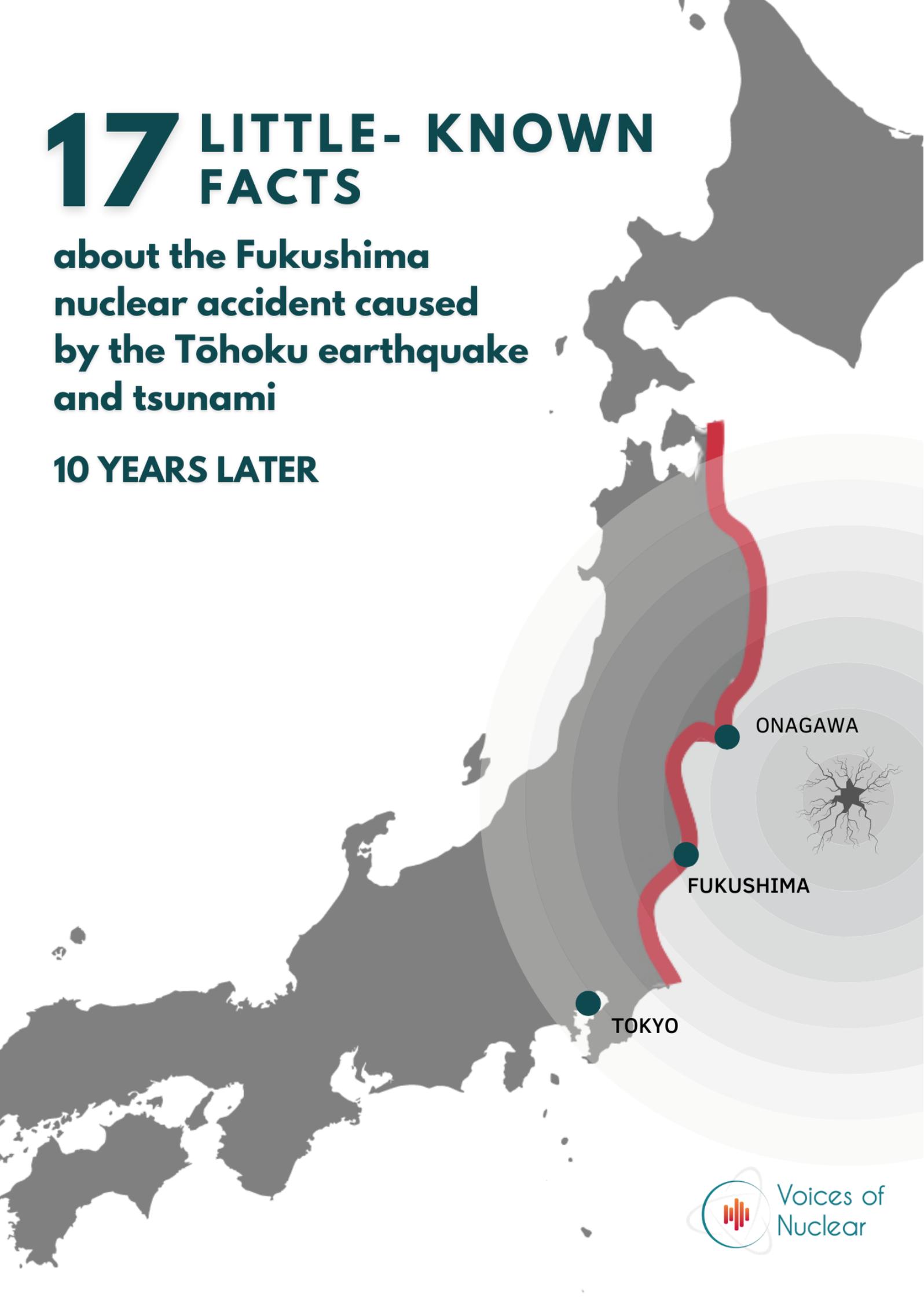


17 LITTLE- KNOWN FACTS

about the Fukushima
nuclear accident caused
by the Tōhoku earthquake
and tsunami

10 YEARS LATER



17 little-known facts about the Fukushima nuclear accident caused by the Tōhoku earthquake and tsunami

1. The radioactive releases from the accident at the Fukushima-Daiichi nuclear power plant resulted in exposure of the population so low that 10 years later no casualties have been recorded and no observable increase in cancer or death is expected. ⊕
2. The natural disaster of March 11, 2011 (the Tōhoku earthquake followed by the tsunami) is responsible for nearly 18,500 direct victims. It also caused some fifty industrial accidents, which themselves had health and environmental consequences. However, the world has mainly focused on the nuclear accident at Fukushima despite a considerably lower health record. ⊕
3. The radioactive releases from the nuclear accident had no observable impact, and none is expected, on terrestrial and aquatic ecosystems beyond the immediate surroundings of the plant. ⊕
4. The level of radioactivity in the Fukushima region today is comparable to natural radioactivity in many parts of the world with no proven impact on health. ⊕
5. Discharge of "radioactive" water containing tritium to the sea (expected from 2022) will have no impact on ecosystems. The water will immediately return to concentrations compatible with the recommendations for drinking water. ⊕
6. An earthquake and tsunami of the magnitude of those of March 11, 2011 in Japan are not possible in France. Even if an accident with fuel melting is possible, it remains very unlikely and its consequences would likely be much less severe. ⊕
7. The prolonged shutdown of Japanese nuclear power plants following the Fukushima accident abruptly deprived the country of 30% of its electricity, which is, even today, largely replaced by fossil fuels (coal and natural gas), considerably increasing Japan's greenhouse gas emissions. ⊕
8. Following the Fukushima nuclear accident, many countries closed safe and operational nuclear power plants or put an end to their construction projects, negatively and lastingly impacting global efforts to fight global warming. ⊕
9. By 2035, it is estimated that there could be up to 260,000 premature deaths in the world and nearly 17.8 billion tonnes of CO² emitted (i.e. 6 months of global emissions), due to fossil-fueled generating capacity that replaced the operational and safe nuclear power plants that were shut down following the Fukushima accident. ⊕
10. Public perception of nuclear risk and its consequences (probability and severity of accidents) is disproportionate to reality. ⊕

