



Analysis of Japan's Carbon Neutrality Goals and Prospects

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Abstract

This paper delves deeply into the intricate complexities surrounding Japan's aspirations for carbon neutrality. It offers a rigorous analysis of the country's ambitions in this realm, dissecting the various aspects of its carbon reduction strategy and discussing the potential outcomes that could materialize in Japan's pursuit of carbon neutrality. The analysis is conducted within the broader context of global carbon reduction initiatives, acknowledging the shared responsibility in combating climate change. The article argues that, given Japan's significant reliance on overseas fossil fuel resources and the intricate challenges posed by navigating policy hurdles and revolutionizing energy and industrial technologies, the likelihood of Japan meeting its emission reduction targets on schedule hinges crucially on its ability to foster profound international collaboration, particularly with China. Such cooperation holds the potential to provide Japan with access to critical resources, technological advancements, and shared experiences, ultimately paving the way for more effective carbon reduction strategies and a more sustainable future for both nations.

Keywords

Carbon neutrality, Japan, carbon reduction efforts, energy sources

1. Strategic considerations of Japan's carbon neutrality goals

In October 2020, the cabinet of Prime Minister Yoshihide Suga announced that Japan aims to achieve carbon neutrality by 2050. In April 2021, Japan further proposed a midterm target of reducing emissions by 46% by 2030 compared to 2013, marking a shift from a passive to an active response to climate change policies following the Fukushima nuclear disaster in 2011 [1]. To achieve these goals, Japan has formulated a comprehensive plan for the transformation of clean energy, green finance, and industry-wide electrification. However, given Japan's heavy dependence on overseas fossil energy in its energy structure, there are policy bottlenecks that are difficult to overcome. The transformation of energy and industrial technologies is facing practical challenges. Whether Japan can engage in deep international cooperation, including cooperation with China, will determine whether its emission reduction targets can be achieved as scheduled.

Driven by the new wave of technological and industrial revolution, energy transition and green transformation have become the necessary path for industrial progress and economic development, even the ethical high ground in international political games. Japan's proposal of carbon neutrality goals and raising the emissions reduction target for 2030 involves various considerations.

One consideration is aligning with the policy shift of the United States. Japan's previous emissions reduction target was "to achieve net-zero greenhouse gas emissions as early as possible in the second half of this century." The plan aimed to reduce emissions by 26% by 2030 compared to 2013 levels (submitted as the "Intended Nationally

Determined Contributions" to the United Nations in July 2015) and 80% by 2050 (submitted as the "Long-Term Low-Carbon Development Goals" to the United Nations in June 2019). However, there was a negative attitude towards raising the emissions reduction target. This is closely related to the negative attitude of the US government on this issue. However, after the Biden Democratic Party came into power, it immediately announced its return to the Paris Agreement and took up the "moral banner" of promoting global emission reduction, claiming that it would work with Europe to raise emission reduction targets. The Japanese government also realized that the US was serious about climate change and was worried about being left behind and being beaten. Meanwhile, given that most member states of the Paris Agreement have proposed or are preparing to propose carbon neutrality targets, Suga said that he has indeed felt the great changes in the world trend on climate change issues, which ultimately prompted him to announce Japan's carbon neutrality target in his first policy speech.

Second, it is hoped to create new momentum for economic growth. During Abe's administration, Japan's relevant economic policies were mainly formulated by bureaucrats from the Ministry of Economy, Trade and Industry. These bureaucrats often have close ties with the economic world and represent the interests of big capital and big enterprises. The Japanese government has been hesitant to propose a carbon neutrality goal due to concerns about opposition from the economic world. After Suga took office, he held high the banner of reform, and identified decarbonization and digitalization as two flagship policies, calling on the economic world to change its mindset and no longer view addressing climate change as a constraint on economic growth, but rather as an opportunity to adjust industrial structure and promote economic and social development. In December 2020, Japan introduced the "Green Growth Strategy", announcing that it will use all policy tools to promote private investment and attract global green funds, in order to create more jobs and drive economic growth. After Kishida took office, he further made green transformation one of the important elements of his "new capitalism", and plans to introduce the "Clean Energy Strategy" in the summer of 2022, continuing to guide the whole society to increase investment in clean energy.

The third is to enhance international influence and realize the "dream of a great political power". Japan has suffered from the "pollution first, governance later" in the process of economic and social development. The whole society has a high degree of concern and early attention to issues such as climate and the environment. When facing climate change issues, the government does not want to be too harsh in its emission reduction obligations and hinder economic development but also expects to occupy a favorable position in global climate governance, grasp strategic advantages, play a leading role, and enhance international political influence.

