

# Geological Disposal of Nuclear Waste that We Have Researched

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## Purpose

Geological disposal is one of the way of disposal of high-level radioactive waste.  
Now we haven't decided where to dispose of it yet. We must have to find the place.  
So we will have to decide when we teenagers become adults.  
We think we have to take responsibility for the disposal of waste after generating electricity.  
So we should know about geological disposal.

## What is geological disposal of nuclear waste?

This is one of the way to dispose of high-level radioactive waste, which is substance including high-level radioactivity.  
High-level radioactive waste has to be buried 300m below the ground.  
It is too dangerous to be buried as it is. So it has to be sealed.

**Multi-barrier Systems**

高レベル放射性廃棄物処分施設

地上施設

地下施設

人工バリア + 天然バリア

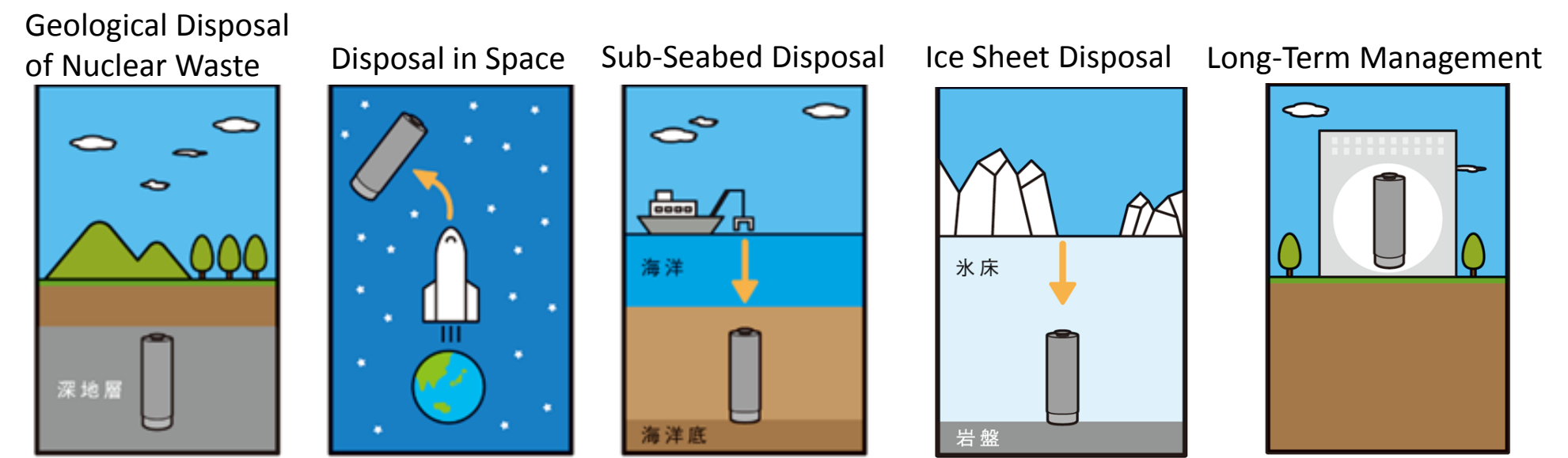
バリア1 ガラス固化体  
バリア2 オーバーパック (金属製の筒状)  
バリア3 緩衝材 (粘土)  
バリア4 岩盤

2000E

300E

Tokyo Disney Resort × 3

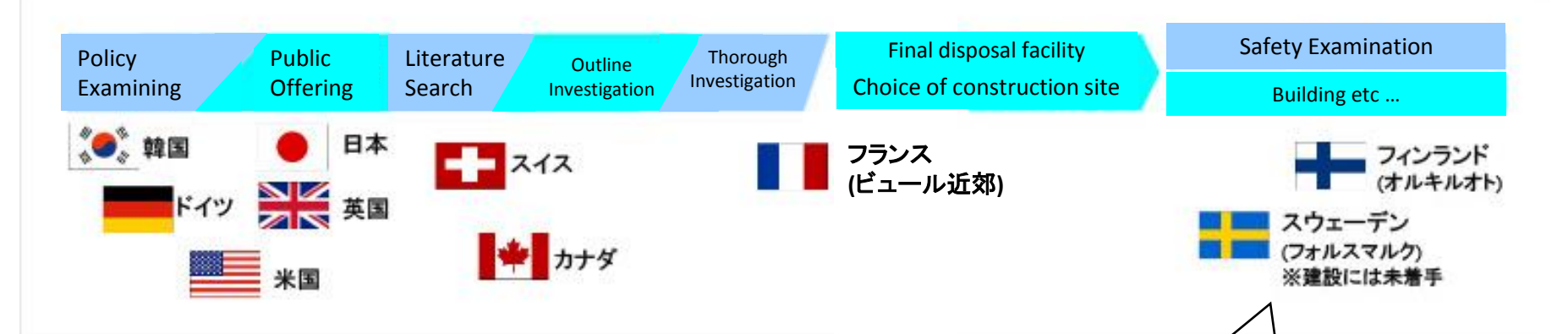
## Why geological disposal of nuclear waste?



