

Tsuruga International Symposium 2025



Efforts toward Starting a Centralized Clearance Materials processing business

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Fukui Clearance Materials Processing Co., Ltd.

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Contents



1. What Is Clearance?
2. Outline of the Fukui Clearance Materials Processing Co., Ltd.
3. Outline of the Centralized Clearance Materials processing business
4. Issues to Be Addressed by the Nuclear Recycling Business
5. Future Schedule

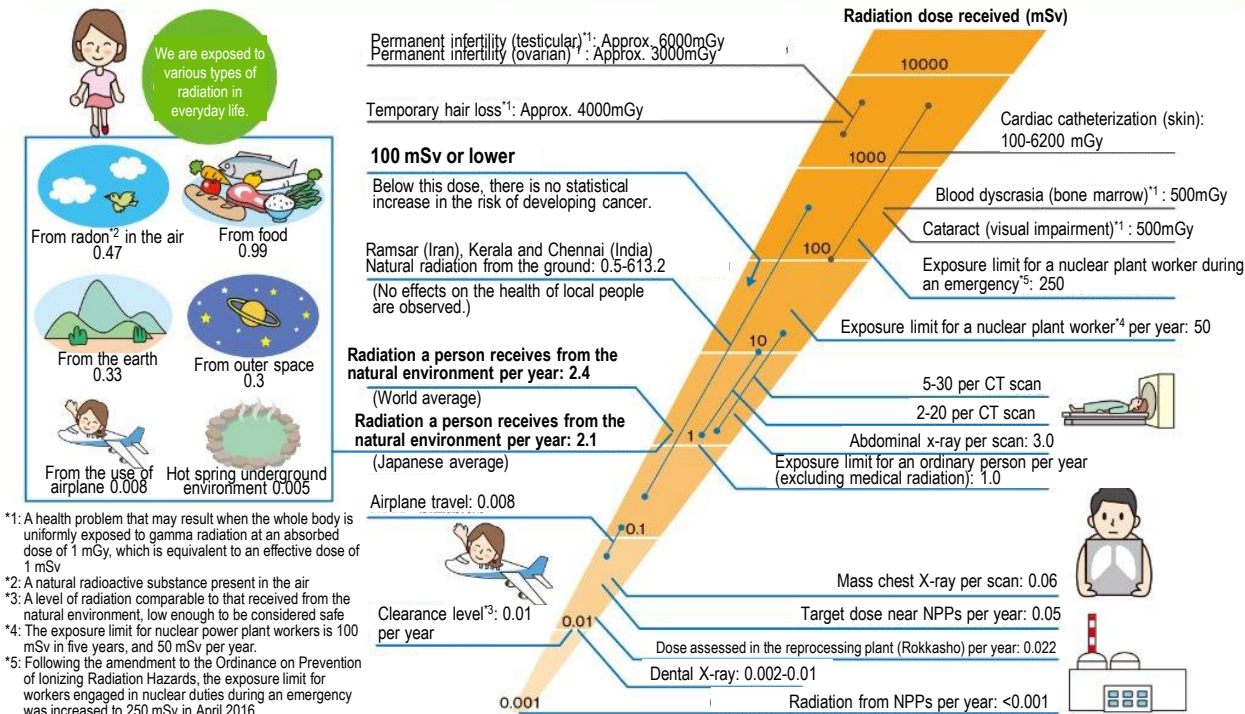
1. What Is Clearance?

1) Clearance System

● Clearance System

- ✓ The clearance system allows radioactive waste generated from nuclear power plants, which has extremely low radioactive concentrations and poses negligible impact on human health, to be recycled or disposed of in the same manner as ordinary waste, subject to government approval and verification.

Daily Life and Radiation



*1: A health problem that may result when the whole body is uniformly exposed to gamma radiation at an absorbed dose of 1 mGy, which is equivalent to an effective dose of 1 mSv

*2: A natural radioactive substance present in the air

*3: A level of radiation comparable to that received from the natural environment, low enough to be considered safe

*4: The exposure limit for nuclear power plant workers is 100 mSv in five years, and 50 mSv per year.

