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The Politics of Energy and Climate Change in Japan under Abe

Abenergynomics

ABSTRACT

Under what we call Abenergynomics, Japanese Prime Minister Abe Shinzō has used energy policy to support the growth objectives of Abenomics, even when the associated policies are publicly unpopular, opposed by utility companies, or harmful to the environment. We show how Abenergynomics has shaped Japanese policy on nuclear power, electricity deregulation, renewable energy, and climate change.

KEYWORDS: Japan, Abe, energy, climate change, nuclear, Abenomics

THE GOVERNMENT OF ABE SHINZŌ came to power in December 2012, when Japan was still reeling from the aftermath of the March 11, 2011, Great Tohoku Earthquake and Tsunami, which led to a nuclear meltdown at the Fukushima Daiichi nuclear plant.[1] Prime Minister Abe's Liberal Democratic Party (LDP) benefited from the perception that the Democratic Party of

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1. Phillip Y. Lipscy, Kenji E. Kushida, and Trevor Incerti, "The Fukushima Disaster and Japan's Nuclear Plant Vulnerability in Comparative Perspective," *Environmental Science & Technology* 47:12 (2013): 6082–88; Phillip Y. Lipscy, Kenji E. Kushida, and Trevor Incerti, "Were Japan's Nuclear Plants Uniquely Vulnerable?" in Edward D. Blandford and Scott D. Sagan (eds.), *Learning from a Disaster: Improving Nuclear Safety and Security after Fukushima* (Stanford, CA: Stanford University Press, 2016): 157–82.

Asian Survey, Vol. 58, Number 4, pp. 607–634. ISSN 0004-4687, electronic ISSN 1533-838X. DOI: https://doi.org/10.1525/AS.2018.58.4.607.

Japan (DPJ) government had mishandled the response to the Fukushima disaster.[2] Furthermore, the DPJ government had stunned the international community in 2010 by announcing Japan's withdrawal from the second commitment period of the Kyoto Protocol, the principal international framework to address climate change. Japan, once a leader in energy efficiency and greenhouse gas mitigation, was criticized as a "fossil" and a "villain" in global climate change efforts.[3]

Hence, the Abe government came to power at a pivotal moment when energy policy—both domestic and international—loomed large as an urgent priority. Would Japan transition away from traditional energy sources toward greener alternatives? Would nuclear power be abandoned, or resuscitated? Would large utilities, such as Tokyo Electric Power Company (TEPCO), see their political influence diminish as a result of the Fukushima disaster? Could Japan reemerge as a leader in energy conservation and international climate change negotiations?

The track record of the Abe government on energy policy raises some intriguing puzzles. First, despite a nuclear disaster that displaced 174,000 people and turned a 337 km² area into a radioactive wasteland,[4] Japanese energy policy has not undergone the widely predicted transformations.[5] Abe's government has reemphasized nuclear and coal-fired power plants and weakened the feed-in tariff (which guarantees a set price from a utility to renewable energy generators) implemented by the DPJ to support renewables. Japan has shied away from ambitious policy measures to encourage energy conservation, such as an emissions trading scheme or a meaningful carbon tax.[6] Why did the Fukushima disaster not become the policy turning point many foresaw?

2. Kenji E. Kushida, "The Fukushima Nuclear Disaster and the Democratic Party of Japan," *Japanese Political Economy* 40:1 (2014): 29–68.

3. "Japan Said 'Cast as Villain' at Cancun Climate Talks," *BBC*, December 12, 2010; "'Fossil' Japan Seen as Obstacle in Cancun," *Reuters*, December 2, 2010.

4. The government has delineated Kitaku Konnan Kuiiki (Difficult to Return to Zones), to which there is no realistic prospect of residents being able to return in the foreseeable future. "Kitaku Konnan Kuiiki ni Tsuite" [About Difficult to Return to Zones], Naikaku Genshiryoku Hisaisha Seikatsu Shien [Cabinet Office Disaster Victim Livelihood Support Team], October 1, 2013.

5. See e.g. Martin Fackler and Andrew Pollack, "Japan Scraps Plan to Build New Reactors; Prime Minister Shelves Nuclear Project and Vows to Focus on Renewables," *International Herald Tribune*, May 5, 2011; Eric Johnston, "Current Nuclear Debate to Set Nation's Course for Decades," *Japan Times*, September 23, 2011.

6. Japan did implement a carbon tax in 2012, under the DPJ government, but the amount is trivial compared to other countries. Jeremy Carl and David Fedor, "Tracking Global Carbon

Second, why did the LDP maintain its support for nuclear energy, and why has it managed to win election after election despite this unpopular and seemingly anachronistic stance? Among major Japanese political parties, the LDP has adopted the most conspicuously pro-nuclear platform since 2011. Nonetheless, the party has won landslide victories in all major elections since the Fukushima meltdown, and the opposition's efforts to galvanize public support around the nuclear issue have failed. This was not what most international observers expected after the Great Tohoku Earthquake. The catastrophe led distant countries, such as Germany, to reconsider and abandon their nuclear programs.[7] Many observers expected Japan to follow a similar path, shifting its attention to renewable energy and a reinvigorated emphasis on energy efficiency.

Third, Japan's status as a laggard on global climate change has continued under the Abe government. The government is a party to the Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC), which entered into force in 2016. However, Japan has been widely criticized for submitting unambitious emissions mitigation targets and engaging in accounting shenanigans to inflate its headline contributions.[8] This runs counter to the general pattern of Abe's foreign policy, which has emphasized international engagement and leadership, particularly since the election of Donald Trump.[9] Japanese public support for climate change mitigation also remains high.[10] What explains Japan's continued backsliding in an area of international cooperation it once led?

In the next section, we outline our basic argument regarding Abe's energy policy, which we call Abenergynomics. We then provide an overview of the major energy policy reforms of the Abe government. A more dedicated

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Revenues: A Survey of Carbon Taxes versus Cap-and-Trade in the Real World," *Energy Policy* 96 (2016): 50–77.

7. Bettina B. F. Wittneben, "The Impact of the Fukushima Nuclear Accident on European Energy Policy," *Environmental Science & Policy* 15:1 (2012): 1–3.

8. Yann Robiou du Pont, M. Louise Jeffery, Johannes Gütschow, Joeri Rogelj, Peter Christoff, and Malte Meinshausen, "Equitable Mitigation to Achieve the Paris Agreement Goals," *Nature Climate Change* 7 (2016): 38; Yasuko Kameyama, *Climate Change Policy in Japan: From the 1980s to 2015* (Abingdon: Taylor & Francis, 2016).

9. Noah Smith, "Japan Rises as a Free-Trade Leader as the U.S. Sinks," *Bloomberg*, October 5, 2017; "Japan Pledges $2.9 Billion to Support Countries Pursuing Universal Health Coverage," *Japan Times*, December 14, 2017.

10. See e.g. Cabinet Office of Japan, "Chikyu Ondanka Taisaku ni Kansuru Yoron Chosa" [Public opinion poll on global warming counter-measures], 2016.

discussion of the Abe government's nuclear policy follows. We then consider Abe's climate change policy and international cooperation in the UNFCCC. Finally, we offer conclusions and discuss future prospects.

ABENERGYNOMICS

Abe's energy policy is best described as Abenergynomics: a set of policies designed to support the economic objectives of Abenomics, with relatively little regard for popular opinion, opposition from utility companies, or environmental consequences. Abe has prioritized policies that will facilitate economic growth. Consistent with this objective, the bureaucratic tussling between the Ministry of the Environment (MOE) and the Ministry of Economy, Trade, and Industry (METI), which had tilted in the former's favor during the DPJ government, was resolved in the latter's favor. Low electricity prices were prioritized, even if this meant pursuing unpopular policies, exacerbating CO_2 emissions, or undermining electric utilities, part of the LDP's traditional support base. Government support for new technologies has been targeted selectively to areas that clearly offer a competitive advantage to Japanese firms.

