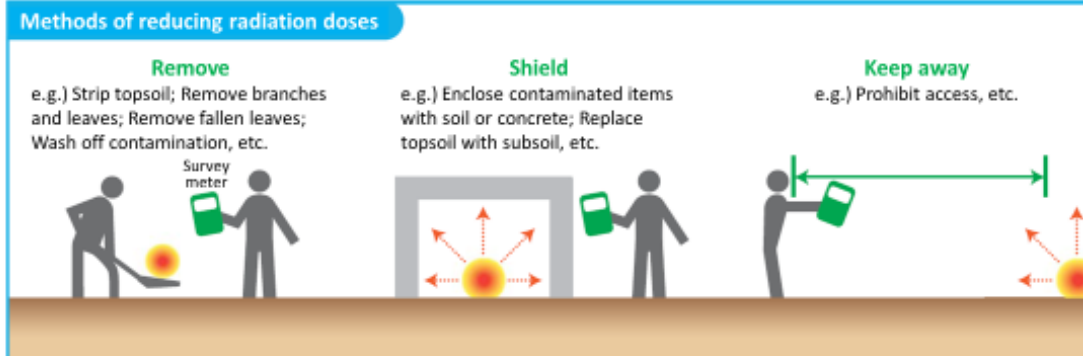


Reduction of Radiation Doses

Radioactive materials released into the air due to the accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS fell onto the ground with rain, etc. and adhered to soil, vegetation, and buildings in people's living environment. Soil and vegetation, etc. thus contaminated are being removed through decontamination work. Removed soil and vegetation, etc. are shielded to prevent them from affecting the surroundings, thereby reducing radiation doses people receive from the environment.



Prepared based on the website, "Environmental Remediation," of the Ministry of the Environment

Radioactive materials released into the air due to the accident at TEPCO's Fukushima Daiichi NPS fell onto the ground with rain, etc. and adhered to buildings, soil, and vegetation, etc. across a wide area. Therefore, the national government has been striving to reduce additional exposure doses through decontamination such as removing those released radioactive materials.

There are three methods of reducing additional exposure doses to remove, to shield, and to keep away radioactive materials. Combination of these methods can reduce additional exposure doses efficiently.

The first is to remove radioactive materials adhering to soil, vegetation or buildings, etc. from people's living environment by such means as stripping topsoil, removing tree leaves, branches and fallen leaves, and washing and cleaning the surface of buildings.

The second is to cover radioactive materials with soil, etc. thereby shielding radiation and reducing ambient doses and exposure doses accordingly.

The third is to take advantage of the characteristic of radiation that the radioactivity intensity reduces as the distance increases (in inverse proportion to the square of the distance from the relevant radioactive material) (p.50 of Vol. 1, "Characteristics of External Exposure Doses").

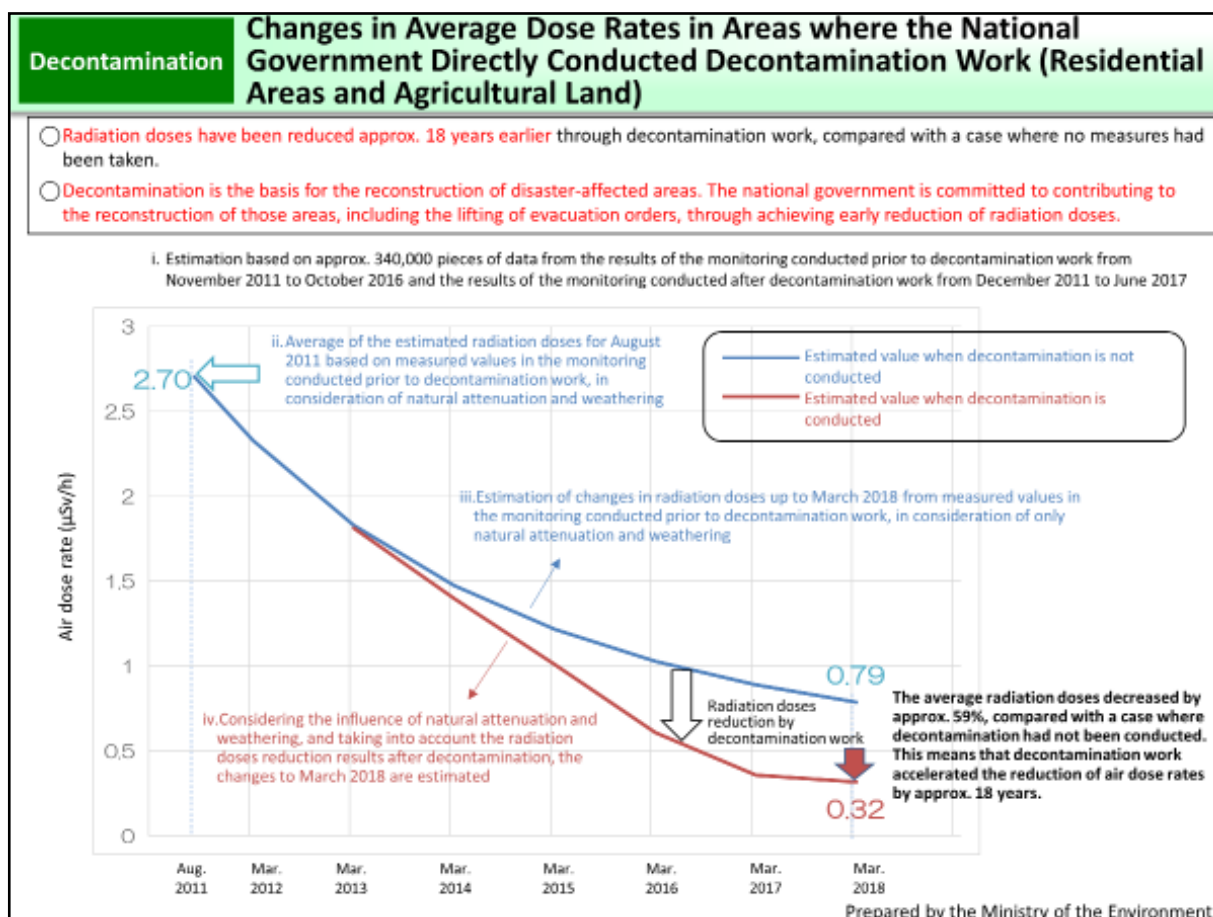
If radioactive materials are kept away from people, exposure doses can be reduced. Therefore, one option is to prohibit access to places where radioactive materials exist.

These methods are combined and employed to reduce people's additional exposure doses.

(Related to p.174 of Vol. 1, "Three Principles of Reduction of External Exposure")

Included in this reference material on March 31, 2013

Updated on February 28, 2018



This figure shows decreases in doses of accident-derived radioactive materials as estimated based on approx. 340,000 pieces of data from the results of the monitoring conducted prior to decontamination work from November 2011 to October 2016 and the results of the monitoring conducted after decontamination work from December 2011 to June 2017.

The blue line in the graph shows air dose rates estimated based on the values of August 2011 only taking into account the influence of natural attenuation and weathering (natural factors such as wind and rain). The red line in the graph shows air dose rates estimated also taking into account the effects of decontamination. When comparing both of these air dose rates as of March 2018, it is known that the average air dose rates decreased by approx. 59% as a result of decontamination. This means that the reduction of air dose rates was accelerated by approx. 18 years through decontamination work.

In this manner, decontamination work has brought about an earlier reduction of radiation doses, while assisting the effects of natural attenuation of radioactive materials.
(Related to p.11 of Vol. 1, "Half-lives and Radioactive Decay")

Included in this reference material on March 31, 2014
Updated on March 31, 2022

Decontamination

Decontamination Methods

Decontamination has been conducted in accordance with the circumstances of respective areas.

Specific methods differ by location.

Effective methods differ depending on the status of contamination with radioactive materials. First, ambient dose rates are measured, and an optimal method is selected on a case-by-case basis. Radiation doses are measured before and after decontamination work to confirm the effects.



This figure explains specific decontamination methods.

Even in areas where radiation doses are relatively low, fallen leaves and dirt containing radioactive materials are apt to accumulate under the leaves or in gutters of houses or in ditches on the street, causing higher ambient doses in the surrounding areas. At such locations, fallen leaves and dirt are removed and the relevant places are washed and cleaned.

There are areas where radioactive materials adhere to the shrubbery, underbrush or fallen leaves. Radioactive materials are removed through mowing of vegetation, pruning and removal of fallen leaves.

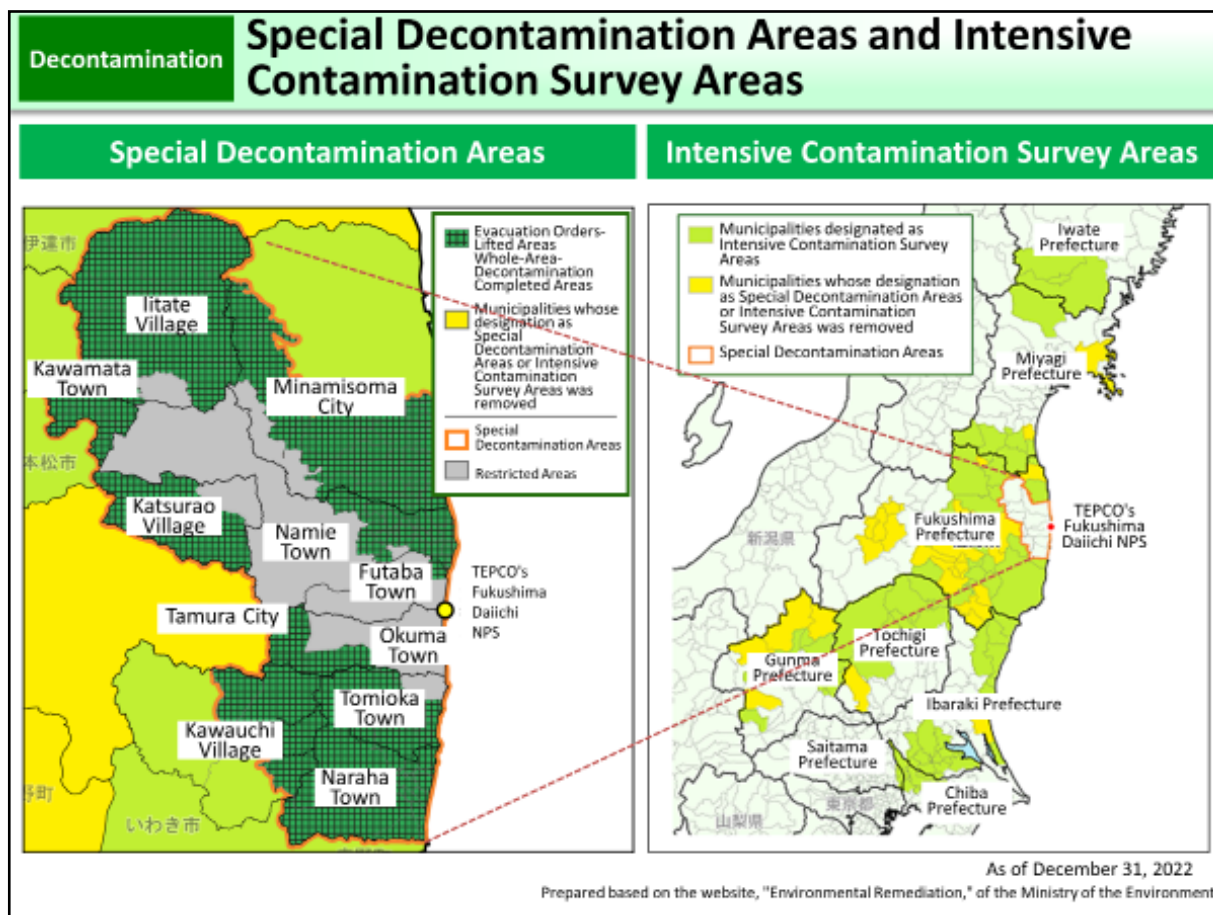
In areas where radiation doses are relatively high, other decontamination methods, in addition to those employed at areas with relatively low radiation doses, may need to be employed. For example, as radioactive materials mostly exist within a layer a few centimeters below the ground surface, effects of radioactive materials can be mostly diminished by stripping topsoil (for example, to a depth of 5 cm) or replacing topsoil with subsoil.

