# Current Situation of Decommissioning Policy and Nuclear Waste Management in Japan

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# Nuclear Energy Policy Direction in Japan

28th April, 2023

## 1. All-out Efforts for Restarting NPPs

- Voluntary Improvements on Safety, Coexistence with Local Communities

## 2. Maximum use of Existing Reactors

- Develop a Framework for NPP Operation Period, under the premise of safety

## 3. Develop/Construct of Next-gen Advanced NPPs

- Target on rebuilding the site which has been decided DCM (decommissioning),
- Improve in NPP Business Env and HRD, Promote Intl' R&D (incl. SMR)

## 4. Accelerate Back-end Process

- Promote Fuel Cycle, Steady & Efficient DCM, Efforts for Final Disposal

## 5. Maintain/Strengthen Supply-chain

- Reinforce JPN Supply-chain, by Support to Industry for join in Intl' Projects

## 6. Contribute to Solve Common Intl' Issues

- Cooperation among like-minded countries, Ensuring Nuclear Safety in Ukraine

# Nuclear Power Plants in Japan

(As of November 14, 2025)

**Restarted** 14 reactors (Date of Restart)

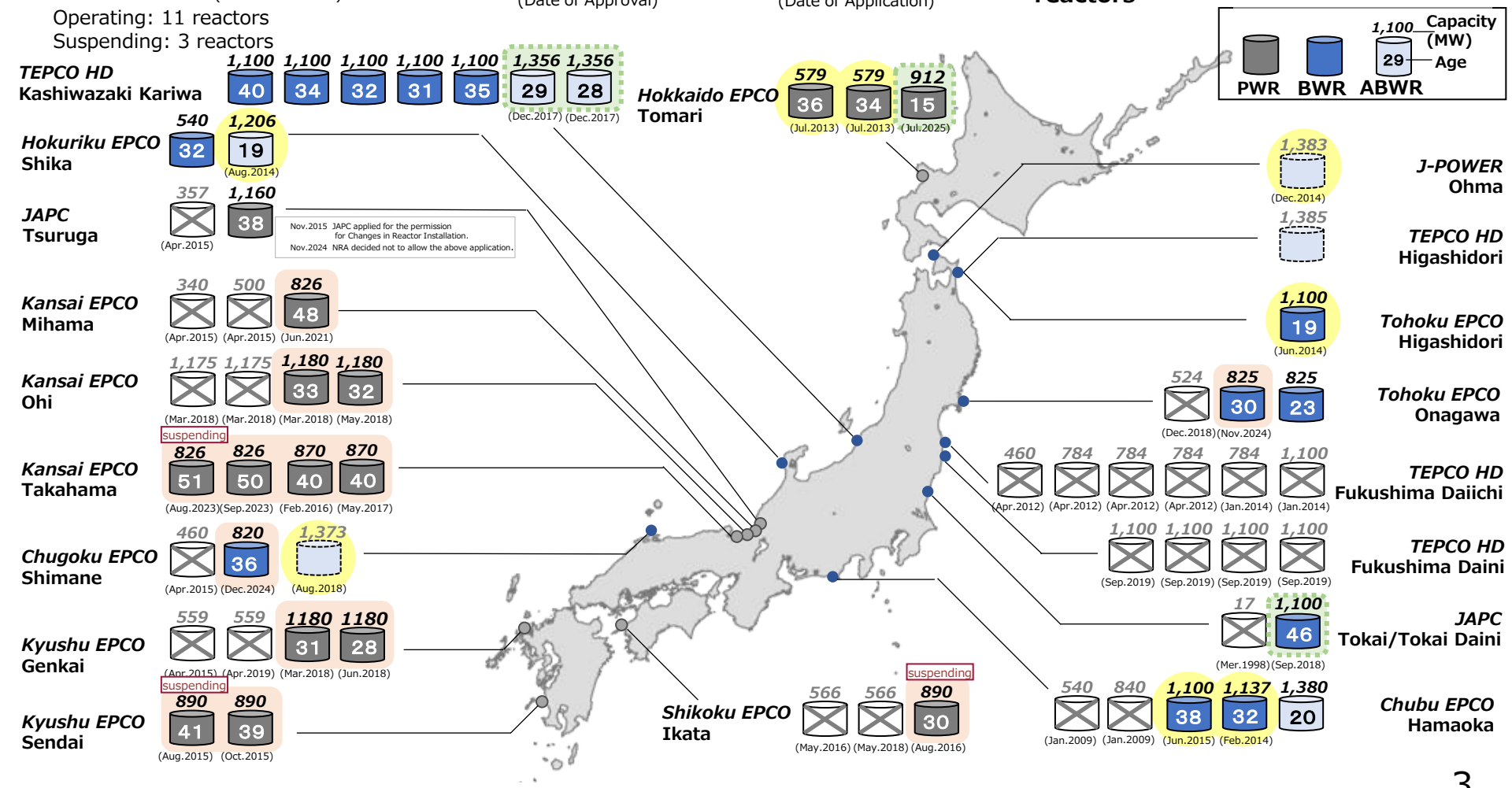
**Passed NRA Review** for the Permission for Changes in Reactor Installation 4 reactors (Date of Approval)