Geological Disposal: Stratum itself has force to confine the matter.  
Disposal in Space: It has the trouble that launching may fail.  
Sub-Seabed Disposal: London Convention prohibits ocean dumping.  
Disposal in glaciated area: Antarctic Treaty prohibits it.  
The characteristic of ice sheet isn't known very much  
Long-Term Waste Management: We will put a heavy burden on the people in the future

The fuel used in nuclear power plant

- The countries that reprocess the fuel into vitrified waste and dispose of it.
- The countries that directly dispose of it.
- The countries that dispose of both vitrified waste and spent fuel without reprocessing.



They get local people to understand. Because they have communicated with local people.

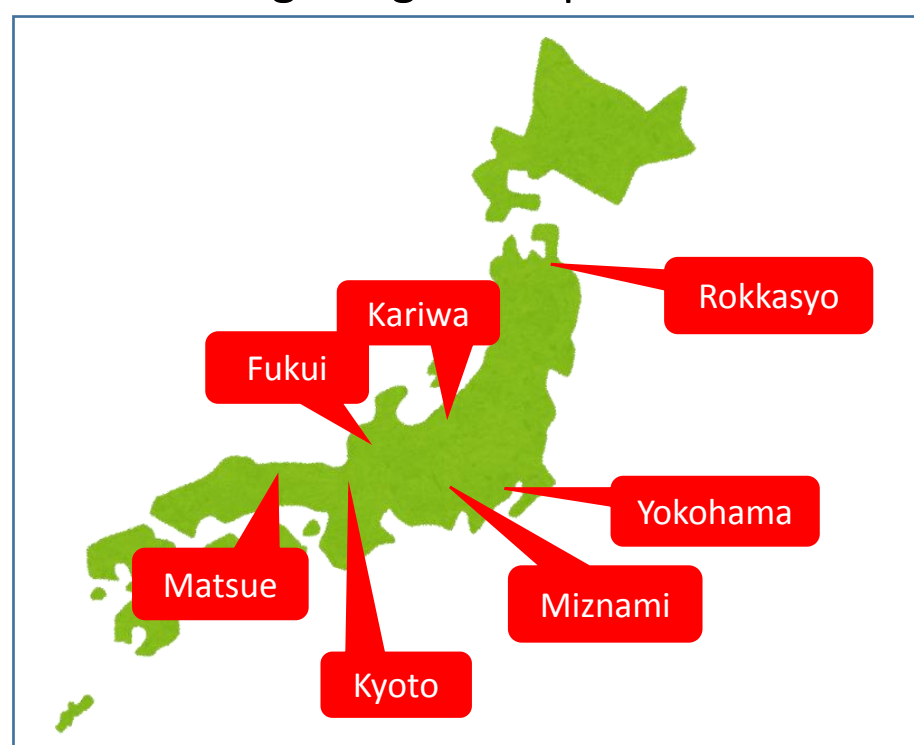
Finland and Sweden go ahead of other country in geological disposal project for a long time.

## Mizunami Underground Research Laboratory

This is laboratory of geological disposal.  
We got down to 300m and 500m below the ground by elevator.  
Junior high school students in various parts of Japan discussed geological disposal.

Horonobe Underground Research Center in Hokkaido studies geological disposal, too.

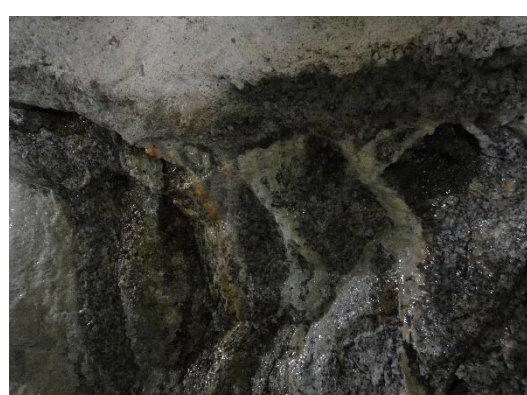
There are a lot of supporters of geological disposal in Rokkasyomura. Because there is a disposal site plant of low-level radioactive waste there.



There is less ground water at the point of 500m than 300m below the ground. And it is also hotter.



The state of ground water.



Q:How about low public awareness?

A:People who know geological disposal make a presentation and let everyone know it.

Q:Does an earthquake damage geological disposal?

A:It is conceivable that vitrified waste can't be broken easily because the underground shakes from 1/3 to 1/5 times as hard as ground.

Q:Do we make people in the future dispose of the waste left by us?

A:We should leave records not to trouble people in the future.

Q:Can we have foreign countries dispose of radioactive waste by paying money?

A:The developed countries in atomic power are responsible for the disposal of native wastes in their own countries. And the international convention says that the countries producing radioactive waste should dispose of them at home.

Q:Is there a possibility that radiation is emitted into groundwater and it appears on the ground?

A:Bedrock itself performs a waterproof function.

Q:Is it necessary for local people to understand?

A:We should tell a lot of people the truth.

## Reference

NUMO <https://www.numo.or.jp/> 経済産業省 <http://www.enecho.meti.go.jp/> 地層処分ポータル <http://chisoushobun.jp/qa/>