



Message from the Mayor

Energy for the Future, from Rokkasho Village

Rokkasho Village, which began with the development of Mutsu Ogawara, has become an important center of Japan's national nuclear power and energy policy. At the same time, we also cherish our local history, traditions, and culture, cultivated through the untiring efforts of our ancestors. Today, Rokkasho is known far and wide as an "energy village" with a high concentration of highly varied energy-related industries and research facilities.

Our world is currently confronting the serious global challenge of climate change and our global energy situation is at a major turning point. In light of this, we recognize that our village is playing an increasingly important role in the fields of nuclear power and renewable energy, which are both viable and practical decarbonized sources of energy.

Meanwhile, using the UN Sustainable Development Goals (SDGs) as a driving force for local development, Rokkasho Village is also striving to create "a sustainable community that leaves no one behind," by comprehensively tackling a variety of social, environmental, and economic issues. To avoid placing any more burden on future generations, we believe that we must contribute to securing a stable supply of energy to support our lifestyles and economic activities, always making safety and security our highest priority.

We appreciate that nuclear power is particularly important to Japan as a base-load power source that helps to ensure the long-term stability of our energy supply and demand structure. We are pleased, therefore, that in 2020 the reprocessing plant and MOX fuel fabrication plant, which will be the core facilities of the nuclear fuel cycle enterprise centered in Rokkasho, were approved in accordance with new regulatory standards. We look forward to seeing these facilities completed as soon as possible. As always, safety will be the top priority.

Along with its nuclear fuel cycle facilities, the village is making effective use of its energy-related facilities, such as the National Petroleum Stockpiling Base, international nuclear fusion research and development facilities, large-scale wind power generation facilities, and mega solar facilities. On top of our commitment to local development, Rokkasho Village is committed to helping achieve carbon neutrality by 2050 as a vital energy base for Japan. In this effort, we look forward to your continued support and cooperation.

Finally, I hope that this publication will offer you a deeper understanding and appreciation of Rokkasho Village and more widely, of the energy infrastructure and policy of Japan.

Mayor of Rokkasho Village

Mamoru Toda



Challenge the Future

Rokkasho Village &
The Nuclear Fuel Cycle 2022



Challenges for the future of energy, people, and communities



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Rokkasho Village and Energy
<http://www.rokkasho.jp/>



Challenge the Future

Challenges for the future of energy, people, and communities



Energy is indispensable to our lifestyles and industry. If we want to ensure healthy, peaceful lives and a sustainable future for everyone, it is time to consider seriously moving away from the use of petroleum, coal, and other fossil fuels, which have been our mainstay sources up to now, toward forms of energy that offer new possibilities. Rokkasho Village has been at the center of pioneering initiatives focusing on nuclear fuel cycles and various kinds of renewable energy technology. It remains committed to shaping a prosperous future by continuing to advance the technology and knowledge it has acquired and creating synergies between energy, people, and communities.



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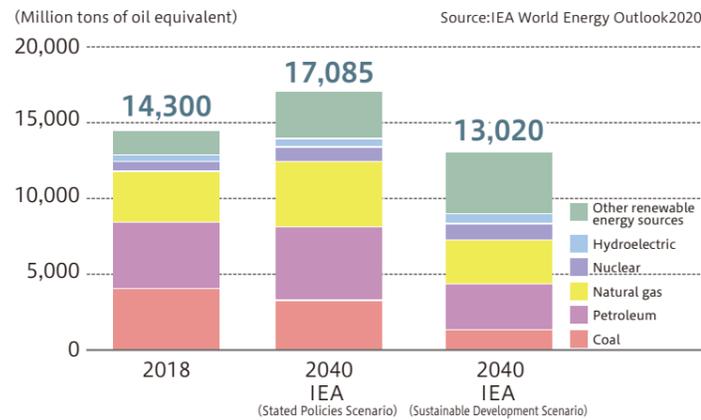
Japan and Rokkasho Village from the viewpoint of the world energy situation

Prospects for energy demand —Shift from supplying demand to pursuing sustainability—

The International Energy Agency (IEA) issues future world energy demand forecasts based on its Stated Policies Scenario*1 and Sustainable Development Scenario*2. Under the Stated Policies Scenario, it is estimated that world primary energy consumption in 2040 will be approximately 17.1 billion tons of oil equivalent, 19% higher than the 2018 level. On the other hand, under the Sustainable Development Scenario, it foresees a drop in consumption to 13 billion tons, 9% down on the 2018 level. Under the Stated Policies Scenario, it will be difficult to meet the 2°C temperature rise limit set by the Paris Agreement, so it is vital to transition away from the high-CO₂ emission energy of petroleum and coal to low-emissions energy sources like nuclear and renewable.

*1 Stated Policies Scenario: Already announced GHG reduction targets and other policy goals are achieved and existing technologies continue to advance.
*2 Sustainable Development Scenario: All the decarbonization policy packages recommended by the IEA are implemented (a scenario that conforms to the aims of the Paris Agreement).

World energy demand outlook (primary energy consumption by source)



From the Paris Agreement to the 2050 Carbon Neutral Declaration —2030 targets of each country—

Under the Paris Agreement, adopted in 2015, all countries are obliged to submit greenhouse gas (GHG) emission targets. Countries are required to formulate and report strategies for transitioning to a low-GHG emission economy over the long term. The G7 countries were expected to lead the way in reporting their long-term strategies, beginning in 2020. In October 2020 (then) Japanese Prime Minister Yoshihide Suga declared that Japan

would “aim to achieve a carbon-neutral society by 2050 by reducing its net greenhouse gas emissions to zero.”

Furthermore, at the Leaders Climate Summit in April 2021, Suga declared that by 2030 Japan would aim to reduce its GHG emissions by 46% relative to the 2013 level, and also that the country would continue striving to cut emissions by 50%.

Source: Created by the Ministry of Economy, Trade and Industry (METI), based on the Climate Ambition Alliance’s submission of a long-term strategy to the UN at COP25 (as of April 30, 2021).
* Brazil announced its commitment to carbon neutrality by 2050 at the Leaders Climate Summit (April 2021).
<https://climateaction.unfccc.int/views/cooperative-initiative-details.html?id=94>

Countries committed to carbon neutrality by 2050



2050 Green growth strategy with carbon neutrality

Japan’s government has formulated a “Green Growth Strategy Through Achieving Carbon Neutrality,” a policy for establishing a virtuous cycle between the economy and the environment, with the aim of shaping a net zero carbon society. Global warming is no longer viewed as an economic restriction or cost. In fact, we are rapidly entering an era in which it is seen

as a growth opportunity, even internationally. Dramatic departures from conventional thinking and proactive initiatives are expected to bring about radical changes in industrial structure, as well as in social and economic conditions, paving the way to a new phase of high economic growth.

14 key fields in which growth is expected up to 2050

Energy industry	Transport and manufacturing	家庭・オフィス関連産業
① Offshore wind power, solar power, geothermal power	⑤ Motor vehicles and storage batteries	⑫ Housing, building, and next-gen. electric power management
② Hydrogen and fuel ammonia	⑥ Semiconductors and telecommunications	⑬ Resource recycling
③ Next-gen. thermal energy	⑦ Shipping	⑭ Lifestyle
④ Nuclear power	⑧ Distribution, flow of people, public works infrastructure	
	⑨ Food, agriculture, fishing, forestry	
	⑩ Aircraft	
	⑪ Carbon recycling and materials	

Policy tools to push companies to take on challenges

- ① Budget funds
- ② Tax scheme
- ③ Finance
- ④ Regulatory reform and standardization
- ⑤ International cooperation
- ⑥ Promotion of initiatives at university
- ⑦ World Expo 2025 in Japan
- ⑧ Youth Working Group on Green Growth

Source: https://www.meti.go.jp/policy/energy_environment/global_warming/ggs/index.html, <https://www.meti.go.jp/press/2020/12/20201225012/20201225012.html>

Rokkasho Rokkasho Village aims to create a sustainable environment, society, and economy.

Rokkasho Village is tackling a wide range of social, environmental, and economic challenges with an integrated approach, focusing on community development centered on the SDGs, in accordance with the Declaration on “SDGs Japan Model,” the 4th Rokkasho Village Comprehensive Promotion Plan, and the Comprehensive Strategy for Community, Human, and Workplace Development.

In the field of energy, it has formulated the Rokkasho Village New Energy Promotion Plan, as the basis for new energy initiatives across the village. With a view to improving the lives of the people of Rokkasho, it is working hard on sustainable community planning, to solve a wide range of local issues relating to industry, tourism, welfare, education, environment, disaster prevention, and urban design.

- To enhance the economy, Cultivate a wide variety of richly individual industries
- To enhance human resources, Foster people and culture to support the future
- To increase peace of mind, Create healthy, vibrant lifestyles together
- To increase safety, Ensure safety by addressing all kinds of disaster risks
- To enhance the natural environment, Protect, nurture, and communicate the importance of nature
- To enhance living environments, Create convenient, comfortable living spaces
- To enhance collaboration, support sustainable management through public-private partnerships

【 Overall 】 Foster leaders of sustainable community planning

Decarbonization and Rokkasho Village

The energy policy roadmap to the realization of decarbonization

In October 2021, Japan's Cabinet approved its 6th Energy Basic Plan. This latest energy basic plan was formulated with two key objectives. The first was to map out an energy policy road map toward the realization of new greenhouse gas emission reduction targets for 2030, as announced in April 2021 as part of Japan's commitment to carbon neutrality in 2050.

The second objective was directed at overcoming the challenge of Japan's energy supply and demand structure, as the country struggles to address climate change, by outlining initiatives for guaranteeing a reliable supply of energy and reducing energy costs, without any safety risks.

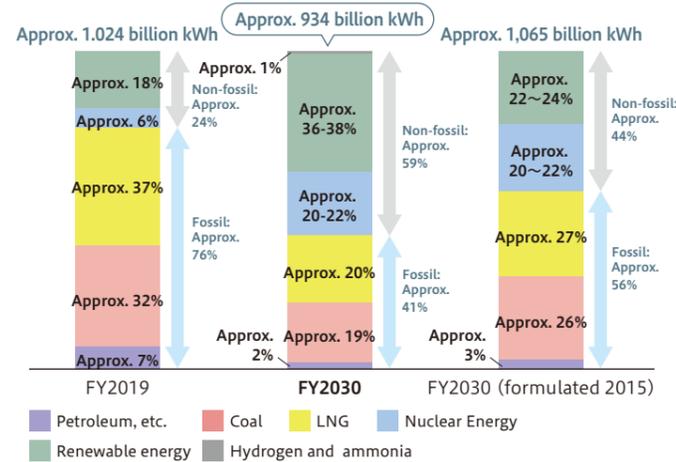
Reference source: <https://www.meti.go.jp/press/2021/10/20211022005/20211022005.html>

Energy supply and demand outlook for 2030

Although economic growth and increasing electrification of technologies are expected to drive up electric power demand, this is likely to be offset by a reduction due to rigorous energy-saving measures. Total power demand in 2030 is estimated to be approximately 864 billion kWh, while the total amount of electrical energy generated is estimated at around 934 billion kWh. In the power supply sector, efforts are focused on exhaustive energy-saving measures as well as on maximizing the use of renewable energy, based on the "S+3E" principles (Safety+Energy Security, Economic Efficiency, and Environment). Furthermore, as a power source that can help to reduce CO₂ emissions and increase electricity supply reliability, nuclear power generation will be included in the energy mix, with safety the highest priority. Nuclear power is expected to account for around 20-22% of the total energy mix. As a power source that contributes to the reduction of CO₂ emissions, nuclear power will also be included in the energy mix, with the utmost importance placed on safety, provided it can be reliably supplied. Nuclear is expected to deliver approximately 20 to 22% of total power, which is about the same level of recent years.

Reference source: <https://www.meti.go.jp/press/2021/10/20211022005/20211022005-2.pdf>

Power source distribution

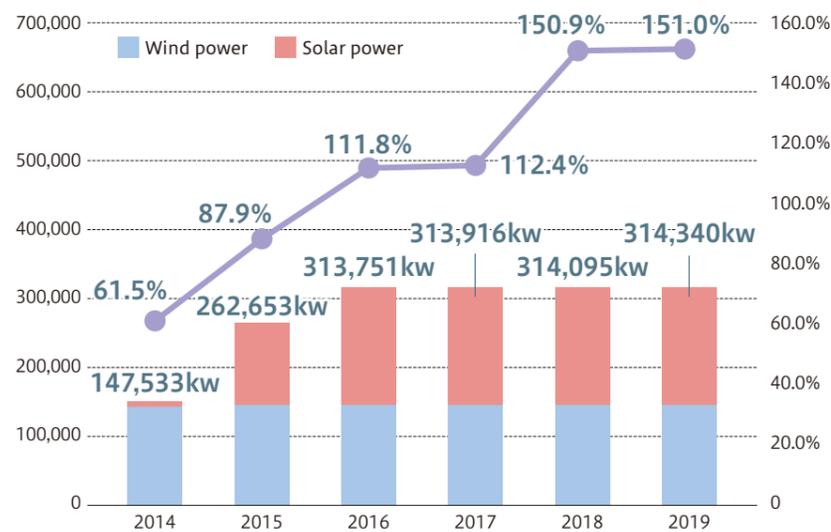


Source: Created based on "Outline of Basic Energy Plan (Draft)," Ministry of Economy, Trade and Industry

Rokkasho Rokkasho Village steadily continues its adoption of renewable energy

The quantity of energy sold under the feed-in tariff (FIT) in Rokkasho Village as a percentage of the village's total consumption has been increasing year by year, reaching 151% in 2019. This means that Rokkasho has been generating more electricity from renewable sources than it consumes. The total installed capacity (as of 2019) is 314.34 MW. Of this, 54% is generated by PV solar panels and 46% by wind generators.

Change in cumulative installed capacity of renewable energy



Source: Ministry of the Environment (chart of emissions by municipality)

"Sustainable zones" indicators of local sustainability through renewable energy

A "sustainable zone" is a municipality capable of producing all the energy and food needed to sustain its continued existence. Rokkasho Village's renewable energy self-sufficiency rate and food self-sufficiency rate are both higher than 100%.

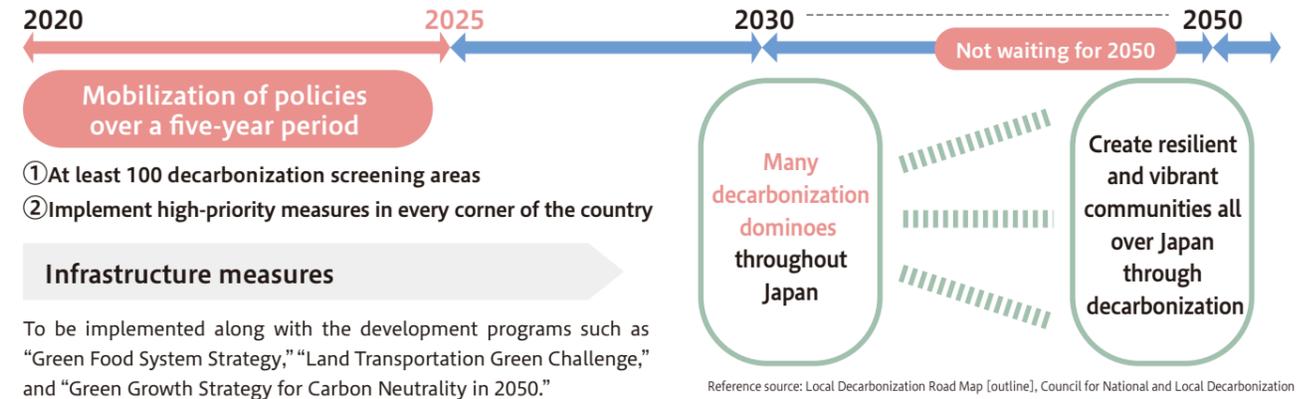
Source: "Sustainable Zone Report 2020," <https://www.isep.or.jp/archives/library/13221>

Decarbonization starts from regional Japan

The Council for National and Local Decarbonization has formulated a road map and concrete measures for regional decarbonization to serve as a growth strategy for regional Japan, focusing on initiatives and measures to be implemented intensively through the decade to 2030. Regional decarbonization is a growth strategy for regional Japan, reflecting the fact that decarbonization is now viewed as an opportunity for growth. Local governments, local

businesses, citizens, and other stakeholders in the region can play a leading role in achieving decarbonization by applying existing technologies and maximizing the use of renewable energy and other local resources, thereby stimulating the economic circulation, addressing local needs such as disaster prevention and improving the quality of life, and contributing to regional development.

Source: https://www.cas.go.jp/jp/seisaku/datsutanso/pdf/20210609_chiiki_roadmap.pdf



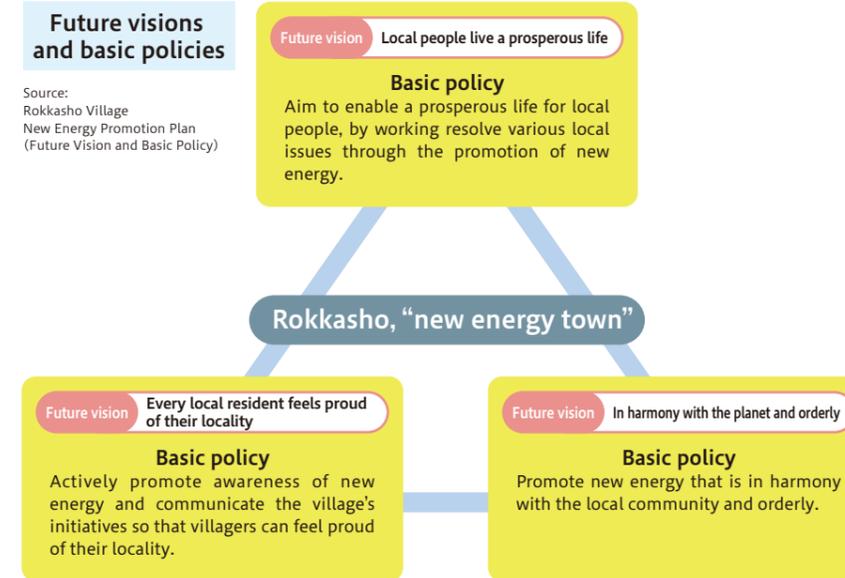
Key points for local decarbonization

- Use local decarbonization as a local growth strategy**
 - Make the locality more appealing for business and investment, and maintain and improve the competitiveness of local industries.
- Help to resolve local issues by taking maximum advantage of renewable energy and other local resources**
 - Contribute to regional innovation utilizing local strengths in industry, lifestyle, transportation, public services, and all other fields.
 - Expanding adoption of local renewable energy is a key.
 - Various local challenges such as preventing and mitigating disasters and increasing quality of life.
- Everyone makes the effort to actively make use of existing technology**
 - Change lifestyle from "mass production, mass consumption, and mass disposal" to "moderate production, moderate purchase, and recycling" to cut CO₂ emissions.

