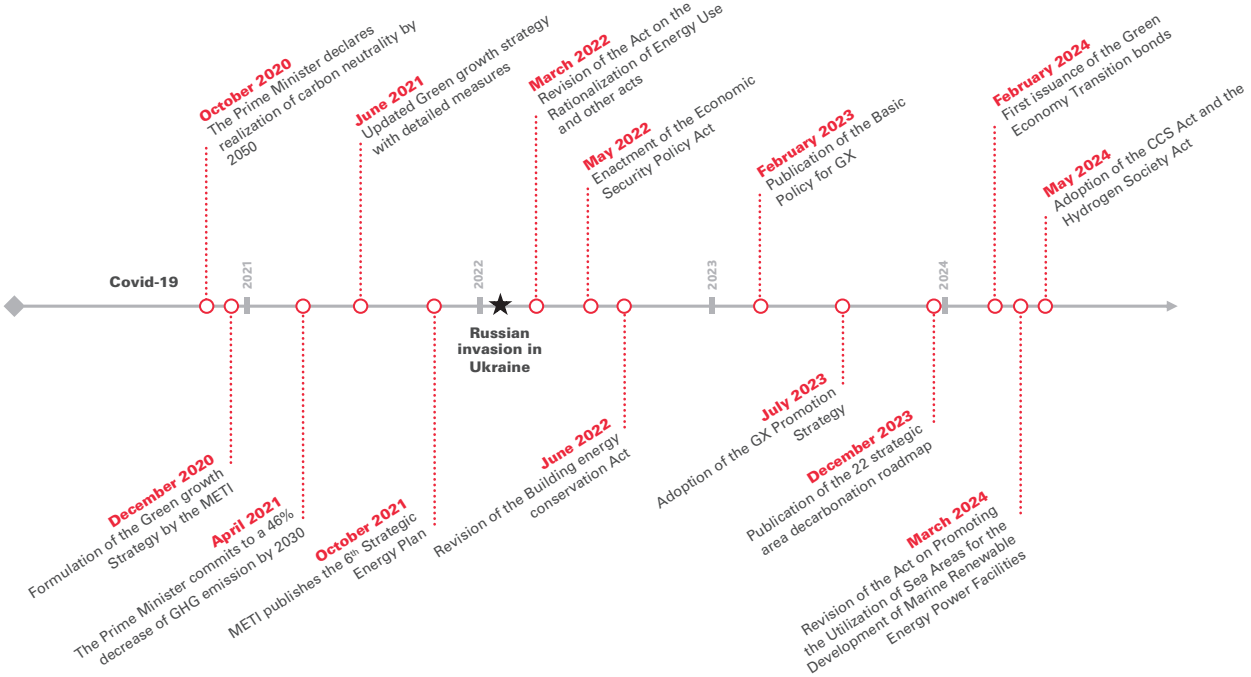
Japan has a long-lasting history of economic interventionism and deep-rooted institutions capable of supporting the development of an industrial policy. This is particularly the case of the Ministry of Economy, Trade and Industry which has committees and institutions enabling the participation of industry representatives (notably in the steel sector) in the definition of public policies. Moreover, after its net-zero pledge in 2020, and in response to international efforts for decarbonization, Japan has also put a greater emphasis on the greening of its industry. This strong culture of industrial policy has enabled the METI to define very detailed technological decarbonization roadmaps by sectors, aiming to support key technologies (such as hydrogen cofiring or next-generation solar technologies) where Japan is perceived to have a competitive advantage. Nonetheless, the industrial strategies deployed by Japan today are mainly reactive, adapting to changing technological and political environments, rather than proactive. Japan has nonetheless developed an original industrial strategy based on a concept of "green growth" that aims to enable energy security, emission reduction and economic growth. It notably relies on the development of long-term financial instruments and especially the GX transition bonds, a large public green bond emission dedicated to fund subsidies directed towards transition objectives. The GX transition bonds should be gradually funded by a new GX-ETS system that introduces a carbon price, initially based on voluntary private commitments, then progressively extended and complemented by a GX surcharge, a proper carbon tax implemented by 2028.