Japanese policymakers have faced constraints that limit the scope of aggressive measures to reduce nuclear power or combat climate change. At the most basic level, Japan is a resource-poor country dependent on foreign energy sources: there is no attractive, near-term alternative to nuclear energy.[11] Japan's slow economic growth and large public debt make it difficult to invest in ambitious new solutions or to generously compensate losers for adverse policy changes.[12] Institutional constraints have also been important. Electoral reform in 1994 shifted Japan from a single nontransferable vote / multimember district system to a mixed system emphasizing plurality voting in single-member districts. The new system makes it difficult to sustain "efficiency clientelism," policy arrangements that encourage energy

11. Vlado Vivoda, "Japan's Energy Security Predicament Post-Fukushima," *Energy Policy* 46 (2012): 135–43.

12. See discussion of the politics of compensation in Kent E. Calder, *Crisis and Compensation* (Princeton NJ: Princeton University Press, 1991); Margarita Estevez-Abe, *Welfare Capitalism in Postwar Japan: Party, Bureaucracy, and Business* (Cambridge: Cambridge University Press, 2008); Megumi Naoi, *Building Legislative Coalitions for Globalization in Asia: Globalization as Legislation* (New York: Cambridge University Press, 2015); Kent E. Calder, *Circles of Compensation: Economic Growth and the Globalization of Japan* (Stanford, CA: Stanford University Press, 2017).

conservation by imposing high energy prices on consumers while redistributing the consequent revenues or rents to organized supporters of the LDP.[13]

Despite these general constraints, Abe has had a clear opportunity to significantly alter the course of Japanese energy policy. In several respects, he assumed power during a moment when constraints were less binding. First, the Fukushima disaster sharply diminished the prestige and political standing of large utility companies, which had resisted major reforms in the past. Second, the Fukushima disaster provided an obvious rationale for Japanese officials to pursue major policy shifts in the energy sector. Prime Minister Kan Naoto of the DPJ sought to use the disaster as an opportunity to shift Japan toward renewable energy. But it was also an opportunity to move policy in the opposite direction, by shifting public attention away from climate change toward more urgent priorities like securing a stable energy supply and managing nuclear safety. Internationally, Japanese policymakers could now portray their country's disappointing performance on climate change as an unfortunate consequence of the nuclear disaster.

Third, Abe and the LDP benefited from fortuitous circumstances. The Fukushima disaster reflected deep-seated problems with Japanese nuclear regulation, which had developed over many years of LDP rule.[14] The DPJ, particularly under Kan, was hostile to the "nuclear village" (a collection of pro-nuclear allies from utilities, the bureaucracy, politicians, finance, academia, etc.) and a natural standard-bearer for dismantling the cozy ties between politicians, bureaucrats, and large utility companies. However, the Fukushima disaster took place under the DPJ's watch, severely damaging the party's public image. The LDP could therefore frame its policy measures—even those that reverted to the status quo ante—as a necessary return to stability.

Fourth, the disintegration and deep unpopularity of the DPJ after 2012 meant the anti-LDP vote has been consistently split, allowing the LDP to secure landslide victories despite lukewarm public support under an electoral system that typically rewards consolidation toward two parties.[15] Following the DPJ's resounding defeat in the December 2012 Lower House election, Japan was left without a viable opposition party. Thus, the Abe government

13. Phillip Y. Lipscy, "A Casualty of Political Transformation? The Politics of Japanese Energy Efficiency in the Transportation Sector," *Journal of East Asian Studies* 12:3 (2012): 409–39.

14. Jeff Kingston, "Japan's Nuclear Village," *Asia-Pacific Journal* 10:37 (2012).

15. Kenneth Mori McElwain, "The Nationalization of Japanese Elections," *Journal of East Asian Studies* 12:3 (2012): 323–50.

has been able to stay in power despite adopting several strategically chosen policies unpopular with the general public.[16]

Under Abenergynomics, Abe has pursued an energy policy mix that prioritizes economic growth by lowering electricity prices and supporting Japanese producers. This explains seemingly contradictory policy measures, such as increasing competition in the electricity distribution market while curtailing competition from renewable power generation: both were meant to facilitate lower electricity prices. Abe has been willing to pursue policies unpopular with the general public, but only in cases—such as nuclear restarts and the construction of new coal-fired plants—where the policies would lower energy costs.[17] Policy measures to mitigate greenhouse gas emissions have been largely shunned, except in exceptional cases where support would clearly benefit Japanese firms.[18]

ENERGY POLICY OF THE ABE GOVERNMENT

This section provides a brief overview of Japanese energy policy and measures undertaken by the Abe government. We first discuss general trends in Japanese energy usage and then major policy measures implemented by Abe. We postpone our discussion of nuclear energy and climate change mitigation to later sections.

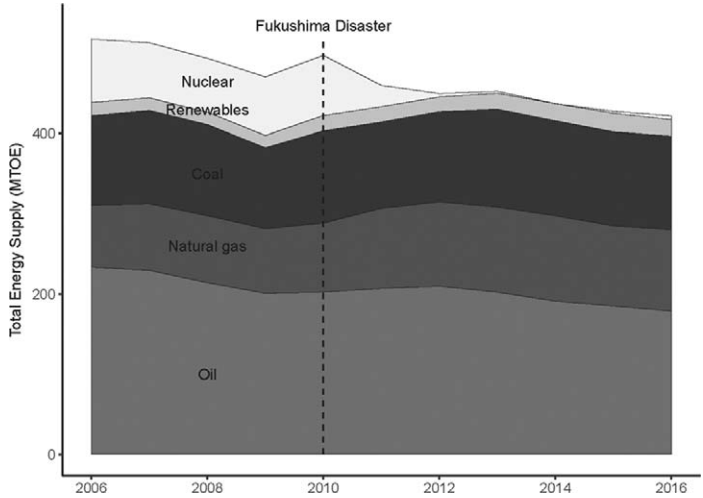
Figure 1 depicts Japan's energy mix during 2006–16, a period that encompasses the 2011 Fukushima disaster. The figure includes energy sources for power generation and other uses, primarily industry and automobile transportation. Before the disaster, Japan relied on a diversified energy mix predominantly based on fossil fuels and nuclear power, with limited

16. Other examples include the 2015 Legislation for Peace and Security, which reinterpreted Japan's constitution to allow collective self-defense under limited circumstances, and the 2013 Act on the Protection of Specially Designated Secrets, which created criminal penalties for leaking state secrets.

17. A public opinion poll found that only 27% of respondents preferred nuclear energy to have a 15% or greater share of Japan's energy mix in 2030, compared to the Abe government's official target of 20–22%. Similarly, respondents were asked whether they preferred fossil fuels with "high CO_2 emissions and low cost (coal)" or "lower CO_2 emissions even if this means higher cost (natural gas)," and 72% said natural gas. Japan Consumers' Co-operative Union, "Kore kara no denryoku no arikata ni tsuite no shohisha ishiki chosa" [Survey of consumers regarding the future of electricity], May 8, 2015.

18. Experts who have personally briefed Abe on environmental measures, such as cap-and-trade, note that he expressed no interest in these initiatives.

