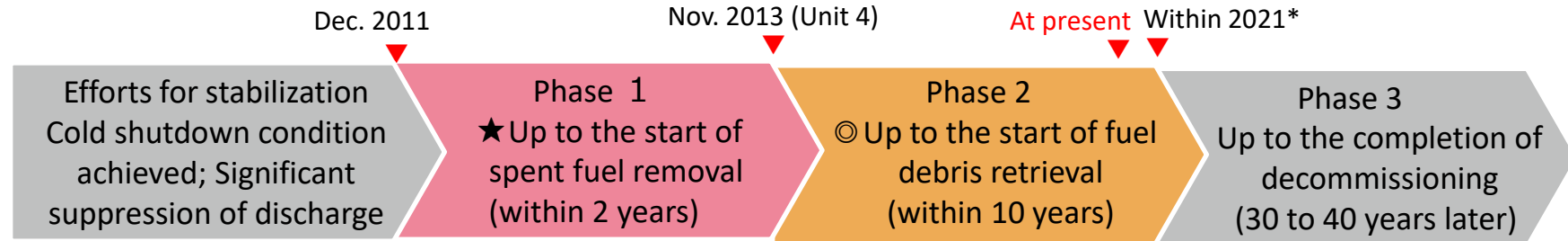


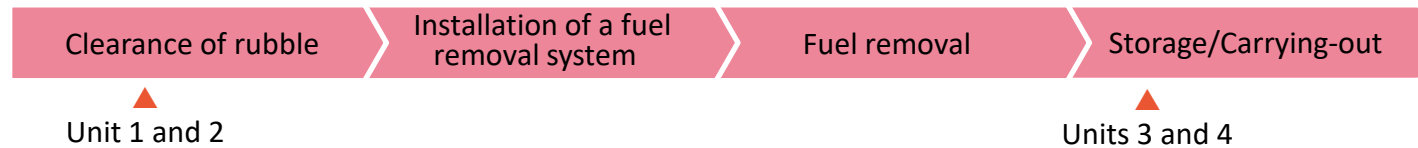
Overall framework of decommissioning procedures



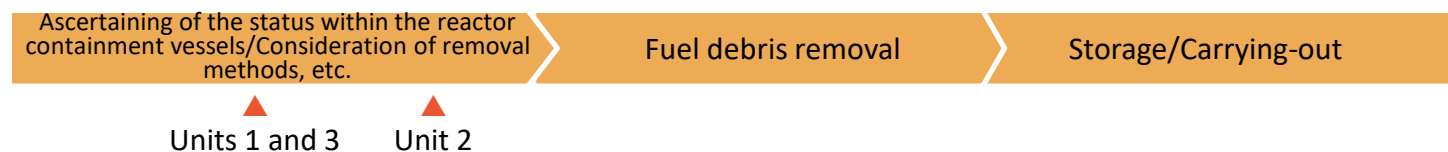
* Based on the status of the development of robot arms, which are necessary for trial removal of fuel debris, the plan will be reviewed in around the latter half of FY2023.

Decommissioning procedures

★ Fuel removal



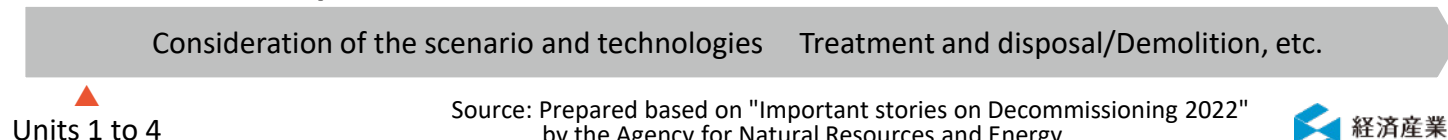
◎ Fuel debris removal



◆ Disposal of ALPS treated water



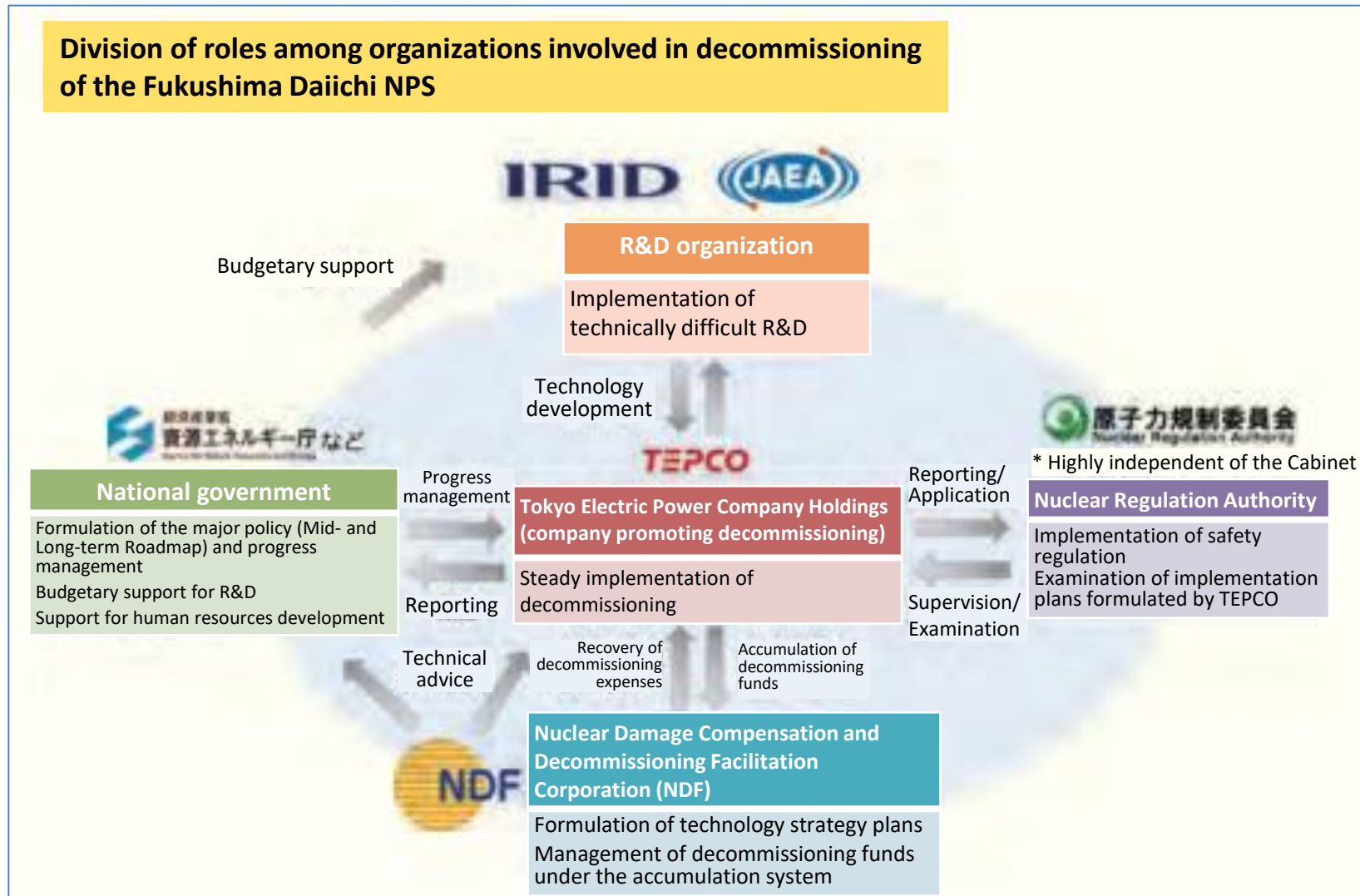
○ Treatment and disposal of waste/Demolition of the reactor facilities, etc.



