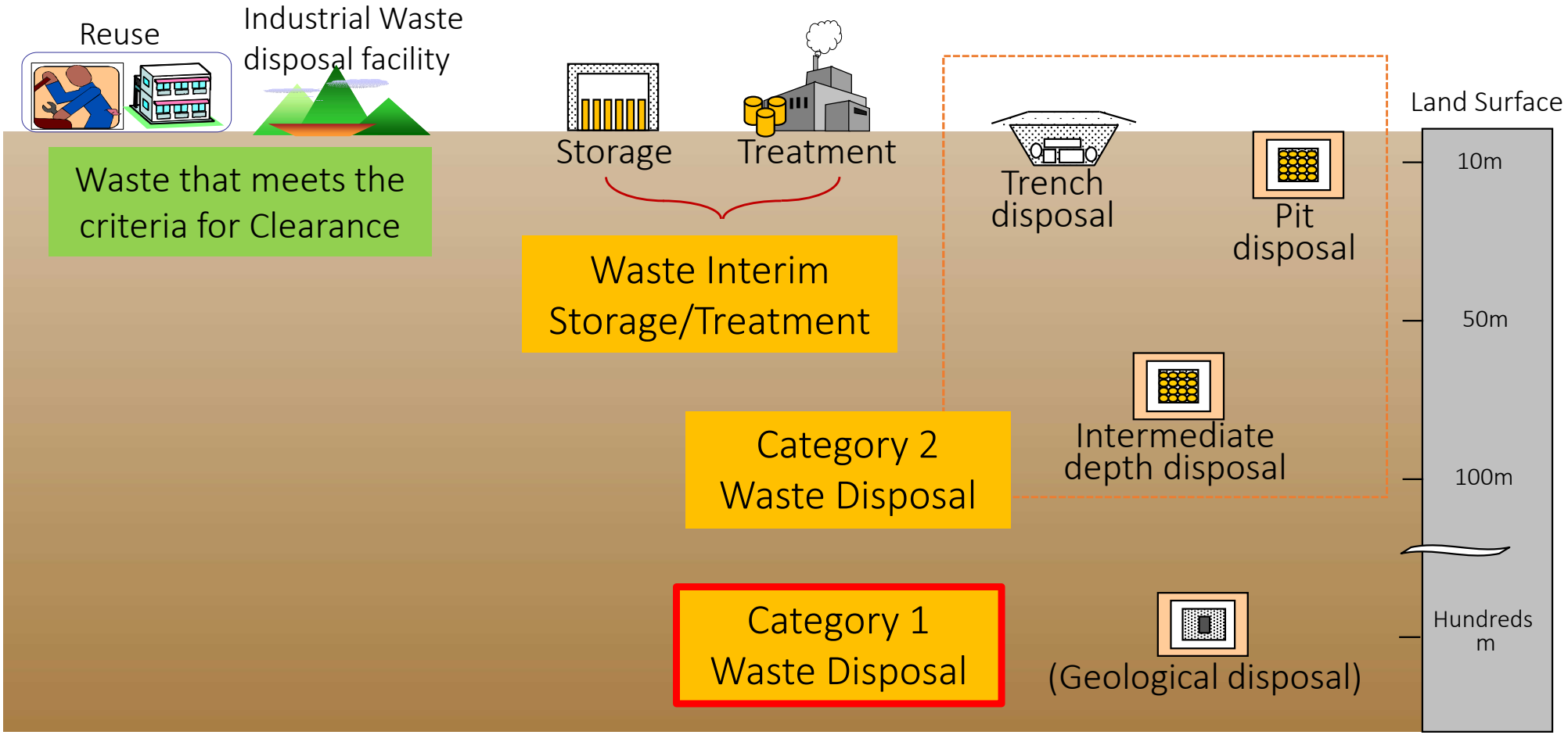
NRA JAPAN
Nuclear Regulation Authority

Status of the spent fuel management in JAPAN, NRA

Finland, June 14, 2024

1. Spent Fuel Interim Storage and Waste Disposal in Japan: "Waste Management" defined in the Reactor Regulation Act

Waste Disposal;
Disposal of radioactive waste through the burial method is classified into two categories: **"Category 1"** and **"Category 2",** depending on the radioactive concentration. The waste for the geological disposal will be produced at the reprocessing facilities.