FIGURE 1. Japanese Energy Mix before and after Fukushima (2006–16)



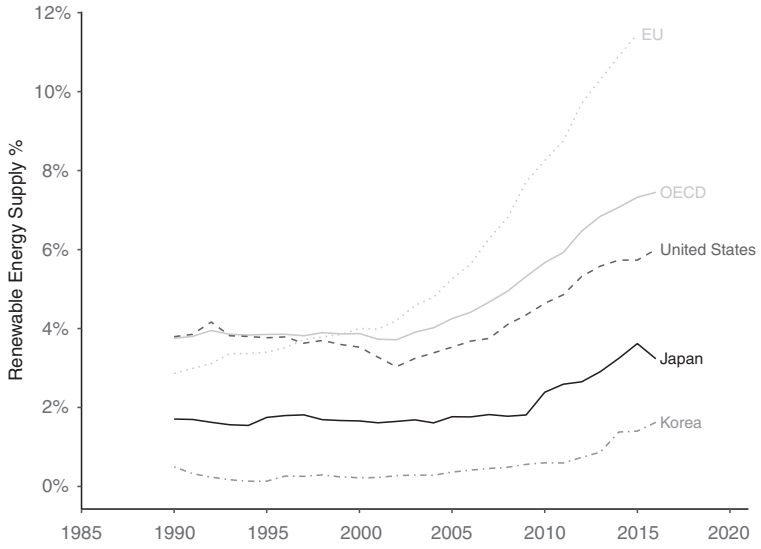
NOTE: Yearly data. Dashed vertical line at 2010 marks last annual data prior to March 11, 2011, Great Tohoku Earthquake.
DATA SOURCE: International Energy Agency, "World Energy Statistics and Balances," 2017.

renewables (a category traditionally dominated by hydropower). The Fukushima disaster altered this mix by triggering a total shutdown of nuclear power generation. Japan responded to the crisis by increasing its reliance on imported fossil fuels, particularly natural gas, and reducing overall energy consumption.

Figure 2 depicts the share of energy supply attributable to renewable energy for several political units of interest from 1990 to 2016. The figure omits hydropower to focus on non-traditional energy sources. Japan has lagged behind its international peers (except South Korea) in renewable energy for the entire period depicted. This has been often attributed to the political influence of incumbent utilities in Japan, which have made large investments in traditional power plants and prefer not to face competition from new entrants.[19] Renewable share started to increase noticeably in the EU and US in the early 2000s, but Japan's share was essentially flat. Japan's renewable share has been increasing since the Fukushima disaster, reflecting

19. Kameyama, *Climate Change Policy in Japan*: 131.

FIGURE 2. Cross-National Renewable Energy Share Excluding Hydropower, 1990–2017



NOTE: Renewables includes geothermal, solar, tide, wind, and biofuels and waste. OECD includes Japan, US, and EU.
DATA SOURCE: International Energy Agency, "World Energy Statistics and Balances," 2017.

the shutdown of nuclear energy as well as the feed-in tariff implemented by the DPJ. However, even with the recent increase, Japan's renewable energy share remains well below that of Western countries, and the gap is not closing.

Table 1 lists major energy legislation enacted during Abe's tenure. The Abe government has been active in passing energy-related legislation covering issues such as energy efficiency, climate change, electricity distribution, and nuclear power. Rather than going through each specific bill, we will focus on five policy areas with high political and substantive salience in which Abe has made significant policy changes: electricity deregulation, reform of the feed-in tariff scheme, hydrogen fuel cells, nuclear regulation, and climate change policy.

Electricity Deregulation

The Abe government has promoted deregulation of the electricity retail market as a core objective, listing it as a priority under the "third arrow" of

TABLE 1. Energy Legislation Enacted by the Abe Government

Date	*Legislation*
05/2013	Partial Revision of the Order for Enforcement of the Act on the Rational Use of Energy
05/2013	Partial Revision of the Act on Promotion of Global Warming Countermeasures
11/2013	Act for Partial Revision of the Electricity Business Act and Other Related Acts
11/2013	Rural Renewable Energy Law
06/2014	Act for Partial Revision of the Electricity Business Act and Other Related Acts
11/2014	Partial Revision of the Act on the Japan Environmental Storage and Safety Corporation
11/2014	Act on the Implementation of the Convention on Supplementary Compensation for Nuclear Damage
11/2014	Act for the Partial Revision of the Act on the Nuclear Damage Compensation and Decommissioning Facilitation Corporation
06/2015	Act for Partial Revision of the Electricity Business Act and Other Related Acts
07/2015	Building Energy-Saving Law
03/2016	Act for Partial Revision of the Act on the New Energy and Industrial Technology Development Organization (NEDO Act)
05/2016	Amendment Bill to the Spent Nuclear Fuel Reprocessing Implementation Act
05/2016	Partial Revision of the Act on Promotion of Global Warming Countermeasures
06/2016	Act on Special Measures Concerning Procurement of Electricity from Renewable Energy Sources by Electricity Utilities
11/2016	Act for Partial Revision of the Act on the Japan Oil, Gas and Metals National Corporation, Independent Administrative Agency
04/2017	Partial Revision of the Act on the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors
05/2017	Act for the Partial Revision of the Act on the Nuclear Damage Compensation and Decommissioning Facilitation Corporation

SOURCE: By authors

Abenomics.[20] The intent is to increase competition in the retail power sector and reduce prices for consumers. Electricity market deregulation began in Japan in 1995 with an amendment to the Electricity Utility Industry Law to allow independent producers of electric power.[21] Deregulation of electricity markets continued throughout the next decade, with the establishment of

20. See e.g. Cabinet Office, "Yawaraka Seicho Senryaku: Abenomics wo Motto Mijikani" [Slow growth strategy: bringing Abenomics closer], May 2015.

21. Nan Wang and Gento Mogi, "Deregulation, Market Competition, and Innovation of Utilities: Evidence from Japanese Electric Sector," *Energy Policy* 111 (2017): 403–13.

a wholesale market for electricity in 2003 and a steady increase in users eligible to access the deregulated markets (large factories in 2003, mid-size factories in 2004, and small factories in 2005).[22] The expansion faltered after the DPJ's electoral victory in 2009 and the subsequent Fukushima disaster, but was revived after Abe assumed power. In April 2016, all residential users were granted access to deregulated markets, giving consumers a choice beyond Japan's 10 regional power monopolies for the first time.

On the LDP's future agenda is decoupling electricity transmission and distribution to allow all power retailers access to both.[23] Traditionally, electricity generation, retail, and transmission have been controlled by vertically integrated regional monopolies. In 2020, however, they will be required to operate separately. In other words, a producer of electricity will no longer be permitted to also own transmission infrastructure or to sell electricity to consumers. With generation decoupled from transmission, a regional monopoly will no longer be able to discriminate against electricity produced by rival generators. With generation decoupled from retail, a producer with market power should no longer be able to discriminate against other retailers.

The goal of these reforms is to introduce competition and to lower electricity prices for Japanese producers and consumers. Some observers have noted that consumer adoption of energy suppliers other than major utilities remains limited, and that prices have yet to fall significantly.[24] But, to our knowledge, a full empirical examination of the results of the market deregulation has not yet been performed, and full liberalization will not occur until transmitters can no longer discriminate against alternative generators.

Reform of Feed-In Tariffs

Although the DPJ government was generally characterized by "political change without policy change,"[25] one exception was the feed-in tariff scheme adopted by Prime Minister Kan in the aftermath of the 2011 disaster. Kan

22. Daiki Nakajima, "Japan's Energy Market Reform: Full Retail Choice in Electricity Market," Japan External Trade Organization, 2015.

23. Wang and Mogi, "Deregulation, Market Competition, and Innovation."

24. "Japan's Electricity Deregulation Not Moving Needle Yet," *Nikkei Shinbun*, June 4, 2016.

25. Phillip Y. Lipscy and Ethan Scheiner, "Japan under the DPJ: The Paradox of Political Change without Policy Change," *Journal of East Asian Studies* 12:3 (2012): 311–22; Kenji E. Kushida and Phillip Y. Lipscy, *Japan under the DPJ: The Politics of Transition and Governance* (Stanford, CA: Brookings Institution / Shorenstein APARC, 2013).

insisted that passing this legislation would be one of three preconditions for his stepping down from office, and it was adopted in August 2011 with unanimous support even in the upper house, which the DPJ no longer controlled.[26]

A feed-in tariff encourages the adoption of renewable energy by allowing electricity generated from renewables to be sold back into the grid at an above-market rate. The Japanese scheme proved remarkably successful at promoting renewable power generation, particularly solar. Between 2011 and 2015, solar power generation grew more than fivefold, leading some to declare the formation of a "solar-power bubble."[27]

However, this rapid adoption of renewable energy came with several costs. The increasing size of the renewables market meant Japanese utilities were being forced to buy ever-larger quantities of electricity at premium rates, and these costs were largely passed on to consumers through higher electricity prices. By 2015, the premium was estimated to be about 700 yen (US$ 6) per month for an average Japanese household.[28] The feed-in tariff also came under criticism from Japanese manufacturers, who saw higher electricity prices as a competitive disadvantage.

