

November 2017

T-Rex, Jurassic Park and Nuclear Power: Nuclear Power Plants and the Courts After the Fukushima Nuclear Accident

Shigenori Matsui

Follow this and additional works at: <https://scholarship.law.wm.edu/wmelpr>



Part of the [Energy and Utilities Law Commons](#), [Environmental Law Commons](#), and the [Oil, Gas, and Energy Commons](#)

Repository Citation

Shigenori Matsui, *T-Rex, Jurassic Park and Nuclear Power: Nuclear Power Plants and the Courts After the Fukushima Nuclear Accident*, 42 Wm. & Mary Env'tl. L. & Pol'y Rev. 145 (2017), <https://scholarship.law.wm.edu/wmelpr/vol42/iss1/5>

Copyright c 2017 by the authors. This article is brought to you by the William & Mary Law School Scholarship Repository.

<https://scholarship.law.wm.edu/wmelpr>

T-REX, JURASSIC PARK AND NUCLEAR POWER: NUCLEAR POWER PLANTS AND THE COURTS AFTER THE FUKUSHIMA NUCLEAR ACCIDENT

SHIGENORI MATSUI*

You're going to engineer a bunch of prehistoric animals and set them on an island? Fine. A lovely dream. Charming. But it won't go as planned. It is inherently unpredictable . . .

–Ian Malcolm, in *Jurassic Park* (Michael Crichton)¹

INTRODUCTION

As citizens of the only nation which has experienced devastating disaster brought about by nuclear weapons, the Japanese people have shown a strong reluctance towards nuclear power. Nevertheless, a very strong government endorsement of nuclear power and the assurance of its safety by nuclear scientists have pushed the Japanese to accept nuclear power. Japan is an isolated island country with little natural resources. Historically, Japan generated power by burning imported fossil fuels, which made Japan heavily dependent on the Middle East. After the 1973 oil crisis, the Japanese government diversified its energy sources and came to rely more and more upon nuclear power, which could provide a stable source of power immune to international political disagreements. Before 2011, there were fifty-four nuclear reactors across Japan, producing about 30.8% of Japan's electricity.² In light of concerns over global warming, the government emphasized the environmental benefits of nuclear power. The government claimed that nuclear power was the most stable, environmentally friendly, and economically efficient method of power production.

Residents opposed to the use of nuclear power have protested and often filed lawsuits to stop the operation of nuclear power plants. However,

* Professor of Law, University of British Columbia, Peter A. Allard School of Law.

¹ MICHAEL CRICHTON, *JURASSIC PARK: A NOVEL* 178 (Random House 2012).

² KEIZAI SANGYŌSHŌ [MINISTRY OF ECONOMY, TRADE AND INDUSTRY], HEISEI 22NEN DENRYOKU KYOUKYU KEIKAKU NO GAIYOU MITSUITE [ON THE SUMMARY OF THE POWER SUPPLY PLAN, 2010] (Mar. 31, 2010), http://www.enecho.meti.go.jp/category/electricity_and_gas/supply_plan/pdf/100414-h22.pdf [https://perma.cc/L3SF-5CRL] [hereinafter MINISTRY OF ECONOMY, TRADE AND INDUSTRY]. At that time, it was anticipated that nuclear power would account for 41% of Japan's power by 2019. *Id.*

the Japanese courts have been very reluctant to intervene and they have essentially sided with the government and power companies to support nuclear power.

Everything changed on March 11, 2011, when the Tohoku Earthquake caused the Fukushima nuclear accident. The accident clearly demonstrated that nuclear power is fraught with risks, and that nuclear accidents could cause serious damage. The risks were especially high for Japan because the country experiences many powerful earthquakes every year. Was this disaster enough to cause a change in the judicial attitude towards nuclear power plants?

This Article examines the judicial response to nuclear power plants in the post-Fukushima era. It will first outline the legal system responsible for regulating nuclear power plants in Japan in Part I. It will then examine the judicial responses to the lawsuits filed by opposing residents, environmentalists, and anti-nuclear power activists in Part II. Part III of this Article will outline the devastating 2011 Fukushima nuclear accident that was caused by the Tohoku Earthquake, and will examine the lessons that we can learn from the accident. Finally, Part IV of this Article will examine the judicial response to nuclear power plants in the aftermath of the Fukushima nuclear accident.

This Article will show that, although some courts came to adopt quite a skeptical stance against nuclear power in the post-Fukushima era, generally the Japanese courts are still very supportive of nuclear power. Simply put, they still trust government bureaucrats as well as science and technology experts even after the Fukushima accident. However, in light of the serious devastation that followed the Fukushima nuclear accident, it may be apt to reconsider whether blindly trusting government bureaucrats and experts is a good idea.

I. NUCLEAR POWER PLANTS BEFORE THE FUKUSHIMA NUCLEAR ACCIDENT

A. *Japan and Nuclear Power*

Japan is the only country in the world that has actually experienced nuclear bombs. On August 6, 1945, an atomic bomb was dropped in Hiroshima instantly killing some 80,000 residents.³ Some additional 16,600

³ HISTORY.COM, *Bombing of Hiroshima and Nagasaki*, <http://www.history.com/topics/world-war-ii/bombing-of-hiroshima-and-nagasaki> [<https://perma.cc/3R7M-QMKJ>] (last visited Nov. 12, 2017).

residents died within four months because of the blast and radiation exposure.⁴ On August 9, the second atomic bomb was dropped on Nagasaki.⁵ It is estimated that between 40,000 and 75,000 people died immediately following the atomic explosion, while the total deaths resulting from the bomb may have reached 80,000 by the end of 1945.⁶ Many survivors and their children suffered from cancer and other health complications over the following decades.⁷ Clearly, the Japanese people know about nuclear power's devastating effects and the risk associated with it.

However, Japan is an isolated island country and has very limited natural resources. As a result, Japan has depended heavily on imports for its primary energy needs. As it recovered from World War II and started to rapidly develop its economy, Japan had to rely primarily on fossil fuel imports, particularly oil, from the Middle East.⁸ This area is politically volatile and is often affected by serious regional conflicts. The 1973 oil crisis caused the price of oil to skyrocket, sending Japan into a panic over the fear that oil imports may stop.⁹ Japan learned a very important lesson. It needed to diversify its energy sources and avoid relying too heavily upon the Middle East. That realization forced the government to place its primary focus on nuclear power.

Japan started the development of its nuclear power program in 1954. The Atomic Power Basic Act,¹⁰ which limited the use of nuclear technology to peaceful purposes, was enacted in 1955. In the following year, the Atomic Energy Commission ("AEC") was established to promote nuclear power development and its wider use.¹¹ The Liberal Democratic Party ("LDP"), a conservative party, which practically dominated the

⁴ ATOMIC HERITAGE FOUND., *Bombings of Hiroshima and Nagasaki—1945* (June 5, 2014), <http://www.atomicheritage.org/history/bombings-hiroshima-and-nagasaki-1945> [https://perma.cc/ZAL3-M6P9] (last visited Nov. 12, 2017). The City of Hiroshima estimates that 237,000 people ended up dying because of the bomb.

⁵ *Id.*

⁶ *Id.*

⁷ See RADIATION EFFECTS RES. FOUND., *Solid cancer risks among atomic-bomb survivors*, http://www.rerf.jp/radefx/late_e/cancrisk.html [https://perma.cc/A9D9-JJFY] (last visited Nov. 12, 2017).

⁸ SHIGEN ENERGY CHŌ [AGENCY FOR NATURAL RESOURCES AND ENERGY], ENERGY HAKUSHO 2016 [WHITEPAPER ON ENERGY, 2016], 2-1-3, <http://www.enecho.meti.go.jp/about/whitepaper/2016html/2-1-3.html> [https://perma.cc/MU6U-4BCF]. In 2014, Japan imported 99.7% of its oils from foreign countries, 80% of which came from the Middle East.

⁹ See R. P. Sinha, *Japan and the Oil Crisis*, 30(8) WORLD TODAY 335, 335, 338 (1974).

¹⁰ Genshiryoku kihonhō [Atomic Power Basic Act], Law No. 186 of 1955 (Japan) [hereinafter Atomic Power Basic Act].

¹¹ ATOMIC ENERGY COMM'N, *Role of the Atomic Energy Commission*, <http://www.aec.go.jp/jicst/NC/about/index.htm> [https://perma.cc/M2LG-6HMY].

government from 1955 until 2009, strongly advanced a pro-nuclear power policy. The Ministry of International Trade and Industry (“MITI”) and its successor, the Ministry of Economy, Trade and Industry (“METI”), have played a fundamental role in encouraging power companies to develop nuclear power plants, largely through its subsidiary organization, the Agency for Natural Resources and Energy (“ANRE”).

However, government agencies and power companies are not the only parties that have promoted nuclear energy. Many local governments, especially those in rural areas where a declining population and a declining industry jeopardize their survival, have been eager to accept nuclear power plants in exchange for economic benefits.¹² Backed by a large amount of research funding, nuclear scientists who support nuclear development have provided assurances that nuclear power is safe, all while enjoying a privileged position within Japan’s academia. So-called entire “nuclear villages”¹³ have been supporting and advancing nuclear power. As a result, there was a widely believed myth among the public, the so-called “safety myth” of nuclear power, that nuclear power was safe and could be completely controlled; that is to say, there would be no serious nuclear accident.¹⁴

With the support of this myth, the number of active nuclear reactors in Japan gradually increased to fifty-four,¹⁵ with nuclear power accounting for 30.8% of all power produced in 2011.¹⁶ It was anticipated at that time that nuclear power would account for 41% of all power produced by 2019.¹⁷ Global warming and the need to reduce Japan’s carbon emissions

¹² Local governments can expect employment of local residents, increased tax revenue and an increase in nuclear power plant-related industries. Moreover, the central government distributed a huge amount of money as a subsidy to promote the acceptance of nuclear power plants. *See infra* note 39.

¹³ Jeff Kingston, *Japan’s Nuclear Village*, 10(37) ASIA-PACIFIC JOURNAL 1 (2012), <http://apjff.org/-Jeff-Kingston/3822/article.pdf> [<https://perma.cc/UDX9-4KEC>].

¹⁴ Akihiro Horiuchi, *Naze genpatsu no anzen shinwa wa umaretanoka* [*How the safety myth of the nuclear power was created*], IT BUSINESS MEDIA (June 19, 2012), <http://bizmakoto.jp/makoto/articles/1206/19/news023.html> [<https://perma.cc/XD7K-7NUW>] (Japan); Yuki Tanaka, *Japan’s Safe Nuclear Myth*, THE DIPLOMAT (Mar. 25, 2011), <http://thediplomat.com/2011/03/japans-safe-nuclear-myth/> [<https://perma.cc/SH9H-5KJU>]; Norimitsu Onishi, ‘Safety Myth’ Left Japan Ripe for Nuclear Crisis, N.Y. TIMES (June 24, 2011), http://www.nytimes.com/2011/06/25/world/asia/25myth.html?_r=0.

¹⁵ *See* MINISTRY OF ECONOMY, TRADE AND INDUSTRY, *supra* note 2. *See also* NIHON GENSHIRYOKU BUNKA ZAIDAN [JAPAN ATOMIC ENERGY RELATIONS ORGANIZATION], *Zenkoku no genshiryoku hatsudensho no joukyou* [*Current status of nuclear power plant all over Japan*] (Sept. 1, 2011), https://www.jaero.or.jp/data/02topic/fukushima/pdf/0901unten_joukyou.pdf [<https://perma.cc/KY9F-KFKV>].

¹⁶ *See* MINISTRY OF ECONOMY, TRADE AND INDUSTRY, *supra* note 2.

¹⁷ *Id.* For the current estimate, *see infra* note 303.

prompted the Japanese government to rely more on nuclear power instead of fossil fuels. The Japanese government strongly promoted nuclear power, claiming that nuclear power was the most stable, environmentally friendly, and economically efficient method of power production.¹⁸

B. Government Regulation over Nuclear Power Plants

Of course, the government heavily regulates the use of nuclear power, as well as the construction and operation of nuclear power plants. These regulations are meant to ensure that nuclear power plants remain safe, and to prevent serious accidents that would cause grave damage to nearby residents as well as to the public.¹⁹

As we already noted, the fundamental policies for using nuclear power were established by the Atomic Power Basic Act.²⁰ It declared that the use of nuclear power is restricted for peaceful purposes and that the development and use of nuclear power should be conducted autonomously under the democratic operation aspiring to secure safety.²¹ AEC was established to enforce the government's nuclear policy systematically and to ensure the democratic operation of nuclear administration.²² The AEC's role is to prepare, review, and decide anything related to the use of nuclear power.²³ The Atomic Power Basic Act requires any individual who wishes

¹⁸ SHIGEN ENERGY CHŌ [AGENCY FOR NATURAL RESOURCES AND ENERGY], ENERGY KIHON KEIKAKU [ENERGY BASIC PLAN] at 10, 27 (June 2010), http://www.enecho.meti.go.jp/category/others/basic_plan/pdf/100618honbun.pdf [<https://perma.cc/ZAT5-GYPH>].

¹⁹ The regulatory system before the Fukushima accident is summarized at Research Organization for Information Science and Technology, *Hatsuden-yō genshiro no anzen kisei no gaiyō* [Outline of safety regulation of nuclear power reactor for power generation], ATOMICA (Dec. 2012), http://www.rist.or.jp/atomica/data/dat_detail.php?Title_No=11-02-01-01 [<https://perma.cc/VD23-NJR2>] [hereinafter *Outline of Reactor Regulation Law*], and the new regulatory system after the establishment of the Nuclear Regulation Authority ("NRA") in 2012 is summarized at Research Organization for Information Science and Technology, *Genshirotō kiseihō no gaiyō* [Outline of the nuclear reactor regulation law], ATOMICA (Dec. 2012) 1, http://www.rist.or.jp/atomica/data/dat_detail.php?Title_Key=10-07-01-05 [<https://perma.cc/D75U-P5QT>].

²⁰ Atomic Power Basic Act, *supra* note 10.

²¹ *Id.* at art. 2.

²² *Id.* at art. 4.

²³ *Id.* at art. 5. After the NRA was established, matters on the safety measures of nuclear power plants were no longer within the jurisdiction of the AEC, but the NRA; *see id.* at art. 3-2, 5; Genshiryoku anzen kisei ni kansuru soshiki-tō no kaikaku no kihon hōshin [Basic Policy on the Reform of an Organization in charge of Nuclear Safety Regulation

to construct nuclear reactors to follow government regulations under a separate statute.²⁴ It also mandates that any interested individuals must submit an operation plan and receive government approval before they may begin operation.²⁵

The Nuclear Reactor Regulation Act established the regulatory scheme for nuclear power plants.²⁶ According to the Nuclear Reactor Regulation Act, a power company that wishes to establish a nuclear reactor to generate power (power-generating nuclear reactor) needs to obtain a government permit.²⁷ There has been a change regarding who has the power to grant this permit. Initially the prime minister had this power, but it was later vested with the Minister of Economy, Trade and Industry (regulatory power was actually enforced by the Nuclear and Industrial Safety Agency (“NISA”), an agency in the ANRE, and the Nuclear Safety Commission (“NSC”) was created from the AEC to supervise on the safety issues).²⁸ After the Fukushima accident, the power to grant permits fell to the Nuclear Regulation Authority (“NRA”), an agency within the Ministry of Environment.²⁹ Despite these changes, the overall regulatory system has not been altered much.

The government is prohibited from granting a permit unless the application satisfies the following four criteria³⁰:

(Cabinet Decision) 15 Aug. 2011, http://www.cas.go.jp/jp/genpatsujiko/pdf/kakugi_en_110815.pdf [<https://perma.cc/Y9HE-JTWG>].

²⁴ Atomic Basic Power Act, *supra* note 10, at art. 14; see Kakugenryou busshitsu, kakunenryou busshitsu oyobi genshiro no kisei nikansuru hōritsu [Act Concerning the Regulation on Nuclear Raw Materials, Nuclear Fuel Materials and Nuclear Reactor], Law No. 166 of 1957, art. 3 (Hōrei teikyō dēta Shisutemu [Hōrei DB]), <http://www.oecd-nea.org/law/legislation/jpn-material-reactors.pdf> [<https://perma.cc/V7BQ-LF93>] (Japan) [hereinafter Nuclear Reactor Regulation Act].

²⁵ Atomic Power Basic Act, *supra* note 10, at art. 16.

²⁶ Nuclear Reactor Regulation Act, *supra* note 24, at art. 1.

²⁷ *Id.* at art. 43-3-5 (after 2012 amendment) (Before the 2012 amendment, all nuclear reactors were treated the same, but the 2012 amendment introduced a distinction between commercial power-generating nuclear reactor and others).

²⁸ Hideaki Shiroyama, *Nuclear Safety Regulation in Japan and Impacts of the Fukushima Daiichi Accident*, REFLECTIONS ON THE FUKUSHIMA DAIICHI NUCLEAR ACCIDENT 284 (J. Ahn et al. eds., 2015); *New Japanese Regulator Takes Over*, WORLD NUCLEAR NEWS (Sep. 19, 2012), http://www.world-nuclear-news.org/RS-New_Japanese_regulator_takes_over-1909125.html [<https://perma.cc/PCE2-4ZZN>] [hereinafter *New Japanese Regulator Takes Over*]; see *Outline of Reactor Regulation Law*, *supra* note 19, at 1.

²⁹ Shiroyama, *supra* note 28, at 284, 288.

³⁰ Nuclear Reactor Regulation Act, *supra* note 24, at art. 43-3-6 (after 2012 amendment) (Before the 2012 amendment, these criteria were stipulated in art. 24 of the Nuclear Reactor Regulation Act).

- (1) there is no danger that the proposed power-generating nuclear reactor would be used for anything other than peaceful purposes,
- (2) the applicant has the necessary technical capacity and financial basis to establish the power-generating nuclear reactor,
- (3) the applicant has the technical capacity necessary to implement countermeasures to prevent or contain any serious accidents and otherwise to operate the power-generating nuclear reactor properly, and,
- (4) the location, structure, and equipment of the proposed power-generating nuclear reactor satisfies government standards . . . such as are sufficient to prevent disaster to be caused by nuclear fuel materials, anything contaminated by nuclear fuel materials, or the nuclear reactor itself.

If the power company wants to modify the fundamental design of the power-generating nuclear reactor, it needs to obtain a permit for the proposed modifications.³¹ Also, before construction begins, the power company must obtain approval for its construction plan.³² Moreover, the facility must pass an inspection after construction is complete, before operations start.³³ If the construction involves welding, the power company must inspect the welding before operations begin and the result of that inspection needs to be recorded and kept.³⁴ The government will also inspect the facility's organization, method, management of construction and other factors to secure safety of the welding.³⁵ Furthermore, the power company needs to submit an operation plan for the proposed nuclear reactor.³⁶ It must also implement measures to ensure the safe operation of the nuclear power plant, in addition to ensuring proper transport, storage, and disposal of nuclear fuel materials or anything contaminated by the nuclear fuel materials, even in the event of serious accident.³⁷ It also needs to establish a security protocol and submit it for approval before operation of the power-generating nuclear reactor can begin.³⁸

³¹ *Id.* at art. 43-3-9.

³² *Id.*

³³ *Id.* at art. 43-3-11.

³⁴ *Id.* at art. 43-3-13, para. 1.