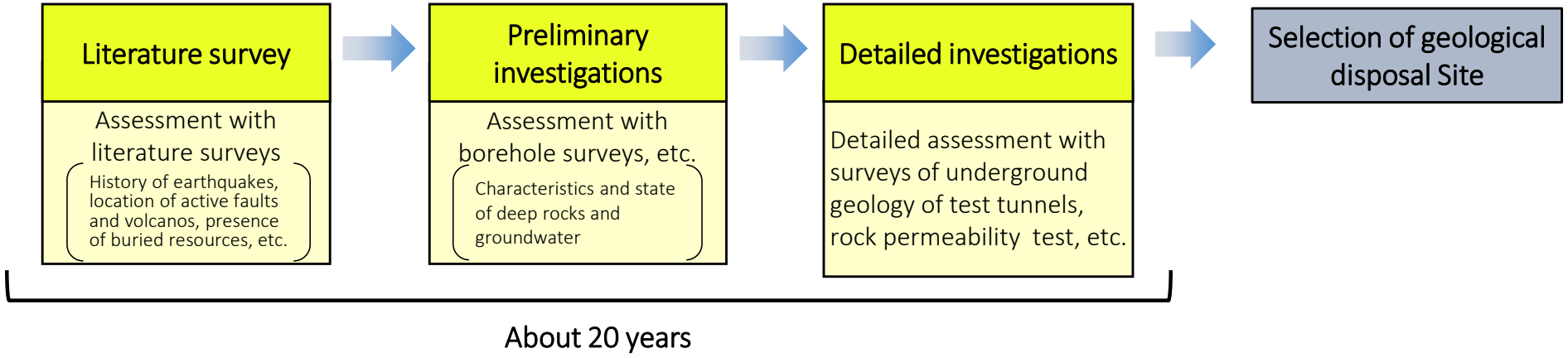
※Modified after NRA's presentation, 7th Review Meeting Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, Vienna, July 2022

-Overview of the "Final Disposal Act"-

◆ The followings are included in the "Final Disposal Act" (commenced in 2000) in order to conduct the final disposal of the high-level radioactive waste in a systematic and reliable way (disposal in a geological stratum at depths greater than 300m).

- Minister of Economy, Trade and Industry(METI) states a basic policy (the cabinet decision made on 14 March, 2008, followed up by the updates on 22 May, 2015 and 28 April, 2023) for final disposal of specified radioactive waste (Cabinet decision).
- Nuclear Waste Management Organization (NUMO) is established as an implementer for geological disposal.
- Three-stage selection investigation process is set for selection of disposal sites, etc.

◆Selection process outlined in the "Final Disposal Act"



※The government will hear the opinions of local municipalities in each stage of the investigation process (not proceed to the next stage if local municipalities oppose).