*5: Following the amendment to the Ordinance on Prevention of Ionizing Radiation Hazards, the exposure limit for workers engaged in nuclear duties during an emergency was increased to 250 mSv in April 2016.

Safety of clearance objects

- Even in our daily lives, we are exposed to radiation from the earth, food, medical care, etc.
- The clearance level is about 1/200 of the natural radiation dose.
- Only materials approved and verified by the government can be recycled as clearance objects.
- Similar clearance and recycling systems have been implemented in various countries around the world.

What Is Clearance?

Reuse of clearance objects in Fukui Prefecture

1st Meeting for Opinion Exchange on Centralized Clearance processing business in Fukui Prefecture, partly modified from Document 2

- To promote the reuse of clearance objects, it is important to establish a well-developed market distribution system and to gain public understanding. Therefore, the national government (Agency for national Resource and Energy), local governments, and business operators are working closely together to achieve this goal in various regions of Japan.
- Since 2020, Fukui Prefecture has incorporated the reuse of demolished waste into its "Reinan E Coast Plan." By utilizing projects commissioned by the Ministry of Economy, Trade and Industry and other organizations, the prefecture is promoting the reuse of clearance objects outside nuclear power plants to foster public awareness.
- Further plans are being considered to expand the range of clearance objects and increase public understanding, thereby promoting the social implementation of reuse activities within the prefecture.



2. Outline of the Fukui Clearance Materials Processing Co., Ltd.

Company name: Fukui Clearance Materials Processing Co., Ltd.

*Considering changing the official company name based on future developments

Establishment: August 1, 2025

Address: 3F Chuo Building, 1-13-40 Chuo-cho, Tsuruga City

Investors: 2 billion yen from 12 parties, including Fukui Prefecture, six cities and towns in the Reinan region, Kansai Electric Power Company, Japan Atomic Power Company, Fukui Bank, Tsuruga Shinkin Bank, and Obama Shinkin Bank

Number of employees: 6

President: Katsumi Kuruba

3. Outline of the Centralized Clearance Processing Business

1) Social significance of the centralized Clearance Processing Business

A) Regional development and human resource development

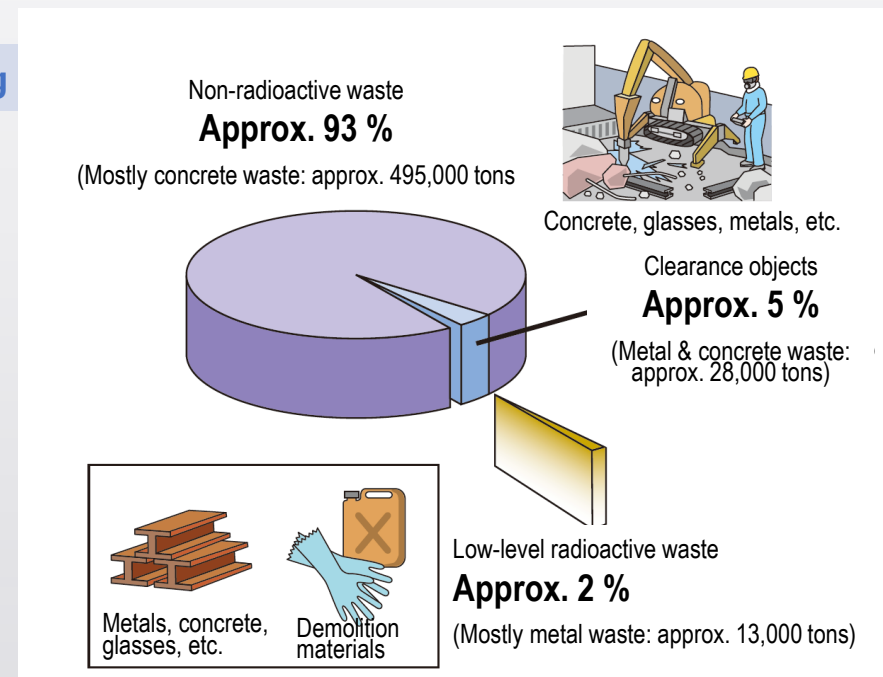
- Local companies are expected to play a central role in promoting the emerging "decommissioning" business, thereby **revitalizing local industries and creating a new framework for collaboration**.
- The business is also expected to serve as **a foundation for human resource development** through the accumulation of decommissioning technologies and know-how by business operators and local companies.