Source: Prepared based on "Important stories on Decommissioning 2022" by the Agency for Natural Resources and Energy

Organizations and Tasks

Decommissioning work is being carried out in cooperation with local companies and other organizations, as well as with the collective wisdom from Japan and abroad.

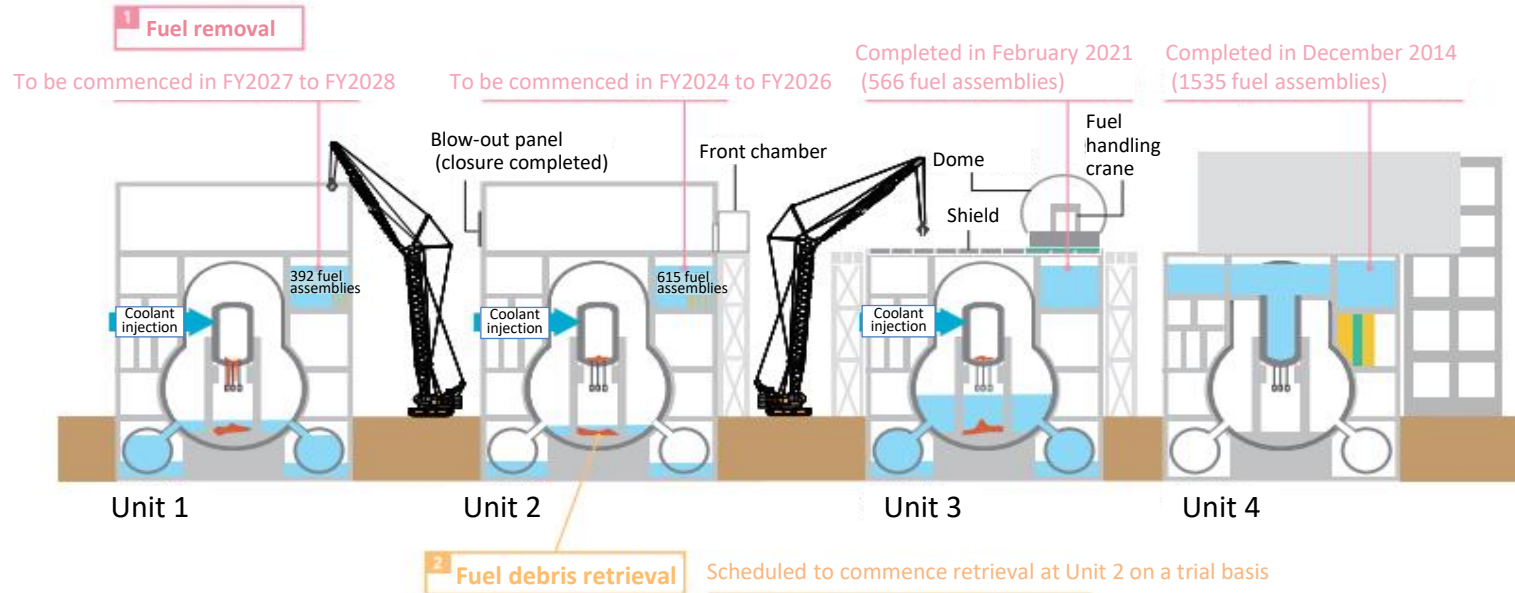


Source: Prepared based on "Important Information on Decommissioning 2022" by the Agency for Natural Resources and Energy

Progress in Efforts for Decommissioning

Current status of Units 1 to 4

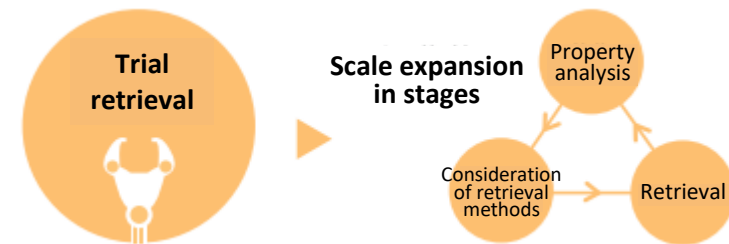
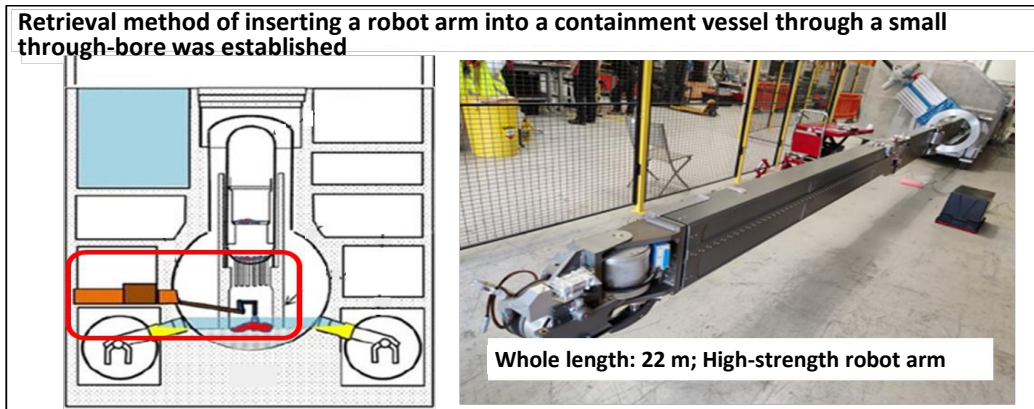
- Situation differs by unit, and methods of carrying out measures and progress are also different.



* No accident occurred in Units 5 and 6, but fuel removal work will be conducted sequentially for these units as well.