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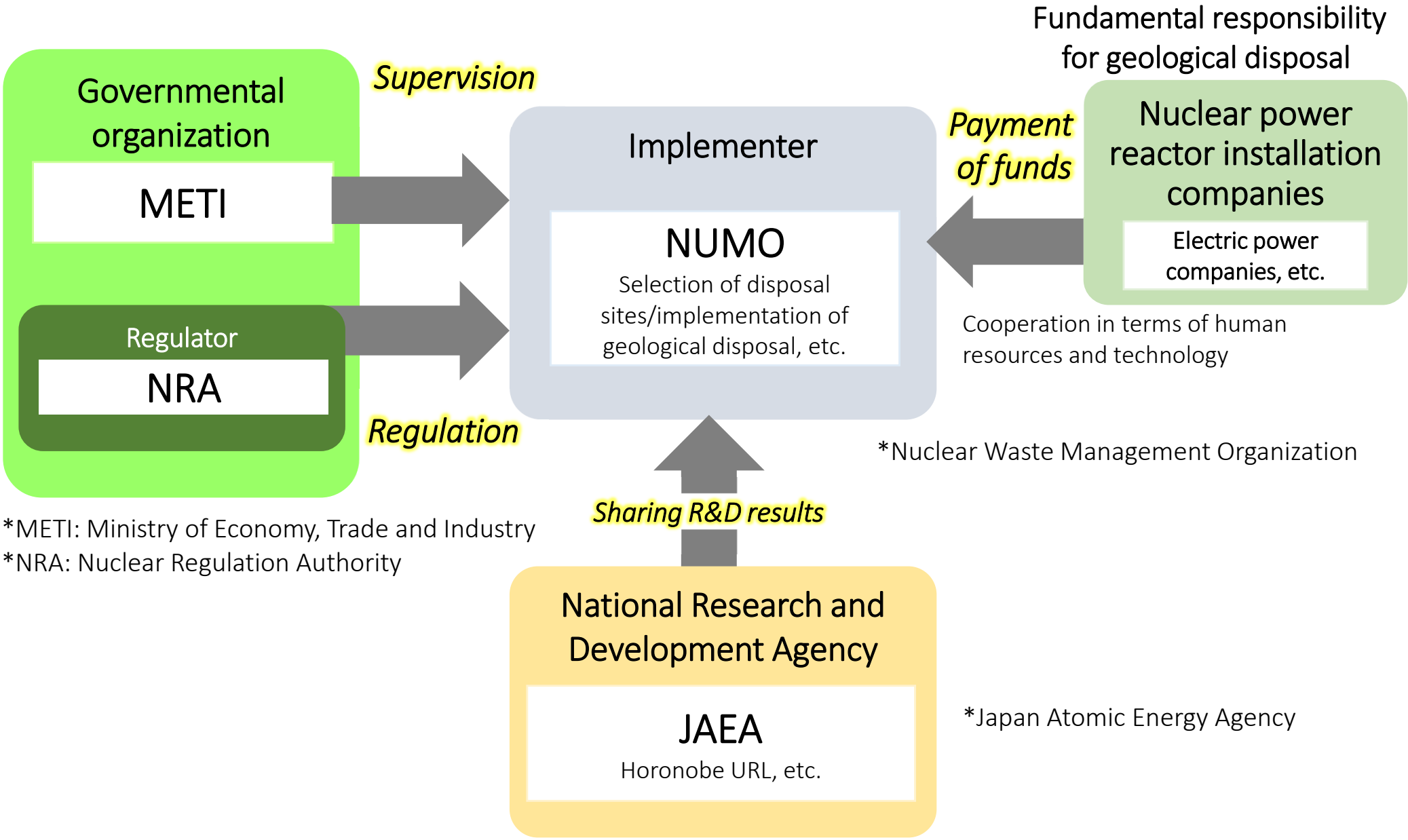
Governmental Policy (2)

-Implementation System for Geological Disposal-



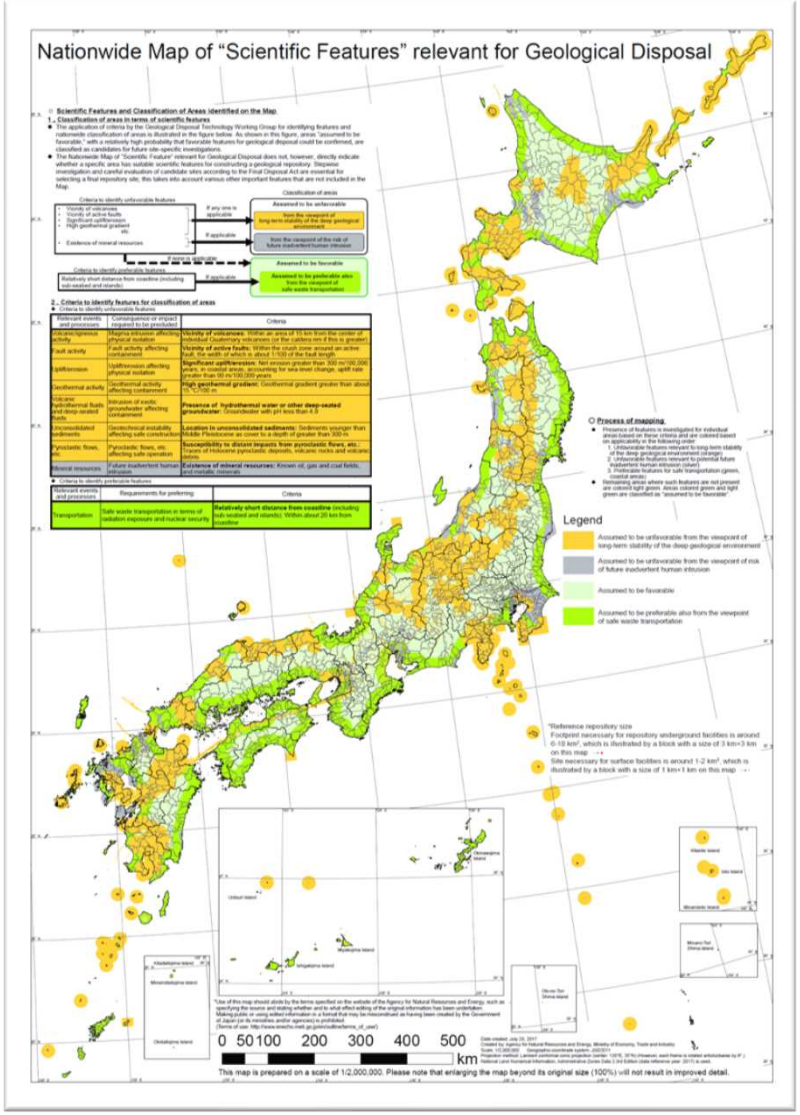
Governmental Policy (3)

