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Kishida's Climate Policy and Opportunities for U.S.-Japan Cooperation

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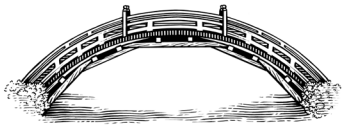

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KEYWORDS: JAPAN CLIMATE POLICY; JAPAN NUCLEAR POLICY; RENEWABLE ENERGY; U.S.-JAPAN RELATIONS

EXECUTIVE SUMMARY

This essay summarizes key trends and drivers in Japan's climate policy, with an emphasis on the acceleration of commitments and policies that has taken place during the Suga and Kishida cabinets, and reviews the policy implications.

MAIN ARGUMENT

Japan's climate policy development has been dominated by a technocratic policy triangle that includes the Ministry of Economy, Trade and Industry; politicians within the dominant Liberal Democratic Party; and industry. This triangle has generated cautious policymaking characterized by gradualism and a focus on the long-term viability of existing industrial assets. However, the acceleration of climate policy under the Suga and Kishida governments of the last two years has been driven by political leadership in response to both competition in East Asia and overtures from the Biden administration. Most crucially, Japan's stepped-up commitments include a comprehensive vision of economic and energy security that views the current competition over green technology in the Indo-Pacific as crucial for future economic competitiveness. Under the Green Transformation (GX) strategy, industrial policy is back.

POLICY IMPLICATIONS

- Energy security and industrial competitiveness are driving the new Japanese approach to climate policy. In the context of a tighter geopolitical environment in the Indo-Pacific area, this approach opens more avenues for cooperation with key allies and partners.
- The Kishida cabinet is emphasizing several key policy sectors: solar energy, nuclear energy revival, ammonia and hydrogen innovation in combination with continued clean coal use, and electric vehicles.
- Japan's climate policy approach will have a strong focus on innovation, competition, and industrial renewal, focusing as much on the supply side as the demand side.

After years of gradual action on climate change, Japan made three bold announcements in 2020–21. On October 25, 2020, Prime Minister Yoshihide Suga formally committed Japan to achieve net-zero carbon emissions by 2050.[1] In April 2021, he pledged that Japan would cut greenhouse gas emissions by 46% by 2030 from 2013 levels.[2] And in May and June 2021, Suga added a commitment to end all coal financing abroad by the end of the year.[3] In October 2022, Prime Minister Fumio Kishida reaffirmed these pledges and added his ambition to accelerate a return to nuclear energy.

This essay reviews the acceleration of climate policy since October 2020 under Prime Ministers Suga and Kishida and asks the following questions:

- To what extent is Japan pushing the frontier in climate policy under its Green Transformation (GX) strategy? What are the key features and limits of this approach?
- What are the drivers behind the choices made by Japan with respect to nuclear policy, renewables, and the continuation of coal? What shaped the new vision Japan has outlined?
- What does this new approach mean for the United States, and what are avenues for U.S.-Japan cooperation?

These questions matter for three key policy reasons. First, Japan is both a systemic player in the energy space and a frontier state. It was the first country to experience a massive nuclear disaster triggered by a natural disaster in March 2011, the Fukushima disaster. Japan still emits 3% of global greenhouse gas emissions,[4] and its actions both have set an important example and have technological downstream effects for other countries in the Indo-Pacific.

Second, Japan is a pivotal U.S. ally in a complex geopolitical location as an island nation facing both China and Russia. It is not able to trade electricity with neighbors, as European countries do. Japan is also an advanced manufacturing state at the cutting edge of technology, whose economic well-being relies on a stable energy supply. Energy policy in Japan has a major impact on the global digital supply chain worldwide. Historically, the country

1 Maria Yamaguchi, "Post-Abe Agenda: Suga Says Japan to Go Carbon-Free by 2050," Associated Press, October 26, 2020 ~ https://apnews.com/article/virus-outbreak-shinzo-abe-cabinets-health-yoshihide-suga-726ac43cceb4b94fe2b532bdea704410.

2 Osamu Tsukimori, "Japan Pledges 46% Greenhouse Gas Emissions Cut by 2030," *Japan Times*, April 22, 2021 ~ https://www.japantimes.co.jp/news/2021/04/22/national/suga-climate-change-emissions-2030.

3 Juntaro Arai, "Tokyo Vows at G-7 to Cut Off Overseas Coal Financing this Year," *Nikkei News*, June 15, 2021 ~ https://asia.nikkei.com/Spotlight/Environment/Climate-Change/Tokyo-vows-at-G-7-to-cut-off-overseas-coal-financing-this-year.