This case study is related to the *Study* New industrial policies: Lessons for the EU and the Clean industrial Deal

Figure A.1 Japan timeline



1. INDUSTRIAL STRATEGY – DIRECTION, PLANNING & GOVERNANCE

1.1. Political directionality of the national industrial strategy

Japan has committed to climate neutrality in October 2020 and adopted multiple strategy papers to achieve this objective since then. Although the objective of supporting industrial decarbonization and the development of green technologies is very clear in these strategies, it is articulated around the idea of "green growth" with 3 objectives: emission reduction, economic growth and energy security.

The first strategy is Japan's Green growth strategy, announced in December 2020 and detailed with precise measures in June 2021 (which also factored in the more ambitious environmental targets defined in the 2021 nationally determined contributions). This strategy defines 14 growth sectors (including next-generation renewable energy, hydrogen and fuel ammonia, next generation heat energy, nuclear power, automobile and battery storage)[1] and associated tools to support the development of these tools. Overall, the Japanese strategy relies on the promotion of electrification in all sectors and the development of hydrogen or carbon capture in all appliances that cannot be electrified. The main instruments for the green growth strategy are the Green Innovation Fund,[2] which supports technology development in decarbonization for these high growth sectors, and tax credits for investments in decarbonization. This strategy was complemented by the sixth Strategic Energy Plan in October 2021 which provides a technological roadmap to achieve a 46% reduction in GHG emission in the power sector before 2030. These technological roadmaps were used as a frame to guide investment priorities for the newly created Green Innovation Fund, defined by "Green Innovation Project committees".[3]

The final and main piece of this strategic framework is the "Basic Policy for the realization of GX" (where GX stands for green transformation) released in February 2023. Compared to previous strategies, the GX strategy[4] uses the same premises as in the 6th Strategic Energy Plan for ensuring a stable energy supply (improving energy efficiency, deploying renewable energies, using nuclear power, facilitating the introduction of hydrogen and ammonia) and adds a new layer for "implementing

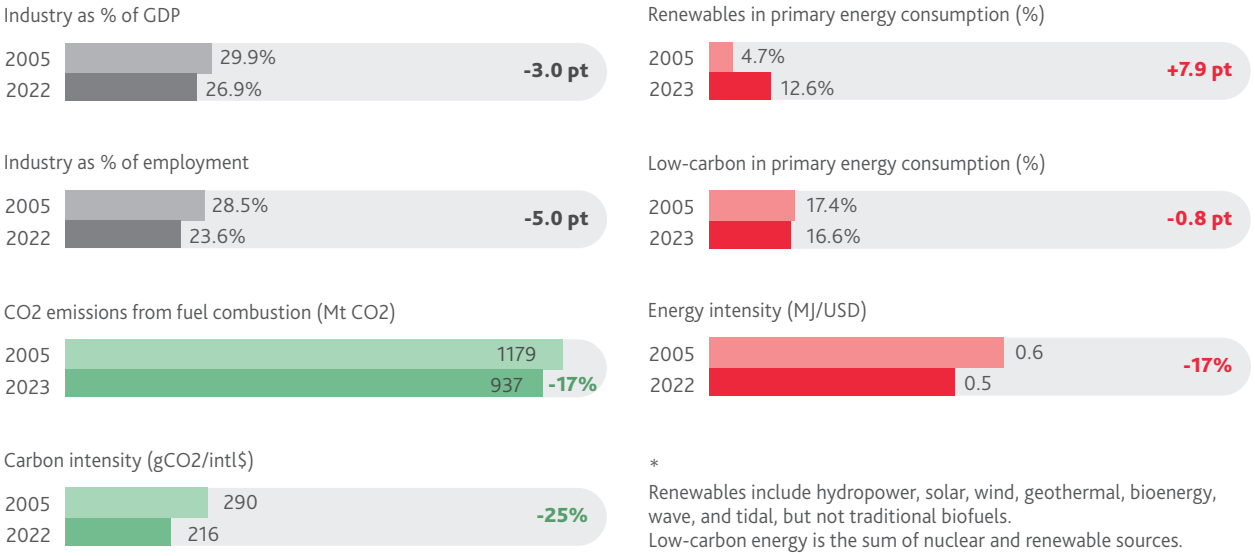
[1] For the complete list of all 14 sectors, see METI's outline on the Green Growth Strategy.

[2] METI, (2025). Green Innovation Fund, https://www.meti.go.jp/english/policy/energy_environment/global_warming/gifund/index.html

[3] The NEDO provides a summary for the governance of the Green Innovation Fund Projects.