Rokkasho Rokkasho Village, "new energy town"

Future visions and basic policies

Source: Rokkasho Village New Energy Promotion Plan (Future Vision and Basic Policy)

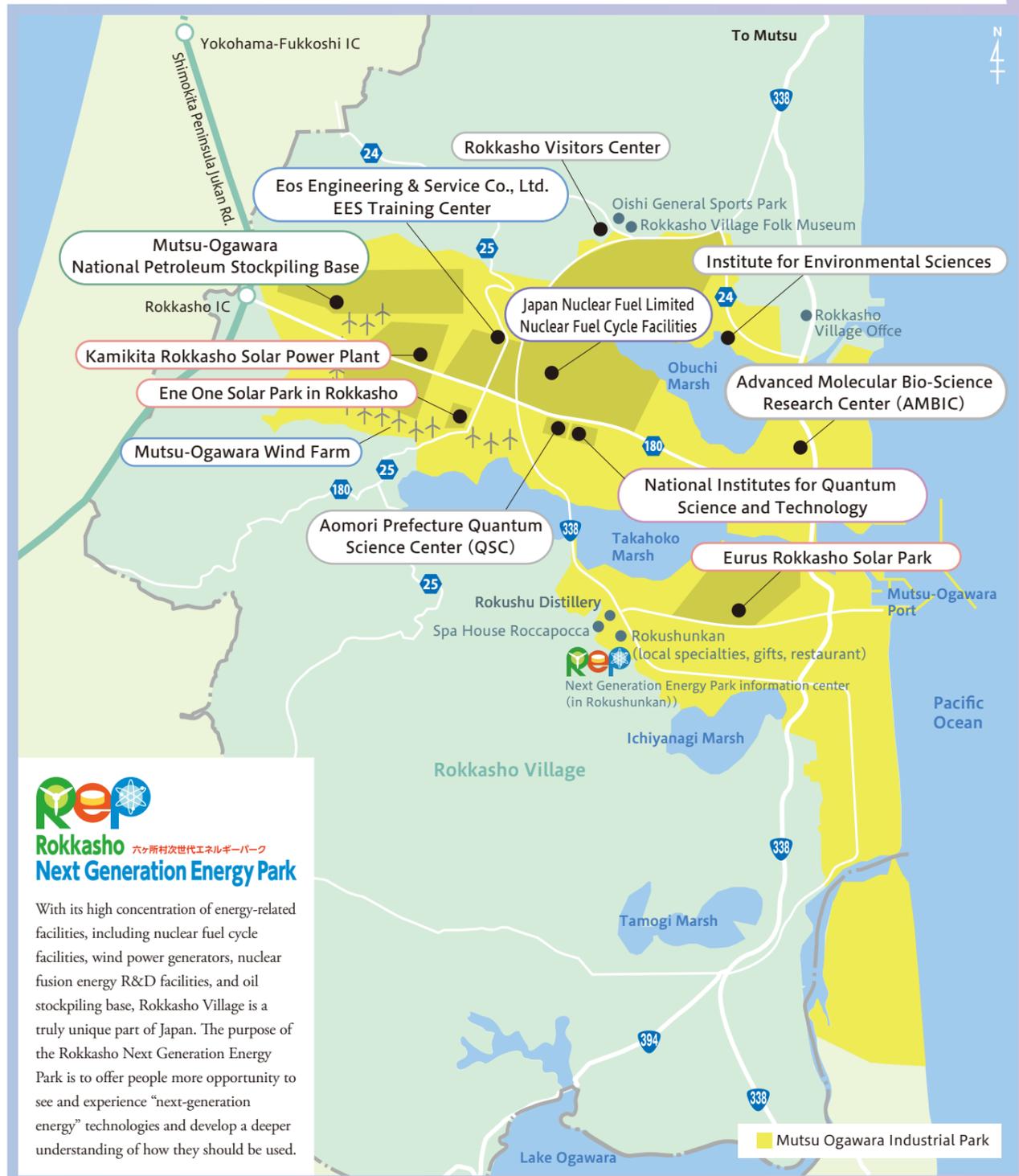


In 2017, Rokkasho Village, which is home to many energy-related facilities, formulated its "New Energy Promotion Plan." In accordance with this plan, it is striving to improve the lives of village residents by tackling multiple initiatives to resolve a variety of issues connected with industry, tourism, education, and community development through the use of new forms of energy. This plan can be realized through the use of renewable energy and other local resources, with local government, villagers, local companies, and other local stakeholders playing a leading role. The plan aims at resolving local challenges like stimulating economic circulation and enhancing the quality of life, which is very similar to the purpose of the local decarbonization road map.

Energy development in Rokkasho Village and the Mutsu-Ogawara Industrial Park



Mutsu-Ogawara Industrial Park aims to be a “Science and Technology Innovation Zone.”



With its high concentration of energy-related facilities, including nuclear fuel cycle facilities, wind power generators, nuclear fusion energy R&D facilities, and oil stockpiling base, Rokkasho Village is a truly unique part of Japan. The purpose of the Rokkasho Next Generation Energy Park is to offer people more opportunity to see and experience “next-generation energy” technologies and develop a deeper understanding of how they should be used.

The Mutsu-Ogawara Industrial Park is a national project centered in Rokkasho Village that serves as the location of a national oil stockpiling base and nuclear fuel cycle facilities, which are vital to Japan’s national energy policy. The park is also home to research centers and is employed for a wide range of other land uses.

The New Mutsu-Ogawara Development Basic Plan, which defines basic

guidelines through the 2020s, aims at creating a “science and technology innovation zone” containing centers of environmental, energy, and science and technology R&D, as well as growth industries. In the coming years, we expect to see development that takes maximum advantage of the unique potential of this location.

Nuclear fuel cycle facilities

The Sixth Strategic Energy Plan, approved by the Cabinet of Japan in October 2021, calls for promotion of the nuclear fuel cycle as a basic policy for making effective use of plutonium and other elements recovered from spent fuel reprocessing, with a view to increasing the efficiency of resource utilization and reducing the volume and toxicity of high-level radioactive waste. The Rokkasho Reprocessing Plant and a MOX fuel plant, which are central to the nuclear fuel cycle under this plan, are both located in Rokkasho Village, along with various other related facilities.



- Uranium Enrichment Plant
- Enrichment and Disposal O ce
- MOX Fuel Fabrication Plant
- Vitrified Waste Storage Center
- Low-level Radioactive Waste Disposal Center

Large-scale top-class wind power generation

Taking advantage of the strong winds that blow in Rokkasho Village throughout the year, wind power generators have been operating here since 2003. There are currently 92 active wind turbines, producing a total of 145,350 kW of power.



- Mutsu-Ogawara Wind Farm
- Futamata Wind Development
- Mutsusakae Wind Farm

Large-scale photovoltaic solar power generation

The first large-scale photovoltaic (PV) solar power generation facility in Rokkasho Village was constructed in 2013 on a large expanse of available land. There are currently three power plants, generating a total power of 168,000 kW.



- Ene One Solar Park in Rokkasho
- Eurus Rokkasho Solar Park
- Kamikita Rokkasho Solar Power Plant

International Fusion Energy Research Center (IFERC)

With the goal of realizing the potential of nuclear fusion energy as soon as possible, IFERC is not only supporting the ITER plan but is also working on a fusion reactor for implementing the next power generation verification of ITER. It is also pursuing activities under the “Broader Approach” (BA), a joint Japan-Europe initiative.



- National Institutes for Quantum Science and Technology

National petroleum stockpiling base

This facility was constructed after the launch of an initiative in 1983 to build the first national oil stockpiling base, for the purpose of ensuring a stable supply of oil in the event of an emergency. The facility’s 51 tanks contain enough oil to supply Japan’s total demand for around 12 days.



- Mutsu-Ogawara National Petroleum Stockpiling Base

Energy diversity and Rokkasho Village industry

Toward the decarbonization of local industries

Traditionally, the main industries in the extensive land and beautiful nature of Rokkasho Village have been agriculture, fishing, and dairy farming. Now, with the development of the Mutsu-Ogawara Industrial Park, about 100 companies are now located within the village. Together, they are helping to shape a science and technology innovation zone that can make a significant contribution to the world.

At the same time, as the Paris Agreement has accelerated the push to decarbonization through the disclosure of management strategies to address climate change and the setting of targets for emission reductions, the ability of industries to reform their management around decarbonization will be an important factor for sustainable industrial advancement. The local community must also work together on initiatives.

Aomori Hana Kobo, Co., Ltd.

<http://aomori-hana-kobo.com/>

Aomori Hana Kobo is the largest greenhouse potted flowering plant operation in Asia, producing some 4 million pots of ornamental flowers each year.

It was established in May 2020 by the Hachinohe Central Fruit & Vegetable Group to provide employment and promote industry in Rokkasho Village. In line with its motto, "A rosy life, living with flowers," the business delivers flowers from Rokkasho to every corner of Japan, helping to bring smiles to the faces of many people.

Although flowers enrich our daily lives, their production typically consumes electricity from the grid as well as fossil fuels for illuminating greenhouses and for temperature control in winter. Green transformation is a challenge that needs to be addressed in the coming years, so that enterprises like this can continue to operate as industries rooted in the local community.



Aoimori Data Solution Co., Ltd.

<https://aoimori.co.jp/>

Aoimori Data Solutions Co., Ltd. operates a state-of-the-art, hybrid, cold-weather extreme data center that combines the world's highest level of energy-saving data center functions, which take advantage of the climate characteristics of cold regions, with high-density data center functions, which boast a per-rack power supply capacity several times higher than conventional data centers.

Combining local characteristics like low disaster risk and a cold climate with a high-grade, high-density data center, the company is catering to the growing demand for data centers as cloud technologies become more and more established. Since the operation of data centers requires a large quantity of electricity, the procurement of electricity from decarbonized sources is vital to ensure business continuity, given the current trend toward carbon neutrality. Along with the pressure caused by the recent spike in electricity prices, dealing with this issue is an urgent challenge.



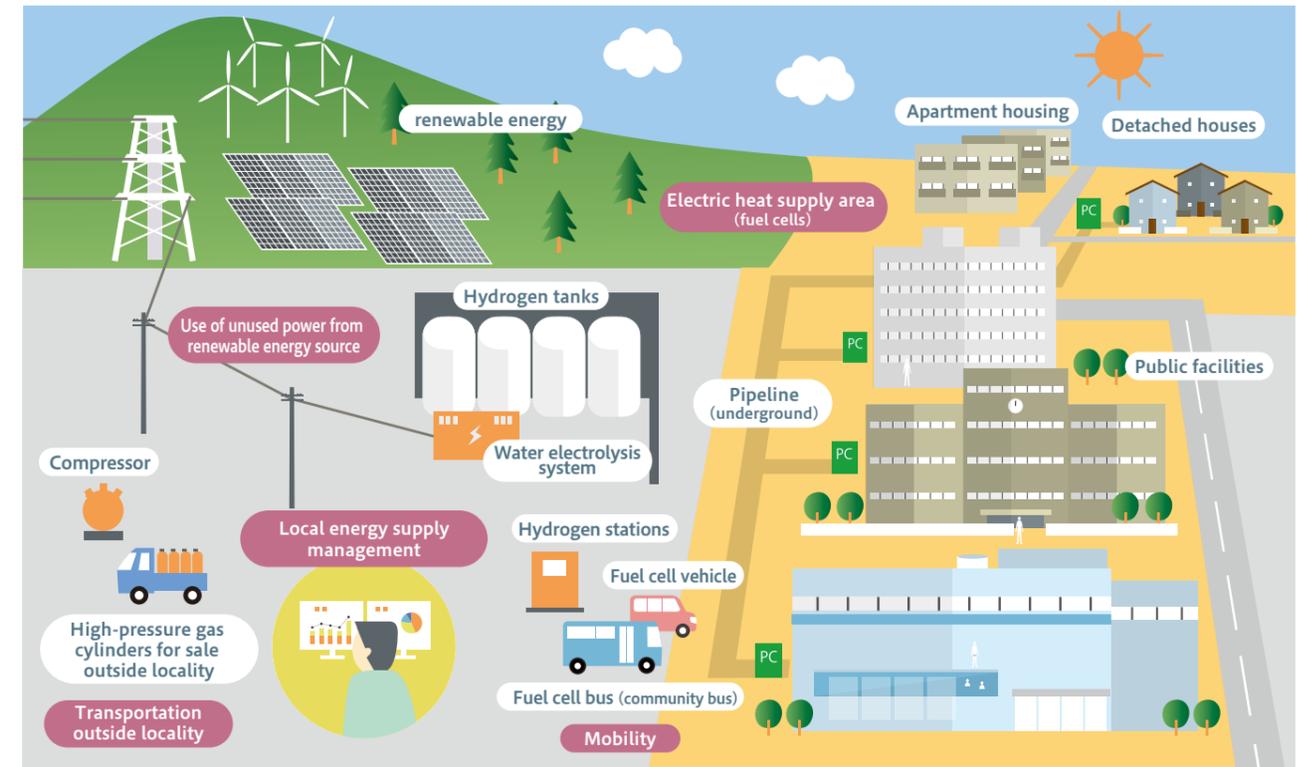
Industrial promotion and local revitalization through "local production for local consumption" of energy

Aomori Prefecture is working to promote its energy industry under the "Aomori Prefecture Energy Industry Promotion Strategy," which aims at an optimal mix of energy sources, taking advantage of the respective merits of renewable energy, nuclear power, and fossil fuels, while ensuring both environmental compatibility and economic viability.

One part of the strategy is hydrogen. In Rokkasho Village, which already

has a high concentration of renewable energy sources, an advanced model for hydrogen use is being examined. This advanced model is expected to achieve an intra-regional economic circulation of local capital that previously flowed out of the region, as well as to promote hydrogen-related industries and improve BCP measures.

Diagram of CO₂-free hydrogen utilization model in Rokkasho Village



Source: Created based on "Aomori CO₂-free Hydrogen Utilization Model Plan" (Outline) https://www.pref.aomori.lg.jp/soshiki/energy/enerugi/hydrogen_model_plan2018.html

Outline of companies located in Mutsu Ogawara Industrial Park

* Mutsu Ogawara Industrial Park Company Liaison Council is a group that aims to improve the industrial park based on a spirit of mutual aid, by promoting deeper understanding between the companies in the park and sharing information related to local development.

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|--|---|---|---|--|
| <ul style="list-style-type: none"> ■ Aomori Data Solution Co., Ltd. ■ AOMORI ADSEC ■ ANT Corporation ■ Aomori Create Co., Ltd. ■ Aomori Sanyu Koki K.K. ■ Aomori Sohgo Security Services Co., Ltd. ■ JGC Plantech Aomori Co., Ltd. ■ Aomori Wind Development Co., Ltd. ■ Aomori Hoei Industries, LTD. ■ Aomori Records Management Service Co., Ltd. ■ Ascend Co., Ltd. ■ Atox Co., Ltd. ■ ATOM Works Co., Ltd. ■ ANOVA CORPORATION ■ Iyasaka Jidousya Co., Ltd. ■ Eneone Solar Park Rokkasho Village Consortium ■ OCL Corporation ■ OLED Aomori Co., Ltd. ■ OYO Corporation ■ Oba Construction & Engineering Co., Ltd. ■ Obayashi Corporation | <ul style="list-style-type: none"> ■ OKAYAMA CONSTRUCTION Co., Ltd. ■ Kakuhiro Corporation ■ Kajima Corporation ■ Kanamoto Co., Ltd. ■ Kamigumi Co., Ltd. ■ Institute for Environmental Sciences ■ Kandenko Co., Ltd. ■ Kitanihon Kaiji Kogyo Co., Ltd. ■ Kumagai Gumi Co., Ltd. ■ Kurihalant Co., Ltd. ■ Nuclear Safety Technology Center ■ Nuclear Fuel Transport Co., Ltd. ■ Cosmo Eco Power Co., Ltd. ■ PENTA-OCEAN CONSTRUCTION CO., LTD. ■ Zax Co., Ltd. ■ Sanwa Techno Service Co., Ltd. ■ CBS Corporation ■ JTEC Co., Ltd. ■ Shimizu Corporation ■ Shimokita Three Hundred Golf Club ■ Jukan Taxi Co., Ltd. ■ SHIN NIPPON AIR TECHNOLOGIES CO.,LTD. | <ul style="list-style-type: none"> ■ Shin-Mutsu-Ogawara Inc. ■ Seikoh Co., Ltd. ■ Sowa Bussan K.K. ■ Taisei Corporation ■ Takada Kougyou Ltd. ■ Takada Plant Co., Ltd. ■ Tachyon Ltd. ■ Takenaka Corporation ■ CHIYODA TECHNOL CORPORATION ■ Tsukuda Corporation ■ Tsuru Sangyo Co., Ltd. ■ Tokyo Energy & Systems Inc. ■ Tokyo Nuclear Services Co., Ltd. ■ Tokyo Bosai Setsubi Co.,Ltd. ■ Tosan Co., Ltd. ■ Toho Acetylene Co., Ltd. ■ Tohoku Chemical Co., Ltd. ■ Tohoku Electric Power Co., Inc. ■ Tohoku Electric Power Engineering & Construction Co., Inc. ■ Tohoku Ryokka Kankyohozen Co., Ltd. ■ Toyo Industries Co., Ltd. ■ Tohyoh Building Janitor Co., Inc. | <ul style="list-style-type: none"> ■ Toda Corporation ■ Tomarikankou Taxi Ltd. ■ Toriyama Doboku Kogyo K.K. ■ Nagaki Seiki Co., Ltd. ■ Nishida Gumi Co., Ltd. ■ Nishimatsu Construction Co., Ltd. ■ JGC HOLDINGS CORPORATION ■ Nissen Sogo Kaihatsu K.K. ■ Nihon Kensetsu Kogyo Co., Ltd. ■ JAPAN NUCLEAR FUEL LIMITED ■ Nippon Express Company, Limited. ■ Nihon Texa Co., Ltd. ■ Newtech Co., Ltd. ■ NESI Inc. ■ Hachinohe Kowan Unso Kaisha Ltd. ■ Hachinohe Tsuun Co., Ltd. ■ Hitachi Systems Power Services, Ltd. ■ Hitachi, Ltd. ■ Futamata Wind Development Co., Ltd. ■ Pesco Co., Ltd. ■ Hoku Shou Bussan, Corp. ■ DCM Nicot Corporation ■ Maeda Corporation | <ul style="list-style-type: none"> ■ Misuzu Seiko Co., Ltd. ■ Mitsubishi Heavy Industries, Ltd. ■ Miyago Ryutsu Co., Ltd. ■ Mirai Soden Kamikita Rokkasho Corporation G.K. ■ Mutsu Ogawara Gennen Kosan Co., Inc. ■ Mutsu-Ogawara Oil Storage Co., Ltd. ■ Mutsu Ogawara Ryokka, K.K. ■ Yakuodo Co., Ltd. ■ Yamamizu Engineering & Construction Co., Ltd. ■ Yurtec Co., Inc. ■ Euror Rokkasho Solar Park G.K. ■ YOSHIDASANGYO Corporation ■ Lake Town Kaizuka Ltd. ■ Rokkasho Engineering Co., Ltd. ■ Rokkasho Gennen Kikaku K.K. ■ Rokkasho Gennen Keibi Co., Ltd. ■ Rokkasho Technos Co., Ltd. |
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In Japanese "alphabetical" order

Source: List of members of the Mutsu Ogawara Industrial Park Company Liaison Council (As of July 27, 2021)

Creating resilient communities that support the prosperity of villagers

Managing the health and fostering the security of villagers in times of emergency

At the time of the Great East Japan Earthquake in March 2011, evacuation shelters were set up in public facilities such as elementary and junior high schools in the village. However, due to the effects of prolonged power outages, it was not possible to secure sufficient lighting, heating, and communication during the night. This hindered the work of responding to evacuees. Based on this experience, we

installed emergency power generators in public facilities to be used as evacuation centers. We also installed our own power lines in the Obuchi area, where the town hall building is located, to ensure the availability of power in the event of an emergency. In this way, we can better manage the health of evacuees and cultivate a sense of security among local residents.

