



Game and Cooperation Between China and Japan Under Carbon Neutrality Goals

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How to cite this paper: Ruijia Zhang, Mengyu Li, Xiaoyue Wu, Xiao Gao. (2024) Game and Cooperation Between China and Japan Under Carbon Neutrality Goals. *Journal of Humanities, Arts and Social Science*, 8(8), 1965-1969.
DOI: 10.26855/jhass.2024.08.029

Received: July 16, 2024
Accepted: August 13, 2024
Published: September 10, 2024

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Abstract

The proposal for carbon neutrality represents China's independent choice based on its national interests, and it also embodies the collective responsibility and obligation of all countries worldwide. Japan is actively engaged in international cooperation regarding climate change; however, it faces several challenges in achieving carbon neutrality, including sluggish economic growth and rising costs associated with carbon reduction. Furthermore, in light of criticism from Western nations, such as the United States and Europe, regarding China's carbon neutrality goals, China should adopt a rational perspective, strive to maximize its own interests in international cooperation, actively participate in global climate governance, fulfill its role as a major country, and contribute to the advancement of global climate initiatives. Simultaneously, Japan should embrace the principle of "not disputing with others" and take on its own responsibilities. Additionally, Japan should seize the opportunity to enhance practical cooperation with China in green and low-carbon sectors within the framework of the Belt and Road Initiative.

Keywords

Carbon neutrality; cooperation; China-Japan

1. Introduction

In March 2021, China announced that it would aim to peak by 2030 and strive to become carbon neutral by 2060. Japan has also announced a goal of becoming carbon neutral by 2050. The carbon neutrality targets proposed by these two countries will have a huge impact worldwide. In the context of global climate governance, China, as the world's second-largest economy, has demonstrated to the world that it will continue to be committed to promoting global climate governance by proposing carbon neutrality targets. As an energy-self-sufficient country, Japan has also put forward plans to achieve the goal of carbon neutrality and participates in global climate governance through various means. However, in the process of implementing the carbon-neutral goal, Japan's action faces many difficulties. As one of the developed countries, Japan's development model leads it to face greater pressure in the process of emission reduction and faces a greater dilemma of weak economic growth. At the same time, Japan faces multiple dilemmas in "climate diplomacy." Based on this, how China and Japan carry out games and cooperation under the goal of carbon neutrality is a question worthy of attention and research.

"Carbon neutrality" refers to a long-term process in which the concentration of greenhouse gases such as carbon dioxide in the atmosphere reaches a certain value and stops growing. At present, there is no clear definition of the concept of "carbon neutrality", but there is a consensus in the international community. In December 2020, the United Nations Climate Change Conference adopted the Paris Agreement, a major reform of the global climate governance system. The Paris Agreement has made arrangements for the post-2020 global action on climate change, proposed the "2 °C target" (by 2030, the global average temperature will not rise more than 2 °C above the pre-industrial level)

and the "3 °C target" (by the end of the century, the global average temperature rise will be contained within 2 °C), and specified the path to achieve the "2 °C target". As one of the core contents of climate change action, carbon neutrality has become the core issue of future global climate governance.

2. Literature Review

First of all, China and Japan may face restrictions from competitive factors in the energy industry chain, supply chain, value chain, innovation chain, etc. Secondly, for a long time, there have been close economic and trade exchanges between China and Japan at the bilateral level, but due to the lack of pragmatic and effective cooperation mechanisms or platform support, the level and level of cooperation have been affected (Castaño-Rosa, R. & Okushima, S., 2021). For example, there have been discussions and calls for cooperation between China and Japan on issues such as the "Northeast Asia Super Grid" and the joint elimination of the "Asian Premium" in the oil market, but no action has been taken. In the face of the new situation of carbon neutrality, although there is broad space for cooperation between China and Japan in the field of green and low-carbon, a series of problems still need to be overcome. In the face of these problems, China and Japan should do the following two things.

First, to enhance political mutual trust between China and Japan and remove external interference. To promote deep carbon-neutral energy cooperation between China and Japan, it is necessary to first break through bottlenecks or difficulties in cooperation such as emotional barriers. Due to historical reasons between China and Japan as well as interference from the international situation, the relationship between China and Japan has always been a thorny topic. The lack of further progress in previous discussions may also be related to insufficient political mutual trust and external interference.

Second, establish and improve the cooperation mechanism between the two sides and promote the formulation of standards. China has obvious advantages in the whole industrial chain of renewable energy and is also the world's largest hydrogen producer, and its advantages will continue to expand in the future (Sokoowski, M. M. & Satoshi, K., 2022). Although Japan has advanced technology, its small land area, high population density, and expensive investment costs have made seeking cooperation abroad its primary choice. Based on the collaborative promotion of green and low-carbon technological innovation, China and Japan can jointly participate in the formulation of green and low-carbon standards. At the same time, in-depth discussions and cooperation can also be carried out at the expert meetings of authoritative standardization institutions to jointly promote the formulation of relevant standards.