Future plan for fuel debris retrieval

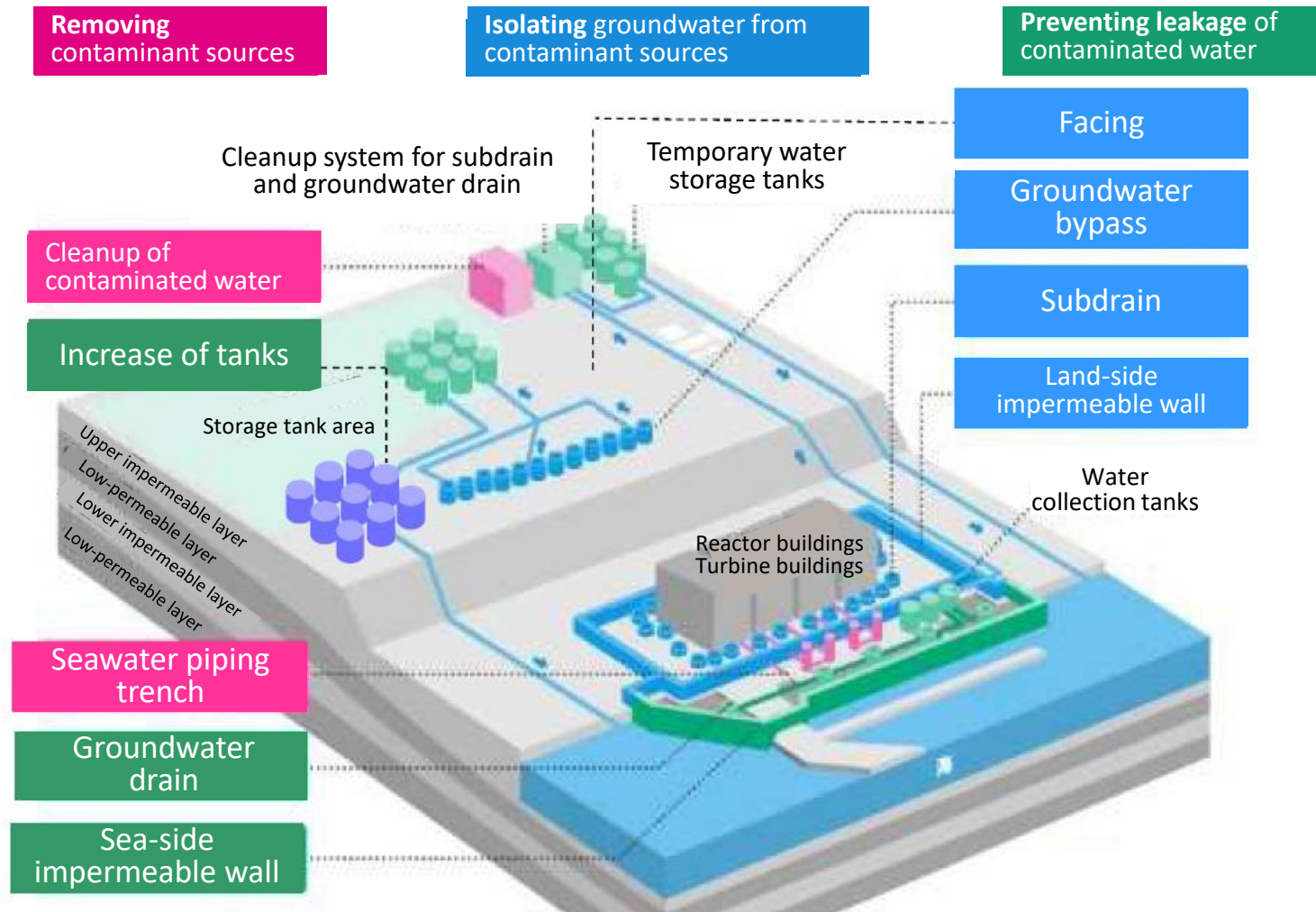
- Retrieval work on a trial basis will be commenced at Unit 2 first and the scale of the retrieval work will be expanded in stages.



Source: Prepared based on "Important Information on Decommissioning 2022" by the Agency for Natural Resources and Energy

Measures against Contaminated Water

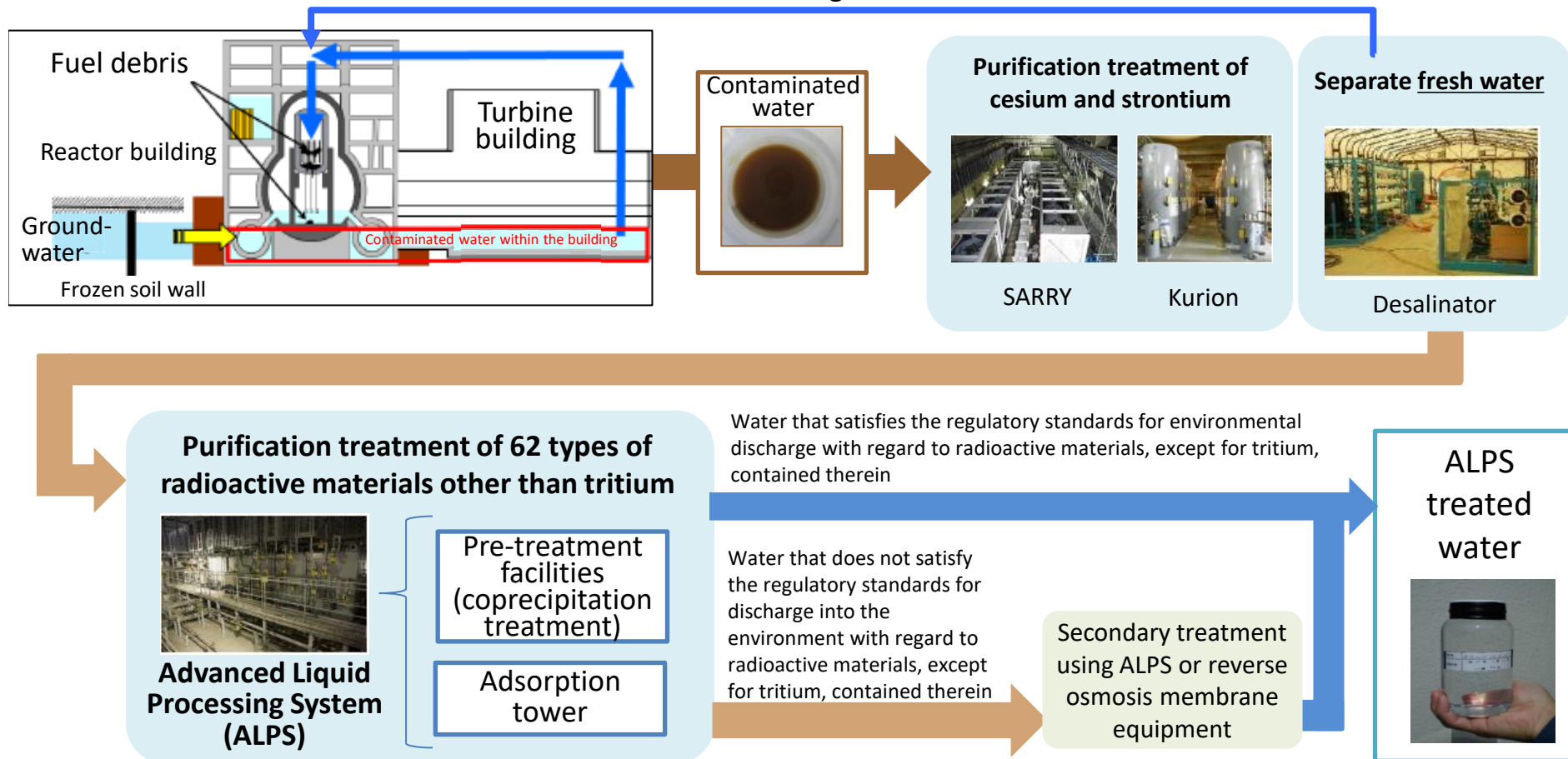
Preventive and multi-layered measures are being taken against contaminated water based on policies of (i) removing contaminant sources, (ii) isolating groundwater from contaminant sources, and (iii) preventing leakage of contaminated water.



ALPS Treated Water – Purification of Contaminated Water –

- Contaminated water with radioactive materials is being generated after the accident at TEPCO's Fukushima Daiichi NPS. "ALPS treated water" refers to the water that has been treated by the Advanced Liquid Processing System (ALPS) and other equipment and has been purified to a level where contained radioactive materials, except for tritium, satisfy the regulatory standards for discharge into the environment.