**Under NRA Review** 8 reactors (Date of Application)

**Not yet Applied** 10 reactors

**Decommission** 24 reactors

Operating: 11 reactors
Suspending: 3 reactors



18th February, 2025

# Response to Backend Issues (General Overview)

- There are concerns regarding the progress of backend issues, and these must be sincerely acknowledged.
- **Efforts related to the backend**—such as the nuclear fuel cycle including reprocessing of spent fuel, **smooth and steady decommissioning**, and final disposal of high-level radioactive waste—**are all critical issues for the long-term use of nuclear energy**.
- **The government will take responsibility and lead these efforts.**
  - The completion of the “Rokkasho Reprocessing Plant” and the “MOX Fuel Fabrication Plant”, which are central to the nuclear fuel cycle, is a crucial task that must be accomplished. To ensure their completion, the government and private sector will jointly take responsibility for managing progress in regulatory reviews and securing necessary human resources.
  - To encourage as many regions as possible across the country to take interest in geological disposal projects and accept literature surveys, proactive public engagement will be conducted. Specifically, this includes hosting interactive national briefing sessions and conducting nationwide visits to local governments to strengthen government-led outreach efforts.

18th February, 2025

# Promote smooth and steady decommissioning

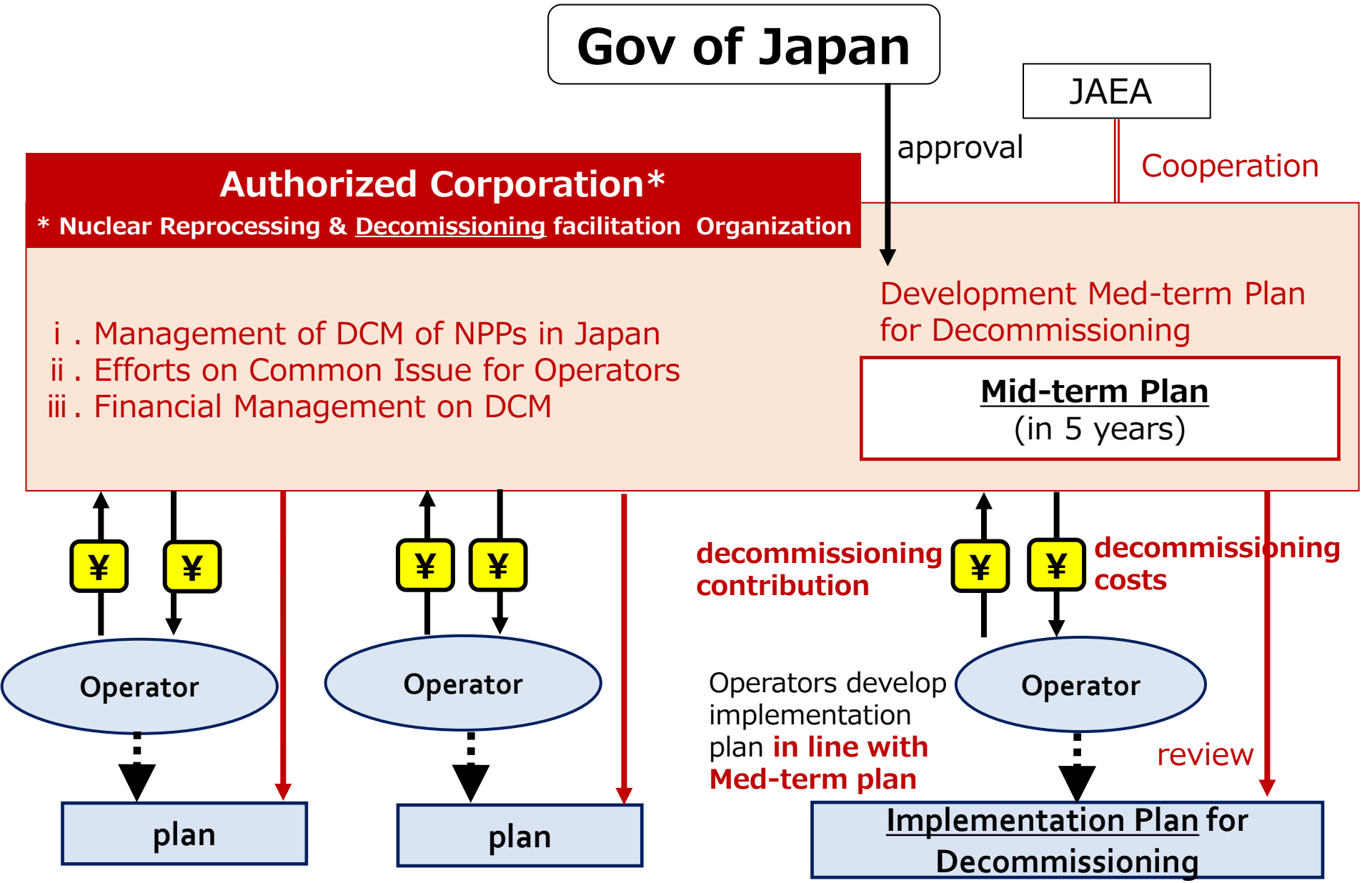
- ✓ As for waste generated from decommissioning, **the Government will consider business strategies for the smooth realization of treatment and disposal of low-level radioactive waste, including securing disposal sites**, on the basis that nuclear operators should steadily proceed with such treatment and disposal under the principle of responsibility of the waste generator, **and provide necessary support and guidance.**
- ✓ In particular, **with regard to clearance materials**, from the viewpoint of facilitating decommissioning and effective utilization of resources, **a roadmap for free release should be established**, and with the cooperation of electric furnace steelmakers and other businesses, efforts should be made to process construction materials with a larger demand scale and to further expand the number of reuse sites **to achieve early free release.**
- ✓ In addition, to improve the efficiency of verification of clearance materials, **the Government will provide support for centralized processing projects and other initiatives**, and will proceed in cooperation with related parties.

1. Decommissioning

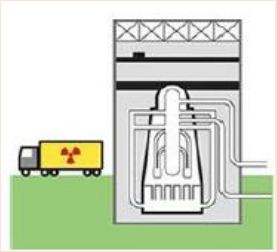
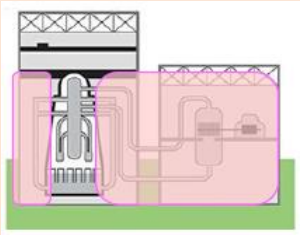
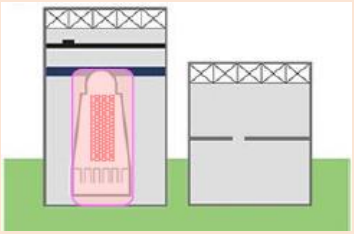
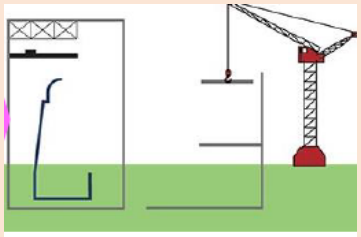
2. Clearance

