Progress in Off-site Environmental Remediation in Japan

IWASAWA Masaru

Ministry of the Environment, Japan

69th IAEA GC

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Ministry of the Environment

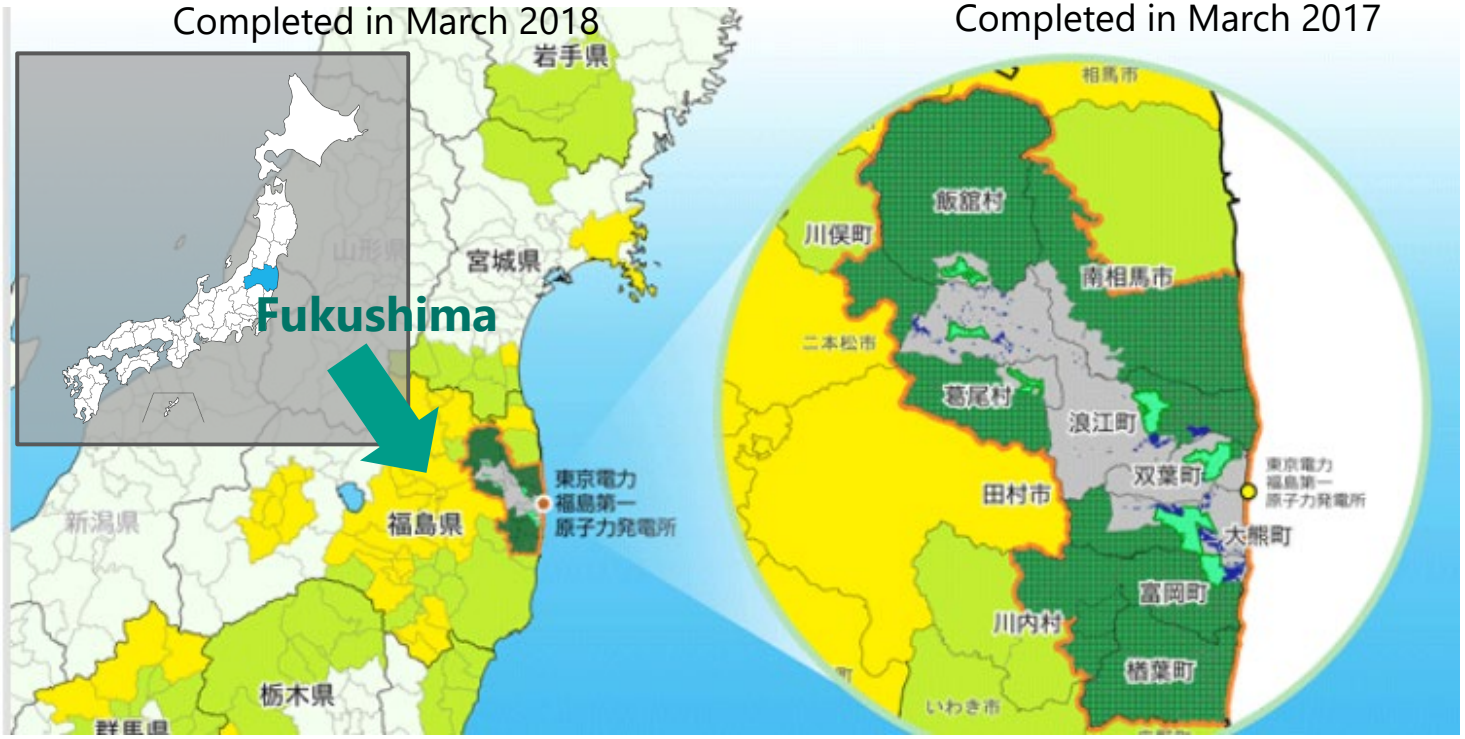
September 2025

Progress of off-site decontamination

- Radioactive materials were released into the environment due to the accident at TEPCO's Fukushima Daiichi Nuclear Power Station, causing environmental contamination.
- The Ministry of the Environment implemented environmental restoration measures, including decontamination, resulting in a large amount of removed soil in Fukushima Prefecture.
- Full-scale decontamination was completed in 100 municipalities of 8 prefectures both in the Special Decontamination Areas (SDA), and the Intensive Contamination Survey Areas (ICSA), by March 19, 2018, except for the Restricted Areas. In the Restricted Area, decontamination continues.

Intensive Contamination Survey Areas
(decontamination implemented by municipalities)
Completed in March 2018