4 Hanna Ritchie and Max Roser, "Japan: CO_2 Country Profile," Our World in Data ~ https://ourworldindata.org/co2/country/japan#what-share-of-global-cumulative-co2-has-the-country-emitted.

has always seen itself as vulnerable in terms of energy, and energy security is always among the top government priorities.

Third, Japan is innovating with several new initiatives and their success or failure will have a large impact for the United States and others. Japan is bundling its climate approach with its GX innovation and industrial policy plan, which it is running parallel to its digital transformation strategy (DX). Japan now sees both green technology and the digital industrial revolution as critical for its future positioning in the world economy, a vision now also shared by the United States, the European Union, and South Korea. In addition, under Prime Minister Kishida, Japan has made the choice to swing back toward nuclear energy, and its experience in doing so will have a large impact on nuclear energy worldwide. Finally, Japan is seeking to extend the viability of coal through a new process that combines ammonia and hydrogen. Should this process succeed, it will have important implications.

This essay makes the following assessments and arguments. First, due to major gains in energy efficiency and rapid renewable increases since the Fukushima disaster, Japan's greenhouse gas emissions (GHG) peaked in 2013 and fell 18% between then and 2020. This positive development laid the foundation for the more ambitious commitments made in 2020 and 2021. Second, after a period of gradualism under Prime Minister Shinzo Abe, Prime Minister Suga made climate change a major priority of his cabinet. In the fall of 2020, he announced Japan's pledge to reach net zero in GHG emissions by 2050. In April 2021, he officially committed to a 46% decrease of emissions by 2030 (from 2013 levels), a significant jump from the 25% reduction pledge made in the 2015 Paris Agreement. This is, however, still a gradualist approach that has been criticized by environmentalists as both unrealistic (due to maintaining a high dependence on nuclear power and coal) and not fast enough to be effective in meeting global efforts toward a 50% reduction of GHG emissions by 2030. Third, Prime Minister Kishida has upheld the commitments made by his predecessor and added the GX strategic vision, with a particular emphasis on nuclear energy and ammonia and hydrogen processes for coal, in addition to intensifying solar and wind energy development. Last, he has embedded the GX vision in his national economic security agenda and new capitalism vision that combines strategic leadership with a focus on competitiveness in a twin industrial revolution. The Ministry of Economy, Trade and Industry (METI) exerts great influence in this GX vision design, and the ministry's energy security concerns are embedded at the heart of the new strategy.

This essay is organized as follows:

- pp. 53–55 examine trends in Japan's energy mix and GHG emissions since the early 2000s, focusing in particular on the period after the 2011 Fukushima disaster.
- pp. 55–58 study the acceleration of climate policy goals since 2020 under Prime Ministers Suga and Kishida.
- pp. 58–62 analyze the structure, obstacles, and drivers of policy to meet Japan's climate mitigation goals.
- pp. 63–65 discuss four key areas of Kishida's new approach that offer potential for U.S.-Japan cooperation.
- pp. 65 offers a brief conclusion.

AN EVALUATION OF CLIMATE AND ENERGY TRENDS IN JAPAN

Constrained by its industrial base and relatively weak public inputs into climate policy, Japan in the 2000s struggled to stabilize and reduce its total GHG emissions under its Kyoto Protocol commitments.[5] Japan's total GHG emissions plateaued at 1,390 megatons (Mt) of CO_2 equivalent between 2000 and 2007, reaching a peak of 1,396 Mt in 2007.[6] With the 2008–9 financial crisis and the undertaking of energy saving measures, GHG emissions dropped 10% to 1,250 Mt in 2009. However, the implementation of the Kyoto plan also relied on an increase in nuclear reactors.

Then the triple disaster of March 11, 2011, hit Japan. The once-in-a-thousand-years earthquake triggered a mega tsunami and a major crisis at the Fukushima Daiichi nuclear plant with its six reactors.[7] At that point, nuclear energy represented 30% of electricity generation and 16% of total energy consumption.[8] Instantly, nuclear energy production was ceased, and Japan had to scramble for replacement sources for its energy mix. The response included both a focus on energy efficiency and increases in coal, oil, and liquefied natural gas (LNG) consumption. By 2013, GHG emissions

5 Yves Tiberghien and Miranda A. Schreurs, "High Noon in Japan: Embedded Symbolism and Post-2001 Kyoto Protocol Politics," *Global Environmental Politics* 7, no. 4 (2007): 70–91.

6 National Institute for Environmental Studies, "Nihon no onshitsu koka gasu haishutsu-ryo deta" [Japanese Greenhouse Gas Emissions Data] ~ https://www.nies.go.jp/gio/archive/ghgdata/index.html.

7 For a poignant narrative by the then prime minister, see Naoto Kan, *My Nuclear Nightmare: Leading Japan Through the Fukushima Disaster to a Nuclear-Free Japan* (Ithaca: Cornell University Press, 2012).