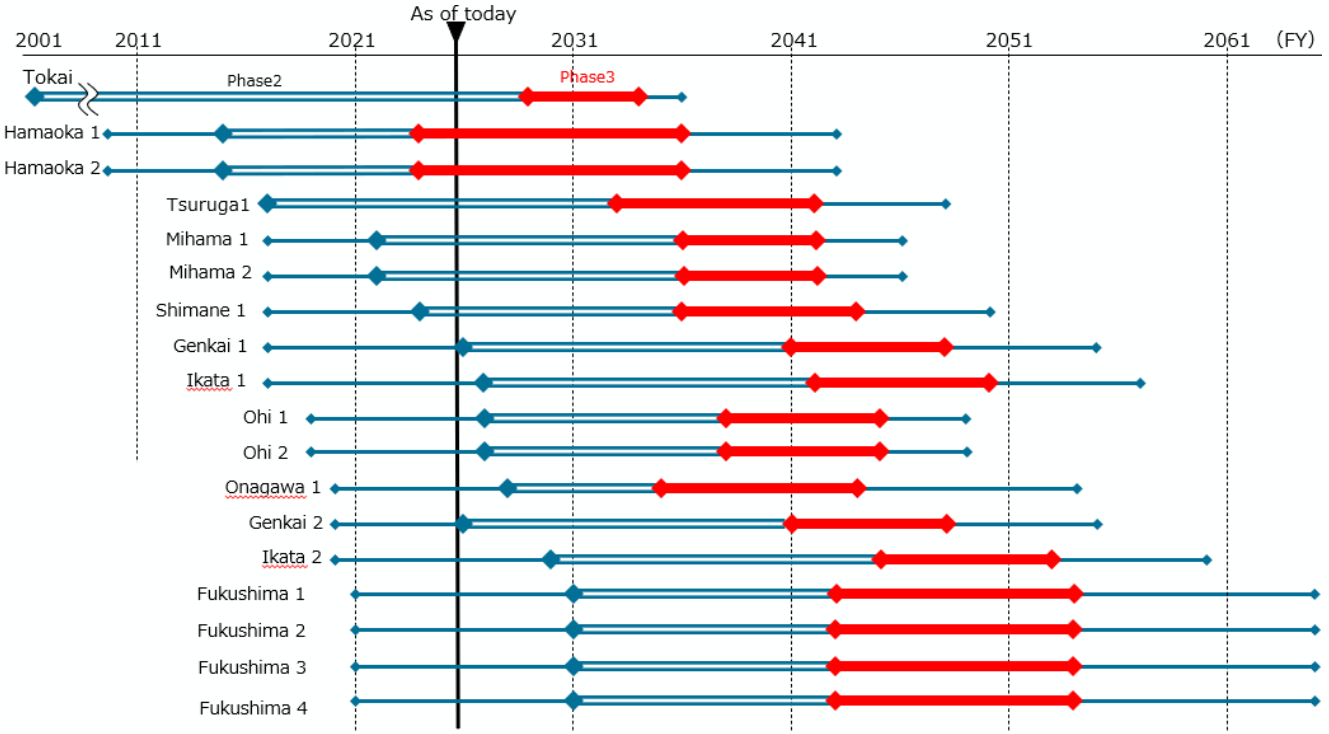
3. Final disposal

# Basic framework for promoting decommissioning in Japan and the role of NuRO



# Decommissioning Schedule in Japan

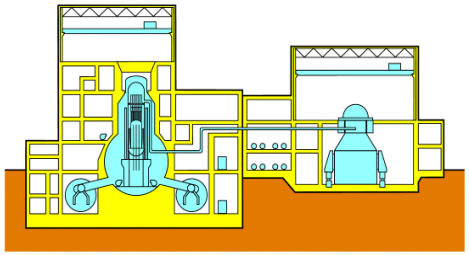
| Phase 1 (about 7 years) | Phase 2 (about 12 years) | Phase 3 (about 7 years) | Phase 4 (about 4 years) |
|---|---|---|---|
|  |  |  |  |
| Fuel removal, Radiological survey, Decontamination | Decommissioning peripheral equipment | Dismantling reactor's equipment | Decommissioning buildings |