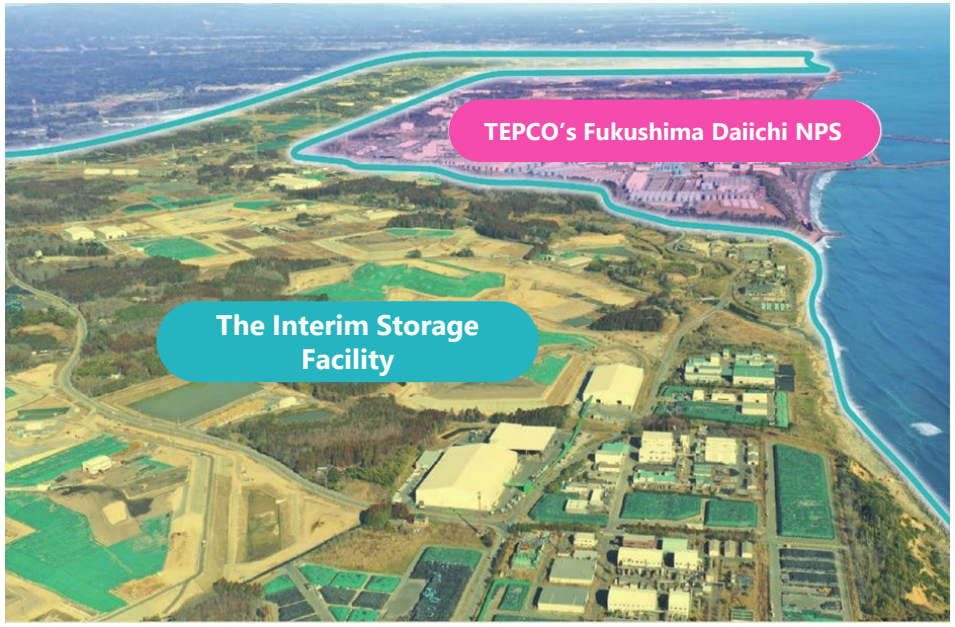
Special Decontamination Areas
(decontamination implemented by the national gov.)
Completed in March 2017



Overview of Initiatives for Environmental Restoration after the Accident of the Nuclear Power Station

- Interim storage facilities were established in Okuma Town and Futaba Town, with the consent of the prefecture.
- The Interim Storage Facility covers a vast area of approximately 1,600 hectares in Okuma Town and Futaba Town, and land acquisition is being carried out while providing careful explanations to landowners.
- The law stipulates that necessary measures shall be taken to complete the final disposal of removed soil and waste generated in Fukushima Prefecture outside Fukushima Prefecture within 30 years (by March 2045) after the start of interim storage.