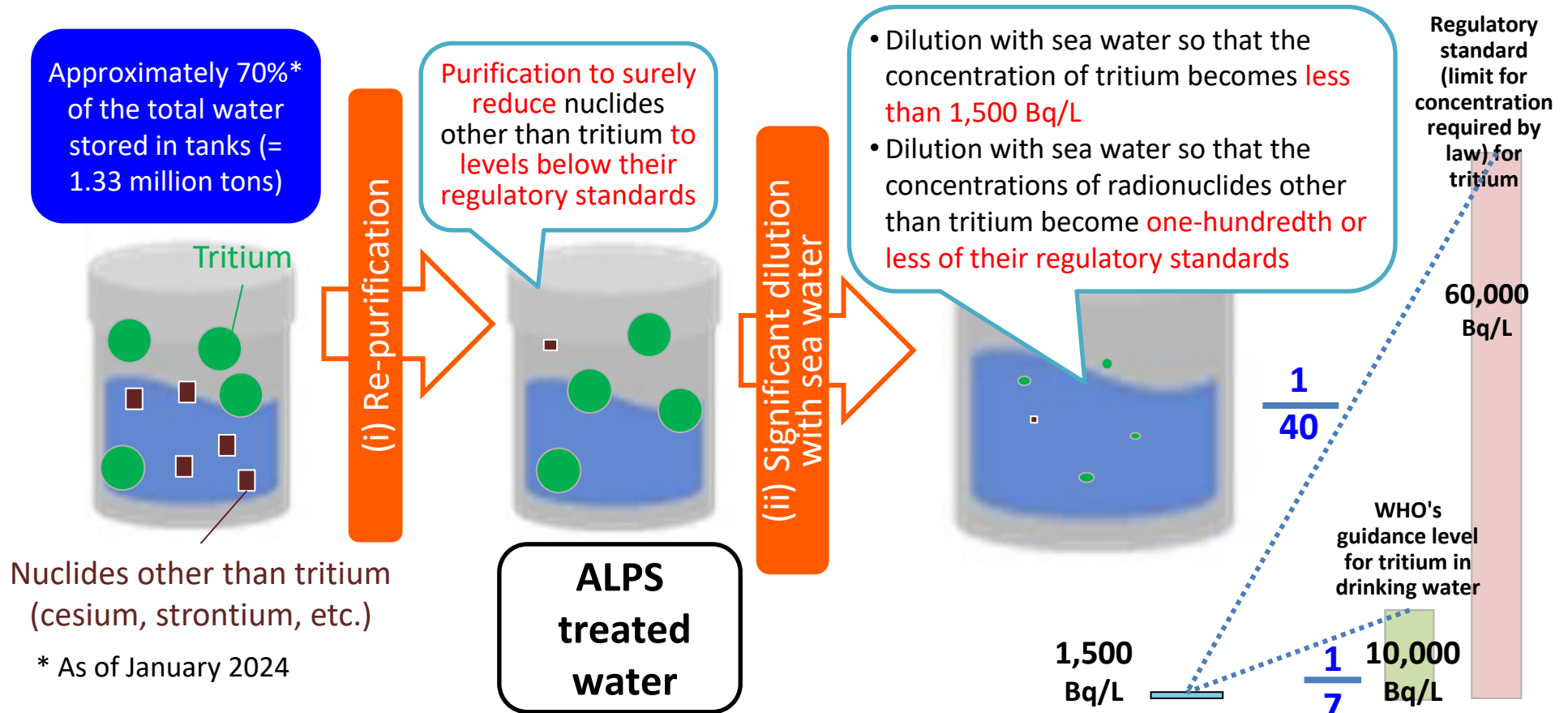
Freshwater obtained through desalination is used as coolant.



(Source) Prepared based on "Fukushima Daiichi Nuclear Power Station: Contaminated water management: What is 'slurry'? Why is it generated? How is it stored?" by the Agency for Natural Resources and Energy (https://www.enecho.meti.go.jp/en/category/special/article/detail_157.html)

Treatment Method for Water Stored in Tanks

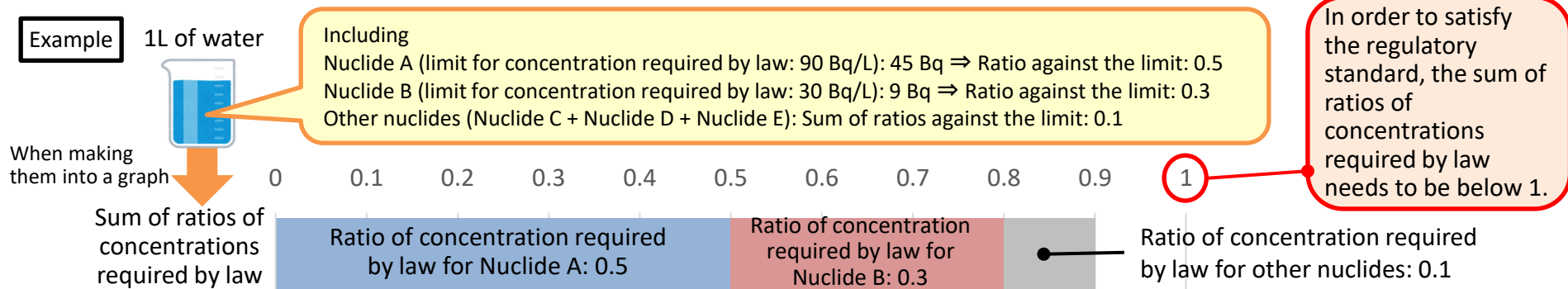
- Reduce concentrations of the radioactive materials contained in treated water far below the regulatory standards through 1) re-purification of radionuclides other than tritium; and 2) dilution by more than 100 times with sea water.
- Discharge water into the sea from TEPCO's Fukushima Daiichi NPS, and conduct monitoring before and after the discharge (evaluation and review by third parties, such as an international organization).



Regulatory Standards for Discharging Radioactive Materials into the Environment

- Whether the regulatory standard is satisfied or not is evaluated based on the sum of radiation effects caused by all types of contained nuclides, irrespective of whether the reactor is an operating one or a damaged one (evaluations are based on the sum of the values converted to the effects on human beings, not simply based on types or amounts of nuclides).
- Contaminated water at TEPCO's Fukushima Daiichi NPS contains radioactive nuclides unique to the broken-down reactors (such as cesium and strontium), but these are surely removed to levels below the regulatory standards by the use of the Advanced Liquid Processing System (ALPS) and other equipment.