[4] The Basic Policy for the Realization of GX – A roadmap for the next 10 years (provisional translation – original in Japanese).

Figure A.2 Japan indicators



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Renewables include hydropower, solar, wind, geothermal, bioenergy, wave, and tidal, but not traditional biofuels.
Low-carbon energy is the sum of nuclear and renewable sources.

pro-growth pricing concept". This pro-growth carbon pricing concept relies on three new financial pillars: public investments in "GX transition bonds", carbon pricing with an emission trading system (the GX-ETS) and green corporate finance. It also describes a strategy for global action to support Japanese industrial and decarbonization strategy: developing the Asia Zero Emission Community initiative as a regional platform, backing up Asian countries for formulating decarbonization roadmap with the Asia Energy Transition Initiative or encouraging green finance with the Asia Transition Finance Guidelines.

1.2. Technological and environmental objectives of industrial policy

One of the specificities of Japanese industrial policy is the profusion of objectives for the different sectors defined in the GX investment strategy published in December 2023 and updated in December 2024. The 22 strategic area decarbonization roadmaps provide very detailed objectives for 22 areas with medium term (FY2030) and long-term (2040-2050) objectives, defined by an Expert Working Group for GX Realization. There are for example some high level commitments such as reaching 36-38% of renewable energy in the power mix by 2030 with 10 GW of installed offshore wind power, establishing success cases of ammonia or hydrogen co-firing by 2024 and achieving lower costs by 2030 (30 yen/Nm^3 for hydrogen), achieving 20~30% of EVs in commercial vehicle sales by 2030 and 100% EVs and HEVs by 2035 for new private car sales, etc.The strategic area decarbonization roadmaps also detail the specific technologies that should be used for achieving these climate targets with technologies clearly identified such as floating offshore wind, next-generation (perovskite) solar cells, use of hydrogen and ammonia for co-firing in heat power-generation (and for industries such as green steel production), stationary batteries, and carbon capture and storage (CCS).

1.3. Institutional setup supporting the implementation of the industrial policy

The definition and the implementation of Japanese industrial policy mostly rely on the Ministry of Economy, Trade and Industry (METI). Japan has a long history of economic interventionism, and the METI has been the center of the historical culture of industrial policies. Our interview highlighted the importance of this political culture for industrial policy and the strong embeddedness of certain traditional sectors, notably the steel industry, when defining these industrial and technological roadmaps. Representatives of these industries are often part of METI's committees and play a role for defining the technologies for which Japan could have a competitive advantage and therefore require specific public support. For example, the importance of maintaining a strong steel production capacity was cited to justify the support towards ammonia and hydrogen co-firing technologies for the decarbonization of blast furnaces.
The development of the GX Basic plan also led to the creation of new institutions. First, the GX Implementation Council is responsible for allocating funds from the Green Economy Transition bonds, which is chaired by the Prime Minister with the participation of relevant ministries. Then, the GX Promotion Strategy has introduced two new governance bodies in Japan:

— The GX Acceleration Agency, responsible for overseeing the provision of financial support to companies engaged in GX investment and the administration of the carbon levy and operation of the ETS.

— The GX league which is a network of Japanese companies (accounting for more than 50% of Japan's emissions) committed to participate in the voluntary emission reduction scheme and active in the formation of working groups (3 in October 2023: developing market rules for carbon credits, management and human resources).

2. DEVELOPMENT OF A CARBON PRICING MECHANISM

In a context where there were no mandatory carbon pricing mechanisms and a few voluntary local initiatives, the GX Implementation Act marked a clear change of direction, by introducing a new carbon pricing mechanism presented as a "Pro-Growth Carbon Pricing Concept". The GX-ETS is implemented progressively through 4 phases:

— 1. Starting from FY23[5] a pilot emission trading for the GX League (more than 700 participating companies, mostly in the energy sector, accounting for more than 50% of Japan's emissions):[6] Companies voluntarily engaged in emissions trading to meet their reduction targets. This phase consists of a "pledge-and-review" program where participants set reduction targets for 2025 and 2030 for both direct and indirect emissions, then monitor and report annual direct and indirect emissions (reviewed by a third party). When the reduction surpasses the NDC reduction target, they can sell the overflow; if they fail, they need to buy the credits from other participants (or explain why they failed to reach the target).