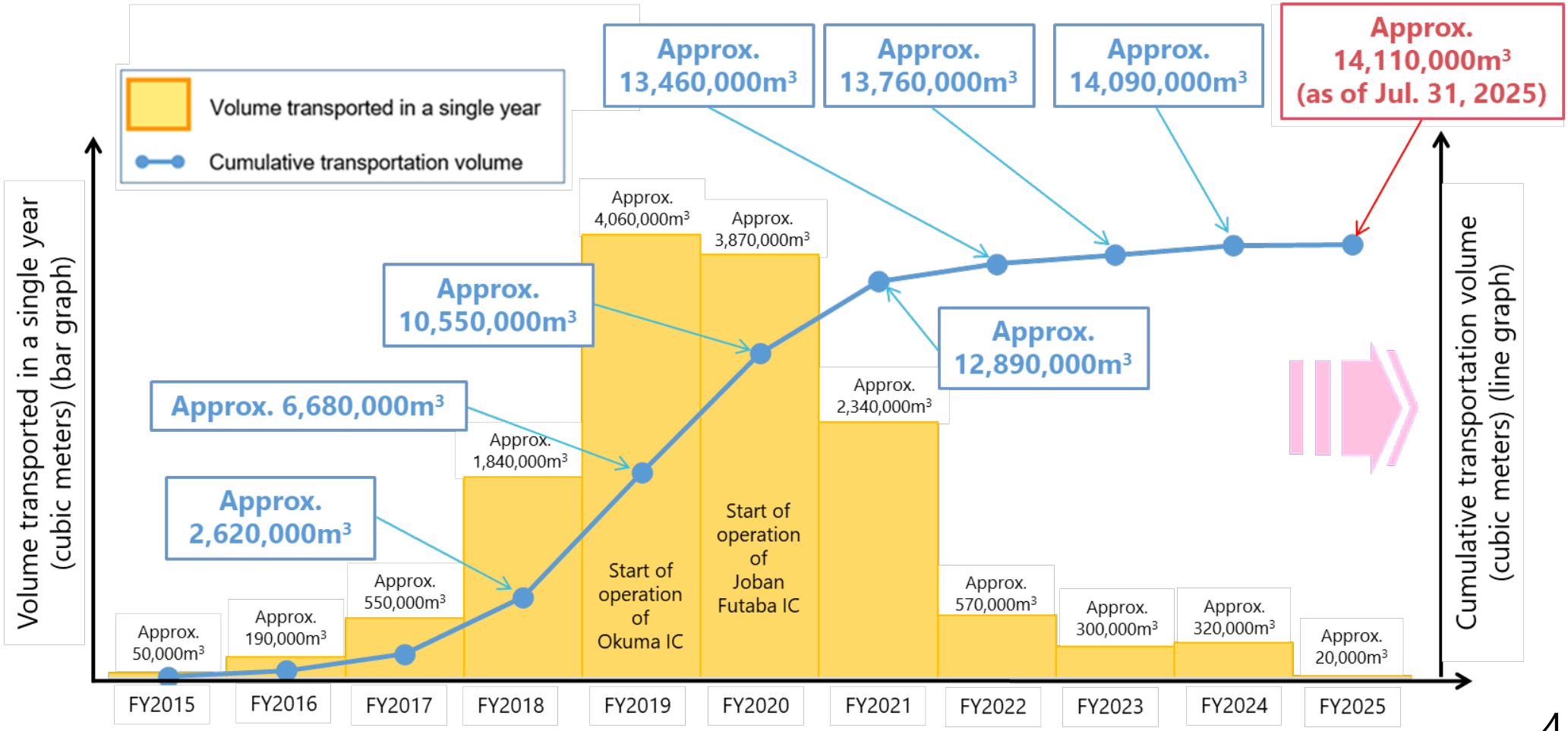
The Interim Storage Facility



Removed Soil stored at the Interim Storage Facility

Transportation to the Interim Storage Facility

- Transportation of removed soil and waste to the ISF has been implemented from the end of FY2014 and **almost all of the removed soil and waste have been transported to the ISF, by Mar. 2022** other than the Restricted Areas.
- **Approximately 14.11 million m³ of removed soil and waste** (including those in the Restricted Areas) **have been transported to the ISF** (as of the end of July 2025).



Necessity for recycling of removed soil

Amount of removed soil and waste transported to the Interim Storage Facility:

Equivalents to volume of 11 Tokyo Domes (Baseball park)

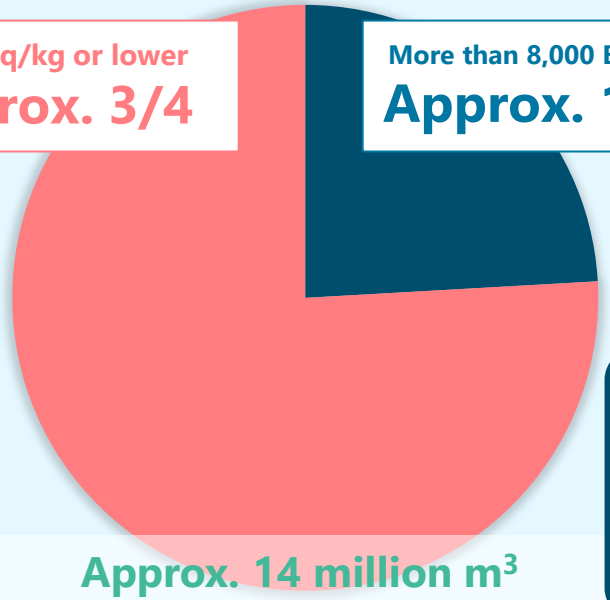
Toward final disposal outside the Fukushima Prefecture:
Volume Reduction before the final disposal is a key measure

Distribution of radioactivity concentration in removed soil

Soil with relatively **low** radioactivity concentration

8,000 Bq/kg or lower
Approx. 3/4

More than 8,000 Bq/kg
Approx. 1/4



Recycling

Recycling under management in public work projects, etc.

Approx. 14 million m³
(as of the end of July 2025)

After the volume reduction

Complete final disposal outside Fukushima within 30 years from the start of transportation to the ISF

Cooperation between the IAEA and the MOEJ

<International Experts Meeting>

- Three International Experts Meetings were held by the IAEA upon the request of the MOEJ, aiming at providing international assessment and advice from technical and social perspectives, concerning the measures taken by the MOEJ for recycling and disposal of removed soil.
- The result of the three meetings was compiled as the Final Report by the IAEA, which was handed over to the MOEJ and published on September 10, 2024.

<Courtesy visit by the Director General>

- In March 2024, IAEA Director-General Grossi made a courtesy visit to the Minister of the Environment ITO and confirmed that the IAEA will continue to support MOEJ in its further efforts for the recycling and the final disposal.

〔 IAEA-MOEJ International Experts Meeting 〕

Site visit to Fukushima (May 2023)

Demonstration project site in Nagadoro, Iitate Village

Interim Storage Facility

The third IEM (Feb. 2024)

〔 Courtesy visit by the DG Grossi to Minister ITO (Mar. 2024) 〕

Final Report of the International Experts Meetings (on September 10, 2024)

- Conclusions in the Executive Summary of the Final Report state:
  - ✓ Approach and activities implemented by the MOEJ to date for the managed recycling and the final disposal are consistent with the IAEA Safety Standards.
  - ✓ Looking ahead, with continuous efforts to meet fully the advice provided by the team of experts, the IAEA is confident that the MOEJ's evolving approach will be consistent with the IAEA Safety Standards. This can be confirmed by future follow-up assessments.
- The MOE will continue to update the IAEA on its efforts and disseminate information domestically and internationally.

Handover to Minister of the Environment (10 Sep. 2024)

A contract for **follow-up evaluation through 2030** of the progress on managed recycling, final disposal and communications activities is in the process of being concluded.