11. The main health impact of the accident is a consequence of the evacuation and of fear, that is, the well-being and mental health of affected populations. This impact is only made worse by outrageous media treatment, anxiety-provoking communication from militant anti-nuclear movements, and stigmatization by the rest of the population. ⊕
12. Recent research calls into question the magnitude, suddenness and duration of the evacuations around Fukushima, the impact of which on the health of the populations concerned is said to be ultimately more severe than would have been the effect of the radioactive releases if these people had stayed home or returned more quickly. ⊕
13. The negative image surrounding food produced in Japan has heavily impacted the Japanese economy and local producers who still find it difficult to make a living from their production, which nevertheless fully complies with consumption standards. ⊕
14. Many political figures, anti-nuclear associations and the media contribute to the confusion between the victims of the natural disaster and the nuclear accident in Fukushima, instrumentalizing (intentionally or not) the memory of the victims and the drama of Japan and the Japanese people. ⊕
15. Before the Fukushima nuclear accident, the Japanese Nuclear and Industrial Safety Agency was dysfunctional and lacked independence from the government and energy companies. ⊕
16. The analysis and experience gained from this accident, which should not be underestimated and which could have been avoided, have made it possible to improve the level of safety of nuclear reactors, in Japan and around the world, with the active and immediate participation of the global nuclear industry. ⊕
17. Reactors at the Onagawa plant, closest to the epicentre, did not suffer major damage in the earthquake. Robust enough to withstand the tsunami, the plant then served as a refuge for local populations. ⊕

Development

1. The radioactive releases from the accident at the Fukushima-Daiichi nuclear power plant resulted in exposure of the population so low that 10 years later no casualties have been recorded and no observable increase in cancer or death is expected.

According to the final conclusions of the scientific committee established by the United Nations and the WHO (UNSCEAR)*, no cases of death or cancer have been recorded, and none are expected, due to the exposure of populations, workers or emergency responders to radioactive emissions from the damaged power plant. Three people died in construction accidents unrelated to radioactivity, and one person who had filed suit was awarded compensation to which TEPCO, the Fukushima operator, consented despite no link having been established between the complainant's cancer and the doses received during the accident (74 mSv)**.

The radioactive releases from the Fukushima accident, ten times lower than those from Chernobyl, exposed the population to doses up to the order of magnitude of those received during a medical scan.

The tsunami (more than 90% of the victims), the earthquake (approximately 10%) and other industrial accidents (more than thirty victims) including the rupture of the Fujinuma dam (eight casualties), are responsible for more than 18 500 deaths and disappearances in Japan on March 11, 2011.

* UNSCEAR (United Nations Scientific Committee on the Effects of Atomic Radiation) is a UN body responsible for evaluating the effects of ionizing radiation on humans. This scientific committee operates on the same principle as the IPCC (Intergovernmental Panel on Climate Change).

** For a one-time dose of radioactivity, no health effect has been observed below a dose of 100 mSv.

SOURCES AND REFERENCES



- [UNSCEAR, L'accident de Fukushima](#)
- [IRSN - Impact environnemental d'un accident nucléaire : comparaison entre Tchernobyl et Fukushima](#)
- [Bilan des études épidémiologiques conduites sur les habitants de Fukushima - mars 2020](#)
- [IRSN, Les conséquences sanitaires de l'accident de Fukushima. Mars 2020](#)
- [Radiation Dose to Patients From Common Imaging Examinations](#)
- [Rupture du barrage de Fujinuma](#)
- Workers' compensation:
 - <https://www.nytimes.com/2018/09/05/world/asia/japan-fukushima-radiation-cancer-death.html>
 - <https://www.nikkei.com/article/DGXMZO34966870U8A900C1CR8000/>
- Number of work accidents: Webinaire SFEN *Fukushima, le tsunami, et le Japon 10 ans après* du 02/03/2021 de Jean-Pierre Pervès - Page 36

2. The natural disaster of March 11, 2011 (the Tōhoku earthquake followed by the tsunami) is responsible for nearly 18,500 direct victims. It also caused some fifty industrial accidents, which themselves had health and environmental consequences. However, the world has mainly focused on the nuclear accident at Fukushima despite a considerably lower health record.

In 2013, the French Ministry of Ecology, Sustainable Development and Energy drew up an overview of the main industrial accidents (excluding nuclear) that occurred during the natural disaster of March 11, 2011. They claimed the lives of around thirty people. None or very few of them appeared in the media. The images of some, such as the fire at the Cosmo Oil refinery, on the other hand, have been extensively and abusively misused to allegedly illustrate the accident at the Fukushima-Daiichi plant.

Among the most notable let us mention:

- those of the Cosmo Oil and JX refineries, responsible for discharges of bitumen into the sea (over 42 km of coastline for Cosmo Oil), into the ground and on the beaches and whose fire was at the origin of significant emissions of toxic fumes;
- that of the cement plant in the port of Ofunato, responsible for the release of 1000 m³ of fuel oil to the environment over 3 km²;
- those of the Ibaraki and Fukushima chemical plants, responsible for the release to the environment of large quantities of hydrochloric acid and 3,500 litres of pure sodium hydroxide;
- as well as the accidents which affected various other factories, causing numerous releases of ammonia and refrigerants (powerful greenhouse gases).