Ensuring emergency power for evacuation centers

Since Rokkasho Village is long and narrow from north to south, with many dispersed residential areas, a total of 21 evacuation centers have been designated, based on assumptions about the number of evacuees in each area. Emergency power generators have been installed in 13 of these evacuation centers to ensure power supply in the event of a power outage.



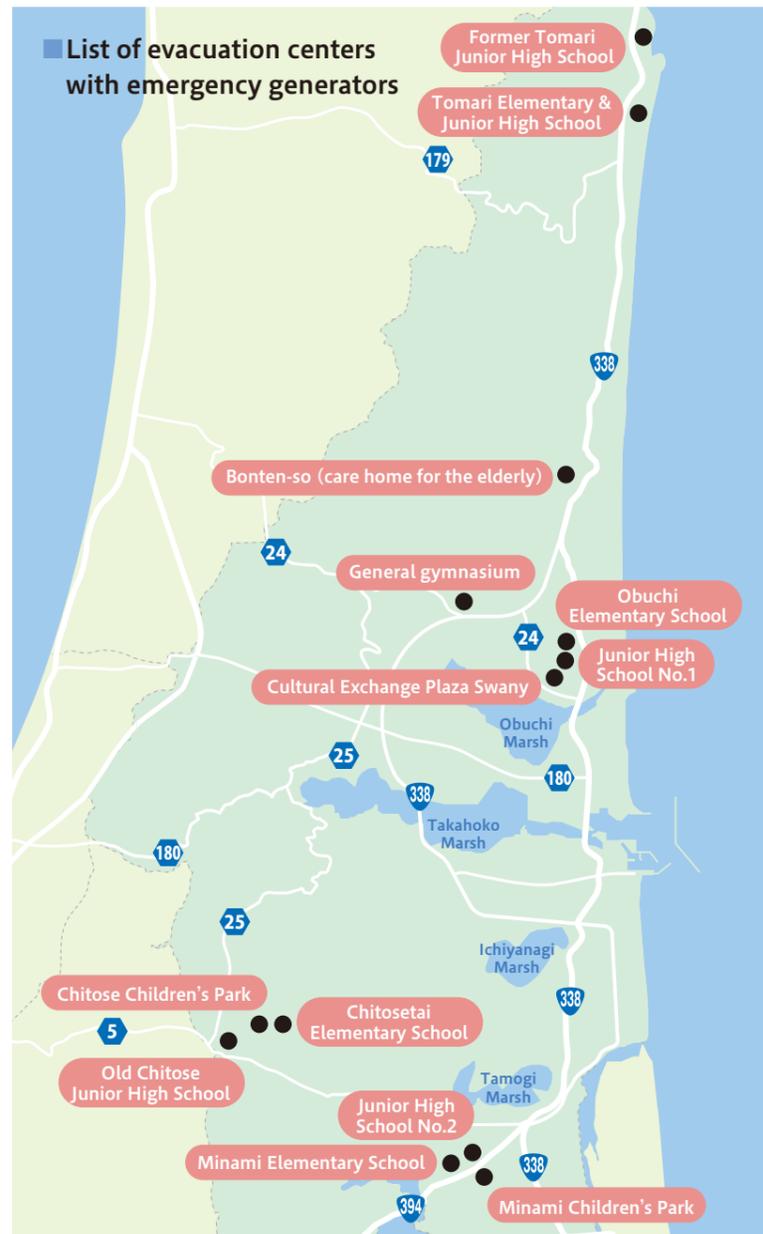
Obuchi Elementary School Emergency power supply



Junior High School No.1 Emergency power supply



Junior High School No.2 Emergency power supply

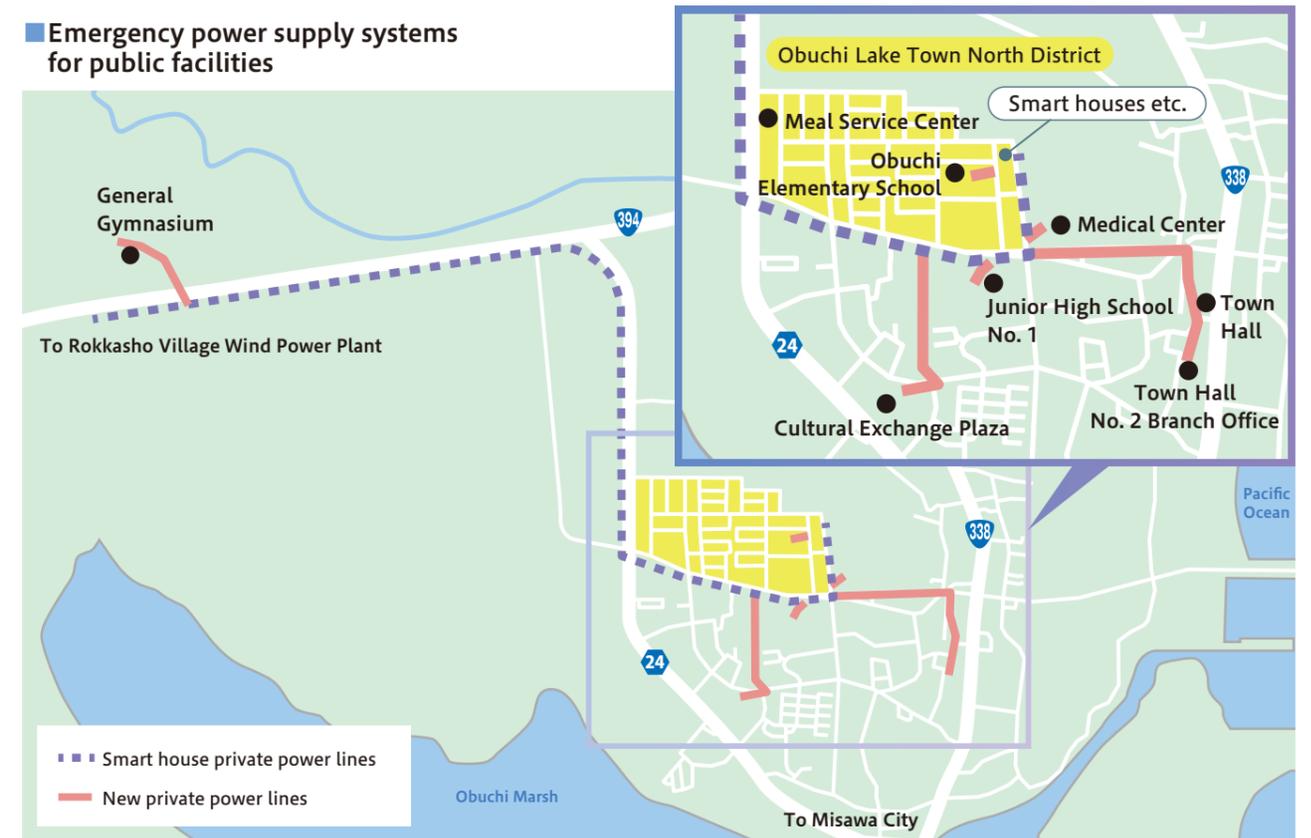


(As of Dec. 2021)

Emergency power transmitted from a local wind generators

In June 2016, Rokkasho Village and Japan Wind Development Co., Ltd. signed an agreement regarding the transmission of emergency power to public facilities. As a result of this agreement, a system was established to transmit electricity generated at the Rokkasho Village Wind Farm to eight public facilities using their own power lines. This initiative ensures the availability of long-term power supplies in the event of an emergency.

Emergency power supply systems for public facilities



Rokkasho Disaster prevention system to ensure the safety of residents

Rokkasho Village has formulated the "Rokkasho Village Local Disaster Prevention Plan" for the purpose of protecting the lives, health, and property of the local community and residents from any conceivable disaster, as well as for ensuring the preservation of the locality and the welfare of its people. The plan addresses the risks of windstorms, flooding, earthquakes, tsunamis, snowstorms, and other natural disasters, as well as maritime disasters, large-scale fires, and nuclear threats arising from an accident at a nuclear fuel cycle facility.

The plan specifies the measures that need to be taken by the village and disaster prevention-related organizations in the event of a disaster. Under the plan, disaster prevention drills are conducted in cooperation with these disaster organizations on a regular basis, to ensure that a functioning and flexible response system is in place to deal with any kind of situation that might arise, even in unforeseen circumstances.

Nuclear emergency drills

To ensure that protective measures such as evacuation of residents can be swiftly implemented in the event or threat of a nuclear disaster, "the Rokkasho Village Nuclear Disaster Evacuation Plan" has been formulated. The plan defines the essential requirements for the village response and actions of residents. To ensure preparedness, Rokkasho Village conducts evacuation drills in collaboration with the national government, Aomori Prefecture, and relevant organizations.



Communicating disaster prevention information

Regular preparation for disasters, as well as self-help and mutual aid in the event of a crisis, can be powerful additional supports to public assistance, helping to minimize damage. Rokkasho Village is working to raise awareness of disaster prevention among residents by providing all households with a disaster prevention guide that covers a variety of disaster response measures.



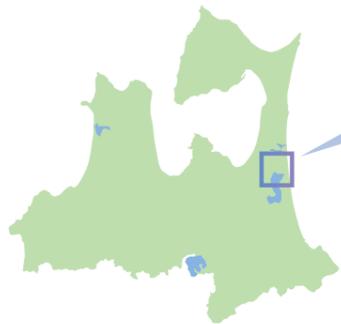
Rokkasho Village and the nuclear fuel cycle

In Japan, nuclear power is positioned as an important base load power source that contributes to the stability of the energy supply and demand structure over the long term as a low-carbon, purely domestic energy source, based on the premise of ensuring safety. Also, from the perspective of effective resource utilization and minimizing the volume and risks of high-level radioactive waste, Japan's basic policy is to promote the nuclear fuel cycle, in which spent fuel generated by nuclear power generation is reprocessed to enable the effective use of plutonium and other recovered materials.

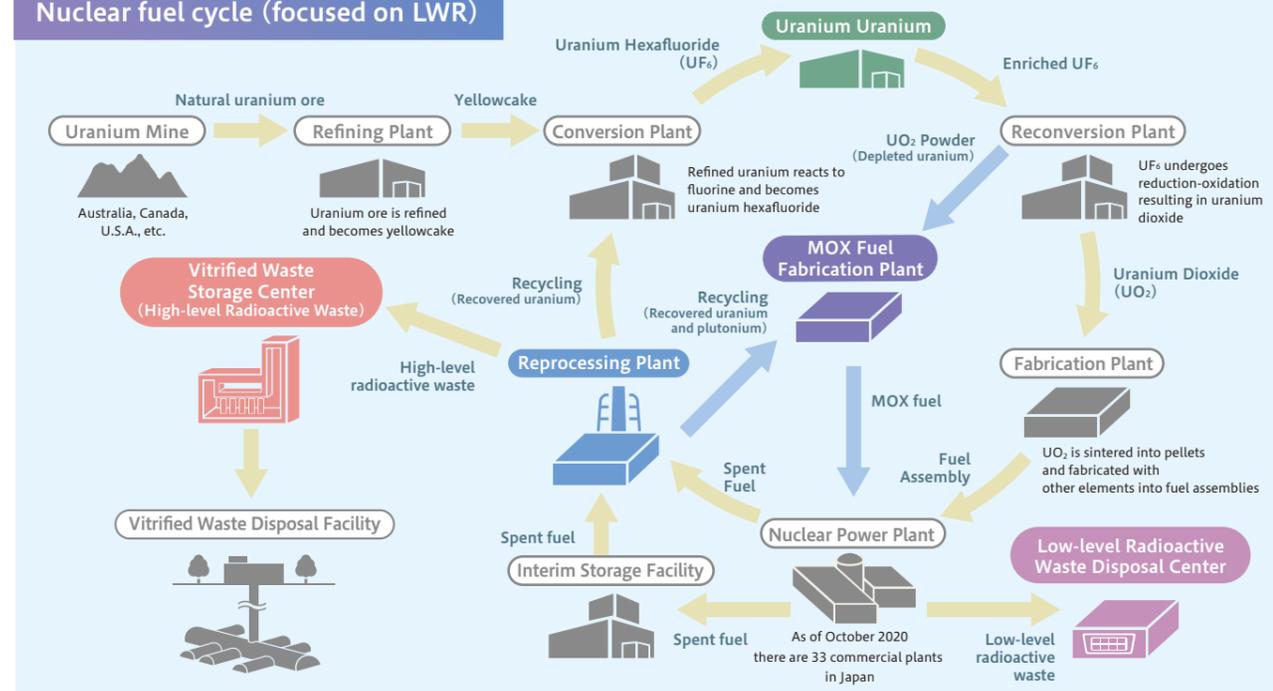
Nuclear fuel cycle systems and initiatives

There are currently three nuclear fuel cycle facilities operating in Rokkasho Village, a uranium enrichment plant, a high-level radioactive waste storage and management center, and a low-level radioactive waste disposal center. There is also a reprocessing plant that is still in the test operation phase, and a MOX fuel plant, which is under construction. Both of these are also vital elements of a nuclear fuel cycle.

Location of Nuclear Fuel Cycle Facilities



Nuclear fuel cycle (focused on LWR)

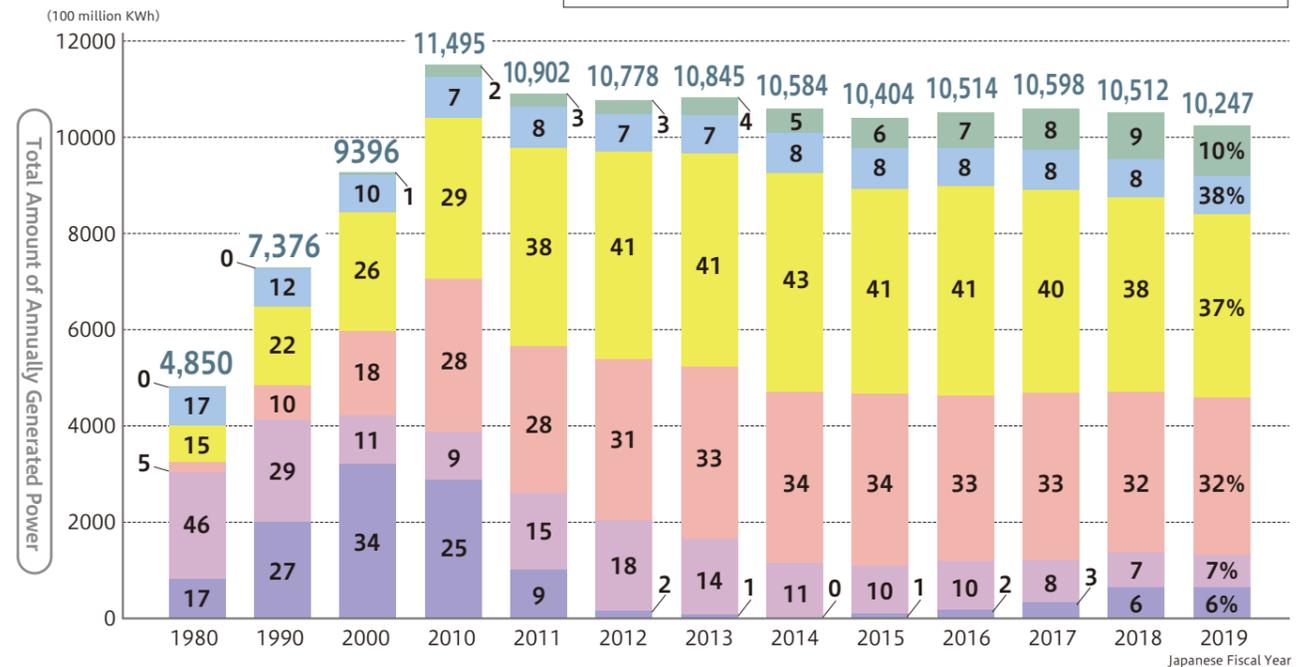


Extracting Resources from Spent Fuels

In Japan, energy is generated in many different ways and fossil fuels such as petroleum and natural gas have generally been used. However, due to the limited nature of those fuels, nuclear power generation using uranium as an alternative fuel was developed. Uranium is also a limited resource, but unlike fossil fuels that end up as ash and carbon dioxide when burned, uranium can be reused repeatedly through reprocessing.

The "nuclear fuel cycle" is the chain of processes ranging from reprocessing spent fuels to reusing them, including safety control concerning radioactive waste generated in this cycle. With this cycle, efficient and long term use of limited resources will be possible and a stable supply of energy can be realized in Japan where resources are rare.