The Final Report is available at:
https://www.iaea.org/newscenter/pressreleases/japans-fukushima-soil-recycling-and-disposal-plan-meets-safety-standards-iaea-says

Standard for Managed Recycling of Removed Soil

The main contents of the standard are as follows:

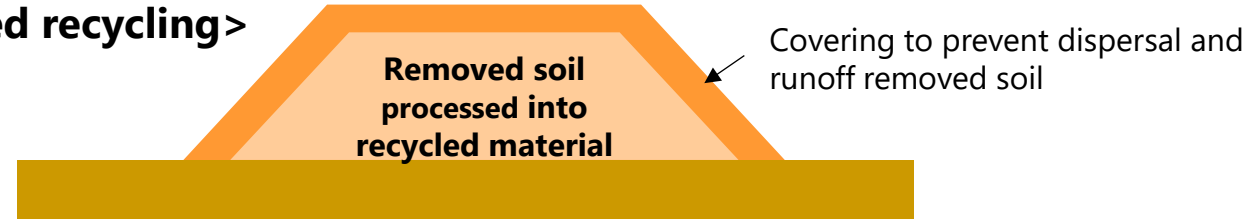
1. Radioactive cesium concentration in removed soil processed into recycled materials
   ※Note: 8,000 Bq/kg or less (which means the additional effective dose of 1 mSv/year or less)
2. Prevention of dispersion and runoff
3. Measurement for the dose of radiation (during construction, operation and maintenance)
4. Protection of the living environment (noise, vibration, etc.)
5. Indication of the use of removed soil processed into recycled materials
6. Record and preserve the location of used, amount used and radioactivity concentration of removed soil processed into recycled materials
7. Consultation on the division of roles in construction and management with project operators, facility managers, etc.

* Under the Act[1], the decontamination operator[2] is responsible for the treatment of removed soil. Therefore, the decontamination operator is responsible for the use and management of removed soil processed into recycled material.

1 Act on Special Measures concerning the handling of Environment Pollution by Radioactive Materials Discharged by the Nuclear Power Station Accident Associated with the Tohoku District-Off the Pacific Earthquake That Occurred on March 11, 2011

2 "decontamination operator":
(1) For removed soil within Fukushima Prefecture: the national government (Ministry of the Environment)
(2) For removed soil outside Fukushima Prefecture: municipalities of each prefecture

<Image of managed recycling>



Efforts to Build Understanding for Recycling and Final Disposal (in Japan)

Nationwide Dialogue Forum

Dialogue forum in Tokyo (Aug. 19, 2023)

Site visits

Interim Storage Facility

Demonstration Project Site
in Nagadoro, Iitate

Installation of potted plants using removed soil

Prime Minister's Office

Office of the Minister of the Environment

Planter
(MOE Headquarters)

← Removed soil with radioactvity concentration of approx. 5,100 Bq/kg is used.

In FY2022, potted plants using removed soil were placed at METI, MLIT and other relevant ministries and agencies (23 facilities outside Fukushima Prefecture as of the end of November 2023).

Efforts to Build Understanding for Recycling and Final Disposal (international)

Experts Meeting with the IAEA


Tours for foreign press


G7 Summit (Hiroshima)


COP28 (UAE)

Options for Final Disposal Outside Fukushima Prefecture (Draft)

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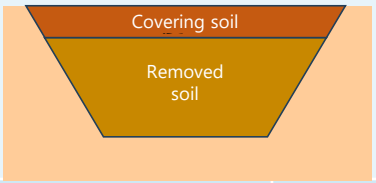
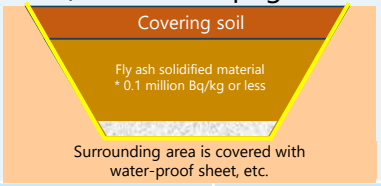
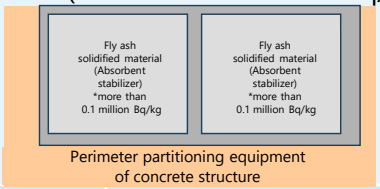
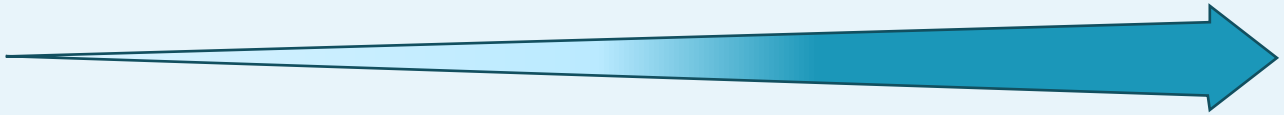
	Scenario (1)	Scenario (2)	Scenario (3)	Scenario (4)
Combination of Volume Reduction Technologies	No volume reduction technology applied	Classification	Classification + Heat treatment	Classification + Heat treatment +Fly ash cleaning
Final disposal volume[1]	Approx 2.1 to 3.1 million m^3 <Breakdown> Removed soil: 2 to 3 million m^3 Waste: 0.1 million m^3	Approx 1.5 to 2.2 million m^3 <Breakdown> Removed soil: 1.4 to 2.1 million m^3 Waste: 0.1 million m^3	Approx 0.3 to 0.5 million m^3 <Breakdown> All waste	Approx. 0.05 to 0.1 million m^3 <Breakdown> All waste
Radioactivity concentration (Soil derived)	Several ten thousand Bq/kg	Several ten thousand Bq/kg	Several hundred thousand Bq/kg -	- Several ten million Bq/kg
Structure (Type of disposal site)	<(1) Removed soil> 	<Waste(0.1million Bq/kg or less> 	<(3) Waste (more than 0.1 million Bq/kg> 	
Required space[*2]	Approx. 30 – 50 hectares	Approx. 30 – 40 hectares	Approx. 20 – 30 hectares	Approx. 2 – 3 hectares
Volume reduction cost[*3]				

*1 Based on the results of the technical demonstration projects that have been carried out to date, the volume reduction rate was set and calculated, and then converted to bulk density at the time of compaction. The quantities are rounded off for ease of comparison between scenarios.