³⁵ Nuclear Reactor Regulation Act, *supra* note 24, at art. 43-3-13, para. 4.

³⁶ *Id.* at art. 43-3-17.

³⁷ *Id.* at art. 43-3-22.

³⁸ *Id.* at art. 43-3-24, para. 1. Before the 2012 amendment, there was no obligation to retrofit the nuclear reactor after the permit had been granted. The 2012 amendment

Of course, in order to build a nuclear power plant, it is politically essential to obtain the support of the local government. The government passed various statutes that provide many grants to local governments who are willing to accept a nuclear power plant within their jurisdiction.³⁹ This grant is a lucrative incentive for any local government and their residents to accept the nuclear power plant.⁴⁰

Moreover, in order to assure local residents that any kind of damage will be compensated if an accident occurs, the government passed the Nuclear Damage Award Act.⁴¹ The Act mandates that power companies are to pay damages for any loss or injury related to nuclear accidents, regardless of fault, except when the loss or injury is caused by an extraordinarily huge natural disaster.⁴² It thus mandated the power companies to secure sufficient damage award security. The power companies are mandated to conclude nuclear damage insurance contracts backed up by government reinsurance or to submit security deposits.⁴³ It also mandated the government to intervene in case the total liability exceeds the limits of the reinsurance or deposit.⁴⁴ While this statute grants power companies a sense of security, it also guarantees the local residents some kind of assurance that their damages will be paid.⁴⁵

The government can revoke the permit or order the suspension of the operation of a nuclear power plant if there is a violation of the Nuclear Reactor Regulation Act.⁴⁶ Moreover, if the government later determines

requires the operator of the nuclear power plant to maintain the facility and ensure that it complies with the current technical standards stipulated. *Id.* at art. 43-3-14.

³⁹ Dengenkaihatu sokushinzeihō [Act on Tax to Promote Development of Electricity Power], Law No. 78 of 1979, at art. 1 (Japan); Tokubetsu kaikei nikansuru hōritsu [Act on Special Finance Accounting], Law No. 23 of 2007, at art. 21-23, para. 2 (Japan) (formerly Dengenkaihatu sokushin taisaku tokubetsu kaikeihō [Act on Special Financial Accounting for Measures to Promote Development of Electricity Power], Law No. 80 of 1974 (Japan); Hatsuden-yō shisetsu shūhenchiiki seibihō [Act on Development of Adjacent Areas of the Electricity Power Generation Facilities], Law No. 78 of 1979, at art. 1, 3 (Japan).

⁴⁰ Act on Development of Adjacent Areas of the Electricity Power Generation Facilities, *supra* note 39.

⁴¹ Genshiryoku songai no baisho ni kansuru hōritsu [Act on Damage Payment for Nuclear Damages], Law No. 147 of 1961, at art. 1 (Japan).

⁴² *Id.* at art. 3. On the other hand, it relieved the liability of other parties involved such as manufacturers or construction companies.

⁴³ *Id.* at art. 6-7.

⁴⁴ *Id.* at art. 16.

⁴⁵ Placing a cap on the liability of the power company could be controversial. J. Mark Ramseyer, *Why Power Companies Build Nuclear Reactors on Fault Lines: The Case of Japan*, 13 THEORETICAL INQ. IN L. 457 (2012).

⁴⁶ Nuclear Reactor Regulation Act, *supra* note 24, art. 43-3-20, para. 2.

that the location, structure, or equipment of the facility does not satisfy the fourth criterion of the requirements for a permit, the government may order the operator of the facility to cease operations, modify its operation protocols, repair or relocate the facility, adopt a different operation method for the facility, or adopt any other necessary measures for security.⁴⁷ The government may do the same when the technical standards mandated by the government are not met, or when the measures to ensure the safety of the nuclear reactor facility's operation, including the proper transport, storage and disposal of nuclear fuel materials or anything contaminated by the nuclear fuel materials, were not sufficient.⁴⁸

As a result, the government and power companies have argued that nuclear power plants are safe because of these extensive regulations.

II. LAWSUITS AGAINST NUCLEAR POWER PLANTS

A. *Opposing Residents and the Courts*

Some local residents, environmentalists, and anti-nuclear power activists are naturally opposed to the construction and operation of nuclear power plants, fearing that such activities may seriously harm the environment and the public.⁴⁹ They also fear the possibility of a catastrophe where a serious accident results in significant radiation contamination, just like the Three Mile Island accident in 1979,⁵⁰ or the Chernobyl nuclear power plant accident in 1986.⁵¹ Even in Japan, a serious sodium leak accident occurred in the Monju fast-breeder facility in 1995,⁵² and several

⁴⁷ *Id.* at art. 43-3-23, para. 1.

⁴⁸ *Id.*

⁴⁹ Suvendrini Kakuchi, *Japanese Mothers Rise Up Against Nuclear Power*, THE GUARDIAN 2 (Dec. 22, 2011), <https://www.theguardian.com/environment/2011/dec/22/japanese-mothers-rise-nuclear-power> [<https://perma.cc/MSV7-TQV9>].

⁵⁰ WORLD NUCLEAR ASS'N, *Three Mile Island Accident* (Mar. 2001), <http://www.world-nuclear.org/information-library/safety-and-security/safety-of-plants/three-mile-island-accident.aspx> [<http://perma.cc/R2HP-9977>] (last updated Jan. 2012) (a cooling malfunction in the nuclear power plant caused part of the nuclear core to melt, releasing radioactive gas outside of the facility).

⁵¹ WORLD NUCLEAR ASS'N, *Chernobyl Accident 1986*, <http://www.world-nuclear.org/information-library/safety-and-security/safety-of-plants/chernobyl-accident.aspx> [<http://perma.cc/4CPF-TUVJ>] (last updated Nov. 2016) (a “flawed reactor design” of the nuclear power plant together with “inadequately trained personnel” resulted in a steam explosion and fires, “releas[ing] at least 5% of the radioactive reactor core into the atmosphere and downwind,” killing two workers immediately and twenty-eight more “within a few weeks” of the accident “as a result of acute radiation poisoning”).

⁵² H. Mikami, A. Shono & H. Hiroi, *Sodium Leak at Monju (I)—Cause and Consequences*,

workers were killed by an accident at the nuclear fuel processing plant of JOC in 1999.⁵³ Moreover, Japan is a country surrounded by four different tectonic plates,⁵⁴ which subject the country to a tremendous number of powerful earthquakes every year because of the subduction of one plate under the different plates.⁵⁵ Furthermore, there are an immeasurable number of active or hidden faults all over Japan.⁵⁶ The movement of these faults can suddenly cause very powerful earthquakes.⁵⁷ A notable example is the 1995 Hanshin-Awaji Earthquake, which was triggered by an active fault directly underneath Kobe, one of the major cities in Japan.⁵⁸ The earthquake resulted in serious casualties (more than 6,400 residents died or went missing because of the earthquake) and heavy damages (more than 100,000 houses were totally destroyed),⁵⁹ while raising serious concerns over the safety of nuclear power plants situated above or near active faults.⁶⁰ The opposing local residents, environmentalists, and

in IWGFR 92, INT'L ATOMIC ENERGY AGENCY 271 (Nov. 1996), http://www.iaea.org/inis/collection/NCLCollectionStore/_Public/31/044/31044840.pdf [<http://perma.cc/S246-8VNH>].

⁵³ WORLD NUCLEAR ASS'N, *Tokaimura Criticality Accident*, <http://www.world-nuclear.org/information-library/safety-and-security/safety-of-plants/tokaimura-criticality-accident.aspx> [<https://perma.cc/95P7-462W>] (last updated Oct. 2013) (during the course of preparing the fuel, a criticality accident occurred, exposing three workers to high doses of radiation).

⁵⁴ NUCLEAR WASTE MGMT. ORG. OF JAPAN (NUMO), *EVALUATING SITE SUITABILITY FOR A HLW REPOSITORY, TECTONIC SETTING AND EVOLUTION OF JAPAN 20, 29* (Aug. 2004), http://www.numo.or.jp/en/reports/pdf/Level3_SF_Final-06.pdf [<http://perma.cc/UX8A-2Z33>].

⁵⁵ According to Professor Bruce D. Malamud, the average number of powerful earthquakes in Japan from 1900 onwards is about seventeen magnitude-seven or greater earthquakes per year (compared to about one magnitude-eight or greater earthquake per year). *Dr. Bruce Malamud Answers Questions on the Japanese Earthquake and Tsunami*, ROYAL GEOGRAPHICAL SOC'Y, at 12 (Mar. 11, 2011), <http://www.rgs.org/OurWork/Schools/School+Members+Area/Ask+the+experts/Japanese+earthquake+and+tsunami.htm> [<https://perma.cc/DZN5-7USM>].

⁵⁶ EARTHQUAKE RESEARCH COMMITTEE, *REPORT: NATIONAL SEISMIC HAZARD MAPS FOR JAPAN 15* (2005), http://www.jishin.go.jp/main/chousa/06mar_yosoku-e/NationalSeismicHazardMaps.pdf [<https://perma.cc/H83Q-UVE5>].

⁵⁷ *Id.* at 2, 10.

⁵⁸ *Id.* at 1, 49, 53–54, 61.

⁵⁹ *Id.* at 1; *see also* CITY OF KOBE, *THE GREAT HANSHIN-AWAJI EARTHQUAKE STATISTICS AND RESTORATION PROGRESS 1, 3–4* (Jan. 1, 2012), <http://www.city.kobe.lg.jp/safety/hanshinawaji/revival/promote/january.2012.pdf> [<https://perma.cc/8WXA-M889>] (noting the deaths that occurred in the City of Kobe alone).

⁶⁰ The critical facility of the nuclear power plant was supposed to withstand the most powerful earthquake, which could be caused by the active fault nearby, which was found to have moved within the last 50,000 years. After the Hanshin-Awaji Earthquake, however, the power company was required to consider the active fault, which moved within the last 120,000 to 130,000 years, so the nuclear power plant just above the active fault was practically precluded. Takuji Koike, *Genshiryoku hatsudensho no jishin risuku* [*Nuclear*

anti-nuclear power activists thus employed all the available methods to protest and challenge the use of nuclear power.

One of the available avenues selected was a judicial challenge. Indeed, an opposing public filed numerous lawsuits against various nuclear power plants. There are two different routes to challenge nuclear power plants. The first route is to challenge the government permit that allows the construction or operation of the nuclear reactor. This first route takes the form of a lawsuit seeking judicial revocation of the government permit or declaration of its invalidity. The second route is to challenge the action of the power companies that construct and operate nuclear power plants. This second route usually takes the form of a lawsuit seeking an injunction against the power companies. There are significant differences between the first and second routes in Japan because a lawsuit challenging a government permit is an administrative case, which needs to follow a different procedure under the Administrative Case Litigation Act,⁶¹ while regular civil suits such as a lawsuit against a power company only need to follow the Code of Civil Procedure.⁶² In other words, if the plaintiffs want to challenge the government permit, they need to follow a separate, more onerous procedure.

B. Judicial Challenge Against a Government Permit

1. Threshold Questions

Opposing local residents, environmentalists and anti-nuclear power activists can challenge the government grant of a permit for a nuclear power plant. The Administrative Case Litigation Act authorizes the public to file a suit seeking the revocation of an administrative order issued by an administrative agency.⁶³ Sometimes, the public will instead file a suit seeking judicial declaration that the permit is invalid.⁶⁴ With respect to both suits, the first threshold question is one of standing. Because only persons who have standing to challenge the government action may file

power plant's risk for earthquake], REFERENCE (Nov. 2013), at 71, 81–82, 84. But there was no legal ban on nuclear power plants just above an active fault; there was fear that some of the faults might be active or there might be still-hidden active faults just underneath some of the nuclear power plants.

⁶¹ Gyousei jiken soshōhō [Administrative Case Litigation Act], Law No. 139 of 1962 (Japan).

⁶² Minji soshōhō [MINSOHŌ] [C. CIV. PRO.], Law No. 109 of 1996 (Japan).

⁶³ Administrative Case Litigation Act, *supra* note 61, at art. 3, para. 2.

⁶⁴ *Id.* at art. 3, para. 4.

these suits,⁶⁵ the government has challenged the standing of some plaintiffs. The leading case on this issue is comprised of the first two Monju decisions.⁶⁶

Monju is a fast-breeder nuclear reactor constructed and operated by the Japan Atomic Energy Agency (“JAEG”) (formerly Power Reactor and Nuclear Fuel Development Corp, and subsequently Japan Nuclear Cycle Development Institute).⁶⁷ JAEG received the permit to construct the nuclear reactor from the prime minister on May 27, 1983.⁶⁸ On September 26, 1985, local residents filed a suit seeking a declaration that this permit was invalid.⁶⁹ The Fukui District Court initially dismissed this administrative suit due to lack of standing.⁷⁰ Upon appeal, the Nagoya High Court, Kanazawa Branch, granted standing to residents who lived within a 20 km radius of the nuclear reactor, while rejecting others.⁷¹

⁶⁵ *Id.* at art. 9, para. 1; *id.* at art. 36. The difference between the revocation suit and the declaration of invalidity suit is that the former would allow the court to negate the validity of the government action from the decision of the court, while the latter would allow the courts to invalidate the administrative action from its start. It has been assumed that a suit for declaration of invalidity is permissible only when there is a grave and manifest illegality in the government action.

⁶⁶ Saikō Saibansho [Sup. Ct.], Sept. 22, 1992, 3rd petty bench, Hei 1 (Toz) no. 131, 46:6 SAIKŌ SAIBANSHO MINJI HANREISHŪ [MINSHŪ], at 1090 (Japan) [hereinafter Monju I]; Saikō Saibansho [Sup. Ct.], Sept. 22, 1992, 3rd petty bench, Hei 1 (Toz) no. 130, 46:6 SAIKŌ SAIBANSHO MINJI HANREISHŪ [MINSHŪ], at 571 (Japan) [hereinafter Monju II].

⁶⁷ *R&D Institutes/Center*, JAPAN ATOMIC ENERGY AGENCY, <https://www.jaea.go.jp/english/centers/> [<https://perma.cc/AF67-Q23T>] (last visited Nov. 12, 2017); *see also* Molly Lempriere, *Scrapping Monju: The Curtain Falls on Japan's Experimental Fast Breeder Reactor*, POWER TECHNOLOGY (Jan. 3, 2017), <http://www.power-technology.com/features/feature-scrapping-monju-the-curtain-falls-on-japans-experimental-fast-breeder-reactor-5708445/> [<https://perma.cc/F6Z4-ZF69>].

⁶⁸ Y. Matsuno, *A Review of Fast Reactor Program in Japan*, 52 INT'L ATOMIC ENERGY AGENCY 10 (Apr. 1984), http://www.iaea.org/inis/collection/NCLCollectionStore/_Public/17/003/17003585.pdf?r=1 [<https://perma.cc/Q37E-USG3>].

⁶⁹ Philip White, *Japan's Supreme Court Snubs Citizens Over Monju*, WISE/NIRS NUCLEAR MONITOR, June 10, 2005, at 3–4, <https://www.nirs.org/wp-content/uploads/mononline/nm629.pdf> [<https://perma.cc/72Y4-JCAJ>]; *see also* Baku Nishio, *Nuclear Court Cases in Japan*, CITIZEN'S NUCLEAR INFORMATION CENTER (CNIC) NUKE INFO TOKYO NO. 104, Jan./Feb. 2005, at 6, <http://www.cnic.jp/english/newsletter/pdf/files/nit104.pdf> [<https://perma.cc/7WWW-PK89>]. The local residents also filed a civil suit against the Power Reactor and Nuclear Fuel Development Corp seeking injunction against the construction and operation of a nuclear reactor, but this suit was later dropped. *Id.*

⁷⁰ Fukui Chihō Saibansho [Fukui Dist. Ct.], Dec. 25, 1987, 38:12 GYŌSEI JIKEN SAIBAN REISHŪ [GYŌSHŪ], at 1829 (Japan).

⁷¹ Nagoya Kōtō Saibansho, Kanazawa Shibu [Nagoya High Ct., Kanazawa Branch], July 19, 1989, 40:7 GYŌSEI JIKEN SAIBAN REISHŪ [GYŌSHŪ], at 938 (Japan).

Article 9 of the Administrative Case Litigation Act grants standing to file a revocation suit against administrative orders stipulated in Article 3, section 2, to plaintiffs “who have legal interest.”⁷² The Supreme Court of Japan [hereinafter cited as Supreme Court] held that anyone whose legal rights or legally protected interests are infringed upon, or will inevitably be infringed upon, by the impugned administrative order should be allowed to file a revocation suit against it.⁷³ When a regulatory statute that authorizes an administrative order is meant to protect a specific interest shared by a number of persons not only as a general public interest but also as the personal interest of each concerned individual, the Supreme Court has held that the interest should be viewed as a legally protected interest that gives standing to file a revocation suit to any individual whose aforementioned interest has been or will inevitably be infringed upon.⁷⁴ Whether the statute should be viewed as protecting only the general public interest or as also protecting the personal interest of individuals concerned should be decided by considering the overall intent, purpose, content, and nature of the interest that is meant to be protected by the administrative statute.⁷⁵ The Supreme Court held that this understanding should be applied to suits seeking a declaration of invalidity authorized in Article 36 of the Administrative Case Litigation Act⁷⁶ as distinguished from suits seeking revocation as well.⁷⁷

In regards to whether the Nuclear Reactor Regulation Act could be viewed as granting legal interest to file a suit for local residents to challenge the permit to satisfy the standing requirement, the Supreme Court viewed that the third criterion regarding technical capacity and the fourth criterion regarding the satisfaction of safety standards creates the responsibility of the government to prevent a nuclear disaster.⁷⁸ It reasoned that such requirements are necessary because a nuclear disaster could seriously harm employees and local residents, and the subsequent radiation contamination would severely damage the surrounding environment. Therefore, it is essential that the permit holder has the necessary technical capacity to ensure that the facility is safe.⁷⁹ The criteria were thus meant to ensure that the person permitted to construct the

⁷² Administrative Case Litigation Act, *supra* note 61, at art. 9.

⁷³ Monju I, *supra* note 66.

⁷⁴ *Id.*

⁷⁵ *Id.*

⁷⁶ Administrative Case Litigation Act, *supra* note 61, at art. 36.

⁷⁷ Monju I, *supra* note 66.

⁷⁸ *Id.*

⁷⁹ *Id.*

nuclear reactor has the necessary technical capacity to operate the nuclear power plant while satisfying the specified safety standards in light of the location, structure, and equipment of the facility.⁸⁰ If there were any errors in this review, there is a possibility that a grave nuclear accident might happen, threatening the safety and lives of residents that live near the nuclear power plant.⁸¹ Due to the overall intent of the provisions and the degree of potential damage, the Supreme Court held that these provisions should be viewed not only as protecting the public and the environment as a general public interest, but also as protecting the life and safety of individual local residents living close to the nuclear power plant by granting a legally protected personal interest.⁸² Furthermore, the Supreme Court held that whether the plaintiff lives in an area where such direct and grave damages are likely to happen as a result of a nuclear disaster should primarily depend on the distance between plaintiff's residence and the location of the nuclear reactor, while also considering the kind of nuclear reactor involved, its structure, its capacity, and other relevant factors.⁸³ The Supreme Court then affirmed the High Court holding, which granted standing to residents within a 20 km radius from the plant (Monju I)⁸⁴ and further granted standing to residents who lived 29 km to even 58 km away from the plant (Monju II).⁸⁵

This was a landmark decision, which cleared the way for local residents to challenge government permits that allowed the construction of nuclear reactors. On the other hand, it denied standing to those persons who live too far away and might only have a serious concern with the safety of the nuclear power plant.⁸⁶ Therefore, environmentalists and anti-nuclear power activists were precluded from joining plaintiffs unless they lived within a certain distance of the nuclear power plant.⁸⁷

2. Standard of Review

When the threshold questions are cleared, the next question is how the reviewing court should review the legality of the permit.

