

Nuclear Disaster

# ShiruManabu

Learn & Understand

FY 2021 Edition / Final Edition

Training Period : 3rd July - 23rd November 2021

We ventured far  
from Fukushima.  
We also went  
overseas.  
We spent five  
years studying  
revitalization  
challenges.

A journey of learning that  
inspired us to grow and  
tackle the challenges of a  
future without answers



## [ Round Table Discussion ] Facing our distant future

- Learning and understanding Fukushima's challenges
- A walk around Suttsu Town, Hokkaido
- The issue of final disposal of radioactive waste: How do we deepen residents' understanding?

◎ Feature: "Fukushima in my thoughts"  
Your home town never leaves your heart,  
even when you're away.

## What happened on that day?

No matter how hard I try to recall it, all that comes to mind is a vague memory of it having been scary, maybe because I was still very young then. Eleven years have passed since the Great East Japan Earthquake and TEPCO's Fukushima Daiichi Nuclear Power Station Accident. We have grown, and are now senior high school students. Am I going to stay in Fukushima in the future? Or am I going to leave? I have no idea. No matter which path I take, I just hope the future of my hometown will be filled with happiness and continue to carry my fond memories.

I wanted to find out more about what happened, so I learned. I learned about the disaster that occurred eleven years ago, the current revitalization efforts, and the challenges and tasks that lie ahead of us. And, I pondered: what can we do? We will be the leading actors in the next generation. I would like to share with you, my contemporaries, what I learned.

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Learning and understanding Fukushima's challenges ①

# Fukushima Daiichi Nuclear Power Station: present and future



● Unit 3 Reactor Building of Fukushima Daiichi as of December 2021

Fukushima Daiichi Nuclear Power Station Accident totally changed our life in Fukushima. What happened in March 2011? More than 10 years have now passed. How is the decommissioning work progressing? The Japanese government and TEPCO are aiming to complete the decommissioning around 2051, 30 years from now, but there are still many high radiation places at the nuclear power station where doses are harmful to the human body, and various decommissioning-related challenges continue.



● Unit 3 Reactor Building at the time of the Fukushima Daiichi Nuclear Power Station Accident

## What happened to Fukushima Daiichi Nuclear Power Station in the Great East Japan Earthquake?

At 2:46pm on March 11, 2011, the Great East Japan Earthquake occurred, with a seismic center offshore Sanriku, and extremely severe shaking with a maximum seismic intensity of 6+ was observed in Fukushima Prefecture. Fukushima Daiichi Nuclear Power Station, which is located in an area straddling Okuma Town and Futaba Town, lost its external power source in the quake and was hit by a tsunami of approximately 13m, which resulted in the submergence of part of the facility, including the emergency

power source.

At this time, there was high-temperature fuel in the reactors, but it could no longer be cooled down due to the loss of power caused by the tsunami inundation. Out of the six units, Units 1 to 3, which were in operation at the time, melted down. The reactor buildings of Units 1, 3, and 4 experienced hydrogen explosions. This was widely recognized as one of the largest nuclear power accidents, along with the Chernobyl Nuclear Accident in 1986.

## What have been the impacts from the Fukushima Daiichi Nuclear Power Station Accident? What is the current situation?

The government issued an evacuation order to prevent residents from being exposed to radiation emitted from radioactive materials that leaked in the Fukushima Daiichi Nuclear Power Station Accident. As many as 160,000 people evacuated at one point. Evacuation

orders were issued to 11 municipalities, including Hamadori. There were also areas in which evacuation was recommended based on the decisions by local governments.

Over ten years and nine months have passed since the Fukushima Daiichi Nuclear Power Station Accident (as of December 2021). Due to decontamination work, in which soil is removed and buildings are washed, and the radiation level naturally lowering over time, the number of evacuation order areas has decreased. According to the data, the number of evacuees has reduced to less than 40,000. That being said, the area to which entry is restricted in principle is as large as over half of metropolitan Tokyo.



● A dome-shaped roof cover is installed on Unit 3, which caused the hydrogen explosion at the accident, to prevent the scattering of radioactive materials toward decommissioning. Many challenges continue

## What is the current situation at Fukushima Daiichi Nuclear Power Station?

The workers had to wear a mask covering the entire face and protective gear in most parts of the nuclear power station premises immediately after the Fukushima Daiichi Nuclear Power Station Accident, but the workers can move around in regular clothing now. This is largely thanks to radiation-reducing measures, such as “facing,” in which mortar is sprayed on the ground. The radiation level has decreased so much that the workers don’t even need to wear protective gear approximately 100m from the reactor buildings in which hydrogen explosions occurred.

## So can we assume that decommissioning has been making progress?

Challenges for the government, TEPCO, and private companies continue in their efforts for decommissioning, through which they ultimately aim to

dismantle the nuclear power station. But what is considered the hardest challenge is the work to remove the melted down nuclear fuel (debris) from the reactors.

It emits such high radiation that it would certainly kill people if they approach it, so working nearby for a long time is difficult. Even electronic devices used to survey the debris locations sometimes suffer malfunctions. Workers have been able to confirm on camera objects that appear to be debris in Unit 2, but the technology to remove them has not been developed yet.

