

The Future of Nuclear and Energy Policy Post Fukushima: A Chance to Make Lasting Change in the Face of the Worst Nuclear Accident since Chernobyl

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Introduction

With the crash of a forty-five foot tidal wave, many nuclear industry insiders and outsiders espoused the view that the Nuclear Renaissance was swept out to sea. The catalyst to this popular view began with a 9.0 magnitude earthquake struck Japan and sent the devastating tsunami surging over the walls of the Fukushima Daiichi Nuclear Power Station.¹ A nuclear meltdown in such a technologically advanced, populated area could do nothing but slow the recent resurgence of the nuclear power industry.

This widely held sentiment has since dissipated. New policies have evolved, and after stepping back from the disaster, the United States has renewed its middle-of-the-road course on the usage of nuclear technology.²

Our nation's energy policies orbit disasters. It is not until there is an Exxon Valdez or Deepwater Horizon that we discuss our dependence on foreign oil.³ It is not until a Chernobyl, Three Mile Island, or Fukushima that we care about how our electrons are being produced as nuclear protestors voice their opinions. It was noted in 2002 that "[e]nergy policy-making in the

¹ Keith Voigt & Irene Chapple, *Analysis: Fukushima and the 'Nuclear Renaissance' that Wasn't*, CNN (June 1, 2011), available at <http://edition.cnn.com/2011/BUSINESS/04/11/japan.fukushima.nuclear.industry/index.html>.

² Brian Wingfield & Julie Johnsson, *Scana Receives NRC Approval to Build South Carolina Reactors*, BLOOMBERG (March 30, 2012), available at <http://www.bloomberg.com/news/2012-03-30/scana-receives-nrc-approval-to-build-south-carolina-reactors-2-.html> (Stating that two new reactors in Georgia and two in South Carolina have begun construction with advanced reactor designs.).

³ See generally Philip Shabecoff, *Balancing Need and Risk in Pursuit of Oil*, N.Y. TIMES (April 07, 1989), <http://www.nytimes.com/1989/04/07/us/balancing-need-and-risk-in-pursuit-of-oil.html>; John M. Broder, *Obama Sketches Energy Plan in Oil*, N.Y. TIMES (May 21, 2010), available at <http://www.nytimes.com/2010/05/22/science/earth/22assess.html>.

United States is a cyclical enterprise.”⁴ Only when there is a crisis in the news does “energy dominate[] the political agenda.”⁵ When it is not in the news, energy policy “... fades into the background.”⁶ Moreover, when “courts or legislatures often create law in reaction to events, rather than anticipating them,”⁷ a sustainable policy for the future of nuclear power in the United States—or for a sustainable energy policy overall—is not created.

After a brief revisiting of the disaster that occurred at Fukushima, an analysis of United States nuclear policy will follow. Finally, there will be a conclusion that discusses the future of nuclear policy and how the nation should proceed in light of growing environmental concerns amid an increasingly energy-starved world.

*“Crying is useless. If we’re in hell now all we can do is crawl up towards heaven.”*⁸

On March 11, 2011, at 2:46 PM the first tremors of a 9.0 magnitude earthquake strike the coast of Honshu Island Japan.⁹ The quake and following shockwaves trigger an automatic shutdown of eleven of Japan's nuclear power reactors.¹⁰ Despite warnings in 2008 that a tremor could occur in the region, it was now too late—Japan was about to become ground zero for nuclear safety and policy discussion.¹¹ At 3:27 PM, the first tsunami slams against Fukushima's massive walls, followed shortly by a forty-five foot wave engulfs the facility, floods its

⁴ Gary C. Bryner, *The National Energy Policy: Assessing Energy Policy Choices*, 73 U. COLO. L. REV. 341, 341 (2002).

⁵ *Id.*

⁶ *Id.*

⁷ Hannah Wiseman et al., *Formulating a Law of Sustainable Energy: The Renewables Component*, 28 PACE ENVTL. L. REV. 827 (2011).

⁸ *Letters from Fukushima: Tepco Worker Emails*, WALL ST. J. (Mar. 28, 2011), available at <http://blogs.wsj.com/japanrealtime/2011/03/28/letters-from-fukushima-tepco-worker-emails/> (quoting a worker participating in the cleanup of Fukushima in an email, 3 weeks after the event occurred).