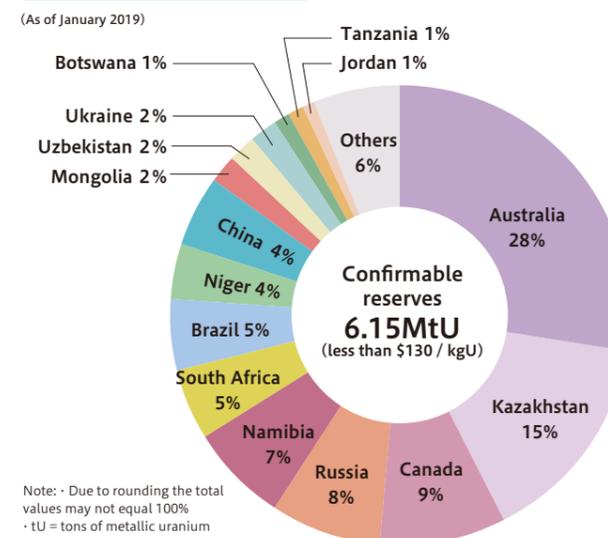
Change in electricity generated and purchased, by power source



(Note: * "Petroleum, etc." includes LPG, other gases and bituminous mixtures.
 · Due to rounding the total values may not equal 100%.
 · Figures within the graph represent the distribution percentages.
 * "New energy" is a type of renewable energy that uses established technologies that require promotional assistance.
 Source: Created based on Energy White Paper 2021

Uranium Reserves and Availability

Uranium Source Reserves



Note: · Due to rounding the total values may not equal 100%
 · U = tons of metallic uranium

Japanese Uranium Purchase Agreements

Type of Import Contract	Trading Partners	Defined Contract Quantities (U ₃ O ₈ short ton)
Long-term Contracts, Short-term Contracts and Product Purchases	Canada, U.K., South Africa, Australia, France, U.S.A. and others	Approx. 367,900
Development and Import	Niger, Canada, Kazakhstan and others	Approx. 83,100
Total		Approx. 451,000

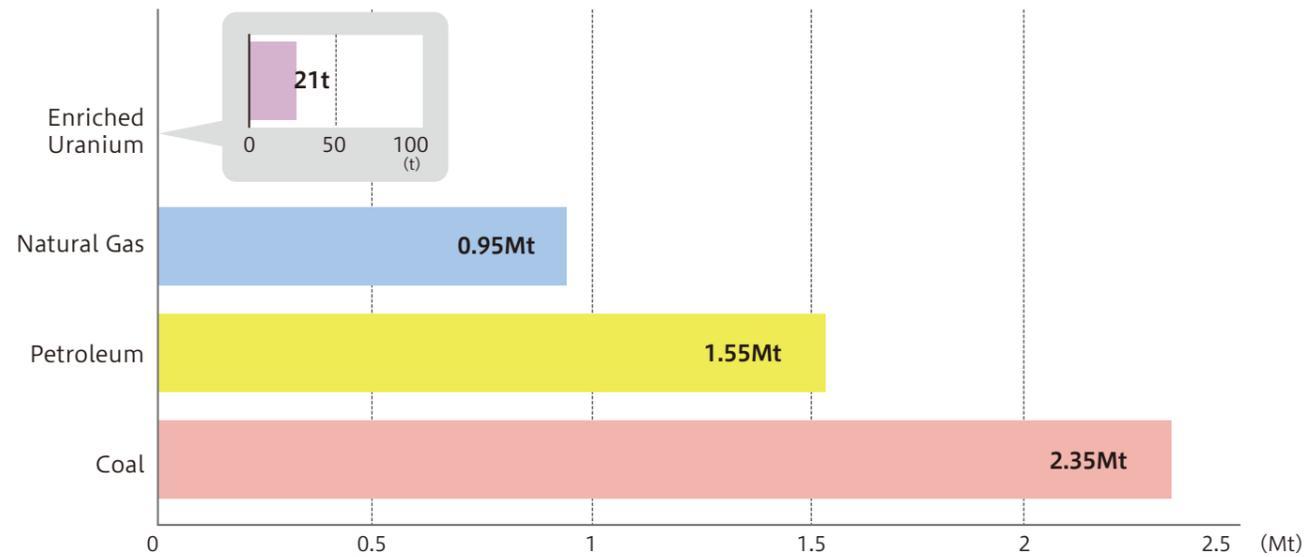
Note: 1 short ton = approx. 0.907 metric ton
 Sourced: Created based on nuclear energy drawings ("Uranium 2020" (OECD/NEA-IAEA), "Atomic Energy Pocket Book 2015" (The Denki Shimbun))

Uranium Fuel Recycling

Natural uranium must undergo the process of refining, conversion, enrichment, reconversion and fabrication in order to become fuel that can be used for generating power at nuclear power plants. Uranium that has been spent can be reused by reprocessing it. The portion of uranium that can

be reused as well as the newly produced plutonium are collected from the spent fuel through chemical processing, fabricated into MOX fuel at a MOX Fuel Fabrication Plant, and then used at a nuclear power plant. This ensures the longterm use and saving of uranium resources.

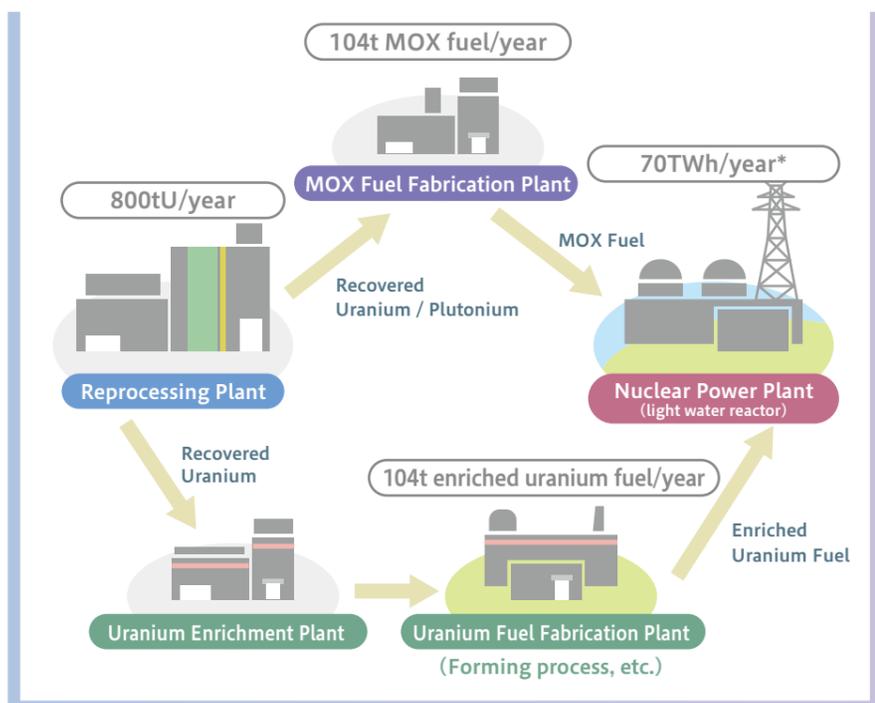
Fuel required to operate a 1GW power plant for one year



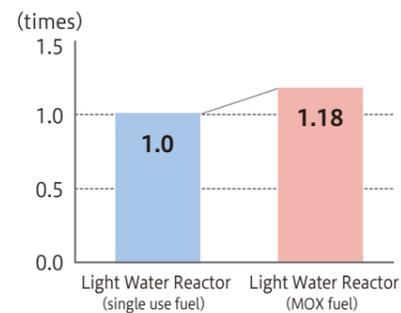
Source: Graphical Flip-chart of Nuclear & Energy Related Topics 2015

Recycling of Uranium Resources (Efficient Use of Resources)

Uranium and plutonium collected at the Reprocessing Plant used in a light water reactor



Efficient Use of Uranium**



* 70TWh is equivalent to the annual output of ten 1GW nuclear reactors (Source 1)
 ** By realizing the fast breeder cycle with increased plutonium use, it is expected that uranium usability will be increased about 30 times (Source 2)
 Nuclear Power Plant (light water reactor)
 Source 1) Material from the 5th, 7th and 8th New Nuclear Policy-Planning Council, Japan Atomic Energy Commission (2004)
 Source 2) "Uranium 2003" by OECD and IAEA

Source: Graphical Flip-chart of Nuclear & Energy Related Topics 2015

Present Status and Activities at Nuclear Fuel Cycle Facilities

Energy resource poor Japan must import much of the fuel used at its power generation plants. Moreover, Japan also entrusted France and Britain with reprocessing fuels spent at its nuclear power plants. Since spent fuel can again become an energy resource through reprocessing, Japan Nuclear Fuel Limited has plans to operate a Reprocessing Plant and is currently building a MOX Fuel Fabrication Plant in order to ensure safe and reliable implementation of such reprocessing work in Japan. In

Rokkasho Village, the following three facilities are already in operation: the Uranium Enrichment Plant, the Vitrified Waste Storage Center, and the Low level Radioactive Waste Disposal Center. Once the Reprocessing Plant and the MOX Fuel Fabrication Plant are operating, a cycle of uranium enrichment, reprocessing, fuel fabrication and waste management will be completed, the next big step toward a stable supply of quasi domestic energy.

Outline of JNFL Nuclear Fuel Cycle Facilities

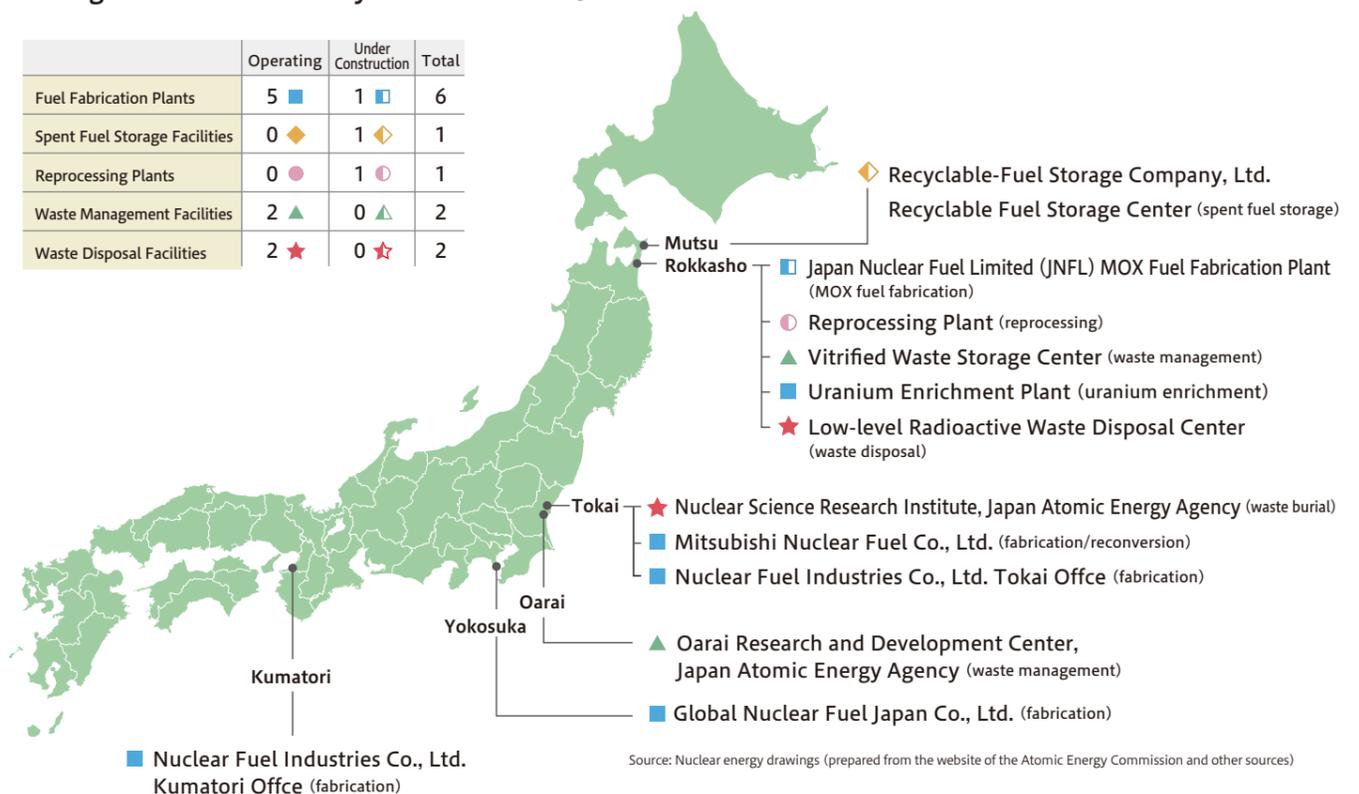
	Reprocessing Plant	Vitrified Waste Storage Center	MOX Fuel Fabrication Plant	Uranium Enrichment Plant	Low-level Radioactive Waste Disposal Center
Location	Iyasakatai, Rokkasho Village, Aomori Prefecture			Oishitai, Rokkasho Village, Aomori Prefecture	
Capacity	Maximum reprocessing capacity: 800tU / year Storage capacity for spent fuel: 3,000tU	Storage capacity for waste returned from overseas: 2,880 canisters of vitrified waste	MOX fuel assemblies for domestic light water reactors (BWR, PWR): 130tHM / year *	150tSWU / year Planned capacity of 1,500tSWU / year	Approx. 125,000 m ³ (equivalent to approx. 620,000 200ℓ drums) Increase with approval for No.3 burial Plan to expand to approximately 600,000 m ³ (equivalent to approx. 3 million 200ℓ drums)
Construction Schedule	1993 Start of construction Completed first half of 2022	1992 Start of construction 1995 Start of operation	2010 Start of construction Completed first half of 2024	1988 Start of construction 1992 Start of operation	1990 Start of construction Start of operation
Construction Costs	Approx. 2.193 trillion JPY	Approx. 125 billion JPY	Approx. 600 billion JPY	Approx. 250 billion JPY	Approx. 160 billion JPY **

* tHM (tons of heavy metal) indicates the mass of plutonium and uranium metallic content in MOX fuel

** Construction costs for approximately 200,000m³ for low-level radioactive waste (equivalent to 1 million 200ℓ drums)

Diagram of nuclear fuel cycle facilities (as of Aug. 2017)

	Operating	Under Construction	Total
Fuel Fabrication Plants	5	1	6
Spent Fuel Storage Facilities	0	1	1
Reprocessing Plants	0	1	1
Waste Management Facilities	2	0	2
Waste Disposal Facilities	2	0	2



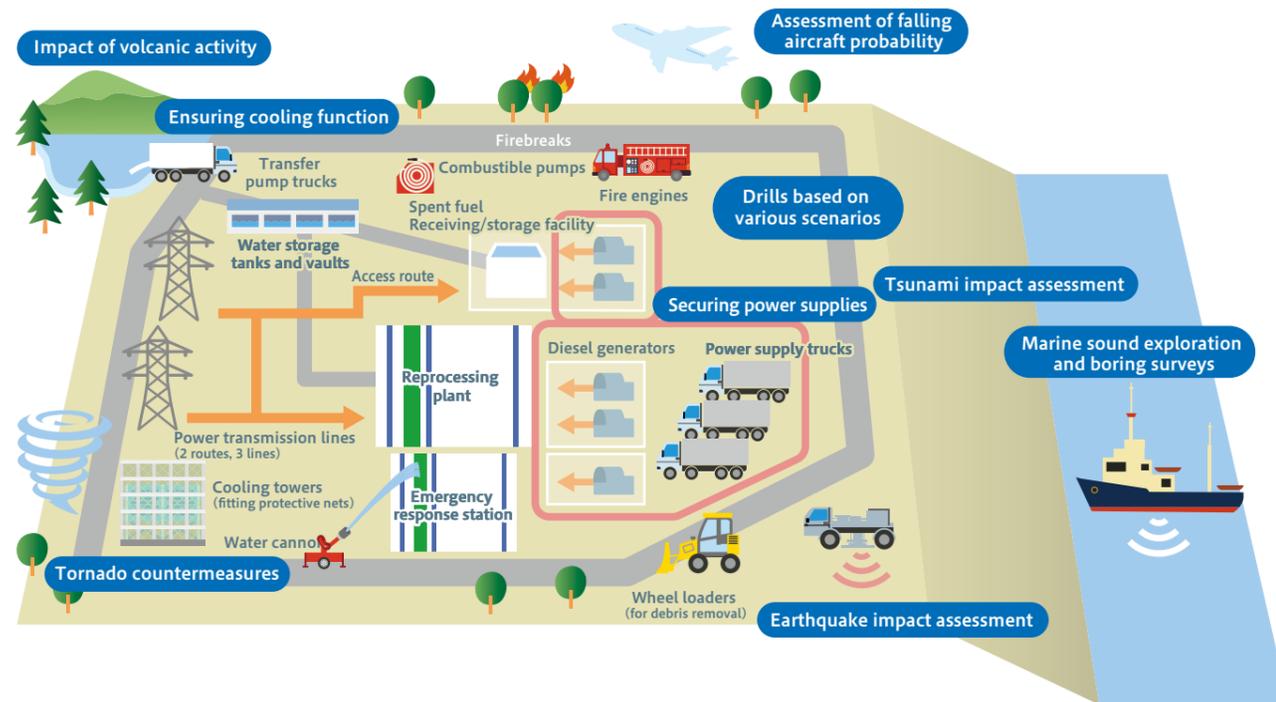
Source: Nuclear energy drawings (prepared from the website of the Atomic Energy Commission and other sources)

Safety measures and disaster prevention systems for nuclear fuel cycle facilities

Safety Measures

In addition to safety measures that have been implemented autonomously, nuclear fuel cycle facilities are currently working on new measures in order to conform to the new regulatory requirements established by the National Government in December of 2013. These regulatory requirements were based on lessons learned from the accident at the Fukushima Daiichi Nuclear Power Plant.

Overview of initiatives to improve safety



To secure power supply

At the Reprocessing Plant a constant power supply is indispensable in order to maintain important safety features such as cooling spent fuels and high level radioactive liquid waste. Therefore, the plant is taking many measures to ensure the power supply remains stable.

① Two External Power Supply Lines

Power is supplied via two external transmission lines from the power company.

② Emergency Diesel Generators

In the event the power supply from the power company is disrupted, the power necessary to maintain safety features is insured.

③ Power Supply Trucks

In the case of a malfunction of the emergency diesel generators, etc. power supply trucks have been deployed.

To maintain cooling function

In the event that the equipment responsible for cooling spent fuels and high level radioactive liquid waste stops working due to power failure or failures in the system, the cooling function is maintained by a backup system that secures a supply of necessary equipment and water.

④ Water Tanks

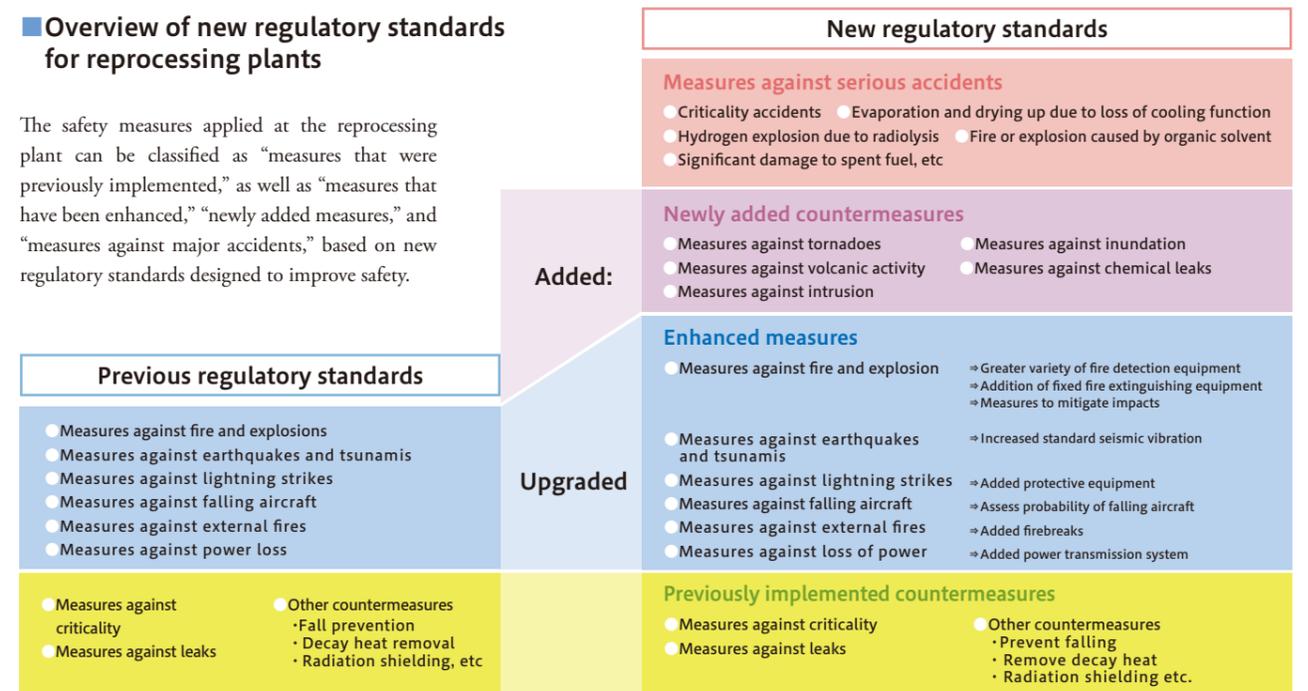
The stored water has a volume of 20,000m³. In addition there are also emergency fire protection water tanks, etc. on site. Moreover, there are plans to set up a new water tank with increased earthquake resistance in order to meet the new regulatory requirements. This new tank will double the amount of the present volume of water (20,000m³).