⁸⁰ *Id.*

⁸¹ *Id.*

⁸² Monju I, *supra* note 66.

⁸³ *Id.*

⁸⁴ *Id.*

⁸⁵ Monju II, *supra* note 66.

⁸⁶ *See* Monju I, *supra* note 66; Monju II, *supra* note 66.

⁸⁷ The Supreme Court also accepted a suit for declaration of invalidity of government permit as lawful. Monju I, *supra* note 66. The civil suit against the power company, it was held, does not preclude a suit for declaration of invalidity. *Id.*

The leading case on this issue is the Ikata nuclear power plant case.⁸⁸ Reactor No. 1 of the Ikata nuclear power plant was granted a permit on November 28, 1972,⁸⁹ and local residents filed a suit seeking the judicial revocation of a permit for the construction of a nuclear reactor on August 27, 1973.⁹⁰ Both the Matsuyama District Court⁹¹ and the Takamatsu High Court⁹² dismissed their claims. On October 29, 1992, the Supreme Court affirmed the High Court's judgment and dismissed all claims brought by the local residents.⁹³

The Supreme Court found that a safety review conducted under the Nuclear Reactor Regulation Act must be a multifaceted and comprehensive one requiring not only the knowledge of nuclear engineering, but also cutting-edge scientific, professional, and technical knowledge.⁹⁴ The Supreme Court thus held that the decision on whether the application satisfied the safety standards should be left to the reasonable judgment of the prime minister, who was supposed to hear the opinion of the AEC and respect it in regards to safety reviews.⁹⁵ As a result, the Supreme Court held that the reviewing courts should determine whether the defendant's judgement was unreasonable or not, in light of the review and decision of the AEC or its expert committee, the Nuclear Reactor Expert Review Committee ("NRERC").⁹⁶ The reviewing courts should find the granting of the construction permit unreasonable only when the specific standards used during the review were unreasonable in light of the current standard of technology and science or when there was a grave error or omission in applying the specific standards to the relevant nuclear reactor during the review and decision of AEC or NRERC.⁹⁷ This is a highly deferential stance.

In an action seeking to revoke government grant of a permit, the plaintiffs bear the burden of proof of showing that the decision to grant

⁸⁸ Saikō Saibansho [Sup. Ct.], Oct. 29, 1992, 1st petty bench, 46:7 SAIKŌ SAIBANSHO MINJI HANREISHŪ [MINSHŪ], at 1174 (Japan) [hereinafter *Ikata*].

⁸⁹ *Plaintiffs Against Ikata Nuclear Power Plant*, CITIZEN'S NUCLEAR INFORMATION CENTER (CNIC) NUKE INFO TOKYO No. 4, Mar./Apr. 1988, at 6.

⁹⁰ *Id.*; DANIEL P. ALDRICH, *SITE FIGHTS: DIVISIVE FACILITIES AND CIVIL SOCIETY IN JAPAN AND THE WEST* 133 (2008).

⁹¹ Matsuyama Chihō Saibansho [Matsuyama Dist. Ct.], Apr. 25, 1978, 29:4 GYŌSEI JIKEN SAIBAN REISHŪ [GYŌSHŪ], at 588 (Japan).

⁹² Takamatsu Kōtō Saibansho [Takamatsu High Ct.], Dec. 14, 1984, 35:12 GYŌSEI JIKEN SAIBAN REISHŪ [GYŌSHŪ], at 2078 (Japan).

⁹³ *Ikata*, *supra* note 88.

⁹⁴ *Id.*

⁹⁵ *Id.*

⁹⁶ *Id.*

⁹⁷ *Id.*

the permit was unreasonable.⁹⁸ However, in light of the fact that all of the evidence regarding the safety review and its processes are possessed by the government, the Supreme Court in Ikata required the government to prove that there were no wrong or unreasonable components to its safety review.⁹⁹ Therefore, the government must argue and adduce proof that the specific standards used by the AEC or NRERC were not unreasonable, and that no unreasonableness arose during the process of their review, from their own decision, or within the ultimate decision of the government.¹⁰⁰ If the government fails to prove these matters, a presumption that the government's judgment was practically unreasonable will stand.¹⁰¹ This part of the decision was a relief to local residents.

Moreover, the entire process of constructing and operating a nuclear power plant requires multiple permits and approvals from the government. The Supreme Court held the view that a permit for the construction and operation of a nuclear reactor needed to focus on the standards specified in the chapter on construction and operation permits within the Nuclear Reactor Regulation Act.¹⁰² Even among the various regulations and permits necessary for the construction and operation of nuclear reactors, there are multiple stages that have their own requirements, such as a permit for construction, permit for alteration, approval of construction plans and methods, inspection before use, approval of security protocol, regular maintenance and check-up, and so forth. Thus, the Supreme Court held that when reviewing a construction permit, only the fundamental design of the nuclear reactor should be subject to review, and not the other aspects of the construction and operation of a nuclear reactor.¹⁰³ As a result, it is only the safety of the fundamental design that should be subject to review during the safety review for a permit to construct a nuclear reactor.

This decision showcased an attitude that was highly deferential towards the government, forcing the courts to examine only whether the government judgment was unreasonable or not, and not whether the impugned nuclear reactor actually satisfied safety standards. Moreover, by limiting the safety review to the fundamental design of the nuclear reactor, it precluded the need to consider the overall safety of the facility, or any other safety issues.

⁹⁸ Ikata, *supra* note 88.

⁹⁹ *Id.*

¹⁰⁰ *Id.*

¹⁰¹ *Id.*

¹⁰² *Id.*

¹⁰³ Ikata, *supra* note 88.

Following the Ikata nuclear power plant case, the Supreme Court affirmed this basic holding on standards of review in a continuation of the Monju case, with a suit seeking a declaration of invalidity (Monju III).¹⁰⁴ Upon remand, the Fukui District Court followed precedent and held that it was only when there was a grave and manifest illegality that the court could declare an order invalid.¹⁰⁵ Then, the District Court applied the Ikata standards of review doctrine and inquired whether there was a grave and manifest error in the safety review.¹⁰⁶ The Nagoya High Court, however, held that the error did not have to be manifest for the court to declare an order invalid, so long as the error was grave.¹⁰⁷ Moreover, it held that the court did not have to find a concrete risk of serious accident, but a court needed to see whether such concrete risk could be denied.¹⁰⁸ The High Court then drew upon the Ikata doctrine to see whether the agency could prove there was no grave error in the safety review.¹⁰⁹ However, the Supreme Court reversed the judgment of the High Court without making clear whether the court needed to find a grave and manifest error.¹¹⁰ The major differences between the Ikata nuclear power plant case and the Monju case involved a shuffling of responsibilities: the power to grant a permit was vested in the Minister of Economy, Trade and Industry instead of the prime minister, the NSC took on the responsibilities previously held by the AEC,¹¹¹ and the Nuclear Reactor Safety Expert Review Committee (“NRSRC”) replaced the NRERC. But the Monju III case holding simply followed the Ikata doctrine’s deference to the judgment of the government.¹¹² The major development was that the Supreme Court found that the government could decide, while exercising reasonable judgment, what matters should be considered when reviewing the safety of a nuclear reactor’s fundamental design.¹¹³ The Supreme Court essentially left the government with the power not only to determine whether an

¹⁰⁴ Saikō Saibansho [Sup. Ct.], May 30, 2005, 1st petty bench, 59:4 SAIKŌ SAIBANSHO MINJI HANREISHŪ [MINSHŪ], at 671 (Japan) [hereinafter Monju III].

¹⁰⁵ Fukui Chihō Saibansho [Fukui Dist. Ct.], Mar. 22, 2000, Hei 1998 no. 6, 1727 HANREI JIHŌ [HANJI], at 33 (Japan).

¹⁰⁶ *Id.*

¹⁰⁷ Nagoya Kōtō Saibansho, Kanazawa Shibu [Nagoya High Ct., Kanazawa Branch], Jan. 27, 2003, 1818 HANREI JIHŌ [HANJI], at 3 (Japan).

¹⁰⁸ *Id.*

¹⁰⁹ *Id.*

¹¹⁰ Monju III, *supra* note 104.

¹¹¹ *New Japanese Regulator Takes Over*, *supra* note 28.

¹¹² *See* Monju III, *supra* note 104.

¹¹³ *Id.*

application reasonably satisfied the required safety standards, but also the very reasonableness of the factors required as safety standards. This allows the government to ignore many issues relevant to the safety of the nuclear reactor, while barring the courts from reviewing these issues as relevant if the government opts not to do so.

Earlier courts reflected this same attitude in a suit against the grant of a permit for Reactor No. 1 of the Fukushima Daini nuclear power plant,¹¹⁴ with the Supreme Court ultimately dismissing the appeal on October 29, 1992.¹¹⁵ The Supreme Court narrowed the subject of safety review to factors included in statute, excluding other factors from the safety review, and limiting the safety review to the safety of the nuclear reactor's fundamental design.¹¹⁶ These holdings were followed by the Niigata District Court and the Tokyo High Court in a case involving the Kashiwazaki Kariwa nuclear power plant operated by TEPCO.¹¹⁷ The Supreme Court simply dismissed the appeal insisting on the absence of a lawful cause for appeal, and it refused to grant a discretionary appeal as well.¹¹⁸

3. Legality of the Permit

Third, the courts needed to squarely face the question of whether the permits were illegal.

In the Ikata nuclear power plant case, the plaintiffs argued that the failure to consider issues regarding the treatment of solid waste, the reuse of spent nuclear materials, or the impact of emissions of warmed water made the permit unlawful, but the Supreme Court agreed with the High Court that these issues were not relevant when conducting a safety review for a construction permit.¹¹⁹ It also agreed with the High Court that the Three Mile Island nuclear power plant accident did not affect the safety review, because not all matters concerning the safety of the

¹¹⁴ Fukushima Chihō Saibansho [Fukushima Dist. Ct.], July 23, 1984, 35:7 GYŌSEI JIKEN SAIBAN REISHŪ [GYŌSHŪ], at 995 (Japan); Sendai Kōtō Saibansho [Sendai High Ct.], Mar. 20, 1990, 41:3 GYŌSEI JIKEN SAIBAN REISHŪ [GYŌSHŪ], at 586 (Japan).

¹¹⁵ Saikō Saibansho [Sup. Ct.], Oct. 29, 1992, 1st petty bench, 166 SAIKŌ SAIBANSHO SAIBANSHŪ MINJI [SAIBANSHŪ MINJI], at 509 (Japan) [hereinafter Fukushima].

¹¹⁶ *Id.*

¹¹⁷ See Niigata Chihō Saibansho [Niigata Dist. Ct.], Mar. 24, 1994, 45:3 GYŌSEI JIKEN SAIBAN REISHŪ [GYŌSHŪ], at 304 (Japan); see Tokyo Kōtō Saibansho [Tokyo High Ct.], Nov. 22, 2005, 52:6 SHŌMU GEPPŌ, at 1581 (Japan).

¹¹⁸ Saikō Saibansho [Sup. Ct.], April 23, 2009, 1st petty bench, Hei 56 (Gozu) no. 56, TKC database (Japan) [hereinafter Kashiwazaki Kariwa].

¹¹⁹ Ikata, *supra* note 88.

nuclear reactor facility would be covered at the reactor installation permission stage.¹²⁰ Overall, the Supreme Court found that the review by the AEC or the NRERC was not unreasonable and so the judgment of the government to grant a permit was not unreasonable.¹²¹

In Monju III, the most significant issue was the failure to anticipate the possibility of the rupture of pipes and a serious accident resulting from the leak of coolant sodium onto the floor.¹²² In 1995, one of the pipes at the Monju nuclear power plant that carried the sodium coolant ruptured and sodium leaked from damaged pipes, reacting with oxygen in the air to cause a fire.¹²³ After the accident, a 0.5–1.5 mm dent was found in the floor liner.¹²⁴ An investigation revealed that the coolant could get heated and could seep into the liner.¹²⁵ If the sodium had reached the concrete floor, then a much more serious disaster could have occurred.¹²⁶ The plaintiffs argued that the failure to anticipate both the erosion of the floor liner due to a reaction between sodium and oxygen and the problems caused by a significant increase in temperature of the floor liner were critical errors in the safety review.¹²⁷ The Nagoya High Court found that the possibility of rupture was not considered during the safety review and sufficient countermeasures were not adopted, and therefore concluded that this error was so grave that the government permit was invalid.¹²⁸ However, the Supreme Court believed that these matters could be considered and countermeasures could be adopted in the later stages, and therefore it was not unreasonable for the Economy, Trade and Industry Minister to not consider these matters during a safety review on the fundamental design of the nuclear reactor.¹²⁹ In sum, there was

¹²⁰ *Id.*

¹²¹ *Id.*

¹²² Monju III, *supra* note 104.

¹²³ T. Funada & Y. Yamagishi, *Sodium Leak at Monju (II): Sodium Leak, Burning and Aerosol Behavior*, in IWGFR 92, INT'L ATOMIC ENERGY AGENCY (IAEA) 284–85 (Nov. 1996), http://www.iaea.org/inis/collection/NCLCollectionStore/_Public/31/044/31044841.pdf?r=1 [<https://perma.cc/62E9-ZASC>].

¹²⁴ *Id.* at 284. “The liner (6.1–6.2 mm, steel) was reduced in thickness by 0.5–1.5 mm.”

¹²⁵ Hiroshi Seino, Shinya Miyahara, Osamu Miyake et al., *Sodium Fire Tests for Investigating the Sodium Leak in Monju*, in IWGFR 92, INT'L ATOMIC ENERGY AGENCY (IAEA) 298–99, 301–02 (Nov. 1996), http://www.iaea.org/inis/collection/NCLCollectionStore/_Public/31/044/31044842.pdf [<https://perma.cc/244D-B9AA>].

¹²⁶ *Id.* at 301–02.

¹²⁷ Monju III, *supra* note 104.

¹²⁸ Nagoya Koto Saibansho, Kanazawa Shibu [Nagoya High Ct., Kanazawa Branch], Jan. 27, 2003, *supra* note 107.

¹²⁹ Monju III, *supra* note 104.

no illegality in the standards used, nor in their application in the safety review, nor the grant of permit.

In the Fukushima Daini nuclear power plant case, the Supreme Court similarly concluded that concerns over the disposal of nuclear waste, the method of recycling and transporting spent fuel, the risk of stress corrosion cracking, and other issues should not be assessed during a safety review; thus, the court below had properly upheld a lawful granting of a permit.¹³⁰ In the Kashiwazaki Kariwa nuclear power plant case, the Tokyo High Court rejected all of the arguments of the local residents, holding that issues such as the environmental impact of the discharge of warmed water, the final disposal location of solid waste, and the method of recycling and transporting spent fuel could all be excluded from safety reviews.¹³¹ The High Court also rejected all other arguments about the alleged failures and errors in the safety review.¹³² It rejected the need to consider the JCO accident, insisting that the JCO facility was not a nuclear reactor, and that the accident was not relevant to whether a permit should be granted.¹³³ It also dismissed the argument that the review failed to consider the Three Mile Island accident, asserting that the nuclear reactor in the Three Mile Island plant was of a different type and that the accident was caused by human error.¹³⁴ It further dismissed the argument that the review was flawed on account of failure to consider the Chernobyl accident, insisting again that the reactor in the Chernobyl plant was a different type, and that the accident was caused by the absence of multilayered security measures combined with multiple flagrant violations of safety protocols.¹³⁵ The Supreme Court simply dismissed the appeal, insisting that the cited reason for the appeal did not constitute a lawful reason for appeal, and it similarly rejected the discretionary appeal.¹³⁶

4. Due Process

In the Ikata nuclear power plant case, the local residents also challenged the constitutionality of the procedure for granting a permit, citing the due process requirement articulated in Article 31 of the Constitution

¹³⁰ Fukushima, *supra* note 115.

¹³¹ Tokyo Kōtō Saibansho [Tokyo High Ct.], Nov. 22, 2005, *supra* note 117.

¹³² *Id.*

¹³³ *Id.*

¹³⁴ *Id.*

¹³⁵ *Id.*

¹³⁶ Kashiwazaki Kariwa, *supra* note 118.

of Japan.¹³⁷ Specifically, they argued that the government acted unconstitutionally by failing to include local residents in the proceeding to grant a permit, and failing to disclose relevant application documents to the local residents.¹³⁸

The Supreme Court held, however, that the due process clause does not require the right to adequate notice and the right to make full answer and defense in all administrative proceedings, even if the due process clause is applicable to administrative proceedings.¹³⁹ Furthermore, the Supreme Court held that, because the decision on whether the application satisfies the requirements set forth in the Nuclear Reactor Regulation Act requires the judgment from a highly professional and technically capable party, the Act mandated that the opinion of the AEC, an expert body in this field, should be heard and respected.¹⁴⁰ In light of this statutory scheme, the Supreme Court concluded that the absence of an opportunity for local residents to participate in the proceeding, the failure to disclose relevant documents, the lack of advance notice, or the lack of opportunity for local residents to participate in permit-granting process did not violate the “spirit” of Article 31.¹⁴¹

The Supreme Court confirmed these holdings in the Fukushima Daini nuclear power plant case as well.¹⁴²

C. *Judicial Challenge Against Power Companies*

1. Civil Injunction Suit Against the Power Companies

An opposing public can challenge a power company’s decision to construct and operate a nuclear power plant by filing a civil suit. In the event of an accident, affected local residents could seek damages. But in most cases, the opposing public files suits seeking an injunction against the construction and operation of nuclear power plants to prevent harms and damages caused by the construction and operation of nuclear power plants and to eliminate the risk of harms and damages that may result from the possible serious accidents in the nuclear power plants.¹⁴³

¹³⁷ NIHONKOKUKENPŌ [CONSTITUTION OF JAPAN], at art. 31; Ikata, *supra* note 88.

¹³⁸ Ikata, *supra* note 88.

¹³⁹ *Id.*

¹⁴⁰ *Id.*

¹⁴¹ *Id.*

¹⁴² Fukushima, *supra* note 115.

¹⁴³ See generally Sendai Chihō Saibansho [Sendai Dist. Ct.], Jan. 31, 1994, 1482 HANREI JIHŌ [HANJI], at 3 (Japan).