## There are 30 years left until 2051. Will the decommissioning really finish?

The government and TEPCO have not changed their goal of completing the decommissioning in “30-40 years” after the Fukushima Daiichi Nuclear Power Station Accident in March of 2011. But some residents criticize that it is “not realistic.”

TEPCO has previously had to abandon starting the work to remove debris within 2021, which was the initial goal. Even for a nuclear power station which has not experienced an accident in the first place, decommissioning is expected to take approximately 30 years. We must say the road to decommissioning is long and difficult.

## In what state should Fukushima Daiichi Nuclear Power Station be for us to be able to say that decommissioning has been completed?

To cut a long story short, neither the government nor TEPCO has a clear vision. This is because there are many uncertain elements, such as establishing the method to remove the debris, although they have established the goal of completing the decommissioning by 2051.

Some residents wish all the buildings to be removed to make a vacant lot. Though others have opinions such as “the buildings should be left as negative legacies to teach a moral lesson.”

The government and TEPCO claim that discussions must be held repeatedly in the future. Young generations, including the current high school students, will face decommissioning for a long time. They will play the main roles in debating how the decommissioning of Fukushima Daiichi Nuclear Power Station should be handled, how the premises should be used, and how the future should look.



● In most areas of Fukushima Daiichi Nuclear Power Station, it is now possible to walk around without wearing protective clothing.

Learning and understanding Fukushima's challenges ②

# Continually increasing ALPS treated water

At Fukushima Daiichi Nuclear Power Station, the amount of treated water, which contains the radioactive material "Tritium", is increasing every day. In April 2021, the Japanese government decided to dilute ALPS treated water (after purification) and discharge it into the ocean. However, opposition from the fisheries industry remains strong and the decision has not been widely accepted. We have to deepen our understanding of the decision, the ALPS treated water processes, and the handling issues.



● At the entrance to the existing ALPS facility building



● Visit to Chemical Analysis Building in Fukushima Daiichi on Nov. 14, 2021, holding a sample bottle of actual ALPS treated water

## What is treated water?

When rainwater or groundwater comes in contact with the fuel debris inside the damaged reactor buildings, and when the fuel debris is cooled by water, this results in contaminated water. The contaminated water is treated through multi-nuclide removal equipment (the purification process is called "ALPS") so that the concentrations of radioactive materials other than "tritium" satisfy regulatory standards for safety. This water is termed "treated water". Tritium is present in everyday drinking water, as well as ALPS treated water, and is very difficult to eliminate because it has the same charac-

teristics as hydrogen. Tritium is a radioactive material, but its beta radiation is weak and can be blocked with a sheet of paper. Tritium's half-life is 12.3 years.

## Why must the treated water be discharged into the ocean?

The amount of ALPS treated water is increasing and it is being stored in tanks at Fukushima Daiichi Nuclear Power Station. New tanks are constantly being built, and there are now more than one thousand at the site. Soon, even if more tanks are built there will be no space to put them. There is also a need to secure more work space to proceed with further decommissioning processes. Amid these circumstances, the Japanese government decided to dilute and discharge the ALPS treated water into the ocean, given the fact that this was the previous practice before the accident occurred, and it is relatively easy to monitor after discharge because ocean currents are less likely to fluctuate than the climate.

## How is the discharge into the ocean to be handled?

The Japanese government regulation is less than 60,000 Bq/L for tritium discharged into the environment. According to the government explanation, even if a person were to drink two liters of the water every day, it is believed that the tritium is unlikely to affect human health, as the amount would be less than the annual radiation impact from natural exposure.

For the discharge from Fukushima Daiichi Nuclear Power Station, stricter handling will take place. TEPCO is to dilute tritium with a large volume of seawater (100 times the volume to be diluted), thereby reducing the concentration of radioactive substances to 1,500Bq/L, which is 1/40 that of the government regulations for discharge into the environment (60,000Bq/L). The government and TEPCO aim to start discharging the water around spring 2023. TEPCO's plan is to construct a discharge facility and undersea tunnel, and release the water 1km away. Why is the tunnel need-



● Viewing Units 1-4 from a hill a short distance away, wearing normal clothes

ed? The reason is that if the water is discharged near the site, it may mix with water taken in for dilution purposes and re-enter the site.

## How is the safety of the discharge to be confirmed?

Tanks store 1.25 million tons and the total amount of tritium is close to 800 trillion Bq. The tritium will be discharged over decades. The government and TEPCO will enhance the monitoring scheme to check that the water discharged is sufficiently diluted until its tritium concentration becomes well below the regulatory standard. They will also continue, and enhance, cooperation with the

International Atomic Energy Agency (IAEA) through review missions and monitoring projects, and with third party organizations, to monitor the tritium concentration.

## Why are some people in opposition?

Since the Fukushima Daiichi Nuclear Power Station Accident, seafood and agricultural products in Fukushima Prefecture have been suffering from "reputational damage" and products have been put on the market cheaply due to unfounded rumors. Even if the ocean discharge method is scientifically safe, fishermen in Fukushima Prefecture are worried that it will lead to new

reputational damage and that Fukushima seafood will be avoided again by consumers who do not know it is safe.