2. Japan's carbon neutrality goal

In September 2020, after taking office, Suga proposed one of the three major policies to elevate the green transformation to the national strategic level and attach importance to it. He also announced Japan's carbon neutrality goal for the first time - Japan will achieve net zero emissions of greenhouse gases and fully achieve carbon neutrality by 2050. In October 2021, Japan's new Prime Minister Fumio Kishida made it clear that he would inherit Suga's commitment to reduce emissions and continue to promote the realization of emission reduction targets in 2030 and 2050.

In order to achieve the mid-term goal of 2030 and the carbon neutrality goal of 2050, the Japanese government has made a series of policies, including the "Green Growth Strategy", the amendment of the "Earth Warming Countermeasures Promotion Law" and its supporting "Earth Warming Countermeasures Plan", and the amendment of the "Energy Basic Plan". It attempts to use both fiscal and financial means to promote the energy revolution, industrial transformation, technology upgrading, and re-establish global industrial competitiveness in the global green transformation. It also participates in the formulation of new rules and leads the new international economic order.

The "Green Growth Strategy" determines Japan's goal of achieving carbon neutrality by 2050 and building a "zero-carbon society" to promote the sustained recovery of the Japanese economy. It is expected that by 2050, this strategy will create nearly \$2 trillion in economic growth for Japan every year. In order to implement the above strategic goals, the strategy proposes specific development goals and key development tasks for 14 industries including offshore wind power, fuel cells, hydrogen energy, etc.

3. Prospects for Japan's carbon neutrality goal

In his first policy speech, Japan's new Prime Minister Yoshihide Suga outlined Japan's new goal in the field of carbon emissions: Japan will achieve carbon neutrality by 2050. At that time, he told Japanese lawmakers: "We need to change our way of thinking and actively take measures to address global warming, which will change our

industrial structure, economic and social conditions, and bring significant growth." In the process of achieving Japan's carbon neutrality goal, there are both positive and negative factors.

3.1 Positive factors

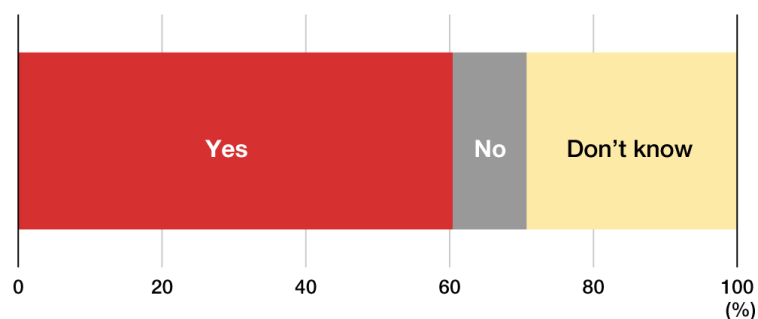
The attitude towards emission reduction is becoming more positive. After the oil crisis, Japan implemented a policy of energy diversification to reduce its dependence on oil, resulting in a steady increase in the use of coal, natural gas, etc. In particular, after the Fukushima nuclear accident, the demand for fossil fuels increased sharply, making the Japanese government's position on emission reduction more negative. Japan used the 2013 emissions peak as the base year for emission reduction, which was far later than most countries' 1990 or 2005. However, during the tenure of Shinzo Abe, Japan repeatedly resisted the pressure from the international community to increase the 2030 target. After Suga took office, he began to emphasize the need for climate action. At the 75th session of the United Nations General Assembly in 2020, China announced that it would achieve carbon neutrality by 2060. Subsequently, Japan and South Korea also announced their goal of achieving net zero emissions by 2050. This reflects Japan's determination to achieve carbon neutrality goals and is conducive to actively promoting the implementation of carbon neutrality goals.

Most international organizations support carbon neutrality, creating a favorable international environment for Japan to achieve its carbon neutrality goal. Most major organizations or mechanisms in major fields such as the World Bank, International Monetary Fund, World Trade Organization, and International Renewable Energy Agency hold a positive position towards carbon neutrality. The World Bank expressed its support for the Paris Agreement and the long-term strategic goal of 2050, hoping to improve the development environment of clean projects through development financing, climate financing, and other means, reduce the financial risks of new technology applications, and expand the clean energy market. To this end, the World Bank designed special projects related to country plans, technical assistance, and loan products to help countries plan and achieve long-term decarbonization. The International Monetary Fund believes that climate change will have a significant impact on the economy of all countries, and policy tools should be used to help achieve the goal of net zero emissions by 2050. Director General Olga Olikhaya said in a seminar that carbon pricing and green financing are important policy tools, and attention should be paid to the application of tools such as carbon taxes.

