

Fukushima Radioactive Water Release

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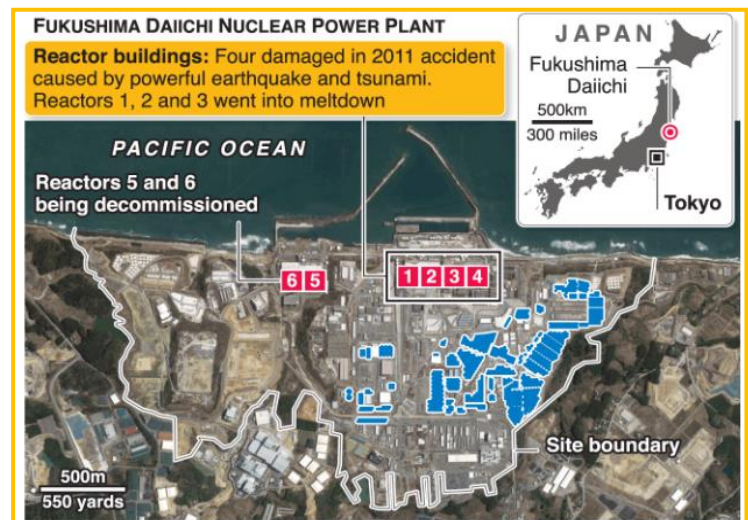
WHAT IS HAPPENING?

Japan has recently divulged its plans to release over one million metric tons of radioactive water from its wrecked Fukushima nuclear plant in the waters of Pacific Ocean within a span of two years, starting from 2022.

The site is located on Japan's Pacific coast, in northeastern Fukushima prefecture about 100 km (60miles) south of Sendai. The facility, operated by the Tokyo Electric and Power Company (TEPCO), is made up of six boiling-water reactors constructed between 1971 and 1979. At the time of the accident, only 1-3 reactors were operational, and reactor 4 served as temporary storage for spent fuel rods.

The whole release process may take over 3 decades to conclude. The plan has agitated Japan's neighbouring countries and the community of environmentalists across the world calling it pernicious for people and ecosystem in the region. Japan is also facing huge criticism at home since the move is expected to throttle its already dying fishing industry.

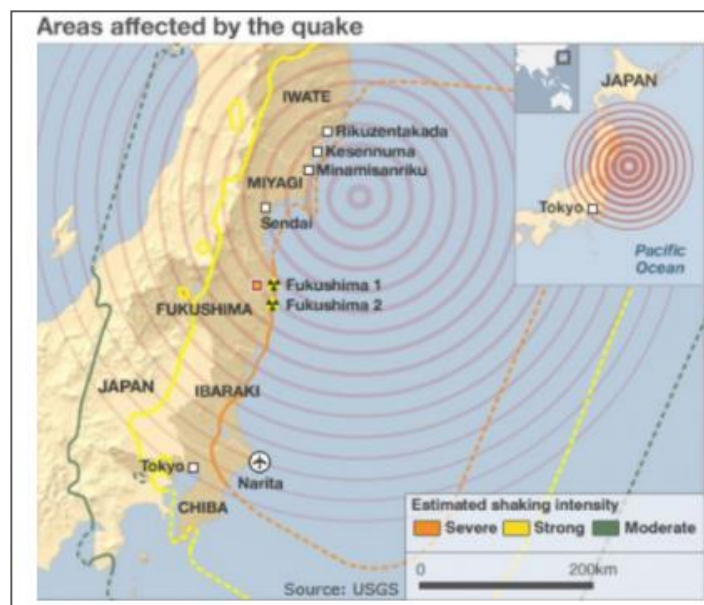
The Japanese Prime Minister Yoshihide Suga in a parliamentary session said that this is a *“realistic solution as the plant is running out of storage space and we cannot put off our decision forever without making a plan”*.