*2 The thickness of the landfill for types (1) and (2) is 10m, and for type (3) it is 5m. The evaluation is based on the area required for the landfill only, and does not take into account factors such as the distance between the landfill and other facilities.

*3 In scenario (1), the cost of volume reduction treatment is zero because volume reduction technology is not applied, but the cost of volume reduction treatment increases as the application of volume reduction technology increases.

Approach Beyond FY2025 for the Final Disposal of Removed Soil and Waste Outside Fukushima Prefecture

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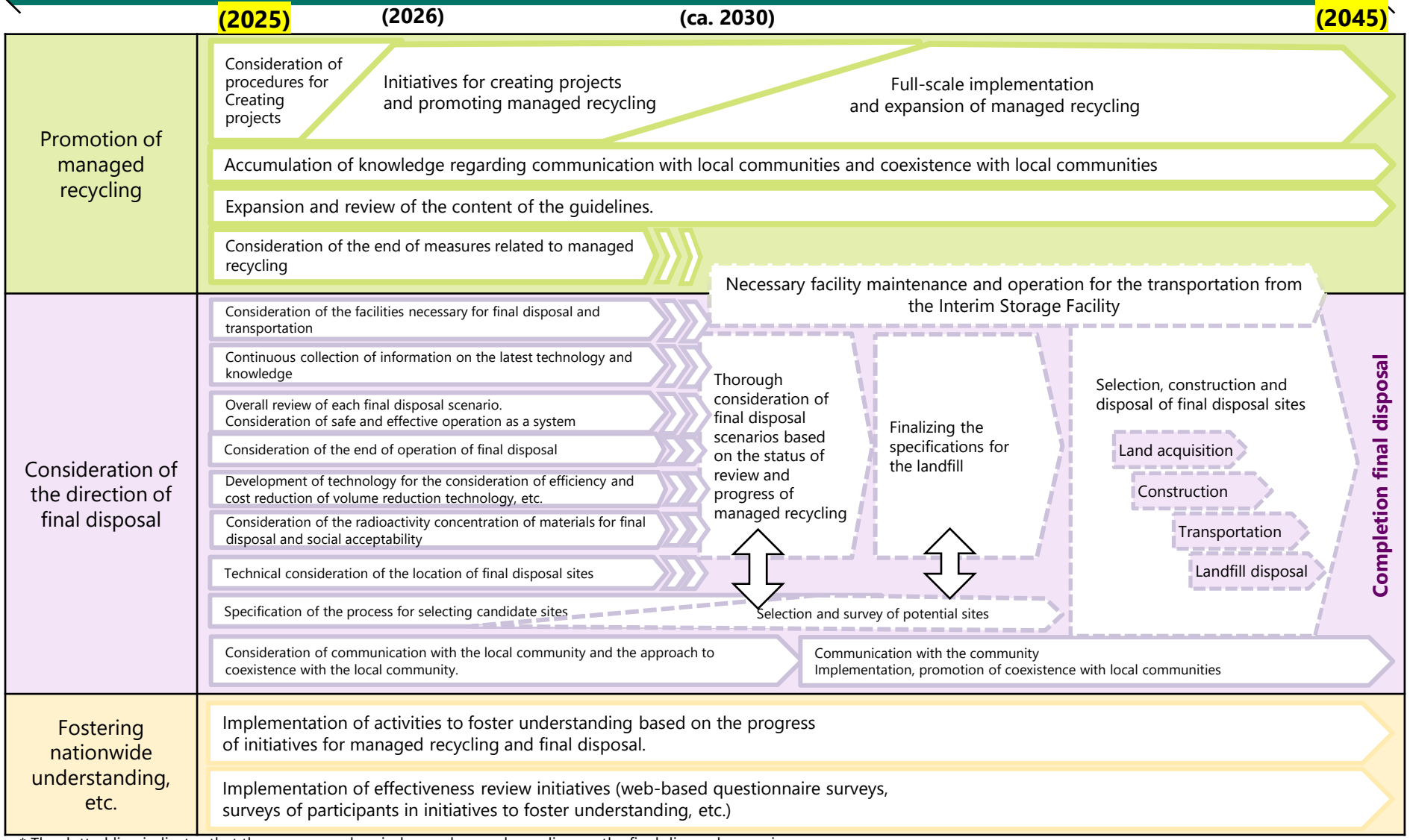

* The dotted line indicates that the process and period may change depending on the final disposal scenario.
* The project in the Nagadoro District of Iitate Village will be continuously monitored, etc., and will be used as a venue for fostering understanding with the cooperation of the local community.
* The implementation of projects to foster understanding will also be considered.
* The use of the site of the Interim Storage Facility, will also be considered.
* The progress of the above initiatives will be followed up by the IAEA and disseminated internationally.