Areas where radioactive materials adhere to roofs and walls of buildings or on the paved road, relevant parts are washed and cleaned but such method may not be effective in cases where radioactive materials adhere firmly depending on the nature of their raw materials.

For farmland, proper methods need to be selected in consideration of the effects on agricultural products, as well as the effects on people due to exposure. In farmland plowed after the accident, radioactive materials exist little deeper from the ground surface. However, if all contaminated soil is removed, the farmland becomes unsuitable for farming. Therefore, at such farmland, various methods such as deep tillage (plowing soil as deep as 30 cm in principle) or inversion tillage (replacing topsoil with subsoil) (p.70 of Vol. 2, "Measures for Reducing Transfer of Radioactive Materials to Crops (1/5) - Decontamination of Farmland -") are being employed.

Included in this reference material on March 31, 2013

Updated on February 28, 2018



After the accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS, the Diet enacted the 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 Ocean Earthquake that Occurred on March 11, 2011 (Act on Special Measures Concerning the Handling of Environment Pollution by Radioactive Materials) in August 2011.

Special Decontamination Areas and Intensive Contamination Survey Areas were designated as areas where decontamination is to be conducted under this Act on Special Measures.

Special Decontamination Areas are areas where the national government directly conducts decontamination work. 11 municipalities in Fukushima Prefecture which were once designated as a Restricted Area or a Deliberate Evacuation Area were designated as Special Decontamination Areas.

Intensive Contamination Survey Areas are areas where municipalities take the initiative in decontamination work, and a total of 104 municipalities in eight prefectures were designated as such. The national government has taken financial measures and technical measures to assist with decontamination work in these municipalities.

Whole area decontamination work was completed in all municipalities designated as Special Decontamination Areas by the end of March 2017. Thereafter, by the end of March 2018, whole area decontamination work was completed in all 100 municipalities in eight prefectures including Intensive Contamination Survey Areas, except for Restricted Areas.

In cases that there are any points where the effects of decontamination are not maintained after the completion of whole area decontamination work, causes are to be ascertained to the extent possible depending on the circumstances of individual points, and follow-up decontamination is to be conducted when it is found necessary by comprehensively taking into consideration the spread of the contamination and the effects and feasibility of decontamination work, in addition to additional exposure doses.



In Special Decontamination Areas, evacuation orders were all lifted by March 4, 2020, for all Habitation Restricted Areas and Preparation Areas for Lift of Evacuation Orders, and the designation as a Special Decontamination Area for Tamura City was removed in March 2022. Additionally, in Intensive Contamination Survey Areas, it was confirmed that radiation doses decreased to below 0.23 $\mu\text{Sv/h}$ in 30 municipalities by the end of December 2022, and the designation as Intensive Contamination Survey Areas was removed for these municipalities.

Included in this reference material on March 31, 2013
Updated on March 31, 2023

Storage in Temporary Storage Sites

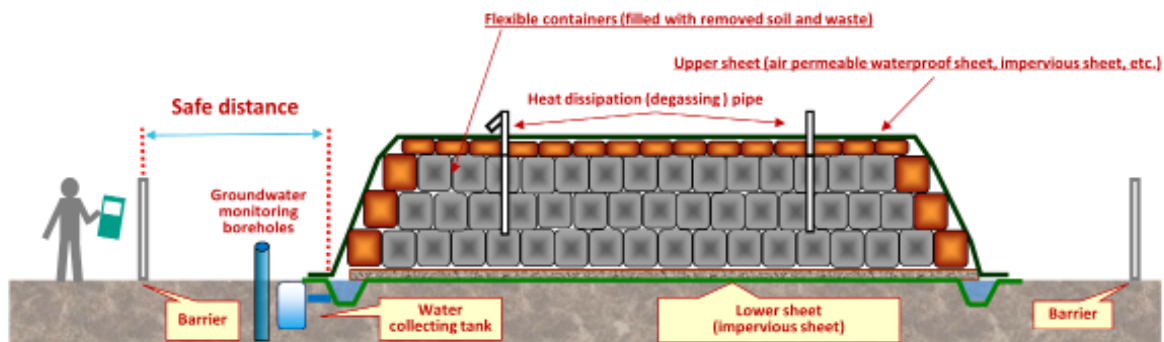
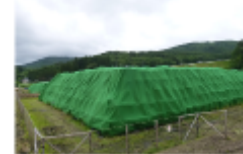
Removed soil and waste generated by decontamination is safely managed in Temporary Storage Sites

Basic structure and management/inspection of Temporary Storage Sites (example of Temporary Storage managed by the national government)

-  Storage containers filled with removed soil and waste
-  Shielding sandbags filled with non-contaminated soil



Status of storage of removed soil and waste in a Temporary Storage Site



Prepared by the Ministry of the Environment

The soil and waste removed through decontamination work (removed soil and waste) are stored and managed temporarily on site or at Temporary Storage Sites.

Specifically, removed soil and waste are put in a container (flexible container, etc.) and placed on an impervious layer (impervious sheet, etc.), and is shielded sufficiently by such methods as placing sandbags filled with uncontaminated soil around the site to reduce ambient dose rates at the boundary to the same level as that in the surrounding areas.

Additionally, the site is covered with an impervious sheet, etc., thereby preventing scattering and leakage of removed soil and waste and further preventing infiltration of rainwater and resulting contamination of groundwater, etc.

Radiation doses at the site and radioactivity concentrations in groundwater are measured regularly.

Furthermore, from the perspective of keeping the site away from the public (securing distance), public access to the site is prohibited, and shortening of working hours and other measures are also considered from the perspective of reducing workers' exposure to radiation (p.174 of Vol. 1, "Three Principles of Reduction of External Exposure").

Included in this reference material on March 31, 2013

Updated on March 31, 2023


Decontamination
Status of Removed Soil Outside Fukushima Prefecture

- Removed soil outside Fukushima Prefecture has been stored safely by respective municipalities based on the storage methods regulated by the national government.
- Municipalities are to follow the disposal methods regulated by the national government, if they collect removed soil and dispose of it by means of landfill in the future.
- However, specific disposal methods have not been determined, and the national government is required to specify disposal methods by Enforcement Regulation.

→ At present, the Study Team on Disposal of Removed Soil, which consists of intellectuals, is deliberating on disposal methods from professional standpoints. Furthermore, demonstration projects on landfill disposal have been implemented in Tokai Village in Ibaraki Prefecture, Nasu Town in Tochigi Prefecture, and Marumori Town in Miyagi Prefecture.

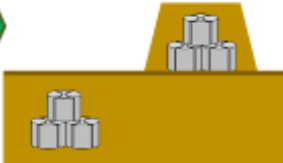
Collection and transportation

* Regulated under Enforcement Regulation



Storage


* Regulated under Enforcement Regulation



Disposal

* No relevant Enforcement Regulation

Landfill



Prepared by the Ministry of the Environment

Removed soil outside Fukushima Prefecture has been stored safely by respective municipalities (decontamination entities) based on the storage methods regulated by the national government.

Municipalities are to follow the disposal methods regulated by the national government, in case of disposing of removed soil by means of landfill.

However, specific disposal methods have yet to be determined, and the national government is required to specify disposal methods by an Enforcement Regulation, etc.

Accordingly, the Ministry of the Environment (MOE) established the Study Team for Disposal of Removed Soil, which consists of intellectuals, in December 2016, and the Study Team has been continuing deliberations from professional standpoints. Furthermore, the MOE has been implementing demonstration projects on landfill disposal at three locations, Tokai Village in Ibaraki Prefecture, Nasu Town in Tochigi Prefecture (completed in March 2020), and Marumori Town in Miyagi Prefecture, with the aim of confirming influence on the workers and surrounding environments in case of disposing of removed soil by means of landfill.

Based on the results of the demonstration projects and deliberations by the Study Team, the national government will establish a necessary Enforcement Regulation and Guidelines.

Included in this reference material on March 31, 2019

Updated on March 31, 2023

Decontamination

Comprehensive Efforts to Restore Forests and Forestry in Fukushima

I. Efforts toward regeneration of forests and forestry

1. Efforts for ensuring safe and secure living environment

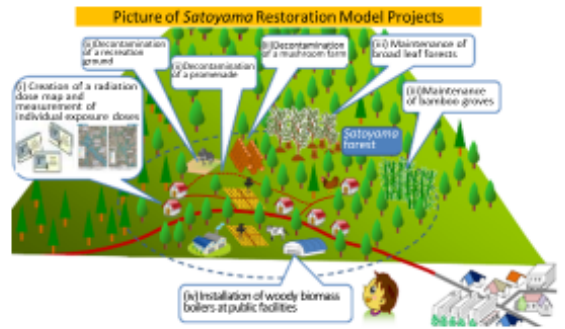
- Steadily continue decontamination work for forests near people's houses, etc.
- For residential areas surrounded by forests on three sides, taking measures as necessary, such as decontaminating forests 20m or further from the border or installing barriers to prevent soil runoff

3. Efforts for regenerating forestry in mountainous areas, etc.

- Promote a project to conduct tree thinning or other forest maintenance work together with measures concerning radioactive materials, and a demonstration project aiming for regeneration of forestry
- Newly prepare a guidebook on radiation safety that is easy to understand for workers

2. Efforts for restoring *Satoyama* forests close to residential houses

- Based on needs of local people, decontamination was conducted properly at places in the forest where residents enter for recreation or daily use; Make efforts for regenerating forestry in broad leaf forests and bamboo groves, etc.
- Select model districts in and around Areas under Evacuation Orders (including areas where evacuation orders have been lifted), comprehensively promote efforts for restoring *Satoyama* forests in those model districts, and reflect the outcomes of such efforts in carrying out further appropriate measures. (*In FY2020 onward, efforts for restoring *Satoyama* forests will be continued by expanding the coverage as the *Satoyama* Restoration Projects.)



II. Future-oriented efforts for research and studies

- Continuously engage in research and studies for monitoring radiation doses in the forest, understanding behavior of radioactive materials and reducing radiation doses; Continue efforts for regeneration of forests and forestry into the future while utilizing the outcomes of such research and studies in formulating further measure

III. Information provision and communication

- Meticulously provide the latest information regarding knowledge on radioactive materials in forests and the national government's efforts toward regeneration of forests and forestry, using such media as relevant ministries' websites and PR magazines
- Continue efforts for ensuring safe and secure lives of the people in Fukushima through maintaining good communication, including dispatching experts

Prepared by the Ministry of the Environment

In addition to decontamination, comprehensive efforts for regenerating the forestry industry and ensuring safe and secure lives of the residents are indispensable for the regeneration of forests and forestry in Fukushima Prefecture. Based on the guideline, “Comprehensive Efforts to Restore Forests and Forestry in Fukushima,” which was compiled by the Reconstruction Agency, the Ministry of Agriculture, Forestry and Fisheries, and the Ministry of the Environment in March 2016, relevant ministries and agencies have been carrying out measures comprehensively for those purpose, while obtaining the understanding of the people in Fukushima. The Reconstruction Agency, the Ministry of Agriculture, Forestry and Fisheries, and the Ministry of the Environment jointly conducted the *Satoyama* Restoration Model Project in 14 municipalities (Kawamata Town, Hirono Town, Kawauchi Village, Katsurao Village, Soma City, Nihonmatsu City, Date City, Tomioka Town, Namie Town, Iitate Village, Tamura City, Minamisoma City, Naraha Town, and Okuma Town) based on the guideline, and the outcome was compiled and published in November 2020. Since FY2020, efforts for restoring *Satoyama* forests have been continued as the “*Satoyama* Restoration Projects” by expanding the coverage to 48 municipalities.

According to the knowledge obtained at the investigative committee on remediation established in the Ministry of the Environment, it is found that removal of sedimentary organic materials at locations 20m or further from the border of the forest adjacent to houses and farmland, etc. has little effect in reducing air dose rates at the forest border. Also, broad removal of sedimentary organic materials in forests may even make things worse, in ways such as increasing bad effects on trees due to causing erosion of dirt, etc. containing radioactive cesium or impoverishing the soil. Accordingly, under the basic policy to prioritize areas especially necessary from the perspective of protecting human health, decontamination of forests has been conducted within approx. 20m from the borders of the forests adjacent to houses or farmland, etc., in principle.