— 2. From FY2026 onwards, the mechanism will become compulsory for companies emitting 100,000 tons of CO_2 directly per year or more. This full-scale ETS may also come with measures to increase trading pricing predictability by incorporating a gradual, and medium to long-term, carbon price increase.

— 3. From 2033 onwards an auctioning system, based on examples in the EU, for power generation utility will be gradually introduced. Emissions quota proportional to the volume of emissions will be auctioned, initially for free and then free allowances will gradually decrease, based on emissions volume projection, power generation efficiency benchmarks and other factors.

Separately, from FY2028, a carbon levy (GX-Surcharge) will gradually be introduced on fossil fuel importers and domestic fossil fuel extractors.

[5] FY23 refers to the financial year 2023, which runs from April 2023 to March 2024.

[6] Japan GX-ETS International Carbon Action Partnership (ICAP).

3. SUPPLY-SIDE SUPPORT TO INDUSTRIES

3.1. Support mechanisms for R&D&I focused on new green technologies

The Green Growth Strategy has created the Green Innovation Fund (GIF), a 2 trillion yen fund managed by the New Energy and Industrial Technology Development Organization (NEDO). This fund focuses on priority fields for which implementation plans have been formulated in the Green Growth Strategy. The projects must be the "average size of conventional R&D projects (20 billion yen) or more". Although all projects funded must include "innovative and fundamental R&D elements", the GIF projects may also invest in the development of manufacturing capacities and even in the installation of these technologies in real conditions. For example, the GIF supports the development of next-generation solar cell development (perovskite solar cells). The total support is 49.8 billion yen (about $340 million) and supports the research stage for combinations of raw materials achieving high performance of solar cells, the development of manufacturing technology for scaling up and mass production, and the actual installation on walls of buildings to test their performance.

The Green Innovation Project Committee formulates investment priorities for the Fund through the overall Fund Allocation Policy. This policy is then declined within field-specific working groups, which deliberate on issues such as the priority, contents and appropriateness of the amount to be implemented by the fund for each project. There were 14 priority fields for which implementation plans were formulated within the green growth strategy, grouped into 3 categories: energy related industries, transport/manufacturing industries and home/office related industries.

3.2. Support mechanisms for the development of new green technologies production units

The Green Economy Transition bonds are the main instruments to support the development of production capacities. Projects which follow the "Basic conditions" in the selection of the use of proceeds are considered eligible projects, and may receive discretionary grants, equity investment and debt guarantees, which are delivered by the GX Implementation Council, considering business risk in each field.

The GX Promotion Strategy considers 14 "future actions" which are eligible for climate transition bonds.

Moreover, the revision of the Industrial Competitiveness Enhancement Act (September 2024) has introduced a new tax credit of up to 40% of total corporate tax liability for 10 years for investment in areas involving green transformation and digital transformation (electric vehicles, green steel, green chemicals, sustainable aviation fuel, and semiconductors).

3.3. Support mechanisms for the decarbonization of existing industrial production units

Green Economy Transition bonds are also the main vehicles used to support industrial decarbonization. Out of the 1.6 trillion yen first emission in February 2024 (about $11 billion), 55% were directed towards R&D, including 18% for the utilization of hydrogen in the steel making process and the decarbonization of thermal processes. The remaining 44.5% consisted of subsidy programs, mostly directed towards semiconductor supply chain and storage battery manufacturing supply chain resilience support.[7]The GX Acceleration Agency also acts as a catalyzer for private investment by providing financial guarantees to companies willing to invest in solutions consistent with the GX strategy. It may also provide equity investments and underwrite corporate bonds issued by companies. It may finally provide some financial support to the companies in their discussions with financial institutions.

4. DEMAND-SIDE INDUSTRIAL POLICIES

4.1. Support mechanisms incentivizing private demand in green markets

Japan has recently updated the subsidies for the purchase of clean energy vehicles for FY24 (since April 2024). Previously, the subsidy was solely based on vehicle performance, such as the electric mileage and mileage per charge. The evaluation method was changed in 2024 to comprehensively assess car manufacturers' efforts to achieve GX objectives in the automobile sector, such as the installation of charging stations.[8] In February 2025, the support to the purchase of clean electric vehicle was also increased for cars manufactured with green steel.[9]

4.2. Public procurement strategy favoring green products and local content requirements

Public procurement is not the main focus of Japanese industrial policy, which rather relies more heavily on provisions regarding sustainable finance for companies. However, the Basic Policy for GX mentions that "with regard to low-carbon products already available in the market to a certain degree, their procurement by public and private entities will be expanded by further leveraging carbon footprints, environmental labels, and other tools, as well as reviewing and discussing criteria, calculation rules, other requirements for products that should be procured under the Act on Promoting Green Procurement and other legal provisions". This act seems not to have been revised since 2016.