Finally, among the many damages to buildings and infrastructure, let us note the Fujinuma dam break, which claimed the lives of 8 inhabitants of the village downstream.

Buildings, civil engineering works or factories -- none were designed to withstand such exceptional natural events.

SOURCES AND REFERENCES



- Number of victims :
https://www.npa.go.jp/news/other/earthquake2011/pdf/higaijokyo_e.pdf
- Panorama des accidents industriels survenus lors du grand séisme et tsunami du Tohoku, Pages 6 - 34 - 83 - 84 - 98
- Examples of using Cosmo Oil to talk about Fukushima
 - <https://twitter.com/emmacosse/status/972738158348718080>
 - <https://twitter.com/DamienCAREME/status/1104996163147714560>
 - <https://reporterre.net/Fukushima-sous-la-centrale-se>
 - <https://www.konbini.com/fr/3-0/japon-blague-fukushima-france-carnard-enchaîne/>
 - https://www.youtube.com/watch?v=-ICbHxyM_Sg&feature=youtu.be
Around the 30th second

3. The radioactive releases from the nuclear accident had no observable impact, and none is expected, on terrestrial and aquatic ecosystems beyond the immediate surroundings of the plant.

The Fukushima-Daiichi nuclear accident caused the release of 3.5 PBq* of Caesium 137 and 134 to the Pacific Ocean, which led to a temporary increase in the radioactivity of the water near the plant. Releases to the atmosphere have also led to an increase in radioactivity in the air.

However, the limited duration of these releases, as well as the dilution of Caesium on the one hand and its capture in the sediments on the other hand, allowed a rapid decrease in contamination levels. The contamination has now returned to levels similar to pre-accident in the water near the plant and to negligible levels in the air.

Thus, in its 2015 report, the International Atomic Energy Agency (IAEA) indicates that no direct effect due to radioactivity could be observed on plants or animals and indicates that, given the level of exposure, it is highly unlikely that biota or ecosystems could suffer significant radiological consequences.

*The Becquerel is a unit of measurement quantifying the activity of a certain amount of radioactive material. Multiples of the Becquerel (like the petabecquerel which is worth 10^{15} becquerels) are used to measure a quantity of radioactive material rather than its mass. 3.5 Petabecquerels is a significant quantity, but 10 times smaller than that of the Chernobyl releases.

SOURCES AND REFERENCES



IRSN (France) :

- [9 ans après l'accident de la centrale de Fukushima Daiichi : Données clés sur les conséquences environnementales et le retour des populations dans les territoires évacués - Mars 2020](#)
- [IAEA. L'accident de Fukushima Daiichi - Rapport du Directeur général - Page 162](#)
- [UNSCEAR. L'accident de Fukushima](#)
- [UNSCEAR 2013 Report to the General Assembly with Scientific Annexes. VOLUME I. Scientific Annex A](#)

4. The level of radioactivity in the Fukushima region today is comparable to natural radioactivity in many parts of the world with no proven impact on health.

In areas initially evacuated and where the evacuation order was lifted between 2014 and 2020, and where it is now possible to reside again, exposure of the public is under 20 mSv/year.

In the current state of scientific knowledge -- the establishment of which began with the study of survivors of the Hiroshima and Nagasaki bombings, and has been consolidated for the last 75 years -- no discernible health effect has been proven for annual doses below 100 mSv. Lower regulatory thresholds, for example 20 mSv for workers, are established to provide margins in light of uncertainties, according to the precautionary principle.

Organisms are also used to living in a slightly radioactive environment. In France, the average annual exposure to natural radioactivity is 2.9 mSv, but the maximum in certain areas can exceed 10 mSv (in Brittany, for example or in the central mountains, due to granite formations that naturally contain radioactive elements).

Levels of natural radioactivity vary greatly among world regions. For example, in the Kerala region of India, the average exposure to natural radioactivity is 6 mSv/year and can rise to 70 mSv/year, with no observable correlation with cancer mortality.

SOURCES AND REFERENCES



- [Radioactivité dans la préfecture de Fukushima](#)
- https://www.irsn.fr/FR/Actualites_presse/Actualites/Pages/20200309_NI-Fukushima-9-ans-apres-consequences-environnement-populations.aspx#.YDJL5o3PyUk
- [Radioactivité sur le territoire français](#)
- <https://www.irsn.fr/FR/connaissances/Sante/exposition-population/exposition-population-france-metropole/Pages/0-Exposition-population-France-Sommaire.aspx#.YDJN0I3PyUk>
- [Bilan des études épidémiologiques sur les expositions chroniques aux rayonnements ionisants](#)
- https://www.irsn.fr/GT-CIPR/Documents/23-11-2004/GT-CIPR_23-11-2004_5-Fiche-Faibles-Doses.pdf
- [Doses de rayonnements ionisants dangereuses pour la santé](#)

5. Discharge of "radioactive" water containing tritium to the sea (expected from 2022) will have no impact on ecosystems. The water will immediately return to concentrations compatible with the recommendations for drinking water.

Following the accident, damage to the structures led to infiltration of water (rain, groundwater, etc.) into the buildings of the Fukushima power plant which are ongoing; in contact with the debris and the reactor core (fuel), it becomes contaminated with radioactive elements. After being pumped, collected, decontaminated and then stored in large tanks around the plant, this water now amounts to around 1.2 million m³ stored on the plant site.

As the reactor site will be full by 2022, the Japanese authorities, on the recommendation of international bodies, plan to discharge this water to the sea once its radioactive content has been reduced to levels similar to normal discharges from an operating nuclear power plant, with no impact on the environment.