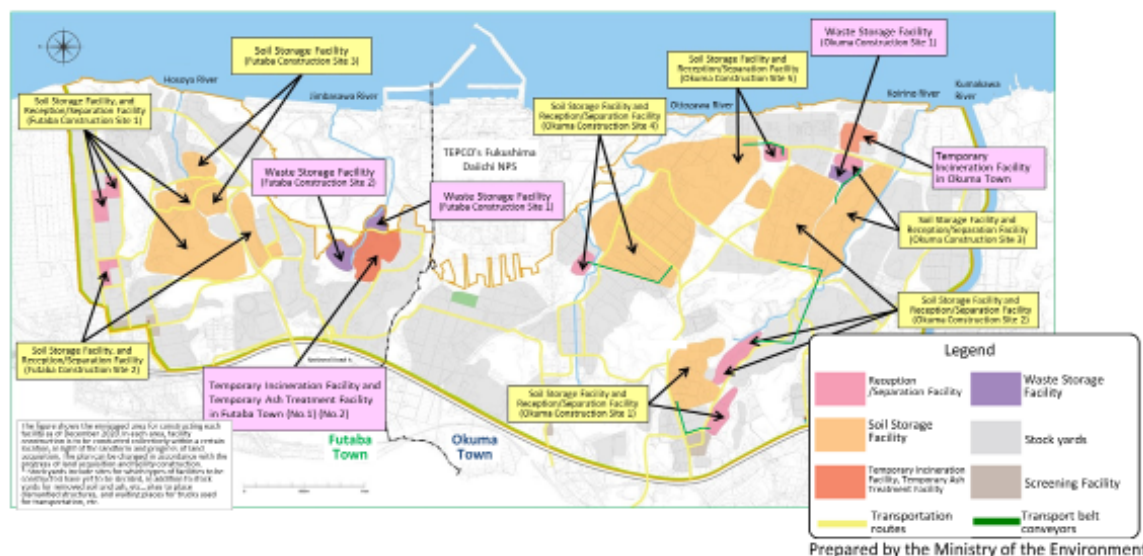
Included in this reference material on March 31, 2017

Updated on March 31, 2022

Interim Storage Facility

Interim Storage Facility for Removed Soil and Waste

- The Interim Storage Facility (ISF) was built to safely and intensively manage and store removed soil, waste, and incinerated ash (>100,000 Bq/kg) generated by decontamination in Fukushima Prefecture, until final disposal outside the prefecture within 30 years from the start of transportation to the Interim Storage Facility.
- Okuma Town and Futaba Town agreed to the request to build the facility, which was a very important decision. The Ministry of the Environment will continue to work on the ISF project with a “Safety First” approach.
- The total area of the planned site for the ISF is approx. 1,600 ha (almost the same as the area of Shibuya Ward in Tokyo). By the end of December 2022, the national government acquired land of approx. 1,280 ha (approx. 80.0% of the total sites).



At the ISF, the following are to be stored:

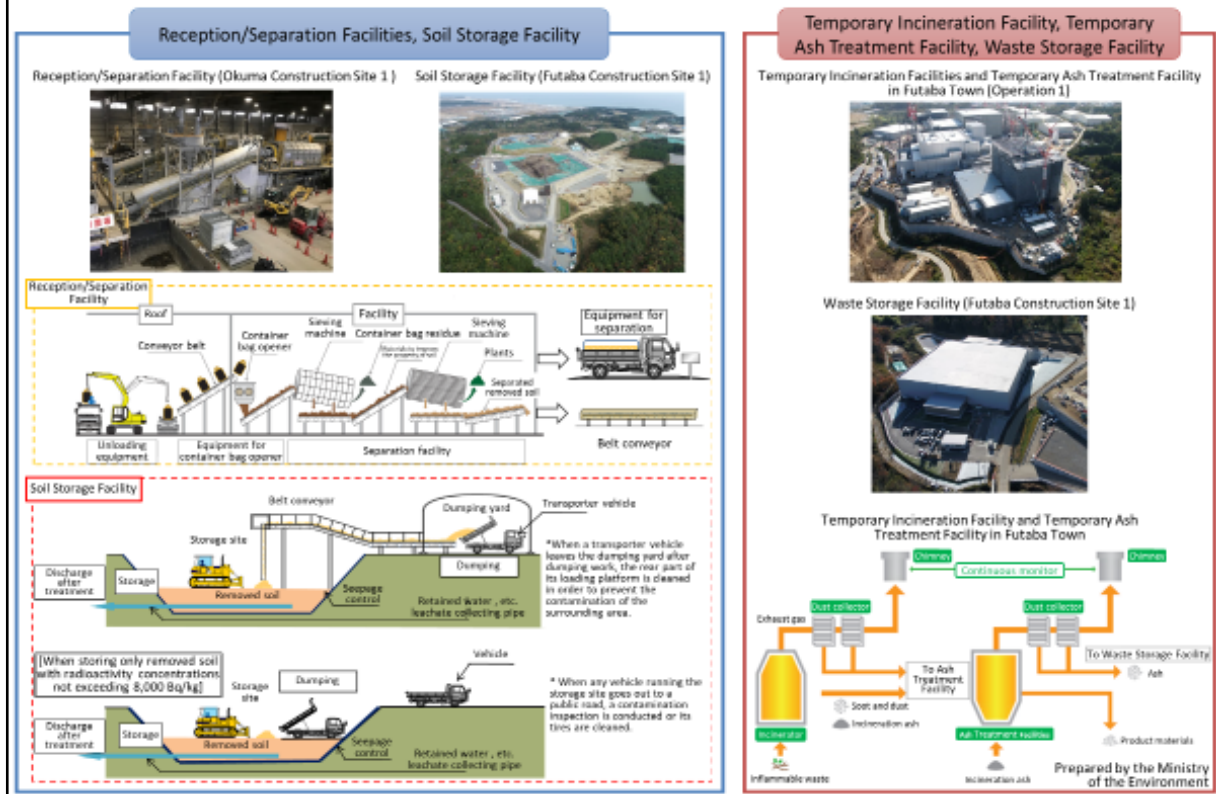
- Removed soil and waste (e.g. fallen leaves and branches, etc.) generated due to decontamination work in Fukushima Prefecture;
- Incineration ash with radioactivity concentration exceeding 100,000 Bq/kg.

The ISF is a facility to safely and intensively manage and store the above until final disposal outside the prefecture within 30 years after the commencement of interim storage. It is comprised of Reception/Separation Facilities, Soil Storage Facilities, and Waste Storage Facilities, etc.

Consent to accept the construction of the ISF was obtained from Fukushima Prefecture in September 2014 and from Okuma Town and Futaba Town in January 2015. The total area of the planned site is approx. 16 km², almost the same area as Shibuya Ward in Tokyo. By the end of December 2022, the national government acquired land of approx. 1,280 ha (approx. 80.0% of the total sites). The national government considers it most important to obtain understanding on the ISF project, not to mention building a relationship of trust with landowners, and is committed to continuing efforts while providing sufficient explanations to landowners.

Included in this reference material on January 18, 2016

Updated on March 31, 2023

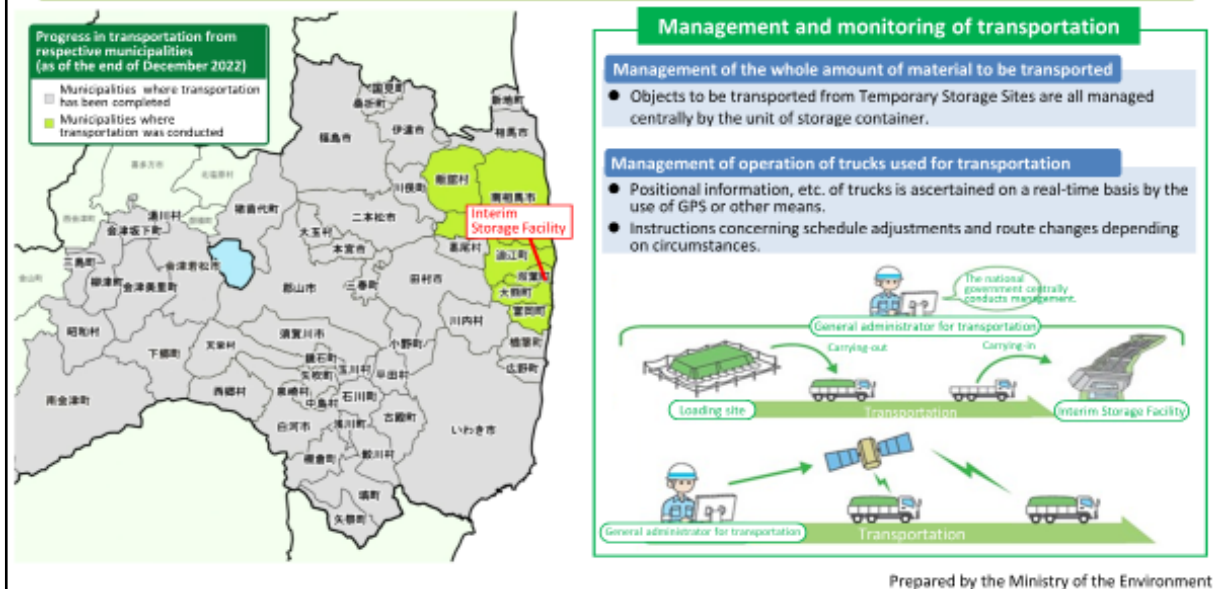


The Reception/Separation Facilities receive the removed soil and waste which is transported from the Temporary Storage Sites in Fukushima Prefecture to the ISF. The soil and waste are unloaded from trucks, taken out from container bags and separated into combustibles and incombustibles. The Soil Storage Facilities store the soil treated at the Reception/Separation Facilities safely in accordance with their radioactivity concentrations and other properties. As waste-related facilities, Temporary Incineration Facilities, Temporary Ash Treatment Facilities, and Waste Storage Facilities are also constructed. At Temporary Incineration Facilities, decontamination waste, disaster waste, and plants, etc. that are combustible are incinerated to minimize the volume. Generated incineration ash, etc. are melted at Temporary Ash Treatment Facilities to further reduce volume. Ash generated at Temporary Ash Treatment Facilities is encapsulated in square steel containers and stored at Waste Storage Facilities made of reinforced concrete, etc.

Construction of these facilities was commenced first for Reception/Separation Facilities and Soil Storage Facilities in November 2016. Then, reception and separation of the removed soil and waste started in June 2017 and storage of the soil sorted out started at the completed Soil Storage Facilities in October 2017. In March 2020, the ISF commenced operations of facilities for all processes of the treatment and storage of removed soil and waste.

At these facilities, safety measures to prevent scattering and leakage of radioactive materials are taken. At the Reception/Separation Facilities, scattering of radioactive materials to outside of the facilities is being prevented by roofs, walls, and double doors and through negative pressure control. Floors are structured not to allow permeation of a liquid for the purpose of preventing contaminated water, etc. from permeating into groundwater. At Soil Storage Facilities, scattering of radioactive materials is prevented by watering, and covering with soil, and permeation into groundwater is prevented by seepage control. Leachate, etc. generated at these facilities is treated properly at a leachate treatment facility and is discharged after water quality management.

- Transportation of the soil and waste from Temporary Storage Sites (TSS) to the Interim Storage Facility (ISF) has been implemented mostly using 10-ton dump trucks.
- Transportation was commenced at the end of FY2014. In FY2022, removed soil and waste will be transported from 8 municipalities, and transportation of removed soil and waste generated in Specified Reconstruction and Revitalization Base Areas will also be promoted.
- Safe and secure transportation is being conducted through managing the whole amount of material to be transported and operation of trucks used for transportation, and conducting environmental monitoring, etc.
- Approx. 13,380,000 m³ of removed soil and waste (including those in Restricted Areas) has been transported to the ISF (as of the end of December 2022).