BACKGROUND

- ✚ In 2011, a powerful earthquake and Tsunami hit Japan due to which reactor 1, 2 and 3 in the Fukushima nuclear plant went into meltdown.
- ✚ Amid the catastrophic earthquake and tsunami, the power supply to cooling systems at the plant was cut off hence the Fukushima nuclear accident happened.
- ✚ Cooling water was continuously pumped to prevent the 3 reactor cores from melting which was then subsequently contaminated by the uranium rods.

- ✚ This highly reactive nuclear amalgamation of chemicals then leaked into damaged basements and tunnels and mixed with the groundwater.
- ✚ The groundwater which flows from the hills above is constantly getting contaminated.
- ✚ Tons of water is wasted every day to dilute the mixture.
- ✚ Tokyo Electric Power Co, the plant's operator has built gigantic tanks on the site to contain the accumulated water after treatment.
- ✚ The company stated the tanks have a storage capacity of 1.37 million metric tons and will saturate by late 2022, hence the decision to release the wastewater in sea.



JAPAN'S STAND ON WASTEWATER RELEASE

- Tritium has weak radiation (only harmful in large quantities).
- The radioactive water will not be released in the ocean 'as it is' but instead will be diluted and treated in a system that removes most of the radioactive material except for tritium which is an isotope of hydrogen and is harmful for humans only in large quantities.
- Before the discharge, the radioactive water in tanks will be heavily diluted.
- Dilution will reduce the concentration of radioactive tritium to much lower levels than Japan's national regulatory standards, which is in tune with the international standards.

THEN, WHY THE PROTESTS?

- * Various countries, experts, and environmental organizations are greatly worried because Tokyo Electric Power Co. (TEPCO) is not being very transparent about the Advanced Liquid Processing System (ALPS) which it will employ for treating the nuclear water.
- * Japan says that the system is highly effective and filters most of the radioactive material but Luk Bing Lam, chairman of the Hong Kong Nuclear Society clarified that no filtration system is 100% effective and that nuclear experts could not find any details on the ALPS so far.
- * Experts proclaim that discharging of wastewater in sea is normal and practically done by all nuclear power plants. However, the water collected from Fukushima nuclear plant is different from the wastewater collected at other functioning nuclear power stations because the core of the Fukushima plant has been damaged.
- * Also, the wastewater is not just contaminated by tritium but has hundreds of other chemicals, some of which are very highly radioactive and dangerous.
- * The nuclear release is more dangerous than the Japanese claims.

REACTIONS: DOMESTIC & INTERNATIONAL

- **South Korea:** The country shares a maritime border with Japan and has strongly rebuked the decision as being detrimental to the environment and health of the people. The country has urged Japan to take concrete measures to prevent damage and is considering filing a lawsuit with the International Tribunal of Land and Sea.

- **China:** China, too, shares a maritime border with Japan and has vociferously protested against its decision of releasing the wastewater in sea, calling it irresponsible. China underlined its position stating the radioactive water must not be released without permission from other countries and Japan must address the concerns of neighboring countries, international community, and people at large. China's Ministry of Foreign Affairs has implored Japan to act responsibly in order to protect international public interests as well as the health and safety of the Chinese people.

- **Taiwan:** Taiwan has decided to test its waters. Taiwan's Atomic Energy Council (AEC) said that it is planning to set up a warning system to closely monitor the waters around the country. The AEC report showed that the released radioactive wastewater could bring pollutants into the waters around Taiwan as the wastewater flows along with the ocean current to Taiwan's waters. Taiwan's Ministry of Foreign Affairs said it has lodged a "solemn representation" concerning Japan's recent decision and has conveyed its concerns to Japan.

- **United States:** USA has categorically supported Japan, accordingly the US department of State released a statement - "In this unique and challenging situation, Japan has weighed the options and effects, has been transparent about its decision, and appears to have adopted an approach in accordance with globally accepted nuclear safety standards".

- **International Atomic Energy Agency (IAEA):** International Atomic Energy Agency (IAEA), UN's nuclear watchdog has supported Japan and stated that there is no harm in releasing the treated water into the sea. IAEA Director General Rafael Mariano Grossi confirmed that this has been previously done in the North Atlantic and the Mediterranean Sea and in many other parts of the world as well, and that there is no adverse environmental impact for the same. He further confirmed that IAEA would never endorse an operation that has harmful environmental ramifications.