This water is called "tritiated water" because it contains tritium, an element that is not very radioactive nor very radiotoxic and has a short half-life. Tritium cannot be separated from the water molecule since it is part of it; it must thus be included in the discharges, in a quantity greater than normal discharges from nuclear power plants.

Taking into account the dilution of the tritiated water in seawater, these discharges, potentially conducted at some distance from the plant, will lead to a tritium concentration in the seawater 10,000 times lower than the threshold set by the World Health Organization for drinking water.

Under the expected discharge conditions, there is therefore no risk to health or the environment.

The difficulties are primarily economic and societal since the majority of the population is not informed about the real risks of these releases. The authorities fear in particular image costs which could again hurt the fishermen of Fukushima prefecture or be used as a means of pressure by foreign countries in the framework of trade negotiations.

SOURCES AND REFERENCES



- https://www.meti.go.jp/english/earthquake/nuclear/decommissioning/pdf/alpsqa_2020_12.pdf - page 9
- <https://www.asn.fr/content/download/100425/730691/version/1/file/2015-DC-0536.pdf>
- <https://apps.who.int/iris/handle/10665/44584> - Page 211
- <https://www.france24.com/en/20190930-japan-lists-fukushima-radiation-levels-on-s-korea-embassy-site>

- 6. An earthquake and tsunami of the magnitude of those of March 11, 2011 in Japan are not possible in France. Even if an accident with fuel melting is possible, it remains very unlikely and its consequences would likely be much less severe.**

An earthquake followed by a tsunami of the magnitude compared to those that led in Japan to the Fukushima accident isn't likely to occur in France. However, despite their very low probability of occurrence, accidents with core melt are taken into account in the safety analysis.

All European nuclear power plants are thus equipped with several redundant systems to prevent this type of accident from occurring, and to limit releases into the environment outside of the site if it does occur. In its analysis carried out after the Fukushima-Daiichi accident, the French Nuclear Safety Authority (ASN), independent from the government and industry, concluded that "[...] nuclear power plants appear to be robust vis-à-vis the hazards considered in the design basis [note: earthquake, flooding in particular]". These safety assessments also take into account the spent fuel pools at the reactors.

The flooding of the Blayais nuclear power plant during a severe 1999 storm was classified as level 2 on the INES international nuclear event scale, nothing like the Fukushima accident (level 7 on a scale of 7): the plant demonstrated robustness and resilience despite flooding. However, full experience feedback from Blayais has been incorporated at all French nuclear power plants, which today present a high level of protection against this type of risk as well.

SOURCES AND REFERENCES



- ASN report, Additional Safety Assessments (ECS) (FR) : <https://www.asn.fr/publications/2012/Rapports-ECS-decembre-2011/files/assets/common/downloads/publication.pdf> - Page 221
- Flooding of the Blayais power station (FR): <https://www.asn.fr/Informer/Actualites/COMMUNIQUE-DE-PRESSE-N-9-Incident-sur-le-site-du-Blayais>

7. The prolonged shutdown of Japanese nuclear power plants following the Fukushima accident abruptly deprived the country of 30% of its electricity, which is, even today, largely replaced by fossil fuels (coal and natural gas), considerably increasing Japan's greenhouse gas emissions.

The electricity generation from the nuclear reactors shut down following the accident (more than half of which were fully operational) has been replaced by generation from fossil fuels, mainly coal and gas.

This production of fossil electricity led to an increase in CO₂ emissions of 36% per kilowatt-hour between 2010 and their peak in 2013. These mainly imported fossil fuels reduced Japan's rate of energy independence from 20% to 6.5% in 2012. Between 2011 and 2035, the emission of 2.2 billion tonnes of CO₂ could have been avoided were that electricity still generated by nuclear power.

Since 2012, 12 coal-fired power generation units have been built in Japan, 15 are under construction and 10 are under consideration, consistently moving the country off the CO₂ reduction path promised under the Paris Agreement.

The sudden and massive imports of fossil fuels that have become necessary have also severely damaged energy independence and Japan's trade balance. Despite the forced drop in electricity consumption, these imports still represented nearly \$200 billion, increasing the price of electricity by 16% for individuals and 25% for businesses.

The reduction in electricity supply also had consequences on industrial production: so as to avoid blackouts, industrial plants had to reduce the pace of construction as well as continue production, and therefore mobilize employees, at night and on weekends.

These impacts were added to the already significant difficulties encountered by the Japanese economy and public due to the consequences of the earthquake and tsunami.

SOURCES AND REFERENCES



- <https://ewoken.github.io/world-data-app/#/country/JP>
- <https://www.sciencedirect.com/science/article/pii/S0301421519303611> - Dernière figure (conclusion)
- [BP Statistical Review of World Energy](#)
- [Centrales à charbon : politique domestique du Japon – DG du Trésor](#)
- [La décentralisation des énergies renouvelables au Japon : un processus enclenché après la catastrophe de Fukushima qui peine à trouver un second souffle – DG du Trésor](#)
- <https://centreasia.eu/japon-bilan-de-lenergie-nucleaire-dix-ans-apres-fukushima/>
- https://www.sciencespo.fr/ceci/sites/sciencespo.fr.ceci/files/art_gd.pdf
- <http://energyatlas.iea.org/#!/tellmap/1378539487/0>
- <https://eneken.ieej.or.jp/data/5252.pdf>

8. Following the Fukushima nuclear accident, many countries closed safe and operational nuclear power plants or put an end to their construction projects, negatively and lastingly impacting global efforts to fight global warming.

The Fukushima accident and its aftermath in the media have had a significant negative impact on the fight against climate change. The fear caused by this accident -- legitimate just after the accident and as long as the uncertainty remained -- was instrumentalised and artificially perpetuated by the anti-nuclear movement and led to a general loss of trust. This brought a real halt to many civilian nuclear programs around the world. While some countries like China only suspended their programs, others took more drastic measures.