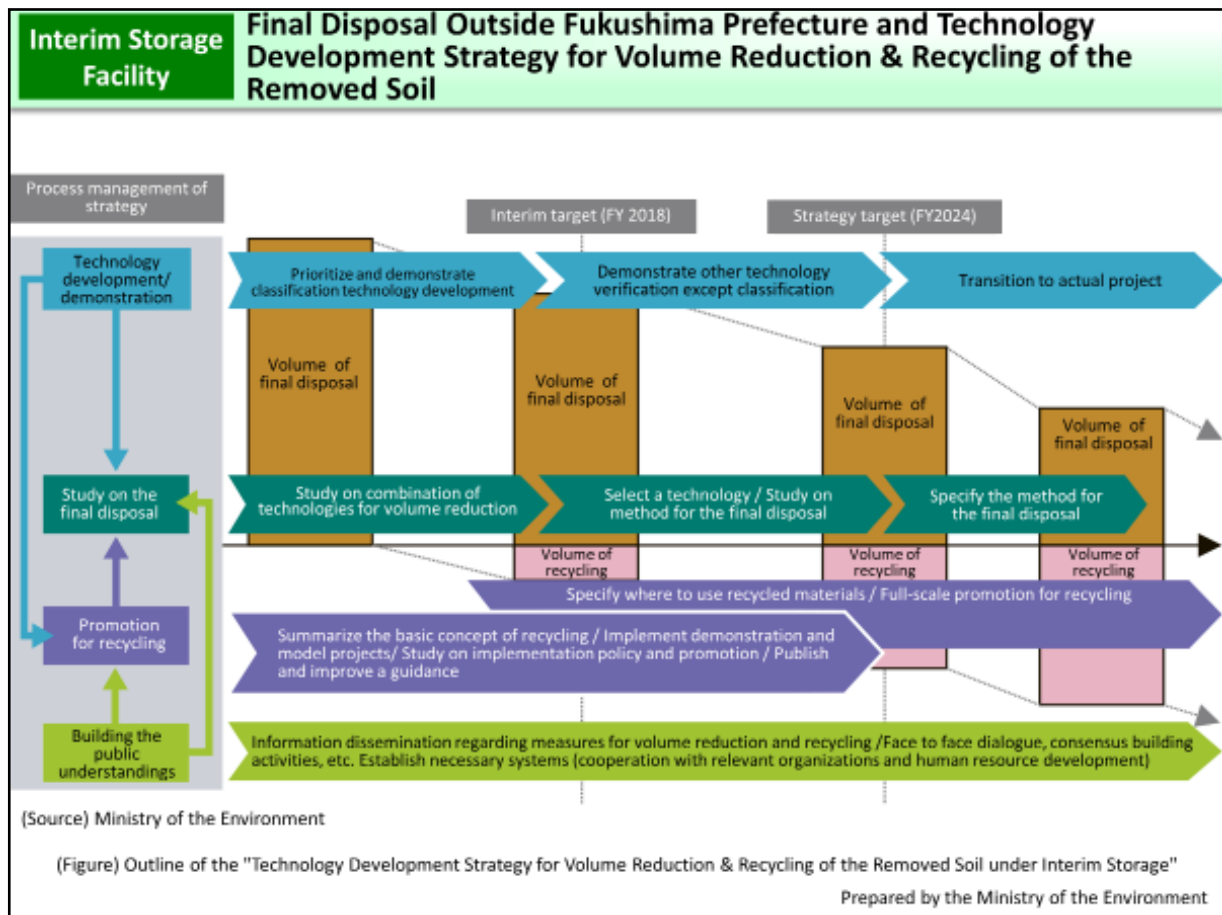
In line with the FY2022 Policies for the Interim Storage Facility (ISF) Project published on January 18, 2022, transportation of removed soil and waste generated in Specified Reconstruction and Revitalization Base Areas, etc. will be promoted. As of the end of December 2022, an accumulative total volume of approx. 13,380,000 m³ of the removed soil and waste had been transported to the ISF.

Transportation is being conducted on a safety-first policy. Major traffic safety measures are as follows.

1. Training for new and existing workers: Training on transportation of removed soil and waste to the ISF is provided to truck drivers and other workers newly employed. Workers already engaging in transportation also receive training again every fiscal year.
2. Pre-driving of transportation routes: All drivers drive the transportation routes in advance to mutually check high-risk spots and things to note, etc.
3. On-site checking of driving status: At spots where attention should be paid for speeding or heavily trafficked spots, etc., driving status of trucks transporting removed soil and waste is checked (including on their way back).
4. Commendation of superior drivers: With the aim of improving and maintaining drivers' motivation and safety awareness, superior driver certificates (to be put on helmets and dashboards) are given to drivers who conducted transportation safely for 100 days or longer via contractors.

Included in this reference material on February 28, 2018

Updated on March 31, 2023



For achieving final disposal of the soil and waste removed through off-site decontamination work outside Fukushima Prefecture within 30 years from the commencement of interim storage (March 2015), it is important to increase the amount of removed soil and waste that can be recycled to the extent possible through processing them while fully utilizing volume reduction technology, thereby reducing the total amount for final disposal. Volume reduction technology includes heat treatment and treatment by classifying removed soil and incineration ash into fine grains and sand and pebbles. Regarding volume reduction and recycling of removed soil and waste, efforts have been made steadily to develop technologies, promote recycling, and study the direction for final disposal in line with the "Technology Development Strategy for Volume Reduction & Recycling of the Removed Soil and Waste under Interim Storage," which the Ministry of the Environment (MOE) published in April 2016. In the mid fiscal year of the Strategy (FY2018), the MOE comprehensively reviewed the achievement of the interim target and the forecast of technology development and recycling in the future, etc. and revised the Strategy in March 2019. Additionally, the MOE published a guide (draft), which compiled technological matters to note in handling recycled soil safely in public works, etc., in March 2019 and updated it in December 2019.

Included in this reference material on March 31, 2019
Updated on March 31, 2023

Basic Concept for Safe Use of Removed Soil Processed into Recycled Materials

- The Ministry of the Environment (MOE) released "Basic Concept" in June 2016 to realize the **use of the removed soil under proper management** after volume reduction and recycling materialization on the premise of securing radiation safety.
- According to a policy of Basic Concept, MOE implements demonstration and model projects, confirms radiation safety, studies specific management systems, while fostering understandings of public all over Japan and developing an environment towards full-scale recycling.

Limited Use

- ✓ The use of contaminated soil is to be limited to public project whose management entity and responsible system are clear such as basic structure of banking, which assumed not to change shape artificially for a long time.
- E.g., coastal levees, seaside protection forests, embankment materials for roads, cover soil for waste disposal sites, landfill materials and filler for land development, and farmland for flowers and resource crops

Proper Management

- ✓ The additional exposure dose should be restricted below 1 mSv/y during the construction.
- ✓ Radioactivity concentration recycling level of Cs-137 included in the soil is below 8,000 Bq/kg as a principle, and is set separately for each use.
- ✓ Shielding is installed to cover soil and prevent the leakage and scattering. The data is also recorded.



Prepared by the Ministry of the Environment

With the aim of broadly obtaining understanding and trust of the public and local residents for recycling of the soil removed through off-site decontamination work in Fukushima Prefecture, and at the same time promoting safe use of removed soil processed into recycled soil by stage, the Ministry of the Environment (MOE) compiled the Basic Concept for Safe Use of Removed Soil Processed into Recycled Materials in June 2016. This Basic Concept imposes a limitation that processed removed soil be only used in public works, etc. where management entities and responsibility-related systems are clarified. It also sets the upper limit for radioactivity concentrations of recycled materials to limit additional exposure doses, while supposing that they are used under proper management, such as with shielding by cover soil.

At present, based on this Basic Concept, the MOE is implementing demonstration projects in Minamisoma City and Iitate Village to confirm the safety of processed removed soil. The results obtained so far through the demonstration projects have shown no significant changes in ambient dose rates or other values since commencing the projects, and measured values of radioactive cesium in seepage water through cover soil were all below the detection limit. In Minamisoma City, a trial embankment was created using recycled materials and radiation monitoring was conducted. As a result, data for over three years were obtained, and the embankment was removed in FY2021.

In Iitate Village, preparatory work for the development of farmland was commenced in June 2020 and creation of an embankment was commenced in April 2021. In the village, an experiment to grow edible crops has been conducted to confirm growth and safety. In the experiment in FY2021, measured concentrations of radioactive cesium in those edible crops were judged to be below the detection limit (The method of measuring radioactive cesium concentrations in foods specified by the Ministry of Health, Labour and Welfare sets the detection limit as less than 20 Bq/kg. As a result of continuing measurements until Cs was detected, all values were 0.1 to 2.5 Bq/kg, far below the standard limit for general foods (100 Bq/kg)). Additionally, since FY2021, a test to check functions of paddy fields has also been conducted.

For achieving final disposal outside Fukushima Prefecture, the national government has been holding dialogue forums nationwide since FY2021 or has otherwise been fundamentally strengthening activities to obtain public understanding for the need and the safety of volume reduction and recycling of waste.

MOE's website, "Interim Storage Facility": Demonstration Project for Recycling in Minamisoma City
<http://josen.env.go.jp/chukanchouzou/facility/effort/recycling/minamisoma.html> (in Japanese)

MOE's website, "Interim Storage Facility": Demonstration Project for Recycling in Iitate Village
<http://josen.env.go.jp/chukanchouzou/facility/effort/recycling/itate.html> (in Japanese)

Included in this reference material on March 31, 2019

Updated on March 31, 2023

Waste
Waste to be Treated by the National Government under the Act on Special Measures Concerning the Handling of Environment Pollution by Radioactive Materials

(i) Waste from the countermeasure area

○ Contaminated **waste from the countermeasure area*** designated by the Minister of the Environment that satisfies certain requirements

* An area that satisfies certain requirements, such that it is found that waste located in that area is likely to be contaminated to the extent requiring special management
(= municipalities containing former Restricted Areas and former Deliberate Evacuation Areas)

<Examples of waste from the countermeasure area>

- Debris due to the earthquake and the tsunami
- Waste from demolition of houses, etc.

(ii) Designated waste

○ Waste contaminated with radioactive materials derived from the accident **whose radioactivity concentration is found to exceed 8,000 Bq/kg and which is designated* by the Minister of the Environment**

* In light of the survey results concerning contamination status of incinerated ash at incineration facilities and based on applications filed by possessors of waste, the Minister of the Environment makes a designation when radioactivity concentration of waste is found to exceed 8,000 Bq/kg

<Examples of designated waste>

- Incinerated ash
- Agricultural and forestry waste (rice straw, compost), etc.

Incinerated ash

Agricultural and forestry by-products (rice straw)

⇒ The national government takes charge of the treatment of waste from the countermeasure area and designated waste

Prepared by the Ministry of the Environment

At present, the area extending over 10 municipalities in Fukushima Prefecture is designated as an Area for Contaminated Waste Countermeasures (an area designated by the Minister of the Environment as an area in which the national government needs to take charge of the collection, transport, storage and disposal of waste located therein; meaning the same as a Special Decontamination Area). Waste discharged from this area is being treated by the Ministry of the Environment as waste from the countermeasure area.

Waste contaminated with radioactive materials derived from the accident whose radioactivity concentration exceeds 8,000 Bq/kg is to be treated as designated waste by an appropriate method under the responsibility of the national government.

Included in this reference material on March 31, 2023

Waste

Progress of Disposal of Disaster Waste Directly Governed by the National Government in Designated Areas in Fukushima Prefecture

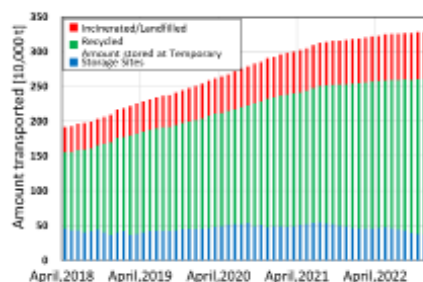


Temporary Incineration Facility in Okuma Town (December 2017)

Disaster waste has been disposed of based on the Treatment Plan on Waste within the Management Areas (partial revision on December 26, 2013).

[Amount of Waste within the Management Areas having been transported to Temporary Storage Sites]

○ As of the end of November 2022, a total of approx. 3.29 million tons of waste had been transported to Temporary Storage Sites (of which, approx. 560,000 tons were incinerated, approx. 2,230,000 tons were recycled, and approx. 220,000 tons were landfilled).



