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# Nuclear Restart Politics: How the ‘Nuclear Village’ Lost Policy Implementation Power

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The March 2011 nuclear accident (3.11) shook Japan’s nuclear energy policy to its core. In 2012, the Liberal Democratic Party (LDP) returned to government with a pro-nuclear policy and the intention to swiftly restart nuclear power plants. In 2020, however, only six nuclear reactors were in operation. Why has the progress of nuclear restarts been so slow despite apparent political support? This article investigates the process of restarting nuclear power plants. The key finding is that the ‘nuclear village’, centered on the LDP, Ministry of Economy Trade and Industry, and the nuclear industry, which previously controlled both nuclear policy goal-setting and implementation, remained in charge of policy decision making, i.e. goal-setting, but lost policy implementation power to an extended conflict over nuclear reactor restarts. The main factors that changed the politics of nuclear reactor restarts are Japan’s new nuclear safety agency, the Nuclear Regulation Authority (NRA), and a substantial increase in the number of citizens’ class-action lawsuits against nuclear reactors. These findings highlight the importance of assessing both decision making and implementation in assessments of policy change.

**Keywords:** *Japan; 3.11; nuclear power; restarts; safety; lawsuits*

## 1. Japan’s Nuclear Politics

On 11 March 2011, the so-called triple disaster (or simply 3.11) shook Japan’s energy policy to its core. It consisted of a magnitude 9 earthquake and a resulting tsunami, which, together, caused a meltdown in three of six reactors at the Fukushima Daiichi nuclear power plant. In response, Japan experienced the largest public demonstrations in decades, a shift in public opinion, and a so-called stress test. Anti-nuclear demonstrations in Tokyo began in April 2011. They reached their zenith, in September 2011, with a 60,000-people-strong rally at Meiji Park, including Nobel Prize winner Oe Kenzaburo (Hasegawa 2014). Meanwhile, public opinion shifted towards a critical stance on nuclear power. Polls conducted by the *Yomiuri Shimbun*<sup>1</sup> showed that support for nuclear power fell from 56% in April to 24% in November 2011, while the share of critics rose from 41% to 73%<sup>2</sup> (Shibata and Tomokiyo 2014). Concerns about safety levels of nuclear reactors in Japan were not limited to

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1. The *Yomiuri Shimbun* is Japan’s daily newspaper with the widest circulation and a generally nuclear-friendly stance.
2. In the polls, participants were asked about the future role of nuclear energy for Japan’s energy supply. They were given four possible answers: (a) increase, (b) maintain, (c) decrease, and (d) phase out. In April, 10% favored an increase of nuclear power, a number that went down to 1% by November. The number of people wishing to maintain the ratio of nuclear energy dropped from 46 to 23%. Whereas only 29% favored decreasing the role of nuclear power at first, the number went up to 51% in November. Finally, the share of those supporting a nuclear phase out increased from 12% in April to 22% in November.

the public. Prime Minister Kan decided to subject Japan's fleet of nuclear power plants to a stress test (Kan 2012). Consequently, all nuclear reactors were shut down for safety checks, removing almost 30% of the electricity generated.

After the Liberal Democratic Party (LDP) won the 2012 snap elections in a landslide, Prime Minister Abe Shinzo announced in his 2013 New Year's address that Japan would restart all nuclear power plants within three years (Cabinet Office Japan 2013). However, energy supply figures tell a different story. In 2018, five years after Prime Minister Abe's restart announcement, nuclear power provided 6% of Japan's electricity supply (IAEA 2019). This was a far cry from the almost 30% of electricity generated from nuclear power in 2010. Since then, no more reactors have taken up operations. In fact, the number of nuclear reactors generating electricity has decreased from nine in 2018 to six in early 2020.

Why has there been such slow progress of nuclear reactor restarts despite apparent political support? This article sheds light on this question by investigating the process of restarting nuclear power plants, with a particular focus on the role played by court cases and the nuclear safety agency. It employs a process-tracing methodology, which draws causal inferences based on within-case analysis and configurational thinking (Blatter and Haverland 2012: 81). The dependent variable here is the number of reactor units in operation. To avoid a potential selection bias that could arise from only looking at restart attempts, this article also includes non-attempts, i.e. decisions to permanently shut down nuclear power plants instead of seeking a restart. To explain Japan's sluggish return to nuclear power, and utilities' decisions to permanently shut down older and smaller reactors, this article highlights two factors related to the new safety agency (permanent shutdowns over safety concerns and refurbishing costs to meet new safety standards) and two factors in connection with court cases (delays in restarts and permanent shutdowns resulting from court rulings). The evidence used includes regulatory decisions by the nuclear safety agency, electric utilities' estimates of refurbishing costs, and a list of court cases against nuclear power plant restarts and respective rulings.

The key finding in this article is that, while the core of nuclear policy decision making, i.e. *goal-setting*, remained unchanged, the scope of *conflict over policy implementation* has expanded. For one, the nuclear safety agency, a new actor in the implementation process, forced the shutdown of nuclear power plants over safety concerns and imposed significant additional safety investments on electric utilities seeking to restart reactors. Another hurdle was a significant increase in the number of citizens' class-action lawsuits against nuclear reactors, particularly as some courts were more receptive to such pleas than they had been prior to 3.11. Neither has the pro-nuclear coalition been able to pressure the NRA to water down safety standards, nor has the LDP regained control of the judiciary—at least not yet. As a result, the 'nuclear village' lost some of its policy implementation power due to an expanded conflict over nuclear reactor restarts.

The first section of the article provides an overview of the theory and the decision-making structures within the nuclear policy domain, then the main section evaluates safety reviews nuclear power plants need to pass in order to go back into operation and analyzes lawsuits seeking to idle nuclear power plants. The next section turns to the response by electric utilities before the concluding section lays out the main argument about an extended conflict scope, particularly lawsuits, and new safety standards, posing a hurdle for bringing nuclear power plants back into operation.

### 1.1. The ‘Nuclear Village’

Theoretically, this article draws on the notion of political conflict scope. The classic work by [Schattschneider \(1961\)](#) postulated:

The outcome of every conflict is determined by the *extent* to which the audience becomes involved in it. That is, the outcome of all conflict is determined by the *scope* of its contagion. The number of people involved in any conflict determines what happens. ([Schattschneider 1961](#): 2, italics in the original)

The idea that the number of actors involved in a political conflict affects political outcomes is present in policy process theories, where a policy subsystem usually contains a dominant coalition, consisting of those in a decision-making position, and those who are excluded. It is in the interest of political decision makers to shape the rules of access in such a way that they discourage ‘outsiders’ from participating ([Baumgartner and Jones 1993](#)). The institutional structure of the policy making process, which determines rules of access, tends to be stable over long periods of time ([Sabatier and Weible 2007](#)).

