

## Fukushima Wastewater Problem

### Why in news?

Japan is expected to start flushing 1.25 million tonnes of wastewater from the embattled Fukushima nuclear power plant into the Pacific Ocean this year, as part of a \$76-billion project to decommission the facility.

### What is the issue about?

- Reactor buildings at the Fukushima power plant (Japan) were damaged by hydrogen explosions caused by an earthquake and tsunami in 2011.
- More than a million tonnes of water have been used to cool the melted reactors.
- Currently, the radioactive water is treated in a complex filtration process that removes most of the radioactive elements, but some remain, including **tritium** - deemed harmful to humans only in very large doses.
- The plant's operator Tokyo Electric Power Co (TepCo) is running out of space, with these tanks expected to fill up by 2022.
- Japan has approved a plan to release the contaminated water from the damaged Fukushima nuclear plant into the Pacific Ocean.
- The water will be treated and diluted so radiation levels are below those set for drinking water.



### What are the concerns with this move?

- **No threshold level** - There is no known threshold below which radiation can be considered safe.
- **Health impacts** - Any discharge of radioactive materials will increase the risk of cancer and other known health impacts to those who are exposed.
- **Effect on marine resource** - Experts expect the affected water to poison the fish.
  - **South Korea** banned seafood imported from around Fukushima from 2013.
- **Presence of radionuclides** - TEPCO hasn't removed tritium from the water. Tritium is easily absorbed by the bodies of living creatures and rapidly distributed via blood.
- In 2018, it was reported that there were other radionuclides including isotopes of ruthenium and plutonium in the treated water that could persist for longer in the marine creatures and on the seafloor.
- **Reputation** - Ultimately, Japan is also concerned about its reputation.

*In Japan, the nuclear accidents reduced nuclear power's contribution to electricity generation from 30% before 2011 to 5% in 2022. But the government has articulated plans to restart older reactors and build new ones to cut the increasing fossil fuels cost.*

## What options do Japan have in managing the waste water?

- **Longer storage** - The Japanese government can store the water for longer and then discharge it as tritium's half-life (time it takes for its quantity to be halved through radioactive decay) is **12-13 years**.
- The quantity of any other radioactive isotopes present in the water will also decrease in this time so that the water could be less radioactive at the time of discharge.
- **Tanks in uninhabitable land** - The tanks to hold the water can be situated in the land around the Fukushima facility which was declared to be uninhabitable by the Japanese government.
- **Discharge into the sea** - In 2020, International Atomic Energy Agency (IAEA) officials said the discharge would be technically feasible and would allow the timeline objective to be achieved.

### Quick facts

#### The International Atomic Energy Agency (IAEA)

- It is the world's central intergovernmental forum for scientific and technical co-operation in the nuclear field.
- The Agency was set up as the world's "**Atoms for Peace**" organization within the United Nations family.
- In **1957**, the delegates to the First General Conference decided to establish the IAEA's headquarters in **Vienna, Austria**.
- It is **not** a specialised organisation of United Nations, however, it reports to the UN general assembly and Security Council.
- **India is a member of IAEA.**

### References

1. [The Hindu | Japan to flush Fukushima wastewater into the ocean](#)
2. [BBC | Japan approves releasing wastewater into ocean](#)
3. [IAEA | About IAEA](#)