Amount of Waste within the Management Areas having been transported from designated areas to Temporary Storage Sites

[Removal of tsunami rubble]

○ Tsunami rubble in former Restricted Areas was all transported to Temporary Storage Sites in March 2016, except for such rubble left in Restricted Areas.

[Installation of Temporary Incineration Facilities]

In operation	Namie Town, Okuma Town, Futaba Town i and Futaba Town ii
Completion of operation	Kawauchi Village, Iitate Village (Komiya district), Tomioka Town, Minamisoma City i, Minamisoma City ii, Katsurao Village, Iitate Village (Warabidaira district), and Naraha Town

*Tamura City and Kawamata Town use existing waste disposal facilities for disposing of disaster waste.



Demolition of a damaged house, etc.

Prepared by the Ministry of the Environment

Waste from the countermeasure area in Fukushima Prefecture has been disposed of based on the Plan on Waste from the Countermeasure Area, which was revised in December 2013.

Such waste, which includes tsunami rubble, debris of damaged houses, and waste from houses after cleaning-up, has been transported sequentially to Temporary Storage Sites. As of the end of November 2022, a total of approx. 3.29 million tons had already been transported. Transported waste is recycled as much as possible.

It was decided to incinerate combustible waste to reduce volume at Temporary Incineration Facilities constructed at 12 locations in nine municipalities. As of the end of December 2022, four such facilities were in operation and waste is being steadily incinerated.

Included in this reference material on February 28, 2018

Updated on March 31, 2023

Ensuring Safety for Temporary Storage of Designated Waste

Temporary storage work (in the case of agricultural and forestry waste)



Elevate a certain parcel of land by adding soil



Put waste in tough bags and surround those bags with sandbags



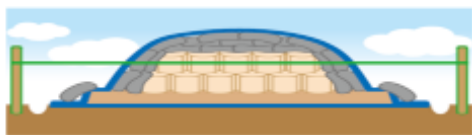
Cover them up with soil to shield radiation



Cover the whole area with an impermeable sheet

Structure of a Temporary Storage Site (in the case of agricultural and forestry waste)

- Take measures to prevent scattering and runoff of waste
- Take required measures against radiation (isolation or shielding using sandbags, etc.)
- Take measures to prevent infiltration of rainwater using impermeable sheet, etc.



Checking of storage status

The status of storage at Temporary Storage Sites is to be checked to ensure that designated waste is properly stored in compliance with the standards, etc. specified in the Act on Special Measures.



Staff of the Regional Environmental Office checking the storage status

Prepared based on the website, "Information on Disposal of Radioactive Waste," of the Ministry of the Environment

Designated waste includes ash left after incinerating waste contaminated with radioactive materials, sludge generated through sewage treatment, soil generated at water treatment plants to supply tap water (p.42 of Vol. 2, "Waterworks System"), agricultural and forestry waste such as rice straw and pasture grass, etc.

As of the end of September 2022, there was a total of over 410,000 tons of designated waste in 10 prefectures, including Tokyo Metropolis. Such waste is temporarily being stored at incineration facilities, water treatment plants, sewage treatment facilities, farmland, etc., where it was generated, until the national government establishes a proper disposal system.

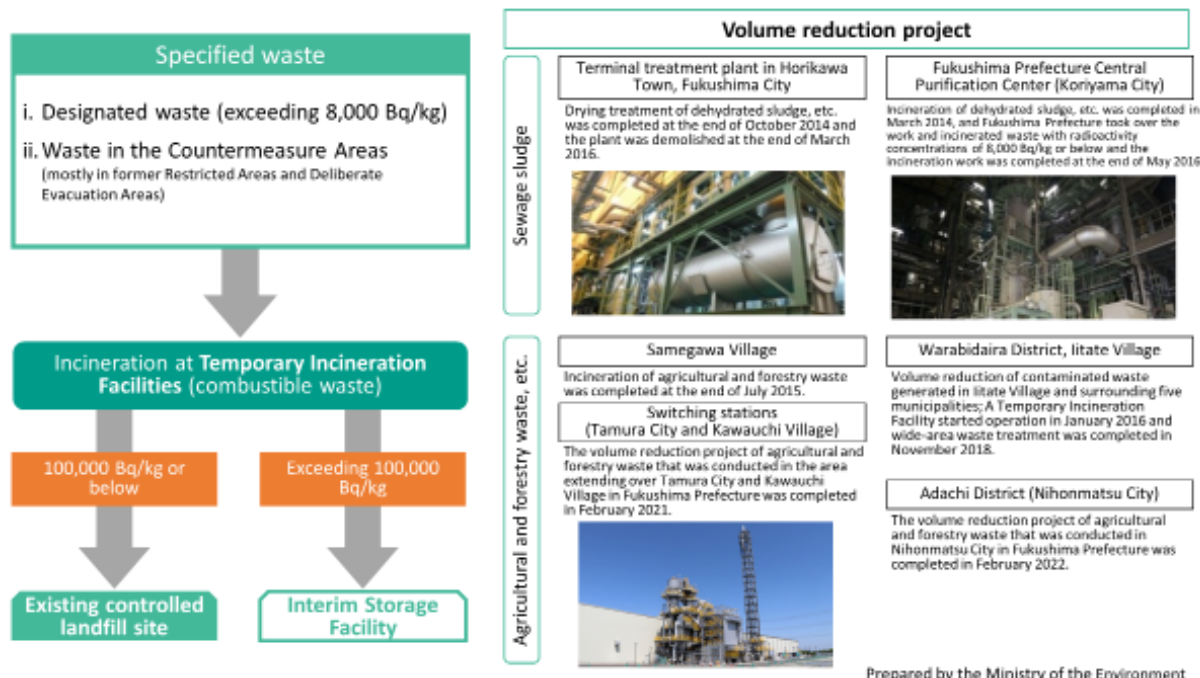
The waste is to be covered with impermeable sheets, etc. to prevent infiltration of rainwater and measures to prevent scattering and runoff of the waste are being taken in line with the guidelines and the Act on Special Measures Concerning the Handling of Environment Pollution by Radioactive Materials. Officials of the Ministry of the Environment visit various locations and check the status of temporary storage periodically to ensure safe and proper storage of designated waste.

Included in this reference material on January 18, 2016

Updated on March 31, 2023

Procedures for Disposal of Designated Waste in Fukushima Prefecture

- The Ministry of the Environment has been carrying out a program to reduce volume and stabilize properties of designated waste through incineration and drying, etc.
- With regard to designated waste generated in Fukushima Prefecture, waste with radioactivity concentrations exceeding 8,000 Bq/kg but 100,000 Bq/kg or below is to be transported to the existing controlled landfill site, while waste with radioactivity concentrations exceeding 100,000 Bq/kg is to be transported to the Interim Storage Facility.



In Fukushima Prefecture, designated waste with radioactivity concentration exceeding 8,000 Bq/kg but 100,000 Bq/kg or below is to be transported to the existing controlled landfill site, while designated waste with radioactivity concentration exceeding 100,000 Bq/kg is to be transported to the Interim Storage Facility.

Additionally, designated waste is incinerated, dried or otherwise handled to reduce volume and stabilize their properties in Fukushima Prefecture.

Included in this reference material on January 18, 2016

Updated on March 31, 2023



Designated waste, etc. with radioactivity concentrations not exceeding 100,000 Bq/kg generated in Fukushima Prefecture are to be disposed of promptly at the existing controlled landfill site.

In order to implement this project, the national government first asked Fukushima Prefecture for consent to accept the construction of an Interim Storage Facility in December 2013, and then provided explanations to Tomioka Town and Naraha Town, and their assemblies and residents.

In December 2015, consent was obtained from Fukushima Prefecture, Tomioka Town and Naraha Town for the implementation of this project. The national government nationalized the existing controlled landfill site in April 2016 and concluded a safety agreement with Fukushima Prefecture and the two municipalities in June 2016. Preparatory work was conducted thereafter and the transport of waste to the facility was commenced in November 2017. Additionally, the Ministry of the Environment (MOE) has endeavored to provide related information positively through the Reprun Fukushima, a specified waste landfill information center, which commenced operation in August 2018.

In order to steadily facilitate disposal of waste contaminated with radioactive materials, utmost efforts will be continued to properly carry out this project with safety as the top priority and to build a stronger relationship of trust with local residents.

Included in this reference material on January 18, 2016

Updated on March 31, 2023

Status of the Five Prefectures concerning Designated Waste

Miyagi Prefecture

[Municipal mayors' conference]
1st to 4th: Oct. 2012 to Nov. 2013
5th: Jan. 20, 2014
→ Three candidate sites for detailed survey were presented (Fukayamadake, Kurihara City; Shimohara, Taiwa-cho; Tashirodake, Kami Town).
7th (held by the prefecture): Aug. 4, 2014
→ The prefectural governor announced the acceptance of a detailed survey as a consensus of all municipal mayors.
Detailed surveys were commenced at the three candidate sites in August 2014. However, an on-site survey was not possible due to protests by Kami Town (also suspended in 2015).
Apr. 5, May 29, and Oct. 13, 2015: Forum targeting prefectural residents
Oct. to Nov. 2015 (twice): Opinion exchange with Kami Town with the participation of experts
9th: Mar. 19, 2016
→ Results of the remeasurement for designated waste and approaches of the Ministry of the Environment were explained.
Apr. 15, 2016: The prefecture requested the suspension of an on-site survey until certain prefectural policy is decided.
11th (held by the prefecture): Nov. 3, 2016
→ Results of the measurement for waste other than designated waste were released. The prefecture presented its draft policy on disposal of waste with radioactivity concentrations not exceeding 8,000 Bq/kg (excluding designated waste).
12th (held by the prefecture): Dec. 27, 2016
→ Agreement on the prefectural disposal policy was not obtained from Kurihara City and Tome City, and it was decided to have discussions again.
13th (held by the prefecture): Jun. 18, 2017
→ The prefecture presented its new draft disposal policies such as to require each district to independently treat contaminated waste generated therein.
14th (held by the prefecture): Jul. 15, 2017
→ Agreement was reached on the draft disposal policy presented at the previous meeting.
Test incineration was completed in four districts, Ishinomaki, Sennan, Kurokawa and Osaki. →
Ishinomaki: Full-fledged incineration was completed;
Kurokawa: Completed with the application to farmland;
Sennan and Osaki: Full-fledged incineration is underway.

Tochigi Prefecture

[Municipal mayors' conference]
1st to 3rd: Apr. 2013 to Aug. 2013
4th: Dec. 24, 2013
→ Selection method was determined.
Jul. 30, 2014
→ One candidate site for detailed survey was presented (Tatehikari, Shiota Town).
5th and 6th: Jul. 2014 to Nov. 2014
May 14, Jun. 22, and Sep. 13, 2015: Forum targeting prefectural residents
Oct. 14, 2015: Survey of the effects of the heavy rain in Tatehikari, Shiota Town
Dec. 7, 2015: The mayor of Shiota Town declared the surrender of the designation as a candidate site for detailed survey.
7th: May 23, 2016
→ Remeasurement for designated waste was decided.
8th: Oct. 17, 2016
→ Results of the remeasurement were released and future directions were presented.
Mar. 30, 2017: Results of the confirmation of intentions of people temporarily storing waste by themselves were released.
Jul. 10, 2017: Meeting of mayors of municipalities concerning measures to ease burdens of farm households storing waste by themselves (i)
→ Draft of policy for measures to ease burdens of farm households storing waste by themselves was presented.
Nov. 26, 2018: Meeting of mayors of municipalities (ii)
→ Agreement was reached on efforts to muster opinions of municipalities, including those on remeasurement.
Mar. 19, 2019: Results of the remeasurement was released.
Jun. 26, 2020: Meeting of mayors of municipalities (iii)
→ Participants confirmed future directions.
Jun. 2, 2021: The Ministry of the Environment asked Nasushiobara City to cooperate in provisional centralized collection of waste (Oct. 22, 2021: Designated waste having been stored by individual farm households started to be transported in the city.)
Mar. 24, 2022: Nasu Town decided on the site for a provisional storage site.
Efforts are to be made continuously to seek agreement on detailed surveys and make adjustments with the prefecture and municipalities storing waste regarding measures to ease the burden on farm households storing waste by themselves.