Turning to Japan’s nuclear policy domain, in the late 1990s, Iida Tetsunari<sup>3</sup> coined the term ‘nuclear village’ to describe the ‘syndicate’ of actors pushing Japan’s nuclear power program ([Asahi Shinbun 2012](#): 13). The term ‘nuclear village’ has since been used, mainly by critics, to describe

...institutional and individual pro-nuclear advocates in the utilities, the nuclear industry, the bureaucracy, the Diet (Japan’s parliament), business federations, the media, and academia. This is a village without boundaries or residence cards, an imagined collective bound by solidarity over promoting nuclear energy. ([Kingston 2014](#): 108)

Some disagree with the picture it evokes of everybody in the ‘village’ acting in concert ([Hymans 2011](#); [Shiroyama 2015](#)), while others criticize its increasingly condescending use ([Scalise 2013](#)), or avoid it altogether ([Kikkawa 2012](#)).

The term ‘nuclear village’ builds on the notion of a powerful ‘iron triangle’ or ‘elite triumvirate’ centered on LDP, METI, and big business. In the longstanding debate about who governs Japan—the bureaucracy, politicians, or the private sector—the characterization of Japan as a ‘developmental state’, in which METI effectively orchestrated Japan’s post-war economic recovery using ‘administrative guidance’ ([Johnson 1982, 1995](#)) is the most famous example of the view that the elite state bureaucracy dominates policy making. Other scholars stress the role of politicians as ‘principals’ and the bureaucracy as their ‘agents’, which puts politicians in the driving seat of Japanese politics ([Ramseyer and Rosenbluth 1993](#)). Yet another perspective stresses that business interests win, at least during times of ‘quiet politics’, when the public pays little attention to an issue and there is low voting salience ([Culpepper 2010](#)).

The nuclear policy domain exhibited particular governance patterns. [Cohen, McCubbins, Rosenbluth \(1995](#): 195) observed that: ‘Once government approval, most of the time LDP approval, had been given, the implementation was left up to MITI [Ministry of International Trade and Industry] in the form of granting licenses’. Electric utilities, however, were strongly opposed to government controls and ‘developed differently from industries that have been directly fostered by the government’ ([Johnson 1978](#): 132). The relationship between nuclear industry and state was one of ‘reciprocal consent’, where the ‘Japanese bureaucracy does not dominate, it negotiates’ ([Samuels 1987](#): 260). Hence, consecutive LDP governments put METI in charge of nuclear policy implementation, which treated the nuclear industry as a partner rather than subject to state control.

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3. Iida left the nuclear industry to become an advocate of renewable energy development. He is the executive director of the Institute for Sustainable Energy Policies (ISEP) in Japan.

A prominent feature of these cooperative state-industry relations was state support for the siting of nuclear power plants in exchange for electric utilities building such power plants as part of their energy portfolio. This system of private electric utilities implementing public policy with state support has been termed *kokusakuminei* (Kikkawa 2012). Although not legally required, from the beginning, nuclear power developers sought local politicians' approval for nuclear power projects. As it remained a gentleman's agreement, it has not been specified whose approval is required exactly, but this usually includes the mayor of the host community and the prefectural governor.

As an outgrowth of cooperative state-industry relations, Japan's nuclear power program exhibited signs of 'regulatory capture', which refers to industry influence over safety regulation (Ferguson and Jansson 2013; Kingston 2014). In the same vein, the Nuclear Accident Independent Investigation Committee, established by the Diet in 2011, concluded that 'the TEPCO [Tokyo Electric Power Co.] Fukushima Nuclear Power Plant accident was the result of collusion between the government, the regulators and TEPCO, and the lack of governance by said parties' (NAIIC 2012: 16). As a result, nuclear policy implementation, costly safety measures, in particular, was largely left to electric utilities in line with Culpepper's findings that business interests win.

Japan's nuclear safety regulators suffered from a lack of competencies. METI's Nuclear and Industrial Safety Agency (NISA) had the power to grant licenses, but once a license was granted it could not be revoked, giving NISA no means to force utilities to upgrade reactors in line with updates in safety standards, called back-fitting. An episode described by Tateishi (2015) clearly illuminates this. In the aftermath of the 2007 accident at the Kashiwazaki-Kariwa nuclear power plant, NISA and the Nuclear Safety Commission (NSC), located at the Cabinet Office, sought to convince electric utilities to back-fit reactors, but their efforts were met with doughty resistance. To improve earthquake countermeasures, NSC and NISA calculated new basic ground movement standards. Back-fit investigations concluded that many plants were capable of withstanding stronger seismic tremors. However, electric utilities restarted all nuclear power plants before the investigations were concluded and reactors were deemed safe. Next to a lack of back-fitting, standards for reactors in operation remained unspecified, and disaster countermeasures, such as tsunami protection walls, were at the discretion of the utilities; regulators NISA and NSC made only non-binding recommendations.

Civil society opposition achieved comparatively little in the face of the 'nuclear village' pushing nuclear power. Anti-nuclear opposition was limited to NIMBY (Not-In-My-Backyard)-protests against the development of nuclear power plants. Few in numbers at first, a 'new wave of anti-nuclear protests' emerged after the 1986 Chernobyl Accident (Hasegawa 2004; Honda 2005). In response to (sometimes successful) protests, the Japanese state displayed a 'Machiavellian' stance by seeking to shape public preferences to serve its policy choices. This included generous side payments to communities hosting nuclear power plants as a means to garner local consent. It further sought to preempt 'site fights' by avoiding areas with stronger potential for resistance in the development process (Aldrich 2010).

One potential avenue for citizen opposition to nuclear power plants was through the courts. The principal-agent account that put politicians in the driver's seat included the notion of judicial manipulation (Ramseyer and Rosenbluth 1993), which refers to the government using the appointment of judges as a way to punish those who ruled against the LDP stance, at least on high-profile partisan disputes, for example the status of Japan's military forces (Ramseyer 2019). In contrast, courts presented an avenue for citizens pushing for stronger pollution regulation (Upham 1987). This exemplifies the dual role of the Japanese judiciary—it can either function as an avenue for citizens to engage in politics or for politicians to keep them out. In the case of nuclear power, the judiciary shut critical citizens and civil society groups out of nuclear politics, as all lawsuits seeking to halt nuclear power

development before 2011 eventually concluded with court decisions to dismiss often safety-related class-action lawsuits (CNIC 2020), meaning that courts tended to decide in line with government interests to further develop Japan's nuclear power program (Kingston 2014; Hasegawa 2019)

In sum, the pro-nuclear coalition in Japan's nuclear policy domain, known as the 'nuclear village', successfully build up Japan's nuclear power program. Since the reactors Tokai No. 1, Tsuruga No. 1, Fukushima Daiichi No. 1 and Mihama No. 1 were the first commercial nuclear reactors to produce electricity and go on the grid between 1965 and 1970, Japan developed into the country with the third-largest number of nuclear reactors, outnumbered only by the United States and France. The 'nuclear village' left virtually no access points for critical 'outsiders' in the decision-making and policy implementation process, thus effectively limiting the conflict scope.