In June 2016, the Abe government reformed the scheme to make renewable power generation more difficult and less lucrative, and the measures were implemented in April 2017. The new legislation introduced cumbersome regulations that made new installations more difficult; existing energy producers that failed to follow the new guidelines lost their right to sell power into the grid at a premium. The legislation also sharply reduced the feed-in tariff rate, with the stated goal of reducing it to the residential electricity rate by 2019 and the spot market rate as soon as possible after 2020.[29] This policy change was devastating for Japan's nascent solar power sector, leading to the abandonment of planned solar installations of 28 million kilowatts, equivalent to about 10% of household electricity consumption.[30]

26. House of Councillors, National Diet of Japan, *Honkaigi Tohyo Kekka* [Regular session voting results], <http://www.sangiin.go.jp/japanese/joho1/kousei/vote/177/177-0826-v004.htm>.

27. "Taiyoko Hatsuden, Utage no Ato" [Solar power generation, after the banquet], *Nikkei Shinbun*, May 13, 2017.

28. Ministry of Economy, Trade and Industry, "Kaisei FITho ni Kansuru Chokuzen Setsumeikai" [Explanation of the revision of the FIT law], February 3, 2017, <http://www.enecho.meti.go.jp/category/saving_and_new/saiene/kaitori/dl/kaisei/fit_2017setsumei.pdf>.

29. Ibid.

30. "Taiyoko Hatsuden, Utage no Ato" [Solar power generation, after the banquet], *Nikkei Shinbun*, February 13, 2017.

Hydrogen Society

The Abe government has taken a more proactive stance on fuel cells than on other environmentally friendly technologies. Fuel cells, which run on hydrogen combined with oxygen from the air, have long been seen as a cleaner alternative to fossil fuels. Unlike internal combustion engines, fuel cells do not directly emit greenhouse gases, and their energy efficiency tends to be higher due to the absence of moving parts.[31] The basic technology has been available for nearly two centuries, but it has been limited to niche uses due to high production costs and the volatile nature of hydrogen.

The Abe government has actively promoted fuel cells. In 2013, METI established the Council for a Strategy for Hydrogen and Fuel Cells, and this was followed by the 2014 publication of a Strategic Road Map for Hydrogen and Fuel Cells.[32] In 2008 Honda became the first major automotive company to bring a fuel cell vehicle to market with the FCX Clarity, and Toyota followed with the 2014 Mirai. In 2015, Abe declared that Japan was seeing "the dawn of a true hydrogen society."[33] METI has developed an ambitious plan to support putting 40,000 fuel cell vehicles on the road in time for the 2020 Tokyo Olympics.[34]

Many outside observers are skeptical about fuel cells. Electric vehicles have many of the advantages of fuel cell cars without the need for expensive new infrastructure and technological development.[35] Hydrogen fuel must be derived from other sources and transported to fueling stations, which diminishes its environmental advantages. This problem is particularly acute for Japan, which has few domestic natural resources and hence must inefficiently import hydrogen on container vessels from distant locations such as Australia and Brunei.[36] Calculations cited by METI indicate that fuel cell

31. US Department of Energy, "5 Fast Facts about Hydrogen and Fuel Cells," October 4, 2017, <https://energy.gov/eere/articles/5-fast-facts-about-hydrogen-and-fuel-cells>.

32. Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry, "METI Has Compiled a Strategic Road Map for Hydrogen and Fuel Cells," June 24, 2014, <http://www.meti.go.jp/english/press/2014/0624_04.html>

33. "Betting on Hot Air," *The Economist*, May 9, 2015.

34. Umair Irfan, "Japan Thinks Hydrogen Will Rule. Does Anyone Else?" *Sasakawa USA Blog*, May 22, 2017, <https://spfusa.org/sasakawa-blog/japan-thinks-hydrogen-will-rule-anyone-else/>.

35. Chisaki Watanabe, "Japan Is at Odds with Elon Musk over Hydrogen Fuel Cells," *Bloomberg*, February 9, 2017.

36. METI, "Suiso Kihon Senryaku" [Basic hydrogen strategy], December 16, 2017, <http://www.cas.go.jp/jp/seisaku/saisei_energy/kaigi_dai2/siryou1-1.pdf>.

automobiles will emit only slightly less CO_2 than gasoline-hybrid vehicles on a "well to wheel" basis (emissions over the entire lifespan of the vehicle, including production, manufacture, distribution, transportation, etc.), with large improvements possible only if the hydrogen is derived from renewable sources.[37]

The Abe government's support for fuel cells largely conforms to its pattern of policymaking in other issue areas, prioritizing economic growth over environmental objectives. Japanese automobile makers, particularly Toyota and Honda, are at the forefront of fuel cell technology, while they have lagged behind in the electric vehicle market, ceding leadership to foreign competitors such as China's BYD, General Motors, and Tesla.[38] The share of electric vehicles in the Japanese market (0.6% in 2016) lags behind both China (1.4%) and the US (0.9%), not to mention aggressive promoters like Norway (28.8%).[39] Because the main impediments to fuel cell automobiles are cost and the absence of fueling infrastructure, government support on these two fronts ultimately benefits Japanese automakers. Providing support to the nascent market for fuel cell vehicles is essentially industrial policy under the guise of environmentalism.

Discussion

The policies discussed above illustrate the logic of Abenergynomics: the use of energy policy to stimulate Japanese economic growth. On the face of it, deregulation of electricity distribution and scaling back of feed-in tariffs reflect contradictory priorities: the former challenges incumbent utilities dependent on traditional power sources and supports new entrants, while the latter does precisely the opposite. However, both policies lower electricity prices for end users, and hence theoretically put more money in the pockets of consumers and industry. Abe's enthusiastic support for hydrogen fuel cells is essentially industrial policy in support of Japanese automakers.

37. METI, "Suiso Shakai no Jitsugen ni Muketa Torikumi ni Tsuite" [Looking toward the implementation of a hydrogen society], February 24, 2015.

38. "Electric Cars Not Ready for Mass Production Yet: Toyota Chairman to Spiegel," *Reuters*, November 17, 2017; Michael Barnard, "6 of 10 Big Electric Car Companies Are in China," *CleanTechnica*, November 23, 2017.

39. International Energy Agency, "Global EV Outlook," Paris, 2017: Table 10.

THE PARADOX OF PRO-NUCLEAR POLICY AFTER FUKUSHIMA

This section examines the Abe government's nuclear policy. Despite overwhelmingly negative public opinion toward nuclear power in post-Fukushima Japan, the LDP has embraced a strikingly pro-nuclear policy platform. This fits into the general theme of Abenergynomics: nuclear restarts provide a stable, cheap source of electricity in the short and medium term, even if longer-term concerns about nuclear safety remain contested. Abe's pro-nuclear policy was viable despite lingering public skepticism in large measure due to the collapse of the DPJ and the subsequent failure of opposition consolidation. The nature of the "nuclear village" has evolved, as the Fukushima disaster undermined the credibility of large utility companies and led to more stringent government oversight. However, compared to the DPJ, the Abe government has moved nuclear policy significantly back toward the status quo ante.