Chiba Prefecture

[Municipal mayors' conference]
1st to 3rd: Apr. 2013 to Jan. 2014
4th: Apr. 17, 2014
→ Selection method was determined.
Apr. 24, 2015
→ One candidate site for detailed survey was presented.
(Part of the premises of TEPCO's Chiba Thermal Power Station (Chuo Ward, Chiba City))
May 20 and Jun. 2, 2015: Chiba City Assembly Plenary Meeting
Jun. 8 and Jun. 10, 2015: Chiba City Assembly and the city mayor requested fresh discussions.
Jun. 29, Jul. 7, 13 and 20, and Aug. 7, 2015: Explanations were given to community organization leaders and residents of Chiba City.
Dec. 14, 2015: Response to the request for fresh discussions was made.
Jun. 28, 2016: Chiba City requested for removal of the designation.
Jul. 22, 2016: Designation was removed for designated waste in Chiba City.
Efforts are to be made continuously to seek agreement on detailed surveys.

Ibaraki Prefecture

[Municipal mayors' conference]
1st: Apr. 12, 2013
2nd: Jun. 27, 2013
3rd: Dec. 25, 2013
4th: Jan. 28, 2015
[Meeting of mayors of municipalities where waste is temporarily stored]
1st: Apr. 6, 2015
2nd: Feb. 4, 2016
→ The policy to continue on-site storage and promote staged disposal was determined.
Mar. 31, 2017: Remeasurement for designated waste, etc. in the prefecture was conducted and the results were released.

Gunma Prefecture

[Municipal mayors' conference]
1st: Apr. 19, 2013
2nd: Jul. 1, 2013
3rd: Dec. 26, 2016
→ The policy to continue on-site storage and promote staged disposal was determined.

Prepared by the Ministry of the Environment

Prefectures other than Fukushima Prefecture which are in urgent need to secure Temporary Storage Sites for designated waste (Miyagi Prefecture, Tochigi Prefecture, Chiba Prefecture, Ibaraki Prefecture and Gunma Prefecture) are taking measures in accordance with the circumstances of respective prefectures, based on discussions at municipal mayors' conferences, while ascertaining the current status through the measurement of radioactivity concentrations.

Regarding candidate sites for detailed surveys, Miyagi, Tochigi and Chiba Prefectures followed selection methods determined through discussions at expert meetings and municipal mayors' conferences, and presented selected candidate sites in January 2014, July 2014 and April 2015, respectively. However, detailed surveys have not been conducted due to a failure to obtain understanding of relevant regions.

In the meantime, Miyagi Prefecture determined its policy that each municipality is to make efforts to dispose of contaminated waste with radioactivity concentrations not exceeding 8,000 Bq/kg under the initiative of the prefectural government, and the Ministry of the Environment is offering financial and technical support. As part of such efforts, test incineration was commenced sequentially in four districts (Ishinomaki, Kurokawa, Sennan and Osaki) from March 2018 and was completed by July 2019. As of the end of December 2021, waste disposal was completed in the Ishinomaki district and Kurokawa district, and full-fledged incineration was underway in the Sennan and Osaki districts.

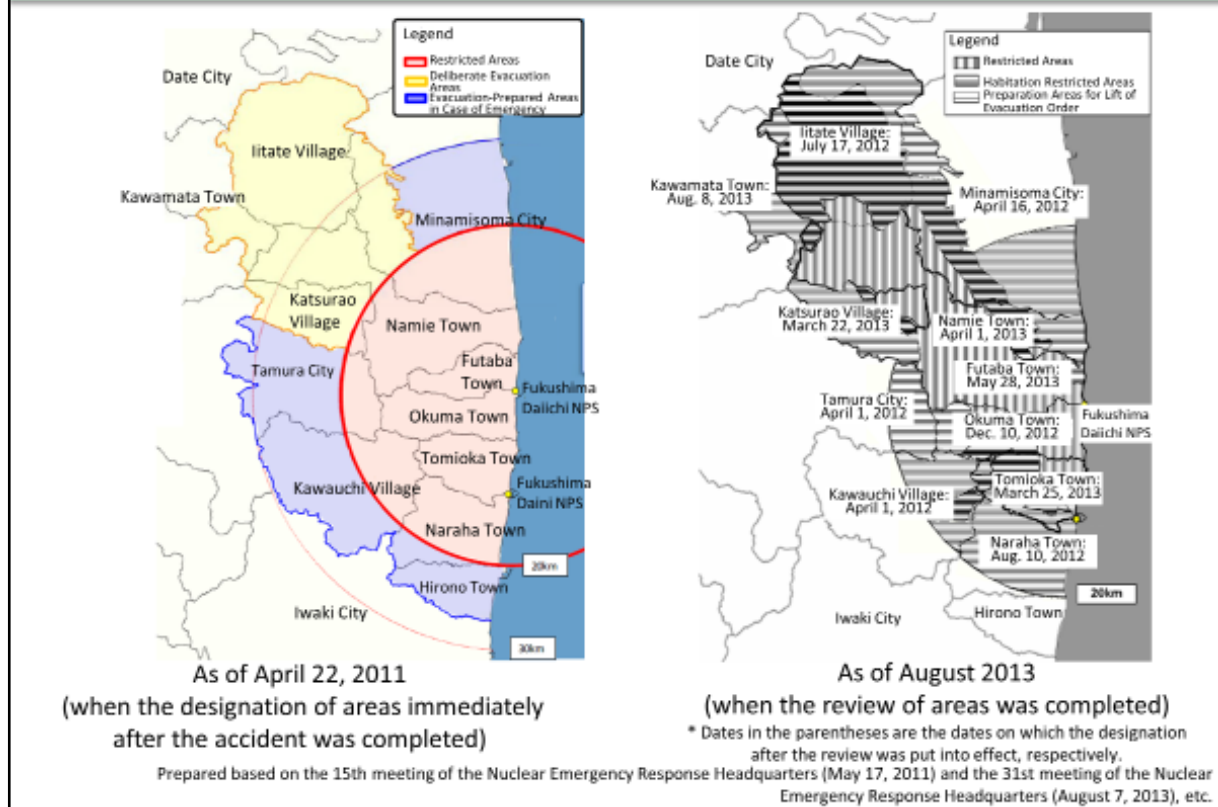
In November 2018, the national government presented a provisional policy for volume reduction and centralized collection of designated waste by the unit of municipality, targeting Tochigi Prefecture and municipalities storing designated agricultural and forestry waste, with the aim of easing burdens of farm households that have been storing designated waste by themselves, while maintaining the basic policy to ultimately develop long-term management facilities. Agreement was reached on the provisional policy. Additionally, it was confirmed that the national government will compile its approach for the selection of provisional storage sites and make efforts to select relevant sites as promptly as possible in collaboration with Tochigi Prefecture and relevant municipalities. In June 2021, the Ministry of the Environment asked Nasushiobara City to cooperate in provisional centralized collection of designated waste having been stored by individual farm households. In October 2021, the work to transport designated waste from farm households to the provisional storage site was commenced in the city. In this manner, efforts are being made by relevant municipalities.

As for Chiba Prefecture, it is also making efforts to obtain understanding of local residents for the implementation of a detailed survey concerning long-term management facilities.

Ibaraki and Gunma Prefectures determined the policies to continue on-site storage and promote staged disposal respectively in February 2016 and December 2016. Based on the determined policies, both prefectures will repair or reinforce storage sites as necessary and will dispose of designated waste whose radioactivity concentrations have reduced to 8,000 Bq/kg or lower at existing disposal facilities in a staged manner.

Included in this reference material on March 31, 2016

Updated on March 31, 2023



Based on Article 15, paragraph (2) of the Act on Special Measures Concerning Nuclear Emergency Preparedness, a Declaration of a Nuclear Emergency Situation was issued at 19:03 on March 11, 2011. At 18:25 on the following day, evacuation orders were issued for the 20-km zone of TEPCO's Fukushima Daiichi NPS.

On April 11, 2011, areas around the 20-km zone where annual cumulative doses would be highly likely to exceed 20 mSv after the accident were designated as Deliberate Evacuation Areas, taking into account the standard limits for radiological protection in emergency exposure situations, and areas within 20 km to 30 km were designated as Evacuation-Prepared Areas in Case of Emergency. Additionally on April 21, 2011, considering future risks due to the accident, areas within 20 km from the NPS were designated as Restricted Areas and access was prohibited in principle.

In June 2011 onward, spots where decontamination work would not be easy and annual cumulative doses would be highly likely to exceed 20 mSv were designated as specific spots recommended for evacuation, based on the results of the environmental monitoring by the national government and Fukushima Prefecture.

On December 16, 2011, the reactors reached a state of cold shutdown and it was confirmed that the discharge of radioactive materials was under control. Accordingly, on December 26, the designation of Restricted Areas was removed and it was proposed to review Areas under Evacuation Orders and to newly designate Restricted Areas, Habitation Restricted Areas and Preparation Areas for Lifting of Evacuation Orders. Upon reviewing Areas under Evacuation Orders, four problems common to all subjected areas were cited as problems to be addressed: (i) need to ensure safety and security of residents; (ii) need for decontamination and due consideration of children's radiation exposure; (iii) reconstruction of infrastructure and job creation; and (iv) compensation.

As requirements for lifting evaluation orders, the following were set: (i) it is certain that annual cumulative doses estimated based on ambient dose rates will become 20 mSv or lower; (ii) infrastructure (such as electricity, gas, water and sewer services, major transportation systems, and communication networks) and living-related services (such as medical services, nursing care, and postal services) indispensable for daily lives have been almost restored and decontamination work has progressed sufficiently centered on children's living environments; and (iii) consultations have been held sufficiently among the prefecture, municipalities and residents.

(Related to p.171 of Vol. 1, "ICRP Recommendations and Responses of the Japanese Government")

Included in this reference material on February 28, 2018

Updated on March 31, 2020

Designation of Restricted Areas and Areas under Evacuation Orders and Removal Thereof

April 22, 2011, onward Area designation immediately after accident	April 2012, onward After confirming cold shutdown of the reactors
Restricted Areas^(*1) Areas within 20 km in radius from the Nuclear Power Station (NPS); The relevant areas were designated as Areas under Evacuation Orders on March 12, 2011.	Preparation Areas for Lift of Evacuation Order Areas where it is confirmed that annual cumulative doses will surely become 20 mSv or lower ^(*2)
Deliberate Evacuation Areas Areas 20 km or farther from the NPS where cumulative doses would be highly likely to exceed 20 mSv within one year after the accident	Habitation Restricted Areas Areas where annual cumulative doses would be highly likely to exceed 20 mSv ^(*2)
Evacuation-Prepared Areas in Case of Emergency Areas within 20 km to 30 km in radius from the NPS other than Deliberate Evacuation Areas; The relevant areas were designated as In-house Evacuation Areas on March 12, 2011.	Restricted Areas^(*3) Areas where annual cumulative doses exceed 50 mSv ^(*2) at present and would be highly likely to remain above 20 mSv ^(*2) even after 6 years from the accident

Areas under Evacuation Orders:

Areas for which evacuation orders were issued based on Article 15, paragraph (3) of the Act on Special Measures Concerning Nuclear Emergency Preparedness; Areas under Evacuation Orders and the 20-km zone of the Nuclear Power Station were rearranged and were newly designated as Preparation Areas for Lift of Evacuation Order, Habitation Restricted Areas or Restricted Areas.

(*1) Areas where access is restricted pursuant to the provisions of Article 63, paragraph (1) of the Disaster Countermeasures Basic Act as applied pursuant to Article 28, paragraph (2) of the Act on Special Measures Concerning Nuclear Emergency Preparedness, following the deemed replacement of terms

(*2) Based on the dose data obtained through the 4th airborne monitoring survey after correction as of March 31, 2012

(*3) The term "Areas where returning is difficult" was formerly used instead of "Restricted Areas" as a literal translation from Japanese.

Prepared based on the "Basic Idea on Review of the Restricted Areas and Areas under Evacuation Orders in Response to the Completion of Step 2 and Matters to be Discussed" (December 26, 2011; Nuclear Emergency Response Headquarters)

Immediately after the accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS on March 11, 2011, the Nuclear Emergency Response Headquarters issued evacuation orders in order to avoid risks to residents' lives and designated the areas within 20 km from the NPS as Areas under Evacuation Orders on March 12.