## 1.2. Nuclear Policy Change After 3.11?

If, however, a catalyst is added to the mix, such as a crisis or an accident, it opens a window of opportunity for major changes in the institutions and ideas that structure political conflict (Kingdon 1984; Baumgartner and Jones 1993; Birkland 2007). Many scholars have asked whether 3.11 was such a catalyst for change in Japan.

Regarding the potential impact on Japan's nuclear power program, many scholars stressed policy continuity over change. The LDP's landslide victory, subsiding protests, and pro-nuclear actors re-asserting the necessity of nuclear power in the public discourse were taken as signs of continuity in Japan's nuclear energy policy (Cotton 2014; Kingston 2014; Scalise 2014). In fact, the Abe government adopted the 2014 Strategic Energy Plan, stressing nuclear power as an essential means to achieve the triad of energy policy goals: energy security, environmental friendliness and economic efficiency (METI 2014). Numerical targets for each energy source were published one year later in Japan's Long-Term Energy Demand and Supply Outlook, which envisioned a share of 20–22% for nuclear power by 2030 (METI 2015: 7). These targets were reconfirmed by the most recent Strategic Energy Plan (METI 2018), adopted by the Abe government in 2018. As LDP Prime Minister Shinzo Abe explained the government strategy: 'Our resource-poor country cannot do without nuclear power to secure the stability of energy supply while considering what makes economic sense and the issue of climate change' (Japan Today 2016). Following the 2012 elections, the Abe government repeatedly stressed its determination to restart as many reactors as possible as soon as possible.

The government's continued support of nuclear power despite continued low public opinion support has been explained in relation to other policy aims. Nuclear power is essential for Abe's three-pronged economic policies to reignite growth, called Abenomics, which is why Jeff Kingston dubbed it 'Abenomics' fourth arrow' and Incerti and Lipsy coined the moniker 'Abenergynomics' (Kingston 2016; Incerti and Lipsy 2018). Furthermore, nuclear power has been an integral element of Japan's efforts to raise its energy self-sufficiency rate, which reached a low point after 3.11 (Vivoda 2014), and to lower greenhouse gas emissions in line with Japan's international commitments under the United Nations Framework Convention on Climate Change and the 2015 Paris Agreement (Kameyama 2019). To achieve these energy and economic goals, Japan's 'power elite, and notably the so-called 'nuclear village' of big business, the electrical utilities, and key government ministries, wanted to return to business as usual' (Hymans 2015: 113). Given that powerful actors in the government and the administration are pushing for a swift restart of Japan's nuclear power plants, why has the implementation process been so slow?

The answer lies in the process of restarting idled nuclear power plants. Japan's nuclear policy continuity was a more 'realist variant' that stressed improvements in safety measures and transparency



as a necessary means to reduce risk levels (Samuels 2013: 115), as exemplified by the reorganization of the existing nuclear safety administration into the Nuclear Regulation Authority (hereafter NRA). Government pressure on the NRA to grant safety permits swiftly and to return to pre-3.11 business as usual was a challenge for the new safety agency's independence (Shadrina 2012; Kingston 2014). Even as the NRA withstood initial pressure to speed up the process of reviewing the safety of nuclear power plants, there was apprehension of strong pro-nuclear interests gaining control over nuclear safety regulation once again (Aldrich 2014; Hymans 2015). A study of attempts to restart nuclear reactors concluded that 'courts, regulators, and seismic activity matter more in restart decisions than technical criteria' (Aldrich and Fraser 2017: 454), e.g. the Fukui District Court's 'first and historical court-ordered injunction disallowing the operation of reactors' (Hasegawa 2019: 21).

This article takes a closer look at the process of restarting nuclear power plants. It puts particular emphasis on regulatory decisions by the new safety agency, which resulted in permanent shutdowns and skyrocketing safety refurbishing costs, and court cases, which have delayed and thwarted attempts to bring nuclear power plants back in operation. Rather than a smooth implementation of nuclear policy by electric utilities, the NRA and a wave of lawsuits speak to an extended conflict scope that questions pro-nuclear actors' policy implementation power.

## 2. A New Actor in the Implementation Process: The Nuclear Regulation Authority

Created in September 2012 and affiliated with the Ministry of Environment, the NRA consisted of a board of five scientists as well as a 'secretariat',<sup>4</sup> which grew to almost 1,000 full-time employees by 2016. Shortly after it was established, the NRA board declared that its mission was 'to protect the general public and the environment through rigorous and reliable regulation of nuclear activities' (NRA Commission 2013). Despite pressure from the 'nuclear village', the NRA achieved regulatory independence based on a strong legal framework and leadership by the first board under Chairman Tanaka Shunichi (Koppenborg forthcoming). In response to Prime Minister Abe's demand to restart all reactors within three years, NRA Chairman Tanaka stated, at one of the regular press conferences, that the NRA was doing everything in its power to swiftly conduct safety reviews, but that it simply could not finish within three years (NRA 2013a). Consequently, the NRA took its time with safety checks.

### 2.1. Safety Standards

The NRA's updated and improved safety standards went into effect on 8 July 2013. New safety regulations for commercial nuclear power plants<sup>5</sup> introduced a number of innovations: severe accident countermeasures, a back-fit system, a 40-year rule, and mandatory evacuation plans (NRA 2013b).

*Severe accident countermeasures* address natural phenomena—defined to include earthquakes, tsunamis, volcanic eruptions, tornadoes, and forest fires—and other events, such as a terrorist attack, a fire inside a reactor, internal flooding, and power supply failure. New requirements include a seismic ground motion assessment for each nuclear power plant in order to determine the specific level of

4. The official name is '*Genshiryoku-Kiseichou*'. The term 'secretariat' was introduced during the reform process in 2011 and 2012. It has survived even though the current secretariat is far larger than originally anticipated.

5. The NRA resolved to develop regulatory requirements for nuclear fuel cycle facilities individually for each facility due to vast differences in construction design. See NRA 2014.

earthquake resistance necessary. Also, volcanoes within a 160 km radius are to be surveyed to assess the hazard and to determine appropriate measures. In addition, mandatory tsunami protection walls must exceed the largest tsunami ever recorded for the area. Furthermore, severe accident countermeasures cover a range of innovations, including the installation of waterproof doors, fire-proof cables, reliable off-site power sources, supplementary mobile power units placed on a hill nearby, filtered venting systems to let out hydrogen if needed to reduce pressure within a reactor, and an extra control room located on higher ground.