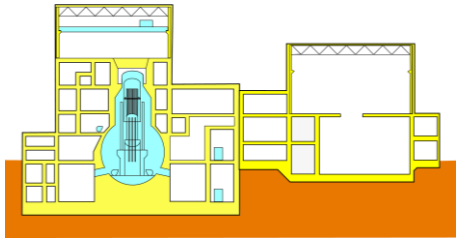

*not including Fukushima Daiichi

# Status of Decommissioning of the Hamaoka Units 1 and 2

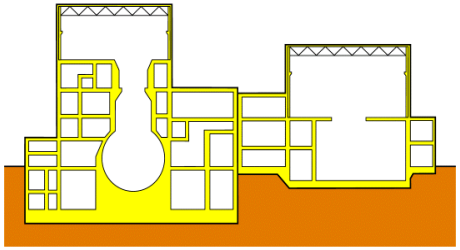
- The application for dismantling and removal of the reactor area of Units 1 and 2 of Hamaoka Nuclear Power Station was approved in December 2024, the first such application in Japan.



**Phase 1**
**FY2009~**

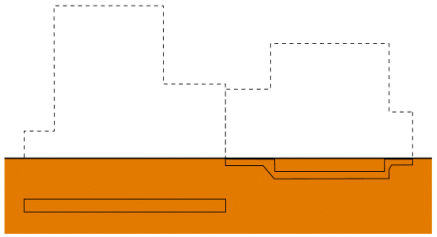


**Phase 2**
**FY2015~**

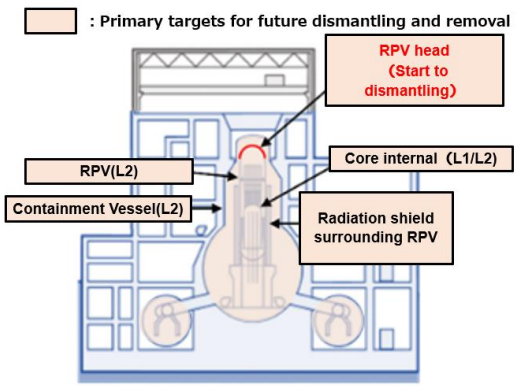


**Phase 3**
**FY2024~**

**On going**



**Phase 4**
**FY2036~**




Reactor building

Removing the pressure vessel top lid

Cutting work using a large band saw

[Photo credit ; Chubu Electric Power]