⑤ Fire Engines ⑥ Portable Pumps ⑦ Large-scale Pumps

In addition to the water tanks, it has also been confirmed that water from nearby Obuchi Marsh can be used. By using all of this equipment, it is possible to transport water to the target facility.

Overview of new regulatory standards for reprocessing plants

The safety measures applied at the reprocessing plant can be classified as “measures that were previously implemented,” as well as “measures that have been enhanced,” “newly added measures,” and “measures against major accidents,” based on new regulatory standards designed to improve safety.



Disaster Prevention Systems

Research Regarding the Influence on the Environment

The facility operators and related organizations monitor radioactive material which is discharged from nuclear fuel-related facilities and surveys and research are conducted regarding the influence of the radioactive material on the environment and living organisms.

1 Environmental Monitoring

The gas and liquid radioactive waste generated in nuclear fuel cycle facilities is processed in a dedicated device inside the facility and then discharged after ensuring the emissions are sufficiently safe. However, to monitor the effect on the environment, Aomori Prefecture and the facility operators measure the amount of radiation in the air of the surrounding area and regularly collect and analyze soil samples, agricultural and livestock products, plants, water samples from streams and the ocean, marine products, etc. to make sure that the level of radiation is well below that specified in the laws and regulations. Furthermore the data regarding the radiation in the air, etc. is published via internet services as well as via displays in public facilities in Rokkasho Village and neighboring municipalities, at Aomori Prefectural Public Health and Environment Center and at the Prefectural Office where radiation levels, etc. can be understood at a glance.

2 Surveys and Research Regarding the Effect on the Environment and Living Organisms

At the Institute for Environmental Sciences research is conducted regarding the effect of discharged radioactive material on the environment and living organisms. The results of the surveys and research are published to provide information regarding this effect.

Measures in the Case of Disaster

Nuclear fuel related facilities execute various safety measures to avoid a nuclear disaster but in the event of one, Aomori Prefecture, Rokkasho Village, the police departments, fire departments and medical facilities, etc. cooperate with the National Government and the facility operators for a quick response.

The second floor of the Nuclear Disaster Prevention Research Plaza is designated as an “Off-site Center” (emergency response measures center) and in the case of a serious incident, related organizations such as the National Government, municipalities and facility operators come together, form a joint council for countermeasures against nuclear disasters and share information.



Institute for Environmental Sciences



Nuclear Disaster Prevention Research Plaza

Uranium Enrichment Plant



Uranium, which is used as fuel at nuclear power plants, contains U-235 which burns easily and U-238 which does not burn easily. Since natural uranium ore contains only about 0.7% of U-235, it is necessary to increase the content to 3-5% in order to use as fuel.

This process is conducted at a uranium enrichment plant. To increase the U-235 concentration, gaseous uranium compounds (uranium hexafluoride) are put in a centrifuge where high-speed rotation separates U-238 and U-235. The portion with a high concentration of U-235 is drawn off and sent to the next centrifuge. Enriched uranium that can be used as fuel is created by repeating this process.

Since the facility commenced operation in March 1992 as Japan's

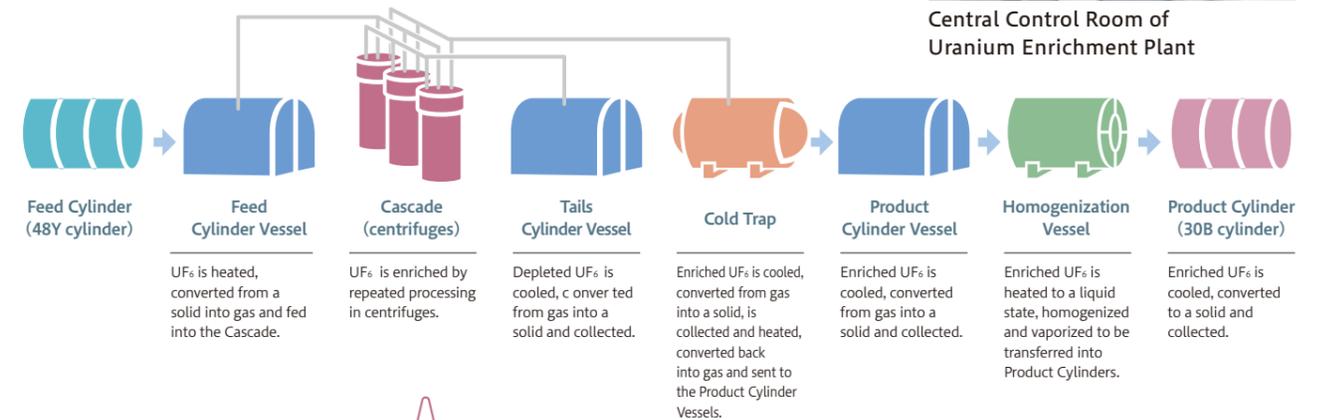
first commercial uranium enrichment plant, it has established a track record of safe and stable operation over more than 20 years. This purely domestic technology boasts a very high level of safety.

The current capacity of the facility is 450 tons SWU/year (the amount of separative work required to enrich enough uranium to power a 1-million-kW-class nuclear power plant for one year is about 120 tons SWU). The plant is now being steadily upgraded to a new type of centrifuge, resulting ultimately in a production capacity of around 1,500 tons SWU/year.

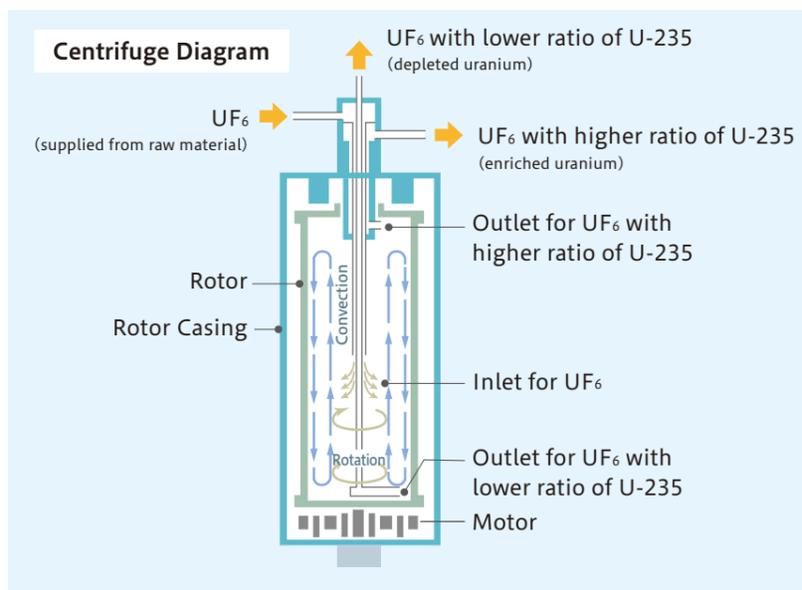


Central Control Room of Uranium Enrichment Plant

Uranium Enrichment Process



The Cascade Since a single centrifuge can only enrich uranium by a slight degree, the process must be repeated by many centrifuges to attain the level of enrichment required. Therefore, a device that links multiple centrifuges is necessary for efficient operation. This is called a "Cascade."



Cascade



Feed and Product Cylinder Vessels



Homogenization Vessels

History of the facility

[Phase 1] (RE 1 [600tSWU / year])

1987, May 26th	Application for nuclear fuel processing business license filed	1993, July 12th	License for expansion granted
1988, August 10th	License to operate nuclear fuel processing business granted	1993, September 9th	Start of construction
1988, October 14th	Start of construction	1997, October 7th	Start of production at RE 2A (150tSWU / year)
1992, March 27th	Start of production at RE 1A (150tSWU / year)	1998, April 1st	Start of production at RE 2B (150tSWU / year)
1992, December 8th	Start of production at RE 1B (150tSWU / year)	1998, October 6th	Start of production at RE 2C (150tSWU / year)
1993, May 27th	Start of production at RE 1D (150tSWU / year)	2008, December 6th	Application for modification to nuclear fuel processing business license regarding renovation filed (75tSWU / year out of 150tSWU / year at RE 2A)
1994, September 21st	Start of production at RE 1C (150tSWU / year)		License for renovation granted

[Phase 2] (RE 2 [450tSWU / year])

1992, July 3rd	Application for modification to nuclear fuel processing business license regarding expansion filed (450tSWU / year)	2010, January 21st	License for renovation granted
		2010, March 1st	Start of construction (75tSWU / year)
		2012, March 9th	Start of production at RE 2A (37.5tSWU / year)
		2013, May 21st	Start of production at RE 2A (37.5tSWU / year)
		2014-May 21	Application for compliance with new regulatory standards (application for business modification approval)
		2017-May 17	Nuclear fuel material processing business modification approval (375 tons SWU/year)

Heavy U-238 and light U-235 are separated by inserting the uranium hexafluoride (UF₆) gas into a centrifuge with a rapidly spinning rotor. The light U-235 gathers at the center of the rotor. By drawing off this gaseous UF₆ (with higher concentration of U-235) from the center, enriched uranium can be obtained.

Reprocessing Plant



Central Control Room



Cask Transport



Spent Fuel Storage Pool

History of the facility

1989, March 30th	Application for reprocessing business filed
1992, December 24th	Approval for reprocessing business granted
1993, April 28th	Start of construction
1999, December 3rd	Start of operation
2001, July 11th	Agreement with COGEMA (now Orano NC) regarding technical assistance for uranium tests
2004, December 21st	Start of uranium testing
2006, January 22nd	End of uranium testing
2006, March 31st	Start of active testing
2014-Jan 7	Application for compliance with new regulatory standards (application for business modification approval)
2020-Jul 29	Reprocessing business modification approval
2020-Aug 21	Expected completion date of reprocessing plant changed from "first half of FY2021" to "first half of FY2022"

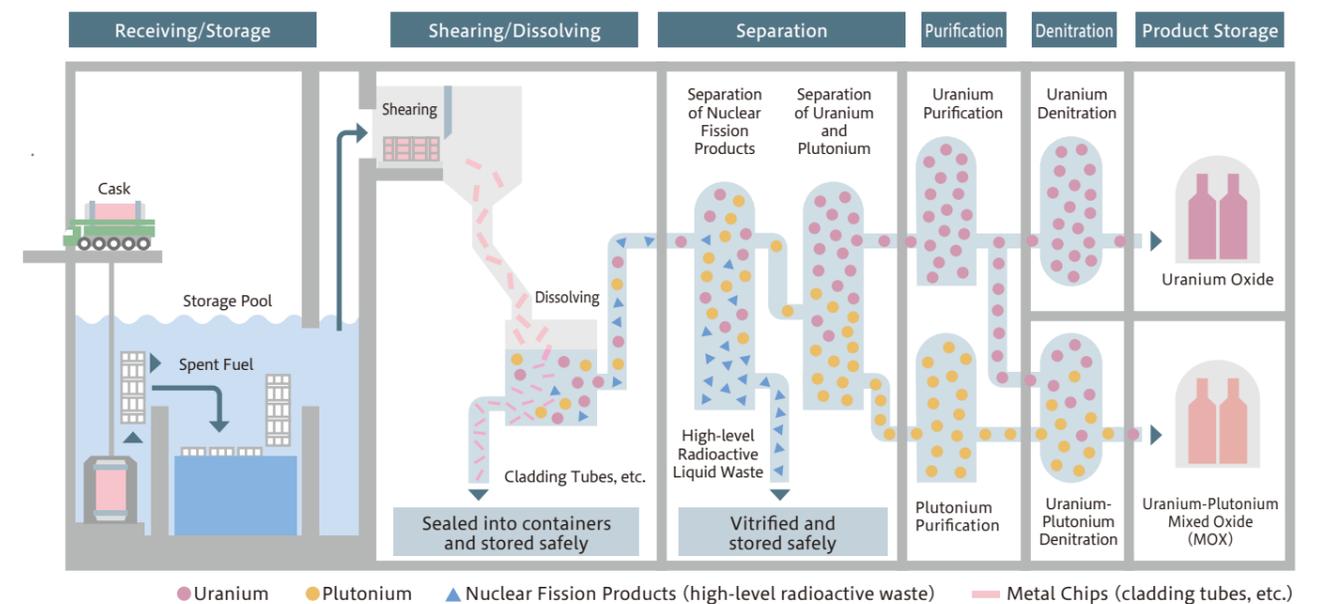
Fossil fuels cannot be reused once burned. On the other hand, fuel spent at nuclear power plants can be reprocessed and then reused. The spent fuel contains uranium that remains unburned as well as plutonium and the role of a reprocessing plant is to collect and prepare them for reuse.

Spent fuel from nuclear power plants located nationwide is transported in special containers called "casks" to the Reprocessing Plant. Casks are stored in the Storage Pool at the Reprocessing Plant until the radioactivity weakens sufficiently, and then spent fuel undergoes chemical treatment for the collection of uranium and plutonium.

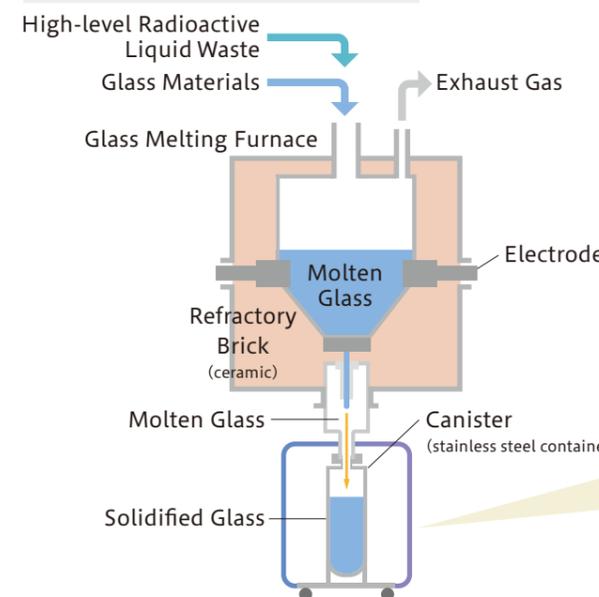
At the Reprocessing Plant in Rokkasho, these processes are conducted in separate buildings, with the solutions being sent to the next stage via pipes in an underground tunnel connecting the buildings. The plant has a maximum processing capacity of 800 tons of uranium per year — equivalent to the fuel spent at about forty 1GW class nuclear power plants.

Currently, active testing (using spent fuel) is in progress to verify the final safety functions and performance of equipment and facilities before the completion of construction in the first half of FY2022.

Reprocessing Process

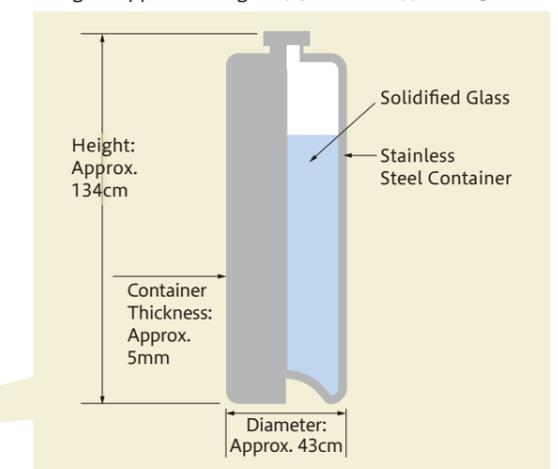


Vitrification Process



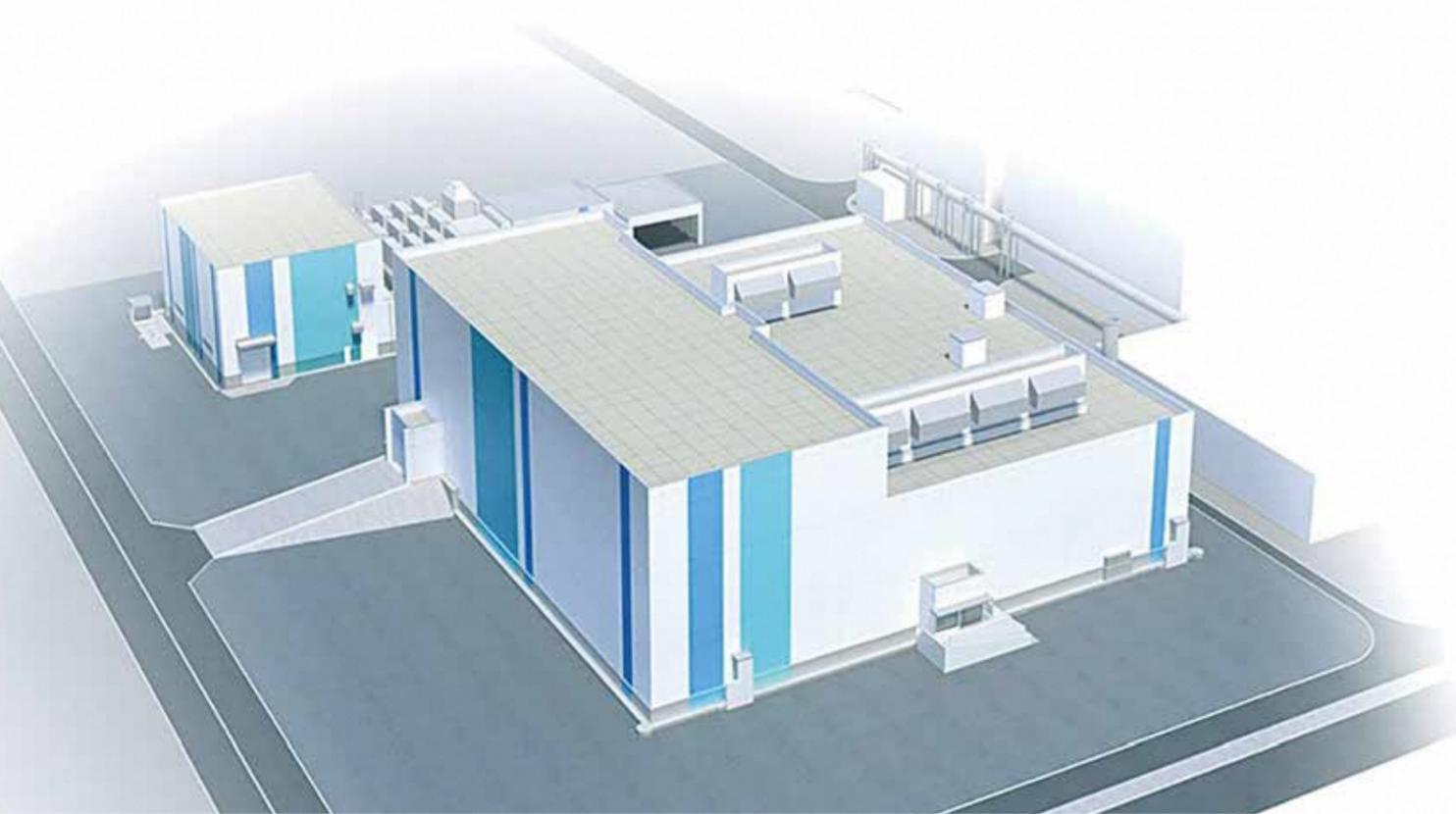
[Vitrified Waste Canister Properties]