Furthermore, the government promised fishermen that the discharge would not take place without their understanding in 2015. However, the government published its Basic Policy on the handling of ALPS treated water without the fishermen's understanding in April 2021, deepening the rift between them. Even after the discharge starts, the government needs to continue its efforts to gain widespread public understanding.



● Visit to tanks which store the ALPS treated water



● Silt fence installed around water intake area of Units 1-4

Learning and understanding Fukushima's challenges ③

# “Where is the decommissioning of Fukushima Daini Nuclear Power Station headed?”



Fukushima Daini Nuclear Power Station, which is owned by TEPCO, is located in an area that straddles the two towns of Naraha and Tomioka, Fukushima Prefecture. In June 2021, over 10 years after the Fukushima Daiichi Nuclear Power Station Accident, decommissioning work started at all four units. We take a look at the history up to decommissioning and the future issues.



● Fukushima Daini Nuclear Power Station (photo taken before March 2011)

## What is Fukushima Daini Nuclear Power Station?

The power station's units started operation sequentially between 1982 and 1987. All four units were in operation at the time of the Great East Japan Earthquake. Although no accident occurred, the power station was in a critical condition at one point when the nuclear reactors could not be cooled down due to severe quakes and damage from the tsunami. In July of 2019, TEPCO officially decided to dismantle and “decommission” all four units, instead of operating them in the future. With the approval of the national agency, the company began the decommissioning work in June of 2021.

## Why did they decide to decommission?

In light of the Fukushima Daiichi Nuclear Power Station Accident, which forced residents of a

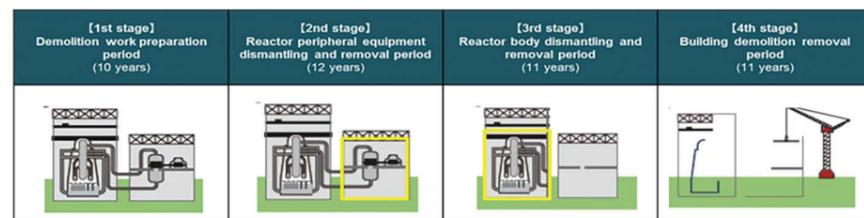
number of municipalities to evacuate, prefectural citizens have also been looking at Fukushima Daini Nuclear Power Station with a critical opinion. While the direction of Fukushima Daini Nuclear Power Station had not been indicated for a long time after the accident, the towns of Naraha and Tomioka, which have not regained pre-accident population levels, have been demanding that decommissioning be finalized soon “because the lack of direction has been impeding revitalization.” The

prefecture and the prefectural assembly have also been making the appeal that “decommissioning is the collective will of prefectural citizens.”

TEPCO had been delaying the decision on decommissioning for reasons including national energy policy trends. However, the company explained that “continuing the vague stance further will hinder revitalization” when it communicated its policy to decommission the reactors.

## How will they decommission the reactors?

It is assumed that it will require over 40 years to decommission all four units. The decommissioning process is divided into four stages. In the first 10 years, they will conduct contamination surveys and



● Major roadmap steps towards the decommissioning of Fukushima Daini (all 4 units)



● Temporary power source cable installation at Fukushima Daini on March 13, 2011, two days after the disaster

decontamination of reactor buildings. They then plan to proceed by removing the peripheral facilities, such as the generation turbines, in the second stage (12 years), the reactors themselves in the third stage (11 years), and the reactor buildings in the fourth stage (11 years). The required cost is over 400 billion yen, which may increase further in the future.

## What are the issues concerning decommissioning?

There are approximately 10,000 pieces of consumed nuclear fuel, which is referred to as “spent nuclear fuel,” on the premises of Fukushima Daini Nuclear Power Station. Since they emit heat and harmful radiation, they are currently stored in pools to keep them cool. The company plans to cool them down with air by keeping the nuclear fuel in metal containers, which are considered safer than pools in the event of power outages and accidents.

The towns of Naraha and Tomioka are demanding that the nuclear fuel be taken outside of Fukushima Prefecture for the safety and security of residents. While TEPCO has

promised that it will be taken outside of the prefecture by the end of decommissioning, no facility that would accept the nuclear fuel from Fukushima Daini Nuclear Power Station has been found within Japan so far. Local residents are concerned that the nuclear fuel will stay there forever.

## Are there only disadvantages to decommissioning?

There are also efforts to connect the decommissioning work to the vitalization of the local area's economy. Taking a different perspective, decommissioning is a massive industry, on which over 400 billion yen will be spent. The towns of Naraha and Tomioka wish local companies to be able to participate in the decommissioning project, and TEPCO is establishing a system that would allow many companies to be involved in the decommissioning work.

## Will the decommissioning really progress safely?

Before decommissioning at Fukushima Daini, it was point-



● Decontamination work for the decommissioning at Unit 1, Fukushima Daini on July 6, 2021

ed out that the security of a door leading to a “protected area”, where access is restricted due to the handling of nuclear fuel, was inadequately managed. This was an event that disappointed Fukushima residents again and raised their distrust. TEPCO repeatedly states that “The decommissioning will proceed safely and steadily”, but if such events continue, it will be difficult for TEPCO to regain people's trust. TEPCO has to strive to ensure transparency in the decommissioning work and thoroughly disclose information that residents can easily understand. Furthermore, the government of Fukushima Prefecture and local governments such as Naraha Town and Tomioka Town, where Fukushima Daini is located, should strengthen their governance.