- **Greenpeace:** the renowned international environmental NGO Greenpeace has strongly condemned the decision saying in doing so Japan will completely disregard the human rights and interests of the people of Fukushima, wider Japan, and the Asia-Pacific region. Greenpeace has urged Japan to reverse its decision.

- **Domestic Reactions:** Fisheries organizations in Japan, are vehemently protesting against the nuclear wastewater release. They argue that the industry has suffered heavy losses since the 2011 tsunami and earthquake followed by the nuclear accident. As a result, many countries like the US, the EU, Iceland, Switzerland, Norway etc., imposed import restrictions and conditions on food items from Japanese districts stricken by the Fukushima nuclear plant meltdown disaster. The release of the nuclear debris is going to worsen the situation for the fishing industry and hence the protests.

IMPLICATIONS & ASSESSMENT

✚ **IMPACT ON ECOSYSTEM:** Fukushima water release is going to have long lasting impact on the eco-system around Pacific Ocean. The highly radioactive water will heavily pollute the ocean water jeopardizing aquatic life and biodiversity in the region. The release will happen over a period of three decades and the ill effects on the environment will linger on for a longer period of time.

✚ **IMPACT ON HEALTH:** According to Greenpeace' report, the contaminated water has dangerous levels of carbon-14, a highly radioactive substance which has the potential to damage the human DNA. Also, the radioactive substances will pollute the fishes, making it unfit for consumption.

A 2013 WHO report '[Health Risk Assessment From The Nuclear Accident After The 2011 Great East Japan Earthquake And Tsunami Based On Preliminary Dose Estimation](#)' predicts that due to high radioactive radiation, in populations living near the affected areas, there is 70% higher risk of developing thyroid cancer in girls exposed as infants and a 7% higher risk of leukemia in males exposed as infants. Additionally, for females, there is 6% higher risk of developing breast cancer exposed as infants and a 4% higher risk overall, of developing solid cancers.

✚ **IMPACT ON BUSINESS:** The already bleak fishing industry around Fukushima is expected to suffer further, since it has been reeling under the impact of the 2011 Fukushima nuclear accident. The wastewater release is going to contaminate the sea water with highly dangerous radioactive chemicals and fish procured from the region would be highly adulterated, unfit for consumption.

✚ **IMPACT ON COUNTRIES' RELATIONS:** Hindrances in businesses accompanied with adverse effects on the environment and health of people would affect Japan's relationships with other countries, especially its neighbours. As South Korea rightly pointed out the decision would directly or indirectly affect the lives, livelihoods of Korean people and the environment at large. China also expressed similar concerns that the wastewater release will harm the ecological as well as economical dynamics in the region.

There are undercurrents of protests in Taiwan as well, but the country in order to avoid any diplomatic impasse with Japan, is not being vocal about the wastewater release issue to the Japanese government. This comes as the two countries are on the cusp of building new diplomatic ties, with Taiwan in need of Japanese support to counter the growing Chinese influence.

CONCLUSION

The Fukushima nuclear plant wastewater is composed of hundreds of lethal radioactive chemicals. The release of which poses serious and long-term implications. Thus, Japan's decision to release the wastewater in the sea poses a great risk to health and ecology, impacting its industries and relations with countries in the neighborhood.

However, according to Japan, it is running out of options since the storage tanks are rapidly filling. Also, there is millions of tons of water wastage on daily basis to dilute the mixture. It has been over ten years since the Fukushima nuclear accident and the country's capacity of storing the wastewater is getting exhausted.

Japan is facing massive opposition since it has announced this decision. Countries and environmental groups are of the view that Japan should build more tanks to contain the radioactive wastewater instead of releasing it in the sea. This is to reduce the high level of radiation in the wastewater over the passage of time, thereafter which, Japan could consider releasing it.

ABOUT THE AUTHOR

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