The *back-fit system* mandates that reactors be updated in line with new scientific developments rather than at the discretion of electric utilities as plant operators. After severe accident countermeasures, this is the second area where the NRA took decision-making power over the implementation of safety standards from electric utilities. The back-fit system forms the legal basis for ongoing safety checks.

The NRA incorporated a *40-year limit* for a reactor's lifespan into the new safety regulations, which means operating licenses are only granted for 40 years. If a plant operator wishes to operate a reactor longer, it can apply for a one-time extension of 20 years. Such an extension license is tied to a renewed safety check.

Both the back-fit system and the 40-year limit provide the NRA with leverage over the industry. In stark contrast to its predecessor, which had to rely on the industry voluntarily complying with its recommendations, the NRA can ensure compliance by threatening to revoke the operating license of a nuclear reactor in case of noncompliance.

Furthermore, new safety requirements include *mandatory evacuation plans* for a 'precautionary action zone' (PAZ). The PAZ specifies a 30 km radius around a nuclear power plant, for which local governments are expected to draw up emergency response plans in advance.

## 2.2. Safety Checks

Safety checks follow a set procedure. First, a paper-based review takes place, followed by on-site checks once the utility has implemented additional safety measures. This two-step system, in which licenses are only granted after all refurbishments are completed, means that it can easily take several years before the safety review request reaches fruition.<sup>6</sup>

Some safety requirements are relative criteria, such as those related to volcanic and earthquake risks. Their implementation depends on underlying risk assessments and on the interpretation of the severity of the risk of an earthquake or a volcanic eruption for each power plant. The NRA accepted utility risk assessment despite critics warning of additional earthquake sources that were not considered. This garnered the NRA criticism from the CNIC ([Ban Hideyuki, Head of CNIC 29 Jul. 2015](#)) and Greenpeace ([Vande Putte, Ulrich, Burnie 2015](#)) for failing to thoroughly implement safety standards.

In contrast, the NRA took decisive action in the face of an undisputable risk in the case of the Tsuruga nuclear power plant in Fukui Prefecture, which is located atop a so-called fracture zone.

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6. There have been a few exceptions to this rule: Tōkai No 2, Mihama No 2, and Takahama No 1 and 2. As these reactors were nearing the end of the 40-year lifespan, they were granted operating licenses just before going into permanent shut down automatically due to the newly introduced requirement of a post-40-year operating license. These reactors will restart commercial operations, once the refurbishment process has been completed and inspected by the NRA. The decision has been criticized by some as a way to water down safety standards. If the final inspection follows the same standards as those conducted before granting a license, the decision resembles a technical difference. If, however, the final inspection is conducted less thoroughly, because the license had already been granted before, it would resemble a problematic rollback of the 40-year rule. Work on safety measures is scheduled to be completed by late 2020 or early 2021.

There, the NRA decided to conduct a fracture zone investigation to make sure the fault line was inactive, and thus not posing an earthquake risk. The NRA's definition of an active fault line exceeds the previous one. It states that, if the surrounding geological layers, which are approximately 120,000 to 130,000 years old, showed signs of displacement or deformation as a result of fault line activity, the fault line would count as active. While the operator, the Japan Atomic Power Co., claimed the fault line was inactive and applied for a restart permit, the NRA conducted an intensive on-the-ground investigation, including excavations around the fault line to collect its own geological data. Based on the conclusion that the fault line was in fact active (NRA Commission 2014), no restart permit was granted, leading to the permanent shutdown of the reactor.

Also, the NRA proved relentless in the face of apparent mismanagement by a plant operator. In 2013, the NRA took issue with how the Japan Atomic Energy Agency (JAEA) maintained the fast breeder *Monju*. After irregularities surfaced during on-site safety inspections and the JAEA submitted a report about requested revisions before completing them (NRA 2014), the NRA issued its first recommendation (*Kankoku*), in which it concluded that the JAEA 'does not have the capacity to operate *Monju* safely' (*Unyouwoanzenniokonaushutaitoshitehitsuoyounashihitsuwoyūshiteinai*). It indicated that a failure to find a new operator within six months would lead to the NRA decommissioning the facility (NRA Commission 2015). In itself, the recommendation was not binding, but the NRA lent substance to it by publicly threatening to shut down the facility at the heart of METI's fuel cycle ambitions. In December 2016, the government was forced to decommission *Monju* as it could not find a suitable operator (The Japan Times 2017).

For anti-terrorism measures, the NRA granted a 5-year grace period. Rather than completion before pre-start-up inspections, utilities were required to complete the construction of radiation and earthquake-resistant remote control centers within five years after the NRA approved construction plans. In early 2019, none of Japan's nuclear power facilities were in line to meet the five-year deadline. In April 2019, the NRA board resolved to turn down utilities' request to extend the deadline and, instead, instructed utilities to halt operations once they pass the deadline (NRA 2019). As it failed to complete construction work for a remote control center, Sendai No. 1 and 2 went into shutdown in March and May 2020, respectively. They will remain halted until construction is completed and approved by the NRA, expected for early 2021. In fact, the NRA's decision not to budge on utilities' request to expand the grace period is threatening to shut down most of the reactors in operation sometime between 2020 and 2022, unless utilities considerably speed up construction.

### 3. Nuclear Power Opposition

A potential route for opposition was for groups of citizens to appeal to the courts. According to a list of court cases and respective rulings, received in personal communications with a CNIC representative (CNIC 8 Apr. 2020), a total of 15<sup>7</sup> lawsuits were filed against nuclear power plants between 1973 and 2010. The nature of legal action sought by citizens slowly changed over time. Five lawsuits, brought forward in the 70s, targeted the operating licenses of nuclear power plants. Lawsuits filed since the 80s have followed a different strategy. With one exception,<sup>8</sup> they sought to impose a ban

<sup>7</sup> This number counts lawsuits against commercial nuclear power plants. Appeals before higher courts are not counted separately. The number excludes lawsuits related to the fast breeder reactor *Monju*, enriching uranium, using mixed oxide fuels, the JCO accident, workers' exposure to radiation and radioactive waste storage.

<sup>8</sup> The exception was a group of citizens that sought a reconsideration of the environmental impact assessment conducted for Sendai No. 3.



on operations. The outcomes have usually been the same. All but one District Court dismissed such lawsuits in the first instance, and higher courts upheld the decision. In the case of a lawsuit against the Shika No. 2, where the Kanazawa District Court ruled in favor of the plaintiffs, the decision was later overturned by the Nagoya High Court. Consequently, courts kept citizens out of the nuclear policy conflict by dismissing their claims, if not in the first instance, at the latest in the second instance. This is in line with Ramseyer's (2019) findings that the judiciary will support the LDP policy line on contentious issues.