3.2 Negative factors

There are mixed attitudes among all sectors of Japanese society towards whether the carbon neutrality target can be achieved by 2050. A joint study by the Japan Natural Energy Foundation, a German think tank, and the University of Finland shows that if policies can be implemented to significantly introduce renewable energy and independently produce and import sufficient hydrogen, the carbon neutrality target may be achieved as scheduled. However, a survey conducted by the Japan Empire Database at the beginning of 2021 showed that Japanese public opinion generally believes that even with efforts, it will be difficult to achieve the emission reduction target by 2030.

Do you favor carbon neutrality?




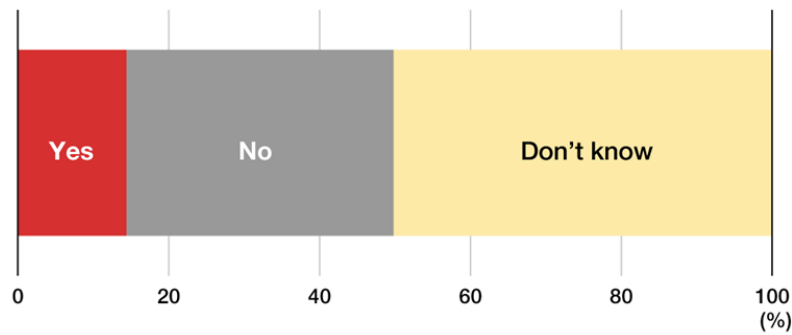
Compiled by *Nippon.com* based on data from the Nippon Foundation.  nippon.com

Figure 1. Do You Favor Carbon Neutrality? (<https://www.nippon.com/cn/>)

Do you think it is possible to achieve carbon neutrality?



Compiled by *Nippon.com* based on data from the Nippon Foundation. nippon.com

Figure 2. Do you think it is possible to achieve carbon neutrality? (<https://www.nippon.com/cn/>)

Firstly, Japan's emission reduction target is divorced from reality. The emission reduction target currently announced by Japan has not been fully demonstrated, especially the target set for 2030, which is not based on Japan's actual situation, such as energy structure, industrial status, etc., but rather a target announced under increasing pressure from countries like Europe and the United States. At the same time, according to Japanese media reports, Japan initially proposed a plan to reduce emissions by 45% by 2030, based on 2013 as the base year, but after assessment, it only advocated reducing emissions by 35%. However, countries like the United States and the United Kingdom strongly demanded that Japan reduce emissions by 50%. Therefore, against this background, Japan ultimately set its target at 46% and stated that it will "continue to strive towards a 50% reduction", which is clearly a compromise strategy to meet the requirements of Europe and the United States and does not match Japan's domestic situation.

Secondly, energy structure constraints. Firstly, it is difficult for Japan to overcome its absolute dependence on thermal power in the short term. The key to emission reduction is to expand the proportion of zero-emission power sources [2]. However, following the Fukushima nuclear accident, nearly all nuclear power facilities in Japan have been shut down, and nearly 30% of the power gap can only be filled by increasing natural gas generation and coal power generation. This has led to a significant increase in Japan's demand for fossil fuel generation such as coal and liquefied natural gas, with fossil fuel power sources accounting for up to 76% in 2019. Against the backdrop of unresolved nuclear power safety issues, cutting back on thermal power will not only affect Japan's power supply stability but also threaten its energy security. Secondly, Japan has encountered bottlenecks in expanding the utilization of renewable energy [3]. Currently, Japan's solar power installed capacity is second only to China and the United States, but the land area suitable for laying solar panels is only half of Germany's, making it difficult to continue to increase scale and expand capacity. The sea area suitable for offshore wind power in Japan is only 10% of the UK's, and due to the deeper surrounding seabed, the use of "floating wind power" with higher costs and technical difficulties than the commonly used "bottom-mounted wind power" in European countries is required. Moreover, due to wind conditions, the efficiency of offshore wind power generation in Japan is only half of that in European countries. Currently, the cost of hydrogen energy in Japan remains high, and without carbon taxes and subsidies, it will be difficult to promote the use of hydrogen energy.

Thirdly, difficulties in industrial transformation. Japan's previous policy on climate change has focused on low-carbon targets rather than absolute decarbonization. Many Japanese companies have long-term technological advantages in areas such as clean coal, liquefied natural gas generation, and hybrid electric vehicles, occupying a significant global market share. However, when the policy shifted to decarbonization, the previous advantages became a burden, leading Japan to cling to thermal power and reject pure electric vehicles. The government's comprehensive electrification target for automobiles is set for 2035, while the large-scale utilization of offshore wind power is targeted for 2040, which is out of sync with the 2030 target. In addition, Japan lacks a strong leadership core and coordination mechanism, with the Ministry of Economy, Trade and Industry, and the Ministry of the Environment operating independently and mutually restraining each other. The decision-making process is not scientific, and policy implementation is prone to interruption.

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