< Concept of the sum of ratios of concentrations required by law, the regulatory standard for discharge into the environment of radioactive materials >



[Reference] Results of the performance test regarding re-purification by the use of ALPS and other equipment (sum of ratios of concentrations required by law and ratios against the limits for major nuclides)

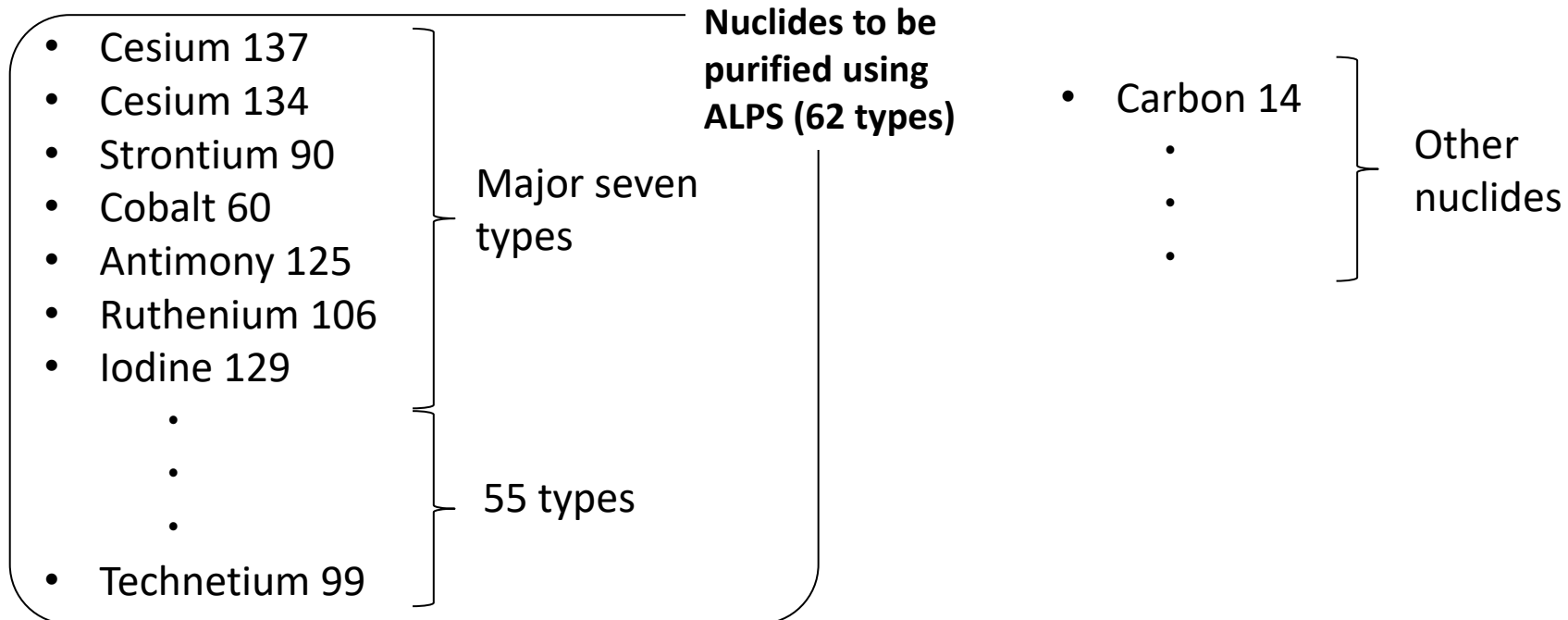
	Cobalt 60	Cesium 137	Strontium90	Iodine 129	Other nuclides	Sum for nuclides other than tritium (sum of ratios of concentrations required by law)
Ratio against the limit for concentration required by law	0.0017	0.0021	0.0012	0.13	0.215	0.35

Dilution by more than 100 times so that the sum of the ratios of concentrations required by law for all radioactive materials including tritium becomes less than 1

(Source) Prepared based on "First priority is given to safety and security; Measures related to contaminated water in Fukushima (iv): Regulatory standards for radioactive materials" (<https://www.enecho.meti.go.jp/about/special/johoteikyo/osensuitaisaku04.html>) (in Japanese) and "Safe and secured disposal of treated water for reconstruction and decommissioning (ii): Secondary treatment and other nuclides contained in treated water" (<https://www.enecho.meti.go.jp/about/special/johoteikyo/shorisui02.html>) (in Japanese) by the Agency for Natural Resources and Energy, and "Performance test regarding secondary treatment of ALPS treated water" by Tokyo Electric Power Company Holdings

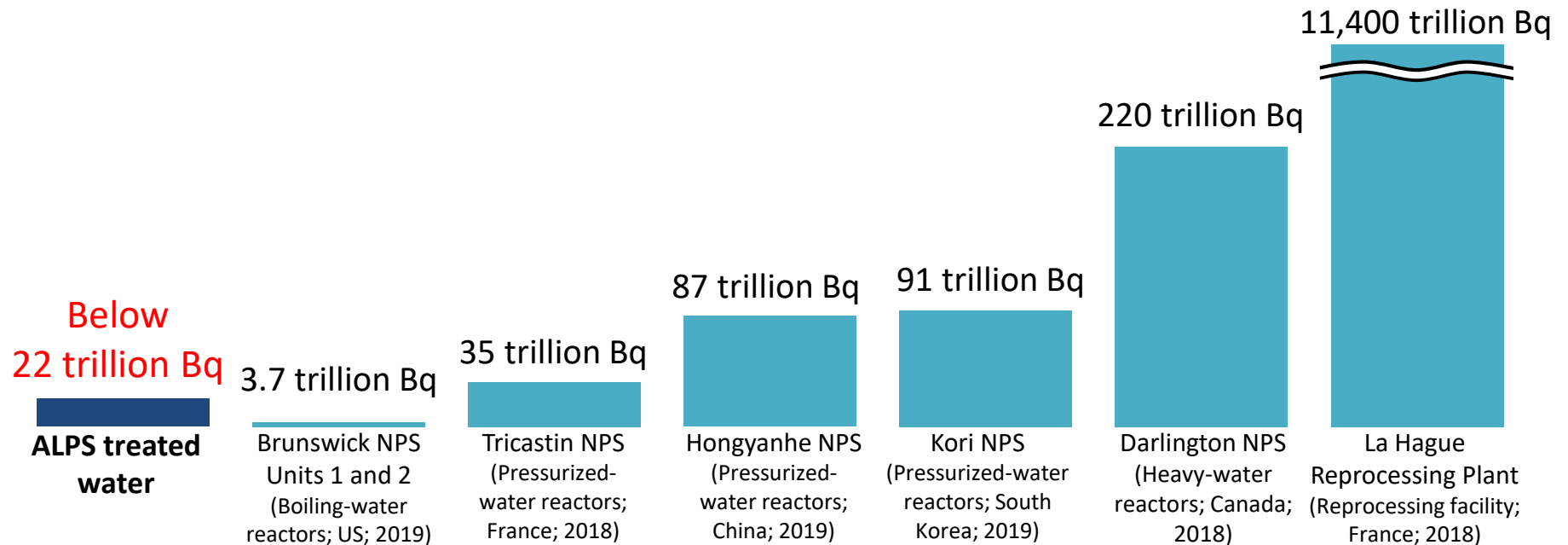
Nuclides Other than Tritium

- Contaminated water generated at TEPCO's Fukushima Daiichi NPS not only contains tritium but also contains Cesium 137, Strontium 90 and other radioactive materials which are seldom detected in water discharged from ordinary nuclear power stations.
- Out of those radioactive materials, 62 types of nuclides that are likely to be contained in the contaminated water at certain levels in consideration of regulatory standards respectively set for those types of nuclides are purified by the use of the Advanced Liquid Processing System (ALPS) and other equipment to the extent that their concentrations become below those regulatory standards.



Annual Discharge Amounts of Tritium - International Comparison -

- The total amount of tritium at the time of discharge of ALPS treated water is below 22 trillion Bq per year (operational target value prior to the accident).
- Tritium is discharged as liquid waste into the sea or rivers or into the air through ventilation, etc. also at other nuclear power stations and reprocessing facilities inside and outside Japan in compliance with the laws and regulations of respective countries.