### 3.1. New Wave of Lawsuits

Pro-nuclear actors' efforts to restart nuclear power plants, temporarily shut down after 3.11, stimulated a flurry of lawsuits brought before district courts all over Japan. Between 2011 and 2020, 30<sup>9</sup> lawsuits were filed against commercial nuclear power plants. In the nine years following 3.11, citizens flooded operators and the regulators with twice as many anti-nuclear lawsuits than in the four decades prior. Was there only an increase in quantity, or do we see deviations from previous trends?

Citizens' class-action lawsuits challenged most attempts to restart nuclear power plants. Since 2011, 15 lawsuits were filed before new safety standards went into effect and another 15 were filed after the NRA began its safety checks. Out of the 27 nuclear reactors seeking restarts, 23, or 85%, faced legal action. Exceptions, at least for the time being, were Shimane No. 2, Onagawa No. 2, Higashidōri No.1, and Tsuruga No. 2. Looking at the 15 reactors that passed safety checks, all except Kashiwazaki-Kariwa No. 6 and 7 faced lawsuits. Hence, class-action lawsuits were launched against 85% of reactors seeking restarts and against 86% of positively concluded safety checks. Table 1 gives an overview of post-3.11 lawsuits, organized by the nuclear power plant they target, and provides information about the safety review status, courts involved, and respective rulings. To distinguish cases that target NRA safety reviews, lawsuits brought before they began in July 2013 are depicted in italic font. Please note that the data discussed in this section is taken from Table 1 unless otherwise specified.

Citizens seeking to stop nuclear reactor restarts have added a new tool to their toolbox. The majority of the 30 lawsuits, 21 in total, sought an immediate halt of operations, also called an injunction (*Karishobun*). An injunction can be a powerful tool. If granted by the court, it idles a nuclear power plant until the decision is overruled by a higher court.

Takahama No. 3 and 4 are an illustrative example of how injunctions can pose a major obstacle to restarts. In April 2015, the Fukui District Court judge Higuchi Hideaki ordered an injunction against the Takahama No. 3 and no. 4 in the Fukui Prefecture. Even though another Fukui District Court judge overruled the injunction on appeal, after only a few days in operation, the reactors had to be shut down again following an injunction ordered by the District Court of Ōtsu in March 2016. The court rejected an appeal by the Kansai Electric Power Company (KEPCO), but its decision was ultimately overruled by the Osaka High Court in March 2017. For the Takahama No. 3 and 4, this meant a significant delay in the restart process. When the NRA gave both reactors the green light for a restart, they would have had another seven years in operation, until they reach the age of 40 and need to renew their operating license. That was in February 2015. Due to injunctions, both reactors have been in operation since early 2017, meaning that two out of seven operating years were lost due to citizens' legal action.

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9. As in the section on pre-Fukushima protests, this number counts only lawsuits against commercial nuclear power plants. Higher instances are not counted separately.

Table 1. Overview of Lawsuits Filed Since March 2011.

Nuclear Power Plant Safety review requests (NRA approval, if applicable)	Class-action lawsuit yes/no	District Court	Higher Court
<b>Tomari No. 1–3</b> July 2013	<i>Tomari 1–3</i>	<i>Sapporo District Court,</i> <i>decommissioning on 2011.11.11</i>	
<b>Ōi No. 3 &amp; 4</b> July 2013 (May 2017)	<i>Ōi 3–4</i> <i>Ōi 1–4</i> <i>Ōi 3–4</i>	<i>Ōi District Court,</i> <i>halt operations on 2012.06.12</i> <i>Kyoto District Court,</i> <i>Injunction on 2012.11.29</i> <i>Fukui District Court,</i> <i>Injunction on 2012.11.30,</i> <i>Injunction granted on 2014.05.21</i>	<i>Nagoya High Court</i> <i>Kanazawa Branch,</i> <i>Defendants’ appeal on 2014.05.22,</i> <i>Injunction lifted on 2018.07.04</i>
	<i>Ōi</i>	<i>Ōtsu District Court,</i> <i>Injunction on 2013.12.24</i>	
	<i>Ōi 3–4</i>	<i>Fukui District Court,</i> <i>Injunction on 2014.12.05,</i> <i>Injunction rejected on 2015.12.24</i>	<i>Nagoya High Court Kanazawa</i> <i>Branch,</i> <i>Plaintiffs’ appeal on 2016.01.06,</i> <i>Injunction repudiated in March</i> <i>2016</i>
<b>Takahama No. 3 &amp; 4</b> July 2013 (February 2015)	<i>Takahama 3–4</i>	<i>Fukui District Court,</i> <i>Injunction on 2014.12.05,</i> <i>Injunction granted on 2015.04.14</i>	<i>Nagoya High Court Kanazawa</i> <i>Branch,</i> <i>Defendant’s appeal on 2016.01.06,</i> <i>Injunction repudiated in March</i> <i>2016</i>
<b>Takahama No. 1 &amp; 2</b> March 2015 (April 2016)	<i>Takahama 3–4</i>	<i>Fukui District Court,</i> <i>Defendant’s Appeal on 2015.04.17,</i> <i>Injunction lifted on 2015.12.24</i> <i>Ōtsu District Court,</i> <i>Filed for Injunction on 2014.12.05,</i> <i>Injunction granted on 2016.03.09</i> <i>Defendant’s appeal on 2016.03.12,</i> <i>Appeal rejected on 2016.07.12</i>	<i>Osaka High Court,</i> <i>Defendant’s appeal on 2016.07.14,</i> <i>Injunction lifted on 2017.03.28</i>

Table 1. Continued

Nuclear Power Plant Safety review requests (NRA approval, if applicable)	Class-action lawsuit yes/no	District Court	Higher Court
	Takahama	Otsu District Court, Injunction on 2013.12.24	
	Takahama 1–2	Nagoya District Court, Halt lifespan extension on 2016.04.14	
<b>Ikata No. 3</b> July 2013 (July 2015)	<i>Ikata 1–3</i> Ikata 2–3	<i>Matsuyama District Court,</i> <i>Injunction 2011.12.08</i> Hiroshima District Court, Injunction filed on 2016.03.11, <b>Injunction rejected on 2017.03.30</b>	Hiroshima High Court Plaintiffs' appeal on 2017.04.13, <b>Injunction granted on 2017.12.13</b>
	Ikata 2–3	Ota District Court, Injunction on 2016.09.28	
	Ikata 3	Yamaguchi District Court Iwakuni Branch, Injunction on 2017.03.03, <b>Injunction rejected on 2019.03.15</b>	Hiroshima High Court, Plaintiffs' appeal on 2019.03.15, <b>Injunction granted on 2020.01.17</b>
<b>Sendai No. 1 &amp; 2</b> July 2013 (September 2014)	<i>Sendai 1–2</i> Sendai 1–2	Yamaguchi District Court Iwakuni Branch, Injunction on 2017.12.27 <i>Kagoshima District Court,</i> <i>Injunction and ban operations on 2012.05.30</i> Fukuoka District Court, Revoke approval of installation changes on 2016.06.10	

