



Nine Years Since Fukushima: Analysing Japan's Progress and Challenges

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Introduction

The torch relay for the upcoming Tokyo Games is set to begin from the J-Village, a sports complex in Fukushima on March 26, 2020. Nicknamed as the "Reconstruction Olympics", it aims to express Japan's comeback after the unfortunate 2011 catastrophe.¹ At the beginning of this decade, Japan was the world's third largest producer of nuclear energy and a proud model for the civil nuclear success story. However, exactly 9 years ago this changed, as on March 11, 2011, Japan was struck by one of the deadliest earthquake and tsunami in the planets' history. While the nuclear power plants in the affected area could brave the earthquake, they, however, fell victim to the tsunami. Breakdown of electricity to the nuclear plants led to a loss of coolant accident which led to three nuclear meltdowns and three hydrogen explosions.

The earthquake and the tsunami killed more than 18,000 people. The nuclear accident caused no casualties. However, other effects of

the nuclear accident were dire. There was radioactive contamination of the environment, towns were rendered inhabitable, marine life was affected and the nuclear power plant became a toxic derelict, among other severe consequences. The biggest casualty, of course, was public confidence in nuclear safety. The Japanese government ever since has been working assiduously towards reconstruction and restoration of the site and faith in nuclear energy. The Reconstruction Agency which was set up after the accident has been given a timeframe of ten years to do so. However, the question of how successful have they been remains.

Progress

Nine years since Fukushima, Japan has indeed made significant progress in recovering from the accident. The infrastructure that was destroyed has been largely repaired and rebuilt.² Radioactive contamination too has been managed effectively. The area where protective gears are not required, known as the *Green Zone*,

has substantially expanded covering about 96% of the plant site.³ In addition, the food produced there has proven to be free from radioactivity. In fact, certain products have shown to have lesser radioactive content than the standard, non-hazardous limits.⁴ On February 25th, 2020, the government task force on the Fukushima nuclear disaster took off the last restrictions on fishes, allowing the fishermen to transport and sell any species of fishes caught in that area.⁵ Singapore too, on February 23, 2020, lifted its ban on the food produce from Fukushima.

Challenges

While the recovery process from the accident appears to be progressing, it has had to overcome several challenges.

Clean-Up

One of the biggest challenges has been in relation to the clean-up, a process that according to some experts could last several decades. Lake Barrett, senior advisor to Tokyo Electric Power Company (TEPCO) states, "It's of the magnitude of putting a man on the moon...Unless there's an acceleration, I would not be surprised if it takes 60 years or so."⁶ The challenges in this process, includes the problem of removal of over 4000 units of fuel rods in the reactors in addition to the removal of molten fuel. Considering the complexities of the clean-up process and the scale of the project, more sophisticated and specialised technologies would be required. In

this regard, TEPCO and the Japanese government are now developing next generation robotics to venture into parts of the facilities where humans can't go due to the high levels of radiation. But challenges are being faced in the severe impairment of robots due to the high gamma radiation. In addition, there is the problem of contaminated water. While 62 out of the 63 radioactive elements have been successfully removed, a solution to remove tritium, a radioactive isotope of hydrogen, is yet to be found. The decision to release the water into the sea also involves several complications. For example, it would not be taken well by the local fisherman who took years to revive their industry after the accident. In addition, South Korea has also expressed concern over the effect it would have on its marine life. There also exists other challenges such as lack of storage space for spent fuel and lack of storage of contaminated water. Although, most of the reconstruction job has been done, majority of the residents from the evacuated zones haven't yet returned to their houses, even after almost a decade.⁷

Economic Challenges

Immediately after the accident, the collective mood of the nation was anti-nuclear. Subsequently, fifty nuclear power reactors were immediately shut down. The effects of this instinctive action, however, have been severe.⁸ One of the major reasons that Japan developed its civil nuclear energy programme, was because

of its lack of domestic energy resources. When the country suspended the operations of all its reactors after the Fukushima accident, it once again faced the same problem. Japan's domestic energy resources meet less than 15% of its total primary energy use.⁹ In order to meet the loss of its nuclear capacity, Japan had to place oil and natural gas on the forefront, which has led to import dependency. Japan thus, has become the world's largest importer of LNG, second largest importer of fossil fuel and third largest net importer of oil.¹⁰ This has not only created energy dependency, but is also proving to be uneconomical, in addition to making Japan vulnerable to the geopolitics of energy. This is in addition to the huge financial strain of not only the clean-up, compensation and reconstruction costs of the Fukushima accident, but also the costs to offset the lost energy supply .