8 National Institute for Environmental Studies, "Nihon no onshitsu koka gasu haishutsu-ryo deta."

reached 1,409 Mt, an increase of 8% from 2010.[9] Japan entered nearly a decade of heavy constraints post-Fukushima, as it initially tried to move away from nuclear, boost renewables, and fill the gap with coal, gas, and oil.

However, 2013 turned out to be the peak of GHG emissions. Between 2013 and 2020, Japan reduced GHG emissions by a combined 18%, or 2.8% per year. This put Japan 10% below the 1990 level, the initial benchmark used in Kyoto in 1997.[10] Part of the decrease was linked to the gradual return of a few nuclear reactions (5.9% of electricity in 2021 with six reactors back online).[11] But increases in renewables (with a jump from 12% to 22% of electricity generation between 2014 and 2020) and energy efficiency were also key factors. The International Energy Agency (IEA) recently lauded Japan's efforts to reduce electrical consumption in the wake of the Fukushima disaster:

> An energy crisis provides an opportunity to ramp up and take new actions to prompt energy efficiency and behavioural changes. Experience in Japan suggests that such actions can yield sustained benefits. A combination of public awareness campaigns and technical assistance programmes in the aftermath of a devastating earthquake in 2011 reduced peak electricity demand that summer by 15% compared with the previous year. Thanks to the continued focus on energy efficiency, this reduction has largely been sustained to date. Electricity demand has stayed below pre-earthquake levels, which helped avoid outages when there were strains on the electricity system.[12]

In terms of its global footprint, Japan's GHG emission share has come down from 5.1% of world emissions in 1990 to 3% in 2020. On a per capita basis, Japan peaked at 11.06 tons of CO_2 per capita in 2013 and declined to 9.12 tons per capita in 2020.[13] Based on 2020 data, the three leading sectors for CO_2 emissions are electricity generation (40%), industry (24%), and transportation (17%), which together represent 81% of Japan's CO_2 emissions.

Yet, while Japan has shown progress in reducing its GHG, its trajectory is still evaluated as "insufficient" per the Climate Action Tracker, an independent scientific tracking program of government climate action toward the Paris

9 National Institute for Environmental Studies, "Nihon no onshitsu koka gasu haishutsu-ryo deta."

10 Ibid.

11 Institute for Sustainable Economic Policy, "2021-nen no shizen enerugi denryoku no wariai" [Share of Renewable Electricity in 2021], April 4, 2021 ~ https://www.isep.or.jp/archives/library/13774.

12 International Energy Agency, *World Energy Outlook 2022* (Paris: IEA, 2022), 195 ~ https://www.iea.org/reports/world-energy-outlook-2022.

13 National Institute for Environmental Studies, "Nihon no onshitsu koka gasu haishutsu-ryo deta."

Agreement goals.[14] To understand why, one must turn to Japan's climate policy over the last decade and the current increase in pace.

CLIMATE POLICY ACCELERATION UNDER SUGA AND KISHIDA A DECADE AFTER FUKUSHIMA

In 2015, in the period leading up to the United Nations' 21st Conference of the Parties (COP21) in Paris, Japan submitted as its nationally determined contribution (NDC) a rather conservative 26% reduction of GHG by 2030 from the 2013 baseline and set its target for renewable sources in electricity generation at 22%–24% by 2030.[15] It is noteworthy that on these two metrics Japan had already reduced GHG by 18% and increased renewables to 22% by 2020. In a personal interview, the chair of the COP21, French foreign minister Laurent Fabius, recounted that Japan was constrained by its nuclear-power difficulties and unwilling to commit to major new targets or to green payments, stating, "They needed to be convinced."[16] But Japan did go along with the Paris Agreement and supported its aims in the end.

Climate policy progress accelerated significantly after Prime Minister Suga took office on September 16, 2020, with a breakthrough moment in his first policy speech to the Diet on October 26. In this speech, he officially committed Japan to the net-zero target by 2050 and pledged the following:

> My administration will devote itself to the greatest possible extent to bring about a green society, while focusing on a virtuous cycle of the economy and the environment as a pillar of our growth strategy.
>
> We hereby declare that by 2050 Japan will aim to reduce greenhouse gas emissions to net-zero, that is, to realize a carbon-neutral, decarbonized society.
>
> Addressing climate change is no longer a constraint on economic growth. We need to adjust our mindset to a paradigm shift that proactive climate change measures bring transformation of

14 "Japan: Country Summary," Climate Action Tracker ~ https://climateactiontracker.org/countries/japan.

15 "Japan Submits INDC," International Institute for Sustainable Development, July 21, 2015 ~ http://sdg.iisd.org/news/japan-submits-indc.