◆ In 2013, Government established Ministerial Meeting on Final Disposal and started discussion on change of policy direction.

◆ In 2015, Revision of the basic policy based on the Final Disposal Act
⇒ **Government should take leadership for public understanding**, by publicizing scientifically favorable areas for geological disposal

◆ In 2017, government **published Nationwide Map of Scientific Features Relevant for Geological Disposal**

◆ 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**.



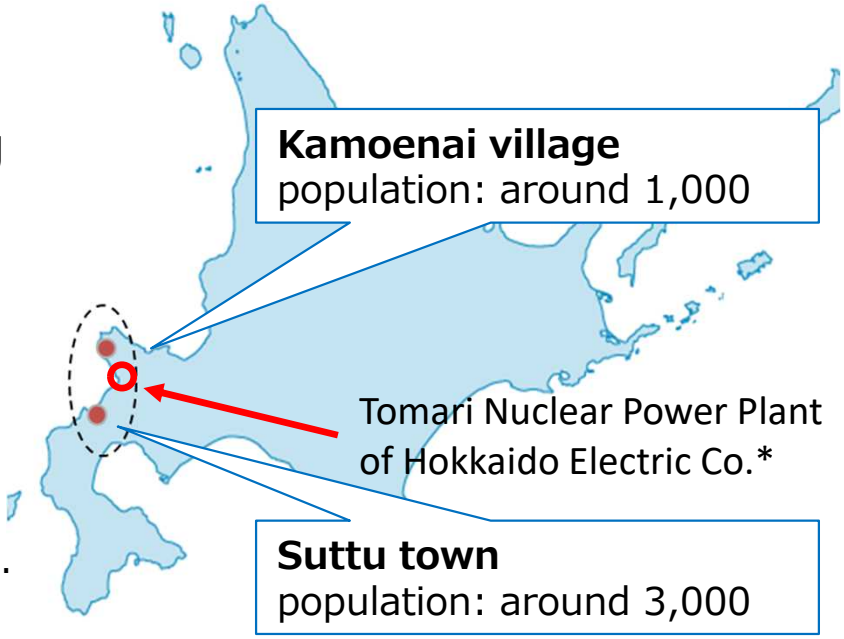
※METI's presentation, 7th Review Meeting Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, Vienna, July 2022

Recent Progress in site investigation processes(1)

In November 2020, NUMO started **Literature Survey**, the first stage of site investigation processes, in two municipalities in Hokkaido.

- ✓ **Kamoenai village** made the decision to accept the offer of government for literature survey, after discussions among the village council and the residents.※
- ✓ **Suttu town** made the decision for the application of literature survey after discussion among the town council and the residents.※

*Tomari NPP is under NRA evaluation.



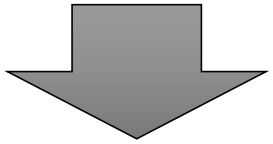
METI and NUMO will continue the public dialogues throughout the nation as well as in the two municipalities, to make more municipalities to have interests in the Deep Geological Repository project (DGR project) and to accept literature survey.