Abe's Nuclear Policy

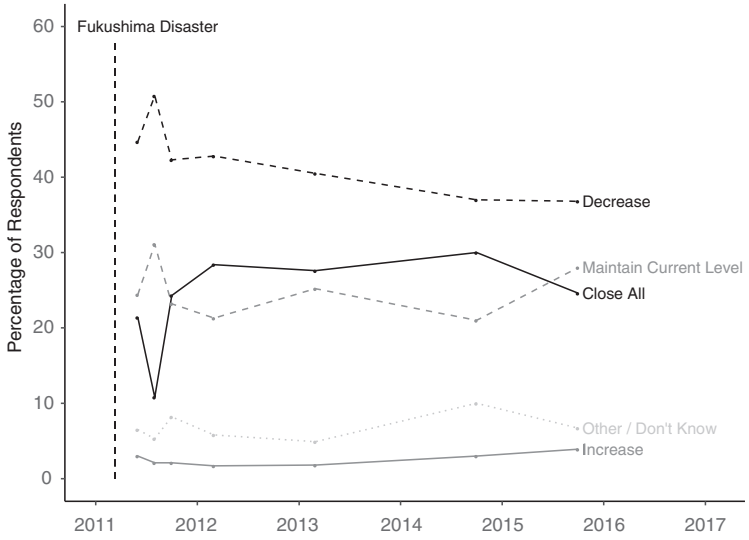
The LDP has adopted a conspicuously pro-nuclear policy since the Fukushima disaster. As Figure 3 shows, the Japanese public has been deeply skeptical of nuclear power since 2011, with around 40% supporting a reduction in nuclear power plants and 30% supporting the closure of all plants. Seeking to capitalize on this anti-nuclear sentiment, all major opposition parties have proposed a complete phase-out of nuclear energy. The LDP has stood apart, proposing that Japan receive roughly 20%–22% of its electricity supply from nuclear power by 2030. Although this represents a reduction from pre-Fukushima planning, which sought to push nuclear power above 30%,[40] it will require restarting most of Japan's shuttered nuclear plants, a tall order given current political, regulatory, and technical constraints.

Prioritization of Economic Growth over Appeals to Anti-Nuclear Sentiment

Japan's 1994 electoral reform increased the incentives for politicians to make broad appeals to consumers, reducing the viability of policies that raise

40. World Nuclear Association, "Nuclear Power in Japan," 2017, <http://www.world-nuclear.org/information-library/country-profiles/countries-g-n/japan-nuclear-power.aspx>.

FIGURE 3. Public Opinion on Nuclear Power in Japan: "What do you think should be done with the current number of nuclear plants in Japan?"



DATA SOURCE: NHK Research, "Genpatsu to enerugi ni kansuru iken chousa" [Public opinion poll on nuclear and energy], 2011–2015.

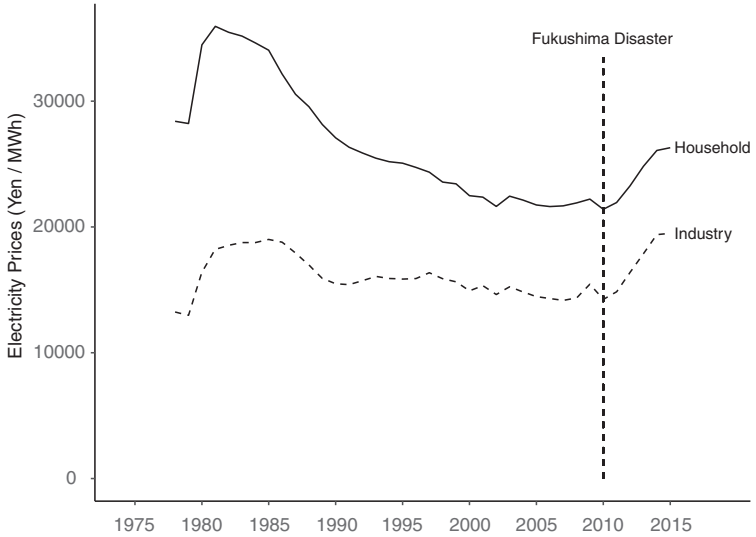
consumer energy prices.[41] However, as Figure 4 shows, consumer electricity prices rose sharply after the Fukushima disaster, increasing by approximately 23% between 2010 and 2015 due to Japan's increasing dependence on imported fossil fuels. There is an inherent tension between responding to anti-nuclear sentiment and reducing energy costs for consumers. The Abe administration has been pressured by Japan's businesses to lower electricity prices, and Keidanren, the Japanese business federation, emerged as a strong supporter of nuclear restarts, stating that "the process of restarting nuclear power plants must be accelerated to a maximum extent" and arguing that restarts are necessary to maintain economic competitiveness.[42]

Abe has also promoted the export of Japanese commercial nuclear technology. The government signed a US$ 22 billion export deal for the

41. Phillip Y. Lipscy, *The Electoral Politics of Energy*, working paper, Stanford University; Frances McCall Rosenbluth and Michael F. Thies, *Japan Transformed: Political Change and Economic Restructuring* (Princeton, NJ: Princeton University Press, 2010).

42. Keidanren (Japanese Business Federation), "A Proposal for Future Energy Policy," October 15, 2013, <http://www.keidanren.or.jp/en/policy/2013/089.html>.

FIGURE 4. Real Japanese Electricity Prices, 1978–2015



NOTE: Yearly data. Nominal prices converted to real 2010 yen using the Japanese producer price index for the industrial sector and the consumer price index for the household sector. Dashed vertical line is placed at 2010 as this was the last year of data unaffected by the March 11, 2011 disaster.
DATA SOURCE: International Energy Agency, "Energy Prices and Taxes," 2017.

construction of Turkey's second nuclear reactor in 2013, recently reached a civil nuclear agreement with India, and is in discussion with Saudi Arabia over a similar arrangement.[43] Restarting Japan's nuclear plants is seen by Abe as a necessary advertisement for the facilitation of these deals. Indeed, Vietnam pulled out of a US$ 11 billion deal in 2016 due to safety fears.

Post-Fukushima Regulatory Reform and LDP Pushback

In the wake of the Fukushima nuclear disaster, many observers pointed to a lack of regulatory oversight as a key cause of the accident. Some blamed "regulatory capture" by the nuclear power industry, which resulted in subpar safety regulations.[44] Japan's nuclear regulatory apparatus was overhauled by

43. Tom Corben, "Japan's Nuclear Exports: Risky Business," *The Diplomat*, December 22, 2017, <https://thediplomat.com/2017/12/japans-nuclear-exports-risky-business/>.

44. See e.g. Charles D. Ferguson and Mark Jansson, "Regulating Japanese Nuclear Power in the Wake of the Fukushima Daiichi Accident," Federation of American Scientists, Washington, DC,

the DPJ to increase the independence of regulatory authorities. Numerous regulatory deficiencies were identified and addressed.

First, in September 2012, the former Nuclear and Industrial Safety Agency (NISA) was abolished and replaced with the new Nuclear Regulatory Authority (NRA) within the MOE. The NRA both creates new nuclear regulations and determines whether current Japanese plants can resume operations. NISA was criticized for conflicts of interest due to its location within METI, which is responsible for the promotion of nuclear power. Only a year before the Fukushima disaster, METI released a plan to supply 70% of Japan's energy via nuclear power.[45] Prime Minister Kan's initial "Basic Policy on the Reform of an Organization in Charge of Nuclear Safety Regulation" included "the separation of nuclear power regulation and promotion" as its first suggested reform.[46] A second advisory body under the administration of the Cabinet Office, the Nuclear Safety Commission, was also abolished and consolidated under the NRA.[47] The commission ostensibly had the role of creating new nuclear safety rules, but as an advisory body, it could not actually force NISA to adopt new standards.

Widespread *amakudari* (retired government officials moving to the private sector) was also blamed for regulatory capture. Amakudari is not necessarily pernicious: firms may hire former regulators because regulators possess valuable skills, particularly in an industry like nuclear power, with high skill barriers and few opportunities for outside employment. However, lucrative positions offered to retired METI bureaucrats by the power sector created an obvious conflict of interest. The DPJ attempted to increase transparency by requiring the creation of a list of former regulators who have been reemployed in the nuclear industry.[48] It also passed a bill banning former ministry

2013; Jeff Kingston, "Japan's Nuclear Village," in Jeff Kingston (ed.), *Critical Issues in Contemporary Japan* (New York: Routledge, 2013).