16 Author's interview with Laurent Fabius, Paris, December 14, 2016, as part of a University of British Columbia and University of Toronto research project on the Paris Agreement. See also Jen Iris Allan et al., "Making the Paris Agreement: Historical Processes and the Drivers of Institutional Design," *Political Studies* (2021) ~ https://doi.org/10.1177/00323217211049294.

> industrial structures as well as our economy and society, leading to dynamic economic growth.[17]

This speech marked a major shift in Japan's approach and indicated how Japan now saw the fight against climate change as interconnected with the project of industrial transformation and future growth. At this point, there was no implementation plan toward net zero, and many questioned whether such an aim was realistic. Suga followed up this speech with the creation of an expert panel on climate change that met on a monthly basis and discussed policies.

The next big milestone took place in Washington, D.C., at President Joe Biden's Leaders Summit on Climate on April 23, 2021. There, Suga made two new pledges that formally updated the previous NDCs made by Japan.[18] He committed Japan to cutting emissions by 46% by 2030 from 2013 levels (with best efforts toward 50%) and to increasing renewables to 36%–38% of Japan's energy mix by 2030. The pledges were previewed the day before at his Global Warming Prevention Headquarters meeting at the Kantei.[19] Unlike the October pledge, a full action plan had been developed this time with the relevant ministries and addressing various contingencies.

Prime Minister Kishida took office on October 4, 2021, and initially had to dedicate all his energy to the general election that took place on October 31. Almost immediately after his election, however, he delivered a climate speech at COP26 in Glasgow on November 2. The speech reaffirmed the pledges prepared by his predecessor with the key headline of a 46% reduction of emissions by 2030 from 2013 levels. At the COP26, however, Japan's commitments once again met with skepticism, as the country received an infamous "Fossil of the Day" award from international environmental group Climate Action Network due to its refusal to commit to phasing out coal by 2030. The group also identified Kishida's commitment to use ammonia and hydrogen to make zero-emission thermal power as a "deluded dream"

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17 Yoshihide Suga, "Policy Speech by the Prime Minister to the 203rd Session of the Diet," Prime Minister of Japan and His Cabinet, October 28, 2020 ~ https://japan.kantei.go.jp/99_suga/statement/202010/_00006.html.

18 For full details on the final NDC announced by Japan in June 2021 in preparation of the COP26 in Glasgow, see "Japan's Nationally Determined Contribution," UN Framework Convention on Climate Change ~ https://unfccc.int/sites/default/files/NDC/2022-06/JAPAN_FIRST%20NDC%20%28UPDATED%20SUBMISSION%29.pdf.

19 Yoshihide Suga, "Global Warming Prevention Headquarters," Prime Minister of Japan and His Cabinet, April 22, 2021 ~ https://japan.kantei.go.jp/99_suga/actions/202104/_00026.html.

and a "fossil fuel nightmare."[20] METI's New Basic Energy Plan, issued in 2021, to accompany the pledges does still include coal for 19% of energy in 2030, affirming Japan's continued desire to use coal until and beyond 2030.

By the time of his first Diet policy speech in early 2022, Kishida had built on the Suga cabinet's direction and connected climate action to his commitment to a "new form of capitalism," stating that "the climate change issue is where the negative aspects of capitalism—market failures from attaching excessive importance to efficiency, a lack of sustainability, and environmental disparities between wealthy nations and poor nations, among other problems—all condense."[21] He pledged a more systemic dimension as he committed to "a major transformation of our economy and society as a whole" and to developing a clean energy strategy. Ten months later, in his second Diet policy speech in October 2022, Kishida fleshed out the contents of his GX strategy (alongside the DX strategy). As is clear from his remarks, the GX strategy combines a focus on emissions reduction with a renewed focus on energy security and general economic security in the wake of Russia's invasion of Ukraine and the increasingly difficult geopolitical environment in the region:

> Aiming to finish by the end of the calendar year, we will accelerate our consideration of a roadmap for promoting green transformation, which will be an area of drastic reform for the economy, society, and industry.
>
> We will bring concrete shape to policy initiatives I have spoken about thus far during my tenure, notably, growth-oriented carbon pricing, bold financial support having regulatory and institutional integration, transition finance, and the Asia Zero Emissions Community.
>
> At the same time, to ensure a stable supply of energy, upon which green transformation is premised, we will squarely take on the issue of nuclear power, in light of the energy crisis that Russia's outrageous acts have caused.[22]

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20 Masako Konishi, "What Did Japan Bring to COP26?" interview by Oscar Boyd, *Japan Times*, Deep Dive, podcast audio, November 18, 2021 ~ https://www.japantimes.co.jp/podcast/japan-cop-26-climate-summit; and "Fossil of the Day 02 November 2021—Norway, Japan, and Australia," Climate Action Network International, November 2, 2021 ~ https://climatenetwork.org/resource/fossil-of-the-day-02-november-2021.