With respect to injunction suits against power companies that wish to construct and operate nuclear power plants, the leading case is the Onagawa nuclear power plant case.¹⁴⁴ Reactor No. 1 was granted a permit in 1970 and began construction in 1979.¹⁴⁵ In 1981, local residents filed a civil suit seeking an injunction against further construction by Tohoku Electric Power.¹⁴⁶ After the facility was completed and began operation in 1983, plaintiffs sought an injunction against the facility's operation instead.¹⁴⁷ The permit for construction of Reactor No.2 was granted in February 1989.¹⁴⁸ Local residents also added a claim seeking an injunction against the construction of Reactor No.2.¹⁴⁹ Both the Sendai District Court¹⁵⁰ and the Sendai High Court¹⁵¹ dismissed the suit, and the Supreme Court dismissed an appeal.¹⁵²

In order to challenge the nuclear power plant, local residents invoked their personality rights,¹⁵³ and their right to enjoy a good environment (environmental right)¹⁵⁴ as a basis for injunction.¹⁵⁵ They argued that the nuclear power plant emitted a low level of radiation that would increase health risks for local residents, thus infringing on the personality

¹⁴⁴ Saikō Saibansho [Sup. Ct.], Dec. 19, 2000, 3rd petty bench, Hei 1999 (e) no. 936, TKC database (Japan) [hereinafter Onagawa].

¹⁴⁵ See Tohoku Electric Power Onagawa Power Station No.1 Furnace, Background of the No. 2 Furnace, RIST, http://www.rist.or.jp/atomica/data/dat_detail.php?Title_Key=10-05-02-06 [https://perma.cc/6HMJ-LZED].

¹⁴⁶ See *id.*

¹⁴⁷ See *id.*

¹⁴⁸ See *id.*

¹⁴⁹ See *id.*

¹⁵⁰ Sendai Chihō Saibansho [Sendai Dist. Ct.], Jan. 31, 1994, *supra* note 143.

¹⁵¹ Sendai Kōtō Saibansho [Sendai High Ct.], Mar. 31, 1999, 1680 HANREI JIHŌ [HANJI], at 46 (Japan).

¹⁵² Onagawa, *supra* note 144.

¹⁵³ In Japan, it is widely believed that the right to personhood is legally protected as a personality right under the Civil Code. This right includes physical and psychological integrity of a person, right of reputation and privacy, and the right of autonomy. See Matsuo Nakamura, *Freedom of Economic Activities and the Right to Property*, 53 LAW & CONTEMP. PROBS. 2; see also Naoki Kanaboshi, *Competent Persons' Constitutional Right to Refuse Medical Treatment in the U.S. and Japan: Application to Japanese Law*, 25 PENN ST. INT'L L. REV. 5, 50 (2006).

¹⁵⁴ The right to enjoy one's environment or the environmental right was first invoked in the environmental pollution cases to justify the damage action and injunction action against the polluters. Even if there were no personal injury or harms to the local residents, people could invoke this right when the environment was harmed or damaged. But the courts are generally very reluctant to accept this right. See JULIAN GRESSER ET AL., ENVIRONMENTAL LAW IN JAPAN, 146 (1981).

¹⁵⁵ See Sendai Chihō Saibansho, [Sendai Dist. Ct.], Jan. 31, 1994, *supra* note 143.

right, and that there was a concrete danger that local residents would suffer massive, unbearable damages if a serious accident occurred due to problems in the structure or operation of the nuclear power plant, thus again infringing on the personality right.¹⁵⁶ Furthermore, local residents argued that a nuclear power plant would damage the environment and could destroy the environment following a serious accident, infringing on the environmental right of local residents.¹⁵⁷ In the Onagawa nuclear power plant case, the Sendai District Court accepted both the personality right and the environmental right as a legal basis for an injunction.¹⁵⁸

Turning to the burden of proof, the Sendai District Court held that the nuclear power plant could not be totally risk-free, insisting that absolute safety was impossible.¹⁵⁹ Instead, the court held that the emission of radioactive materials needed to be minimized as much as possible, reducing the risk of harms to a socially negligible and tolerable degree.¹⁶⁰ The court then held that local residents faced the ultimate burden of proof in determining a problem with the plant's safety.¹⁶¹ However, in light of the fact that the power company and government possessed all the data and evidence, the Sendai District Court placed the burden on the defendant to show, with sufficient evidence, that there was nothing wrong with the nuclear power plant's safety.¹⁶² If a power company failed to demonstrate there was nothing lacking with their plant safety measures, the plaintiffs were then required to further prove the alleged lack of plant safety.¹⁶³ To finally meet their burden, local residents had to establish that the facility posed a concrete risk to the life and health of the local residents.¹⁶⁴

With respect to the merit of the case, the Sendai District Court found that the conclusion of the government safety review was reasonable and there was nothing wrong with the impugned safety measures included in the facility's fundamental design.¹⁶⁵ It also found that no specific problems could be found in the construction and operation process.¹⁶⁶ It dismissed the possibility of a serious accident in light of the

¹⁵⁶ *See id.*

¹⁵⁷ *See id.*

¹⁵⁸ *Id.*

¹⁵⁹ *Id.*

¹⁶⁰ Sendai Chihō Saibansho, [Sendai Dist. Ct.], Jan. 31, 1994, *supra* note 143.

¹⁶¹ *Id.*

¹⁶² *Id.*

¹⁶³ *Id.*

¹⁶⁴ *Id.*

¹⁶⁵ Sendai Chihō Saibansho, [Sendai Dist. Ct.], Jan. 31, 1994, *supra* note 143.

¹⁶⁶ *Id.*

accidents in other nuclear power plants.¹⁶⁷ The Sendai District Court concluded that there was no possibility of radiation exposure beyond a socially negligible degree through normal operation of the facility, and that there was no risk of a serious accident that would expose local residents to radiation levels beyond a socially negligible degree.¹⁶⁸

This reasoning was affirmed by the Sendai High Court.¹⁶⁹ The Supreme Court found that the appeal did not fall within permissible legal grounds, and it also dismissed the discretionary appeal.¹⁷⁰ Similar results were also reached in other civil injunction cases, although all other courts rejected the notion that environmental rights could be a legal basis for seeking an injunction.¹⁷¹ This led to allowing only local residents living close to a nuclear power plant, and therefore most likely to be hurt or to suffer damage from a serious nuclear accident, the ability to file a civil suit seeking an injunction. Thus, environmentalists and anti-nuclear power activists were once again excluded from bringing suit as plaintiffs. Apart from this issue, the Sendai District Court's decision in the Onagawa nuclear power plant case became the leading precedent for other civil injunction cases against power companies.

2. Minority Position

In contrast, the Kanazawa District Court accepted the arguments of its local residents and issued an injunction against the operation of Reactor No. 2 in the Shiga nuclear power plant.¹⁷² On April 14, 1999, a permit to add Reactor No. 2 was granted, and its construction began on August 27.¹⁷³ Commercial operation was slated to start in January

¹⁶⁷ *Id.*

¹⁶⁸ *Id.*

¹⁶⁹ Sendai Kōtō Saibansho, [Sendai High. Ct.], Mar. 31, 1999, *supra* note 151.

¹⁷⁰ Onagawa, *supra* note 144.

¹⁷¹ Kanazawa Chihō Saibansho [Kanazawa Dist. Ct.], Aug. 25, 1994, 1515 HANREI JIHŌ [HANJI], at 3 (Japan) [hereinafter Shiga-Kanazawa]; Nagoya Kōtō Saibansho, Kanazawa Shibu [Nagoya High Ct., Kanazawa Branch], Sept. 9, 1998, 1656 HANREI JIHŌ [HANJI], at 37 (Japan) [hereinafter Shiga-Nagoya]; Osaka Chihō Saibansho [Osaka Dist. Ct.], Dec. 24, 1993, Hei 3 (wa) no. 8150, 1480 HANREI JIHŌ [HANJI], at 17 (Japan) [hereinafter Takahama]; Sapporo Chihō Saibansho [Sapporo Dist. Ct.], Feb. 22, 1999, 1676 HANREI JIHŌ [HANJI], at 3 (Japan) [hereinafter Tomari]; Shizuoka Chihō Saibansho [Shizuoka Dist. Ct.], Oct. 26, 2007, TKC database (Japan) [hereinafter Hamaoka].

¹⁷² Kanazawa Chihō Saibansho [Kanazawa Dist. Ct.], Mar. 24, 2006, Hei 19 (wa) no. 430, 1930 HANREI JIHŌ [HANJI], at 25 (Japan) [hereinafter Shiga II—Kanazawa].

¹⁷³ *Id.*

2006.¹⁷⁴ Local residents filed a civil suit seeking an injunction against its operation.¹⁷⁵

Although the local residents invoked the personality right as well as the environmental right as a basis for seeking an injunction, the court rejected an argument based on the environmental right, holding that the plaintiffs can seek an injunction only if they could prove that their life, body, or health was actually injured or that there was a concrete danger that they would be infringed.¹⁷⁶ In civil suits, the plaintiff essentially bears the burden of proof for the concrete danger.¹⁷⁷ However, because all the information and data on the safety of the nuclear facility belongs to the defendant power company, the court held that the plaintiffs should be required to prove only that there is a substantive concrete possibility of radiation exposure beyond the tolerable limits by the defects in the safety system.¹⁷⁸ If that is established, the onus flips to the defendant power company to establish that there is no such concrete possibility, backed with relevant evidence.¹⁷⁹ The defendant argued that the addition of a second reactor was approved by the government, a fact that the court noted was an important factor in reviewing the facility's safety.¹⁸⁰ However, the court also noted that unexpected, abnormal situations that were not anticipated during the safety review have happened before, and that the safety review for the facility was conducted seven years ago, and held that prior approval should not preclude further review by the courts.¹⁸¹

Turning to the risk of radiation exposure, the court held that the radiation exposure from normal operation of the reactor was very low and therefore that risk alone should not justify an injunction.¹⁸² The plaintiffs relied on the accidents that befell the Three Mile Island and Chernobyl nuclear power plants to argue for the existence of a concrete possibility of an accident. Yet, the court rejected their argument, insisting that the reactors involved were different in structure and equipment.¹⁸³ The court

¹⁷⁴ *Id.*

¹⁷⁵ *Id.*

¹⁷⁶ *Id.*

¹⁷⁷ Shiga II—Kanazawa, *supra* note 172.

¹⁷⁸ *Id.*

¹⁷⁹ *Id.*

¹⁸⁰ *Id.*

¹⁸¹ *Id.*

¹⁸² Shiga II—Kanazawa, *supra* note 172.

¹⁸³ *Id.*

also rejected arguments based on accidents that happened in other nuclear power plants in Japan, as well as other arguments that cited deficiencies and previous problems in the impugned nuclear reactor.¹⁸⁴

Nevertheless, the court found that the estimates for both the tremor speed and anticipated maximum magnitude of an earthquake that would occur directly below a nuclear facility were too conservative, and that the estimation formula used by the government was outdated as it did not accurately predict the Hanshin Awaji earthquake.¹⁸⁵ The court also cast doubt on the reasonableness of the assumption regarding vertical movement to be half of the horizontal movement as too formalistic.¹⁸⁶ Because of these errors, the court found that the safety review was not sufficient enough to preclude the possibility of a serious accident.¹⁸⁷ As a result, the court was satisfied that the plaintiffs proved a substantive concrete possibility of significant radiation exposure, as well as that the defendant power company failed to rebut these arguments.¹⁸⁸ As the remedy, the court granted an injunction barring operation of the second nuclear reactor.¹⁸⁹

However, the Nagoya High Court, Kanazawa Branch reversed the district court judgment and dismissed the suit.¹⁹⁰ It reviewed whether the power company had fulfilled its obligation to demonstrate, with necessary evidence, that there was no safety defect.¹⁹¹ The Nagoya High Court found that the power company proved that the impugned nuclear reactor satisfied the safety standards, and therefore, it concluded that the local residents failed to demonstrate any concrete risks.¹⁹² The Nagoya High Court thus dismissed the injunction claim.¹⁹³ Here too, the Supreme Court dismissed the appeal for a lack of lawful cause for appeal, and dismissed the discretionary appeal as well.¹⁹⁴

¹⁸⁴ *Id.*

¹⁸⁵ *Id.*

¹⁸⁶ *Id.*

¹⁸⁷ Shiga II—Kanazawa, *supra* note 172.

¹⁸⁸ *Id.*

¹⁸⁹ *Id.*

¹⁹⁰ Nagoya Kōtō Saibansho, Kanazawa Shibu [Nagoya High Ct., Kanazawa Branch], Mar. 18, 2009, Hei 108 (ne) no. 108, 2045 HANREI JIHŌ [HANJI], at 3 (Japan).

¹⁹¹ *Id.*

¹⁹² *Id.*

¹⁹³ *Id.*

¹⁹⁴ Saikō Saibansho [Sup. Ct.], Oct. 28, 2010, 1st petty bench, Hei 21 (o) no. 1241, TKC database (Japan).

D. *Lawsuits Against Nuclear Power and the Japanese Society*

1. Reluctance of the Courts to Intervene

Japanese people are notorious for their reluctance to use litigation to settle legal questions.¹⁹⁵ The Japanese tend to avoid litigation and are eager to accept settlement if litigation is filed.¹⁹⁶ As a result, there are far fewer regular civil cases in Japan than there are in the United States or even in Canada.¹⁹⁷ Therefore, it is noteworthy that the local residents who opposed the nuclear power plants did not hesitate before filing lawsuits against the government and power companies.¹⁹⁸ Even though the Japanese courts are very reluctant to intervene, these residents are still willing to file lawsuits one by one and sometimes on numerous occasions.¹⁹⁹

There has been a consistent doubt regarding the safety of the nuclear power plants. However, the courts have been just as consistently reluctant to overturn decisions made by the government and nuclear experts in the context of administrative cases concerning construction permits and the safety of nuclear reactors. The courts are also very reluctant to intervene or issue injunctions against power companies in civil injunction suits. The only difference is that the courts are willing to consider the overall safety of the nuclear power plant in civil injunction suits, while in administrative cases the courts focus only on errors in the

¹⁹⁵ John O. Haley, *Litigation in Japan: A New Look at Old Problems*, 10 WILLAMETTE J. INT'L L. & DISP. RESOL. 121, 123 (2002) (noting consensus that the resort to courts occurs statistically less frequently in Japan compared to similar industrial societies). *But see* Carl F. Goodman, *The Somewhat Less Reluctant Litigant: Japan's Changing View towards Civil Litigation*, 32:4 LAW AND POLICY IN INTERNATIONAL BUSINESS 769 (2001).

¹⁹⁶ Haley, *supra* note 195, at 127–28.

¹⁹⁷ John O. Haley, *Dispute Resolution in Japan: Lessons in Autonomy*, 17 CAN.-U.S. L.J. 443–44 (1991). Some commentators argue that the small number of civil suits in Japan is a result of government manipulation to deter litigation, or a rational choice by the Japanese considering the difficulty of winning a suit and the low possibility of receiving a sufficient remedy. *See* John O. Haley, *The Myth of the Reluctant Litigant*, 4 J. OF JAPANESE STUD. 359 (1978); J. Mark Ramseyer, *Reluctant Litigant Revisited: Rationality and Disputes in Japan*, 14:1 J. OF JAPANESE STUD. 111 (1988). *See also* Tom Ginsburg & Glenn Hoetker, *The Unreluctant Litigant? An Empirical Analysis of Japan's Turn to Litigation*, 35 J. OF LEGAL STUD. 31 (2006). However, this argument does not explain why the opposing residents are willing to challenge nuclear power plants despite the hurdles and poor odds of success.

¹⁹⁸ Haley, *supra* note 195, at 127–28.

¹⁹⁹ *See* Robert L. Kidder & Setsuo Miyazawa, *Long Term Strategies in Japanese Environmental Litigation*, 18 LAW & SOC. INQUIRY 608–10, 612, 614–15, 617 (1993) (positing that local residents may continuously file lawsuits in order to facilitate a social movement).

safety review on the fundamental design of the facility. It is also noteworthy that the courts in civil litigation do not preclude judicial review on safety even though the nuclear reactor received approval and a permit from the government. Furthermore, while the courts place the ultimate burden of proof on the plaintiff local residents, the courts require that the defendant power companies first prove that there was no safety defect. Nevertheless, the courts found that the nuclear power plant satisfied the safety standards established by the government, holding that there was no safety defect, deferring to the judgment of the government, and dismissed injunction claims in almost all cases. In this regard, these courts are following the holding in the Ikata nuclear power plant case for civil injunction suits as well.

2. Reluctance Reconsidered

The deferential attitude of the Japanese courts towards the government in administrative permit revocation and declaration of invalidity cases may come across as unsurprising. Generally, Japanese courts take a highly deferential attitude towards the government in administrative cases.²⁰⁰ Lawsuits filed by the public against administrative orders are dismissed or rejected in most cases.²⁰¹ This judicial deference is not limited to lawsuits against a permit for the construction of a nuclear reactor; it is present in all sorts of administrative cases, which has led courts to typically reject such claims unless they are satisfied there has been a blatant violation of the law, a clear error in an application of law, or a clear abuse of discretion by the administrative agencies.²⁰²

The highly deferential attitude within civil lawsuits against nuclear power plants is remarkable, however, because the Japanese courts generally impose a much higher duty of diligence on chemical or pharmaceutical companies that produce and distribute chemical products or medicine.²⁰³ These companies are held to a much higher standard of care since they produce products that are not only highly dangerous for local

²⁰⁰ See Nihon bengoshi rengōkai [Japan Federation of Bar Associations], Gyoseisoshou kentōkai eno iken [Comments for Administrative Litigation Review Committee], at 4–6, <http://www.kantei.go.jp/jp/singi/sihou/kentoukai/gyouseisosyou/dai4/4siryou2.pdf>.

²⁰¹ The Japan Federation of Bar Associations (“JFBA”) estimates that the citizen plaintiffs could win (even partially) only in 10–15% of all administrative cases. *Id.* at 2.

²⁰² *Id.* at 3.

²⁰³ Tomohei Taniguchi, *A Commentary on the Legal Theory of the Four Major Pollution Cases*, 9 LAW IN JAPAN 36–38 (1976).

residents, but can also seriously harm the health of customers.²⁰⁴ Even when the manufacturing process satisfies government regulations, the company is not shielded against liability.²⁰⁵ Even if there is no solid scientific proof supporting a causality between a defendant's conduct and a plaintiff's damage, the courts are willing to hold a defendant liable if there is reasonable proof of the relationship.²⁰⁶ Although these holdings are mostly concerned with actions for damages, and not injunctive suits, the vast difference in the judiciary's stringent attitude towards chemical and pharmaceutical companies, compared to the highly deferential attitude in lawsuits against power companies, is striking.²⁰⁷

III. FUKUSHIMA NUCLEAR ACCIDENT AND ITS LESSONS

A. *Fukushima Nuclear Accident*

Everything changed on March 11, 2011.²⁰⁸

²⁰⁴ Kumamoto Chihō Saibansho [Kumamoto Dist. Ct.], Mar. 20, 1973, Showa 44 (Wa) no. 522, 696 HANREI JIHŌ [HANJI], at 15 (Japan) (holding Nihon Chisso liable for Minamata disease); Osaka Chihō Saibansho [Osaka Dist. Ct.], June 21, 2006, 1942 HANREI JIHŌ [HANJI], at 23 (Japan) (HIV contamination case); Fukuoka Chihō Saibansho [Fukuoka Dist. Ct.], August 30, 2006, 1953 HANREI JIHŌ [HANJI], at 11 (Japan) (HIV contamination case); Tokyo Chihō Saibansho [Tokyo Dist. Ct.], Mar. 23, 2007, 1975 HANREI JIHŌ [HANJI], at 1 (Japan) (HIV contamination case).