While the German government was planning to extend the lifespan of its nuclear power plants, Germany immediately decided to shut down 8 GW of the country's 22 GW of nuclear power gradually, with a complete exit in 2022. Switzerland halted the renewal of its reactor fleet, Japan closed its reactors indefinitely.

Beyond these very visible consequences, the major impact was much more insidious. The turning of public opinion against nuclear power on the basis of disinformation and a sustained media campaign on the topic strongly destabilized the nuclear industry, which depends heavily on stable, long-term policies. Subjected to an unfavourable, even hostile, political, regulatory and financial environment, the nuclear industry is still experiencing very significant difficulties in keeping alive and developing in markets which are moreover biased against it.

SOURCES AND REFERENCES



- Japon : <https://www.nippon.com/fr/japan-data/h00238/>
- Allemagne : <https://www.world-nuclear.org/information-library/country-profiles/countries-g-n/germany.aspx>
- France : Accord PS-EELV mis en place par la loi LTECV <https://idf.eelv.fr/files/2011/11/accord-2012-EELV-PS.pdf> - Page 15

9. By 2035, it is estimated that there could be up to 260,000 premature deaths in the world and nearly 17.8 billion tonnes of CO₂ emitted (i.e. 6 months of global emissions), due to fossil-fuelled generating capacity that replaced the operational and safe nuclear power plants that were shut down following the Fukushima accident.

The health and climate toll of the premature closure of operational and safe nuclear power plants is estimated at 260,000 deaths and nearly 17.8 billion tonnes of CO₂ emitted (i.e. 6 months of global emissions) by 2035.

Following the Fukushima-Daiichi accident, Germany immediately decided to abandon the ongoing review of its energy transition policy to use to nuclear power in order to accelerate the exit from coal, and instead to shut down 8 out of 17 operating nuclear reactors and bring forward the deadline for closing the others to 2022.

To be sure, this policy has not increased CO₂ emissions from the electricity sector, thanks to the development of wind and solar energies and energy savings in the residential sector. But developing those low-carbon, intermittent energy sources at the same pace while closing coal-fired power stations rather than nuclear power stations, would have helped avoid the emission of 1.4 billion tons of CO₂ and the premature death of 21,000 people over the period 2011-2035.

With nuclear power, Germany could have resolutely begun its transition to a low-carbon economy rather than simply prevent the increase of its emissions.

In Japan, the shutdown of operational nuclear reactors led to an increase of nearly 200 million tonnes of CO₂ emissions per year between 2010 and 2012. Over the period 2011-2035, 2.2 billion tonnes of CO₂ and the deaths of 23,300 people would have been avoided had they remained online.

The effects of energy poverty are also an aspect that is increasingly being included in public health assessments. Thus, a study by the NBER* estimates at 1,280 (and as many as 4,500) the number of deaths from cold in Japan following the sudden increase in electricity prices (+ 38%) caused by the shutdown of nuclear reactors that provided competitively priced electricity.

*NBER stands for National Bureau of Economic Research, an American non-profit organization devoted to economics.

SOURCES ET RÉFÉRENCES



- <https://www.sciencedirect.com/science/article/pii/S0301421519303611> Dernière figure (conclusion)
- <https://www.nber.org/papers/w26395> - Page 21
- <https://www.lefigaro.fr/international/2011/05/30/01003-20110530ARTFIG00679-nucleaire-angela-merkel-cede-aux-ecologistes.php>

10. Public perception of nuclear risk and its consequences (probability and severity of accidents) is disproportionate to reality.

The French Institute for Radioprotection and Nuclear Safety conducts an annual public opinion study measuring the French population's perception of risks, including nuclear and radiological risk.

The most recent study reveals that 55% of French citizens believe that the Fukushima nuclear accident caused more than 500 deaths, compared to only 4% who believe the accident caused no deaths or between 1 and 10 deaths.

For 23% of French citizens "the most frightening event" is the Fukushima nuclear accident (despite the fact that no deaths/cancers were found) compared to only 7% for the Haiti earthquake (230,000 deaths) or 6% for the 2003 heat wave in France (19,000 deaths). Moreover, 35% of respondents consider that the strongest (and most important) argument against nuclear power is the risk of an accident. However, the probability of a serious accident is extremely low and its real radiological consequences are likely limited.

The Fukushima nuclear accident is still regularly presented in the media using names that are each more alarming than the others. That it is "the most serious nuclear accident in the history of the 21st century" is a fact, since it is the only one. But the perception that the public retains from these statements is far from the reality of the accident's consequences.

This disproportionate perception is also found in political circles which, consciously or not, perpetuate a general relationship to the accident that is due more to myth than to reality.

SOURCES AND REFERENCES



- [Baromètre IRSN 2020](#)
- https://www.irsn.fr/FR/IRSN/Publications/barometre/Documents/IRSN_Barometre_2020-graphiques.pdf - Page 36 - 105 - 106
- [Canicule de 2003 page 57](#)
- https://www.euro.who.int/data/assets/pdf_file/0018/112473/E91350.pdf
- [Canicule de 2019 page 1](#)
- https://www.santepubliquefrance.fr/content/download/195851/document_file/BSP_Bilan_2019.pdf
- Anxiety-inducing perception of political figures:
<https://twitter.com/emmacosse/status/972738158348718080?s=20>

11. The main health impact of the accident is a consequence of the evacuation and of fear, that is, the well-being and mental health of affected populations. This impact is only made worse by outrageous media treatment, anxiety-provoking communication from militant anti-nuclear movements, and stigmatization by the rest of the population.