21 Fumio Kishida, "Policy Speech by Prime Minister Kishida Fumio to the 208th Session of the Diet," Prime Minister's Office of Japan, January 17, 2022 ~ https://japan.kantei.go.jp/101_kishida/statement/202201/_00009.html.

22 Fumio Kishida, "Policy Speech by Prime Minister Kishida Fumio to the 210th Session of the Diet," Prime Minister's Office of Japan, October 3, 2022 ~ https://japan.kantei.go.jp/101_kishida/statement/202210/_00003.html.

The major blueprint unveiled in October 2021 by METI to accompany the prime minister's pledges is built around the S+3E concept: with safety as the core premise (the "S"), the strategy seeks to optimize three "E" goals: "stable and resilient energy supply," "environmental suitability," and "economic efficiency of energy."[23] This triple optimization indicates the conditional pathway of Japan's climate policy, rooted in economic rationality. With METI as the chief architect of energy policy, the government's first priority is energy security (a stable supply of energy), which is a traditional priority in Japanese political economy going back to the Meiji period. Other priorities relate to the requirement of low-cost energy (efficiency) and overall safety. Only within this enduring framework does Japan seek to achieve lower CO_2 emissions.

THE DRIVERS OF AND OBSTACLES TO JAPAN'S CLIMATE POLICY ACCELERATION

The Structure of Climate Policymaking in Japan and Its Obstacles

The structure of climate policymaking in Japan has been remarkably stable and path-dependent over the last three decades. Indeed, the key actors, institutional constraints, and ideational framework today follow the same fundamentals as in the late 2000s.[24] METI remains the dominant player, with oversight over industrial policy, energy policy, and trade policy. The Ministry of Environment is a more junior player, even though its power and voice have expanded since the 2000s. Nuclear decision-making, in particular, has become more complex, with clear oversight from the new, post-Fukushima rules of the Nuclear Regulatory Authority.[25]

In this decision-making structure, Japan's energy policy is centered on a policy triangle involving METI, Keidanren (the Japanese business federation), and related LDP politicians. This triangle ensures fully informed decisions and decision implementation. But it also has been described as a "dominant techno-institutional complex"—a system that generates "techno-institutional lock-in," favors gradualism and path-dependence, and prevents the emergence

23 Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry (Japan), "Outline of Strategic Energy Plan," October 2021 ~ https://www.enecho.meti.go.jp/en/category/others/basic_plan/pdf/6th_outline.pdf.

24 Tiberghien and Schreurs, "High Noon in Japan."

25 For an oversight of nuclear energy and rules today in Japan, see "Nuclear Power in Japan," World Nuclear Organization, October 2022 ~ https://world-nuclear.org/information-library/country-profiles/countries-g-n/japan-nuclear-power.aspx.

of breakthrough ideas from outside this policy triangle.[26] It is thus a system plagued by a positive feedback loop.

Climate policy is clearly being driven by the top political leadership, in consultations with senior economic leaders and METI. However, the actual implementation of high-level aspirational targets entails the work of committees dominated by METI, industry, and pro-economy politicians. Thus, there is a strong process of reversal and even pushback during the drafting and implementation phase, as well as the integration of industry priorities (such as nuclear energy and the ammonia-hydrogen thermal energy plan).

There are also serious concerns inside the industrial and energy sectors about stranded assets and long-term investments that are made obsolete before their full lifespans are complete. For example, the strategy put out by the Keidanren in May 2022 to implement the GX strategy emphasizes the following points:

> The Government should promptly present its grand design = "GX Policy Package" to maximize public and private investment and thus maintain and enhance the international competitiveness of the industry….We need to fully consider Japan's circumstances, including geographic constraints and lack of energy resources…. Japan must essentially maximize the use of existing technologies, including nuclear power, particularly, during the transition period through 2030.[27]

This Keidanren document puts the emphasis on amortizing existing investments and using existing assets for as much of their intended life as possible. There is a clear reluctance to scrap infrastructure projects before they are fully amortized. Given the support of METI for this approach as well, this emphasis tends to result in locking in existing technologies and making rapid change to new technologies difficult.

In many countries, acceleration to greening climate policy comes from public pressure, civil society, and green political parties. In Japan, stimuli from the public and civil society exist, but are less institutionalized than in Europe, for example, and not integrated into the core structure of policymaking. On the one hand, the public recognizes the dangers and risks of climate change. In an NHK survey from 2021, 75% of the public responded that "a rise in

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26 Hiroshi Ohta, "Why Did Japan Decide to Jump on the Bandwagon and How Serious Is It? The Path to 2050 Net Carbon Neutrality" (panel presentation, "Negotiating at the Brink: How Does the World Solve the Climate Crisis?" Vancouver, BC, March 10, 2022) ~ https://cjr.iar.ubc.ca/6741-2.