B) Steady implementation of decommissioning

- 5% of** the waste generated from nuclear power plants* (**approx. 28,000 tons**) consists of **clearance objects**.
- Safe and efficient waste treatment** will contribute to the **advancement of decommissioning activities**.

C) Effective use of resources and contribution to SDGs

- Resources can be effectively used** by recycling clearance objects.
- CO2 emissions can be reduced to 1/5** of those produced in steelmaking from iron ore.

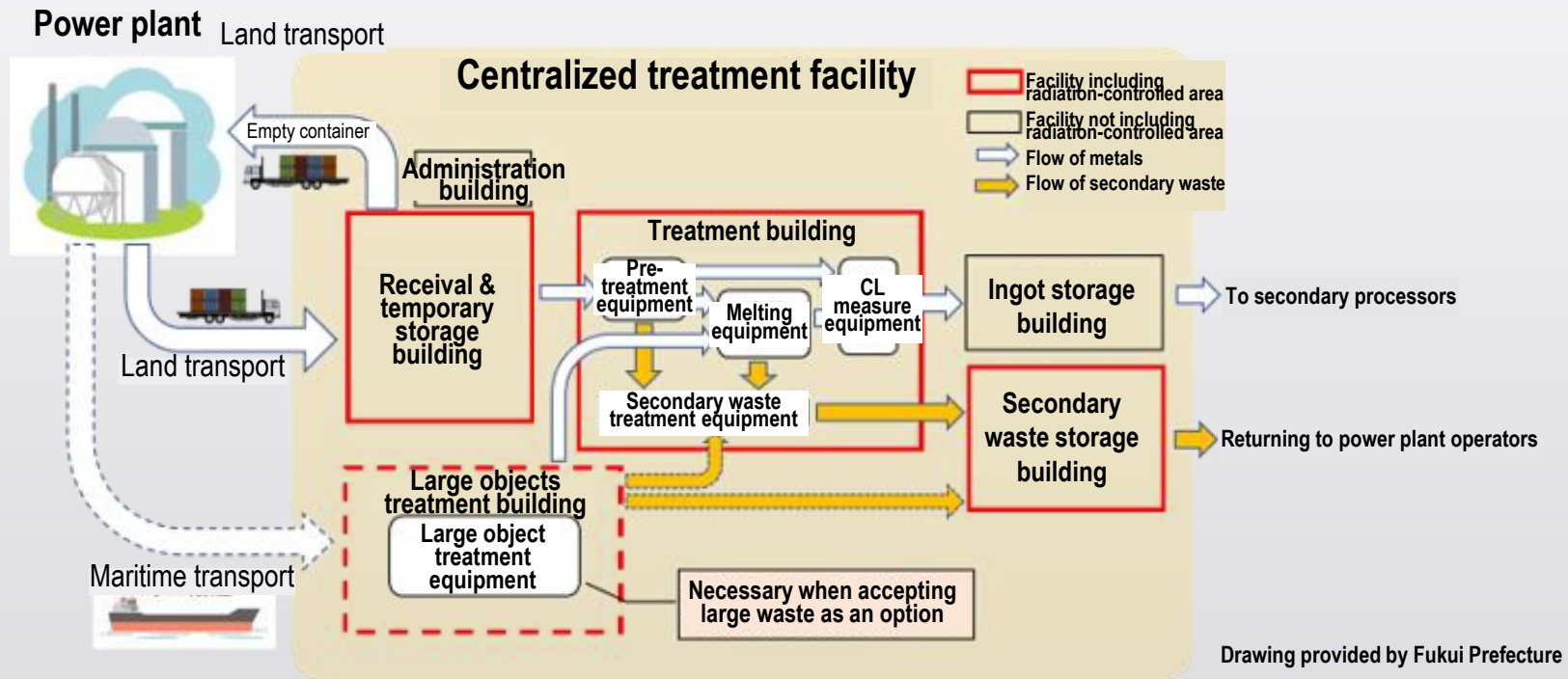


*In the case of dismantling one 1.1-megawatt-class BWR plant (Source: Japan Atomic Energy Relations Foundation, "Graphical Flip-chart of Nuclear & Energy Related Topics")

3. Outline of the Centralized Clearance Processing Business

2) Outline of the centralized clearance processing business

Our business aims to collect estimated clearance objects (radioactive waste anticipated to be designated as clearance objects through pre-treatment such as decontamination) from multiple nuclear power plants, centralize treatment processes such as cutting, decontamination, melting and radioactivity measurement at a single location, and recycling them after their clearance is verified (hereinafter referred to “centralized clearance processing business”).



3. Outline of the Centralized Clearance Processing Business

2) Outline of the centralized clearance processing business

1st Meeting for Opinion Exchange on Centralized Clearance Processing Business in Fukui Prefecture, partly modified from Document 1

(1) Operation and management of the centralized clearance processing business

The centralized clearance processing business includes facility design and radiation control in accordance with the Nuclear Reactor Regulation Law, as in the case with existing nuclear businesses.

While centralized management of radioactive waste has already been implemented in Japan at specified waste management facilities, the radioactive waste handled in our business will have low levels of radioactivity and an amount less than 3.7 TBq (not applicable to specified waste management facilities).

A) Estimated clearance objects handled in our business

- The materials of the estimated clearance objects handled in our business are mainly metallic materials such as iron and SUS materials.

