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“Why Does Japan Need Nuclear Energy?”

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Introduction

March 11th this year marked 9 years of the unfortunate Fukushima nuclear disaster. Japan has been able to successfully rebuild and reconstruct most of the damage caused by the earthquake and the tsunami and the clean-up programme of the Fukushima nuclear disaster also appears to be fairly effective. However, trust in the power utilities, political authorities and in nuclear technology doesn't appear to have been completely salvaged. While a decision was taken to phase off nuclear energy by the government immediately after Fukushima, this policy was reversed later with a change in leadership. Currently, the Japanese government has decided to continue developing its civil nuclear programme. All the reactors which were shut down after Fukushima are slowly being restarted once again as they clear stringent safety checks. In fact, the government is also considering to build new nuclear power reactors. But, amidst the continuing anti-nuclear mood of the public, this decision by the government may not be very easy to implement. Rather, it leads one to

question as to why, despite its less than happy experience with nuclear technology, Japan wants to continue with nuclear energy?

Rationale Behind the Japanese Government's Decision

The 2011 *Annus Horribilis* in Japan persisted way beyond that year. For the next several years, as the nuclear energy output drastically decreased, its effects on the economy, environment and on public health among others were severely felt. These therefore remain the main reasons for the Japanese government's decision to continue its commitment to nuclear energy.

Lack of Indigenous Energy Resources

One of the major reasons that Japan developed its civil nuclear energy programme in the 1970s was because of its lack of indigenous energy resources. It depended heavily on imports and thus nuclear energy posed as an ideal, energy source option. In addition, other forms of renewable energies did not suffice for several reasons. For example, with regard to

hydroelectricity there were limitations of high operational costs, maintenance issues, lack of sites for dams etc.

Japan's domestic energy resources meets less than 15% of its total primary energy use.¹ The loss of its nuclear capacity has led Japan to modify its energy mix. This new energy mix placed oil and natural gas on the forefront, which further 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.² This has not only created dependency, but is also proving to be uneconomical, in addition to making Japan vulnerable to the geopolitics of energy. In view of this shortage of energy resources that persists to this day, Japan is unable to seriously consider phasing out of nuclear power even after Fukushima.

Economic Impediments

According to the Breakthrough Institute, California, phasing out nuclear energy in Japan and replacing it with renewable energy would be a costly step. Producing 203 GW of solar capacity to make up for the energy shortage would cost Japan about \$1 trillion dollars. On the other hand, if wind energy were used instead it would cost \$375 billion for 152 GW of newly installed wind capacity, in addition to taking up about 50% of Japan's land area.³

The challenges of doing away with nuclear energy was experienced first-hand by Japan

when it suspended the operation of all its reactors immediately after Fukushima. Its effect on the country's economy was grave. As Japan shut down its reactors, it had to import energy resources from other countries to fill in the energy void. This led to Japan facing the worst trade deficit in its history. From 2011-13 the cost of energy imports in Japan was \$40 trillion and the trade deficit of \$227 billion from April 2011 to March 2014.⁴ In addition, the average electricity price also shot up to 25% in households and 38% in industries.⁵

Environmental and Health Concerns

Rolling back nuclear power has also had severe environmental repercussions. Dependency on fossil fuels to meet the urgent energy requirements after the nuclear accident has led to the problem of increasing carbon emissions. Apart from having a disastrous effect on the planet, it also led to public health issues.

According to a study undertaken by Matthew Neidell, Shinsuke Uchida and Marcella Veronesi, the replacement of nuclear energy by fossil fuels after Fukushima led not just to increasing electricity prices but also to public mortality.⁶ In some cases, the increase in energy prices led to decrease in energy consumption which further increased death rates during extremely cold weather. Another cause for mortality stemmed from the burning of coal which causes respiratory problems. As per some studies, the combined number of deaths due to

these factors are higher than the number of casualties from the earthquake and tsunami in Japan in 2011.⁷ David Weinstein from Columbia University in this regard states that “If Japan had decided to keep all [unaffected] nuclear reactors open in 2012 and had met its energy needs by proportionally reducing coal, oil, LNG and other energy sources, I estimate that this policy would have saved 9,493 lives based on the air pollution of that year alone.”⁸

Conclusion

Unfortunate as the Fukushima accident was, it also turned to be a much-needed wakeup call to all countries with a civil nuclear programme. It bought in the realisation that safety cannot be taken for granted, and that indolence and negligence of even the smallest matters related to technology cannot be tolerated. Studies undertaken after Fukushima prove that it was TEPCO’s irresponsibility and negligence that deserves culpability and that this accident could have been prevented, if not better managed. Post Fukushima, global nuclear safety standards were reviewed and countries around the world re-examined their safety mechanisms, recognised loopholes in their safety systems and strengthened it further.

Although the instinctive reaction of shutting down nuclear reactors after Fukushima seems understandable, its effects have been dire.⁹ If Japan wants to achieve stable economic development while also prioritising its green

commitments, it could only be possible with nuclear energy. The solution thus, is not doing away with nuclear energy, rather, it is to take a more regulated and cautious approach to nuclear energy. Transparency and accountability should be given utmost importance. With enhanced safety, Japan’s decision to continue with nuclear energy appears to be a pragmatic and well-thought out one.

(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 “Japans Energy 2018, 10 Questions to understand the current energy scenario”, *Ministry of Economy, Trade and Industry Agency for Natural Resources and Energy*, June, 2019. p.3. accessed on January 31, 2020.

² “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.

³ Brendan F.D. Barrett, “Can Japan Go 100% Renewable by 2050?”, *Our World*, April 11, 2011 <https://ourworld.unu.edu/en/can-japan-go-100-renewable-by-2050>. Accessed on March 17, 2020.

⁴ “Nuclear energy challenges in Japan”, *Global Risks Insights*, July 05, 2019. <https://globalriskinsights.com/2019/07/japan-nuclear-energy/>. Accessed on March 18, 2020.

⁵ “Japans Energy 2018, 10 Questions to understand the current energy scenario”, *Ministry of Economy, Trade and Industry Agency for Natural Resources and Energy*, June, 2019. p.3. accessed on January 31, 2020.

⁶ 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

⁷ Ibid.

⁸ Ibid.

⁹ Ibid.