Although the radioactive releases had extremely limited consequences on the environment and the public, the evacuation conducted in response to the accident had very significant consequences on the well-being and mental health of the residents and workers of Fukushima Prefecture. This conclusion by UNSCEAR* takes into consideration the trauma of the evacuation, the impact that the earthquake, tsunami and nuclear accident had on the population, but also the fear of radiation, the long-term separation and the stigma associated with having been exposed to ionizing radiation during the accident.

The World Health Organisation (WHO) also reports the results of a study that reveals a strong correlation between the level of doses received by workers and their high psychological stress in relation to the potential danger of exposure. It appears that they were also victims of discrimination and harassment from the rest of the population, and that many women expressed reluctance to conceive a child for fear of the social judgment associated with the alleged genetic impact of radiation exposure.

Finally, we note that former residents of Fukushima prefecture are reluctant to reveal their former place of residence when they move, because of the discrimination they know they could face.

This focus, whose real harmful effects on the health and well-being of the public could have been avoided, also has the characteristic of downgrading the victims of the earthquake and tsunami and the pain of their survivors .

This instrumentalization is the work of some anti-nuclear movements and politicians who have chosen to make the Fukushima accident a symbol of something it is not. It also echoes the question that needs to be asked about the role of the media and social networks. WHO has taken this issue up in its report, which points to the responsibility of information playing on emotion and not scientifically established, and of rumours that feed fear, which have contributed to anxiety, confusion and division in society.



SOURCES AND REFERENCES

- [Maeda, 2017 https://doi.org/10.1177/1010539516689695](https://doi.org/10.1177/1010539516689695)
- [Rapport OMS : https://apps.who.int/iris/rest/bitstreams/1318032/retrieve](https://apps.who.int/iris/rest/bitstreams/1318032/retrieve) - Page 15 - 26
- Specific work on the value of systematic screening for thyroid cancer was carried out in 2018 by a group of experts from the International Agency for Research on Cancer (IARC, Thyroid monitoring after nuclear accident (TM-NUC) <http://tmnuc.iarc.fr/en/>. It recommends that priority be given to making screening facilities available to high-risk groups of individuals, combined with detailed information on the risks of over-diagnosis for patients and families

12. Recent research calls into question the magnitude, suddenness and duration of the evacuations around Fukushima, the impact of which on the health of the populations concerned is said to be ultimately more severe than would have been the effect of the radioactive releases if these people had stayed home or returned more quickly.

The immediate, forced and prolonged evacuation around the Fukushima power plant resulted in 2,200 deaths and had a significant negative impact on the mental health of the displaced. It affected 95,000 people, of whom barely 20% had returned by 2020,.

The study of the consequences of the evacuation of the population during the Chernobyl and Fukushima accidents showed that these effects could be greater than the radiation-induced health effects in the case of unforced evacuation (particularly among the elderly).

For example, researchers have recently developed an indicator (“the J-value”) to mathematically determine the efficiency of a population protection measure based on life expectancy.

Applied to the efficiency of population evacuation during the Chernobyl accident, this evaluation method concludes that the authorities evacuated five to ten times too many people: three times too many during the first wave of evacuations (110,000 instead of 31,000) in 1986, the second in 1990 being unjustified.

Applied to the Fukushima accident, the same evaluation method establishes that no evacuation would have been really necessary given the low doses received.

It would seem that a non-systematic, non-immediate and time-limited evacuation is preferable to the approach taken up to now.

SOURCES AND REFERENCES



- a. https://www.irsn.fr/FR/connaissances/Installations_nucleaires/Les-accidents-nucleaires/accident-fukushima-2011/fukushima-2016/Pages/7_lecon-France-fukushima-2016.aspx?dId=a4c10d10-3eb2-4f22-abe4-f2e1390f8278&dwId=e54a8fba-14b7-402c-b39c-a81eec4df160#.YDEcqY3PyUm
- b. [10.1093/pubmed/fdr114](https://pubmed.ncbi.nlm.nih.gov/10.1093/pubmed/fdr114/)
- c. <https://www.sciencedirect.com/science/article/pii/S0957582017302173?via%3Dihub>
- d. [9 ans après l'accident de la centrale de Fukushima Daiichi : Données clés sur les conséquences environnementales et le retour des populations dans les territoires évacués - Mars 2020](#)

13. The negative image surrounding food produced in Japan has heavily impacted the Japanese economy and local producers who still find it difficult to make a living from their production, which nevertheless fully complies with consumption standards.

Even if the radioactive releases from the nuclear accident, significant at the beginning, had consequences on food production in the first year, they quickly became imperceptible, or only marginally detectable and in rare cases such as forest mushrooms.

Since the Fukushima accident, Japanese food products, especially fish, are hardly exported. The Japanese themselves are increasing their consumption of imported foodstuffs due to fear of contamination. Anti-nuclear associations and certain countries close to Japan do not hesitate to accentuate this fear, despite the ever-increasing number of reassuring sample measurements.

The draconian contamination thresholds imposed by Japanese health authorities are actually much stricter than those applied in Europe, and the agricultural production of the Fukushima region, which is now only sold locally, presents no health risk.

In general, Japanese authorities have been lowering allowed levels of radioactivity in baby food, in school lunches, vegetables and many other consumer products, forcing local authorities to purchase new measuring instruments to detect unusually low levels. Ten years after the accident, the region hopes to take advantage of the upcoming Olympic Games in Japan to erase this caricature that rumours have forced upon it.

The economic cost of the disaster seems difficult to assess. The direct damage from the tsunami and earthquake alone is already estimated at between 3.5% and 5% of GDP and is pushing Japan back into recession. Some estimates suggest a range of 250 to 500 billion dollars for the abandoned cities and territories alone (800 km²). These estimates are very conservative as they exclude the effects of speculation on the yen, the fall in consumer exports, the abrupt and sustained rise in fossil fuel imports, the slowdown imposed on the economy, the fall in production due to energy supply shrinkage, and the drop in domestic consumption.