⁹ *Deadly Earthquake is Strongest in Japan's History*, ACCUWEATHER (Mar. 11, 2011 9:00AM), available at <http://www.accuweather.com/en/weather-news/deadly-earthquake-is-strongest/46859>.

¹⁰ Josef Oehmen, *Fukushima Nuclear Accident - A Simple and Accurate Explanation*, ENERGY COLLECTIVE (Mar. 15, 2011), available at <http://theenergycollective.com/node/53461>.

¹¹ *AFP, IAEA Warned Japan Over Nuclear Quake Risk: WikiLeaks*, THE EXPRESS TRIBUNE (Mar. 17, 2011), available at <http://tribune.com.pk/story/133824/iaea-warned-japan-over-nuclear-quake-risk/>.

basements, and disables the site's emergency diesel generators by sweeping away their above-ground emergency fuel supply.¹²

Over the next few days, the Japanese government established a three kilometer exclusion zone around the power plant and people within a ten kilometer radius zone were advised to stay indoors.¹³ Multiple countries advise their nationals in Tokyo to consider leaving in response to fears of spreading radioactive contamination.¹⁴ What looked like a scene from a horror movie became a harrowing reality. The disaster ranks as the second biggest nuclear accident ever-second only to Chernobyl.¹⁵ Many predicted the area would not be habitable for decades.¹⁶

As cleanup began, questions emerged: Why? How? Could it happen here? Calmed, and perhaps forgotten, by two decades without a major accident, the Pandora's Box of nuclear power crept back into the spotlight. The disaster at Fukushima renewed the debate on nuclear energy, and both ends of the political spectrum voiced their opinion and took sides. Some countries, like Germany, abandoned all plans for a nuclear future. Others, like the United States, stayed the course, reassured by unshaken agencies and a president eager to move forward with nuclear technology, that a disaster like Fukushima could not happen on U.S. soil. Still other, more cautious individuals feel that the issue is not so black and white, but more complicated, and an opportunity to explore the world of nuclear energy law at home and around the globe.

¹² *TEPCO Details Tsunami Damage / Waves That Hit Fukushima Plant Exceeded Firm's Worst-Case Projections*, DAILY YOMIURI (Apr. 11, 2011), available at <http://archive.is/JiRG>.

¹³ *Timeline: Japan Power Plant Crisis*, BBC (Mar. 13 2011), available at <http://www.bbc.co.uk/news/science-environment-12722719>.

¹⁴ Justin McCurry & Robert Booth, *Britain Joins Countries Urging Their Citizens to Leave Tokyo*, THE GUARDIAN, (Mar. 16, 2011), available at <http://www.theguardian.com/world/2011/mar/16/britain-urging-citizens-leave-tokyo>.

¹⁵ *How Does Fukushima Differ From Chernobyl?*, BBC (Dec. 16, 2011), available at <http://www.bbc.co.uk/news/world-asia-pacific-13050228> (noting that while Fukushima ranks a distant second to Chernobyl, both accidents are the only maximum-level accidents in history).

¹⁶ Martin Fackler, *Large Zone near Japanese Reactors to Be off Limits*, N.Y. TIMES (Aug. 21, 2011), available at <http://www.nytimes.com/2011/08/22/world/asia/22japan.html>.

United States' Reaction to the Disaster – Staying the Course

Just a few days after the disaster, President Obama reiterated America's commitment to nuclear power as part of a diverse energy portfolio. "Nuclear power," he said, was still "an important part of our own energy future."¹⁷ Instead of a major change in nuclear policy, like Germany who committed to shutting down all nuclear power plants by 2022,¹⁸ the President instead challenged the Nuclear Regulatory Commission (NRC) to carefully review Fukushima's implications for nuclear power plants in the United States.¹⁹

The NRC's review was focused solely on safety, assessing Fukushima's implications in a three tier approach.²⁰ Starting with an immediate short-term review, the NRC followed up with an intermediate review and released its findings on July 11, 2011. The third, longer term, tier of review is still ongoing. However, the middle-term review culminated in a nearly 100-page report from a task force of six experts with a combined total of 135 years of regulatory experience.²¹