4.3. Regulation and norms favoring green industries

Our interviews highlighted that traditionally Japan prefers to take a relatively lax position on regulation and rather rely on private initiative for standard setting.
There are however some sectoral norms that have been recently updated. The revision of the Building Energy Conservation Act in 2022 requires all new residential and nonresidential buildings that begin construction after 1 April, 2025 to comply with a grade 4 insulation performance in housing. However, these performances are considered relatively lax compared to other countries and especially compared to European companies and have been criticized and deemed insufficient[10].

4.4. Labor and social policies for a just industrial transition

There are limited provisions aiming at supporting skills or re-skilling workforce. As such, there is no clear specific policy to specifically address this issue, although there are references to a "just transition framework" in the strategies.[11] A 2022 report by the British Academy nonetheless underlines the importance of potential re-skilling needs in Japan.[12]

5. TRADE AND INTERNATIONAL POLICIES SUPPORTING INDUSTRIAL POLICIES

5.1. Policies aiming at improving resilience and de-risk global supply chains

On 7 June, 2020, Japan strengthened foreign investment screening in certain areas (advanced technology materials, pharmaceuticals, mining, utilities) by reducing the threshold of acquisitions of shares of a listed company from 10% to 1%.[13] On 11 May, 2022, the Japanese parliament approved the 'Act on the

[7] Briefing Note Japan's Climate Transition Bond A groundbreaking milestone in sustainable finance. Climate Transition INT-Bearing GOVT BD to be issued in February 2024. https://www.climatebonds.net/files/reports/japan-transition-bond-briefing-note-14022024.pdf

[8] Subsidies Upgraded for the Purchase of Clean Energy Vehicles toward the Realization of GX in the Automobile Sector (24 June, 2024) METI.

[9] The subsidy for clean energy vehicles manufactured by low carbon emission steel should be 50,000 yen – about 300€ (https://yieh.com/en/japan-launches-incentives-for-green-steel/153032).

[10] Climate Integrate, Tackling climate change in residential and building sectors (10/20/2023).

[11] See page 27 in the Basic Policy for the Realization of GX.

[12] The British Academy, Just Transition in Japan, 2022.

[13] Pinsent Masons. (2025). Foreign direct investment in Japan, https://www.pinsentmasons.com/out-law/guides/foreign-direct-investment-in-japan. July 7th, 2023

promotion of national security through integrated economic measures'. This Economic Security Protection Act includes the establishment of a system to ensure stable supplies of critical materials, a system to ensure stable provision of services using critical infrastructure, a system to support the development of critical technologies, and a secret patent for technical fields that might be used for military purposes.[14]

5.2. Policies supporting internationalization of national industries

The Japanese international strategy relies on two key initiatives which are part of the GX strategy:

- At the global level, Japan supports the development of a green market (green steel, green plastics, energy efficient products) through international standards and by establishing global evaluation methods for the diffusion of green products;
- At the regional level, Japan will promote the Asia Zero Emission Community (AZEC) Initiative.[15] This regional platform should provide support, coordinate policies, and promote energy transition in Asian countries. Additionally, Japan supports the formulation of roadmaps towards achieving net-zero GHG through the Asia Energy Transition Initiative, and backs up financing activities for transition technologies and projects based on the Asia Transition Finance Guidelines.

Japan also engages in energy diplomacy to ensure access to natural resources (fossil fuels, mineral resources) with a new focus on LNG through the Japan Organization for Metals and Energy Security (JOGMEC) and the Japan Bank for International Cooperation.

[14] See the article of Ulrich Jochheim (Jul. 2023) Japan's economic security legislation EPRS.

[15] The cooperation was launched in 2023 with 11 countries (Australia, Brunei Darussalam, Cambodia, Indonesia, Japan, Lao PDR, Malaysia, Philippines, Singapore, Thailand, and Viet Nam) – see METI's page about AZEC.

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