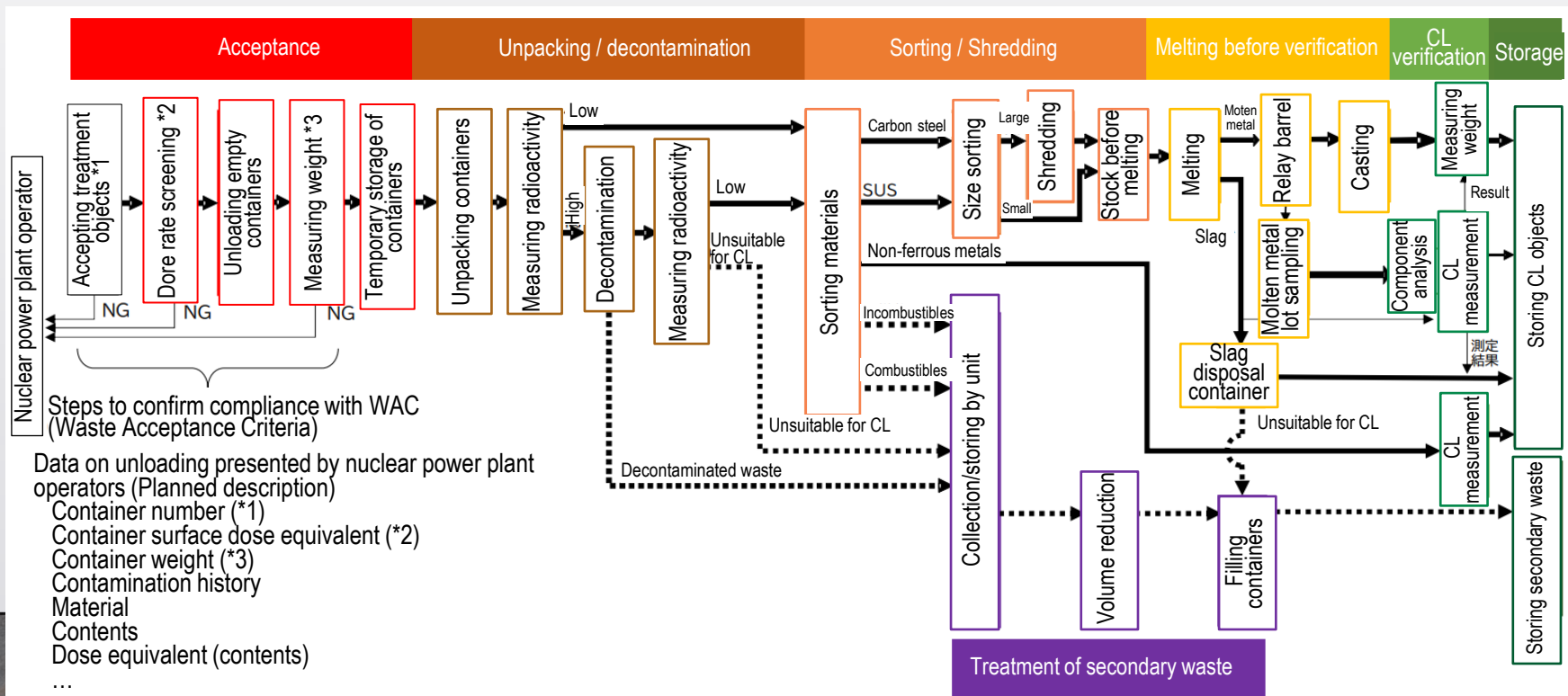
3. Outline of the Centralized Clearance Processing Business

2) Outline of the centralized clearance processing business

1st Meeting for Opinion Exchange on Centralized Clearance Processing Business in Fukui Prefecture, partly modified from Document 1

B) Delivery of estimated clearance objects

- The delivery of estimated clearance objects from nuclear power plant operators to our business will be carried out in accordance with “Regulations on the Transport of Nuclear Fuel Material, etc. outside of Factories or Businesses” and “Regulations on the Disposal of Nuclear Fuel Material, etc. outside of Factories or Businesses.”
- The acceptance of estimated clearance objects in our business will be confirmed to comply with the WAC (waste acceptance criteria) established for this business, based on the delivery data provided by the nuclear power plant operators.



3. Outline of the Centralized Clearance Processing Business

2) Outline of the centralized clearance processing business

1st Meeting for Opinion Exchange on Centralized Clearance Processing Business in Fukui Prefecture, partly modified from Document 1

C) Radiation control undertaken by our business

- In our business, a facility will be established within a radiation-controlled area in accordance with the Nuclear Reactor Regulation Law to implement processes ranging from the receipt of estimated clearance materials to unpacking, decontamination, sorting, shredding, melting, and measuring and evaluation of clearance levels. The controlled area will be divided into "areas with contamination risk" and "areas without contamination risk" to prevent the spread of radioactive contamination.

D) Confirmation before melting

- Estimated clearance objects are sorted and shredded into pieces suitable for loading into the melting furnace prior to melting.
- Because the facility receives estimated clearance objects from multiple nuclear power plant operators, it adopts a campaign treatment method (a method in which objects are melted collectively by their plant of origin) with due consideration for the approved clearance measurement and evaluation methods, and it implements measures to prevent the mixing of contamination properties. In our business, we receive data from nuclear power plant operators required for the preparation of applications for approval of clearance.
- The facility is designed with a treatment capacity of approximately 2,000 tons or more per year.
- Samples for radioactivity measurement are taken from the molten metal and subjected to radioactivity concentration measurement and nuclide analysis using a Ge semiconductor detector and other instruments, in accordance with the pre-approved "CL measurement and evaluation method."