Annual discharge amounts of tritium (liquid) from ALPS treated water and at nuclear facilities around the world

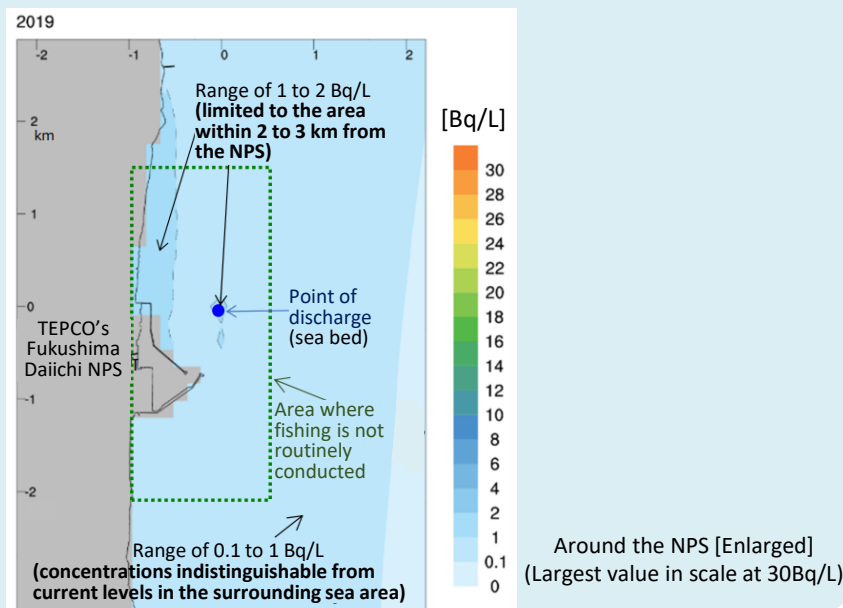
(Source) Prepared based on "ALPS Treated Water" on the website of the Ministry of Economy, Trade and Industry (<https://www.meti.go.jp/english/earthquake/nuclear/decommissioning/atw.html>)

Assessment of the Radiological Impact of Discharge of ALPS Treated Water into the Sea

- When discharging ALPS treated water into the sea, dilution is to be surely conducted and the diffusion and potential radiological impacts on humans and the marine environment are to be scientifically assessed.
- The content of the assessment is to be reviewed as necessary based on the opinions of the IAEA and the Nuclear Regulation Authority.

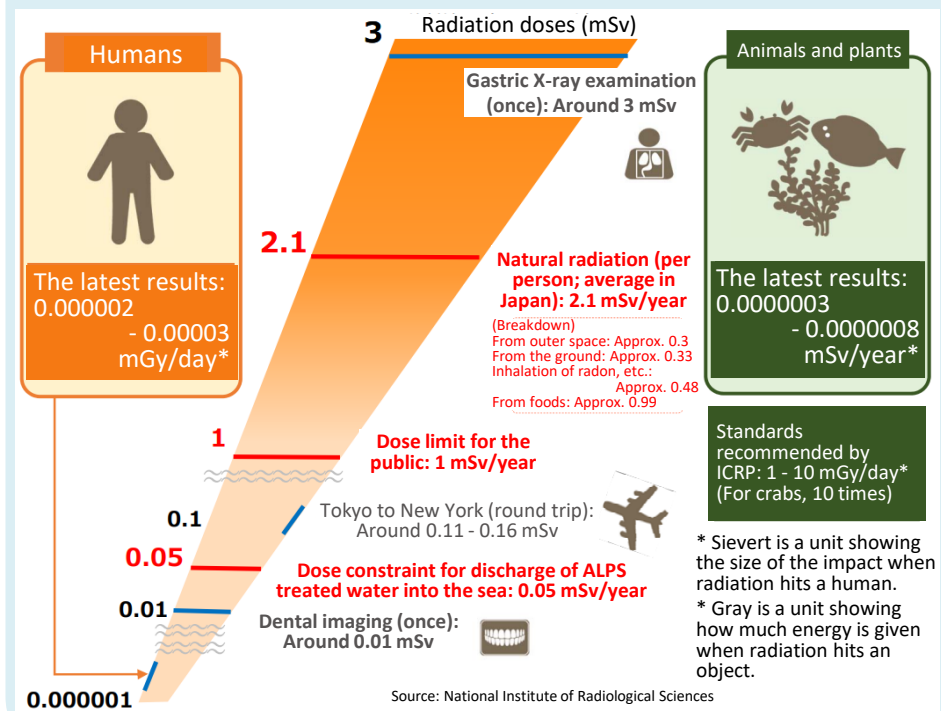
Results of the dispersion simulation

- The surrounding sea area where the tritium concentration was assessed to increase from the current level (0.1 to 1 Bq/L) is limited to the area within 2 to 3 km from the NPS.
- Even in this sea area, the sea water sufficiently satisfies the regulatory standard for tritium in Japan and the WHO's guideline for drinking-water quality.



Assessment of the public's exposure

- The impact on humans is assessed to be approx. 1/1,000,000 to 1/70,000 of the exposure doses (2.1 mSv/year) of Japanese people from natural radiation.



(Source) Prepared based on the "Radiological Environmental Impact Assessment Report Regarding the Discharge of ALPS Treated Water into the Sea (Construction stage)" (May 2023) by Tokyo Electric Power Company Holdings, https://www.tepco.co.jp/decommission/progress/watertreatment/images/ria_202112j.pdf

Sea Area Monitoring in Relation to ALPS Treated Water

- Since 2022, before commencing the discharge, relevant ministries and agencies, the nuclear operator, and others have conducted sea area monitoring in relation to ALPS treated water. Immediately after commencing the discharge in August 2023, they strengthened and expanded the structure for sea area monitoring by such means as increasing analysis frequencies and locations.
- The reliability of the analyses is being ensured with the assistance of the IAEA.
- As of December 2023, it was confirmed that tritium concentrations were sufficiently low and would have no adverse impact on human health and the environment.

< Monitoring of sea water, marine biota and fishery products regarding ALPS treated water >

Extract of monitoring plan for FY2023 (immediately after commencing the discharge)

[Sea water (conducted by the Ministry of the Environment and the Nuclear Regulation Authority)]

(i) Precise analysis of tritium

- Conduct analysis basically four times a year
- For the time being after commencing the discharge, additionally conduct analysis at three locations once a month
- Also conduct analysis at six bathing beaches close to the outlet

(ii) Rapid analysis of tritium

- For the time being after commencing the discharge, conduct analysis at 11 locations once a week

(iii) Analysis of radionuclides other than tritium

- Conduct analysis for relevant radionuclides other than tritium basically four times a year
- For the time being after commencing the discharge, additionally conduct analysis at three locations once a week

[Marine biota (conducted by the Ministry of the Environment)]