45. "Lessons from Fukushima," *East Asia Forum*, March 7, 2016, <http://www.eastasiaforum.org/2016/03/07/lessons-from-fukushima/>.

46. METI, "Basic Policy on the Reform of an Organization in Charge of Nuclear Safety Regulation," 2010, <http://www.meti.go.jp/english/earthquake/nuclear/iaea/pdf/20110911/annex4.pdf>.

47. Ferguson and Jansson, "Regulating Japanese Nuclear Power"; Jeff Kingston, "Japan's Nuclear Village," *Asia-Pacific Journal*.

48. Ferguson and Jansson, "Regulating Japanese Nuclear Power"; Jeff Kingston, "Japan's Nuclear Village," *Asia-Pacific Journal*.

employees from returning to employment in their respective ministries after working for the NRA.[49]

Each of these regulatory reforms occurred under DPJ rule. Given that the DPJ sought to eventually eliminate nuclear power in Japan, and that the Abe administration seeks to restore Japan's commercial nuclear production, it is no surprise that the LDP has focused on undoing some of the DPJ's reforms. Abe and other senior LDP lawmakers have publicly called for swift decision-making on nuclear restarts, a proposition at odds with the NRA's goal of ensuring safety at all costs. The Abe-led LDP has therefore pushed to reverse or limit some of the regulatory reforms instituted after the Fukushima disaster as it seeks to re-cement nuclear power in Japan's energy mix.

Some of these efforts took place while the DPJ was still in power. While the DPJ proposal to place the NRA within the MOE ultimately passed, the LDP proposed a separate NRA structure that would have created an independent body outside the umbrella of any ministry. While this might have created a more autonomous organization, critics feared that such a body would fall prey to pro-nuclear appointments and capture. The MOE has consistently promoted renewable energy and clashed with METI over the implementation of post-Fukushima energy policy. For example, after the MOE in 2015 revealed an estimate of a potential Japanese energy future including 35% renewable energy, METI Minister Miyazawa Yoichi stated that the plan was not "feasible" and "could not be used as the basis for the energy mix."[50] A completely independent body might therefore have been more vulnerable to METI and industry influence.

Three months after the Fukushima disaster, the DPJ established an Energy and Environment Council to debate future energy policy changes and formulate a national energy plan.[51] The council was chaired by the minister of state for national policy, effectively eliminating METI's former control over national energy policy. Nevertheless, METI created its own Advisory Committee for National Resources and Energy, even if it could no longer formulate national energy policies. The Energy and Environment Council ultimately recommended a phase-out of nuclear power by 2040, a policy

49. Daniel Aldrich, "Post-Fukushima Nuclear Politics in Japan, Part I," *The Monkey Cage*, April 1, 2013, <http://themonkeycage.org/2013/04/post-fukushima-nuclear-politics-in-japan-part-i/>.

50. "LDP Proposes Future Energy Policy Heavy on Nuclear Power," *Japan Times*, April 7, 2015.

51. Yasuo Takao, *Japan's Environmental Politics and Governance: From Trading Nation to Eco-nation* (Abingdon: Routledge, 2016).

Keidanren, METI, and the LDP all opposed. Upon returning to power in December 2012, the LDP promptly abolished the council and placed METI back in charge of the creation of future energy plans.[52] National energy policy was thereafter solely debated and formulated within METI's Advisory Committee for National Resources and Energy, and most anti-nuclear members of the committee were removed from their positions.[53]

Some LDP NRA appointments also came under scrutiny from anti-nuclear advocates and proponents of regulatory reform. For example, in 2014, the LDP nominated and appointed Tanaka Satoru, a university professor of nuclear engineering and former Japan Atomic Industrial Forum official who had received payments from TEPCO, Hitachi-GE, and engineering firm Taiheiyo Consultant Co. in the three years prior to his nomination. By contrast, none of the five original NRA commissioners nominated in 2012 received payments of any kind (including for academic research) from a utility in the three years before their appointment. Tanaka's appointment was symbolic to anti-nuclear advocates, as he was assigned to replace seismologist Shimazaki Kunihiko, whose assessment of fault lines under Japan Atomic Power's Tsuruga plant and Kansai Electric Power's Ōi plant effectively foreclosed early restarts. Utility officials reportedly described Shimazaki's retirement as a "small victory."[54] In fact, Shimazaki has continued to argue that Kansai Electric's calculation methods may underestimate the maximum size of a temblor at the Ōi plant, a claim his successor, Tanaka, has called "groundless."[55]

Finally, despite the NRA's more stringent safety criteria, the traditional "nuclear village" of the LDP, METI, utilities, and Keidanren has been partially revived by the LDP. As mentioned, on returning to power, the LDP immediately abolished the DPJ's independent Energy and Environment Council and returned control of national energy policy to METI. The LDP, Keidanren, and utilities have pushed for quick nuclear restarts to reduce electricity prices, lower production costs, and increase the profitability of beleaguered utilities.

52. World Nuclear Association, "Nuclear Power in Japan."

53. Takao, *Japan's Environmental Politics and Governance.*

54. "Abe Picks for NRA 'Undermine' Nuclear Watchdog's Independence," *Japan Times*, June 11, 2014.

55. "Local Consent Needed Despite OK to Restart Oi Nuclear Plant," *Asahi Shimbun*, February 23, 2017; "Quake Scale May Be Underestimated in Calculations for Nuclear Plants: Ex-NRA Official," *Mainichi*, June 17, 2016.

Discussion

Despite public skepticism about nuclear power in post-Fukushima Japan, the Abe government has focused on restarting nuclear plants and retaining nuclear power as a permanent component of Japan's energy mix. Nuclear power is an essential part of Abenergynomics due to its ability to supply cheap electricity in the short term and relieve Japan of excessive dependence on foreign energy sources. For sure, the Abe government's nuclear policy does not represent a complete return to the status quo ante. Nuclear regulation under the NRA is more independent than under NIRA, and it is doubtful that nuclear energy will ever return to being 30% of Japan's energy mix. However, it is also clear that the Abe government has actively sought to reverse elements of the stringent nuclear regulatory policies put in place by the DPJ.

FROM CLIMATE CHANGE LEADER TO CLIMATE CHANGE VILLAIN

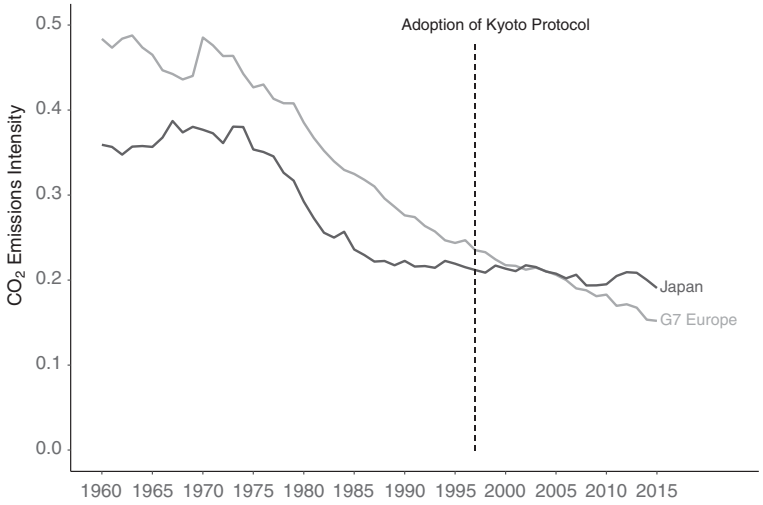
In this section, we consider the Abe government's approach to greenhouse gas emissions and international climate change negotiations. Japan's disappointing track record on climate change predates Abe, and the Fukushima disaster sharply increased Japan's reliance on fossil fuels. However, Abe has generally pursued policies that lower energy prices in order to boost economic growth, even as this leads to higher greenhouse gas emissions and international criticism.