May 2025

Basic Policy on Promotion of Managed Recycling for the Realization of Final Disposal outside Fukushima Prefecture of Removed Soil and Waste

環境省

May 27, 2025 Decision by the Council for the Promotion of Managed Recycling for the Realization of Final Disposal outside Fukushima Prefecture of Removed Soil and Waste

- In December 2024, **the "Council for the Promotion of Managed Recycling for the Realization of Final Disposal outside Fukushima Prefecture of Removed Soil and Waste"** was established. (Chairperson: Chief Cabinet Secretary; Vice Chairpersons: Minister of the Environment and Minister of Reconstruction; Members: All other Ministers of State except the Prime Minister)
- **The following are the main points of the basic policy (draft) that will be compiled by the Promotion Council as a government-wide policy to realize the final disposal outside Fukushima Prefecture of the removed soil and waste.**

Basic Concept

- **The law stipulates that necessary measures shall be taken to complete final disposal outside Fukushima Prefecture within 30 years (by March 2045) after the start of interim storage for removed soil and waste generated in Fukushima Prefecture. The government as a whole will take responsibility** for the revitalization of Fukushima, taking into account the history of the Interim Storage Facility, which was accepted under a difficult decision of the local community.

Promoting Managed Recycling	Fostering Understanding and Risk Communication for the Implementation of Managed Recycling, etc.	Toward Final Disposal Outside Fukushima Prefecture Promotion of initiatives
✓ From the perspective of fostering understanding among the general public, **the government will promote managed recycling by taking the initiative in creating leading cases including the consideration of its use in the Prime Minister's Office.** ✓ Based on the status of fostering understanding, **the government will develop projects for managed recycling in practical applications and promote its full-scale implementation and expansion.**	✓**All ministries and agencies will collaborate to promote initiatives to foster cooperation for managed recycling and to promote understanding of the necessity and safety of managed recycling.** ✓In order to foster a sense of security and understanding regarding managed recycling, **tours of the Interim Storage Facility and managed recycling sites will be implemented and expand gradually.**	✓ In order to examine the final disposal scenario, **technical and social considerations regarding volume reduction and final disposal will continue to be considered.** ✓ Consideration will be given to facilities necessary for transport from the Interim Storage Facility, and **the process for selecting candidate sites will be specified to select and conduct surveys of candidate sites for final disposal.**

In Conclusion

- In order to steadily implement this basic policy, the government will compile a roadmap by this summer, focusing on promoting managed recycling, fostering public understanding, and risk communication, which will the government will jointly work on for the next five years.

May 2025

First Implementation of the Managed Recycling, the Prime Minister's Office

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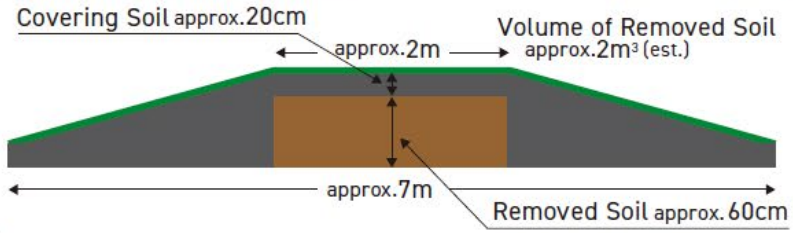
- Toward the realization of the final disposal, it is important to reduce the amount of soil to be disposed of, and the key is to promote the use of soil with low radioactivity levels in public works projects (the managed recycling). It is also important to foster understanding of the necessity and safety of the final disposal and the managed recycling.
- Therefore, the Prime Minister's Office took the initiative in promoting the managed recycling efforts.

Conceptual image

Vertical Section View



Changes in Radiation Levels

Before
0.07-0.10 μSv/h
Above the planned area

After
0.11 μSv/h
Above the embankment

*This change in radiation levels is negligible for human health.

Construction completed

The Prime Minister's Office, July 2025

Initiative Cases of Managed Recycling in Central Government

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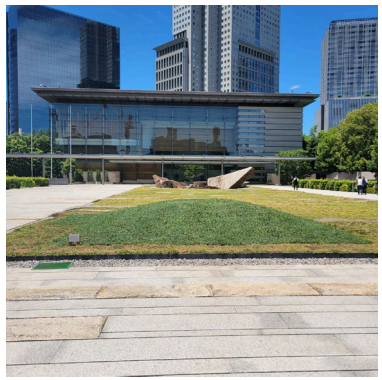
Ministry of Foreign Affairs

Ministry of Land, Infrastructure, Transport and Tourism

Ministry of Justice

Ministry of Internal Affairs and Communications



Prime Minister's Office

Ministry of Agriculture, Forestry and Fisheries

Ministry of the Environment

Cabinet Office

Ministry of Finance

Ministry of Economy, Trade and Industry

Roadmap on Promotion of Managed Recycling for Realization of Final Disposal of Removed Soil and Waste outside Fukushima Prefecture