On April 22, for fear of any risks that residents might be exposed to a large amount of radiation at one time as a result of worsening of the situation, the Headquarters designated the relevant areas as Restricted Areas to prohibit access in principle, and also designated areas 20 km or farther from the NPS where cumulative doses would be highly likely to exceed 20 mSv within one year after the accident as Deliberate Evacuation Areas.

On December 16, the reactors reached a state of cold shutdown and the Nuclear Emergency Response Headquarters confirmed that the chaotic situation after the accident ended. Accordingly, on December 26, the basic idea on review of Restricted Areas and Areas under Evacuation Orders was presented. The Headquarters made preparations for the review while closely consulting with the prefecture, municipalities and residents and making adjustments, and at the same time endeavored to address problems common to all subjected areas.

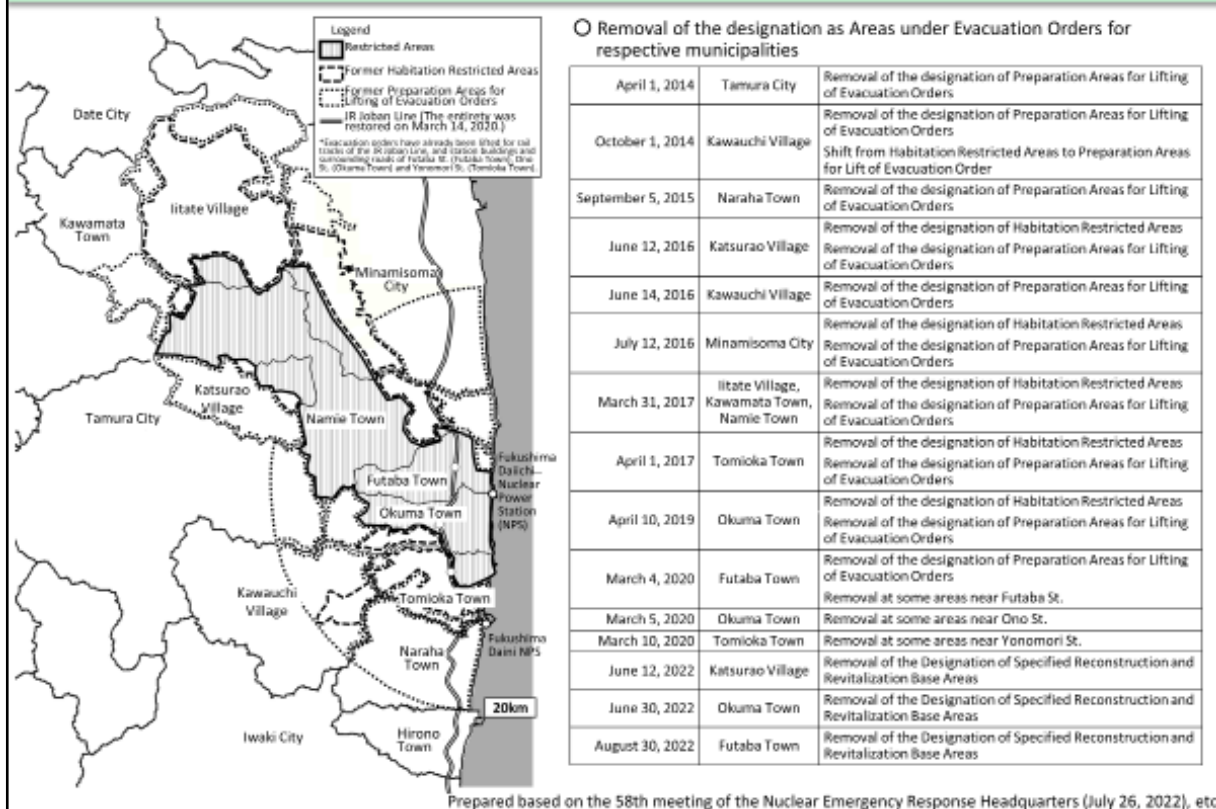
On March 30, 2012, the Nuclear Emergency Response Headquarters reviewed Restricted Areas and Areas under Evacuation Orders in accordance with radiation doses and problems unique to respective areas. By August 2013, the designation of Restricted Areas and Specific Spots Recommended for Evacuation was completely removed, and Areas under Evacuation Orders were newly designated as Preparation Areas for Lifting of Evacuation Orders, Habitation Restricted Areas, or Restricted Areas.

(Related to p.171 of Vol. 1, "ICRP Recommendations and Responses of the Japanese Government")

Included in this reference material on February 28, 2018

Updated on March 31, 2020

Removal of the Designation of Areas under Evacuation Orders



At the joint meeting of the Reconstruction Promotion Council and the Nuclear Emergency Response Headquarters held on March 7, 2013, it was pointed out that “a certain view should be indicated within the year” regarding the lifting of evacuation orders. Accordingly, procedures to be followed for lifting evacuation orders were presented based on the discussions over the Cabinet decision on December 20, 2013, titled “For Accelerating the Reconstruction of Fukushima from the Nuclear Disaster.” In order to ease returning residents’ anxiety over health effects of radiation, measures are being taken to reduce radiation exposure and eliminate health concerns (risk communication project). These measures include deployment of counselors, development of counselor support centers, ascertaining and management of personal doses, and radiation monitoring.

In the meantime, evacuation orders were lifted by March 2020 for all areas designated as Preparation Areas for Lift of Evacuation Orders or Habitation Restricted Areas, except for Restricted Areas.

Regarding Restricted Areas, evacuation orders were lifted for the first time for some areas in Futaba Town, Okuma Town and Tomioka Town within the Specified Reconstruction and Revitalization Base Areas designated as Restricted Areas, upon the reopening of the entirety of the JR Joban Line in March 2020. Evacuation orders were also lifted for the Specified Reconstruction and Revitalization Base Areas in Katsurao Village and Okuma Town in June 2022 and in Futaba Town in August 2022. Although Kawauchi Village and Hirono Town had recommended evacuation for areas other than Areas under Evacuation Orders designated by the national government, based on their independent determinations, these evacuation recommendations were also lifted on January 31, 2012, and on March 31, 2012, respectively.

The latest information, the current status of evacuees and the details of the Areas under Evacuation Orders are posted on the portal site, “Fukushima Revitalization Station.”

“Fukushima Revitalization Station”

<https://www.pref.fukushima.lg.jp/site/portal-english/>

Included in this reference material on February 28, 2018
Updated on March 31, 2023

Traffic on Major Roads in Restricted Areas



- **Joban Expressway:** The entirety was restored in March 2015.
Source: https://www.e-nexco.co.jp/en/pressroom/head_office/2014/1225/00006647.html
- **JR Joban Line:** The entirety was restored in March 2020.
Source: https://www.jreast.co.jp/press/2019/20200117_ho01.pdf (in Japanese)
- **National roads and prefectural roads:** Transit without carrying and presenting a pass came to be permitted for National Road 6 from September 2014, for National Road 114 from September 2017, and for Prefectural Road 35 from September 2019.

Exposure doses of drivers passing through

Dose survey period		November 2018 to January 2019	August 2017	November to December 2019	
Section		Japan Expressway: between Hirono IC and Minamisoma IC	National Road 114: between the border of Kawamata Town and Namie IC	National Road 6: in Restricted Areas	Prefectural Road 35: in Restricted Areas
Exposure dose while passing through (μSv)	Automobiles	0.28	1.01	0.39	0.51
	Motorcycles	0.34	-	0.49	0.63

Reference) Exposure dose during a round flight between Tokyo and New York: approx. 80 to 110 μSv

Source: Prepared by the Support Team for Residents Affected by Nuclear Incidents based on the "Results of Radiation Dose Surveys in Restricted Areas along National Roads 114, 399 and 459 and Prefectural Roads 49 and 34" (September 15, 2017), the "Results of Radiation Dose Surveys in Restricted Areas along National Roads 6 and 114 and Prefectural Roads 34, 35, 36, 253 and 256" (January 30, 2020), and NEXCO East's website (<https://jobando.jp/hibakusenryo/hibakuryo.html> (in Japanese))

In Restricted Areas, transit had been restricted except for temporary entry of residents and transit based on the Special Transit Permission System.

As National Road 6 is a key major road for reconstruction and recovery of Fukushima Prefecture, after completion of decontamination and road repair work, special transit without carrying and presenting a pass came to be permitted for National Road 6 and Prefectural Road 36 on September 15, 2014, as a result of consultations with the relevant municipalities.

The Special Transit Permission System has also been applied to National Road 114 and Prefectural Road 35 based on consultations with the relevant local governments and organizations. From March 2020, motorcycles are also permitted to use some routes, such as National Road 6 and Prefectural Road 35. Furthermore, in association with the lifting of evacuation orders for the Specified Reconstruction and Revitalization Base Areas in Okuma Town in June 2022 and in Futaba Town in August 2022, the entirety of National Road 6 was reopened to foot and bicycle traffic. The most recent status of the application of the Special Transit Permission System and the results of dose surveys under the application of the system are published in the form of a notice issued by the Support Team for Residents Affected by Nuclear Incidents, Cabinet Office (<https://www.meti.go.jp/earthquake/nuclear/kinkyu.html> (in Japanese)).

Included in this reference material on February 28, 2018

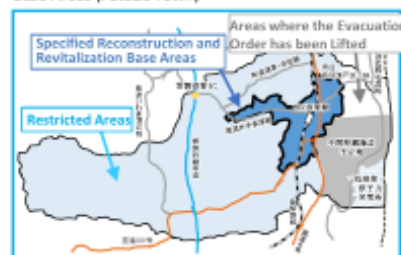
Updated on March 31, 2023

[Approval of Plans for Specified Reconstruction and Revitalization Base Areas and Targeted Timing for the Lifting of Evacuation Orders]

Municipality name	Approval date	Targeted timing for the lifting of evaluation orders
Futaba Town	Sep. 15, 2017	Around spring of 2022 (Lifted on August 30, 2022)
Okuma Town	Nov. 10, 2017	By around spring of 2022 (Lifted on June 30, 2022)
Namie Town	Dec. 22, 2017	March 2023
Tomioka Town	Mar. 9, 2018	Around spring of 2023
Iitate Village	Apr. 20, 2018	Around spring of 2023
Katsurao Village	May 11, 2018	By around spring of 2022 (Lifted on June 12, 2022)

<https://www.reconstruction.go.jp/topics/main-cat1/sub-cat1-4/saiseikyoten/20170913162153.html> [in Japanese]

Example of a Specified Reconstruction and Revitalization Base Areas (Futaba Town)



*Specified Reconstruction and Revitalization Base Area Reconstruction and Revitalization Plan" by the Reconstruction Agency

"Radiological Protection Measures at Specified Reconstruction and Revitalization Base Areas"

(Dec. 12, 2018, by the Cabinet Office's Support Team for Residents Affected by Nuclear Incidents, the Reconstruction Agency, the Ministry of the Environment, and the Secretariat of the Nuclear Regulation Authority)

As Specified Reconstruction and Revitalization Base Areas are areas where entries have been strictly restricted as Restricted Areas, required measures are to reduce residents' exposure doses and meticulously respond to their worries over radiation.

Under this concept, radiological protection measures should be taken in two stages, the first stage to make preparations for returning and rebuild communities ahead of the lifting of the evacuation order and the second stage to achieve the lifting of the evacuation order for further accelerating related initiatives.

Prepared based on the "Radiological Protection Measures at Specified Reconstruction and Revitalization Base Areas" (2018) by the Cabinet Office's Support Team for Residents Affected by Nuclear Incidents, the Reconstruction Agency, the Ministry of the Environment, and the Secretariat of the Nuclear Regulation Authority and the "Toward the Lifting of Evacuation Orders and Returning and Inhabitation of Residents for Specified Reconstruction and Revitalization Base Areas" (2018) by the Nuclear Emergency Response Headquarters

As radiation doses have decreased in some Restricted Areas, the national government published its policy in August 2016 to develop "reconstruction bases with the aim of lifting evacuation orders and permitting inhabitation in such areas within around five years in light of the status of decreases in radiation doses." In response, the Act on Special Measures for the Reconstruction and Revitalization of Fukushima was amended in May 2017 and the system for Specified Reconstruction and Revitalization Base Areas was established thereby. Plans for reconstruction and revitalization that all municipalities (Futaba Town, Okuma Town, Namie Town, Tomioka Town, Iitate Village, and Katsurao Village) had formulated for Specified Reconstruction and Revitalization Base Areas were approved by May 2018 and their development has been promoted. Evacuation orders were lifted for the Specified Reconstruction and Revitalization Base Areas in Katsurao Village and Okuma Town in June 2022 and in Futaba Town in August 2022, and efforts are being made, aiming to lift evacuation orders for the remaining three municipalities by around the spring of 2023.