(i) Fish

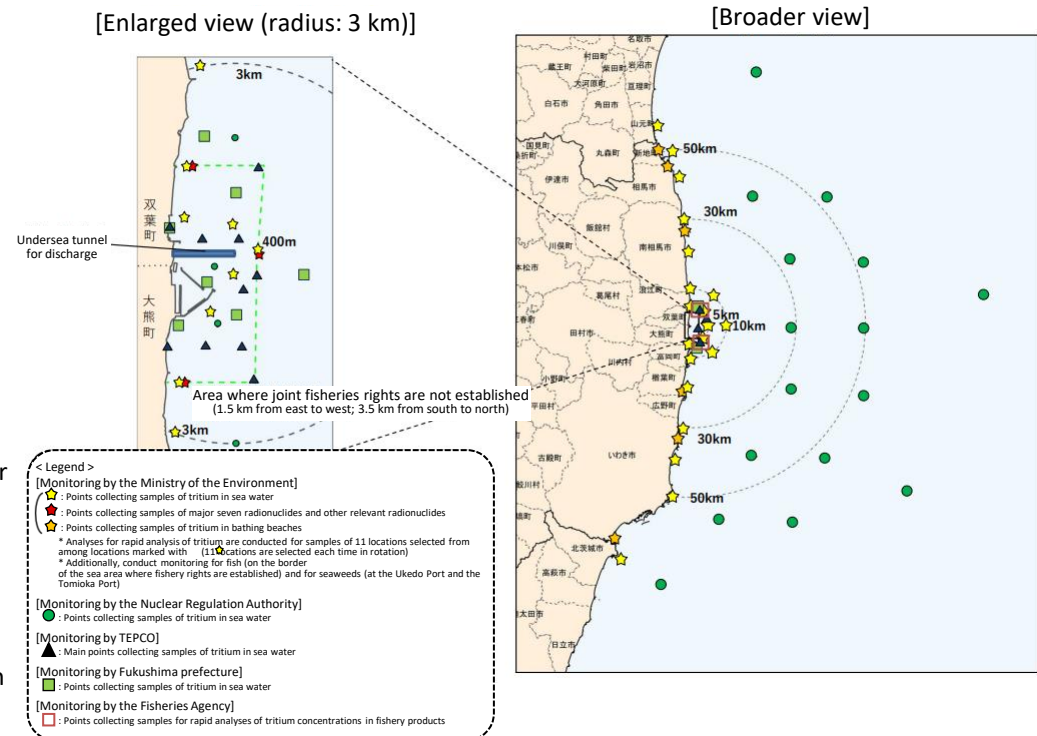
- Conduct analysis for fish collected at three locations closest to the outlet in the sea area where fisheries are conducted ordinarily
- Analyze the concentrations of tritium and Carbon-14 four times a year

(ii) Seaweeds

- Conduct analysis for seaweeds collected at two locations close to the outlet
- Analyze the concentrations of Iodine-129 four times a year

[Fisheries products (conducted by the Fisheries Agency)]

- Measure the concentration of tritium for approx. 380 samples per year

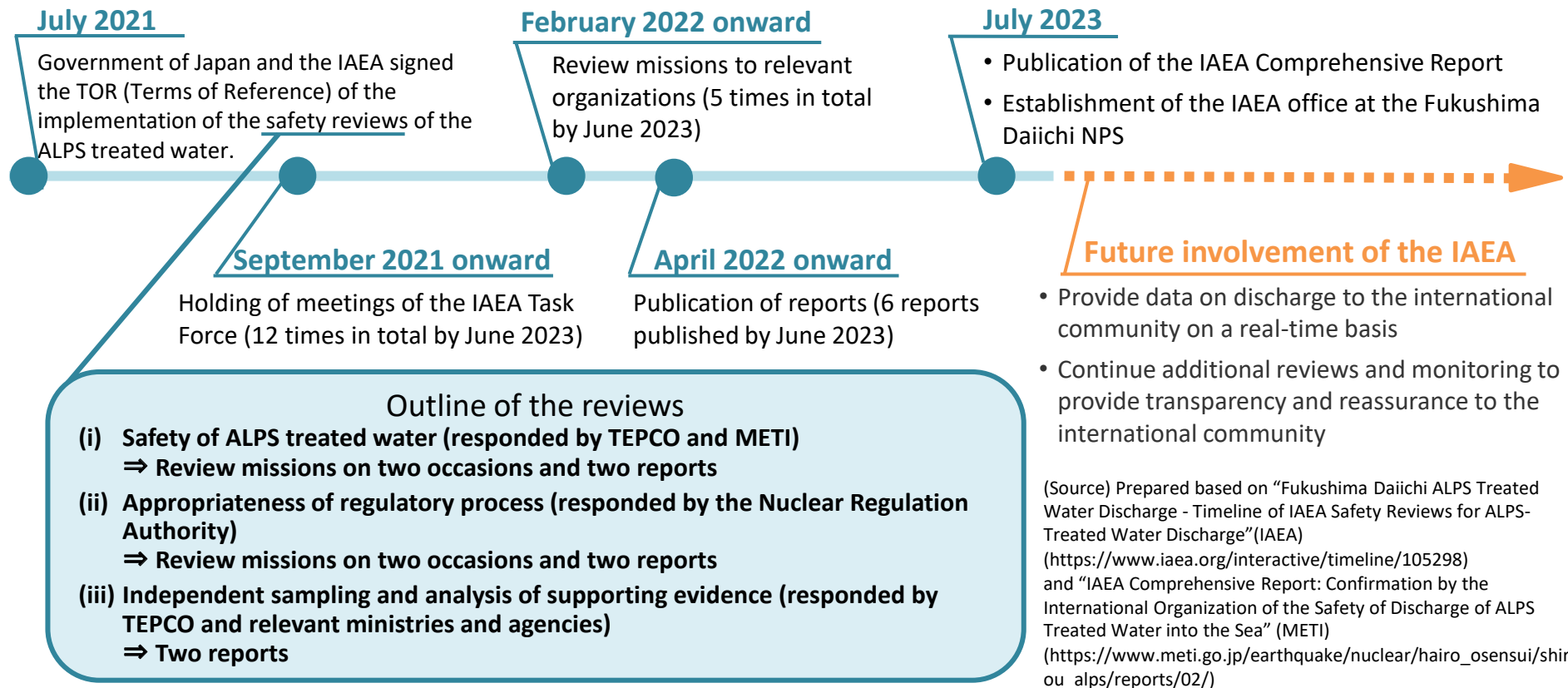


Points collecting samples for sea area monitoring by the relevant organizations

(Source) Prepared based on "Comprehensive Radiation Monitoring Plan (revised on March 16, 2023)" (Monitoring Coordination Meeting) (https://radioactivity.nra.go.jp/en/contents/17000/16273/24/274_20230412.pdf), and "Status of Monitoring by MOE" (MOE's website) (<https://www.env.go.jp/content/000183685.pdf>) (in Japanese), and "Sea Area Monitoring regarding ALPS Treated Water" (NRA) (<https://www.nra.go.jp/data/000457798.pdf>) (in Japanese)

Involvement of the IAEA in Discharge of "ALPS Treated Water"

- The IAEA conducts reviews as a third party in its professional capacity as an authoritative UN-related agency with specialized knowledge in the field of nuclear energy.
- On July 4th, 2023, the IAEA published its comprehensive report stating that discharges of the ALPS treated water to the sea are "consistent with relevant international safety standards" and "would have a negligible radiological impact on people and the environment."
- The IAEA will get involved in securing the safety of discharge of ALPS treated water over years even during and after discharge, not limited to reviews prior to discharge.