²⁰⁵ Kumamoto Chihō Saibansho [Kumamoto Dist. Ct.], Mar. 20, 1973, *supra* note 204.

²⁰⁶ *Id.* See also Saikō Saibansho [Sup. Ct.], June 16, 2006, 2nd petty bench, Hei 16 (Receiving) no. 672, 60:5 SAIKŌ SAIBANSHO MINJI HANREISHŪ [MINSHŪ], at 1997 (Japan).

²⁰⁷ See Saikō Saibansho [Sup. Ct.], June 16, 2006, *supra* note 206.

²⁰⁸ The following description of the Fukushima nuclear accident is based on the following sources: see generally INTERNATIONAL ATOMIC ENERGY AGENCY, FUKUSHIMA NUCLEAR ACCIDENT, <https://www.iaea.org/newscenter/focus/fukushima> [<https://perma.cc/5BL8-P2SS>]; INTERNATIONAL ATOMIC AGENCY, THE FUKUSHIMA DAIICHI ACCIDENT: REPORT BY THE DIRECTOR GENERAL (2015), <http://www-pub.iaea.org/MTCD/Publications/PDF/Pub1710-ReportByTheDG-Web.pdf> [<https://perma.cc/W5T6-NZ52>] [hereinafter IAEA FUKUSHIMA REPORT]; WORLD NUCLEAR ASSOCIATION, FUKUSHIMA ACCIDENT, <http://www.world-nuclear.org/information-library/safety-and-security/safety-of-plants/fukushima-accident.aspx> [<https://perma.cc/7EL9-XVZW>]; NATIONAL DIET OF JAPAN, OFFICIAL REPORT OF THE FUKUSHIMA NUCLEAR ACCIDENT INDEPENDENT INVESTIGATION COMMISSION: EXECUTIVE SUMMARY (2012), https://www.nirs.org/fukushima/naiic_report.pdf [<https://perma.cc/89W3-354G>]; INVESTIGATION COMMITTEE ON THE ACCIDENT AT THE FUKUSHIMA NUCLEAR POWER STATIONS OF TOKYO ELECTRIC POWER COMPANY, FINAL REPORT (2012), <http://www.cas.go.jp/jp/seisaku/icanps/eng/final-report.html> [<https://perma.cc/BKC3-U2HJ>]; TEPCO, FUKUSHIMA GENSHIRYOKU JIKO CHOUSHA HOUKOKUSHO [FUKUSHIMA NUCLEAR ACCIDENT INVESTIGATION REPORT] (2012), http://www.tepco.co.jp/cc/press/betu12_j

The 9.0-magnitude Tohoku Earthquake occurred 130 km off the shore of Sendai at 2:46 PM on March 11, 2011, causing nuclear reactors No. 1 to No. 3 of the Fukushima Daiichi nuclear power plant²⁰⁹ operated by the Tokyo Electric Power Company (“TEPCO”) to initiate an automatic shutdown, a procedure known as a scram.²¹⁰ A fourth reactor was shut down for regular maintenance and its nuclear fuel was stored inside the cooling pool.²¹¹ Despite the lack of evidence suggesting any serious structural damage to the facility, the earthquake knocked out the power lines that supplied the electricity to the Fukushima nuclear power plant, disrupting the facility’s supply of external electricity.²¹² Fortunately, the back-up generators immediately kicked in and supplied power to the power plant.²¹³ However, the earthquake created an extremely powerful tsunami that overpowered the tsunami barriers (seawalls) that were supposed to shield the Fukushima nuclear power plant.²¹⁴ While the earthquake did minimal damage to the roads at the power station (apart from damage to some of the routes), the tsunami carried objects and debris that left no access to the incoming roads to the plant, preventing anyone from reaching the plant with automobiles.²¹⁵ The tsunami water entered the power plant, damaging the seawater pumps and disabling the residual heat removal (“RHR”) cooling system.²¹⁶ It also submerged the diesel generators and the batteries, which were all located in the basements of the

/images/120620j0303.pdf [https://perma.cc/33YA-9745] [hereinafter TEPCO REPORT]; TEPCO, FUKUSHIMA NUCLEAR ACCIDENT ANALYSIS REPORT (2012), http://www.tepco.co.jp/en/press/corp-com/release/betu12_e/images/120620e0104.pdf [https://web.archive.org/web/*/http://www.tepco.co.jp/en/press/corp-com/release/betu12_e/images/120620e0104.pdf].

²⁰⁹ The Fukushima Daiichi reactors are General Electric (“GE”) boiling water reactors (“BWR”) of an early (1960s) design supplied by GE, Toshiba and Hitachi, with what is known as a Mark I containment. There were six reactors inside the Daiichi plant and the No. 5 and No. 6 reactors were located separately from the rest. Reactors one, two, and three came into commercial operation between 1971 and 1975. See TEPCO, FUKUSHIMA NUCLEAR ACCIDENT ANALYSIS REPORT, *supra* note 208, at 1.

²¹⁰ IAEA FUKUSHIMA REPORT, *supra* note 208, at 23–24; TEPCO REPORT, *supra* note 208, at i, 36, 70, 113.

²¹¹ IAEA FUKUSHIMA REPORT, *supra* note 208, at 23–24.

²¹² *Id.* at 24–25.

²¹³ *Id.* at 24.

²¹⁴ *Id.* at 30–31.

²¹⁵ TEPCO, FUKUSHIMA NUCLEAR ACCIDENT ANALYSIS REPORT, *supra* note 208, at 146–47, 177; IAEA FUKUSHIMA REPORT, *supra* note 208, at 87.

²¹⁶ TEPCO, FUKUSHIMA NUCLEAR ACCIDENT ANALYSIS REPORT, *supra* note 208, at 156–57, 264, 266; IAEA FUKUSHIMA REPORT, *supra* note 208, at 31, 33.

turbine buildings.²¹⁷ Thus, the back-up generators were rendered useless and the power plant lost all power at 3:42 PM.²¹⁸

Even when the fission reactions were shut down, the reactor cores continued to produce some heat.²¹⁹ Without heat removal via a heat exchanger connected to outside the facility, the reactor cores increased in temperature, evaporating the surrounding water and, once there was no more water left to evaporate, the cores began to melt down.²²⁰ To cool down the nuclear fuel, plant workers tried to do everything they could do. The nuclear power plant emergency response centre team (“on-site ERC”) and its support unsuccessfully tried to reconnect power lines, to bring in power generators from outside despite the damage to incoming roads, and to power the facility through the use of generator trucks because of the incompatibility of plugs.²²¹ They also tried to cool down the reactor cores as well as the spent fuels stored in the fourth reactor by supplying water from outside.²²² The workers even resorted to seawater to cool the reactors, knowing that the use of seawater would ruin the system.²²³

Meanwhile, the overheated nuclear rods created excess hydrogen gas, which created a high-pressure system inside Reactor No. 1.²²⁴ As pressure rose in Reactor No. 1, plant workers attempted to vent the containment to decrease the pressure.²²⁵ But in the absence of power, such a task needed to be done manually, delaying the whole process.²²⁶ Even though they finally accomplished manually venting the unit, at 3:36 PM on Saturday, March 12, there was a hydrogen explosion on the service floor of the building above Reactor No. 1 containment, blowing off the roof and cladding on the top part of the building.²²⁷ The cooling system for Reactor No. 2 failed two days later on Monday, March 14, eventually depleting the water surrounding the nuclear rods that subsequently melted down.²²⁸ Then, early on Tuesday, March 15, the pressure suppression chamber under the reactor seemed to have ruptured possibly

²¹⁷ IAEA FUKUSHIMA REPORT, *supra* note 208, at 31–32.

²¹⁸ *Id.* at 76–78.

²¹⁹ *Id.* at 33–35.

²²⁰ *Id.* at 26, 36–37, 55–56.

²²¹ *Id.* at 77, 79.

²²² IAEA FUKUSHIMA REPORT, *supra* note 208, at 44.

²²³ *Id.* at 37.

²²⁴ *Id.* at 33, 59.

²²⁵ *Id.* at 35.

²²⁶ *Id.* at 37.

²²⁷ IAEA FUKUSHIMA REPORT, *supra* note 208, at 38.

²²⁸ *Id.* at 42, 57–58.

due to a hydrogen explosion, causing the containment pressure inside to drastically drop.²²⁹ In Reactor No. 3, the cooling system failed on Saturday, March 12, and early on Sunday, March 13 as the reactor's water levels dropped dramatically.²³⁰ A very large hydrogen explosion above Reactor No. 3 containment destroyed most of the roof and walls while demolishing the top part of the building.²³¹ The explosion created a huge number of highly radioactive debris scattered around the ground near Reactor No. 3, making it hard for plant workers to approach to the facility.²³² The explosion also released highly contaminated radioactive materials into the air, significantly increasing the radiation level of the plant and seriously contaminating the environment.²³³

Reactor No. 4 was already shut down for regular maintenance when the earthquake hit.²³⁴ However, used nuclear fuel needs to be cooled over a long time.²³⁵ This is supposed to be accomplished by submerging the fuel in a pool of water, located above each reactor which is near the top of the reactor building.²³⁶ The pool also contains unspent fuel in addition to spent fuel.²³⁷ At the time of the accident, in addition to a large number of spent fuel assemblies, the Reactor No. 4's pool also held a full core load of 548 unspent fuel assemblies.²³⁸ Without power, the plant lost its capacity to cool the unspent fuel assemblies through circulated water.²³⁹ At about 6 AM on Tuesday, March 15, an explosion and fire occurred in Reactor No. 4,²⁴⁰ caused by hydrogen vented from Reactor No. 3 which reached Reactor No. 4 through backflow in shared ducts.²⁴¹

Indeed, it took a tremendous effort from the plant workers to pour water, especially seawater, into the reactor facilities to supply water to the cooling pools and cool down the damaged reactor.²⁴² Eventually, the power

²²⁹ *Id.* at 43.

²³⁰ *Id.* at 37, 39–40.

²³¹ *Id.* at 42, 58. This took place at 11:01 AM on March 14, 2011.

²³² IAEA FUKUSHIMA REPORT, *supra* note 208, at 41, 58.

²³³ *Id.* at 1.

²³⁴ *Id.* at 58.

²³⁵ *Id.*

²³⁶ *Id.* at 26, 153.

²³⁷ IAEA FUKUSHIMA REPORT, *supra* note 208, at 27.

²³⁸ *Id.* at 58; David Wright, *More on Spent Fuel Pools at Fukushima*, UNION OF CONCERNED SCIENTISTS: ALL THINGS NUCLEAR (Mar. 21, 2011, 4:32 PM), <http://allthingsnuclear.org/dwright/more-on-spent-fuel-pools-at-fukushima> [<https://perma.cc/22YY-KPLU>].

²³⁹ IAEA FUKUSHIMA REPORT, *supra* note 208, at 27.

²⁴⁰ *Id.* at 43–44.

²⁴¹ *Id.* at 58.

²⁴² *Id.* at 79.

lines were reconnected and the Fukushima power plant received power once again.²⁴³ The power plant was able to cool down any overheated reactor fuel as well as spent fuel in the cooling pool.²⁴⁴ All that remained was to repair the damaged facilities and ultimately to dispose of the entire nuclear facility. The plant reached a cold shut down in December 2011.²⁴⁵

B. What Went Wrong?

It is not difficult to speculate on what went wrong during the Fukushima nuclear accident.

First of all, the government, TEPCO, and the scientific community did not anticipate that such a powerful earthquake would occur so close to Japan.²⁴⁶ In retrospect, there was evidence that indicated a very powerful earthquake had previously hit this region and that an extremely powerful tsunami struck the Sanriku Coast a long time ago.²⁴⁷ However, scientists could not figure out precisely how powerful the previous earthquake was.²⁴⁸ A few researchers did warn about the risk of a much more powerful earthquake than the one anticipated by the government and TEPCO, but the government, TEPCO, and most other nuclear scientists dismissed these warnings as simply unrealistic.²⁴⁹

²⁴³ *Id.* at 44, 47.

²⁴⁴ IAEA FUKUSHIMA REPORT, *supra* note 208, at 47.

²⁴⁵ *Id.* at 19 n.24.

²⁴⁶ The Japanese government and TEPCO anticipated the maximum strength of any possible earthquake to be at magnitude 7.9, and anticipated that a tsunami would be fended off by the tsunami barrier with a height of 3.1 m. TEPCO built seawater intake buildings at four meters above sea level, and the main plant buildings at the top of a slope ten meters above sea level, so that it could escape any tsunami damages. Thereafter, more recent research indicated the possibility of a much higher tsunami and TEPCO increased the height of the seawall to 5.7 m. The Tohoku Earthquake had a magnitude of 9.0 and it caused a tsunami with height of 14 to 15 m. See James M. Acton & Mark Hibbs, *Why Fukushima Was Preventable*, CARNEGIE PAPERS (March 2012), at 9–11, <http://carnegieendowment.org/2012/03/06/why-fukushima-was-preventable-pub-47361> [<https://perma.cc/KJ97-5XRN>]; IAEA FUKUSHIMA REPORT, *supra* note 208, at 51.

²⁴⁷ Acton & Hibbs, *supra* note 246, at 12.

²⁴⁸ CHUO BOSAI KAIGI [CENTRAL DISASTER PREVENTION CONFERENCE], TOHOKUCHIHŌ TAIHEIYŌ OKI JISHIN WO KYOUKUNTOSHITA JISHIN TSUNAMI TAISAKU NI KANSURU SENMON-CHOUSAKAI HOUKOKU [REPORT OF THE EXPERT COMMITTEE ON COUNTERMEASURES AGAINST EARTHQUAKE AND TSUNAMI IN LIGHT OF THE TOHOKU REGION OFF THE PACIFIC COAST EARTHQUAKE] 7 (Sep. 28, 2011), <http://www.bousai.go.jp/kaigirep/chousakai/tohokukyokun/pdf/houkoku.pdf> [<https://perma.cc/LS5A-GTVJ>] (a very powerful earthquake from the 869 AD was ignored because past analysis was focused on recurrent powerful earthquakes).

²⁴⁹ CHUO BOSAI KAIGI [CENTRAL DISASTER PREVENTION CONFERENCE], *supra* note 248; see also Acton & Hibbs, *supra* note 246, at 11–12.

The government as well as TEPCO failed to pay sufficient attention to risks associated with a powerful tsunami and thus failed to secure the safety of the Fukushima nuclear power plant against a powerful tsunami.²⁵⁰ TEPCO and the government thus failed to use the more recent and reliable prediction methodology for damage caused by tsunamis, especially for the possible damage caused by the run-up on the slope.²⁵¹ As a result, the seawater pump and heat exchanger were destroyed by the tsunami without any alternative.²⁵² It was also a fatal error to place the back-up generators in the basement of the facility.²⁵³ Indeed, the government and TEPCO failed to adopt comprehensive anti-flooding measures.²⁵⁴ Once swept by the tsunami, these back-up generators became completely useless.

Second, the government and TEPCO never prepared for the possibility of an extended total power outage.²⁵⁵ As a result, when the power plant lost all power, the plant also lost all the measures to cool down the reactor fuel rods, thus leading to nuclear meltdown and explosions. It was a grave error for the government and for TEPCO to not have additional measures in anticipation of the facility's total power loss.

Moreover, there were ample opportunities to notice the need to prepare for a total power loss. After the 9/11 attacks in the United States, the Nuclear Regulatory Commission ("NRC"), a regulatory body on nuclear power in the United States, mandated all US power companies to prepare for total power loss.²⁵⁶ The Japanese government knew about this development, but was not able to notify TEPCO per NRC order.²⁵⁷

²⁵⁰ Acton & Hibbs, *supra* note 246, at 13, 26.

²⁵¹ *Id.* at 12–13, 23–24.

²⁵² *Id.* at 21–22.

²⁵³ Peter Fairley, *What We Learned About Nuclear Safety from Fukushima*, TECHNOLOGY REVIEW (Mar. 2012), <https://www.technologyreview.com/s/427166/what-we-learned-about-nuclear-safety-from-fukushima/> [<https://perma.cc/8TZR-W7M6>] (citing the comment made by Tony Irwin, a lecturer in nuclear technology from Australian National University).

²⁵⁴ Acton & Hibbs, *supra* note 246, at 22–23, 26. In addition to building much higher sea-walls, the government could have demanded facilities to, for example, relocate emergency diesel generators and other emergency power sources to higher ground, establish watertight connections between emergency power supplies and the plant, or install emergency power equipment and cooling pumps in dedicated, bunkered, watertight buildings or compartments.

²⁵⁵ *See id.* at 19.

²⁵⁶ NRC, REPORT: A COMPARISON OF U.S. AND JAPANESE REGULATORY REQUIREMENTS IN EFFECT AT THE TIME OF THE FUKUSHIMA ACCIDENT 15 (Nov. 2013), <http://www.nrc.gov/docs/ML1332/ML13326A991.pdf> [<https://perma.cc/C3W8-UMS5>] [hereinafter NRC COMPARISON REPORT].

²⁵⁷ Minoru Matsutani, *NRC briefed NISA on contingencies; Tepco in dark*, THE JAPAN TIMES (Jan. 28, 2012), <https://www.japantimes.co.jp/news/2012/01/28/national/nrc-briefed>

Therefore, TEPCO did not take any additional measures and the government also did not require any additional measures to be taken.²⁵⁸

Third, TEPCO did not sufficiently prepare for emergencies. As the pressure inside the nuclear vessel increased, there was a need to vent and release the pressure. Without any power, pressure needed to be released manually. It seems, however, that no one confidently knew where the switches to manually control the vents were located, and no one was ever trained to manually vent the nuclear vessel. Plant workers needed to confirm the place of vent switches and the method of operation.²⁵⁹ Moreover, because the rising radiation level, they had to come up with the idea of figuring out how to open the vent both manually and quickly with heavy protective gear.²⁶⁰ Similarly, although there was a need to supply water from outside, there was insufficient preparation for such a task.²⁶¹ As a result, the government had to call for help from firefighters from other local governments to supply water into the reactor facilities.²⁶²

Apparently, absence of sufficient countermeasures against the earthquake and tsunami and utter unpreparedness derived from the overconfidence in technology, a “safety myth” prevailed in Japan that a serious accident would never happen.²⁶³ Instead of talking about the possible risks and how to cope with the possible damages or to reduce the possible damages, all the government, power companies, and nuclear scientists had presumed that the nuclear power plant was safe. As a result, even a discussion about the risk or necessity of additional safety measures or preparation was likely to be avoided.²⁶⁴ Moreover, even when the new safety measures were introduced, there was no back-checking obligation—the obligation to make sure the nuclear reactors that received permits complied with the new additional safety measures.²⁶⁵ Such a measure would have raised the suspicion that existing facilities that do not comply

-nisa-on-contingencies-tepco-in-dark/#.Wdf3SvlSyUk [https://perma.cc/7NUP-SYJY]; see TEPCO, FUKUSHIMA NUCLEAR ACCIDENT ANALYSIS REPORT (2012), *supra* note 208, at 54.

²⁵⁸ Acton & Hibbs, *supra* note 246, at 19–20.

²⁵⁹ TEPCO REPORT, *supra* note 208, at 150.

²⁶⁰ *Id.* at 151.