27 Keidanren, "Towards Green Transformation (GX)," May 17, 2022 ~ https://www.keidanren.or.jp/en/policy/2022/043_point.pdf.

the world's temperature caused by climate change" is dangerous," and 59% also said that nuclear power stations were dangerous.[28] In a similar vein, in September 2022 the Japanese magazine *Business Insider* published a survey of youth aged 15–18 years old on their evaluation of Japanese climate policy: 48% thought that corporate actions were insufficient, 49% said the same about adults in Japan, and a whopping 68% responded that government actions were insufficient.[29] On the other hand, Japan stands out in international surveys for the low salience of climate action among citizenry demands for action. Just prior to the COP26 in October 2021, the BBC published a GlobeScan survey of the public in 31 countries on climate action.[30] In that survey, 59% of the average public in 31 countries expected their own government to take a leadership role. For Japan, public expectations stood at 39%—near the bottom—with only Russia, Hong Kong, Singapore, and Thailand ranking lower. [31] In another question, pollsters asked whether the government was responsible for addressing climate change. The average response answering in the affirmative was 61%, whereas Japan had the lowest positive score (a mere 21%) among 31 countries (51% of the U.S. public answered affirmatively). The same pattern was present when respondents were asked whether companies and the United Nations must do more: Japan ranked at the bottom with 16% and 20%, respectively. Finally, when asked whether ordinary people should take more responsibility for climate change, the Japanese response rate was only 6% affirmative—dead last and far below other responses (the global average was 35%).

Japan often appears as an outlier in international surveys. There is a common pattern where cultural practices can lead respondents to pick "I don't know" or "not sure" responses, and so surveys may underestimate or fail to capture the actual opinions of Japanese people. But the consistently low results still seem to indicate a tepidness in the Japanese public's

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28 Hiroko Murata, "Attitudes towards Environment in the Age of Decarbonization: From the ISSP Survey on Environment: Survey Results in Japan," NHK Broadcasting Cultural Research Institute, June 1, 2021 ~ https://www.nhk.or.jp/bunken/english/research/yoron/20210601_5.html.

29 Yoko Yuda, "Nihon no otona wa 'kiki-kan usuku, kodo fujubun.' 15–18-sai 'kiko hendo keizai kakusa' chosa ni miru kodomo-tachi no kibishi shisen" [Adults in Japan Have Weak Sense of Danger and Take Insufficient Action. 15–18-Year-Olds Survey "Climate Change/Economic Disparity" Shows Children's Harsh Eyes], *Business Insider* (Japan), September 20, 2022 ~ https://www.businessinsider.jp/post-259504.

30 Matt McGrath, "Climate Change: Polls Shows Rising Demand for Government Action," BBC, October 28, 2021 ~ https://www.bbc.com/news/science-environment-59067471.

31 "New Global Poll ahead of COP26 in Glasgow Shows Growing Support for Governments to Take Strong Action on Climate Change," GlobeScan, October 27, 2021 ~ https://globescan.com/2021/10/27/global-poll-cop26-growing-support-governments-take-strong-action-climate-change.

commitment to priority action on climate change, relative to other priorities such as energy security.

The Driving Roles of Foreign Pressure and Political Leadership

A common debate in Japanese policy studies focuses on the role of *gaiatsu*, or foreign pressure, whether from the United States directly, Europe, the UN, or global civil society.[32] Normative or diplomatic pressure may indeed play a partial role in influencing the foreign ministry or political leadership, but the effects are hard to assess. In the case of Suga's acceleration of Japan's climate goals depicted earlier in the essay, it is likely that two types of pressure played a role. First, peer pressure and competition with Japan's Northeast Asian neighbors were likely involved—China's net-zero by 2060 pledge and South Korea's net-zero by 2050 pledge, both announced in 2020, incentivized Japan to compete to outdo them and to move fast. Second, the Biden administration's focus on climate change provided further incentive for faster action, including the crucial role of the Leaders Summit on Climate in April 2021. It is particularly noteworthy that Suga committed to the steeper 46% emissions cut by 2030 just days after the meeting with Biden. This was followed by the May 2021 announcement that Japan would stop all coal financing abroad and the further pledge at the June G-7 meeting that Japan would do this by the end of 2021. Interestingly, South Korea also made a similar pledge to stop coal financing abroad just after Biden's Climate Summit.