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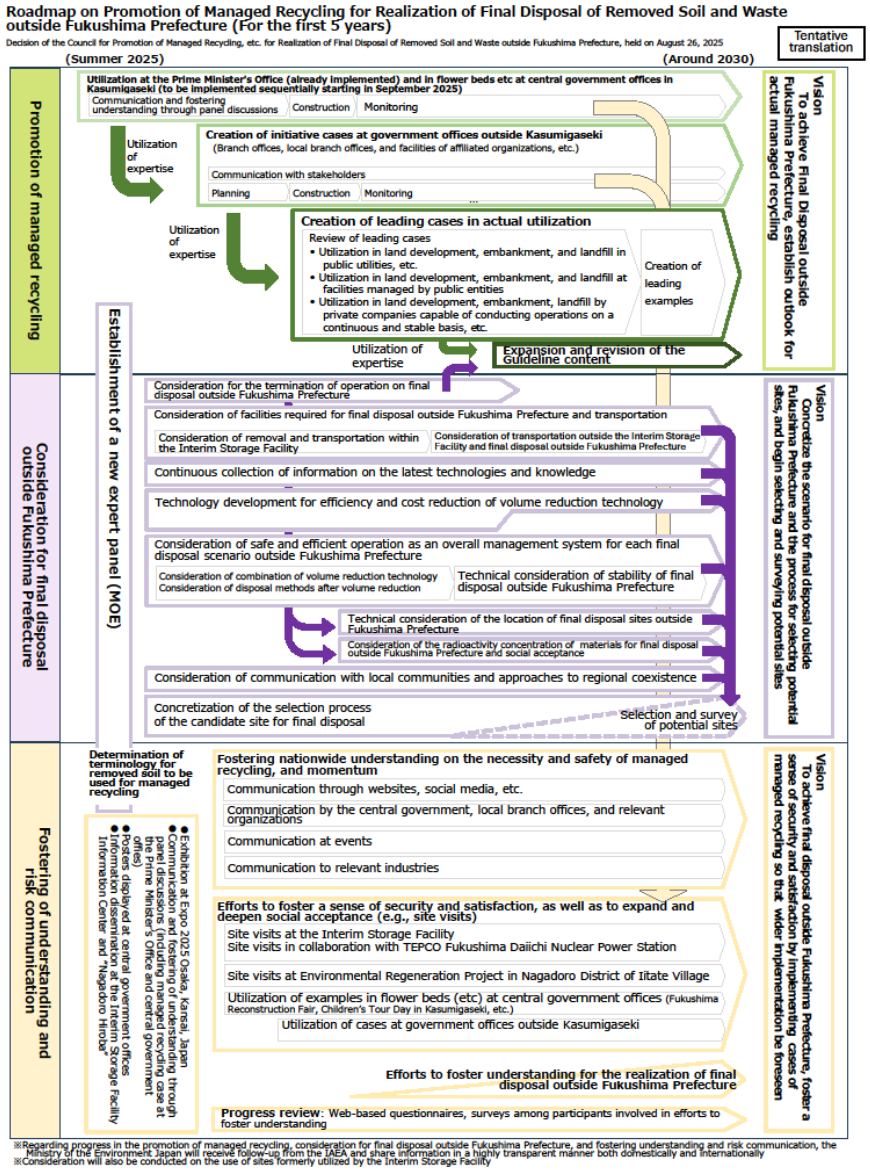
Aug. 2025

Promotion of managed recycling

Consideration for final disposal outside Fukushima Prefecture

Fostering of understanding and risk communication



https://josen.env.go.jp/en/news/20250826_01.html

Roadmap on Promotion of Managed Recycling for Realization of Final Disposal of Removed Soil and Waste outside Fukushima Prefecture