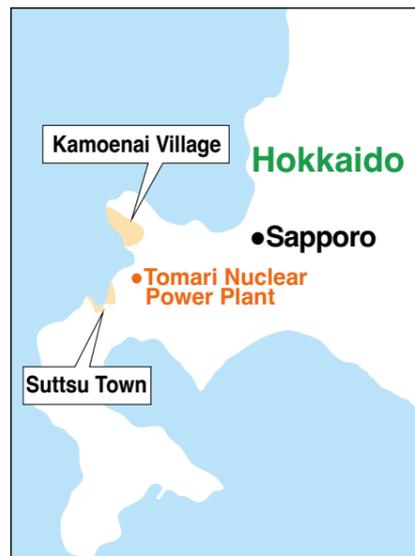


● Fukushima Daini Nuclear Power Station as of December 2021

**Learning and understanding Fukushima's challenges ④**

# “What is the future regarding radioactive waste?”

Where will the final disposal site be for “radioactive waste” from nuclear power stations in Japan? This is a difficult challenge that has remained since the beginning of nuclear energy policy after World War II, when nuclear power was promoted as a means of supplying reliable electricity to rapidly-developing Japan. However, in October 2020, Suttsu Town and Kamoenai Village in Hokkaido agreed to undergo literature surveys – the first step towards selecting final disposal candidate sites. Why are such surveys needed? How will they proceed? Fukushima's high school students investigated the nuclear waste issue.



**What is radioactive waste?**

Radioactive waste is created by removing uranium, plutonium, and other reusable substances from the nuclear fuel used in nuclear power stations, mixing the remaining liquid with glass, hardening it and pouring it into metal containers. Its official name is “high-level radioactive waste.” There is a risk of it emitting intensely strong radiation for a long time, which has extremely severe effects on people's bodies if approached. Since Japan has used nuclear power plants for a long time, it is expected that a great amount of radioactive waste will continue to be produced in the future.

**What is final disposal?**

Final disposal is the method for ultimately disposing of radioactive waste. The government has been promoting research for the technology to enclose radioactive waste in bedrock deeper than 300 meters underground. This is called “geological disposal” and it is a method for keeping the waste away from the

living environment of people over tens of thousands of years. A number of methods had been considered regarding the final disposal of radioactive waste, including launching it into space on a rocket or burying it under Antarctic ice. However, as a result of international discussions regarding the certainty of disposal and opinions such as “waste should be disposed of in one's own country,” geological disposal is considered to be the optimal method.

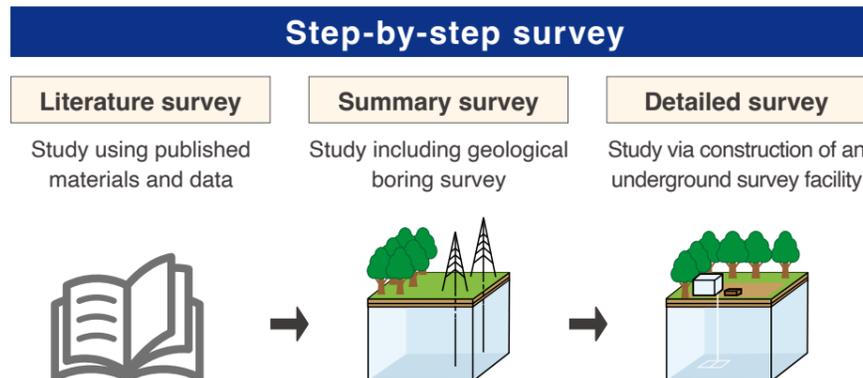
**How will they proceed with the survey?**

To choose the final disposal site, they will conduct the survey over a long period of approximately 20 years, dividing it

into three steps in order to ensure that the candidate sites are indeed safe.

What Suttsu Town and Kamoenai Village accepted is known as a “literature survey.” At this first stage, aspects such as active fault distribution are studied using written materials. The second stage is called a “summary survey,” where holes will actually be dug to study the geological features and bedrock. After this, they will proceed to the detailed survey, which will be the third and final stage.

Upon accepting a literature survey, the government pays up to 2 billion yen. The literature survey began in November 2020 for Suttsu Town and Kamoenai Village, and is expected to end within 2022.



# A walk around Suttsu Town, Hokkaido

Suttsu Town is a peaceful port town along the bay, with approximately 2,800 residents. It is located mid-way between Hakodate City and Otaru City. Historical buildings such as Nishin Goten (herring castle) still remain in Suttsu Town from its prosperous herring fishing days. While the town has maintained its traditional fishery industry, it has recently pioneered new fields for regional development, such as basil production – the only facility of its kind in Hokkaido. In the energy industry too, Suttsu Town is taking advantage of the area's strong winds, which have plagued residents, to install wind power generators. The town is making best use of local resources to promote its regional development.