Japanese Climate Change Policy Prior to Abe

Japan was an early leader in global climate change negotiations. Japan's aggressive response to the 1970s oil shocks established the country as a front runner in energy conservation and rationalization. Japan's response to the oil shocks reflected "efficiency clientelism," raising the cost of energy consumption for consumers while using the revenues or rents to reward concentrated political supporters of the LDP.[56] As concerns over greenhouse gases and climate change intensified in the 1980s and 1990s, Japanese policymakers saw an opportunity to assume global leadership in the new post–Cold War international order. Measures to mitigate greenhouse gas emissions would

56. Phillip Y. Lipscy, *The Institutional Politics of Energy and Climate Change,* unpublished book manuscript, Stanford University.

FIGURE 5. CO_2 Emissions Intensity (Mt CO_2 / 2010 US$ billions), Japan vs. European G7 Countries, 1960–2015



NOTE: CO_2 emissions intensity is the amount of CO_2 emitted by a country per unit of economic output. Japan achieved a sharp reduction in CO_2 emissions in the aftermath of the 1970s oil shocks, but progress stagnated just as concerns over global climate change intensified. The European G7 countries are France, Germany, Italy, and the UK.
DATA SOURCE: International Energy Agency, "World Energy Statistics and Balances," 2017.

also benefit Japanese firms, which had developed a competitive advantage in energy conservation technologies, such as hybrid automobiles and energy-efficient household appliances.

It was therefore natural for Japan to assume leadership in the UNFCCC negotiations that culminated in the 1997 Kyoto Protocol. Japanese negotiators accepted an aggressive target of a 6% reduction in greenhouse gas emissions to build support for the agreement. Japanese firms took advantage of the landmark agreement to showcase their leading technologies: Toyota accelerated production of its Prius hybrid to bring the automobile to market in time for the Kyoto meeting.[57]

However, Japan's track record under the Kyoto Protocol was deeply disappointing. Figure 5 depicts carbon intensity for Japan against the average of the European G7 countries. Carbon intensity is how much CO_2 a country

57. "Toyota Steps on the Gas: A Leaner, Tougher Company Gambles on Global Leadership with New 'Eco-Car'," *Washington Post*, December 14, 1997.

emits per unit of GDP. For many years, Japan's economy stood apart for its low carbon intensity, and significant reductions in intensity were achieved after the 1970s oil shocks. However, improvements essentially stopped after the 1990s, a period during which global climate change concerns intensified. As the figure shows, European countries did not experience comparable stagnation and now have lower carbon intensity than Japan. This reflected institutional changes in Japan, such as electoral and administrative reform, which rendered Japan's earlier model of energy efficiency unsustainable.[58]

Japanese emissions actually *rose* during the Kyoto commitment period rather than declining 6% as envisioned. In absolute terms, Japan was the worst performer under the Kyoto Protocol: even accounting for land-use changes and forestry, Japan exceeded its target by 44 Mt CO_2e (metric tons of carbon dioxide equivalent).[59] Japan was able to meet its international treaty obligations only by making heavy use of flexibility mechanisms, effectively transferring financial resources to countries such as the Czech Republic, Ukraine, and Estonia to take credit for their emissions reductions.

When it assumed power in September 2009, the DPJ government was sharply critical of the LDP's performance on climate change. Prime Minister Hatoyama Yukio surprised the international community and many Japanese policymakers by announcing that Japan would reduce CO_2 emissions by 25% from 1990 levels by 2020. This goal was widely ridiculed as unrealistic, and the DPJ ultimately could not develop concrete policies to follow through on Hatoyama's ambitious pledge. In fact, many signature DPJ policies—elimination of highway tolls, reduction in gasoline taxes—undercut the emissions goal by encouraging greater consumption of fossil fuels. Ultimately, the DPJ made essentially no meaningful domestic progress in reducing emissions.

Furthermore, the DPJ government stunned the international community in 2010 by announcing that it would categorically oppose the second commitment period of the Kyoto Protocol. Once a leader in international climate change cooperation, Japan was disparaged for being a "fossil" and

58. Phillip Y. Lipscy and Lee Schipper, "Energy Efficiency in the Japanese Transport Sector," *Energy Policy* 56 (2013): 248–58.

59. Igor Shishlov, Romain Morel, and Valentin Bellassen, "Compliance of the Parties to the Kyoto Protocol in the First Commitment Period," *Climate Policy* 16:6 (2016): 768–82.

a climate change "villain."[60] The 2011 Fukushima disaster exacerbated Japan's predicament by sharply increasing the country's dependence on imported fossil fuels.

The Abe Government's Climate Change Policy

During his first, short-lived stint as prime minister in 2006–07, Abe took some steps to promote Japanese leadership on climate change, declaring to the Diet that he would set up a "21st Century Environmental Nation Strategy." The MOE announced that Japan would play a leadership role in post-Kyoto climate negotiations.[61] By the time Abe reassumed power in 2012, the situation had changed considerably. Far from playing a leadership role, Japan had exited the Kyoto Protocol, and the aftermath of the Fukushima Daiichi disaster shifted attention away from climate change toward more-immediate priorities.

In 2012, Abe declared that he would "reconsider from zero start" (i.e., from scratch) the ambitious CO_2 reductions target espoused by the DPJ government: a 25% reduction in CO_2 from 1990s levels by 2020.[62] In 2013, the cabinet formally abandoned this goal and announced a new target equivalent to a 3% *increase* from 1990s levels.[63] Japan came under international criticism for what was widely perceived as an unambitious emissions target. As mentioned, the Abe government also slowed the adoption of solar power generation in Japan by altering the feed-in tariff scheme.

Under the Paris Agreement of 2015, Japan was obligated to publish intended nationally determined contributions (INDC) outlining its proposed emissions reduction plan. Abe was not personally enthusiastic about climate change mitigation, but he was unwilling to give up Japan's status as an important contributor to global climate change efforts. To this end, he directed government ministries to produce an INDC that would lower electricity costs in

60. "Japan Said 'Cast as Villain' at Cancun Climate Talks," *BBC*, December 12, 2010; "'Fossil' Japan Seen as Obstacle in Cancun," *Reuters*, December 2, 2010.

61. Ministry of the Environment, "21 Seiki Kankyou Rikkoku Senrayku" [21st Century Environmental Nation Strategy], <https://www.env.go.jp/guide/info/21c_ens/>.

62. See e.g. Cabinet Office, "Nihon Saiko Senryaku: Japan is BACK" [Japan revival strategy: Japan is BACK], June 14, 2013.

63. Kameyama, *Climate Change Policy in Japan*: 139–40. The Japanese government changed the base year to 2005 to portray this target as an emissions reduction.

Japan while making Japan's target appear comparable to those of the EU and the US.[64]

To reconcile these contradictory goals, Japanese bureaucrats produced an energy mix that relied heavily on coal, which reduced anticipated electricity costs, while choosing a base year—2013—that would paint Japan's headline emissions reduction number in the most favorable light possible: a 26% reduction by 2030, compared to 18%–21% for the US and 24% for the EU. Compared to the 1990 base year in the Kyoto Protocol, the number was far less impressive, putting Japan (18%) far behind the EU (40%) and in a range comparable to the US (14%–16%).[65] Furthermore, Japan's INDC has been criticized for relying on accounting gimmicks, such as excluding land use, land-use change, and forestry from the base year but including it in the target year to inflate the headline emissions reduction level.[66]

Abe's government has also come under criticism for encouraging the construction of new coal-fired power plants. The Abenomics growth strategy accelerated the construction of fossil fuel power plants: for example, the government reduced the environmental assessment period for new construction from three years to one.[67] Under Abe, Japan became the only G7 country pursuing the construction of new coal-fired plants.[68] The government has also pushed back against international efforts to limit foreign aid funding of coal-fired plants in developing countries, arguing that coal represents the cheapest source of electricity.[69] This policy also benefits Japanese firms, which are at the forefront of energy-efficiency technology for coal-fired plants.