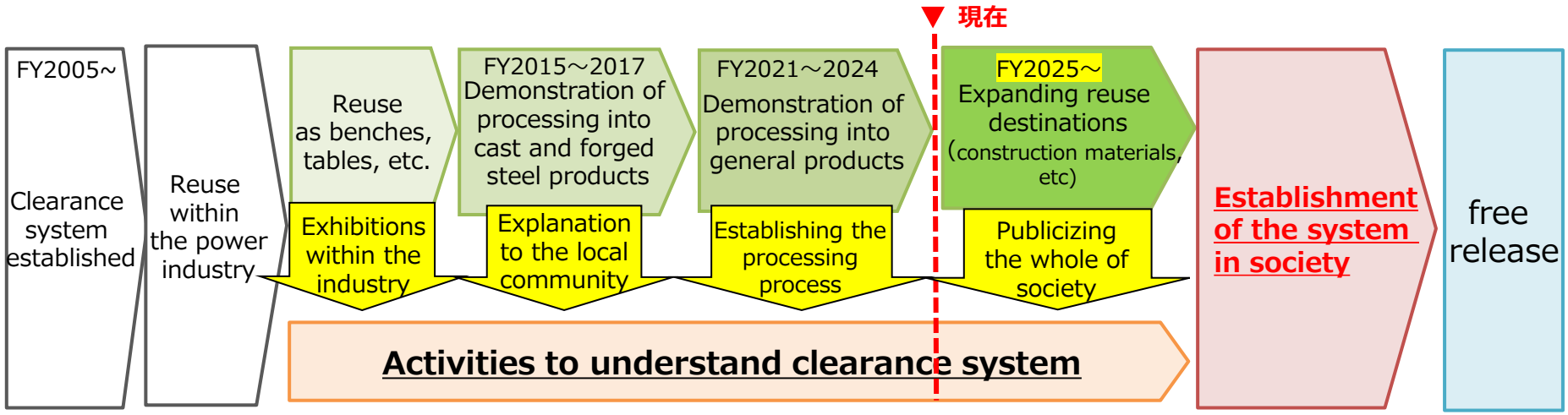
1. Decommissioning

**2. Clearance**

3. Final disposal

# Activities to understand clearance system

- Regarding clearance materials, it is important to promote recycling while gaining the understanding and cooperation of the general public and society at large. Therefore, until the clearance system is established in society, nuclear power operators are taking the lead in reusing clearance materials at electric utility facilities, power plant facilities, and nuclear power-related facilities, while taking measures to prevent clearance metals from circulating on the general market.
- METI has supported demonstration project of clearance materials, and produce bicycle rack and light, etc.From the viewpoint of facilitating decommissioning and effective utilization of resources, it is important to further expand reuse destinations and to allow for future free release.



# Reuse example


bicycle rack

bench


grating

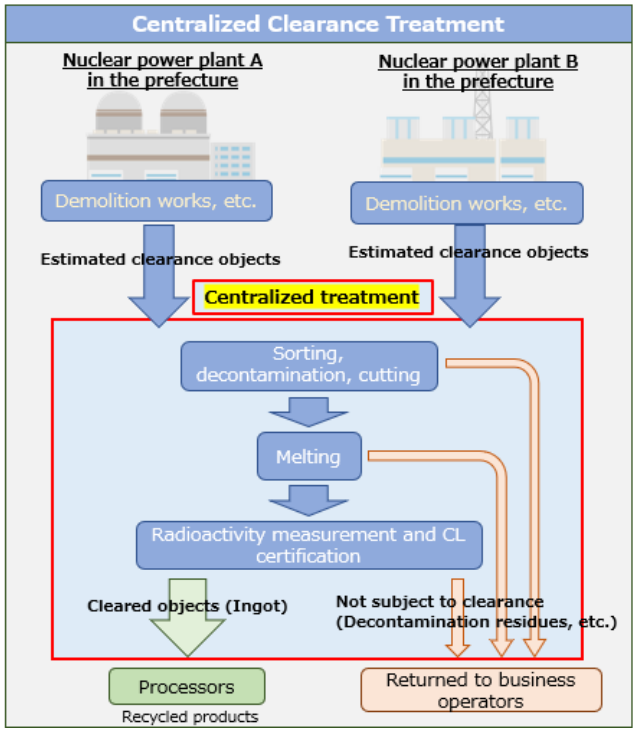
light

table

car stop

# The nuclear recycling business

- In Europe, there are companies that provide melting services for recycling metals from nuclear power plants.
- In Japan, Fukui Prefecture is taking the lead in developing a project to receive estimated clearance materials from multiple operators of nuclear power reactors, melt them in a centralized processing facility, and have them inspected by the Nuclear Regulation Authority.
- Improving the efficiency of the clearance process is an important issue, and it is important to proceed with the necessary considerations, including regulatory compliance, to achieve this.
- Agency for Natural Resources and Energy are currently providing subsidies to the preparation company for the detailed design of the centralized processing facility (subsidy decision made in October 2025).




(Source) Provided by the Energy Division, Energy and Environment Department, Fukui Prefecture

## Cyclife Sweden facility “SMA”

- The metal melting plant SMA is located in an industrial area called Stadsvik Technopark in the municipality of Nyköping on Sweden's southeastern coast and has been in operation since 1987.
- To ensure smooth melting, the facility is operated in conjunction with the MRF, a pre-processing facility for large metal equipment in Workington, western England.

melting furnace

## Japanese case

Fukui Prefecture Nuclear Recycling Business Preparation Co., Ltd. established (August 1, 2025)