3. Result and Discussion

As environmental problems on a global scale worsen, sustainable development has become a fundamental issue concerning the present and future of humanity. In the face of environmental problems, the Chinese government has proposed to accelerate the transition to green and low-carbon development, achieve green recovery, and strive to achieve the "3060 dual carbon goal" of carbon peak before 2030 and carbon neutrality before 2060. In April this year, the Intergovernmental Panel on Climate Change (IPCC) released the report "Climate Change: Mitigation of Climate Change" in 2022, pointing out that since 2010, the growth rate of annual global greenhouse gas emissions has slowed down, but industries accounting for about one-quarter of global emissions still face challenges in participating in achieving carbon neutrality. For factories, achieving net zero emissions will require new production processes, low-emission and zero-emission power, and the use of carbon capture and storage technology when necessary. Therefore, the green transformation of factories has become a timely measure to cope with climate change.

China and Japan have also actively carried out a series of cooperation in these fields. Regarding the realization of Japan's carbon neutrality concept and goals in China, we can gain some insights from some of the carbon-neutral technology achievements.

Panasonic is a large Japanese electrical appliance manufacturing company. In recent years, it has continuously realized the importance of further improving energy efficiency. Panasonic Group's enterprises in China have also made significant progress in reducing carbon emissions and contributing to achieving carbon neutrality. Panasonic has now achieved three zero-carbon dioxide model factories and zero-carbon dioxide exhibition halls around the world. Panasonic Energy (Wuxi) Co., Ltd. has effectively reduced carbon dioxide emissions of about 44,000 tons to zero in 2020, which is the largest zero-carbon dioxide factory of Panasonic to date.

Specific measures to achieve zero carbon dioxide include: Through process and process innovation, the introduction of advanced energy-saving technologies, and the use of LED lighting, the energy consumption in the product

manufacturing process is reduced. While promoting this lowest energy consumption production, through the introduction of photovoltaic power generation systems, the purchase of International Renewable Energy Certificate (I-REC) certificates, and the flexible use of fossil fuel source carbon dioxide emission offset quotas, photovoltaic power generation roof leasing plans, etc. In the future, by promoting these measures globally, we will solidly advance the "no carbon dioxide emissions in the product manufacturing process to achieve a sustainable society" activities proposed in "Panasonic Environmental Vision 2050".

In the future, by promoting these measures globally, we will steadily advance the activities of "Not emitting carbon dioxide during product manufacturing to achieve a sustainable society" proposed in "Panasonic Environmental Vision 2050".

Toyota Motor Corporation is headquartered in Toyota City, Aichi Prefecture, Japan, and Wenjing District, Tokyo. In 2015, Toyota Motor Company released the "Toyota Environmental Challenge 2050" strategy, setting the goal of reducing global average carbon dioxide emissions during new car driving by 90% (compared to 2010) by 2050. In the face of China's "dual carbon" goals, Toyota, which has been deeply rooted in the Chinese market for many years, is also contributing to China's environmental protection and carbon neutrality goals through practical actions. Hydrogen fuel cell vehicles, as a true "zero emission, pollution-free" transportation tool, are one of the main development directions for future new energy-clean power vehicles. Its further research and mass production will undoubtedly become a new revolution in the global automotive industry.

Hydrogen fuel cell vehicles are also a major cooperation between China and Japan in contributing to the "carbon neutrality" of low-carbon travel solutions. On November 12, Toyota and the Beijing Winter Olympic Organizing Committee jointly held the delivery ceremony of the service vehicles for the Beijing 2022 Winter Olympics and Paralympics. As a global partner in the field of mobile travel for the Olympic and Paralympic Games, Toyota will use its hydrogen fuel cell vehicle as the core of its comprehensive electric mobility products to assist the Beijing 2022 Winter Olympics and Paralympics, and contribute its own strength to "Green Olympics and High-tech Olympics".

In the future, Toyota will also actively cooperate with Chinese companies. For example, in the use of hydrogen fuel cell technology, Toyota and its Chinese partners have jointly developed a high-power, long-lasting hydrogen fuel cell system TL Power 100 that is suitable for the use environment of Chinese commercial vehicles. In the future, Toyota will continue to work in this direction.