Finding that "a sequence of events like the Fukushima accident is unlikely to occur in the United States. . ." the task force concluded that ". . . continued operation and continued licensing activities do not pose an imminent risk to public health and safety."²² Twelve overarching changes to U.S. nuclear regulation were proposed.²³ Not one of them, however, considered closing down plants or halting new construction—instead, the recommendations emphasized ways

¹⁷ Jesse Lee, *President Obama: "We Will Stand with the People of Japan,"* WHITE HOUSE BLOG (Mar. 17, 2011), available at <http://www.whitehouse.gov/blog/2011/03/17/president-obama-we-will-stand-people-japan>.

¹⁸ *Germany: Nuclear Power Plants to Close by 2022*, BBC (May 30, 2011), available at <http://www.bbc.co.uk/news/world-europe-13592208>.

¹⁹ Lee, *supra* note 17.

²⁰ Charles Miller et al., *Recommendations for Enhancing Reactor Safety in the 21st Century*, NUCLEAR REGULATORY COMMISSION vii-viii (July 12, 2011), available at <http://pbadupws.nrc.gov/docs/ML1118/ML111861807.pdf>.

²¹ *Id.*

²² *Id.*

²³ *Id.*

to “clarify” and “strengthen” existing policy, not replace it.²⁴ For instance, the task force recommended that nuclear operators “reevaluate and upgrade as necessary [the facilities’] seismic and flooding protection of structures.”²⁵ Similarly, it urged the strengthening of “station blackout mitigation capability,” and pursuing “additional emergency preparedness topics related to multiunit events and prolonged station blackout.”²⁶ Seemingly every one of the suggestions was directly linked to the problems encountered at Fukushima, instead of challenging nuclear policy and asking if gaps in NRC regulations existed in general.

Nuclear energy suffered at the polls after the Fukushima disaster.²⁷ Support for the technology dropped to its lowest point since the Three Mile Island incident, dropping nearly fifteen percentage points from its almost sixty percent approval rating in 2008.²⁸ Yet, despite such doubts, the overall approach to nuclear power in the United States remains largely unchanged in Fukushima’s aftermath. Fueled by the need for action on climate change, calls for nuclear expansion were growing in the years prior to Fukushima, and despite being lessened, the calls are being heeded as the United States continues to build four new nuclear plants in the nation’s Southeast.²⁹

Policy Analysis

Energy disasters offer an opportunity to explore the aims of our energy policies. By demonstrating the catastrophic consequences that pursuing these aims can lead to, disasters offer

²⁴ *Id.*

²⁵ *Id.*

²⁶ *Id.* Station blackout is the loss of all alternating current power from off site or on site sources. The tsunami that struck Fukushima led to a core melt down.

²⁷ Michael Cooper & Dalia Sussman, *Nuclear Power Loses Support in New Poll*, N.Y. TIMES (Mar. 22, 2011), available at <http://www.nytimes.com/2011/03/23/us/23poll.html>.

²⁸ *Id.*

²⁹ Wingfield, *supra* note 2.

the chance to, as a society, reflect on whether the current aim of our policies is the correct one.³⁰

As professor Zygmunt Plater aptly observed in the context of the Deepwater Horizon disaster,

The question for national energy law and policy now is whether, this time around, we will acknowledge and implement the lessons for hard systematic change largely avoided two decades ago. There are many promising areas for reform, . . . [but the] Deepwater Horizon tragedy will be a doubly disastrous occasion if it does not produce systemic changes for the future, as the Exxon Valdez spill markedly failed to do. As White House Chief of Staff Rahm Emanuel said in another context, “You never want a serious crisis to go to waste.”³¹

Despite this possibility of transformation, energy disasters in the U.S. generally have not caused any kind of thoughtful reflection Professor Plater advocates. While energy disasters have long been held as catalysts to change in energy and environmental policy, they tended to produce results much like what Fukushima has done: incremental ones. The Exxon Valdez disaster helped tighten liability for oil spills, but it did nothing to lessen our dependence on oil.³² The events following the explosion of Deepwater Horizon caused President Obama to halt off-shore drilling, but in the face of intense political pressure, that ban was quickly lifted.³³

As discussed, U.S. regulators focused mainly on improving safety post-Fukushima, to avoid the exact problems that Japan encountered and the possibility of corollaries in U.S. plants.³⁴ The NRC task force’s recommendations urged nuclear power companies to account for

³⁰ Cf. Bruce R. Huber, *Transition Policy in Environmental Law*, 35 HARV. ENVTL. L. REV. 91, 113 (2011).