Political problems

Reversing the policies of the previous government which had decided to eventually phase-out nuclear power, Prime Minister Shinzo Abe's government put forward The New Energy Plan in 2014, which stated that nuclear power was the "the country's most important power source".¹¹ Japan wants to increase its share of renewables from the current 16% to about 24% by 2030. In planning to do so, it wants to increase nuclear energy output to about 22% from its current 3% (as per 2017). These are ambitious plans and would require fervent development of nuclear power. But, even the

resumption of nuclear power reactors following approval by the Nuclear Regulation Authority has been exceedingly slow because of the stringent safety regulations and owing to lawsuits being filed against nuclear power plants. The presence of anti-nuclear sentiments among the citizens has become a political issue being used by opposition parties to garner public support for the next elections.

Conclusion

Japan deserves credit for valiantly braving through the catastrophe. The Japanese government as well as TEPCO, have been transparent in owning up to their lapses, and have been working seriously towards making amends. The recovery process, however appears to be a long-drawn one. While the future of nuclear energy in Japan currently appears to be secure owing to the support of the government, but the politics around the issue remains fragile due to public scepticism. Meanwhile, there are several problems and impediments that the government needs to manoeuvre through. A balanced, mixed energy basket would help Japan in achieving its climate change goals and power its economic development while minimising energy vulnerability.

(Disclaimer: The views and opinions expressed in this article are those of the author and do not necessarily reflect the position of the Centre for Air Power Studies [CAPS])

Notes

¹ “Fukushima safe to host Tokyo Olympic torch relay, says governor”, *The Japan Times*, February 19, 2020. <https://www.japantimes.co.jp/news/2020/02/19/national/fukushima-olympics/>. Accessed on March 01, 2020.

² “Efforts for Reconstruction of Tohoku”, *reconstruction.go.jp*, <https://www.reconstruction.go.jp/english/>, accessed on January 23, 2020.

³ Turner Jackson, “3Q: The future of nuclear energy in Japan”, *energy.mit.edu*, May 29, 2019. <http://energy.mit.edu/news/3q-the-future-of-nuclear-energy-in-japan/>, accessed on February 20, 2020.

⁴ n.2.

⁵ “Fishermen in Fukushima now free to ship all catches of fish”, *The Asahi Shimbun*, February 26, 2020. <http://www.asahi.com/ajw/articles/13165594>. Accessed on March 01, 2020.

⁶ James Martin, “A rare look at the meltdown inside Fukushima Daiichi Nuclear Power Plant”, *Cnet.com*, March 4, 2019. <https://www.cnet.com/news/inside-fukushima-daiichi-nuclear-power-station-nuclear-reactor-meltdown/>, accessed on December 13, 2019.

⁷ n.1

⁸ James Conca, “Shutting Down All Of Japan’s Nuclear Plants After Fukushima Was A Bad Idea”, *Forbes*, October 31, 2019. <https://www.forbes.com/sites/jamesconca/2019/10/31/shutting-down-japans-nuclear-plants-after-fukushima-was-a-bad-idea/#456d88f919a4>, accessed on January 29, 2020.

⁹ “Japan is the second largest net importer of fossil fuels in the world”, *US Energy Information Administration*, November 7, 2013. <https://www.eia.gov/todayinenergy/detail.php?id=13711>, accessed on January 29, 2020.

¹⁰ Ibid.

¹⁰ Olga Belogolova, National Journal, “Why Japan Can’t Quit Nuclear Power”, *The Atlantic*, February 14, 2020. <https://www.theatlantic.com/politics/archive/2013/02/why-japan-cant-quit-nuclear-power/437028/>. Accessed on February 22, 2020.

¹¹ “Japan reverses its withdrawal from nuclear power”, *DW.com*, April 13, 2014. <https://www.dw.com/en/japan-reverses-its-withdrawal-from-nuclear-power/a-17563405>. Accessed on January 27, 2020.