It should be pointed out that in its estimate of what an accident like Fukushima could cost in France, IRSN includes image costs which amount to nearly 40% of the total. This image cost, which the definition emphasizes is not justified by the facts, has a lot to do with the way in which the tragedy of some is reported and publicized by others.



SOURCES AND REFERENCES

- a. [Dans les ports et les champs de Fukushima, la malédiction de la rumeur](#), Les Echos
- b. Strengthening of import control levels:
[Règlement d'exécution \(UE\) no 297/2011 de la Commission du 25 mars 2011 imposant des conditions particulières à l'importation de denrées alimentaires et d'aliments pour animaux originaires ou en provenance du Japon à la suite de l'accident survenu à la centrale nucléaire de Fukushima \[archive\] - Journal officiel de l'Union européenne du 26 mars 2011](#)
- c. Cost:
 - https://www.sciencespo.fr/ceri/sites/sciencespo.fr/ceri/files/art_gd.pdf
 - NewsOnJapan.com, ["Fukushima Cleanup Could Cost up to \\$250 Billion"](#) *NewsOnJapan.com*. 6 Nov. 2012
 - Gundersen, Arnie & Caldicott, Helen. ["The Ongoing Damage and Danger at Fukushima."](#) *Fairewinds Energy Education*. Web. 6 Nov. 2012.
 - o Examples of misinformation and rumour:
 - <https://www.terraeco.net/Aliments-importes-du-Japon-a-t-on,54985.html>
 - <https://www.sudouest.fr/2014/03/10/pollution-de-fukushima-la-chaine-alimentaire-touchee-par-la-contamination-1486541-5010.php>
 - o Surplus cost of fossil fuels :
- d. <https://www.forbes.com/sites/jamesconca/2016/03/10/after-five-years-what-is-the-cost-of-fukushima/?sh=102ab4c722ed>
- e. https://www.sciencespo.fr/ceri/sites/sciencespo.fr/ceri/files/art_gd.pdf
- f. IRSN scenario :
 - Synthesis : https://www.irsn.fr/FR/connaissances/Installations_nucleaires/Les-accidents-nucleaires/cout-economique-accident/Pages/2-cout-economique-pour-2-scenarios.aspx
 - Methodology and details : https://www.irsn.fr/FR/expertise/rapports_expertise/Documents/surete/IRSN-PRP-CRI-SESUC-2013-00261_methodologie-cout-accident.pdf
- g. Costs of dismantling, refugee compensation, and decontamination:
https://link.springer.com/chapter/10.1007/978-3-662-57366-2_7
- h. Cost of reconstruction : <https://www.reconstruction.go.jp/english/>
- i. [9 ans après l'accident de la centrale de Fukushima Daiichi : Données clés sur les conséquences environnementales et le retour des populations dans les territoires évacués Mars 2020](#)

14. Many political figures, anti-nuclear associations and the media contribute to the confusion between the victims of the natural disaster and the nuclear accident in Fukushima, instrumentalizing (intentionally or not) the memory of the victims and the drama of Japan and the Japanese.

The disaster in the Tōhoku region of Japan was caused by a tsunami, which was in turn caused by an underwater earthquake. Villages, hamlets, schools, hospitals, retirement homes, shopping centres, industrial areas, all of them filled with people, were swept away by the giant wave. The coastal region was completely devastated, and the tsunami killed nearly 18,500 people.

And yet, this tragedy and its victims now seem condemned to remain forever in the shadow of the nuclear accident, also a consequence of these natural events. From the day after the disaster, and almost without interruption since, a multitude of public actors have undertaken what constitutes the opposite of a work of memory: a work of omission, even of manipulation. Politicians, activists, associations, the media, anonymous people on social networks - the motley crowd of those who see this natural disaster only through the prism of their anti-nuclear dogma - have begun the work of rewriting history. Through press releases, public statements, reports, articles or simple posts, and depending on the level of credulity or cynicism of their respective authors, these victims have disappeared or become consequences of the nuclear disaster.

The declarations of scientific committees such as WHO and UNSCEAR confirming that the radioactive releases from the nuclear power plant did not cause any casualties observable 10 years later, and that none are expected, have not prevented a strong collective imagination from being formed for a majority of the public - a public for whom the name of Fukushima is now associated with that of the nuclear power plant and the thousands of victims that it did not cause.

Sometimes, the amalgam appears to stem from ignorance, as in the France Inter radio news report of 23 July 2017 which went so far as to attribute the tsunami itself and its victims to the nuclear accident. Sometimes, it is done by omission - the victims are glossed over in favour of mentions of the nuclear accident. Worse, some public figures contribute to the stigmatisation of people who fled the region, or people who are still trying to make a living there, with their opportunistic communication.

The 10th anniversary of the events of March 2011 is unfortunately a new opportunity to see this communication at work. It is up to us, collectively, to help restore the respect due to the victims.