Table 1. Continued

Nuclear Power Plant Safety review requests (NRA approval, if applicable)	Class-action lawsuit yes/no	District Court	Higher Court
<b>Genkai No. 3 &amp; 4</b> July 2013 (January 2017)	<i>Genkai 1-4</i>  <i>Genkai 1-4</i>  <i>Genkai 2-4</i>  <i>Genkai 1-4</i>	<i>Saga District Court,</i> <i>Injunction on 2012.01.31</i> <i>Saga District Court,</i> <i>Injunction on 2011.12.27</i> <i>Saga District Court,</i> <i>Injunction on 2011.12.27</i> <i>Saga District Court,</i> Ban operations on 2013.11.13 <i>Niigata District Court,</i> <i>Injunction on 2012.04.23</i>	
<b>Kashiwazaki-Kariwa</b> <b>No. 6 &amp; 7</b> September 2013 (December 2017)	<i>Kashiwazaki-</i> <i>Kariwa 1-7</i>		
<b>Shimane No. 2</b> December 2013	None		
<b>Shimane No. 3</b> August 2018	<i>Shimane 3</i>	<i>Matsue District Court,</i> <i>Revoke construction license, injunction on</i> <i>2013.04.24</i>	
<b>Onagawa No. 2</b> December 2013	None		
<b>Hamaoka No. 4</b> February 2014	<i>Hamaoka 3-5</i>	<i>Shizuoka District Court</i> <i>Hamamatsu Branch,</i> <i>Permanent shut down and ban on</i> <i>operations on 2011.05.27</i>	
<b>Hamaoka No. 3</b> June 2015	<i>Hamaoka 3-5</i>	<i>Shizuoka District Court,</i> <i>Halt operations on 2011.07.01</i>	

Table 1. Continued

Nuclear Power Plant Safety review requests (NRA approval, if applicable)	Class-action lawsuit yes/no	District Court	Higher Court
<b>Tokai No. 2</b> May 2014 (September 2018)	<i>Tokai 2</i>	<i>Mito District Court, revoke operating license, injunction on 2012.07.31</i>	
<b>Higashidōri No. 1</b> June 2014	None		
<b>Shika No. 2</b> August 2014	<i>Shika 1-2</i>	<i>Kanazawa District Court, Injunction on 2012.06.12</i>	
<b>Ōma</b> December 2014	Ōma construction license	Tokyo District Court, Revoke construction license, cease-and-desist letter on construction on 2014.04.03	
<b>Mihama No. 3</b> March 2015 (October 2016)	Mihama Mihama 3	Ōtsu District Court, Injunction on 2013.12.24 Nagoya District Court, Revoke operation extension on 2016.12.09	
<b>Tsuruga No. 2</b> November 2015	None		

*Note:* Created by the author using information about safety review applications and approval from the NRA Website and data on lawsuits received during personal communications with the CNIC (8 April 2020).



The effectiveness of lawsuits as a tool for opposing reactor restarts depends on the receptiveness of courts to the plaintiffs' cause, which remains uneven. In April 2015, the Kagoshima District Court rejected an injunction sought by a group of local residents against the restart of two reactors at the Sendai nuclear power plant in Kagoshima Prefecture ([The Japan Times 2015](#)). Similarly, the Hiroshima District Court rejected a request for an injunction against Ikata No. 3.

By early 2020, in six cases, there were court decisions at some point in the judicial process in favor of citizen plaintiffs seeking to halt a nuclear reactor. In lawsuits brought against Ōi No. 3 and 4 and against Takahama No. 3 and 4, Fukui District Court and Ōtsu District Court decisions in favor of plaintiffs were later overturned by the Nagoya High Court and the Osaka High Court. This was in line with pre-3.11 lawsuits, where higher courts acted as gatekeepers in case district courts were receptive to anti-nuclear opposition.

Diverging rulings reveal the importance of the chief judge. The former Fukui District Court Judge Higuchi was apparently receptive to the plea by citizens concerned about the safety of nuclear power plants. With Fukui Prefecture at the heart of nuclear power generation in Japan, such a judge would have been a major hurdle for the government's vision of a return to nuclear power. At first, KEPCO—unsuccessfully—tried to have judge Higuchi removed ([The Tokyo Shinbun 2015b](#)). Soon after, Higuchi was transferred to a different court and the new chief judge lifted injunctions following an appeal by KEPCO. In an interview post-retirement, Higuchi repudiated speculations about his transfer as a punishment for repeatedly ruling against an electric utility, and by extension the government's nuclear policy. At the same time, Higuchi encouraged younger judges to make independent judgments rather than to rely on precedents ([Asahi Shinbun 2018](#)), which equaled a call for more rulings in favor of citizens' challenging nuclear reactor restarts on safety grounds.

An unexpected decision was a high court ruling in favor of plaintiffs. This happened in two cases where the Hiroshima High Court decided to order a halt of Ikata No. 3 in 2017 and 2020. In doing so, it overruled the Hiroshima District Court and the Yamaguchi District Court decisions, respectively, that allowed operators to keep the reactor in operation. The Hiroshima High Court Judge Mori Kazutake, who surprisingly overruled district courts' decisions and forced Ikata No. 3 to halt operations in January 2020, retired that same month.

This development is of interest given that more courts were involved in the struggle over nuclear reactors than before. Pre-3.11 lawsuits were all filed at the court closest to the nuclear power plant, thus within the same prefecture. However, the post-3.11 mandatory evacuation plans for an expanded precautionary action zone mean that local authorities need to work together across prefectures as part of the safety review process. As a result, courts in neighboring prefectures became involved. The effect of this change is illustrated by the Takahama case, in which the Ōtsu District Court, located in Shiga Prefecture adjoining Fukui Prefecture, forced reactors No. 3 and 4 to a halt. The Ōtsu District Court justified its decision on the grounds that KEPCO failed to fulfill its obligation to provide information on safety- and evacuation-related issues in case of an emergency ([Asahi Shinbun 2016](#)). Similar developments were visible with Ōi facing lawsuits in Fukui prefecture and neighboring Shiga prefecture,<sup>10</sup> as well as Ikata facing a class-action lawsuit in Ōita, a prefecture falling within the 30km radius around the plant. By expanding emergency response provisions, the NRA drew more citizens and courts from neighboring prefectures into the conflict over restarting Japan's nuclear power plants.

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10. The lawsuit against the Ōi plant in adjoining Kyoto prefecture was filed before new safety standards went into effect, which makes it an instance of widened anti-nuclear protests after 3.11, but not an example of protests galvanized by the NRA.