● Suttsu Bay: Beautiful bow-shaped coastline. Suttsu Town offers abundant nature for its residents



● We saw many rotating wind power generators and were impressed by their huge size when seen close up



● Nishin Goten (herring castle), a symbol of Suttsu Town, which prospered with herring fishing. It used to house fishing facilities and serve as a residence for the head fisherman. It is now a renovated restaurant where visitors can enjoy delicious “soba” (buckwheat noodles).



# The issue of final disposal of radioactive waste: How do we deepen residents' understanding?

High School Students interview Suttsu Town Mayor

High-level radioactive waste produced from nuclear power stations throughout the country must be eventually disposed of somewhere in Japan at some point. There is also spent nuclear fuel with intense radioactivity at TEPCO's Fukushima Daiichi and Daini Nuclear Power Stations. These sites are close to us, as students in Fukushima Prefecture, rather than somebody else's problem. What were the reasons that Suttsu Town in Hokkaido applied for the literature survey for the final disposal site selection? How will they gain the understanding of residents who oppose the plan? We visited Suttsu Town and asked questions to the Mayor, Mr. Haruo Kataoka, who faces the most important issue in national nuclear policy.



**Q** What were your thoughts behind deciding to apply for the literature survey despite opposition from some residents?

**A** We have used nuclear power for over half a century throughout Japan and we cannot pretend that the issue of spent nuclear fuel disposal doesn't affect us. If we prolong facing the issue, it will cause problems for future gener-

ations. When we accepted the literature survey, the press pointed out that it was "out of a desire for money." We don't deny that. The younger generations from Suttsu move to Sapporo or Tokyo after they graduate from high school, so part of the idea was that we want to utilize the subsidy to invest in creating working opportunities. However, more than anything we applied for the survey because we wanted to help with the problem of radioactive

waste, despite being fully aware that people will criticize us.

**Q** In the town mayor election held in October, you won over the candidate opposing the survey, but the vote difference was only 235. How do you regard the result?

**A** I regard this seriously, as the result was that 45% of voters did not support me. Furthermore, it does not mean



Suttsu Town Mayor, Mr. Haruo Kataoka

that the 55% of the people who voted for me welcome the survey. They have concerns. The reality is, knowledge regarding the safety of final disposal is not yet sufficient in Suttsu Town. I think it is necessary to establish opportunities for us to listen to explanations from both pro-survey and anti-survey groups as we proceed.

**Q** How will you seek the understanding of residents who oppose the plan?

**A** I have established several opportunities for dialogue with residents.

Some people just said "I oppose it" and left the room. That won't deepen our dialogue. They need to state what kind of concerns they have if they oppose the survey. We have to be patient and repeatedly hold discussions, listening to specialists' opinions, so that we can resolve their concerns.

**Q** Some have expressed criticism that the government decided on the policy of releasing treated water containing radioactive tritium from TEPCO's Fukushima Daiichi Nuclear Power Station into the ocean without gaining the understanding of the fishing industry. How do you view such deci-



● Holding discussions with the mayor

sion-making processes?

**A** In Japan, we have a bad habit of those in positions of responsibility postponing painful decisions. They should have made efforts to deepen the understanding of the fishing industry from an early stage regarding why the treated water has to be disposed of quickly. Although it is late in the process, I would like the government to provide sufficient explanations.

**Q** The literature survey will end within this year. Please tell us about the

outlook toward the summary survey in the second stage.

**A** The final disposal sites for radioactive waste have been decided in Sweden and Finland. We would also like to communicate such examples. We hope to continue having dialogue and develop a town that is attractive for young people, as well as face up to an important national issue. Before we proceed to the summary survey, we will conduct a residents' poll and respect respondents' opinions.



● High school students asked frank questions



● There is a signboard in the town showing an opposing opinion, "We don't need nuclear waste in our children's future."



● A peaceful town now wrestling with the pros and cons of accepting the literature survey

Learning and understanding Fukushima's challenges ⑤

# “Nuclear Fuel Cycle” Rokkasho Village, Aomori Prefecture

The “Nuclear Fuel Cycle” is a policy of taking the spent fuel from a nuclear power station and reusing it in a constant cycle. Japan is deficient in natural resources and the nuclear fuel cycle is thought to represent a nuclear policy that can support the country's energy supply efforts. However, many obstacles remain. Should we proceed along this path, or take a step back and reconsider? Opinion is divided.



● Obuchi Lake Town in Rokkasho Village, Aomori Prefecture



● High school students received an explanation of nuclear fuel cycle processes at JNFL's Rokkasho visitors Center.

## Will implementation of the nuclear fuel cycle proceed as envisaged?

It is said that the realization of the nuclear fuel cycle can be achieved by successfully operating the following facilities: a "reprocessing plant" that extracts plutonium, an existing reactor with MOX fuel known as "Plu Thermal", and a "fast breeder reactor" that uses the MOX fuel. So, what is the current situation in terms of these three facilities?

First, with regard to "Plu Thermal", power companies in Japan have already operated four units and are aiming to operate at least twelve units by 2030.