These pressures are mainly contextual, however. To break or change the structural institutional equilibrium requires the influx of significant political capital from the prime minister and his ministers. Preliminary research indicates that Suga relied actively on two rising star ministers, Shinjiro Koizumi (minister of environment) and Taro Kono (minister of administrative reform). The son of former prime minister Junichiro Koizumi, the younger Koizumi has become known as a political rising star with a strong focus on environmental issues. Likewise, Kono has emerged as a popular and progressive maverick with strong reform credentials in foreign affairs as well as in the digital and economic space. Suga placed them in key ministries and partly relied on their popularity and policy effectiveness. Hiroki Ohta has also noted the probable role played by Hiromichi Mizuno, a special adviser to METI and co-chair of the One Planet Working Group.[33]

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[32] The "Fossil of the Day" award given by the Climate Action Network International at COP meetings is an example of such pressures.

[33] Ohta, "Why Did Japan Decide to Jump on the Bandwagon and How Serious Is It?"

Additionally, Komeito, the junior party partner in the LDP's ruling coalition (under Abe, Suga, and Kishida) has championed environmental actions and provided further political stimulus.

As I have recently argued elsewhere with Sun Park, Northeast Asian countries, followed by the United States, have increasingly converged in their vision of the green tech race as one critical to the economy of the future.[34] Governments are not just competing with the pace of climate change; they are competing with each other for the future competitiveness and power of nations. This vision sees the twin industrial revolutions of digital and green technologies as a structural change that will reorder the future global economic order. Suga first embraced this vision in 2020–21, and Kishida has since deepened it.

In his second policy speech in the Diet, on January 18, 2021, Suga took up this theme again and argued that "environmental measures…are the keys to transforming the industrial structure and producing robust growth by dramatically changing our economy and society, promoting investments, and enhancing productivity." According to Suga, Japan's green growth (now GX) strategy is expected to "produce an annual economic impact of 190 trillion yen in 2050, while generating vast employment opportunities. *Japan will realize a decarbonized society ahead of the rest of the world*" (emphasis added).[35] In both of his Diet policy speeches to date, Kishida emphasized a modernization of the whole economy and society through the green strategy. In his October 2022 speech to the Diet, he emphasized the GX strategy as a core industrial transformation and linked it to economic security and energy security: "Aiming to finish by the end of the calendar year, we will accelerate our consideration of a roadmap for promoting green transformation, which will be an area of drastic reform for the economy, society, and industry."[36]

These speeches reveal a fundamental shift in the Japanese government's idea about climate policy. It is no longer just a contribution to a global public good; it is now a vision to spur innovation and industrial transformation and ensure Japanese economic leadership in the future. That vision has become a focal point to mobilize industry around climate action, with the caveat that it will also need to find a way to fit with industry priorities.

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34 Sun Ryung Park and Yves Tiberghien, "The Indo Pacific's Green Industrial Policy Race," East Asia Forum, November 1, 2022 ~ https://www.eastasiaforum.org/2022/11/01/the-indo-pacifics-green-industrial-policy-race.

35 Yoshihide Suga, "Policy Speech by the Prime Minister to the 204th Session of the Diet," Prime Minister of Japan and His Cabinet, January 18, 2021 ~ https://japan.kantei.go.jp/99_suga/statement/202101/_00013.html.

36 Kishida, "Policy Speech by Prime Minister Kishida Fumio to the 210th Session of the Diet."

FOUR KEY POLICY AREAS AND IMPLICATIONS FOR U.S.-JAPAN COOPERATION

The Kishida climate strategy emphasizes four particular areas for innovation and action: renewable energy (especially solar), nuclear energy, ammonia and hydrogen in coal burning, and electric vehicles (EVs). All four of these areas hold great potential for U.S.-Japan cooperation in the short term.

With regard to renewables, Japan's target is for them to account for 36%–38% of electricity generation by 2030. METI's released its sixth Strategic Energy Plan in October 2021, which includes "efforts for utilization of renewable energy as the major power source" among its policy responses toward 2030. The Ministry of Environment's March 2022 action plan for the next five years emphasizes two sets of initiatives:[37]

1. Create at least one hundred "decarbonization leading regions" by FY2030.
2. Implement priority measures throughout the country (e.g., solar power for private consumption, energy-efficient housing, EVs, etc.).