³¹ Zygmunt J.B. Plater, *The Exxon Valdez Resurfaces in the Gulf of Mexico ... and the Hazards of “Megsystem Centripetal Di-Polarity”*, 38 B.C. ENVTL. AFF. L. REV. 391, 396 (2011).

³² See Sanne Knudsen, *A Precautionary Tale: Assessing Ecological Damages After the Exxon Valdez Oil Spill*, 7 U. ST. THOMAS L.J. 95 (2009).

³³ Peter Baker & John M. Broder, *White House Lifts Ban on Deepwater Drilling*, N.Y. TIMES (Oct. 12, 2010), available at <http://www.nytimes.com/2010/10/13/us/13drill.html?pagewanted=all>.

³⁴ Miller, *supra* note 20.

a prolonged total loss of station power at their nuclear facilities, to anticipate the possibility of multiple natural disaster events, and to assure that there will not be venting problems with the reactor type used both in Daiichi and here in the United States.³⁵ The future of what nuclear power's role in the United States should be after Fukushima did not get mentioned. In the aftermath of a tragedy as catastrophic as this, U.S. regulators and policymakers followed the traditional American path for responding to disasters. Instead of capitalizing on the opportunity to make big, long-lasting changes in response to a high profile event, policies were enacted to stay the course.

Another example of this comes from a more recent change in energy law. In the summer of 2003, approximately fifty million people in the northeastern United States and southeastern Canada lost power as a result of cascading transmission and generation failures: an unprecedented blackout.³⁶ Partially in response to this event, the Energy Policy Act of 2005 (EPAct 2005) gave the Federal Energy Regulatory Commission (FERC) authority to oversee the reliability of the United States' bulk transmission system.³⁷ Only after national a crisis forced transmission reliability to the forefront did federal law react to the issue of transmission security. This response to the disaster of the 2003 blackouts was similar to Fukushima: rather than asking broader policy questions about the state of the nation's transmission system, the authority granted by EPAct 2005 related closely to the proximate cause of the disaster. It provided FERC

³⁵ *Id.*

³⁶ See generally *Final Report on the August 14, 2003 Blackout in the United States and Canada: Causes and Recommendations*, DEPT. OF ENERGY (2004), available at <http://energy.gov/sites/prod/files/oeprod/DocumentsandMedia/BlackoutFinal-Web.pdf>

³⁷ Federal Regulation and Development of Power, 16 U.S.C. § 792 (2013).

power to certify an “electric reliability organization” that would enforce operating standards, not the authority to reassess the structure of the transmission system altogether.³⁸

The Dark Side of the Patchwork Approach

This patchwork approach to energy and environmental policy in reaction to disasters is hardly sustainable. This is exemplified by taking a close look at Germany’s policy before and its reaction after the Fukushima disaster.

Late in 2010, German Chancellor Angela Merkel fostered a plan that she called a “revolution in energy provision” which extended the lives of the nation’s seventeen nuclear power plants by twelve years.³⁹ She boldly went on to state, “I am against shutting down our nuclear power plants only to have atomic power imported into Germany from other countries That won’t happen on my watch.”⁴⁰

Not even weeks after Fukushima, Germany pulled the plug on its 7 nuclear reactors built prior to 1980.⁴¹ Then the German government announced that by 2022, the remaining 10 reactors would be phased out.⁴² In a bold statement for any politician, Norbert Rottgen, Merkel’s environment minister set the nation’s plans in stone, saying, “It’s definite: the latest end for the last three nuclear power plants is 2022 There will be no clause for revision.”⁴³

³⁸ *Id.*

³⁹ Kate Connolly, *Germany Agrees to Extend Life of Nuclear Power Stations*, THE GUARDIAN (Sept. 6, 2010), available at <http://www.theguardian.com/world/2010/sep/06/germany-extend-nuclear-power-stations>.