²⁶¹ *Id.* at 140–41, noting that most of the fire trucks stationed inside the plant were destroyed by the tsunami or disabled, and the plant workers needed to remove all the tsunami debris to look for an intake bulb for outside water.

²⁶² IAEA FUKUSHIMA REPORT, *supra* note 208, at 79.

²⁶³ Acton & Hibbs, *supra* note 246, at 2.

²⁶⁴ *Id.* at 27–28.

²⁶⁵ *Id.* at 14.

with the additional safety measures were not safe. The government and power companies apparently did not want such suspicion.

Fourth, the government was also apparently totally unprepared for such an emergency. The Democratic Party of Japan (“DPJ”), which took over the government in 2009 for the first time, was apparently unprepared for managing the government. When the situation deteriorated so quickly, the plant, TEPCO, and the government under the DPJ Prime Minister Naoto Kan could not respond to rising urgency quickly and efficiently enough. The information on the plant was sent to TEPCO headquarters, and then to NISA, METI, and then to the prime minister.²⁶⁶ The prime minister and the government leaders were frustrated with the delay and insufficiency of the information they received.²⁶⁷ They suspected that TEPCO might be hiding more damaging information.²⁶⁸ Apparently, there was no effective information sharing among participants. Moreover, the decision-making process was chaotic. After the nuclear emergency was issued by the prime minister²⁶⁹ and the Nuclear Disaster Countermeasures Headquarters was established in the Cabinet office,²⁷⁰ it was the prime minister who was supposed to coordinate all emergency measures as a director of the headquarters.²⁷¹ But the prime minister did not have legal authority to order or direct TEPCO, the plant manager, or issue an evacuation order.²⁷² Moreover, the prime minister did not have experts for giving advice on countermeasures on this kind of serious accident in the nuclear power plant. Nevertheless, he tried to micromanage the whole operation to counteract against the emergency.²⁷³ There was indeed

²⁶⁶ Jeff Kingston, *Mismanaging Risk and the Fukushima Nuclear Crisis*, 10(12:4) THE ASIA PACIFIC JOURNAL 1, 8 (2012).

²⁶⁷ *Id.*

²⁶⁸ *Id.* at 1.

²⁶⁹ Genshiryoku saigai taisaku tokubetsu sochihō [Nuclear Disaster Countermeasures Basic Act], Law No. 156 of 1999, [hereinafter Nuclear Disaster Act], art. 5, para. 2 (Japan).

²⁷⁰ *Id.* at art. 16, para. 1.

²⁷¹ *Id.* at art. 15, para. 3.

²⁷² It was the municipal mayor who could legally restrict the entry into an area or order evacuation. Saigai taisaku kihonhō [Disaster Countermeasures Basic Act], Law No. 223 of 1961, at art 63, para. 1. It was also the Minister of Economy, Trade, and Industry who had the power to order the power company to suspend the operation, alter, repair, or relocate the nuclear reactor. The prime minister could only direct these mayors or the Minister of Economy, Trade and Industry. *Id.* at art. 20, para. 2. After the 2012 amendment, it is now the NRA, which has the power to order the power company to take specific countermeasures, and the NRA's independence is statutorily guaranteed. Genshiryoku kisei iinkai secchihō [Act to Establish Nuclear Regulatory Authority], Law No. 47 of 2012 [hereinafter NRA Act], at art. 5; Nuclear Disaster Act, *supra* note 269, at art. 20, para. 3.

²⁷³ *Lessons in Leadership from the Fukushima Nuclear Disaster*, KNOWLEDGE@WHARTON

confusion on who should have had ultimate responsibility for solving all the critical questions.²⁷⁴

Finally, nuclear experts did not know how to respond to this nuclear crisis. They didn't expect that the nuclear reactors would explode with a hydrogen blast.²⁷⁵ They were at a loss about how to address the total loss of power and inability to cool down nuclear reactor fuels.²⁷⁶ They had not prepared any countermeasures against these situations and could not come up with appropriate countermeasures in time.²⁷⁷ They needed to improvise almost everything in response to emergent contingencies.²⁷⁸

C. *Lessons of the Fukushima Nuclear Accident*

The Fukushima nuclear accident left many lessons for future nuclear power policy. First of all, it made clear that there is surely a grave risk that serious accidents could happen and serious damages could be inflicted. Because of the accident, many local residents were forced to

5–6, <http://knowledge.wharton.upenn.edu/article/lessons-leadership-fukushima-nuclear-disaster/> [<https://perma.cc/8HNT-5WN9>].

²⁷⁴ After the plant manager started preparation of seawater to cool down Reactor No. 1, the prime minister hesitated to approve this decision fearing that the use of seawater might exacerbate the situation. Sensing the hesitation of the prime minister, TEPCO ordered the plant manager to wait for the prime minister's decision. However, the plant manager ignored this order and went on to pour seawater into the reactor and probably saved Japan from much a greater disaster. TEPCO REPORT, *supra* note 208, at 148.

²⁷⁵ Haruki Madarame, a chairperson of NSC, replied to Prime Minister Kan's inquiry as to the possibility of a hydrogen blast on their way to the Fukushima plant by helicopter that there would be no explosion, only to see the hydrogen blast several hours later. *Kantei no kainyu tsuyometa Madarame hatsugen "Suiso bakhatsu nai" [Madarame's "no hydrogen blast" reply lead to much intrusive government intervention]* NIKKEI 1 (February 27, 2012), http://www.nikkei.com/article/DGXNASDG2704H_X20C12A2CC1000/ [<https://perma.cc/KBB3-8ZNV>]. NSC was supposed to give advice on the safety issues of the nuclear power reactors. However, not all members could gather together and, because the chairperson is always with the prime minister, it could not function as an advisory group.

²⁷⁶ Eiichi Yamaguchi, *Meltdown wo husegenakatta honto no riyu [True reason why the nuclear meltdown was not prevented]*, NIKKEI TECHNOLOGY (Dec. 15, 2011) <http://techon.nikkeibp.co.jp/article/COLUMN/20111215/202630/?rt=ocnt> [<https://perma.cc/FH63-GG7N>] (even after the total power loss, TEPCO could have prevented the meltdown by pouring seawater immediately).

²⁷⁷ *Fukushima report: Key points in nuclear disaster report*, BBC NEWS (July 5, 2012), <http://www.bbc.com/news/world-asia-18718486> [<https://perma.cc/5FKT-XUTG>] ("The government, the regulators, TEPCO management, and the Kantei [prime minister's office] lacked the preparation and the mindset to efficiently operate an emergency response to an accident of this scope. None, therefore, were effective in preventing or limiting the consequential damage").

²⁷⁸ Kingston, *supra* note 266, at 6.

evacuate, with some still unable to return.²⁷⁹ The radiation also seriously affected the agricultural products produced in the nearby communities and the fish caught in the nearby sea.²⁸⁰ Many nearby communities are so badly contaminated that despite decontamination efforts, large areas surrounding the power plant are still contaminated.²⁸¹ Even though some of the residents can return, they are forced to live in constant fear of the potential effects of radiation contamination.²⁸² TEPCO was forced to pay huge amounts of damages to victims of the accident, and it is difficult to predict how much it will have to pay in the future.²⁸³

Second, the Fukushima nuclear accident revealed that the safety of nuclear power was simply a “myth.” Despite all assurances that nuclear power plants were safe, it became apparent that there is always a risk of a serious accident. A serious accident could happen and grave damage could be caused. The belief that there would be no serious accidents was merely a result of overconfidence in technology.²⁸⁴

But most importantly, the Fukushima nuclear accident revealed that we cannot blindly trust the government and experts. It vividly revealed that the government regulator of nuclear power before the Fukushima accident, NISA, an external agency of ANRE, inside METI, was actually captured by the power companies and acted as a promoter

²⁷⁹ In total, approximately 154,000 people have been evacuated from Fukushima. RECONSTRUCTION AGENCY, THE STATUS OF FUKUSHIMA 1, <http://www.reconstruction.go.jp/english/topics/2013/03/the-status-in-fukushima.html> [<https://perma.cc/VNY5-FDYX>].

²⁸⁰ Tomoko Nakanishi & Keitaro Tanoi (eds.), AGRICULTURAL IMPLICATION OF THE FUKUSHIMA NUCLEAR ACCIDENT (Springer 2016).

²⁸¹ David McNeill & Miguel Quintana, *Fukushima residents question radiation cleanup effort*, CBC NEWS (Sept. 23, 2013), <http://www.cbc.ca/news/world/fukushima-residents-question-radiation-cleanup-effort-1.1856332>.

²⁸² Fred Pears, *In Fukushima, A Bitter Legacy Of Radiation, Trauma and Fear*, YALE ENVIRONMENT 360 (Sept. 19, 2016), http://e360.yale.edu/features/fukushima_bitter_legacy_of_radiation_trauma_fear [<https://perma.cc/BM8U-ZTRL>].

²⁸³ The government now estimates that TEPCO will need to pay over 8 trillion JPY (roughly 70 billion USD under the current exchange rate) as compensation for nuclear damage and decontamination. *Touden eno baisho shien Schouen wo toppa, genbaikikin ni Tsenokuen wo tsuikashinsei* 1 SANKEI SHIMBUN (Dec. 27, 2016), <http://www.sankei.com/economy/news/161227/ecn1612270019-n1.html> [<https://perma.cc/5LMY-TCQH>]. The total cost of the Fukushima accident is now believed to exceed 20 trillion JPY (roughly 180 billion USD under the current exchange rate). *Cost of Fukushima disaster expected to soar to ¥20 trillion*, 1 JAPAN TIMES (Nov. 28, 2016), <http://www.japantimes.co.jp/news/2016/11/28/national/cost-fukushima-disaster-expected-soar-¥20-trillion/#.WFbUXbESjGY> [<https://perma.cc/2RCY-EQJC>].

²⁸⁴ Akira Omoto, *The accident at TEPCO's Fukushima-Daiichi Nuclear Power Station: What Went Wrong and What Lessons Are Universal?*, NUCLEAR INSTRUMENTS AND METHODS IN PHYSICS RESEARCH A 731 (2013) 3, 6.

of nuclear power rather than a regulator.²⁸⁵ As a result, the government was more concerned with the promotion of nuclear power than with the safety of local residents.

Surely, the Japanese government and the Japanese people learned very important lessons from the Fukushima accident. The government created a separate safety regulatory agency, the Nuclear Regulatory Authority (“NRA”), which is under the direct control of the Ministry of the Environment, not METI.²⁸⁶ METI no longer functions as a promoter and regulator of nuclear power. The Nuclear Reactor Regulation Act was revised to require more stringent requirements for nuclear safety²⁸⁷ and NRA also adopted newly revamped safety standards for all nuclear power plants.²⁸⁸ In particular, a nuclear power plant is mandated to update its facility to satisfy new evolving standards.²⁸⁹ Moreover, preparations for the event of a total power loss are now mandatory.²⁹⁰ Because the new guidelines adopted the basic forty-year life rule for nuclear reactors,²⁹¹ and extensions are granted only in exceptional cases, power companies are practically forced to give up on reactivating older nuclear reactors because of the cost associated with upgrading them to meet the new requirements.²⁹² The new standards were also designed to ensure that nuclear power plants could withstand more powerful earthquakes and were better prepared for much taller tsunamis by mandating the facility install much higher tsunami barriers.²⁹³

²⁸⁵ Acton & Hibbs, *supra* note 246, at 24–26; Charles D. Ferguson & Mark Jansson, *Regulating Japanese Nuclear Power in the Wake of the Fukushima Daiichi Accident*, FAS 5–7 (May 2013), https://fas.org/wp-content/uploads/2013/05/Regulating_Japanese_Nuclear_13May131.pdf [<https://perma.cc/ZL3H-UC22>].

²⁸⁶ NRA Act, *supra* note 272.

²⁸⁷ *Id.*

²⁸⁸ See generally NUCLEAR REGULATORY AUTHORITY (NRA), OUTLINE OF THE DRAFT NEW REGULATORY REQUIREMENTS FOR NUCLEAR FUEL FACILITIES, RESEARCH REACTORS, AND NUCLEAR WASTE STORAGE/DISPOSAL FACILITIES, <https://www.nsr.go.jp/english/regulatory/> [<https://perma.cc/W973-ZU85>].

²⁸⁹ See Nuclear Reactor Regulation Act, *supra* note 24.

²⁹⁰ NRA, OVERVIEW DRAFT NEW SAFETY STANDARDS FOR NUCLEAR POWER STATIONS NRA, JAPAN 2 (January 2013), <https://www.nsr.go.jp/data/000067120.pdf> [<https://perma.cc/Z289-XKAK>].

²⁹¹ NRA, ENFORCEMENT OF THE NEW REGULATORY REQUIREMENTS FOR COMMERCIAL NUCLEAR POWER REACTORS 1 (July 8, 2013), <https://www.nsr.go.jp/data/000067212.pdf> [<https://perma.cc/3HUV-S28U>].

²⁹² *Id.* at 9–11.

²⁹³ *Id.* Moreover, the new standards explicitly banned the construction of the nuclear power plant right above the active faults, and mandated consideration of the faults with signs of movement in the past 120,000 to 130,000 years, also obligating the power company to check any sign of movement between 130,000 and 400,000 years ago if there was some doubt.

This is a significant improvement, although it might be still questioned whether, compared with the government regulation on nuclear power in the United States, Japanese regulations are sufficient.²⁹⁴ But what about the judicial response? Has there been any change in the judicial attitude towards nuclear power plants?

IV. JUDICIAL RESPONSE TO NUCLEAR POWER AFTER FUKUSHIMA

A. *After the Fukushima Nuclear Accident*

After the earthquake, all active nuclear reactors in Japan were automatically shut down. Subsequently, there were no active nuclear power plants operating after the Fukushima accident.²⁹⁵ In order to resume operations at a nuclear power plant, a power company needed to clear the revised safety standards established by NRA and needed to have consent from local governments.²⁹⁶ It took a while for NRA to come up with the new safety standards and it was also not easy for the power companies to obtain the necessary consent from local governments because an increased number of local residents came to show serious concern over the safety of nuclear power plants.²⁹⁷

²⁹⁴ NRC COMPARISON REPORT, *supra* note 256. It might be possible to find, however, the same kind of problems in the United States. Neal H. Lewis, *Interpreting the Oracle: Licensing Modifications, Economics, Safety, Politics, and the Future of Nuclear Power in the United States*, 16 ALB. L. J. SCI. & TECH. 27 (2006); *see generally* Richard Webster with Julia LeMense, *Spotlight on Safety at Nuclear Power Plants: The View from Oyster Creek*, 26 PACE ENVTL. L. REV. 365 (2009). After the Fukushima accident, the NRC conducted a critical review of its regulation system and concluded that additional measures were required. NRC, WHAT ARE THE LESSONS LEARNED FROM FUKUSHIMA? 1 (Jul. 28, 2017), <https://www.nrc.gov/reactors/operating/ops-experience/japan-dashboard/priorities.html> [<https://perma.cc/9AWH-JX9K>]; *see generally* NRC, RECOMMENDATIONS FOR ENHANCING REACTOR SAFETY IN THE 21ST CENTURY (Jul. 12, 2011), <https://www.nrc.gov/docs/ML1118/ML111861807.pdf> [<https://perma.cc/6TCF-X8GB>]; *see also* Daniel A. Dorfman, *The Changing Perspectives of U.S. and Japanese Nuclear Energy Policies in the Aftermath of the Fukushima Daiichi Disaster*, 30 PACE ENVTL. L. REV. 255, 255 (2012); *see generally* Emily Hammond, *Nuclear Power, Risk, and Retroactivity*, 48 VANDERBILT J. TRANSNAT'L L. 1059 (2015).

²⁹⁵ David Batty, *Japan shuts down last working nuclear reactor*, THE GUARDIAN, May 5, 2012, <https://www.theguardian.com/world/2012/may/05/japan-shuts-down-last-nuclear-reactor> [<https://perma.cc/J83D-D85Q>].

²⁹⁶ U.S. ENERGY INFORMATION ADMINISTRATION, FIVE AND A HALF YEARS AFTER FUKUSHIMA, 3 OF JAPAN'S 54 NUCLEAR REACTORS ARE OPERATING (Sept. 13, 2016), <http://www.eia.gov/todayinenergy/detail.php?id=27912> [<https://perma.cc/A7LB-UVKN>].

²⁹⁷ *Id.*

Moreover, the LDP, which had been a major proponent of nuclear power before the Fukushima accident, lost an election in 2009 to its rival party, the DPJ, which was reluctant to resume the operation of nuclear power plants after the Fukushima accident. DPJ Prime Minister Naoto Kan once expressed his personal view that Japan was better off abandoning all nuclear power.²⁹⁸ Nevertheless, power companies, nuclear scientists, and all others who have a vested interest in nuclear power did not give up.²⁹⁹ During the 2012 election campaign, DPJ came to adopt the anti-nuclear power policy.³⁰⁰ Many other minority parties also opposed the nuclear power. LDP, on the other hand, was ambivalent³⁰¹ but everyone knew that LDP would want to reactivate the nuclear reactors. With a landslide victory of LDP over DPJ in the post-Fukushima election in 2012, it was again LDP that controlled the government.³⁰² And the LDP government came to officially accept nuclear power³⁰³ and allowed power companies to restart their reactors. As of July 2017, power companies have applied for permission to reactivate a total of twenty six nuclear reactors, with five reactors already reactivated and seven others already approved.³⁰⁴ Kansai Electric Power applied for a permit for the restart of nuclear reactors No. 3 and No. 4 of the Ooi nuclear power plant, which finally resumed operations on July 5, 2012 and July 21, 2012, respectively.³⁰⁵ It became the first nuclear power plant to resume operations

²⁹⁸ Prime Minister's Office, Press Interview of Prime Minister Kan (July 13, 2011), <http://www.kantei.go.jp/jp/kan/statement/201107/13kaiken.html>.

²⁹⁹ Ellis S. Krauss & Robert J. Pekkanen, *The Rise and Fall of Japan's Liberal Democratic Party*, 69 JOURNAL OF ASIAN STUDIES 1 (2010).

³⁰⁰ Minshuto (DPJ), *Manifesto 2012*, 2, 6, <https://www.dpj.or.jp/global/downloads/manifesto2012.pdf> [<https://perma.cc/N68B-3JUW>].

³⁰¹ Jiminto (LDP), *Manifesto 2012*, 6 http://jimin.ncss.nifty.com/pdf/j_file2012.pdf [<https://perma.cc/3YRE-RFA7>].

³⁰² Martin Fackler, *Japan Election Returns Power to Old Guard*, N.Y. TIMES (Dec. 16, 2012), <http://www.nytimes.com/2012/12/17/world/asia/conservative-liberal-democratic-party-nearing-a-return-to-power-in-japan.html?mcubz=1>.

³⁰³ The government now estimates that the nuclear power will constitute 20–22% of all power in 2030. SHIGEN ENERGY CHŌ [AGENCY FOR NATURAL RESOURCES AND ENERGY], CHOUKI ENERGY JUKYU MITOOSHI [LONG TERM ESTIMATION OF ENERGY PRODUCTION] 7 (July 2015), http://www.meti.go.jp/press/2015/07/20150716004/20150716004_2.pdf [<https://perma.cc/2SJK-GBRD>].