4. Issues to Be Addressed by the Nuclear Recycling Business

1) Siting of the centralized clearance treatment facility

Reinan E-Coast Plan Promotion Council in FY2024, partly modified from Document 1

Previous issues

- A specification survey for the centralized clearance treatment facility was conducted by Fukui Prefecture in FY2022.
- The approximate facility size and building area were estimated.

Current issues

- Siting conditions are being reviewed.

Required conditions

- The area required for facility construction is available and has already been developed.
- Municipal requirements are considered.

Desirable conditions

- Infrastructure such as roads, electricity, and water is available.
 - Municipal requirements are considered.
 - No residential areas, factories, or farmland are adjacent to the facility.
- Based on the above conditions, we are considering Urasoko, Tsuruga City as a candidate site for the facility after receiving information from the cities and towns in Reinan and nuclear operators in the prefecture.

4. Issues to Be Addressed by the Nuclear Recycling Business

2) Construction cost of centralized clearance treatment facility

Facility installation cost

➤ Previous studies

The facility installation cost has been estimated at 22 billion yen.

Item	Amount (tax included) ^{*1}
Design and survey	Approx. 2 billion yen
Equipment and construction	Approx. 19.5 billion yen
Test and survey ^{*2}	Approx. 0.5 billion yen
Total	Approx. 22 billion yen

^{*1} The amounts are estimates and may vary during construction.

^{*2} The testing and survey costs refer to the expenses associated with research and data collection necessary for applying for clearance approval.

Issues to Be Addressed by the Nuclear Recycling Business

3) Organization

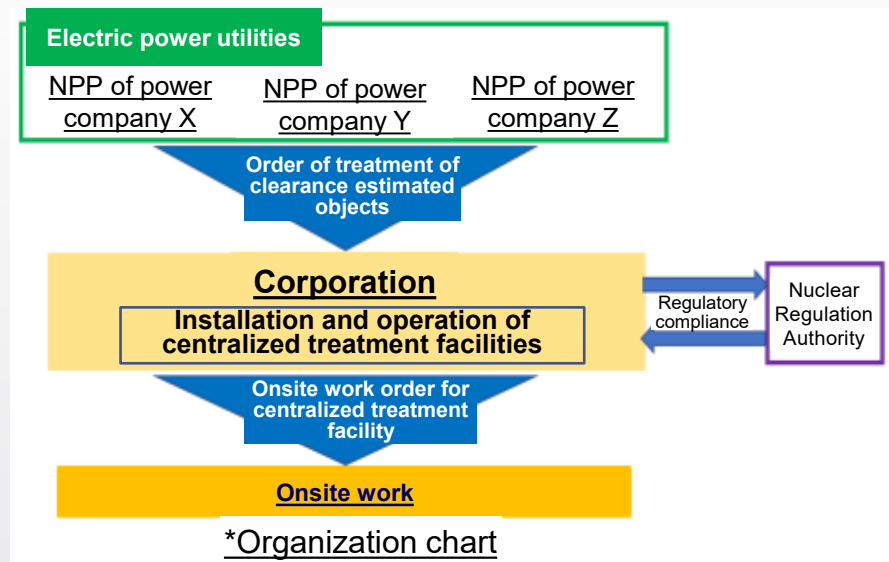
Reinan E-Coast Plan Promotion Council in FY2024, partly modified from Document 1

Previous issues

- Fukui Prefecture discussed the organizational structure in FY2025.
- A new company responsible for facility installation, regulatory compliance and operational management will outsource on-site work to local companies.

Current issues

- Facility installation, regulatory compliance and operational management
 - Facility installation: Geological surveys, design and construction of the centralized treatment facility
 - Regulatory compliance: Obtaining business permits and obtaining and confirming clearance approvals
 - Operational management: Maintenance and management of the centralized treatment facility
 - Waste storage volume management, radiological management for employees, order and work management for local companies, etc.