Next, a fast breeder reactor is a reactor at a nuclear power station that uses MOX fuel to generate more plutonium than it consumes while generating electricity. It was called the "dream reactor." Research and development was carried out in a prototype fast breeder reactor called "Monju" in Fukui Prefecture, but various incidents occurred, such as a sodium leak accident in 1995, and the government decided to decommission the reactor in 2016. During this period, tax revenue of over 1 trillion yen was invested in the research

and uranium from spent fuel received from nuclear power stations nationwide. The plan is to build this in Rokkasho Village, Aomori Prefecture, but the schedule, which originally targeted completion of the facility in 1997, has been postponed more than 20 times due to various difficulties.

However, the plant is now (as of December 2021) scheduled for commissioning during the first half of FY 2022. The facility will also have the advantage of enabling a reduction in the amount of high-level radioactive waste.

## How is this related to the Fukushima Daiichi and Fukushima Daini Nuclear Power Stations?

As already stated, the reprocessing plant is a key facility in the realization of a nuclear fuel cycle. In general, a plant accepts "sound" (that is, undamaged) spent nuclear fuel from nuclear power stations in normal operation. In other words, for Fukushima Daiichi and Fukushima Daini Nuclear Power Stations, which are already undergoing decommissioning, their spent fuel destination

has not been decided yet. Especially regarding Fukushima Daiichi Nuclear Power Station, where the accident occurred, a nuclear policy official said, "discussions on the destination will start only after investigating the extremely small damage to the fuel rods and confirming that they are sound."

## So, what will happen with the nuclear fuel cycle in future?

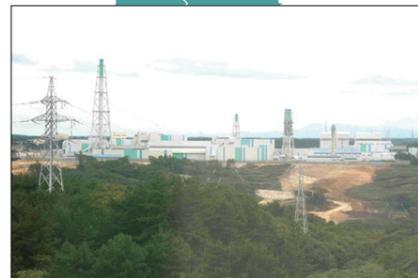
“We should get rid of it as soon as possible.” “We should continue with it.” The nuclear fuel cycle was one of the important issues in the Liberal Democratic Party's leadership election (September 2021) in Japan, which is closely related to the future of Japan's energy policy.

As a result, the ruling party has leaned toward restarting nuclear power stations, but people should know the nuclear fuel cycle has both advantages and disadvantages.

Since the Fukushima Daiichi Nuclear Power Station Accident, utilization of renewable energy and hydrogen energy has increased, but these also have advantages and disadvantages. We would like everyone to think about the future of our energy.



● High school students view a fuel rod model up close



● The reprocessing plant is in preparation for operation

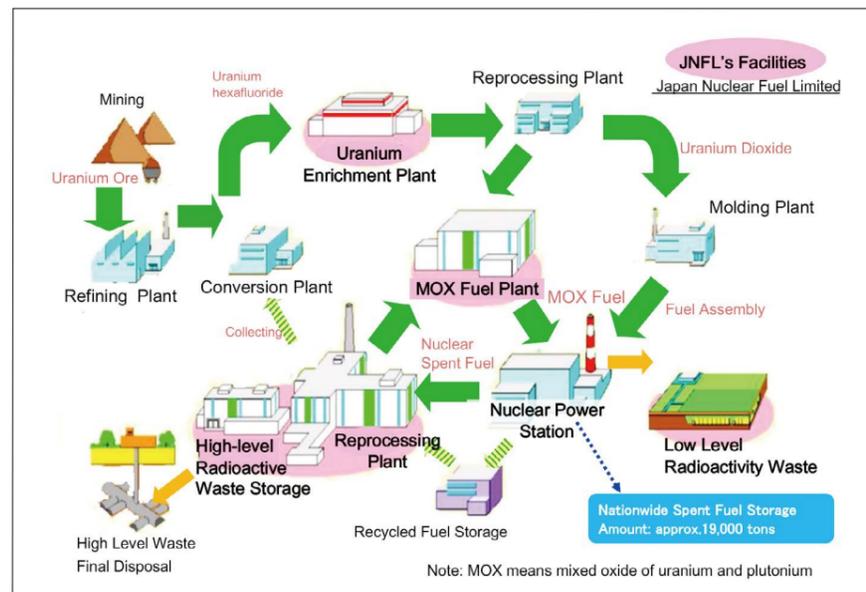
## Tell me how the “Nuclear Fuel Cycle” works.

In the 1950s, shortly after World War II, the Japanese government announced this as an energy policy. The government and major electric power companies have been promoting the use of plutonium in thermal reactors. In the nuclear fuel cycle process,

plutonium is taken from spent nuclear fuel at nuclear power stations, mixed with uranium to make MOX fuel, and reused at nuclear power stations.

MOX means “Mixed Oxide,” and refers to mixing plutonium and uranium. The aim is to break away from relying on uranium fuel imports so that

the country can secure its own energy resources by continuing to use nuclear fuels. Now that the realization of a carbon neutral society has become an international trend, some call for the use of MOX fuel in nuclear power stations because it does not emit carbon dioxide.



● Diagram of the nuclear fuel cycle, which underpins nuclear power generation



# Learning about decommissioning issues and what action to take for the future

**Fukushima Prefecture Hamadori High School Student Report**

## Visit to Suttsu Town, Rokkasho Village, and Fukushima Daiichi



- I learned many things that I would never learn at school, like terms that I didn't know but that are important in understanding what decommissioning is about, and what it was actually like when the Fukushima Daiichi Nuclear Power Station Accident occurred.
- It is important to always have "doubts". Through them, one's own thinking will also deepen. I would like to develop the ability to distinguish what is true and what is not.