³⁰⁴ DENKI JIGYŌ RENGŌKAI [FEDERATION OF ELECTRIC POWER COMPANIES OF JAPAN], KOKUNAI NO GENSHIRYOKU HATSUDUDENSHO NO SAIKADOU NIMUKETA TAIUJOUKYOU [CURRENT SITUATION OF REACTIVATION OF THE DOMESTIC NUCLEAR POWER PLANTS], <http://www.fepc.or.jp/theme/re-operation/> [<https://perma.cc/APN5-UPEU>].

³⁰⁵ *Ohi reactors cleared for restart*, WORLD NUCLEAR NEWS (June 18, 2012), http://www.world-nuclear-news.org/RS-Ohi_reactors_cleared_for_restart-1806124.html [<https://perma.cc/277G-3RFY>].

after the Fukushima accident.³⁰⁶ After stopping for regular maintenance, they were again granted an approval under the new safety standards on February 22, 2017.³⁰⁷ Owned by Kyushu Electric Power, reactors No. 1 and No. 2 of the Sendai nuclear power plant were reactivated on November 13, 2015, and reactor No. 3 of the Ikata nuclear power plant operated by Shikoku Electric Power was reactivated on August 12, 2016.³⁰⁸ And as we will see below, the No. 3 and No. 4 reactors of the Takahama nuclear power plant operated by Kansai Electric Power were approved and reactivated on January 29 and February 16, 2016 as well.³⁰⁹ In addition, Reactor No. 3 of the Mihama nuclear power plant³¹⁰ and No. 1 and No. 2 reactors of the Takahama nuclear power plant operated by Kansai Electric Power, as well as No. 3 and No. 4 reactors of the Genkai nuclear power plant operated by Kyushu Electric Power, are approved and are slated to reactivation.³¹¹

There were some lawsuits against nuclear power plants that were already pending at the time of the Fukushima accident.³¹² Some cases had already been decided by lower courts, and were now before the appellate courts.³¹³ Opposing residents were waiting for the appellate court to review their case or issue a judgement.³¹⁴ Naturally, opposing local residents incorporated the lessons from the Fukushima accident into their argument.³¹⁵

Moreover, opposing residents filed a suit that sought to prevent the restart of the nuclear power plants. Some opposing residents asked for a preliminary injunction against the restart. Others filed suit seeking a permanent injunction against the restart of the nuclear facility, or an

³⁰⁶ *Id.*

³⁰⁷ *Id.*

³⁰⁸ *Japan regulator clears more reactors for restart amid opposition*, JAPAN TIMES (Nov. 9, 2016), <https://www.japantimes.co.jp/news/2016/11/09/national/japan-regulator-clears-reactors-restart-amid-opposition/#.Wb7WDsiGOM8> [<https://perma.cc/9SRQ-CNHP>].

³⁰⁹ GENSHIRYOKU KISEIINKAI [NRA], GENSHIRYOKU SHISETSU SHIN-KISEIKIJUN TEKIGOUSEI SHINSA JOKYOU [STATUS OF APPLICATION FOR APPROVAL UNDER THE NEW SAFETY STANDARDS FOR NUCLEAR POWER PLANTS], <http://www.genanshin.jp/facility/map/> [<https://perma.cc/252F-J2NP>].

³¹⁰ *Japan reactivates third nuclear power plant after post-Fukushima shutdown*, SAN DIEGO UNION-TRIBUNE (Aug. 12, 2016, 8:12 AM), <http://www.sandiegouniontribune.com/hoy-san-diego/sdhoy-japan-reactivates-third-nuclear-power-plant-after-2016aug12-story.html> [<https://perma.cc/X74V-4MT5>].

³¹¹ *Id.*

³¹² *Court cases associated with nuclear facilities in Japan*, CITIZENS' NUCLEAR INFORMATION CENTER (May 31, 2016), <http://www.cnlic.jp/english/?p=3404> [<https://perma.cc/75QN-W82S>].

³¹³ *Id.*

³¹⁴ *Id.*

³¹⁵ *Id.*

injunction ordering the power company to abandon and decommission the plant.³¹⁶ Opposing residents cited the Fukushima accident in their arguments to support the necessity of granting a preliminary or permanent injunction.³¹⁷

How have the Japanese courts responded to these allegations?

B. Pending Lawsuits Against the Operation of Nuclear Power Plants

The suit against Chubu Electric Power's Hamaoka nuclear power plant is still pending. After the Fukushima accident, then Prime Minister Naoto Kan asked the President of Chubu Electric Power to stop the operation of the Hamaoka nuclear power plant, insisting that it is vulnerable to a very powerful tsunami, as was the Fukushima plant.³¹⁸ The Hamaoka nuclear power plant is the same type of nuclear power plant as the Fukushima plant and it is located in an area where the massively powerful Nankai Trough Earthquake is expected to strike and leave a direct effect.³¹⁹ The request was not legally binding, but the president decided to accept the prime minister's request and stopped operation of the Hamaoka plant in May 2011.³²⁰ Afterwards, Chubu Electric Power decided to decommission reactors No. 1 and No. 2 but is still planning to restart the remaining reactors.³²¹

Local residents filed suit seeking an injunction against the operation of the plant in 2002, but the Shizuoka District Court dismissed the suit in 2007.³²² Local residents filed an appeal and now the case is before

³¹⁶ *Plaintiffs drop bid to block restarts of Fukui reactors after high court nixes landmark injunction*, JAPAN TIMES (Apr. 4, 2017), <https://www.japantimes.co.jp/news/2017/04/04/national/plaintiffs-drop-bid-block-fukui-reactor-restarts-high-court-nixes-landmark-injunction/#.Wb7l9MiGOM8> [<https://perma.cc/GCL2-SXA2>].

³¹⁷ *Id.*

³¹⁸ Prime Minister's Office, *Prime Minister Kan's Press Interview* (May 6, 2011), <http://www.kantei.go.jp/jp/kan/statement/201105/06kaiken.html> [<https://perma.cc/K529-VJCN>]; Anthony Tate, *Hamaoka Nuclear Power Plant another ticking bomb like Fukushima*, CRITICALITY (Apr. 25, 2011), <http://criticality.org/hamaoka-nuclear-power-station-ticking-bomb-fukushima/> [<https://perma.cc/37ML-M3M6>].

³¹⁹ Tate, *supra* note 318.

³²⁰ Chubu Electric Power, *About Hamaoka Nuclear Power Station*, <http://hamaoka.chuden.jp/english/about/index.html> [<https://perma.cc/Z9S5-J3LK>].

³²¹ Press Release, Chubu Electric Power, *Application for Approval of Hamaoka Nuclear Power Station Reactors, No. 1 and 2 Decommissioning Plan Submitted* (June 1, 2009), http://www.chuden.co.jp/english/corporate/ecor_releases/ereL_pressreleases/3137916_11098.html [<https://perma.cc/GWR3-D8GJ>].

³²² Shizuoka chihō saibansho [Shizuoka Dist. Ct.], Oct. 26, 2007, TKC database (Japan).

the Tokyo High Court.³²³ They argued that the risk of restarting the Hamaoka nuclear power plant was apparent in light of the Fukushima nuclear accident.³²⁴ It has already been ten years since the appeal but the arguments are still ongoing.

Local residents also filed suit in the Shizuoka District Court in July 2011 after the Fukushima accident, seeking the permanent abandonment and decommission of the Hamaoka nuclear power plant.³²⁵ The courts are still reviewing the arguments.³²⁶ Of course, the plaintiffs cited the Fukushima accident as support for casting doubt on the safety of the plant.³²⁷

C. *Lawsuits to Prevent the Restart of Nuclear Power Plants*

Local residents also filed suits seeking both permanent and preliminary injunctions against the restart of nuclear power plants.³²⁸

On May 1, 2014, the Fukui District Court granted an injunction against the operation of reactors No. 3 and No. 4 of the Ooi nuclear power plant operated by Kansai Electric Power.³²⁹ This was the first major judicial decision on the operation of nuclear power plants after the Fukushima accident. The court held that there was no guarantee the facility would not be hit by an earthquake more powerful than the strongest anticipated earthquake the facility was designed to withstand, per government safety regulations, and that there was a concrete risk that residents living within a 250 km radius of the plant would suffer serious damage if the facility's cooling system malfunctioned.³³⁰ The court also pointed out that the cooling pool for spent fuel is very vulnerable and could be destroyed by an earthquake that is less powerful than the maximum one

³²³ *Hamaoka genpatsu sashitome soshō: Souhou ga iken chinjutsu, Tokyo kōsai* [Hamaoka Nuclear Power Plant injunction suit: both parties stated opinions before the Tokyo High Court] NIKKEI (July 6, 2011), http://www.nikkei.com/article/DGXNASDG06017_W1A700C1CC0000/ [<https://perma.cc/EQN7-4UTB>].

³²⁴ *Id.*

³²⁵ *Hamaoka genpatsu hairō soshō: chubuden ga arasou shisei, shizuoka chisaide hatsu benron* [Hamaoka Nuclear Power Plant decommission suit: Chubu Electric Power contests before the Shizuoka District Court] NIKKEI (Oct. 13, 2011), http://www.nikkei.com/article/DGXNASDG13009_T11C11A0CR0000/?at=DGXZZO0195583008122009000000 [<https://perma.cc/TVF2-7HG8>].

³²⁶ *Id.*

³²⁷ *Id.*

³²⁸ *See Ooi genpatsu no unten sashitome meijiru, Fukui chisai ga hanketsu*, FUKUI SHIMBUN (May 21, 2014) (granting the injunction against operation of Ooi Nuclear Power Plant).

³²⁹ *Fukui chihō saibansho* [Fukui Dist. Ct.], May 21, 2014, Hei 24 (W) no. 394, 2228 HANREI JIHŌ [HANJI], at 72 (Japan).

³³⁰ *Id.*

anticipated, and therefore the current security measures and equipment were too weak.³³¹

On April 14, 2015, the Fukui District Court granted a preliminary injunction against the restart of reactors No. 3 and No. 4 of the Takahama nuclear power plant operated by Kansai Electric Power.³³² The Fukui District Court pointed out that five earthquakes more powerful than the strongest anticipated earthquake the facility was designed to withstand, per government safety regulations, hit four different nuclear power plants since 2005, and there is no guarantee that the Takahama nuclear power plant would not be hit by an earthquake more powerful than the strongest anticipated one.³³³ Moreover, even if the earthquake is not powerful enough to reach the anticipated magnitude, there is still a risk of a serious accident if the cooling system malfunctions due to a power loss or a disruption in the water supply.³³⁴ Even the new safety standards are not demanding enough to preclude the possibility of a serious accident and are not reasonable.³³⁵ As a result, the court found that there is a concrete danger that the personality rights of all residents living within 250 km of the power plant could be infringed.³³⁶

On March 9, 2016, the Otsu District Court similarly granted a preliminary injunction against the restart of reactors No. 3 and No. 4 of the Takahama nuclear power plant operated by Kansai Electric Power.³³⁷ The Otsu District Court held that, although the ultimate burden of proof rests with the claimants, the burden of proof of establishing the safety of the power plant should lay with the power company and, if the power

³³¹ *Id.*

³³² Fukui chihō saibansho [Fukui Dist. Ct.], Apr. 14, 2015, Hei 16 (Yo) no. 31, 2290 HANREI JIHŌ [HANJI], at 13; *Takahama genpatsu no saikadou mitomezu, karishobun, Fukui chisai, shin kijun wo hitei*, SANKEI BIZ (Apr. 15, 2015), <http://www.sankeibiz.jp/express/news/150415/exc1504151000001-n1.htm> [<https://web.archive.org/save/http://www.sankeibiz.jp/express/news/150415/exc1504151000001-n1.htm>] (granting the preliminary injunction against the restart of the Takahama nuclear power plant and rejecting the new safety standards).

³³³ Fukui chihō saibansho [Fukui Dist. Ct.], April 14, 2015, *supra* note 332.

³³⁴ *Id.*

³³⁵ *See id.*

³³⁶ *See id.*; *see also* Fukui chihō saibansho [Fukui Dist. Ct.], May 18, 2015, Hei 27 (Mori) no. 39, TKC database (Japan) (rejecting the application for the suspension of the preliminary injunction granted).

³³⁷ Otsu chihō saibansho [Otsu Dist. Ct.], Mar. 9, 2016, Hei 20 (Yo) no. 6, 2290 HANREI JIHŌ [HANJI], at 75 (Japan); *Takahama genpatsu 3/4gouki untensashitome, Otsu chisai gakarishobun*, ASAHI SHIMBUN (Mar. 9, 2016), <http://www.asahi.com/articles/ASJ37454PJ37PTJB00C.html> [<https://perma.cc/R5R8-8DJQ>] (explaining that the court granted a preliminary injunction against the Takahama nuclear power plant for the first time).

company failed to satisfactorily prove the facility's safety, the decision to restart plant operations would be deemed unreasonable.³³⁸ In light of the severity of the Fukushima nuclear accident, the court held that the safety standard needed to be sufficiently demanding to prevent devastating disasters even if necessary countermeasures failed.³³⁹ Since the cause of the Fukushima nuclear accident was still unclear, the court said, there is grave concern about the sufficiency of the new safety standard adopted after the accident.³⁴⁰ With respect to the Takahama nuclear power plant, the court pointed out that the government underestimated the maximum magnitude of earthquakes that could happen directly below the power plant and the safety standards to be met were inadequate. Evidence indicating the existence of previous tremendous tsunamis was also ignored, thus casting doubt on the adequacy of counter-tsunami measures.³⁴¹ Furthermore, the safety standard for cooling pools for spent nuclear fuel is far more lax than that for the nuclear vessel, and there is no sufficient protocol to address a cooling water leak from the cooling pool.³⁴² Lastly, the court cast doubt on the adequacy of the evacuation plan established by the municipal government and held that significant active intervention by the central government was essential.³⁴³ As a result, the court found that there is a high possibility that the personality rights of the resident plaintiffs could be infringed, granting preliminary injunction.³⁴⁴

Kansai Electric Power applied to the Otsu District Court for the suspension of the preliminary injunction, but the Otsu District Court dismissed the application.³⁴⁵ Furthermore, the Otsu District Court dismissed the objection filed by Kansai Electric Power against the preliminary injunction.³⁴⁶ Kansai Electric Power has appealed to the Osaka

³³⁸ Otsu chihō saibansho [Otsu Dist. Ct.], Mar. 9, 2016, *supra* note 337.

³³⁹ *Id.*

³⁴⁰ *Id.*

³⁴¹ *Id.*

³⁴² *Id.*

³⁴³ Otsu chihō saibansho, [Otsu Dist. Ct.] Mar. 9, 2016, *supra* note 337.

³⁴⁴ *Id.*

³⁴⁵ Otsu chihō saibansho [Otsu Dist. Ct.], June 17, 2016, unreported; *see also* Ichijo & Yuko, *Takahama genpatsu, saikadou mitomezu, Kanden moushitate kyakka, Otsu chisai*, MAINICHI SHIMBUN (June 17, 2016), <http://mainichi.jp/articles/20160617/k00/00e/040/166000c> [<https://perma.cc/FC6E-9N6V>] (dismissing Kansai Electric Power's application and denying the restart).

³⁴⁶ Otsu chihō saibansho [Otsu Dist. Ct.], July 12, 2016, Hei 20 (M) no. 12, 1 TKC database (Japan); *see also* *Kanden Takahama genpatsu, hutatabi unten mitomezu, Otsu chisai igishin kettei*, NIKKEI SHIMBUN (July 12, 2016), http://www.nikkei.com/article/DGX LASHC11H4A_S6A710C100000/ [<https://perma.cc/78Q5-NF4B>] (dismissing the objection and denying the restart of the Takahama nuclear power plant).

High Court.³⁴⁷ But until the Osaka High Court overturns the judgment, Kansai Electric Power is precluded from restarting reactors No. 3 and No. 4 of the Takahama nuclear power plant.

On the other hand, on April 16, 2013, the Osaka District Court rejected the preliminary injunction suits against reactors No. 3 and No. 4 of the Ooi nuclear power plant operated by Kansai Electric Power.³⁴⁸ The court believed that the plaintiffs failed to prove the concrete possibility that they would suffer serious damage resulting from a serious accident at the nuclear power plant.³⁴⁹ Moreover, the Fukui District Court reversed the preliminary injunction order of the same court against the Takahama nuclear power plant on December 24, 2015.³⁵⁰ The Fukui District Court upheld the new safety standards of the NRA and its application to reactors No. 3 and No. 4 of the Takahama nuclear power plant, holding that there is nothing unreasonable in the NRA's judgement.³⁵¹ It thus concluded that there is no concrete danger that the personality right of the resident plaintiffs would be infringed.³⁵² The same court on the same day dismissed a suit for a preliminary injunction against the restart of reactors No. 3 and No. 4 of the Ooi nuclear power plant operated by Kansai Electric Power.³⁵³ Since the review on the reactors of the Ooi nuclear power plant by NRA was still pending, the court concluded that there was no urgent need to issue a preliminary injunction.³⁵⁴ Furthermore, on April 22, 2015, the Kagoshima District Court dismissed the application for a preliminary injunction against reactors No. 1 and No. 2 of the Sendai nuclear power plant operated by Kyushu Electric Power.³⁵⁵ Upon

³⁴⁷ *Koukokushin toshiakeikouni handan: Takahama genpatsu, kōsai de hatsu shinjin*, SANKEI WEST (Oct. 13, 2016), <http://www.sankei.com/west/news/161013/wst1610130073-n1.html> [<https://perma.cc/C3J2-PQH2>] (noting that a hearing before the High Court will take place next year).

³⁴⁸ Osaka chihō saibansho [Osaka Dist.Ct.], April 16, 2013, Hei 24 (Yo) no. 262, 2193 HANREIJIHŌ [HANJI], at 44, http://www.courts.go.jp/app/files/hanrei_jp/259/083259_hanrei.pdf [<https://perma.cc/2CTD-C2C8>] (Japan).

³⁴⁹ *Id.*

³⁵⁰ Fukui chihō saibansho [Fukui Dist. Ct.], Dec. 24, 2015, 2290 HANREIJIHŌ [HANJI], at 29 (Japan); *Takahama genpatsu no saikadou mitomeru, Fukui chisai, karishobun torikeshi*, NIKKEISHIMBUN (Dec. 24, 2015), http://www.nikkei.com/article/DGXLASDG24H3O_U5A221C100000/ [<https://perma.cc/H4E6-WJQW>].

³⁵¹ Fukui chihō saibansho, *supra* note 350.

³⁵² *Id.*

³⁵³ Fukui chihō saibansho [Fukui Dist. Ct.], Dec. 24, 2015, 2290 HANREIJIHO [HANJI], at 73 (Japan).