SOURCES AND REFERENCES



- Former minister and former director general of WWF France Pascal Canfin, now a member of the European Parliament, confuses the deaths from the natural disaster with the nuclear accident <https://twitter.com/pcanfin/status/708206623936749568?s=20>
- This same amalgam was made by the radio station France Inter during an evening news programme, or by the newspaper La Dépêche in a report on the nuclear accident. <https://www.franceinter.fr/emissions/le-journal-de-19h/le-journal-de-19h-23-juillet-2017> at 8:19
<https://social.shorthand.com/ladepechedumidi/ngKJulAsrY/fukushima-5-ans-apres>
- Other personalities, such as leftist politician Jean-Luc Mélenchon, called for thinking about Fukushima and getting out of nuclear power six years after the earthquake and tsunami.
<https://twitter.com/JLMelenchon/status/840484639663886337?s=20>
- Anti-nuclear associations:
 - Sortir du Nucléaire :
<https://twitter.com/sdnfr/status/1105109037866278912?s=20>
 - WWF :
 - <https://www.wwf.fr/vous-informer/actualites/pascal-canfin-quitte-son-poste-de-directeur-general-du-wwf-france>
 - <https://reporterre.net/Fukushima-sous-la-centrale-se>

15. Before the Fukushima nuclear accident, the Japanese Nuclear and Industrial Safety Agency was dysfunctional and lacked independence from the government and energy companies.

Before the Fukushima accident, the Japanese safety agency was not sufficiently independent from the operator and not sufficiently prescriptive vis-à-vis the latter. One of the first measures taken after the accident was therefore to create the current authority (NRA), which has the power to prescribe, shut down reactors and authorize their restart.

The agency at the time did not prescribe to the operator a protective dike height consistent with the historical earthquakes and tsunamis in the area. The devices that would have limited radioactive releases in the event of an accident in the reactor building, which were present in most Western and Chinese reactors at the time, were not required, nor were the very simple systems that could have prevented the hydrogen explosions observed and the subsequent release of radioactive elements into the atmosphere.

Today, all the reactors in the world concerned, with measures adapted for each type of reactor, are equipped with this type of devices. French reactors were equipped well before 2011.

SOURCES AND REFERENCES



- Philip Andrews-Speed (2020) Governing nuclear safety in Japan after the Fukushima nuclear accident: incremental or radical change?, *Journal of Energy & Natural Resources Law*, 38:2, 161-181, DOI: [10.1080/02646811.2020.1741990](https://doi.org/10.1080/02646811.2020.1741990)
- <https://www.mhmjapan.com/content/files/00002247/report.pdf>
- https://www.iaea.org/sites/default/files/documents/review-missions/irrs_mission_to_japan_jun_2007.pdf

16. The analysis and experience gained from this accident, which should not be underestimated and which could have been avoided, have made it possible to improve the level of safety of nuclear reactors, in Japan and around the world, with the active and immediate participation of the global nuclear industry.

The important feedback from the accident has allowed for further improvements in nuclear safety in Japan and around the world.

After the Fukushima accident, the Japanese safety agency was dissolved and then reformed. New safety standards were presented in July 2013, concerning the design of reactors, protection against earthquakes and tsunamis as well as the limitation of the consequences of severe accidents.

In the minutes following the accident, the global nuclear industry provided assistance, whether in terms of expertise, post-accident crisis management, or logistical support that was lacking due to the scale of the earthquake and tsunami disaster.

In the following months, all the operators and safety authorities, R&D centres as well as equipment and service suppliers mobilized with a twofold objective: to take the immediate measures that TEPCO lacked (in particular, protective devices against atmospheric releases and hydrogen explosion) and to launch additional safety studies to analyse the reasons of the accident, in especially those regarding the consideration of major external hazards. These studies led to the establishment of new measures to be implemented in the existing installations, the deployment of which is in its final phase.

Since the accident, all over the world, improvements have been made to existing plants and feedback has been integrated into new reactor designs such as the EPR. In particular, in France, it has been decided to bring the safety of operating reactors closer to the level of the EPR design, which is a particularly ambitious and exemplary objective, to equip all the power plants with ultimate emergency means for extreme cases (all of which are installed today) and to create the Nuclear Rapid Action Force capable of intervening on any site in less than 24 hours.

SOURCES AND REFERENCES



- a. [How the Fukushima Daiichi Accident Changed \(or not\) the Nuclear Safety Fundamentals?](#)
- b. [Groupe permanent d'experts pour les réacteurs nucléaires \(GPR\). Séance 18/19.01. 2012](#)
 - o http://www.jaif.or.jp/ja/wnu_si_intro/document/2011/felgate_postfukushimasafetyculture.pdf
 - o http://www.ensreg.eu/sites/default/files/EU%20Stress%20Test%20Peer%20Review%20Final%20Report_0.pdf

17. Reactors at the Onagawa plant, closest to the epicentre, did not suffer major damage in the earthquake. Robust enough to withstand the tsunami, the plant then served as a refuge for local populations.

The Onagawa NPP is the closest plant to the epicentre of the 11 March 2011 earthquake (60 km), twice as close as the Fukushima-Daiichi plant. Its reactors are of the same design and model, although more recent. Above all, they are operated by a different operator. In particular, the operator has better designed the plant's earthquake and tsunami protection based on available historical data for the region.

During the natural disaster, the populations of the villages closest to the nuclear power plant were able to find refuge in the gymnasium protected from the 14 m high wave by the combined effect of the voluntary elevation of the site, as well as the protections and robustness of the power plant (a larger wave than the one received at Fukushima-Daiichi). The villagers were accommodated for three months while a solution for their relocation was being searched for.

Of the three reactors at Onagawa, only the first reactor will not be restarted due to the cost of bringing it up to new standards, which is considered too high in relation to its power and remaining life. The second reactor has recently been restarted while the third is waiting for approval to restart.

SOURCES AND REFERENCES



- a. https://www.challenges.fr/monde/japon-feu-vert-au-redemarrage-du-reacteur-nucleaire-le-plus-proche-du-seisme-de-2011_686847
- b. <https://www.reuters.com/article/us-japan-nuclear-tsunami-idUSTRE79JOB420111020>

CONTACT US



LinkedIn



Twitter (FR)



Twitter (EN)



Facebook



YouTube



Page web (FR)



Webpage (EN)



contact@voixdunucleaire.org