※In May 2024, the Council and the Mayor of Genkai town in Kyushu Island expressed the decision to accept the offer of government for literature survey.

※METI's presentation, 7th Review Meeting Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, Vienna, July 2022

Engagement of NRA to site selection process on geological disposal

- The “Basic policy on the final disposal of designated radioactive wastes” mentions that the Nuclear Regulation Authority of Japan shall put in place “the Considerations to ensure nuclear safety in the site selection phases for geological disposal” (herein after referred to as “the Considerations”) . Based on this policy, the NRA discussed and issued the Considerations in August 2022 which includes;

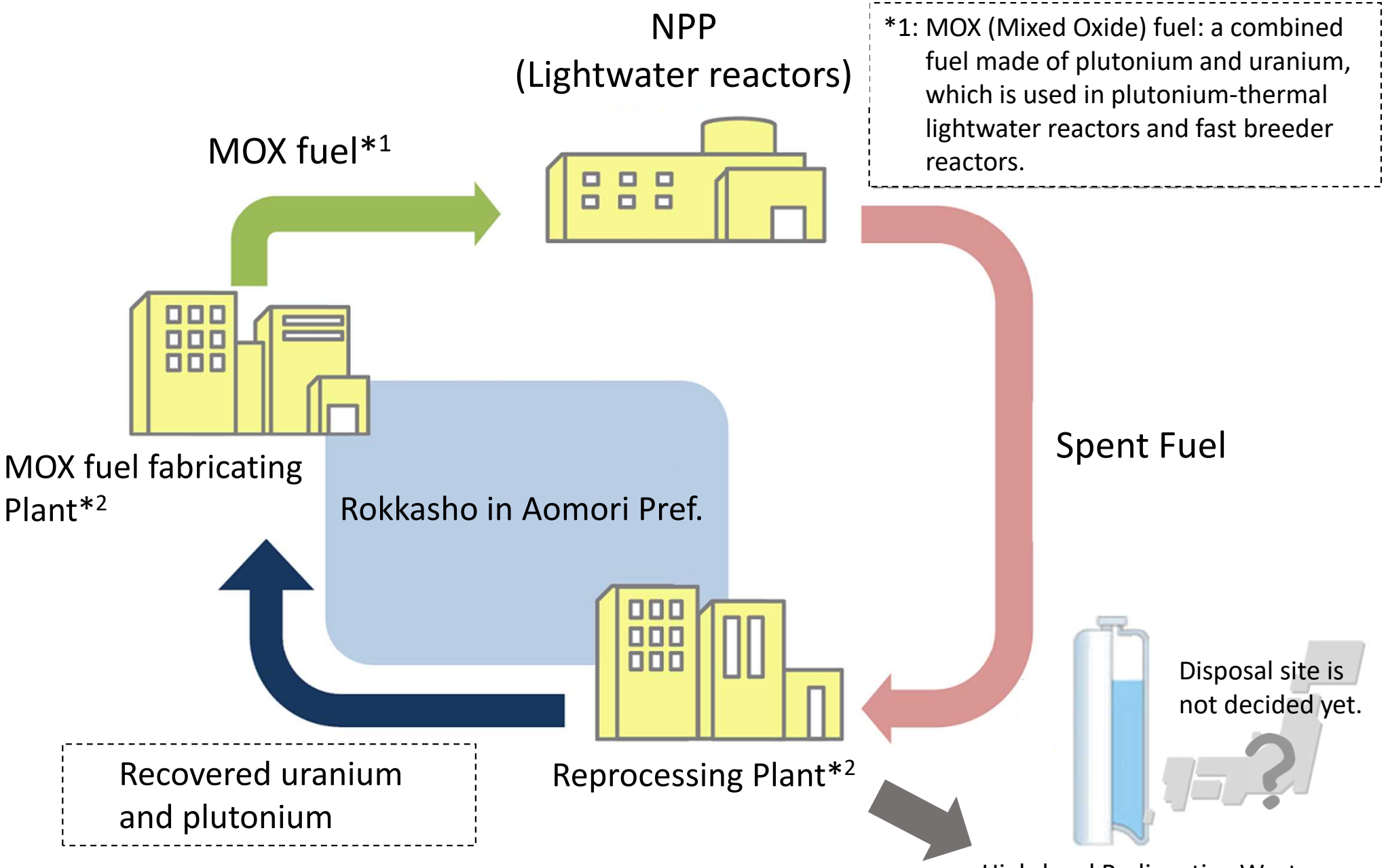


- *For site selection of geological disposal facility, some events (natural events and human events) should be considered to avoid the significant damage to the underground facility. These events will not be avoided by the design of facility but will be avoided by selecting an appropriate site location.*