One indicator of climate change response is provided by Germanwatch, an NGO that ranks countries' performance and policies on climate change mitigation. Its inaugural Climate Change Performance Index, in 2006, ranked Japan 34th out of 53 countries. On the eve of Abe's assumption of power in 2012, Japan was 40th out of 58—six places lower—but this was

64. Ibid.: 150.
65. Ibid.: 149.
66. Climate Action Tracker, "Japan," <http://climateactiontracker.org/countries/japan.html>.
67. Cabinet Office, "Yawaraka Seicho Senryaku."
68. Chris Littlecot, "Snapshot of Japan Coal Phase Out Progress," *E3G*, October 21, 2015, <https://www.e3g.org/library/snapshot-of-japan-coal-phase-out-progress>.
69. Kameyama, *Climate Change Policy in Japan*: 155, 159–60.

partly attributable to five more countries being included in the ranking. In the 2018 ranking, five years into Abe's tenure, Japan was 47th out of 57.[70]

This poor performance was not due solely to consequences of the Fukushima disaster. In the same 2018 assessment, Japan was 51st out of 57 in the "climate policy" component of the ranking, which focuses on the assessment of national policy measures by an expert survey.[71] International experts assessed Japan's climate change mitigation policies under Abe as less ambitious than those of Australia, where conservative politicians are often openly skeptical of climate change science.[72] (Shortly after leaving office, Australia's former prime minister, Tony Abbott, likened climate change mitigation policies to "primitive people . . . killing goats to appease the volcano gods."[73]) The experts, the report said, "see the continued increase in the number of coal-fired power plants as becoming a major threat to achieving Japan's already weak 2030 mitigation target."[74]

Discussion

Japan's climate change policy has failed to live up to the leadership ambitions it had in the 1990s. In part, this reflects long-term factors that preceded Abe. Japan also achieved high levels of energy efficiency relatively early on, making incremental mitigation relatively more costly in international comparison.[75] However, even accounting for these factors, it is clear that Abe has placed a low priority on climate change mitigation, consistently favoring policies that reduce domestic energy prices even if they raise CO_2 emissions.

CONCLUSION

The Abe government's energy policy has reflected both continuity and disjuncture from previous periods. In several respects, Abe's assumption of

70. Jan Burck, Franziska Marten, Christoph Bals, Niklas Höhne, Carolin Frisch, Niklas Clement, and Kao Szu-Chi, "Climate Change Performance Index 2018," Germanwatch, Bonn.

71. Ibid.

72. "Climate Change 'Exaggerated', Says Former Australian PM," *The Guardian*, November 6, 2013.

73. "Tony Abbott Needs to Explain U-Turn on Climate Change, Julie Bishop Says," *The Guardian*, October 12, 2017.

74. Burck et al., "Climate Change Performance Index 2018."

75. David G. Victor, Keigo Akimoto, Yoichi Kaya, Mitsutsune Yamaguchi, Danny Cullenward, and Cameron Hepburn, "Prove Paris Was More Than Paper Promises," *Nature* 548 (2017): 25–27.

power represented a return to traditional LDP energy policymaking, only briefly perturbed by the DPJ in 2009–12: the prioritization of economic growth over environmental issues, and hence the greater bureaucratic influence of METI over the MOE; rejection of the DPJ's radical post-Fukushima environmental policies, such as the 25% emissions reduction target and anti-nuclear policy; and a relative shift back toward Japan's traditional energy mix in favor of nuclear and coal at the expense of renewables.

Abe's government also faced the same constraints that left the DPJ's energy policy inchoate. Japan's slow economic growth and dire public finances limit the scope for ambitious policy initiatives. Japanese industry is struggling under international competitive pressures, and maintains a credible threat of international relocation, making policymakers hesitant to impose stringent energy conservation policies. The Fukushima disaster sharply increased Japan's dependence on fossil fuels and made new nuclear power plant construction a nonstarter for the foreseeable future. Japan's current electoral system makes it difficult to raise the price of energy for the general public, limiting policy tools to encourage energy conservation and mitigate greenhouse gas emissions.

Nonetheless, we should not exaggerate the political constraints faced by Abe. His government came to power with greater leeway to pursue an aggressive climate change agenda, compared to its predecessors. The collapse of the DPJ and subsequent splintering of the opposition under an electoral system dominated by single-member districts meant the LDP could reliably return to power despite adopting at least some policy positions out of favor with Japanese voters. Abe chose to use this leeway primarily to reinvigorate nuclear power, which had become deeply unpopular after Fukushima. Under a different prime minister, it is conceivable that the political opportunity afforded by opposition failure could have been used for other priorities, such as accepting higher electricity prices for the more vigorous promotion of renewables, a national cap-and-trade system, or a more meaningful carbon tax.

Abe's policies did not represent a complete return to traditional Japanese energy politics. The Fukushima disaster undermined the political influence and credibility of large utilities, which now face more-stringent regulatory oversight and more-meaningful competition. Although Abe watered down the DPJ's feed-in tariff scheme, the basic principles remain in place, and the government's long-term planning still foresees a significant increase in

renewable energy generation by 2030, to a level exceeding nuclear. Abe's promotion of hydrogen fuel cells and their associated infrastructure represents a gamble that few of his international counterparts are willing to take.

Abe has promoted himself as a defender of the international liberal order in the wake of President Trump's assumption of power in the US, symbolized by Japan's resuscitation of the Trans-Pacific Partnership. Similar leadership has not been forthcoming in climate change. Japan's performance on CO_2 emissions reduction is no more impressive than that of the US, despite the latter's withdrawal from both the Kyoto and Paris agreements. Japan's INDC associated with the Paris Agreement relies heavily on accounting gimmicks designed to exaggerate emissions reduction. Japan's deteriorating profile in international climate change cooperation precedes Abe. However, his government did not make a meaningful effort to reverse the tide.

What are the future prospects for energy policy in Japan? The basic preconditions for Abenergynomics are likely to remain in place in the immediate future, but the longer term is less certain. The LDP is unlikely to face a credible electoral threat in the near term. As of April 2018, Japan's opposition parties, including the two largest in the lower house—the Constitutional Democratic Party of Japan and the Party of Hope—agree on nuclear power elimination, but remain divided on a host of other issues, such as constitutional revision. These ideological and policy divides make it unlikely that Japan's current opposition parties will consolidate into an effective coalition in the near term. Certain aspects of Japan's electoral institutions may also make opposition consolidation challenging.[76] Nonetheless, as the DPJ illustrates, two-party consolidation is not impossible in Japan.

But two-party consolidation could actually exacerbate Japan's energy predicament by constraining viable policy options. For example, credible competition from a consolidated opposition could make it more difficult for the LDP to continue publicly unpopular measures like nuclear restarts and coal-fired power plant construction, increasing Japan's dependence on energy from unstable sources like the Middle East and Russia. A credible opposition

76. John M. Carey and Matthew Soberg Shugart, "Incentives to Cultivate a Personal Vote: A Rank Ordering of Electoral Formulas," *Electoral Studies* 14:4 (1995): 417–39; Ethan Scheiner, *Democracy without Competition in Japan: Opposition Failure in a One-Party Dominant State* (Cambridge: Cambridge University Press, 2006).

may also increase pressure to keep a lid on energy prices, further limiting action on climate change.

Still, it may be difficult for Japanese policymakers to sidestep international and domestic criticism over its climate change policies indefinitely. The Fukushima disaster and the election of Donald Trump have shifted attention away from Japan's disappointing track record on greenhouse gas mitigation. But the Japanese public still sees climate change as an important priority. A return to normalcy in the US could refocus attention on Japan and build greater pressure for more ambitious measures.