### 3.2. Local Consent

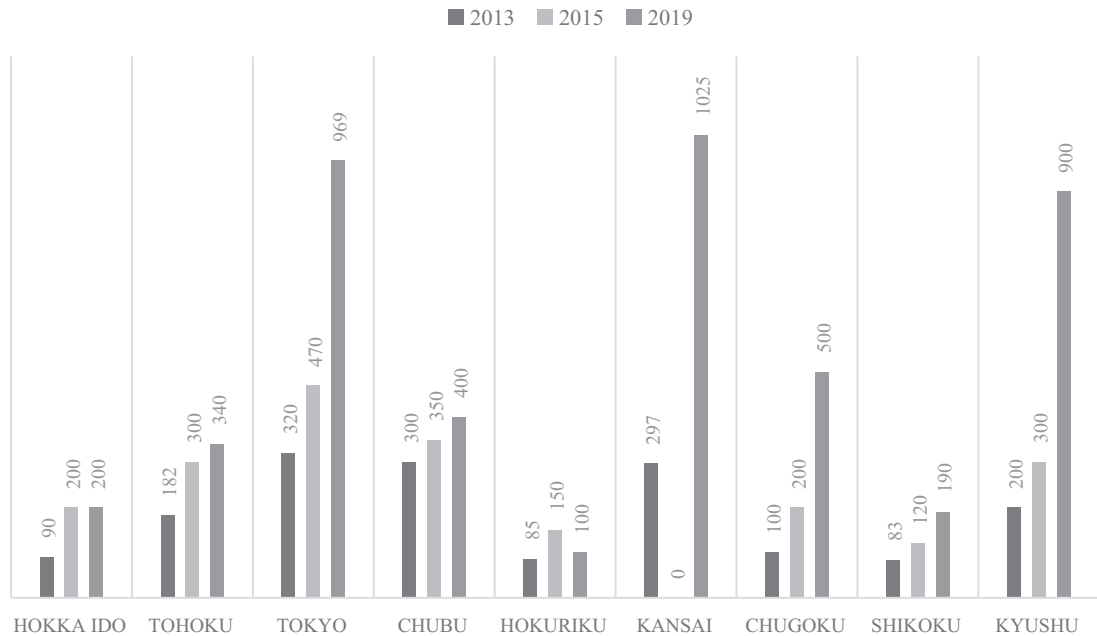
Another form of opposition that should be noted comes from local politicians refusing to consent to restarts. TEPCO, in particular, has faced resistance to restarting its power plants. In its decision to permanently shut down the four reactors at Fukushima Daiichi, TEPCO took into account that the governor of Fukushima prefecture repeatedly stressed his opposition to restarting any nuclear power plants in Fukushima Prefecture (TEPCO 2019a). Out of TEPCO's remaining seven reactors at Kashiwazaki-Kariwa in Niigata Prefecture, the two youngest and largest were undergoing safety reviews. Successive governors of Niigata Prefecture opposed TEPCO's restart attempts before the Niigata prefectural investigation into the March 2011 accident is completed and can serve as the basis for a decision about TEPCO's suitability as an operator. Furthermore, the mayor of Kashiwazaki town, Sakurai Masahiro, requested TEPCO to permanently shut down the five reactors not undergoing safety reviews. In response, TEPCO offered to scrap at least one of the older reactors within five years of restarting No. 6 and No. 7 (TEPCO 2019b), a timeline Sakurai accepted. Depending on local government decisions, TEPCO may have to scrap at least one more reactor or give up operating its last remaining commercial nuclear power plant.

## 4. Industry Response

So far, this article has illuminated the NRA's independent handling of safety checks, the willingness of some local politicians to speak out against nuclear restarts, and the efforts of nuclear power opponents to use the judiciary to delay or even stop reactor restarts. Compared to pre-3.11, this is a radically different environment for electric utilities to try to operate nuclear power plants. Their response to the expanded conflict scope is crucial in order to understand the dim prospects for nuclear power in Japan.

Once the NRA safety standards went into effect, it was up to electric utilities to submit safety review requests. A total of 12 requests were submitted within one month. Shortly after, Denjiren, the Federation of Electric Power Companies, announced the intention of electricity utilities to comply with the NRA safety review, to gain local approval for restarts and to restart nuclear reactors one by one (Denjiren 2014: 3). Another 14 applications followed within roughly two years. Judging from that, electric utilities seemed eager to have safety checks conducted in order to bring their nuclear reactors back on the grid. Power companies, however, have sought no further safety reviews since late 2015, and the number of review applications was still 27 at the time of writing.

One factor that can explain the slowdown in review applications was the unexpectedly high safety costs. Meeting safety requirements forced utilities to make costly investments. Asked about the estimated costs of investments for reactors undergoing safety checks, utilities estimated total costs of 1.7 trillion yen in the fall of 2013. By April 2015, that figure rose to 2.4 trillion yen (The Tokyo Shinbun 2015a) and reached 5 trillion yen by July 2019 (Asahi Shinbun 2019). Figure 1 shows a breakdown of these costs for each electric utility. Note that KEPCO was unable to provide an estimate in 2015. Tohoku electric utility gave an estimate only for the Onagawa plant in 2019, because it was unclear how much refurbishing Higashidōri would cost, while previous numbers included refurbishment costs for both. The numbers show that the utilities' planned investment costs have skyrocketed since 2013, especially for those utilities owning many nuclear power plants. While these numbers are only estimates, they clearly indicate that the magnitude of refurbishments necessary exceeded what electric utilities were prepared for when they first applied for safety reviews.



**Figure 1.** Estimated Refurbishing Costs by Electric Utility (in Billion Yen). Chart created by the author based on The Tokyo [Shinbun \(2015a\)](#) and the [Asahi Shinbun \(2019\)](#).

In response to exploding safety costs, utilities apparently chose to invest strategically. Since 3.11, the number of available commercial nuclear power plants has decreased significantly. The six reactors at the crippled Fukushima Daiichi plant were the first to go into permanent shutdown, followed by decommissioning. One month after Denjiren declared that ‘it is essential to build a sustainable earnings structure and to put the business back on track’ ([Denjiren 2015a: 1](#)), it announced the decision to permanently shut down five older and smaller reactors ([Denjiren 2015b: 2](#)). Since then, utilities made the same decision for another four units. Concomitant to decommissioning another five older and smaller reactors, Denjiren shifted to stress ‘safety and economic efficiency’ ([Denjiren 2018: 3](#); [Denjiren 2019: 3](#)). As technical safety costs rose and utilities faced tough business decisions, an apparent shift in strategy took place where utilities discarded the idea of restarting all reactors in line with government plans in favor of a more business-oriented strategy with strategic investments.