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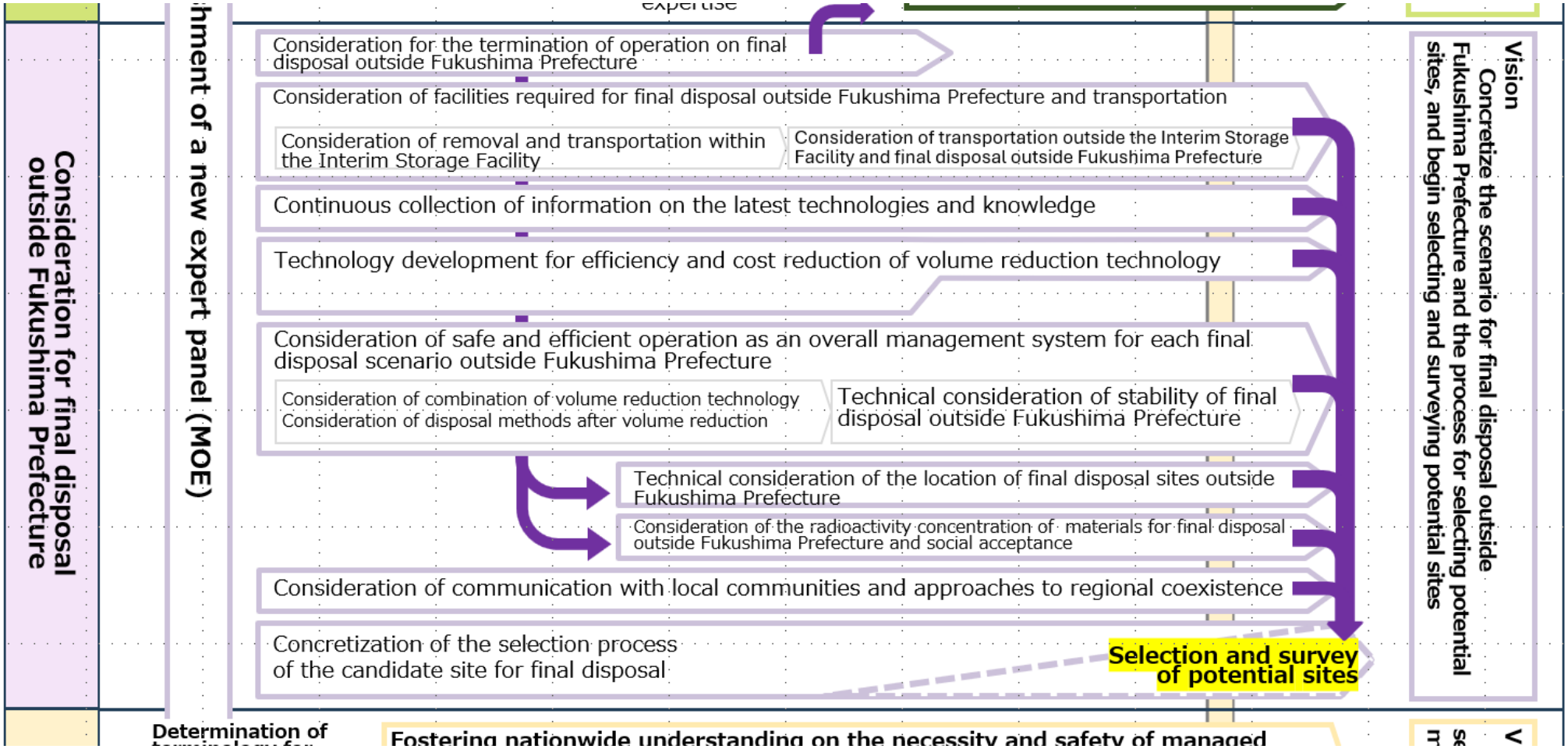
Aug. 2025

Consideration for final disposal outside Fukushima Prefecture



<Reference> Timeline of IAEA Support

Timeline of IAEA Assistance to MOE on Managed Recycling and Final Disposal of Removed Soil	
May 2023 – Feb. 2024	IAEA International Experts Meetings (3 Sessions)
Sep. 2024	Final Report on the IAEA Experts Meeting
Mar. 2025	<MOE> “Enforcement Regulations for the Act” was amended <MOE> “Guidelines for Managed Recycling were announced
May 2025	<MOE> “Basic Policy on Promotion of Managed Recycling for the Realization of Final Disposal” was announced
Jul. – Sep. 2025	<MOE> Initiative cases of managed recycling at 10 government offices including Prime Minister’s Office
Aug. 2025	<MOE> “Roadmap on Promotion of Managed Recycling for Realization of Final Disposal” was announced
<IAEA & MOE> A contract for follow-up evaluation through 2030 is in the process of being concluded.	

<Reference> Summary

(Decontamination)

- **Full-scale decontamination activities were completed by March 2018, other than the Restricted Areas (RA).** Evacuation orders were lifted by March 2020, other than the RA.
- Evacuation orders in the Specified Reconstruction and Revitalization Base Areas (SRRBA) in 6 municipalities were lifted by the end of November 2023. **In the RA, decontamination activities are still in progress**, and in December 2023, decontamination activities in the Specified Living Area for Returnees (SLAR) started.

(Transportation, Storage of generated soil and waste)

- Soil and waste arising from the decontamination activities in Fukushima Prefecture have been transported into the Interim Storage Facility (ISF), and **almost all of the removed soil and waste had been transported into the ISF by March 2022, other than the RA.**
- **More than 14 million m^3 of soil and waste have been transported into the ISF, and soil stored in the ISF is supposed to be recycled or finally disposed of outside Fukushima Prefecture by March 2045.**

(Promotion of volume reduction and recycling)

- Taking account of the difficulties to find out the place to accommodate all of the removed soil and waste, volume reduction and recycling of removed soil have been promoted.
- **Based on the Strategy, technology development and demonstration projects have been promoted, development of necessary basic technologies was completed by March 2025.**
- **Standard for the managed recycling and landfill disposal of removed soil were formulated in March 2025 based on the achievements of initiatives to date. In addition, the Ministerial Council compiled the basic policy for the realization of final disposal outside Fukushima Prefecture in May 2025, and the roadmap on promotion of managed recycling for realization of final disposal in August 2025.**
- **To promote managed recycling, as a leading example, it is being implemented in 10 central government offices, including the Prime Minister's Office.**

(Cooperation with international community)

- **The MOEJ has shared a wide range of experience and lessons learned obtained through more than 14-year off-site remediation activities. These efforts will be continued, for example, through cooperation with the IAEA, international meetings and conferences. The IAEA and the MOE are in the process of concluding a contract for follow-up assessments through 2030.**

Thank you

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For more information:
http://josen.env.go.jp/en/