Volume: Approx. 150ℓ of solidified glass
Weight: Approx. 490kg (empty container: approx. 90kg)



Source: Graphical Flip-Chart of Nuclear & Energy Related Topics 2015

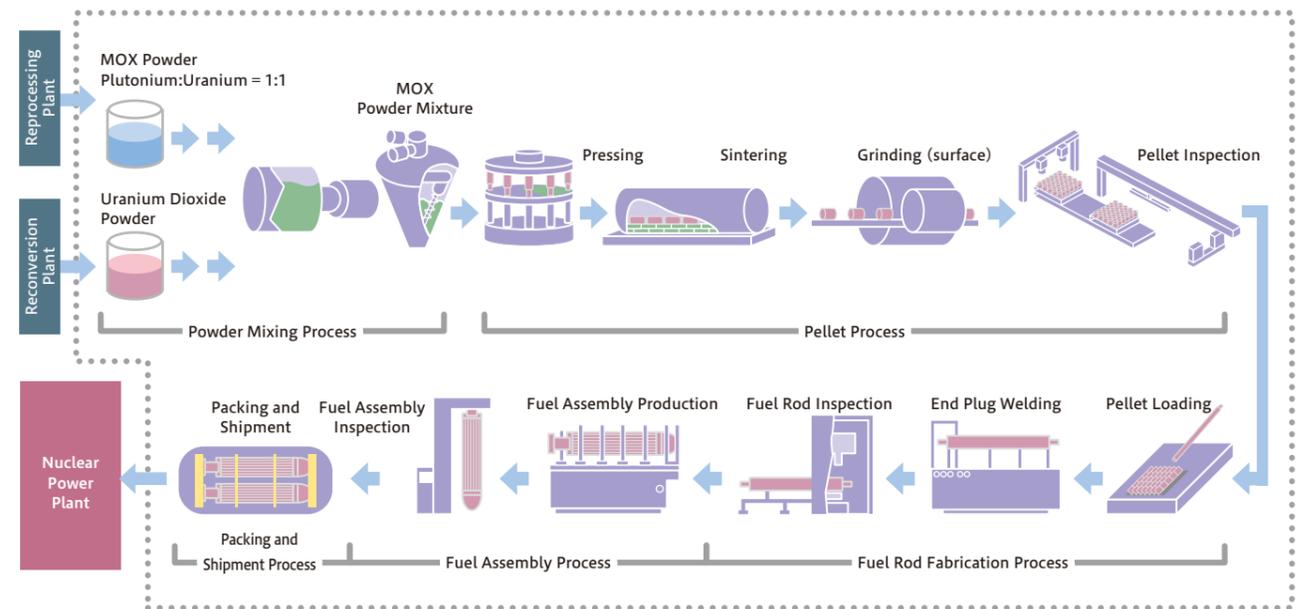
MOX Fuel Fabrication Plant



MOX stands for “mixed oxide” (uranium and plutonium). Natural uranium consists of U-235 which burns easily and U-238 which does not burn easily. Uranium fuel used at nuclear power plants is uranium where the U-235 content has been increased to 3-5%. MOX fuel is fuel that uses plutonium extracted from spent fuel at reprocessing plants instead of

U-235. These fuel pellets have the same size and shape as those of uranium fuel pellets used at nuclear power plants. The MOX Fuel Fabrication Plant is being developed to fulfill the aim of producing MOX fuel.

MOX Fuel Fabrication Process



History of the facility

1998, October 12th	Request for cooperation from the Federation of Electric Power Companies of Japan (FEPC) to Japan Nuclear Fuel Limited (JNFL) regarding feasibility studies for domestic MOX fuel fabrication	2005, April 20th	JNFL submits application for nuclear fuel fabrication business license to Ministry of Economy, Trade and Industry (METI)
1998, December 21st	JNFL begins studies	2007, February 20th	JNFL submits amendment to above license application to METI
1999, February 26th	Additional goal of MOX fuel production added	2007, May 18th	JNFL submits amendment to above license application to METI
1999, June 11th	Agreement concluded for technology cooperation with Japan Nuclear Cycle Development Institute (JNC) regarding feasibility studies	2008, October 7th	JNFL submits amendment to above license application to METI
2000, November 10th	JNFL feasibility study report submitted to FEPC	2009, April 16th	JNFL submits amendment to above license application to METI
2000, November 10th	FEPC requests JNFL become the operating body on the condition that the plant is located in Rokkasho	2009, June 26th	JNFL submits amendment to above license application to METI
2000, November 17th	JNFL declared the operating body for MOX fuel fabrication business	2009, December 4th	JNFL submits amendment to above license application to METI
2000, December 27th	Agreement concluded between JNFL and JNC for technology cooperation regarding building and operating the plant	2010, May 13th	License granted for MOX fuel fabrication business
2001, August 24th	JNFL requests cooperation from Aomori Prefecture and Rokkasho Village regarding the establishment of the plant	2010, May 21st	JNFL notifies METI about modification of construction plan
2005, April 19th	Basic cooperation agreement concluded between JNFL, Aomori Prefecture and Rokkasho Village regarding the establishment of the plant	2010, October 28th	Start of construction
		2014, January 7th	JNFL applies to Nuclear Regulatory Commission (NRC) for modification to MOX fuel fabrication business license
		2020-Dec 9	MOX fuel plant business modification approval
		2020-Dec 16	Expected completion date of MOX fuel plant was changed from first half of FY2022 to first half of FY2024.
			A basic agreement on location cooperation for the MOX fuel fabrication facility was concluded

MOX Fuel Fabrication Facilities Worldwide

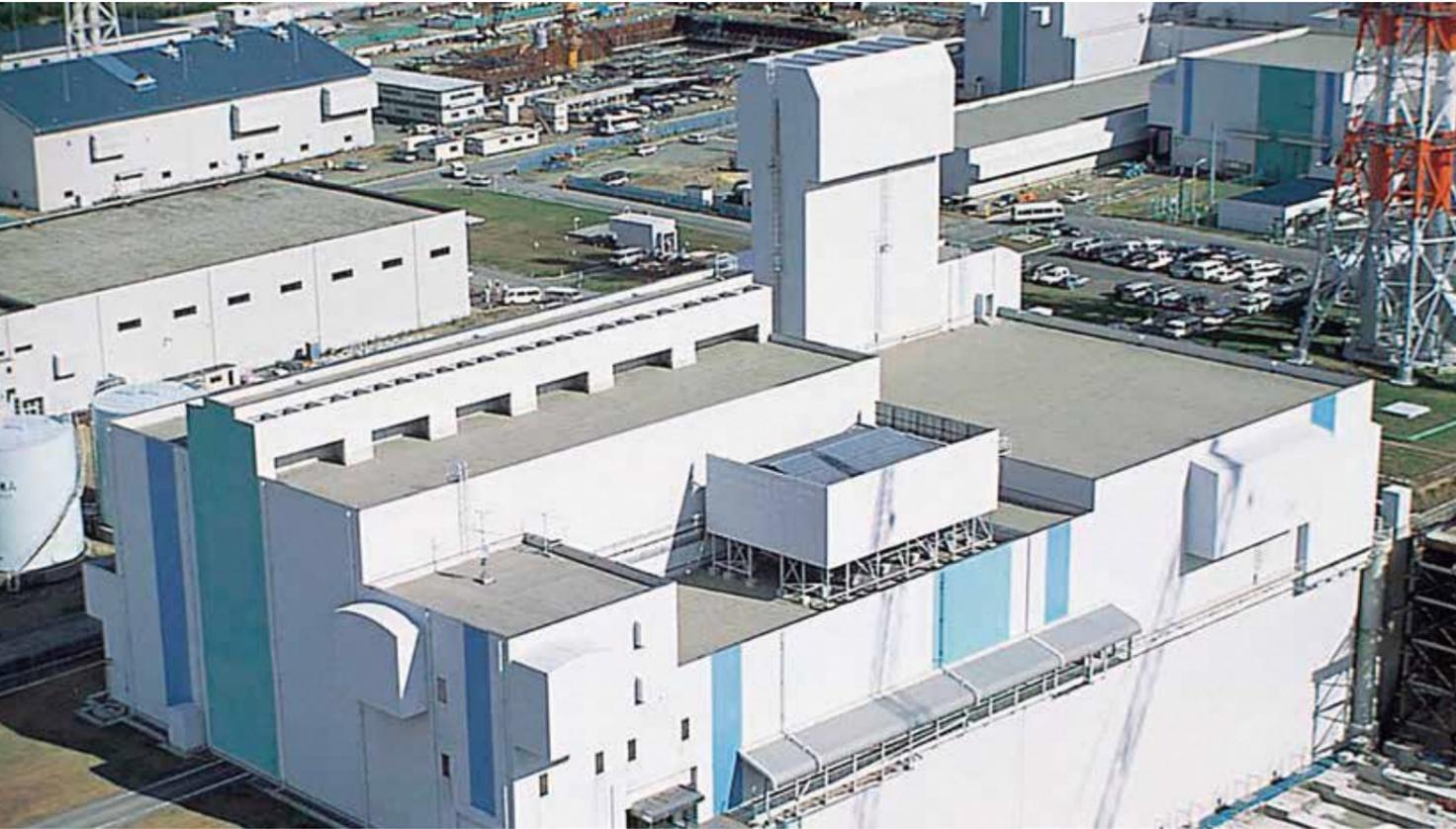
(as of Jan., 2021)

Country	Operator	Location	Reactor Type	Annual Production Capacity (tHM*/year)	Commercial operation
France	Orano R Melox	Bagnols-sur-Cèze	PWR, BWR	195	1995
Japan	Japan Atomic Energy Agency (JAEA)	Tokai Village, Ibaraki Prefecture	FBR	4.5	1988
	Japan Nuclear Fuel Limited (JNFL)	Rokkasho Village, Aomori Prefecture	PWR, BWR	130 (max.)	First half of FY2024 (completion)
Belgium	FBFC International	Dessel	PWR, BWR	200	1960

*tHM: The metal mass of plutonium and uranium in MOX fuel

Source: Nuclear energy drawings (prepared from World Nuclear Industry Status Report 2021)

Vitrified Waste Storage Center

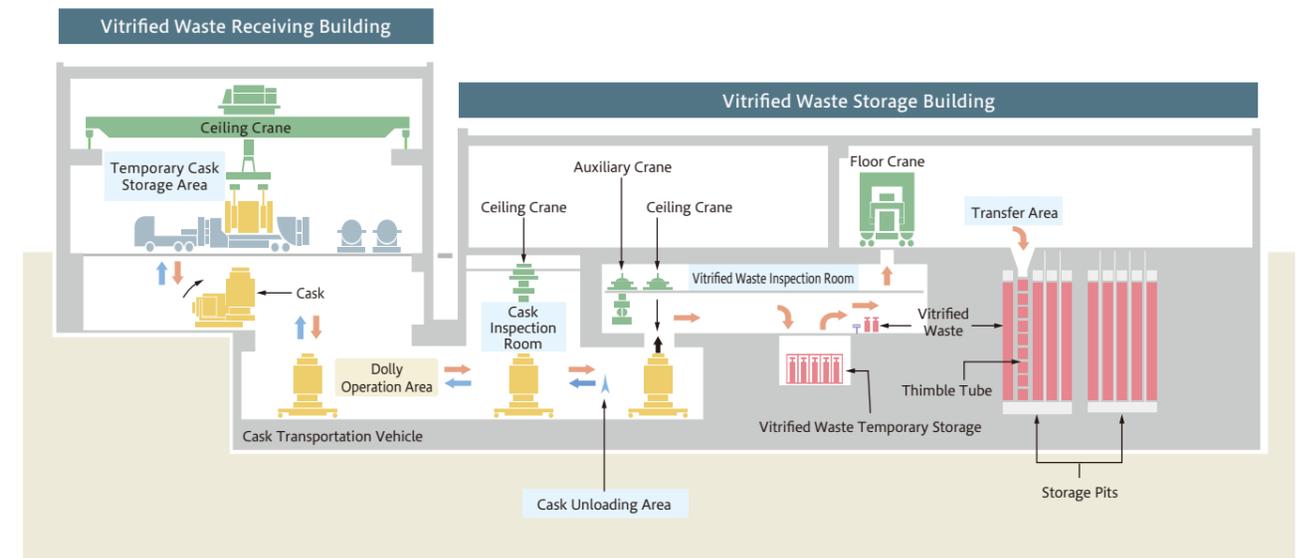


Japanese electric power companies outsource reprocessing of spent fuel to reprocessing plants in France and the UK. Uranium and plutonium recovered in this plant are returned to Japanese power utilities to be reused as nuclear fuel. In addition, the high level radioactive waste generated from reprocessing is vitrified, placed in containers called casks, and returned to Japan by sea. The Vitrified Waste Storage Center safely stores and manages the vitrified waste until final disposal. The storage and inspection areas are encased by reinforced concrete walls 1.5–2 meters thick to prevent radiation from escaping. Initially, the center had a storage capacity of 1,440 canisters but the facility has been expanded to accommodate 2,880 canisters of vitrified waste.



Vitrified Waste Inspection Room

Building Overview



→ Flow of casks with vitrified waste
 ← Flow of empty casks

History of the facility

1989, March 30th Application for waste management business license filed
 1992, April 3rd License for waste management business granted
 1992, May 6th Start of construction

[Return of vitrified waste from France begins]

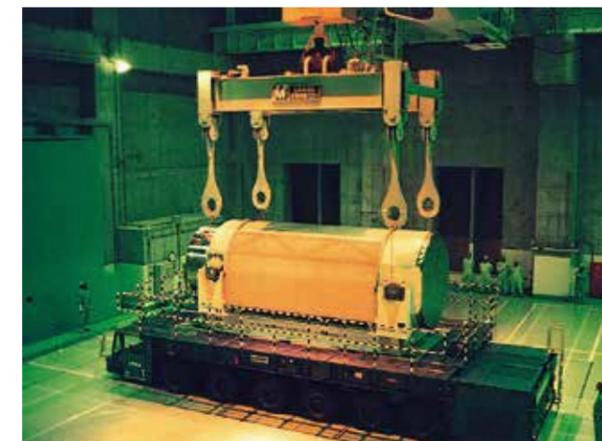
1995, April 26th Start of operation, first shipment of vitrified waste received (1 cask, 28 canisters)
 1997, March 18th 2nd shipment of vitrified waste received (2 casks, 40 canisters)
 1998, March 13th 3rd shipment of vitrified waste received (3 casks, 60 canisters)
 1999, April 15th 4th shipment of vitrified waste received (2 casks, 40 canisters)
 2000, February 23rd 5th shipment of vitrified waste received (4 casks, 104 canisters)
 2001, February 21st 6th shipment of vitrified waste received (8 casks, 192 canisters)
 2001, July 30th Application for modification to waste management business license regarding expansion filed
 2002, January 23rd 7th shipment of vitrified waste received (6 casks, 152 canisters)
 2003, July 24th 8th shipment of vitrified waste received (6 casks, 144 canisters)
 2003, December 8th License for expansion granted
 2004, March 4th 9th shipment of vitrified waste received (5 casks, 132 canisters)
 2005, April 20th 10th shipment of vitrified waste received (5 casks, 124 canisters)
 2006, March 24th 11th shipment of vitrified waste received (7 casks, 164 canisters)
 2007, March 28th 12th shipment of vitrified waste received (6 casks, 130 canisters)

[All vitrified waste from France is returned]

2010, March 9th 13th shipment of vitrified waste received (1 cask, 28 canisters)

[Return of vitrified waste from U.K. begins]

2011, April 25th Vitrified Waste Storage Building B completed
 2011, September 15th 14th shipment of vitrified waste received (3 casks, 76 canisters)
 2013, February 27th 15th shipment of vitrified waste received (1 cask, 28 canisters)
 2014-Jan 7 Application for compliance with new regulatory standards (application for business modification approval)
 2014, April 22nd-23rd 16th shipment of vitrified waste received (5 casks, 132 canisters)
 2015-Sep 16-17 17th return vitrified waste (5 casks, 124 canisters)
 2016-Oct 21-22 18th return of vitrified waste (5 casks, 132 canisters)
 2020-Aug 26 Waste management business modification approval



Cask Unloading Crane



Storage Pits

Low-level Radioactive Waste Disposal Center



History of the facility

1988, April 27th	Application for waste disposal license filed (Disposal Facility No. 1: 40,000m ³ [equivalent to 200,000 200 ℓ drums])
1990, November 15th	License for waste disposal granted
1990, November 30th	Start of Disposal Facility No. 1 construction
1990, December 8th	Start of Disposal Facility No. 1 operation
1997, January 30th	Application for expansion license filed (Disposal Facility No. 2: 40,000m ³ [equivalent to 200,000 200 ℓ drums])
1998, October 8th	License for expansion granted
1998, October 12th	Start of Disposal Facility No. 2 construction
2000, October 10th	Start of Disposal Facility No. 2 operation
2018-Aug 1	Application for waste management business modification approval (Equivalent to 211,200 200 ℓ drums or 42,240 m ³ for No. 3 burial) (Change to accept No. 2 category waste body for No. 1 burial) (The quantity was changed to the equivalent of 204,800 200 ℓ drums, or 40,960 m ³ of waste for No. 1 burial, and the equivalent of 207,360 200 ℓ drums, or 41,472 m ³ of waste for No. 2 burial)
2021-July 21	Waste burial business modification approval



Reprocessing Process

Low-level radioactive waste (waste that has a low degree of radioactivity) is created during the operation or inspection of nuclear power plants. Such waste includes the water used for cleaning, the metal equipment used to purify this water afterwards and insulators. The liquid waste is evaporated and condensed while burnable waste is incinerated, stored in drums and then solidified with cement, etc. Solids such as metals are cut, compressed or melted as required, stored in drums, and then solidified using cement-based fillers. The waste is then stored in the storage facility of each nuclear power plant, subjected to various inspections, and then

transported to the Low-level Radioactive Waste Disposal Center. Waste drums arriving at the Center are inspected, stored in reinforced concrete pits constructed on a solid foundation and then strictly controlled until the level of radioactivity decreases. The Center currently operates with a business license that grants an area of about 80,000m³ for the disposal of waste at Disposal Facilities No. 1 and No. 2 (equivalent to 400,000 200ℓ drums). There are plans to expand the disposal area to 600,000m³ in order to accept future low-level radioactive waste created by nuclear fuel cycle facilities.