- Squarely take on any challenges needed to face the unprecedented decommissioning project, which will last for a long period of time. I would like to maintain a proactive attitude in life.
- Do not run from accountability. We are still young. We don't have much life experience. But I'd like you all to live your lives earnestly.



- Think about things from new perspectives. There are things only the young can do.
- Look at the broader picture. Doing so may allow one to broaden one's thinking and consider novel ideas that can help with revitalization.

### What I learned from the lecture sessions and site visits

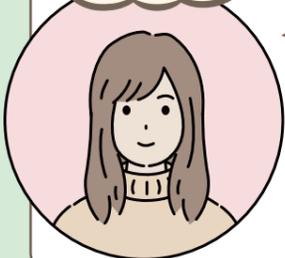


- It is important to use easy-to-understand explanations, tailored to different age groups. Some of the terms used in explanations and documents about decommissioning are difficult for children who will take on the future challenges.
- I would like people from the national government and TEPCO to come to schools and have face-to-face talks with the younger generation.



- Fukushima has overcome challenges in revitalization slowly but steadily. I would like to study in detail what the background circumstances were and what was going through the minds of the people who made the decisions, and discuss whether things have been done correctly or not.
- When the earthquake disaster occurred, we were young. What actually happened? An attitude and mindset of wanting to get to the truth is important.

### Lessons learned



- Some ingenuity is required when asking questions to draw out what people actually think about decommissioning. We have to hear not just the "official stance" but what people really think in order for revitalization to move forward.
- The issues generated by the Fukushima Daiichi Nuclear Power Station Accident do not just affect Fukushima. Broadly seeking the understanding of people throughout Japan is important, and the government and local residents should put effort into this.



- Nuclear power station accidents are rare across the world, so we need to make use of the lessons learned when they do occur. Otherwise, similar mistakes may be repeated in the future.
- Various information about Fukushima is being disseminated through traditional media and social media. What is correct, and what is not? I want to gain the knowledge to ascertain that by myself.

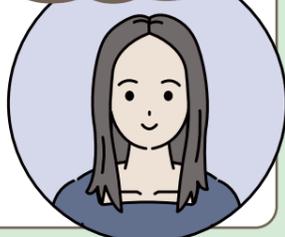


- Conflicts are sure to occur when trying to resolve issues concerning revitalization. We should move forward presenting rationales and reasons for our opinions, instead of criticizing each other.

- Uneasiness about radiation is not a matter for Fukushima only. Issues will remain for the future generations as well. What can be done to assuage such uneasiness?

- The memory of the earthquake disaster and Fukushima Daiichi Nuclear Power Station Accident is steadily fading away. I will continue to seek areas where I can help.

### Issues encountered



### My approach from now on



- I want to convey information to others in my own way, and I will be careful not to be misled by false information.
- I'd like to think outside the box, offer many ideas, and state unfettered thoughts.
- I will express my opinions unflinchingly. After all, one's sense of values varies from person to person.



- Each person has his/her own sense of values. Exchanging opinions frankly will lead to ideas that one person alone could never come up with.
- What can we do to help with revitalization? I want to continue to do what I can even while studying at high school.



- Tell others of the unique attractions of Fukushima, as seen through our own eyes, using SNS.
- Think of the future of my hometown as my own issue from now on. There will surely come a time when we have to face the issue of revitalization.
- We have so far learned only the questions that have answers. We will have to face the question of revitalization, which has no firm answers, into the future.

### What can I do?



# Checking things for oneself, and taking ownership of issues



**Fukushima Prefecture Hamadori High School Student Report**

## Deepening understanding about the release of treated water



### What I learned from the lecture sessions and site visits

- It will take about ten years to remove fuel from the spent fuel pool (Units 1-6).
- The hydrogen explosions that occurred at Unit 1 were so massive that they even destroyed the glass windows of the office building.
- State of the art tools and technologies are being used in decommissioning, such as robots and X-ray imaging.

- Instead of trying to close the issue by simply decommissioning the reactors, efforts are also being made to ensure that relevant technologies remain in the region.
- Monitoring is also being conducted by a third-party (the International Atomic Energy Agency, IAEA).
- The reason why the roof of Unit 3 is semi-cylindrical (to make it as light and tough as possible).
- I learned about collaboration with local companies (e.g., ABLE Co., Ltd. carried out exhaust stack disassembly work).

- Resident return rates are still low for Tomioka Town, Okuma Town, etc.
- Reducing the amount of on-site work is resulting in reduced exposure to workers. Special designs have been devised, such as a plant cover for decommissioning, for this reason.
- The nuclear power station is securely guarded.
- The mechanism and importance of the impermeable walls.

- Tritium is similar to hydrogen in structure, and difficult to remove. Therefore, we have no choice but to release it into the ocean.
- Diluted treated water is to be released 1 km off the coast of Fukushima Daiichi Nuclear Power Station. An undersea tunnel is to be used.
- Seawater from off the coast of Fukushima Daiichi Nuclear Power Station is to be used to dilute the treated water.
- Muons are measured to ascertain the location of fuel debris.