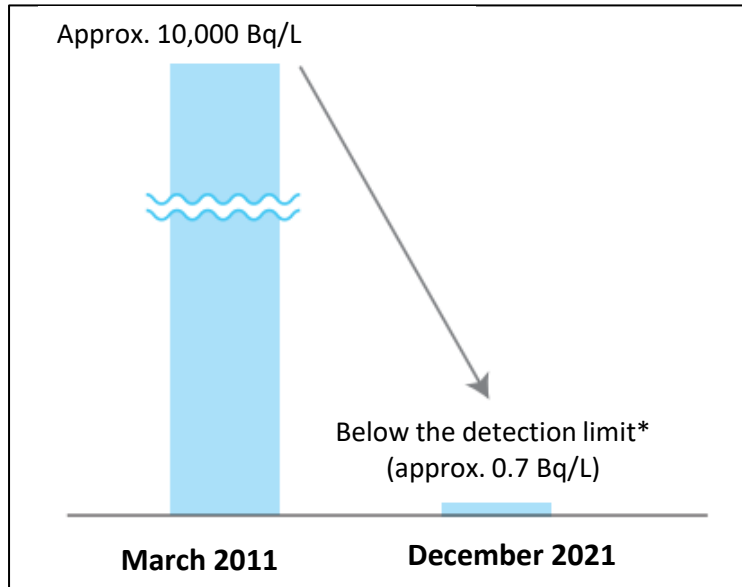
IAEA Comprehensive Report on the Safety of "ALPS Treated Water"

- The IAEA conducted technical reviews (on five occasions) before discharge in order to evaluate whether the discharge of ALPS treated water into the sea complies with the international safety standards.
 - In those reviews, TEPCO's assessment of radiological environmental impacts was verified and data were corroborated through comparison among analytical laboratories (Interlaboratory Comparison (ILC)) with the participation of third-party analytical laboratories* in addition to the IAEA.
 - The comprehensive report published in July 2023 evaluates that "discharges of the ALPS treated water to the sea would have a negligible radiological impact on people and the environment."
- * Analytical laboratories of South Korea, France, the United States, and Switzerland participated.

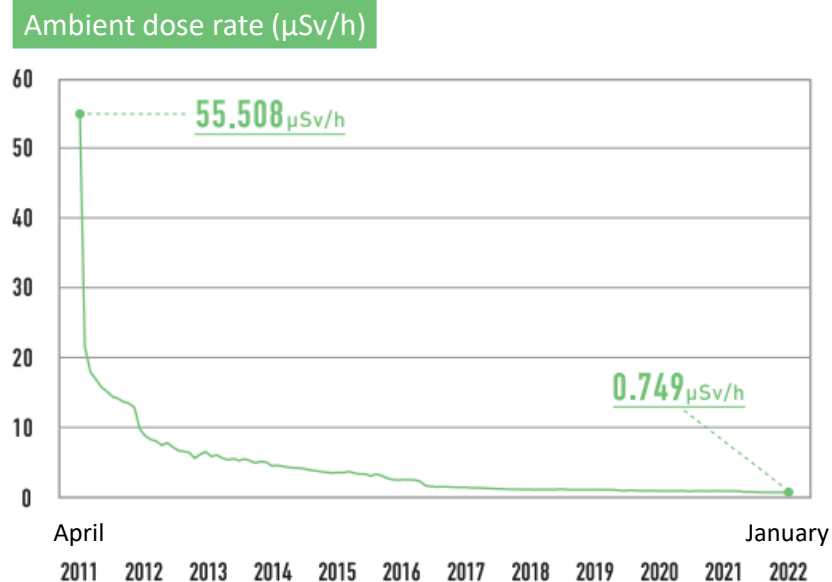
Reviewed items	Major results
Radiological impacts on humans and the environment	<ul style="list-style-type: none"> • Assessment of radiological impacts on the environment is being conducted in compliance with international standards. • International waters are not affected by the discharge of ALPS treated water, and the cross-border impact is negligible.
Integrity of facilities and process for controlling discharge	<ul style="list-style-type: none"> • The system and process for controlling discharge are robust. • Emergency isolation valves and radiation detectors are incorporated in the system in a redundant manner.
Regulatory management and approval	<ul style="list-style-type: none"> • The Nuclear Regulation Authority has established and is enforcing appropriate legal and regulatory safety frameworks as an independent regulatory organization.
Analysis/source and environmental monitoring	<ul style="list-style-type: none"> • Monitoring activities by the government of Japan and TEPCO are in compliance with the international safety standards. • TEPCO has the ability to undertake accurate and precise analyses and has a sustainable and robust analytical system in place.

Reduction of Effects in Surrounding Environment and Preventive Measures against Earthquakes and Tsunamis

- Radioactivity concentrations (Cesium 137) in Seawater near the NPS (around the south outlet)



- Results of the measurement by the monitoring post at the boundary of the premises of the Fukushima Daiichi NPS (west gate)



* Changes in the monthly average of results of measurement by the monitoring post (MP.5) at the boundary of the premises of the NPS

Source: Prepared based on "Important Information on Decommissioning 2022" by the Agency for Natural Resources and Energy

- Measures against earthquakes and tsunamis

Securing of power sources in an emergency

In preparation for power loss, ordinary power sources have been made multifaceted and emergency power supply vehicles and gas turbine vehicles are put in place. These vehicles are to be used to supply power to water injection facilities in an emergency.



Water injection drill

Emergency power supply vehicle

Fire engines

Backup power sources such as emergency power supply vehicles and water injection means such as fire engines are placed at a higher area where tsunamis are unlikely to reach.

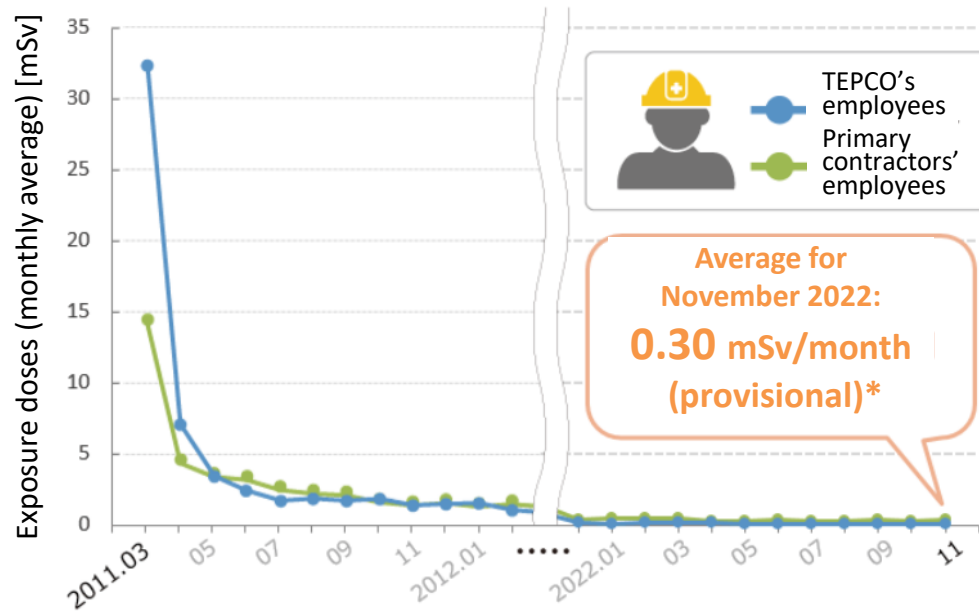


Sea wall

(Source: Website of Tokyo Electric Power Company)

Improvement of Working Environment at TEPCO's Fukushima Daiichi NPS

Changes in occupational workers' monthly personal exposure doses



Source (upper): Prepared based on the website of the Tokyo Electric Power Company (<https://www.tepco.co.jp/decommission/progress/environment/>)
 Source (lower): Prepared based on "Important Information on Decommissioning 2022" by the Agency for Natural Resources and Energy

Workers' working environment



The large rest house has a dining room and a convenience store.



Emergency physicians are stationed at all hours.