Disposal Process

Transportation

Waste drums are transferred from the nuclear power plant to Mutsu-Ogawara Port by a dedicated transport ship.

Receiving/Inspection

Drums are inspected to ensure conformity with technical standards.

Stacking



Drums are stacked inside disposal facility

Filling with Mortar

Cement-based filler (mortar) is poured in the spaces between the drums.

Covering with Concrete



Reinforced concrete is placed on top of the disposal facility and resembles a single rock.

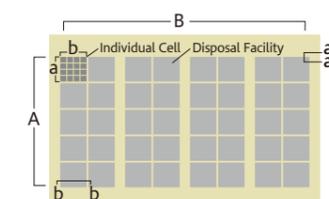
Covering with Soil

An inspection tunnel is added and then a bentonite (clay) and soil mixture is used to cover the disposal facility, increasing impermeability. Earth is then placed on top along with vegetation.

Disposal Facility Illustration

Disposal Facility No. 1

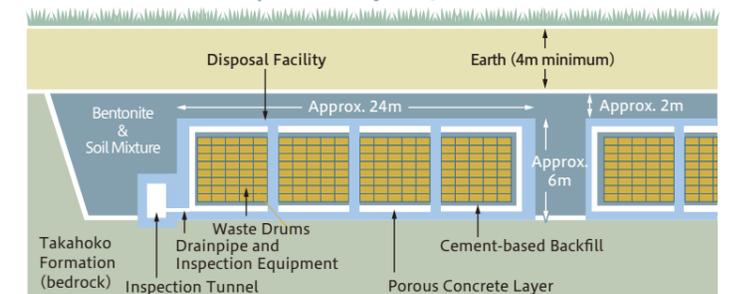
Overall Structure
A:132m B:231m
a: 24m b: 24m



Cross-section of Cell (along a-a axis)

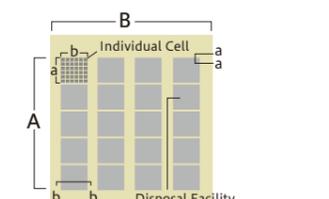
The drums are stacked eight deep in five rows of eight.

Cross-section of the Disposal Facility (along b-b axis)



Disposal Facility No. 2

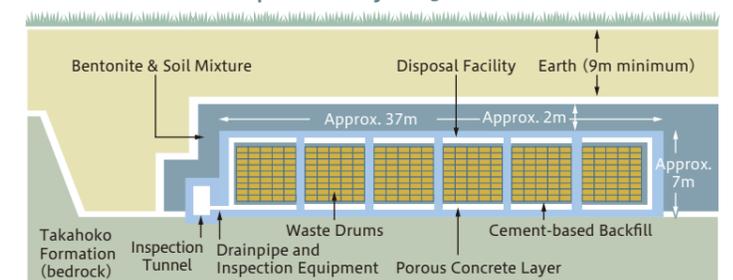
Overall Structure
A:152m B:191m
a: 36m b: 37m



Cross-section of Cell (along a-a axis)

The drums are stacked nine deep in six rows of eight.

Cross-section of the Disposal Facility (along b-b axis)



Statistics

Population and Number of Households

Population and Number of Households As of March 31st each year

Year	Number of Households	Population	
		Total	Male / Female
1970	2,553	13,901	7,055 / 6,846
1975	2,716	12,995	6,671 / 6,324
1980	2,882	12,539	6,405 / 6,134
1985	3,099	12,251	6,229 / 6,022
1990	3,218	11,636	5,926 / 5,710
1995	3,616	11,622	6,029 / 5,593
2000	4,008	11,639	6,114 / 5,525
2005	4,430	11,883	6,288 / 5,595
2010	4,433	11,225	5,938 / 5,287
2012	4,519	11,047	5,864 / 5,183
2015	4,519	10,685	5,672 / 5,013
2018	4,823	10,459	5,579 / 4,880
2021	4,946	10,099	5,487 / 4,612

Source: Civil Registration and Certificate Section (Basic Resident Register)

Changes in Population and Number of Households According to the National Census

Year	Number of Households	Population	
		Total	Male / Female
1970	2,461	11,749	5,840 / 5,909
1975	2,520	11,321	5,612 / 5,709
1980	2,881	11,104	5,463 / 5,641
1985	2,875	11,003	5,425 / 5,578
1990	2,921	10,071	4,924 / 5,147
1995	3,997	11,063	5,914 / 5,149
2000	5,021	11,849	6,746 / 5,103
2005	4,729	11,401	6,317 / 5,084
2010	4,571	11,095	6,186 / 4,909
2015	4,683	10,536	5,816 / 4,720
2020	5,194	10,367	5,910 / 4,457

Note: The data from the national census and the Basic Resident Register do not match.
Source: National Census
* A value is fixed for 2020.

Age Structure of Population According to the National Census (five year periods) As of October 1st each year

Age Group	1970	1975	1980	1985	1990	1995	2000	2005	2010	2015
0-4	1,242	1,086	897	911	621	566	536	604	499	399
5-9	1,499	1,241	1,081	920	817	636	564	519	482	432
10-14	1,843	1,463	1,216	1,070	839	830	645	526	472	460
15-19	853	676	749	696	677	640	586	418	456	409
20-24	810	855	662	545	465	672	740	583	533	549
25-29	605	807	888	776	551	709	944	849	693	662
30-34	774	590	817	941	694	656	835	951	828	638
35-39	868	776	605	820	796	779	797	740	864	735
40-44	807	846	744	581	760	962	874	746	708	801
45-49	622	798	810	714	563	909	1,104	845	749	676
50-54	491	596	767	756	680	659	939	969	805	667
55-59	380	460	537	712	694	699	663	855	914	758
60-64	339	372	430	508	647	700	643	544	820	819
65-69	264	316	323	386	467	632	669	572	522	697
70-74	161	220	280	291	352	437	589	590	527	452
75-79	119	119	177	199	246	288	356	499	530	487
80-84	50	79	78	117	132	181	207	272	410	413
85-89	18	18	38	46	60	83	116	130	174	280
90-94	4	3	4	13	8	23	40	49	52	83
95-100+	0	0	1	1	2	2	2	14	20	15
Unknown	0	0	0	0	0	0	0	126	37	104
Total	11,749	11,321	11,104	11,003	10,071	11,063	11,849	11,401	11,095	10,536

Note: The data from the national census and the Basic Resident Register do not match.
Source: National Census

Resident Livelihood

Village Resident Income Per Capita

Year	Income Per Capita, 1,000 JPY			Income Per Capita, Percentage		
	Village	Prefecture	Country	Village / Prefecture	Village / Country	Prefecture / Country
1970	239	379	586	63.1	40.8	64.7
1975	611	851	1,109	71.8	55.1	76.7
1980	889	1,223	1,706	72.7	52.1	71.7
1985	1,214	1,563	2,104	77.7	57.7	74.3
1990	1,861	2,169	2,786	85.8	66.8	77.9
1995	2,867	2,491	3,029	115.1	94.7	82.2
2000	3,192	2,410	2,929	132.4	109.0	82.3
2005	19,598	2,381	3,068	823.1	638.8	77.6
2010	16,104	2,284	2,827	705.1	569.6	80.8
2012	16,957	2,374	2,820	714.3	601.3	84.2
2015	16,026	2,536	3,070	631.9	522.0	82.6
2018	9,841	2,507	3,198	392.5	307.7	78.4

Source: Municipal Accounts and Aomori Prefecture Accounts

Finances

General Revenue Dedicated Accounts

Category	2011		2014		2015		2017		2018		2019		2020	
	Amount, 1,000 JPY	%												
Village Tax	6,967,104	52.4	7,881,026	52.6	7,221,599	48.4	8,384,840	56.9	8,507,861	56.2	7,815,580	55.0	7,330,914	45.8
Local Transfer Tax	60,670	0.5	53,000	0.4	59,985	0.4	61,672	0.4	62,311	0.4	64,356	0.5	68,117	0.4
Interest Tax Subsidy	3,239	0.0	2,866	0.0	2,372	0.0	2,681	0.0	2,266	0.0	1,183	0.0	1,194	0.0
Dividends Tax Subsidy	1,301	0.0	6,451	0.0	4,410	0.0	2,859	0.0	2,266	0.0	2,812	0.0	2,553	0.0
Capital Gains (Stocks, etc.) Tax Subsidy	258	0.0	2,680	0.0	3,075	0.0	2,542	0.0	1,723	0.0	1,566	0.0	3,023	0.0
Enterprise tax contribution	-	-	-	-	-	-	-	-	-	-	-	-	75,326	0.5
Local Consumption Tax Subsidy	170,058	1.3	201,873	1.3	280,676	1.9	244,974	1.7	263,069	1.7	248,000	1.7	288,070	1.8
Golf Course Use Tax Subsidy	6,048	0.0	6,154	0.0	4,773	0.0	5,129	0.0	4,907	0.0	4,512	0.0	4,218	0.0
Automobile Acquisition Tax Subsidy	12,482	0.1	6,811	0.0	10,163	0.1	16,465	0.1	15,226	0.1	9,397	0.1	-	0.0
Environmental performance discount tax contribution	-	-	-	-	-	-	-	-	-	-	-	-	4,570	0.0
Subsidy for Municipalities Supplying Locations for use by U.S. Forces	6,207	0.0	8,528	0.1	8,482	0.1	9,048	0.1	8,722	0.1	8,722	0.1	8,706	0.1
Special Local Tax Subsidy	24,733	0.2	3,064	0.0	3,209	0.0	3,634	0.0	4,204	0.0	38,018	0.3	7,550	0.0
Local Allocation Tax	81,804	0.6	8,634	0.1	10,557	0.1	16,514	0.1	9,883	0.1	4,114	0.0	22,917	0.1
Special Traffic Safety Measures Subsidy	1,219	0.0	1,047	0.0	1,151	0.0	1,060	0.0	867	0.0	876	0.0	1,025	0.0
Allotted Charges and Burden Fees	259,450	2.0	118,499	0.8	114,003	0.8	108,022	0.7	126,527	0.8	30,043	0.2	32,976	0.2
Rental Fees and Commissions	147,466	1.1	129,205	0.9	133,464	0.9	141,900	1.0	144,139	1.0	148,196	1.0	139,070	0.9
National Treasury Disbursements	3,220,286	24.2	3,244,744	21.7	4,686,419	31.4	3,059,504	20.8	2,917,359	19.3	2,756,695	19.4	4,225,424	26.4
Prefectural Disbursements	675,959	5.1	1,270,702	8.5	1,308,113	8.8	1,070,016	7.3	907,214	6.0	877,606	6.2	964,873	6.0
Property Income	19,591	0.1	85,219	0.6	118,861	0.8	45,345	0.3	221,212	1.5	107,247	0.8	97,099	0.6
Contributions	750,150	5.6	1,040	0.0	51,050	0.3	30,350	0.2	20,790	0.1	19,178	0.1	24,665	0.2
Transfers	325,303	2.4	250,784	1.7	584,316	3.9	1,209,455	8.2	1,566,812	10.3	1,449,820	10.2	1,996,663	12.5
Balance Brought Forward	87,993	0.7	370,499	2.5	61,204	0.4	47,887	0.3	143,873	0.9	362,925	2.6	418,973	2.6
Miscellaneous Income	369,031	2.8	997,488	6.7	238,298	1.6	268,684	1.8	215,878	1.4	265,171	1.9	289,991	1.8
Village Bonds	109,900	0.8	325,300	2.2	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0
Total	13,300,252	100.0	14,975,614	100.0	14,906,180	100.0	14,732,581	100.0	15,147,109	100.0	14,218,199	100.0	16,007,917	100.0

Source: Financial Statements

Changes in Village Tax Revenue

Category	2011		2014		2015		2017		2018		2019		2020	
	Amount, 1,000 JPY	%												
Village Inhabitant Tax	849,214	12.2	1,013,982	12.9	770,562	10.7	1,145,760	13.7	1,222,945	14.4	987,463	12.6	1,113,539	15.2
Property Tax	5,979,238	85.8	6,722,984	85.3	6,311,142	87.4	7,101,237	84.7	7,142,192	83.9	6,679,210	85.5	6,065,843	82.7
Light Automobile Tax	20,887	0.3	22,812	0.3	22,996	0.3	28,329	0.3	29,671	0.3	30,662	0.4	33,297	0.5
Village Tobacco Tax	117,765	1.7	121,246	1.5	116,896	1.6	109,512	1.3	113,051	1.3	118,244	1.5	118,233	1.6
Electricity Tax	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lumber Transaction Tax	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Special Landholder Tax	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	6,967,104	100.0	7,881,024	100.0	7,221,596	100.0	8,384,838	100.0	8,507,859	100.0	7,815,579	100.0	7,330,912	100.0

Source: Financial Statements

General Expenditure Dedicated Accounts

Category	2011		2014		2015		2017		2018		2019		2020	
	Amount, 1,000 JPY	%												
Local Assembly Expense	157,891	1.2	137,151	0.9	140,228	1.0	133,422	0.9	131,757	0.9	159,071	1.2	125,126	0.8
General Administration Expense	2,147,400	16.7	2,489,259	16.9	3,171,592	21.6	2,608,481	18.2	2,781,348	19.2	2,492,162	18.2	4,514,931	28.8
Welfare Expense	2,630,939	20.4	2,335,254	15.8	1,964,780	13.4	1,671,510	11.6	2,601,422	17.9	2,192,196	16.0	2,249,726	14.3
Healthcare Expense	730,057	5.7	1,280,345	8.7	898,835	6.1	942,003	6.6	998,844	6.9	1,100,997	8.1	1,149,582	7.3
Labor Expense	653	0.0	523	0.0	435	0.0	13	0.0	25	0.0	12	0.0	0	0.0
Agriculture, Forestry and Fishing Expense	939,556	7.3	1,178,981	8.0	1,948,480	13.3	821,943	5.7	632,010	4.4	766,340	5.6	1,381,348	8.8
Commerce Expense	384,838	3.0	191,519	1.3	265,790	1.8	1,156,769	8.1	564,784	3.9	231,862	1.7	190,836	1.2
Civil Engineering Expense	1,530,004	11.9												

Subsidy System Under the Three Laws for Power Source Development

Subsidy Outline

There is a subsidy system based on the Three Laws for Power Source Development which supports electric power development. This support is available for the following: the development of power supply regions, the promotion of the national cooperation and understanding regarding the establishment of power supply facilities and the promotion of local understanding regarding the assurance of safety and preservation of the environment. In Rokkasho Village the following subsidies and grants are available with respect to the establishment of the nuclear fuel cycle facilities and the nearby Higashidori Nuclear Power Plant.



"Roppu," indoor heated swimming pool



International Education and Training Center

Subsidized Projects for the Development of Power Supply Regions

Measures for planning and creating regional development

Projects for the promotion of understanding regarding power generation facilities, etc. These projects include regional development planning, tours of developed areas, seminars, lectures, examinations as well as the creation of posters, flyers and pamphlets.

Measures for upgrading public facilities

Projects for upgrades, repair and operation maintenance of public facilities and industry promotion facilities. These projects include roads, water services, sports facilities, education and culture facilities, medical and social welfare facilities.

Measures for social welfare

Projects that aim at increasing the welfare of local residents. These projects include medical and social welfare facility upgrades and operation as well as the Home Helper Project. Additional projects include grants and capital investment related to welfare measures.

Measures for assistance regarding the administration of benefits

Projects which assist those who administrate benefits that substantially reduce electricity fees of general households and factories, etc. that are supplied with electricity from general power supply companies.

Measures related to thermal effluent

Projects for the promotion of fisheries. These projects include seedling production, feed supply, fishery workshops, experimental research, surveys of developed areas, supervision/training/public relations, environmental surveys of fishing grounds, surveys of fishery resources, surveys for planning fishery promotion and basic surveys for the introduction of effective thermal effluent use.

Measures for the solicitation of companies and industrial vitalization

Projects for upgrades and operation maintenance of facilities that support the following: the promotion of solicitation of the commerce, agriculture and forestry, fishery and tourism industries as well as modernization of regional industries and promotion of industry-related technology.

Measures for regional vitalization

Projects which vitalize the region. These include projects which support local industries, projects which market the use of local resources that take advantage of regional characteristics, projects which promote welfare services and projects that foster local human resources, etc.