Along with energy-saving initiatives, they emphasize some specific policy tools linked to renewable promotion:

1. Roof-mounted and other self-sustainable methods of solar-power generation
2. Implementation of renewable energy sources that coexist with and benefit the local community
3. Zero-carbon drive (renewable energy electricity in EVs, plug-in hybrid EVs, and fuel-cell vehicles)

Since the invasion of Ukraine by Russia, the Kishida government has increasingly focused on energy security, and nuclear energy has gained in prominence and priority. Speaking about nuclear power, in his October 2022 Diet policy speech, Kishida announced the following:

> I have given instructions to accelerate discussions by experts, aiming at the end of the calendar year, regarding restarting more than ten nuclear reactors, developing and constructing

[37] Ministry of the Environment (Japan), "Datsu tanso shakai e no iko ni muketa jissen" [Practices for Transitioning to a Decarbonized Society], March 14, 2022 ~ https://www.env.go.jp/policy/%EF%BC%92.pdf.

> next-generation advanced reactors that incorporate new safety mechanisms, and related matters.[38]

At the time of writing, six nuclear reactors were functioning in Japan, but four more have been given the green light to resume operations. Kishida indicated the political will to approve more in 2023 and resume investment toward future new reactors. Also being considered is extending the life of some existing reactors. Energy security and nuclear energy development are both areas for greater cooperation with the United States. The IEA Energy Outlook summarized the situation: "A key element is to restart its [Japan's] nuclear reactors and lift the share of nuclear in the electricity mix back to 20% by 2030. Raising the share of renewables in the mix is also important, from 23% in 2021 up to 36–38% in 2030."[39]

Third, Japan intends to lead the way in a new technology that would use ammonia and hydrogen to produce emission-free energy from coal. Following a visit to Japan in late September 2022 by the IEA director, the IEA included this assessment in its latest World Energy Outlook: "The co-firing of ammonia or hydrogen remains very limited…and accounts for less than 0.1% of total electricity generation in 2050. The notable exception is Japan, where plans to co-fire ammonia in coal plants are under development and where co-fired ammonia and hydrogen are projected to reach a share of close to 5% of electricity generation in 2050."[40] Japan is likely to lead in hydrogen research, another area where U.S.-Japan cooperation would be valuable in the years to come.

Fourth, after a significant delay, Japan is targeting EVs for priority development. Due to early investments by Japanese automakers in hybrid cars, Japan is a latecomer in the EV market. In 2020, it sold only 14,604 EVs (0.59% of car sales), compared to 922,750 hybrid cars (37% of car sales).[41] In 2021, Japan was still significantly behind China (over 3.3 million EVs sold), Germany (696,000), the United States (631,000), and even South Korea (120,000).[42] Japanese automakers are now deeply investing in EVs, and the situation should change rapidly. In the short term, this is a sore

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38 Kishida, "Policy Speech by Prime Minister Kishida Fumio to the 210th Session of the Diet."

39 IEA, *World Energy Outlook 2022*, 302.

40 Ibid., 295.

41 Japan Automobile Dealers Association, "Nenryo betsu hanbai daisu (joyosha)" [Sales Volume by Fuel (Passenger Vehicles)] ⇝ http://www.jada.or.jp/data/month/m-fuel-hanbai.

42 Govind Bhutada, "Visualizing 10 Years of Global EV Sales by Country," Visual Capitalist, August 8, 2022 ⇝ https://www.visualcapitalist.com/visualizing-10-years-of-global-ev-sales-by-country. See also the comparative EV data at IEA, "Trends in Electric Light-Duty Vehicles" ⇝ https://www.iea.org/reports/global-ev-outlook-2022/trends-in-electric-light-duty-vehicles.

area for U.S.-Japan cooperation, given Japan's frustrations with the "Buy North America" restrictions in the United States' 2022 Inflation Reduction Act. Still, in the long term, development and market access for EVs has potential as an area for bilateral cooperation.

CONCLUSION

Over the past twenty years, the default Japanese mode of climate policy was gradualist and path-dependent, with policy dominated by METI and industry and the most significant gains made in energy efficiency and rationalization. The Fukushima nuclear crisis of 2011 was a huge shock to the system that initially led to further emission cuts by Japan but also spurred a great acceleration in energy efficiency and in solar energy development following 2011 feed-in tariffs. Japan's GHG emissions peaked in 2013 and decreased by 18% from 2013 to 2020.

In 2020–22, under the relatively concurring Suga and Kishida leaderships, Japan has stepped up its climate commitments, including a net-zero pledge by 2050 and a 46% emissions cut by 2030 from 2013 levels. The implementation of these pledges will not occur purely through a renewables future, though. It includes a rebound in nuclear energy to 20% of electricity produced by 2030 and the development of new technology for clean coal use with ammonia and hydrogen. Both of those major plans could lead to innovation but could also suffer setbacks.

Japan's new approach is a part of an integrated vision of green technology as a major arena of economic security and competition among nations. Despite some short-term frictions with the United States over U.S. policy on EVs, this economic security lens naturally lends itself to intensified cooperation with the United States and other like-minded partners. ◈