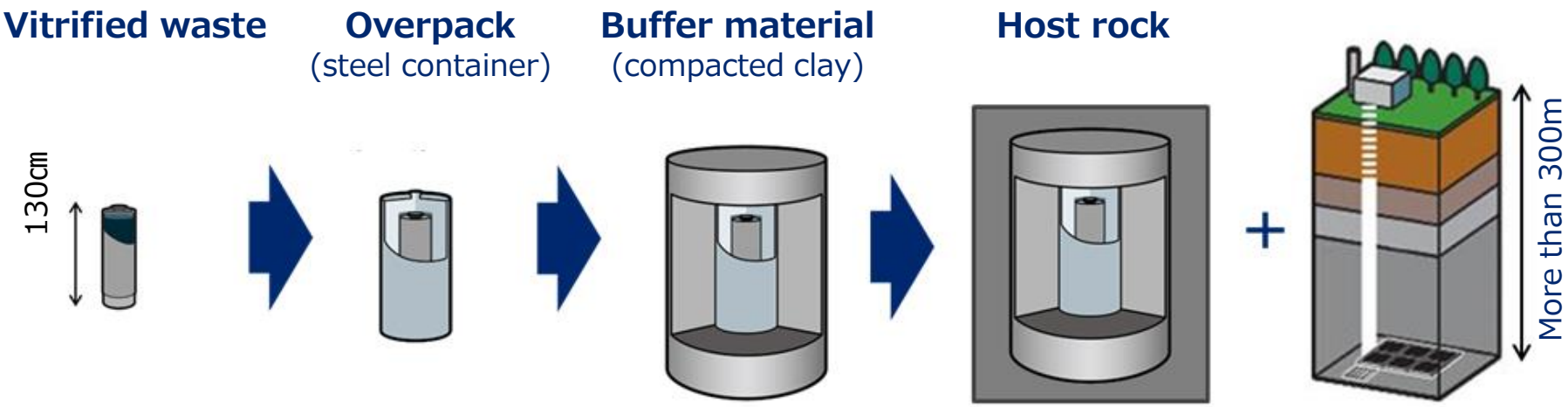
1. Decommissioning

2. Clearance

**3. Final disposal**

# Basic Concept of Geological Disposal in Japan

- Deep underground, there is little oxygen, which makes it difficult for materials to change and the flow of groundwater slows down, so fossils of living organisms can sometimes be found retaining their shape from tens of millions of years ago.
- In geological disposal, a natural barrier deep underground is combined with an engineered barrier to isolate and confine the vitrified waste so that it does not affect the human living environment.




| Vitrified waste | Overpack (steel container) | Buffer material (compacted clay) | Host rock | |
|---|---|---|---|---|
| • Solidify radioactive materials with glass<br>• Difficult to dissolve in water | • Prevent vitrified waste to contact with ground water | • Restrict groundwater flow in the buffer<br>• Retard nuclide migration by sorption | • Reducing condition to prevent alteration<br>• Low flowrate of groundwater | • Isolation from human environment |
| **Engineered barriers** | | | **+** | **Geological barrier** |

# Revision of basic policy based on Final Disposal Act

◆In 2000, **Final Disposal Act was enacted** and **NUMO was established** as an implementing agency.

**Volunteer approach, but no application for literature survey**

◆In 2015, Revision of the basic policy based on the Final Disposal Act

⇒ **Areas that are scientifically considered more suitable were presented.**It clearly states that reversibility and recoverability are guaranteed.A submission system was introduced.