Subsidized Projects for Public Relations

Research Subsidies (formerly Measures for Public Relations/Safety Subsidies) under the Electric Power Development Promotion Subsidies

- Increasing knowledge regarding nuclear power generation
- Research regarding effect on surrounding residential life
- Coordinating communication regarding effect on surrounding residential life

Subsidized Projects for Nuclear Fuel Cycle Subsidies

- Projects for regional vitalization
- Projects for upgrading public facilities
- Projects for welfare measures
- Projects for solicitation of companies and industrial vitalization

Overview of Project Results

Subsidized Projects for the Development of Power Supply Regions and Subsidized Projects for Electric Power Development Promotion (Japanese FY 1981-2020) Unit: JPY

Project Category	Facility / Project Name	Total Expenses	Revenue source		Stand-alone cost	Amount of Applications	Main Projects	
			Amount	Distribution				
Hard (constructions, etc.)	Roads	6,228,245,920	5,727,597,000	0	500,648,920	80	Hiranuma-Takasegawa line 1, Gengeshu-Nojo Yasakadaira line, Tomari Chuo line, Chitose line 1.No. 2 trunk line, Chitose No. 5 line, Kurachi-Michinokami line, etc.	
	Parks	2,423,411,149	2,292,973,000	0	130,438,149	23	Makadogawa Tourist Park, Birdwatching Park, Obuchi Lakeside Park, etc.	
	Water Services	5,063,625,710	4,828,024,000	0	235,601,710	50	Chitose Reservoir Extension, Tomari Small Water Supply System	
	Communication Infrastructure	2,507,104,372	2,468,235,000	0	38,869,372	9	Facility for receiving individual radio broadcasts for disaster prevention and administration, facilities for local information infrastructure, etc.	
	Sports and Recreational Facilities	2,790,367,944	2,560,658,000	0	229,709,944	16	No. 3 Baseball Field Improvement, Oishi Swimming Pool shelter, indoor heated pool, etc.	
	Environmental Facilities	1,817,617,800	1,749,592,000	0	68,025,800	21	Final disposal site for general waste, renewal of sewer pipes in western treatment area, etc.	
	Education and Culture Facilities	11,999,678,613	11,079,353,000	194,750,000	725,575,613	53	School lunch center, Cultural Exchange Plaza, No. 2 Junior High School, International Education & Training Center, community center, etc.	
	Medical Facilities	5,885,714,234	4,208,271,000	0	1,677,443,234	20	Rokkasho Medical Center, Chitose Medical Center, medical equipment at each clinic (Obuchi, Tomari, Chitose), etc.	
	Social Welfare Facilities	4,704,251,994	4,394,233,000	0	310,018,994	27	Outside of Obuchi Childcare Center, Bonten-so, Kakehashi Dormitory, Community Exchange Home, Elderly Care Center hot springs facility, etc.	
	National Land Conservation Structures (around rivers)	860,871,660	782,800,000	0	78,071,660	13	Tokusarimae River repair, Olppe River environmental maintenance project, Hiranuma River environmental maintenance project, emergency generation for evacuation facilities, etc.	
	Industrial Promotion Facilities	Agriculture, Forestry and Fishing	6,461,302,000	5,851,457,000	135,978,000	473,867,000	68	Fishery management radar, Uchikonai Farm and Mountain Village Square, Tomari Cargo Handling Facility, Tomari Ice-making and Storage Facility, artificial fish reef improvement project, etc.
		Tourism	363,952,981	357,956,000	0	5,996,981	8	Tomari District Event Square, tourist information board, etc.
		Commerce, etc.	715,470,000	685,914,000	0	29,556,000	2	Nagaimo Shochu Rokushu Distillery
	Firefighting Facilities	320,814,000	308,270,000	0	12,544,000	5	Ladder truck with waterway, large chemical fire truck	
Total		52,142,428,377	47,295,333,000	330,728,000	4,516,367,377	395		
Soft (events, etc.)	Events	112,766,326	84,399,346	0	28,366,980	6	Snow carnivals, triathlons, etc.	
	PR / Research Projects	49,811,360	49,200,000	0	611,360	1	Study tours of nuclear-related facilities	
	Regional Vitalization Projects	12,550,953,696	11,165,378,000	0	1,385,575,696	148	Cultural Exchange Plaza and Childcare Center operation project, educational computer adoption project, academic improvement promotion project, health and sanitation project, etc.	
	Projects Supporting the Promotion of the Agriculture, Forestry and Fishing Industry	512,264,275	511,697,000	0	567,275	18	Seed and seedling release project, acquisition of dairy product manufacturing technology, survey of expected tastes, acquisition of sales technology, etc.	
	Projects Supporting the Establishment of Companies	120,000,000	120,000,000	0	0	1	Crystal Valley-related industry promotion project	
	Projects Supporting Measures for Planning and Creating Regional Development	37,977,738	37,000,000	0	977,738	3	Rokkasho Village development vision creation support project	
	Nuclear Power Supply Location Benefit	7,750,540,274	7,655,079,919	0	95,460,355	40	Provision of nuclear power location benefits to households and businesses (total from prefecture and village)	
	Projects for Public Relations/Research Subsidy (nuclear fuel cycle facilities)	725,026,905	708,193,555	0	16,833,350	37	Inspection training, tours, creation of pamphlets, etc.	
	Projects for Public Relations/Research Subsidy (Higashidori Nuclear Power Plant)	152,548,667	146,236,000	0	6,312,667	39	Inspection training, tours, creation of pamphlets, etc.	
	Total	22,011,889,241	20,477,183,820	0	1,534,705,421	293		
Total	74,154,317,618	67,772,516,820	330,728,000	6,051,072,798	688			

Breakdown by Subsidy Type regarding Subsidy Results for each Japanese Fiscal Year the Subsidized Projects for the Development of Power Supply Regions and Subsidized Projects for Electric Power Development Promotion

Development of Power Supply Regions Subsidies	Unit: 1,000 JPY		Electric Power Development Promotion Subsidies	Unit: 1,000 JPY	
	Total			Total	
Subsidies for initial measures concerning the establishment of power supply facilities	5,044,200		Nuclear fuel cycle subsidies	1,126,500	
Subsidies for promotional measures concerning the establishment of power supply facilities	27,327,367		PR/Research Subsidies (formerly Measures for Public Relations/Safety Subsidy)	854,430	
Subsidies for areas surrounding nuclear fuel cycle facilities, etc. (including prefectural benefits)	9,672,808		Grants Regarding Support of Industrial Cultivation in Power Supply Regions	86,096	
Subsidies for prefectural power exports, etc.	459,099		Total	2,067,026	
Subsidies for long-term development of regions with power supply facilities such as nuclear power	3,314,900				
Subsidies concerning nuclear fuel cycle facilities	20,379,784				
Total	66,198,158				

Subsidy Results for each Japanese Fiscal Year

Year	Development of Power Supply Regions Subsidies		Electric Power Development Promotion Subsidies		Year	Development of Power Supply Regions Subsidies		Electric Power Development Promotion Subsidies								
	Total		Total			Total		Total								
1981				1,400	1992	1,628,904		29,100	2003	1,660,697		27,900	2014	3,029,478		159,025
1982				1,400	1993	2,660,266		33,300	2004	1,780,926		27,900	2015	2,623,706		183,100
1983				1,400	1994	3,421,434		30,150	2005	1,640,882		27,900	2016	2,695,382		671,112
1984				1,400	1995	3,960,802		29,250	2006	1,983,752		29,250	2017	2,395,383		20,618
1985				10,400	1996	3,909,529		35,199	2007	2,284,165		29,360	2018	2,399,723		23,490
1986				10,400	1997	670,402		36,909	2008	1,634,745		29,588	2019	2,232,940		24,794
1987				10,400	1998	998,876		47,400	2009	2,202,441		23,750	2020	2,238,006		855
1988	148,770			10,400	1999	967,721		47,400	2010	2,282,998		22,706				
1989	311,897			15,600	2000	771,865		43,838	2011	2,624,546		72,250	Total	66,198,158		2,067,026
1990	1,226,602			15,600	2001	888,012		39,778	2012	3,156,882		65,100				
1991	974,053			26,613	2002	911,664		27,900	2013	3,880,709		123,091				

Timeline of the Mutsu Ogawara Industrial Park and the Nuclear Fuel Cycle Project History

1969	May 30th	Cabinet decision made regarding new Comprehensive National Development Plan
1970	April 1st	Mutsu Bay-Lake Ogawara Development Section established by Aomori Prefecture
1971	March 25th	Mutsu-Ogawara Development Co., Ltd. established
1972	September 14th	Cabinet verbal understanding given regarding first Mutsu-Ogawara Basic Development Plan
	December 25th	Negotiations about land acquisition by Aomori Prefecture Mutsu-Ogawara Development Corporation commenced
1975	December 20th	Second Mutsu-Ogawara Basic Development Plan decided by Aomori Prefecture
1977	August 30th	Cabinet verbal understanding given regarding second Mutsu-Ogawara Basic Development Plan
	September 13th	Mutsu-Ogawara Port designated a "Major Port" by National Government
	December 2nd	Mutsu-Ogawara Port Plan approved by Minister of Transport
1978	March 23rd	Basic Plan for Water System Construction at Takase River decided
	December 6th	Basic Plan concerning the Lake Ogawara Comprehensive Development Project declared by Minister of Construction
1979	May 8th	Urbanization promotion areas as well as urbanization control areas and zones within Rokkasho's Urbanization Plan decided and declared
	October 1st	Formal decision made regarding the establishment of the National Petroleum Stockpiling Base (5.6 million kl) in Mutsu-Ogawara Industrial Park
1980	March 1st	Japan Nuclear Fuel Service Co., Ltd. established
	July 23rd	Mutsu-Ogawara Port groundbreaking ceremony
1983	August 31st	Twelve tanks in the Mutsu-Ogawara National Petroleum Stockpiling Base completed
	September 1st	Parts of the Mutsu-Ogawara Port Wharf begin operation (2,000 DWT, 1 berth)
1984	April 20th	The Federation of Electric Power Companies of Japan submits cooperation request to the Governor of Aomori Prefecture regarding the establishment of nuclear fuel cycle facilities on the Pacific Ocean side of the Shimokita Peninsula
	July 27th	The Federation of Electric Power Companies of Japan submits request to Aomori Prefecture and Rokkasho Village regarding cooperation with the establishment of three nuclear fuel cycle facilities in Rokkasho Village
	August 30th	Council for Measures Regarding Nuclear Fuel Cycle Facilities established by Rokkasho Village
1985	January 5th	Council for Measures Regarding Nuclear Fuel Cycle Facilities submits statement of opinion with thirty-seven requests to the Mayor of Rokkasho Village
	January 16th	Above requests acknowledged by entirety of the Rokkasho Village Assembly Council
	March 1st	Japan Nuclear Fuel Industries Co., Ltd. established
	April 18th	Aomori Prefecture and Rokkasho Village accept The Federation of Electric Power Companies' request to build three nuclear fuel cycle facilities Aomori Prefecture, Rokkasho Village, Japan Nuclear Fuel Industries Co., Ltd. and Japan Nuclear Fuel Service Co., Ltd. conclude the "Basic Agreement on Cooperation Regarding the Establishment of Nuclear Fuel Cycle Facilities"
	April 26th	Cabinet verbal understanding given regarding modification of second Mutsu-Ogawara Basic Development Plan
	October 26th	Rokkasho Visitors Center opens
1986	August 5th	Mutsu-Ogawara Development Co., Ltd. holds groundbreaking ceremony for construction site of nuclear fuel cycle facilities
1988	April 27th	Japan Nuclear Fuel Industries Co., Ltd. submits application for low-level radioactive waste disposal business license to National Government
	August 10th	Uranium Enrichment Plant business license granted
	October 14th	Start of Uranium Enrichment Plant construction
1989	March 20th	Mutsu-Ogawara Regional and Industrial Development Foundation established
	March 30th	Japan Nuclear Fuel Service Co., Ltd. submits application for reprocessing business as well as an application for waste management business license to National Government
1990	November 14th	Mutsu-Ogawara Port 5,000 ton wharf completed and begins operation
	November 15th	License for low-level radioactive waste disposal business granted
	November 30th	Start of Low-level Waste Disposal Center construction
	December 3rd	Institute for Environmental Sciences established



Mutsu Ogawara Industrial Park



Foundation and excavation work of building for spent fuel receiving and storage started



National Oil Stockpiling Base



Construction of spent fuel receiving and storage building is in progress and foundation work on pretreatment building started



Uranium Enrichment Plant

1991	July 25th	Safety agreement concluded between Aomori Prefecture, Rokkasho Village and Japan Nuclear Fuel Industries Co., Ltd. regarding Uranium Enrichment Plant
	September 20th	New Rokkasho Visitors Center opens
1992	March 27th	Start of Uranium Enrichment Plant operation
	April 3rd	License for vitrified waste storage business granted
	May 6th	Start of Vitrified Waste Storage Center construction
	July 1st	Japan Nuclear Fuel Service Co., Ltd. and Japan Nuclear Fuel Industries Co., Ltd. merge and become Japan Nuclear Fuel Limited (JNFL)
	September 21st	Safety agreement concluded between Aomori Prefecture, Rokkasho Village and JNFL regarding Low-level Radioactive Waste Disposal Center
	December 8th	Start of Low-level Radioactive Waste Disposal Center operation (First shipment received for Building No.1)
	December 24th	License for reprocessing business granted
1993	April 28th	Start of Reprocessing Plant construction
	May 1st	Rokkasho Visitors Center annex opens
	November 18th	First uranium product shipment sent from Uranium Enrichment Plant
1994	December 26th	Safety agreement concluded between Aomori Prefecture, Rokkasho Village and JNFL regarding Vitrified Waste Storage Center
1995	January 30th	Rokkasho Village announces desire for International Thermonuclear Experimental Reactor (ITER) to enter Mutsu Ogawara Industrial Park
	March 7th	Inauguration of "Rokkasho Promotion Council for Fusion Energy Research Facility Establishment"
	April 26th	Start of Vitrified Waste Storage Center operation and first shipment of high-level radioactive waste from overseas
	June 16th	Rokkasho Village submits candidacy proposal to Aomori Prefecture regarding invitation of ITER
	October 23rd	Aomori Prefecture announces desire for ITER to enter Mutsu-Ogawara Industrial Park
1998	October 5th	Disaster Prevention Center Office established by Nuclear Safety Technology Center
1999	December 3rd	Start of reprocessing business
2000	August 4th	Mutsu-Ogawara Development Co., Ltd. dismantled and Shin-Mutsu-Ogawara Inc. established
	November 20th	JNFL declared operating body of MOX fuel fabrication business
	December 19th	First shipment of spent nuclear fuel from domestic nuclear power plants received
2001	May 22nd	Aomori Prefecture, Aomori Prefectural Assembly and Rokkasho Village submit desire for ITER to enter Mutsu-Ogawara Industrial Park to the Ministry of Education and Culture as well as the Science and Technology Agency
	June 14th	Start of easy-access Radiation Administrative Information Transmission System upgrade
	July 9th	Start of operation of LCD color filter manufacturing plant by AIS Co., Ltd., the first company established under the Aomori Prefecture Crystal Valley Concept
	August 24th	JNFL submits cooperation request to Aomori Prefecture and Rokkasho Village regarding the establishment of the MOX Fuel Fabrication Plant in Rokkasho
2002	May 31st	Rokkasho Village accepted by the Cabinet as a domestic candidate for the location of ITER
	December 1st	Start of Rokkasho Safeguards Center business
2004	December 21st	JNFL brings in first shipment of depleted uranium for uranium testing
2005	January 17th	JNFL begins uranium testing at the Reprocessing Plant
	April 19th	"Basic Agreement Regarding Cooperation on the Establishment of the MOX Fuel Fabrication Plant in Rokkasho" concluded between Aomori Prefecture, Rokkasho Village and JNFL
	April 20th	JNFL submits license application to National Government for nuclear fuel material processing business regarding MOX fuel fabrication business
	June 28th	Construction site of ITER Enterprise in Cadarache, France decided
	October 12th	Aomori Prefecture receives request for the establishment of Broader Approach Activities pertaining to ITER project
2006	March 29th	"Agreement Regarding Regional Safety and Environmental Conservation with Concern to Receiving Spent Fuels as well as Handling Spent Fuels in Storage and During Active Testing at the Rokkasho Reprocessing Plant" concluded between Aomori Prefecture, Rokkasho Village and JNFL



Inside the Vitrified Waste Storage Center building



Rokkasho Visitors Center



Reprocessing plant construction at its peak (1999)



Nuclear Disaster Prevention Research Plaza



Active testing of reprocessing plant started

2006	April 29th	Completion ceremony for Tohoku Device Co., Ltd., the second company established under the Aomori Prefecture Crystal Valley Concept
2007	May 28th	Rokkasho Research Center Department of Simulation Science's National Institute for Fusion Science (NIFS) established
	June 1st	Broader Approach Agreement goes into effect
	June 22nd	Cabinet verbal understanding given regarding new Mutsu-Ogawara Basic Development Plan
	October 24th	ITER Agreement goes into effect
	October 24th	Integrated Nuclear Emergency Response Drill regarding the Reprocessing Plant conducted by National Government
2008	May 21st	Start of International Fusion Energy Research Center (IFERC) construction
2010	April 27th	IFERC completion ceremony
	May 13th	JNFL business license for MOX Fuel Fabrication Plant granted by Minister of Economy, Trade and Industry
	September 30th	Tohoku Device Co., Ltd. transfers business to OLED Aomori Co., Ltd.
	October 28th	Start of MOX Fuel Fabrication Plant construction
2011	March 11th	Tohoku Earthquake
	April 25th	JNFL expansion of Vitrified Waste Storage Center completed (additional 1,140 canisters)
	December 1st	Start of ANOVA Co., Ltd. operation
	December 28th	Start of operation of new type of centrifuge introduced by JNFL at Uranium Enrichment Plant
2012	March 19th	Start of operation of supercomputer (nickname "Rokuchan") at IFERC
2013	July 26th	Vitrification testing completed
	December 18th	New regulatory requirements regarding nuclear fuel-related facilities enforced by National Government (Nuclear Regulation Authority)
2014	January 7th	JNFL submits applications to National Government (Nuclear Regulation Authority) for change of business license and safety regulations in order to meet new regulatory requirements; the completion date of the Reprocessing Plant changed to October of 2014
	April 11th	Completion date of the MOX Fuel Fabrication Plant changed to October of 2017 by JNFL
	October 31st	Completion date of the Reprocessing Plant changed to March of 2016 by JNFL
2015	November 16th	Completion date of MOX Fuel Fabrication Plant changed to beginning of 2019 and completion date of Reprocessing Plant changed to beginning of 2018 by JNFL
2016	November 15th	Signed a contract with Nuclear Reprocessing Organization of Japan for reprocessing and waste management business.
2017	May 17th	Uranium enrichment business modification approval (compliance with new regulatory standards)
	December 22nd	Japan Nuclear Fuel Limited (JNFL) changed expected completion dates of MOX fuel fabrication facility and reprocessing facility to first half of FY2022, first half of FY2021, respectively.
2018	July 1st	New supercomputer (nicknamed Roku-chan II) commenced operation at National Institutes for Quantum Science and Technology in Rokkasho Village.
2019	April 1st	Japan Nuclear Fuel Cycle Information Center is relocated.
2020	July 29th	Japan Nuclear Fuel Limited (JNFL) reprocessing business modification approval (to comply with new regulatory standards)
	August 21st	JNFL changes expected completion date of reprocessing plant to the first half of FY2022.
	August 26th	JNFL Waste management business modification approval (compliance with new regulatory standards)
	December 16th	Expected completion of MOX fuel fabrication facility changed to first half of FY2024
2021	June 30th	JNFL signs an outsourcing contract for MOX fuel fabrication at the Nuclear Reprocessing Organization of Japan.
	July 7th	Ceremony to celebrate completion of Blanket Engineering Test Building held at National Institutes for Quantum Science and Technology in Rokkasho Village.
	July 21st	Waste burial business modification approval (compliance with new regulatory standards)
	September 27th	Institute of Environmental Sciences held an online international symposium to commemorate the 30th anniversary of the project launch.
	November 1st	Prefecture and village held first nuclear emergency drill at JNFL's nuclear reprocessing plant since the Great East Japan Earthquake.



International Fusion Energy Research Center (Rokkasho Fusion Institute, National Institute for Quantum Science and Technology)



National Petroleum Stockpiling Base and windmill



Reprocessing plant, as of 2019



MOX fuel plant, as of January 2021



Nuclear emergency drills