³⁵⁴ *See id.*

³⁵⁵ Kagoshima chihō saibansho [Kagoshima Dist. Ct.], Apr. 22, 2015, Hei 16 (Yo) no. 36 2290 HANREIJIHŌ, at 147 (Japan); *see also Sendai genpatsu, saikadou sashitome shinsei*

appeal, the Fukuoka High Court, Miyazaki Branch, dismissed the appeal on April 6, 2016, upholding the Kagoshima District Court's decision to reject the preliminary injunction.³⁵⁶

Then, finally, the Osaka High Court overturned the decision of the Otsu District Court, which had granted a preliminary injunction against reactivation of the No. 3 and No. 4 reactors of the Takahama nuclear power plant operated by Kansai Electric Power on March 28, 2017.³⁵⁷ The Osaka High Court confirmed the framework of analysis following other courts, holding that if the nuclear power plant does not satisfy the government safety standards, then it could be concluded that it has a concrete risk of harming the life and health of the local residents but that the plaintiffs seeking injunction need to satisfy the burden of proof that the nuclear power plant involved does not satisfy the safety standards.³⁵⁸ In light of the fact, however, that the nuclear power company has all the data on safety of the plant and all the materials submitted to the safety review, the power company needs to prove that the plant satisfied the safety standards with sufficient grounds.³⁵⁹ If the power company fails to prove this, then it could be assumed that the power plant presents concrete danger of harming the life and health of local residents.³⁶⁰ If it succeeds in proving this, then it is up to plaintiff local residents to prove that the government safety standards were unreasonable or that there was some unreasonable applications in the safety review.³⁶¹

Then, the Osaka High Court approved that the powerfulness of an earthquake can be used as a basic standard, which has been upheld by the NRA, using all the standard formulae to estimate the likelihood, powerfulness, and risk of the influence of faults as satisfying the government standards.³⁶² With respect to countermeasures against a powerful

wo kyakka, karishobunde Kagoshima chisai, NIKKEI SHIMBUN (Apr. 22, 2016), http://www.nikkei.com/article/DGXLASJC22H0U_S5A420C1000000/ [<https://perma.cc/KFX7-4N5K>] (dismissing the Application for Preliminary Injunction against the Restart of Sendai Nuclear Power Plant).

³⁵⁶ Fukuoka kōtō saibansho, Miyazaki shibu [Fukuoka High Ct. Miyazaki Branch], Apr. 6, 2016, TKC database (Japan); *see also Sendai ganpatsu: Sashitome mitomezu, Shin-kiseikijun hugouri towa iezu*, MAINICHI SHIMBUN (Apr. 6, 2016), <https://mainichi.jp/articles/20160406/k00/00e/040/201000c> [<https://perma.cc/YCC9-D5A8>] (denying the injunction and holding that the new regulatory standards are not unreasonable).

³⁵⁷ Osaka kōtō saibansho [Osaka High Ct.], Mar. 28, 2017, TKC database (Japan).

³⁵⁸ *Id.*

³⁵⁹ *Id.*

³⁶⁰ *Id.*

³⁶¹ *Id.*

³⁶² Osaka kōtō saibansho [Osaka High Ct.], Mar. 28, 2017, *supra* note 357.

earthquake, the power company added 830 reinforcements and confirmed that the plant could withstand the standard earthquake and the NRA also confirmed this.³⁶³ With respect to countermeasures against the possible tsunami, the power plant estimated the possible height of a tsunami and introduced various countermeasures to the satisfaction of the NRA.³⁶⁴ The power plant further added sufficient countermeasures including a countermeasure against total power loss, also to the satisfaction of the NRA.³⁶⁵ Although the exact extent of damage and cause of the Fukushima nuclear power plant accident is not fully clarified, the Osaka High Court held that the basic outline of events are already confirmed by various investigation teams and new safety standards were adopted by incorporating the lessons of the accident.³⁶⁶ The new safety standards can be viewed as reasonable.³⁶⁷ The court thus denied the arguments of the local residents that the power plant lacks sufficient safety measures and denied preliminary injunction.³⁶⁸

Therefore, the stance of the lower courts is split. But it looks like many courts still adhere to their previous stance and pay a very strong deference to the judgment of the government and nuclear experts, limiting their own reviews only to whether the government judgment was grossly unreasonable. Many courts still believe that the nuclear power plants approved by the government raise no concrete possibility of accident or harm despite the Fukushima nuclear accident.³⁶⁹

D. Japanese Courts in the Post-Fukushima Era

It is remarkable that even in the post-Fukushima era many courts are willfully blind to the possibility of serious damage raised by the local residents in the civil suits filed against power companies over the safety of nuclear power plants.

³⁶³ *Id.*

³⁶⁴ *Id.*

³⁶⁵ *Id.*

³⁶⁶ *Id.*

³⁶⁷ Osaka kōtō saibansho [Osaka High Ct.], Mar. 28, 2017, *supra* note 357.

³⁶⁸ *Id.* Upon the decision of the Osaka High Court, No. 3 and No. 4 reactors of the Takahama nuclear power plant were reactivated again.

³⁶⁹ *See also* Hiroshima chihō saibansho [Hiroshima Dist. Ct.], Mar. 30, 2017, TKC database (Japan) (rejecting the application for preliminary injunction against the restart of Reactor No. 3 of the Ikata nuclear power plant); Saga chihō saibansho [Saga Dist. Ct.], Mar. 20, 2015, TKC database (Japan) (rejecting a suit against the use of MOX fuel at the Genkai nuclear power plant operated by the Kyushu Electric Power).

It may be understandable for the courts to defer to the judgment of a regulatory agency supported by experts in the context of an administrative case against the government agency.³⁷⁰ Even in the United States, the United States Supreme Court has been very reluctant to require additional steps in the procedure³⁷¹ and has been extremely reluctant to subject a decision by the NRC to a searching review.³⁷² Even after the Fukushima accident, courts in the United States are generally very supportive of nuclear power.³⁷³

But in light of the government's catastrophic failure to regulate the safety of nuclear power plants, it is doubtful whether the courts should continue to blindly place their faith in the expert knowledge of the government regulatory agency and its commitment to protect the public safety in administrative cases. It is more persuasive now to allow for a more searching judicial review on the sufficiency of government regulation.³⁷⁴ A more searching judicial review would make more sense especially because public participation in the permit-granting process is restricted and there is a critical shortage of information.³⁷⁵

³⁷⁰ *But see* Saikō saibansho [Sup. Ct.], April 16, 2013, 3rd petty bench, 67: 4 SAIKŌ SAIBANSHO MINJI HANREISHŪ [MINSHŪ], at 1115 (Japan) (holding that in a revocation suit against the refusal to admit the eligibility to receive compensation for Minamata disease, the reviewing court should not review whether the decision was unreasonable or not but whether the applicants should be found to suffer Minamata disease to receive the compensation).

³⁷¹ *Vermont Yankee Nuclear Power Corp. v. NRDC*, 435 U.S. 519 (1978).

³⁷² *Metropolitan Edison Company v. People against Nuclear Energy*, 460 U.S. 766 (1983). *See also* Sheldon L. Trubatch, *How, Why and When the United States Supreme Court Supports Nuclear Power*, 3 ARIZ. J. ENVTL. L. & P. 1 (2012); Richard Lazarus, *The National Environmental Policy Act in the U.S. Supreme Court: A Reappraisal and a Peek behind the Curtains*, 100 GER. L. J. 1507 (2012).

³⁷³ Joel Yellin, *Judicial Review and Nuclear Power: Assessing the Risks of Environmental Catastrophe*, 45 G. WASH. L. REV. 969 (1977). In *New York v. U.S. NRC*, 681 F.3d 471 (D.C.Cir. 2012), the Court of Appeal for the District Circuit ordered NRC to consider the possibility that the permanent waste disposal site for high level nuclear waste may not be built under the National Environmental Policy Act. *See* Hillary H. Harnett, *New York v. U.S. Nuclear Regulatory Commission*, 37 HARV. ENVTL. L. REV. 589, 595 (2013). But, once NRC reconsidered and decided that the permanent storage of high level nuclear waste does not raise serious risk, the court has backed off. *New York v. U.S. NRC*, 824 F.3d 1012, 1018 (D.C. Cir. 2016). *See* Amanda Matos, *Thousands of Half-Lives to Go: Weighing the Risks of Spent Nuclear Fuel Storage*, 23 J. L. & POL'Y 305 (2014).

³⁷⁴ Emily Hammond Meazell, *Super Deference, the Science Obsession, and Judicial Review as Translation of Agency Science*, 109 MICH. L. REV. 733, 757–58 (2011); Katherine A. Trisolini, *Decisions, Disasters, and Deference: Rethinking Agency Expertise after Fukushima*, 33 YALE L & POL'Y REV. 323,325 (2015).

³⁷⁵ For the necessity of allowing more public participation, *see* Anthony Z. Roisman, Erin Honaker, & Ethan Spaner, *Regulating Nuclear Power in the New Millennium (The Role*

Regardless of the level of deference the courts should pay to an administrative agency in a suit against the grant of a permit by the government, courts are not obliged to defer to the judgement of a government regulatory agency or power company in the civil injunction cases. The Ikata nuclear power plant case involved a revocation suit against the government and its holding is not applicable to civil suits. It is in this sense surprising that the courts applied the same kind of deference in the past, even in civil suits filed by local residents against the power companies.

But more fundamentally, in the post-Fukushima era, it would make more sense for the judiciary to keep at least a searching review on the safety of the nuclear power plant in civil suits against power companies for several reasons.

First of all, the high number of earthquakes in Japan create a high probability that a massive earthquake could hit a nuclear power plant. The government and experts estimate the magnitude of these earthquakes and ensure that the power plant can withstand these anticipated powerful earthquakes. But there is no guarantee that a more powerful than anticipated earthquake will never occur in Japan. Almost no one anticipated that an earthquake as powerful as the Tohoku Earthquake could hit Japan, especially since such a powerful earthquake has never hit Japan before. In this sense, it is not surprising that almost no one expected it to happen. But now it has become apparent that such an unanticipated massive earthquake could strike any part of Japan. Government estimates on earthquakes anticipated to affect particular nuclear power plants are based on past experience and are very conservative. It would make more sense to require that power plants can withstand very powerful earthquakes even if the likelihood is remote.

Nuclear power plants are planned and constructed to withstand earthquakes with help from computer simulations. Computers can provide the best insight on the resilience of the nuclear power plant in the event of an earthquake. But that is merely a simulation. No one knows whether the nuclear power plant can actually withstand such a powerful earthquake. The government, as well as TEPCO, believes that there was no serious structural damage due to the earthquake itself this time. But there is no guarantee that any serious structural damages will not happen in the future.

of the Public), 26 PACE ENVTL. L. REV. 317 (2009); Joseph Spivey, *Beyond Entergy Nuclear Vermont Yankee: Preserving Public Agency in Nuclear Regulation*, 25 TULANE ENVTL. L.J. 473 (2012).

Furthermore, predicting an earthquake is very difficult. The Japanese disaster prevention model is built on the presumption that it is possible to predict, and thus prepare for, an earthquake. The safety of the nuclear power plant is supported by the fact that the plant will be able to withstand the most powerful earthquake that is anticipated to hit the plant within some margin of error. Yet, the Tohoku Earthquake proved that predicting earthquakes is still very difficult. Some experts thus openly argued that it would be better to focus on damage mitigation instead of earthquake prediction.³⁷⁶ Rather than making sure that there would be no serious damage due to the most powerful anticipated earthquake, it might be better to be prepared to mitigate the damage, that is to say, to prevent any fatal damage from occurring even if the plant is seriously damaged. It is doubtful whether current nuclear power plants are designed, constructed, and operated in accordance to this philosophy.

Finally, even if the plant can withstand a simulated powerful earthquake, the plant is built by humans, which raises the possibility of human error. Although many maintenance and operation tasks are accomplished automatically by computers, ultimately it is humans that need to maintain the plant and supervise its operation. There is no guarantee that the plant is built and maintained by humans without any problems. Errors in constructing or maintaining crucial safety components in the power plant could compromise the facility's ability to withstand powerful earthquakes. Because of these mistakes, there is a potential risk that a powerful earthquake could damage or destroy the power plant.

As a result, instead of blindly relying upon the government and experts, it may be better to allow the judiciary to scrutinize the design, construction, operation plan, and all other security measures to make sure that there is nothing wrong with them. Prior to the Fukushima accident, most courts reviewed whether the judgment of the government was unreasonable or not when dealing with administrative suits. Even in civil suits, the courts practically presumed that nuclear power plants, licensed by the government after a safety review, were safe. In actual practice, the courts are not paying deference but are simply accepting the judgment of the government and experts without much scrutiny. Their reviews were toothless. Now everyone knows that we cannot blindly trust the experts and the government after the Fukushima accident. It is therefore more apt to expect the courts to review the judgments of the

³⁷⁶ *Don't rely on quake predictions*, JAPAN TIMES (July 7, 2016), <https://www.japantimes.co.jp/opinion/2016/07/07/editorials/don't-rely-quake-predictions/> [https://perma.cc/DJ4U-8UKB].

government with more bite in order to force the power companies to defend the safety of their facilities in civil suits.

The Japanese courts may be afraid that the judgments on nuclear technology require a significantly higher degree of expert knowledge that judges may not have. Or perhaps they fear that since the development of nuclear power is highly political and controversial, they should avoid interfering with the government's decision to allow power companies to build and operate nuclear power plants, leaving the choice to the public to make through election.

Surely, judges are not experts on nuclear technology. Judges are legal professionals and are not required to have the technical and scientific background for everything. They can, however, use their legal skills with proper assistance from other experts to question whether the judgment of the government could be justified and whether there is a concrete possibility of a serious accident. Also, no matter how political or controversial the issue is, that is not an excuse to avoid facing the issue. Even if both the government and a large majority of the people support nuclear power, that is not an excuse to turn a blind eye to the judgment of the government or the power companies. It is understandable that judges are hesitant to issue injunctions unless they are persuaded that there is a high probability that a serious accident could happen and significantly affect local residents. But now, everyone knows that such accidents do happen and that local residents are seriously affected. In light of the seriousness and magnitude of the consequences, it makes sense for the courts to require much higher safety standards for nuclear power plants. Judges should not hesitate to issue an injunction if there is a doubt over whether the nuclear power plant is well structured and equipped with sufficient safety measures or whether all the safeguards designed to mitigate damages from accidents are actually well prepared.³⁷⁷

³⁷⁷ Or, the courts might be simply imposing a much higher threshold for injunction suits relative to damage suits. Indeed, the Japanese courts did not hesitate to hold TEPCO liable for the nuclear damage caused by the Fukushima accident. Osaka chihō saibansho [Osaka Dist. Ct.], Sept. 16, 2015, 2294 HANREIJIHŌ, at 89 (Japan); Kyoto chihō saibansho [Kyoto Dist. Ct.], Feb. 18, 2016, TKC database (Japan); Sapporo chihō saibansho [Sapporo Dist. Ct.], Mar. 18, 2016, TKC database (Japan); Tokyo chihō saibansho [Tokyo Dist. Ct.], May 25, 2016, TKC database (Japan). For the statutory scheme on compensation for damages caused by nuclear accidents, see Eric A. Feldman, *Fukushima: Catastrophe, Compensation, and Justice in Japan*, 62 DEPAUL L. REV. 335 (2013); Eric A. Feldman, *Compensating the Victims of Japan's 3-11 Fukushima Disaster*, 16 ASIAN-PACIFIC L. & POL'Y J. 127 (2015). It is still an open question whether the government has any liability

CONCLUSION

Nuclear power is a very controversial and sensitive issue in Japan. Although many people have serious concerns with the safety of nuclear power plants, not many people argue for the total abolition of nuclear power immediately.³⁷⁸ However, many people doubt the appropriateness of the new safety standards adopted by the NRA and oppose restarting power plants even if they satisfy the new standards.³⁷⁹ Polls indicate that only 18% of the public thought that the nuclear experts are trustworthy, while 31.7% feel that nuclear experts were not trustworthy.³⁸⁰ A miserable 9.2% of the public report that the government can be counted on, but 51% consider the government untrustworthy.³⁸¹ In light of this distrust, blind deference to the government and experts with respect to the safety of nuclear power plants simply does not make any sense.

It is up to the people to choose whether to keep nuclear power. It is possible to abandon all nuclear power just as the German government did.³⁸² If the people decide to keep it, it then becomes crucial to see whether we can predict the power of earthquakes and whether we can ensure the safety of nuclear power plants while adopting additional safeguards to

for its failure to secure the safety of a nuclear power plant. Joel Rheuben, *Government Liability for Regulatory Failure in the Fukushima Disaster: A Common Law Comparison*, 23 PACIFIC RIM L. & POL'Y J. 113, 134 (2014).

³⁷⁸ A poll indicated that 14.8% of the respondents supported immediate abandonment of nuclear power, while 47.9% of the respondents supported gradual reduction and ultimate abandonment. Japan Atomic Energy Relations Organization ("JAERO"), Genshiryoku riyō nikansuru yoron chousa 2015 [Public Opinion Survey on the Use of Nuclear Power 2015], http://www.jaero.or.jp/data/01jigyousurvey_pickup.html [<https://perma.cc/DE42-CGL4>] [hereinafter JAERO Survey].

³⁷⁹ The 2015 public poll indicated that 58% of the respondents opposed the restart of nuclear reactors even if they satisfied the new safety standards., *Zenkoku yoron chousa: genpatsu saikadou hantai ga 58%, 74% hinan dekinai* [Public poll indicates that 58% of the public opposed to the restart of the power plant, 74% citing the difficulty of evacuation], TOKYO SHIMBUN (Sept. 20, 2015), <http://www.tokyo-np.co.jp/article/feature/nucerror/list/CK2015092002100006.html> [<https://perma.cc/L46X-EY4G>].

³⁸⁰ JAERO Survey, *supra* note 378.

³⁸¹ *Id.*

³⁸² Gerd Winter, *The Rise and Fall of Nuclear Energy Use in Germany: Processes, Explanations and the Role of Law*, 25:1 J ENVTL. L. 95 (2013); Lincoln L. Davies & Alexis Jones, *Fukushima's Shadow*, 48 VAND. J. TRANSNAT'L L. 1083, 1098 (2015). For the international response to the Fukushima accident, see Stephen G. Burns, *The Fukushima Daiichi Accident: The International Community Responds*, 11 WASH. U. GLOBAL STUDIES L. REV. 739, 745 (2012); Emily Benz, *Lessons from Fukushima: Strengthening the International Regulation of Nuclear Energy*, 37 WM. & MARY ENVTL. L. & POL'Y REV. 845, 863–64 (2013).

mitigate the possible damages.³⁸³ It is true that there are so many errors and deficiencies which contributed to the Fukushima accident. In retrospect, therefore, it is easy to say that all these errors could have been avoided and the nuclear power plant could be safely constructed and operated if sufficient safeguards were to be introduced and all countermeasures were to be adopted.³⁸⁴ Nevertheless, how can we be sure that the different kinds of errors might not bring another nuclear disaster?

John Hammond attempted to bring dinosaurs back to life using the DNA from blood preserved inside insects encased in amber to create a dinosaur theme park, Jurassic Park, and used all available technologies to contain the dinosaurs inside the park in order to secure the safety of the visitors. However, could we really contain and control T-Rex? Ian Malcolm, a mathematician and chaos theory expert, was pessimistic on this issue after he was invited to preview the park. The Fukushima accident forces us to reconsider this basic question now with respect to earthquakes and nuclear power plants.

³⁸³ Massive disasters might not be the best things to prompt overall re-evaluation of energy law and policy, but everyone needs to learn lessons from the past failures. Lincoln L. Davies, *Beyond Fukushima: Disasters, Nuclear Energy, and Energy Law*, 2011 BYU L. REV. 1937, 1989 (2011).

³⁸⁴ Acton & Hibbs, *supra* note 246, at 3–4.