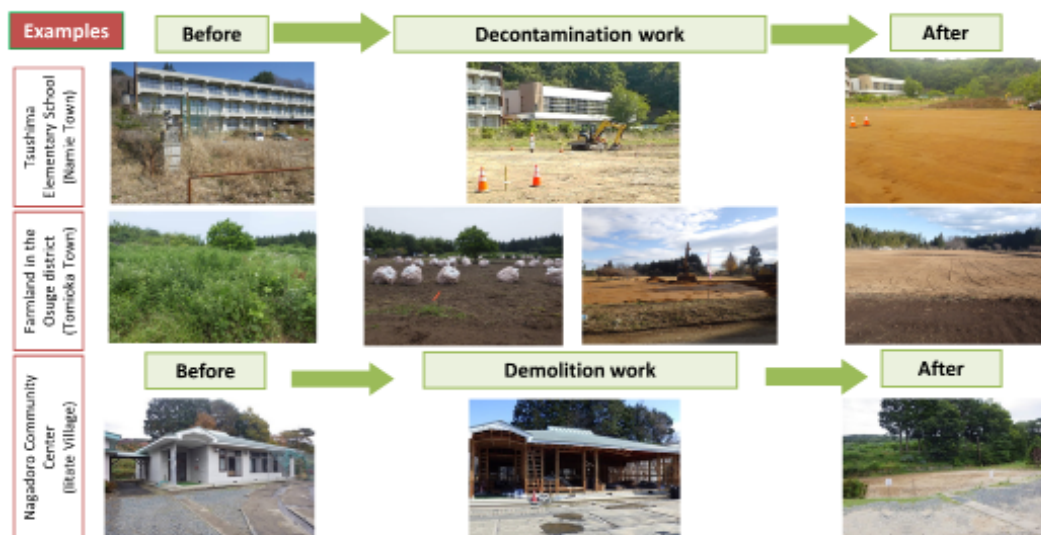
In December 2018, as moves toward the lifting of evacuation orders for these municipalities had become active, the national government presented its policy to take radiological protection measures for Specified Reconstruction and Revitalization Base Areas in two stages, a stage to prepare for returning and a stage to achieve the lifting of evacuation orders, with the aim of further accelerating efforts for lifting evacuation orders.

In a stage to prepare for returning, the national government will not only ensure steady management of individuals' doses and secure a consultation system, but also minutely obtain doses and other information and provide estimated exposure doses based on detailed dose maps and representative behavior patterns or otherwise take multi-layered measures in cooperation with local governments.

In a stage to achieve the lifting of evacuation orders, as residents spend more time and move around more widely than in the preparatory stage, the national government will take measures to reduce residents' exposure doses based on dose data and individuals' living conditions and risk communication measures to meticulously respond to residents' worries and anxieties, comprehensively and in a multi-layered manner in line with individual local governments' wishes, in addition to steadily managing individuals' doses and securing a consultation system.

Included in this reference material on March 31, 2020
Updated on March 31, 2023

- Works to demolish houses and other buildings and decontamination work have commenced in all of the six towns and villages (Futaba Town, Okuma Town, Namie Town, Tomioka Town, Iitate Village and Katsurao Village). Works have been completed for station squares, kindergartens, gymnasiums and other public facilities. Efforts to restore the environment are thus steadily progressing.
- In order to achieve lifting of evacuation orders for the entirety of the Specified Reconstruction and Revitalization Base Areas from around the spring of 2022 to around the spring of 2023, as had been targeted, demolition and decontamination of houses in the areas are being conducted in collaboration with relevant ministries and agencies.
- In Specified Reconstruction and Revitalization Base Areas, **decontamination has been completed for over 90%, and the demolition of houses and other buildings has been completed for approximately 84% out of the total number of applications (as of the end of November 2022).**



Prepared by the Ministry of the Environment

For Restricted Areas, relevant municipalities formulated plans for environmental development (decontamination and development of infrastructure, etc.) for Specified Reconstruction and Revitalization Base Areas based on the Act on Special Measures for the Reconstruction and Revitalization of Fukushima. After obtaining approval for the formulated plans from the Prime Minister, they are making efforts to achieve the lifting of evacuation orders within five years.

The Ministry of the Environment (MOE) is now carrying out decontamination work and the demolition of houses and other buildings in the Specified Reconstruction and Revitalization Base Areas based on their plans. Evacuation orders were lifted for Katsurao Village on June 12, 2022, for Okuma Town on June 30, 2022, and for Futaba Town on August 30, 2022. For the remaining three municipalities (Namie Town, Tomioka Town, and Iitate Village), efforts are being made to lift evacuation orders by around the spring of 2023.

At present, decontamination work has been completed for over 90%, and the demolition of houses and other buildings has been completed for approximately 84% out of the total number of applications (as of the end of November 2022). Specified waste from demolished houses and other buildings is to be disposed of after volume reduction for disposal at the controlled landfill site managed by the Futaba Regional Municipal Association (Clean Center Futaba). In August 2019, the MOE, the Association and Fukushima Prefectural Government concluded the basic agreement thereon.

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Updated on March 31, 2023

- In response to a request from the governor of Fukushima Prefecture, the Ministry of the Environment (MOE) commenced the Fukushima Regeneration/Future Oriented Project in August 2018.
- Under the "Cooperation Agreement on Future Oriented Environmental Plans Aimed at Recovery in Fukushima" concluded in August 2020, Fukushima Prefecture and the MOE will promote initiatives further cooperatively.

- Concrete ideas**
- In response to local needs in Fukushima Prefecture, promote not only initiatives for environmental restoration but also initiatives toward a new stage of reconstruction of Fukushima to create and rediscover local value from environmental perspectives, including Decarbonization, Material Cycles and Natural Symbiosis.
 - Strategically implement a cross-sectoral policy package by combining programs of the Ministry of the Environment effectively, while taking the side of local communities through PR activities and information provision, including risk communication, in response to people's concerns about health effects of radiation.

Support for creation of industries

< Job creation >

- The MOE supports the creation of the waste recycling industry. As a joint program with local companies, a non-combustibles recycling facility was completed in October 2020.



- Demonstrations of advanced recycling technologies and commercialization thereof are being promoted (recycling of used solar panels, an automatic sorting system using AI).

Advanced recycling technology for solar panels

Non-combustibles recycling facility



Support for Fukushima Green Reconstruction

< Reconstruction using natural resources >

- Promoting measures to enhance national and quasi-national parks based on "Fukushima Green Reconstruction" formulated with Fukushima Prefecture in April 2019.
- In 2022, Bandai-Azuma and Inawashiro Area Step-up Program 2025, Project to Fully Enjoy the Bandai-Asahi National Park was formulated to promote related initiatives.



Renovation of the Ozenuma Visitor Center

Support for decarbonized town development

< Reconstruction living environment >

- The MOE supports new town development to realize a decarbonized society.
- In FY2022, the MOE conducted feasibility studies (FS) for five programs and continued providing financial support for the introduction of an independent and distributed energy system, etc., which was newly commenced in FY2021.



Introduction of a solar power generation system to the Okuma Town Office Building



Support for local revitalization

- Radiation risk communication for environmental restoration projects through the utilization of Reprun Fukushima, a specified waste landfill information center.
- The MOE held events in Shinjuku Gyoen National Garden or other places under its jurisdiction to introduce the attractions of Fukushima and the status of environmental restoration in Fukushima.



Local revitalization activities

Prepared by the Ministry of the Environment

In response to local needs in Fukushima Prefecture, the Ministry of the Environment (MOE) is promoting not only initiatives for environmental restoration but also initiatives toward a new stage of reconstruction of Fukushima to create and rediscover local value from environmental perspectives, including decarbonization, material cycles and natural symbiosis.

In August 2020, the MOE concluded the "Cooperation Agreement on Promotion of Future-oriented Environmental Measures for the Reconstruction of Fukushima" with Fukushima Prefecture. Under this agreement, the MOE is promoting future-oriented environmental measures in collaboration with the prefecture, such as steady promotion of the Fukushima Green Reconstruction Concept and promotion of global warming countermeasures at the same time as the reconstruction of Fukushima.

With the aim of promoting waste treatment and creation of industries in Restricted Areas, a non-combustibles recycling project in public-private collaboration was adopted and a non-combustibles recycling facility was completed in Okuma Town in October 2020. In addition, since FY2021, the MOE has been implementing a project to promote the creation of pioneering communities through carbon-free reconstruction and has intensively supported *survey, planning, and equipment* for introducing an independent and distributed energy system, etc. in Fukushima. A solar power generation system was introduced to the Okuma Town Office Building.

In April 2019, the Fukushima Green Reconstruction Concept was formulated with the aim of reconstructing Fukushima by the use of natural resources, such as natural parks, and in November 2020, the Fukushima Green Reconstruction Promotion Council was established to promote cooperative initiatives by Fukushima Prefecture, the MOE, and municipalities and relevant bodies in Fukushima. In March 2022, the Bandai-Azuma and Inawashiro Area Step-up Program 2025, Project to Fully Enjoy Bandai-Asahi National Park, was formulated and promotion to further enhance the attractions of national parks, etc. in Fukushima are being implemented.

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- The framework aiming to **create new industries** in Hamadori District for the purpose of industrial revitalization of the district
- The **"Fukushima Innovation Coast Promotion Organization"** (since July 2017; President: Saito Tamotsu (Senior Advisor, IHI)), the national government, Fukushima Prefecture, and municipalities are cooperatively carrying out activities for such purposes as forming industrial clusters, providing education and fostering human resources, increasing the number of visitors, and providing information, while placing the focus on **six priority fields**.

Six priority fields



Regarding the Fukushima Innovation Coast Framework, deliberations were commenced with the aim of having people around the world witness the spectacular recovery of the Hamadori District at the time of the Tokyo Olympic and Paralympic Games in 2020. The Study Group on the Fukushima Innovation Coast Framework compiled the Framework in June 2014, aiming to build a new industrial base in the Hamadori District in order to recover the industry and employment in the district that was severely affected by the earthquake and the nuclear disaster.

For achieving the Framework, efforts have been made to develop bases for R&D on decommissioning, research and demonstration on robot technology, and information provision (archives base), to materialize projects in such fields as energy including hydrogen and renewable energy, as well as environment and recycling, the agriculture, forestry and fisheries industry, medical services, and aerospace, and to form industrial clusters, foster human resources and develop living environment, etc.

In December 2019, the Reconstruction Agency, the Ministry of Economy, Trade and Industry and Fukushima Prefecture jointly compiled the "Blueprint of Industrial Development Placing the Fukushima Innovation Coast Framework at the Core," which shows envisaged independent and sustainable industrial development in the Hamadori District and concrete measures therefor also in consideration of the future after the reconstruction and revitalization period. Based on the Blueprint, Fukushima Prefecture formulated a draft revision of the Intensive Promotion Plan based on the Act on Special Measures for the Reconstruction and Revitalization of Fukushima in March 2020, and the revised plan was approved by the Prime Minister in May 2020.

Additionally, Fukushima Prefecture established a general incorporated foundation, "Fukushima Innovation Coast Promotion Organization," in July 2017 as the central organization in promoting the Fukushima Innovation Coast Framework towards its realization. The Organization has strengthened its system sequentially since April 2018 and became a public interest incorporated foundation in January 2019. In June 2020, the Act on Special Measures for the Reconstruction and Revitalization of Fukushima was amended, and a system was newly introduced to make it possible to dispatch national public employees to the Organization while maintaining their status as national public employees. In June 2022, as part of the Grand Design and Action Plan for a New Form of Capitalism and the Follow-up, the Cabinet decided to intensively offer support for the improvement of the demonstration field and practical development of startups, etc. with the aim of making the Fukushima Hamadori area into an advanced area for creating startups.

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