Natural events	• fault activities and landslides • volcanic activities • erosion
Human event	• human intrusion (mining of mineral resources)

※NRA’s presentation, 7th Review Meeting Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, Vienna, July 2022

2. Spent fuel reprocessing Cycle in Japan



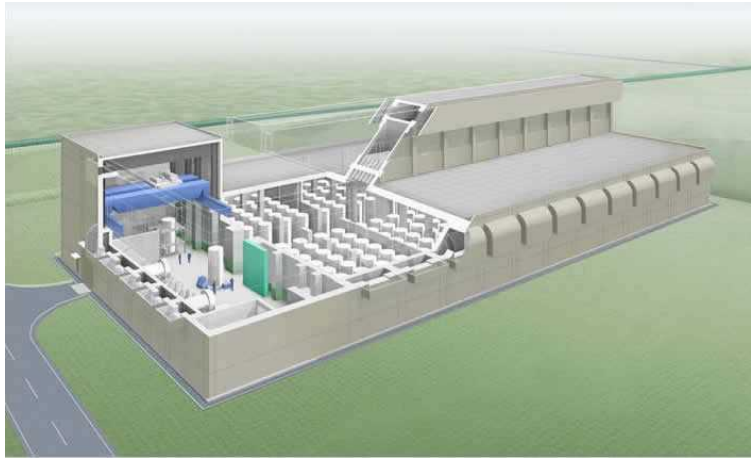
*2:The review by the NRA is in progress.

3-1. Example of spent fuel storage method in Japan

Storage at the nuclear power plant

In order to use the spent fuel at the nuclear power plant again as fuel, it is necessary to carry it out to the reprocessing plant.
But it is stored safely in Spent Fuel Pool (SFP) at the site of the nuclear power plant until it is taken out.

Spent Fuel Interim Storage Facility



approx.131m X approx.62m, (Height) approx.28m

- This facility safely stores and manages spent fuel from Tokyo Electric Power Company Holdings, Inc. and The Japan Atomic Power Co., Ltd. until reprocessing.
- Storage for up to 50 years
- After storage, export to reprocessing plant

Image for the Recyclable Fuel Storage Center which is under construction in Mutsu City, Aomori Prefecture
(storage capacity: 3,000tU)

（Based on the data from Recyclable-Fuel Storage Company）

3-2. Amount of Spent Fuel Stored at Nuclear Power Plants

NPPs: Under NRA Evaluation/Passed Evaluation/On Operation　As of the end of March 2021

Power Company	Power Plant	Spent Fuel in Storage (tU)	Facility Capacity (tU)
Hokkaido Electric Power	Tomari	400	1,020
Tohoku Electric Power	Onagawa	480	860
	Higashidōri	100	440
Tokyo Electric Power (TEPCO)	Fukushima Daiichi	2,130(Decom.)	2,260
	Fukushima Daini	1,650(Decom.)	1,880
	Kashiwazaki-Kariwa	2,370 (84%)	2,920
Chubu Electric Power	Hamaoka	1,130	1,700
Hokuriku Electric Power	Shika	150	690
Kansai Electric Power	Mihama	470 (76%)	620
	Takahama	1,340 (77%)	1,730
	Ohi	1,740 (83%)	2,100
Chugoku Electric Power	Shimane	460	680
Shikoku Electric Power	Ikata	720	1,430
Kyushu Electric Power	Genkai	1,080	1,920
	Sendai	1,030 (80%)	1,290
The Japan Atomic Power Company	Tsuruga	630	910
	Tokai Daini	370	510
Total		16,240	22,960

(Note) The first promotion council (as of the end of September 2015) is referred for Fukushima Daiichi, where the amount at the interim storage for the dry cask is also excluded as the plant having now been decommissioned.

（Based on the data from The White Paper on Nuclear Energy 2022 of JAEC）