4. The Proposal and Implementation of Japan's Carbon Neutrality Goal

As an active participant in the UN climate change negotiations, Japan has established a sound institutional framework on climate change and formulated a national program on climate change. Japan has also actively promoted the reform of international climate governance and pushed developing countries to reach a consensus on emission reduction. In addition, Japan is a key member of international institutions such as the United Nations Development Program, the International Labor Organization, and the World Bank, all of which are important players in international climate governance reform. As one of the largest developing and developed countries in the world, Japan actively promotes global action on climate change and plays an important role in emission reduction target setting, financial support, technology research and development and other fields. At the same time, Japan has actively participated in the international climate negotiation process and worked with other developing countries to promote the conclusion and entry into force of the Paris Agreement, playing an active role in global climate governance.

The target of carbon neutrality is an independent emission reduction target proposed by China in light of its domestic development situation and the international climate change response situation, which reflects the great importance China attaches to the issue of climate change. The Japanese government also published its National Climate Strategy in October 2020, which clearly sets out the goal of carbon neutrality (Mishchenko, Y. V., 2021). The Japanese government has taken the goal of achieving carbon neutrality as an important part of its response to global climate change and has actively promoted the development of a low-carbon economy and green technology on the whole. On March 15, 2021, the Japanese government further proposed the goal of carbon neutrality in its National Energy Strategy. In the process of implementation, the Japanese government has focused on guiding enterprises to carry out low-carbon production and develop low-carbon industries through policy measures and has provided financial and tax support.

5. Necessity and Feasibility of Cooperation Between China and Japan

As important developing and developed countries in the world, China and Japan share many commonalities in

addressing global climate change. The share of carbon emissions between the two countries in the world is also very close, so there must be an important basis for cooperation in tackling global climate change (Motoko Hasegawa, 2020). For China and Japan, cooperation on the biggest "common but differentiated responsibilities" issue, carbon neutrality, can both promote the improvement of bilateral relations and contribute to the solution of global climate change.

First of all, China and Japan share similar development goals and path choices in addressing climate change. After Japan put forward the goal of "carbon neutrality", China also put forward the "dual carbon" goal of achieving carbon peak around 2030 and carbon neutrality by 2060. This goal is of great significance for the realization of the "double carbon" goal and helps to enhance China's influence and voice in the international community. In addition, China has also controlled its carbon dioxide emissions within a certain level, which is a positive sign for other developing countries and helps to narrow the development gap with developed countries.

As the world's largest developing country, China has made certain achievements in the field of carbon emission reduction, but with the development of China's economy and society and the improvement of people's living standards, the cost of carbon emission reduction is also rising. The enormous cost of reducing carbon emissions has become an important factor restricting China's economic growth, but also put great pressure on Japan's economic development. In the field of carbon emission reduction, Japan has neither technological advantage, nor financial advantage, nor carbon emission technology and market experience, so it is unrealistic to achieve carbon neutrality entirely by relying on its own strength. Therefore, cooperation between China and Japan in the field of carbon emission reduction is not only in the interests of both countries but also can provide Chinese solutions and Chinese wisdom for global climate governance. At the same time, as major developed and developing countries in the world, China and Japan play different roles and have different responsibilities and obligations in the global climate governance system. Therefore, there is no fundamental difference or conflict of interest between the two countries on the issue of global climate change. As long as the two sides adhere to the principle of fairness and win-win cooperation, we can achieve win-win results.

6. Conclusion

Based on this concept and goal, Fuji Film Aiko Manufacturing (Suzhou) Co., Ltd. achieved carbon neutrality through cooperation between China and Japan. The company is a resource recycling plant that reuses and recycles used Fuji Film commercial innovative digital multifunctional machines and printers. In order to fully adopt renewable energy, Fuji Film Aiko Manufacturing (Suzhou) Co., Ltd. installed approximately 8,000 square meters of solar photovoltaic panels for 90% of the power supply in the factory area, and the remaining power supply was purchased from electricity with renewable energy certificates.

Carbon neutrality is an important part of building a community with a shared future for mankind and an important area of exchange and cooperation between China and Japan. In the current complex international environment, China and Japan should actively carry out dialogue and exchanges, deepen cooperation and enhance communication and coordination in addressing climate change through scientific research and technological innovation, and jointly advance global climate governance. At the same time, we should take the practical cooperation between China and Japan as an opportunity to deepen exchanges and cooperation in green and low-carbon technology innovation, especially to strengthen green and low-carbon cooperation under the framework of the Belt and Road Initiative. In the future, China will continue to strengthen exchanges and cooperation with Japan and other developing countries in addressing climate change. For its part, Japan should seize the opportunity to strengthen practical cooperation with China in green and low-carbon fields under the framework of the Belt and Road Initiative.

Funding

This paper is funded by the Fundamental Research Funds for the Central Universities (2023MS161); The Key Research Project of Humanities and Social Sciences of the Education Department of Hebei Province (ZD202310).

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