◆In 2017, Government **published Nationwide Map of Scientific Features.**

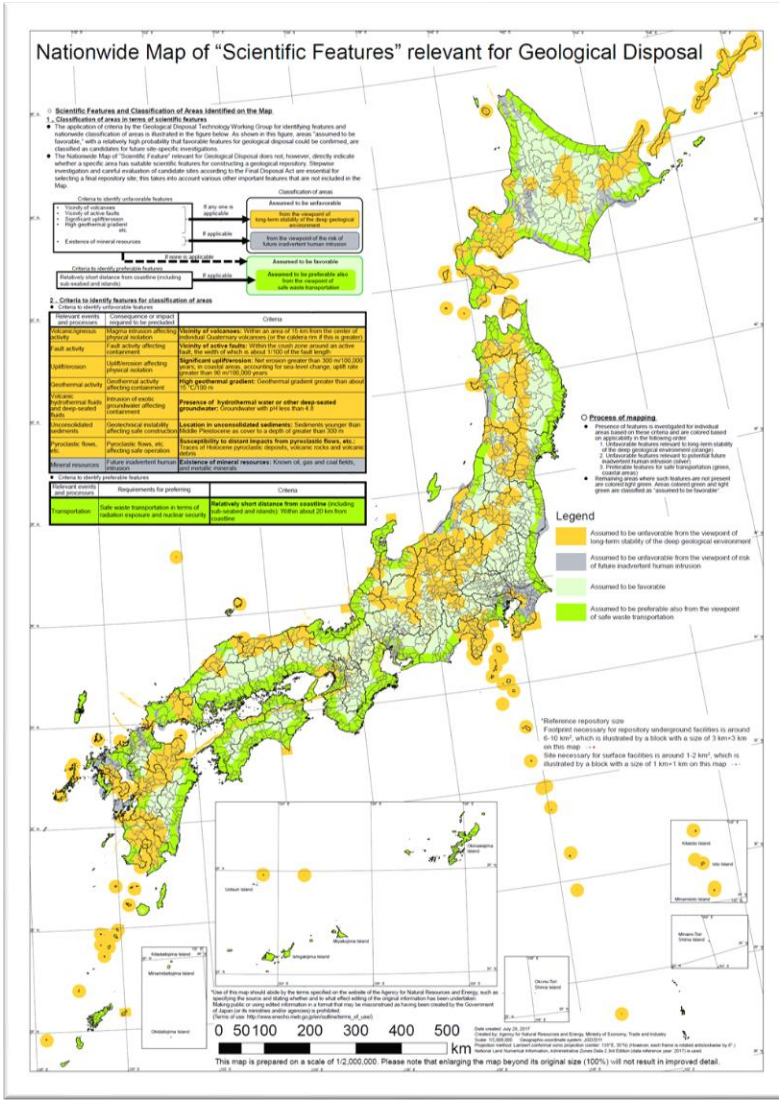
◆Since 2017, with expecting that multiple municipalities will undertake the site investigations, METI and NUMO have **promoted public dialogues** to ensure deeper public understanding of geological disposal.

**First literature surveys were launched** in Suttu Town and Kamoenai Villege.

◆In 2023, Government revised the basic policy based on the Final Disposal Act.

⇒ **To visit individual local government leaders across the country began. Strengthened cooperation with related ministries and agencies.**

**Literature surveys were launched** in Genkai Town.



# Site selection processes in Japan

- The disposal site selection process consists of three stages: literature survey, preliminary survey, and detailed survey.
- When moving forward, the opinions of the prefectural governors and mayors of cities, towns, and villages will be heard and fully respected, and no progress will be made against the opinions of the prefectural governors or mayors of cities, towns, and villages in question.

Apply from a municipality

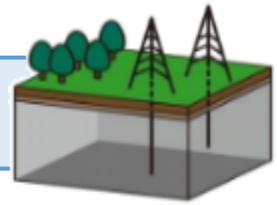
A municipality accept GOJ's offer

**Suttsu-town**
**Kamoenai-town**
**Genkai-town**

**Literature Survey**

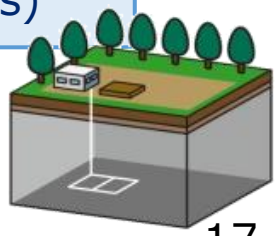
Listening to opinions from local government

Preliminary Investigation (borehole survey etc.)



Listening to opinions from local government

Detail investigation (construction & studies in underground facilities)



Listening to opinions from local government

Decision of final disposal site

# Community Dialogue Meeting in Literature Survey Areas

- In order to expand the area of the literature survey, to visit individual local government leaders across the country began in 2023. With the cooperation of local electric power companies, 250 local governments have been visited as of the end of September this year.
- Additionally, the Agency for Natural Resources and Energy and the Nuclear Waste Management Organization of Japan (NUMO) are jointly conducting nationwide dialogue activities. Interactive seminar were launched in 2017, and 214 seminars have been held as of the end of September this year.
- In addition, the government and NUMO held symposiums and conducted mass media public relations activities, including television commercials and newspaper advertisements.

**〈TV commercials〉**


**〈Symposium on Geological Disposal Technology in Sapporo〉**（September, 2025）

**〈Large-scale symposium in Tokyo〉**
（February, 2025）

**〈newspaper advertisements〉**

# Thanks for your attention !

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