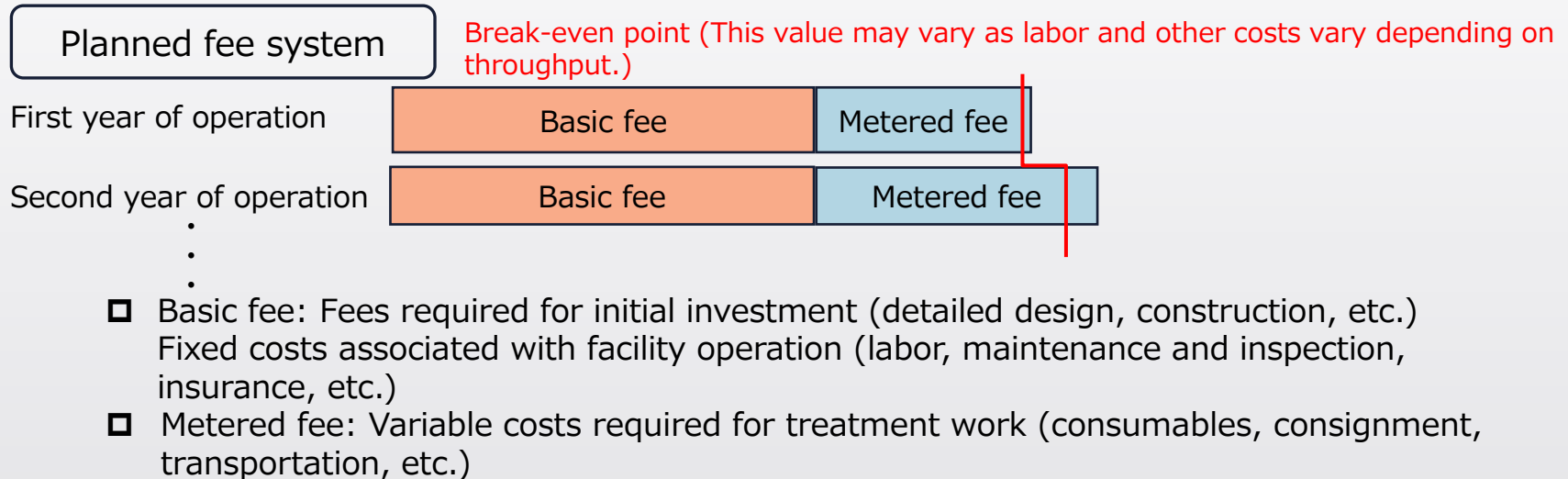
4. Issues to Be Addressed by the Nuclear Recycling Business

4) Fee system, revenue plan, and financial plan

Reinan E-Coast Plan Promotion Council in FY2024, partly modified from Document 1

Previous issues

- Since 2023, we have been discussing a fee system with nuclear operators and have agreed on a system in which the initial investment and operating costs will be recovered through treatment fees paid by the nuclear operators.