⁴⁰ Daniel Johnson, *Why Germany Said No to Nuclear Power*, THE TELEGRAPH (May 30, 2011), available at <http://www.telegraph.co.uk/news/worldnews/europe/germany/8546608/Why-Germany-said-no-to-nuclear-power.html>.

⁴¹ Luke Harding, *Angela Merkel Switches off Seven Nuclear Power Plants*, THE GUARDIAN (Mar. 15, 2011), available at <http://www.theguardian.com/world/2011/mar/15/germany-merkel-switches-nuclear-power-off>.

⁴² *Germany: Nuclear Power Plants to Close by 2022*, BBC (May 30, 2011), available at <http://www.bbc.co.uk/news/world-europe-13592208>.

⁴³ *Id.*

This extreme response in nuclear policy, while heralded by much of the German population,⁴⁴ is coming at quite a cost to the country. Much like Merkel predicted, Germany now has to import electricity from nearby France and the Czech Republic – both heavy users of nuclear power.⁴⁵ Despite getting twenty-five percent of its energy from renewable resources, the subsidies and taxes that are in place are beginning to cripple the German economy.⁴⁶ A recent report from IHS, an energy research firm, states, “[r]ising electricity prices in Germany are making German products less competitive and encouraging firms to relocate elsewhere.”⁴⁷ This is a clear showing of how evolving energy policy in response to disaster instead of through research and planning can simply lead to new crises.

Conclusion

Fukushima can be viewed as both a tragedy and an opportunity to reassess our nuclear energy policies. Some, like Germany, seized on this opportunity to turn the page on nuclear power. For others, the view was hazier. In the United States, Fukushima, if anything, appeared as a “grim reminder of the calculated risk associated with nuclear power,”⁴⁸ but the country only shored up its defenses to the exact scenario that took the Japanese plant down. Nuclear energy provides many benefits—cheap, emission free energy—yet the potential costs of those benefits can be exceedingly high. Decades from now, Fukushima will still be a grim reminder of that fact.

⁴⁴ *How Germany Plans to Succeed in a Nuclear Free, Low-Carbon Economy*, THE GUARDIAN (July 29, 2011), available at <http://www.theguardian.com/environment/2011/jul/29/nuclearpower-energy>.

⁴⁵ *Nuclear Power in the World Today*, WORLD NUCLEAR ASSOCIATION (last updated Nov. 2013), available at <http://www.world-nuclear.org/info/Current-and-Future-Generation/Nuclear-Power-in-the-World-Today/>.

⁴⁶ Stanley Reed, *O.E.C.D Head Calls for Global Effort against Climate Change*, N. Y. TIMES (Oct. 9, 2013), available at <http://www.nytimes.com/2013/10/10/business/energy-environment/oecd-head-calls-for-global-effort-against-climate-change.html>.

⁴⁷ *Id.*

⁴⁸ Chirag Rathi, *A Pause in the Growth of Nuclear Energy*, 24 ELECTRICITY J. 48, 52 (July 2011), available at http://ac.els-cdn.com/S104061901100145X/1-s2.0-S104061901100145X-main.pdf?_tid=c8c771f2-795c-11e3-9c7a-00000aab0f02&acdnat=1389292696_0030d9a1741577933a252b4110bed2a2.

Fukushima does not fundamentally alter the nuclear energy risk. Certainly the tragedy caused us to scrutinize our nuclear plants nationally, but no nuclear facility built today—or on March 10, 2011 for that matter—would use the design of the Fukushima Daiichi plant. The critical question thus is not simply what Fukushima means for the future of the nuclear industry in the United States but what it means for the future of United States energy law. Energy disasters should not be the primary drivers of our law; that much is plain. But if we do not use them as a chance to at least reconsider what our energy law should be, they are wasted opportunity indeed.⁴⁹

⁴⁹ Lincoln L. Davies, *Beyond Fukushima: Disasters, Nuclear Energy, and Energy Law*, 2011 B.Y.U. L. REV. 1937 (2011).