For TEPCO, the decision to retire the damaged Fukushima Daiichi and Daini due to local politicians’ opposition means a drastic decrease of available nuclear reactors. Until 2011, TEPCO operated three nuclear power plants with 17 reactors, one-third of Japan’s nuclear reactors. At the time of writing, it had seven units remaining at Kashiwazaki-Kariwa. If local opposition remains, TEPCO may have to scrap at least one of the older reactors at the Kashiwazaki-Kariwa in order to restart No. 7 and 8, bringing the number of nuclear reactors it operates down further. Construction work on its only new reactor is on hold with no plans for resumption. Without restarts, TEPCO, the first electric utility to pursue the nuclear power business and a proud powerhouse of the nuclear industry until 2011, will slowly but surely run out of nuclear reactors to operate.

#### 4.1. Outlook for the Future of Nuclear Power in Japan

What does the industry response mean for the nuclear power targets stubbornly maintained by the Japanese government? As of September 2019, a total of 35 reactors remained from Japan's once large nuclear reactor fleet, with two additional reactors under construction. But only 27 reactors were undergoing safety reviews. Adding up the electricity generation capacity of the 27 nuclear reactors undergoing safety checks (including the two under construction), it amounts to 60% of the installed capacity available prior to 3.11. In 2010, nuclear power covered 29% of Japan's electricity demand. Assuming a stable electricity demand, which will require significant energy efficiency improvements and energy savings efforts, the 27 reactors could technically provide close to 17% of Japan's electricity demand by 2030. However, this assumes an operation rate of 100%, which is not the norm for nuclear power plants. They usually operate at somewhere between 80 and 90% of their rated capacity. Standard operating procedures at 85% capacity will lower the share these 27 reactors can provide by 2030 to 14%, far from enough to reach the government's goal of 20–22% nuclear power by 2030.

### 5. Conclusion

This article set out to investigate the puzzle of slow nuclear reactor restarts despite apparent political and administrative support. Many argued that there was policy continuity with the pro-nuclear LDP's return to government in late 2012, because it brought the 'nuclear village' back into power (Aldrich 2014; Hymans 2015; Kingston 2014; Vivoda and Graetz 2014). The key finding in this article is that, while the core of nuclear policy decision making, i.e. *goal-setting*, remained unchanged, the scope of *conflict over policy implementation* has expanded. These findings affirm Culpepper's (2010) thesis about business interests only winning out during times of 'quiet politics' and, at the same time, contradict some prominent theses about Japanese nuclear policy post 3.11.

The first factor is the addition of the Nuclear Regulation Authority as a new actor in the implementation process. The addition of the NRA to the implementation process created a hurdle for nuclear restarts. Concretely, it shut down nuclear power units over earthquake-related safety concerns and delays in the implementation of newly introduced safety requirements, particularly remote control centers. Even though the NRA has not adopted the most stringent risk assessment approach, it imposed significant additional safety investments on electric utilities seeking restarts, which negatively impacted the—already low—economic viability of nuclear power plants.

The second hurdle in the restart process was a significant increase in number of lawsuits filed against nuclear reactors. The use of injunctions took on a new dimension after 3.11 with the majority of lawsuits seeking at least a temporary shutdown. Furthermore, the NRA—unintentionally—broadened the conflict scope by drawing more communities into the restart struggle via expanded mandatory evacuation planning. In doing so, NRA safety standards expanded the allegorical backyard of Not-In-My-Backyard-protests. In addition, new safety requirements, such as a second license after 40 years in operation, provide citizens with more opportunities to challenge each reactor's operating license. As a result of the NRA expanding the allegorical 'backyard' and providing more opportunities for citizens to challenge individual nuclear reactors, nuclear power opposition evolved from NIMBY 'site fights' (Aldrich 2010) into cross-prefectural reactor fights.

With courts as the only bodies with the authority to override NRA decisions, the outcome of these lawsuits has strong implications regarding the future of nuclear power in Japan. Ramseyer (2019) has argued that courts in Japan were under the influence of the LDP, leading them to rule in favor of the government on high salience issues. But in the case of post-3.11 lawsuits, some courts were more

receptive to such pleas, while others continued the pre-3.11 line. Court rulings in favor of nuclear power opponents questioned the LDP's hold over the judiciary. Rather than a reliable gatekeeper keeping opponents away from nuclear power, the judiciary has become embroiled in the conflict over nuclear restarts. Whether the judiciary will continue to serve as an avenue for change crucially depends on individual judges. At the time of writing, two of three receptive chief judges had retired and it remained to be seen how many would follow in their footsteps.

Exploding costs for safety refurbishments and shutdowns of reactors after receiving a license by the NRA, either due to court injunctions or missing the deadline for anti-terrorism measures, put electric utilities in a difficult position. Utilities responded by strategically investing in younger and larger reactors that are more likely to generate enough revenue to make substantial safety investments worthwhile. As the magnitude of additional safety investments became apparent, they began retiring older and smaller nuclear reactors. Furthermore, TEPCO was forced to retire many of its undamaged nuclear reactors due to local politicians' refusal to consent to restarts. These findings complement a study of all restart attempts that found certain criteria, such as age, size, or local consent to be less important than regulators and courts in determining restart prospects (Aldrich and Fraser 2017: 454). The findings here show that while regulators and courts are important for restart prospects, the other factors matter in utilities' decision *whether to attempt a restart* in the first place.

More generally, the response by electric utilities questions the notion of a 'nuclear village' united behind the promotion of nuclear power. The expanded conflict over nuclear reactor restarts puts into question the system of policy implementation through *kokusakuminei*, which Kikkawa (2012: 57) has described as electric utilities implementing public policies with state support. Investment decisions of electric utilities will determine whether the Japanese government can reach its 2030 target of generating 20–22% of electricity from nuclear power. As of now, it remains unclear whether more safety review applications will be submitted. With rising costs, this seems unlikely to happen anytime soon. Unless electric utilities take immediate actions to meet the government's nuclear policy goals, however, their actions amount to a quiet exit from the pro-nuclear policy coalition. These developments raise questions about how exactly utilities, the pre-3.11 winners of the 'nuclear village', lost out. The nuclear safety administration reforms that brought about this change are the subject of another publication under preparation by this author.

Japan's nuclear reactors are aging rapidly. That means decommissioning will begin in the mid-2030s. With only two new reactors under construction, nuclear power will likely play a minor role in Japan's future energy policy. Not only are reactor restarts progressing slowly, but nuclear power in Japan faces an existential challenge. The question that remains is how far below the government goal the share of nuclear power will fall by 2030. The current trajectory could well amount to a phase out beginning in the mid-2030s. The Fukushima Daiichi power plant was among the first to take up commercial operations. It marked the beginning of nuclear power in Japan. Looking at everything that has happened since 3.11, we have to ask: Did the Fukushima Daiichi meltdown usher in the end of Japan's nuclear power program?

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