Current issues

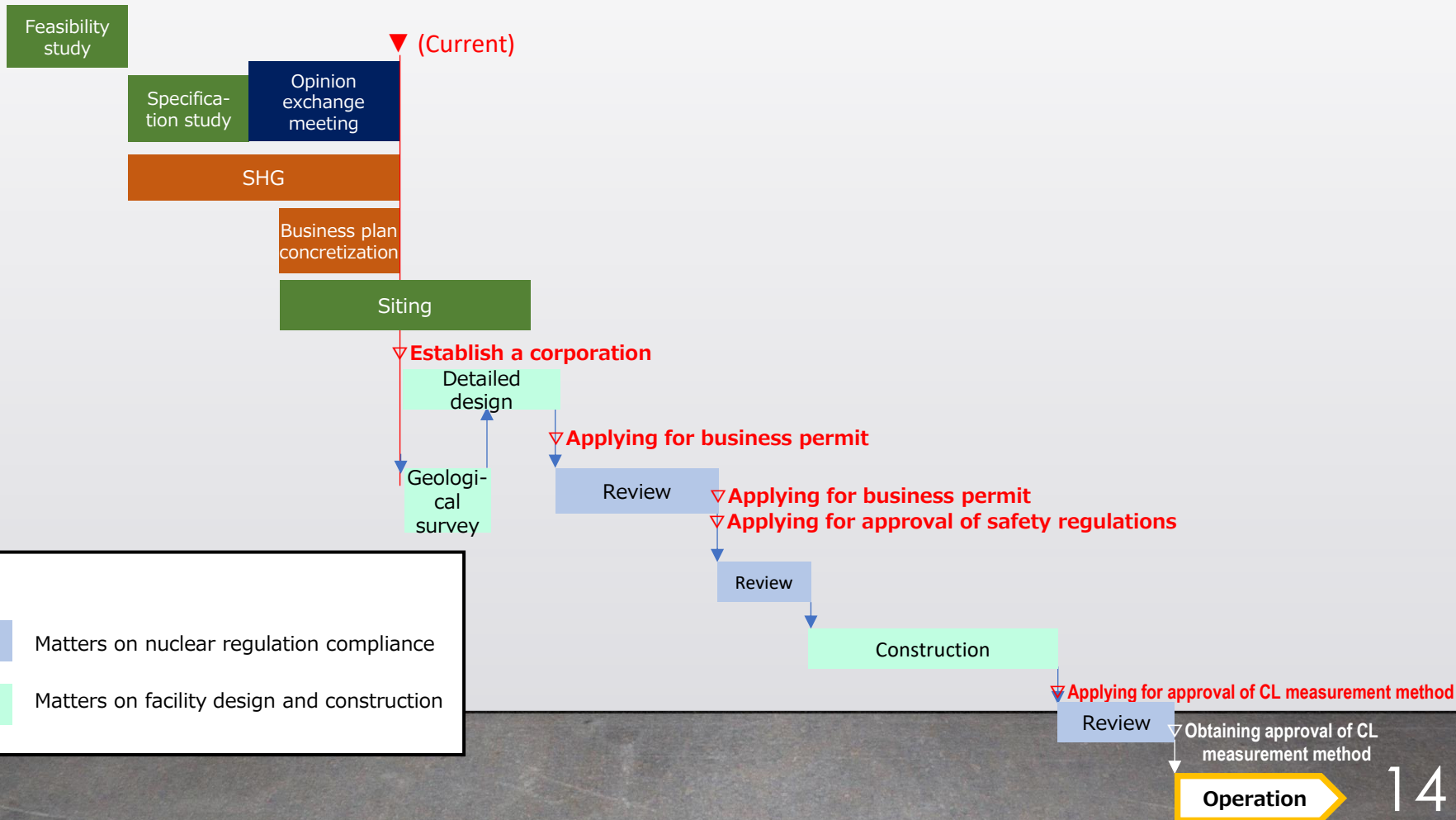
- A revenue plan is being developed based on the fee system agreed upon with nuclear operators.
- Financial plans for borrowing and government support are being discussed with financial institutions, nuclear operators, and the government.

5. Future Schedule

1) Estimated schedule

Process toward operation

- The detailed design of the facility and necessary permits and approvals will proceed in preparation for operational startup.
- The facility will be constructed after the operation permit has been obtained.



5. Future Schedule

2) Current status

Detailed design

- We are conducting the detailed design for the construction of the centralized treatment facility for estimated clearance objects.
- On August 26th, we issued a call for proposals for the design of the nuclear recycling business facility.

Geological survey

- We are conducting geological surveys and land surveys around the proposed site for the centralized clearance treatment facility.
- On September 25, we held a competitive bid for the geological survey related to the construction of the facility.

Q & A

- Thank you for your attention.
- If you have any questions, please do not hesitate to ask.

Fukui Clearance Materials Processing Co., Ltd.
Katsumi Kuruba