- Rainfall increases the amount of water to be treated and examined. Therefore, 140 tons of water is treated per day, calculating the daily rate from the annual amount.
- The monitored nuclides (62 + 2) are tested and some tests take up to 1 month depending on the nuclide.
- Interestingly, people can enter quite a lot of places in Fukushima Daiichi Nuclear Power Station in normal, light clothing.
- The safety of ALPS treated water has been reconfirmed.

Note: The student's comment "62 + 2" means 62 radionuclides plus tritium and C-14.

- The safety of ALPS treated water.
- To avoid exposure, objects are pre-built elsewhere before installation at the site.
- Samples are inspected during the ALPS treatment procedure.
- The amount of contaminated water is reduced by preventing the inflow of rainwater through surface paving work at Fukushima Daiichi Nuclear Power Station and pumping out underground water using sub-drains.

### Lessons learned



- It made me think that we who represent the coming generation have to pass on information about the damage caused by, and the effects of, the Great East Japan Earthquake to future generations.
- Negligence or conceit could result in something that is extremely difficult to rectify later.

- Nothing is better than making efforts to minimize risk levels at all times.
- We have to accurately learn correct information.
- There is a need to separate reality from emotions.
- The importance of community-based approaches.

### My approach from now on



- We ourselves need to have correct information, and relay it across a wider range of generations.
- Instead of passing the buck onto each other, we must relay the reality to people as issues every person needs to think about.
- I want to speak using concrete "evidence" so that people will not make light of what I say and treat it as a story by a mere high school student.

- To protect the future of Fukushima, I will take action to disseminate correct information on issues concerning Fukushima and nuclear power stations so that as many people in Japan as possible will become aware of them.
- I will urge larger, more influential organizations to disseminate such information.
- It is important not to let memories of the earthquake disaster fade away, and make younger generations aware of it.
- This issue is often considered an issue for Fukushima only, but I want to tell people that it is a national issue for Japan.

### Issues encountered



- So few people take the treated water issue seriously (little interest in nuclear power station issues).
- The progress of the decommissioning work is hardly communicated to people, even to local residents.
- I felt that the memory of the earthquake disaster has faded away further after ten years.

- There were so many tanks, as if the site was fully surrounded by them.
- Elimination of harmful rumors regarding Fukushima.
- Assistance for residents to return home.
- Ascertaining correct information without being misled by false information.

### What can I do?



- Online information sharing is fine, but I saw something like "The government is brainwashing high school students..." on Twitter, etc., so we have to present things in a way that people don't think about it like that.
- We should have people watch the film "Fukushima 50", which depicts the extremely difficult situation faced by those who responded to the disaster in its immediate aftermath, so they can learn what happened and the actions taken to date.

Feature "Fukushima in my thoughts"

# Your home town never leaves your heart, even when you're away.

I was a second year elementary school student at the time of the Great East Japan Earthquake. While I was on my way back from school, a severe quake with a seismic intensity of 6+ struck. The Fukushima Daiichi Nuclear Power Station Accident occurred, and we evacuated voluntarily. However, I was still little and wasn't sure what was happening.

If it had not been for the quake, I don't think I would have known where the nuclear power station was in Fukushima Prefecture and what kind of facility it was, even now. Unlike the residents of Futaba County, who are still forced to live in evacuation, I was able to regain my former lifestyle at an early stage. Since I did not face the effects of the Fukushima Daiichi Nuclear Power Station Accident over a long period, I didn't feel the motivation to contribute to revitalization in Fukushima, or the desire to continue living in Fukushima Prefecture. That was until I participated in the training program, "Hamadori, Fukushima HIGH SCHOOL ACADEMY 2019," organized by an NPO, Happy Road Net, in Hirono Town, when I was in my second year of high school.



I participated in the training program because my high school teacher recommended it. I visited England as part of my training, and I observed the Sellafield nuclear site, which is a



Yui Ito: First Year student, Miyagi University of Education

nuclear power-related complex that underwent a nuclear reactor fire in the past. I deepened my understanding of its decommissioning plan, which will require over 100 years. I continued learning about the tasks involved in Fukushima's revitalization after I returned to Japan. As I continued my studies, my feelings kept changing.

The road to overcoming the issues of radioactive waste disposal and nuclear power station decommissioning, which Fukushima Prefecture is facing right now, is long and hard. Children who have not even been born yet may have to face serious issues regarding revitalization someday, not to mention those of us who are currently university students and high school students.

"I am from Fukushima. Can I turn away from these issues?" When I thought about what I could do for my hometown, I decided that I wanted to learn about disaster prevention and disaster education and that I will utilize my knowledge in future town development. This is why I decided to study at Miyagi University of Education, which is a leading university for research in this field.



I participated again in the training program, which started in the summer of 2021, as a facilitator to assist the high school students in their research. The theme was "the issue of radioactive waste disposal." We visited Rokkasho village and Suttsu town. Rokkasho village is located in Aomori Prefecture, and will be a key area in the nuclear fuel cycle. Suttsu town is in Hokkaido. It has applied for a survey to be a final disposal candidate site for radioactive waste.

Something in particular left a strong impression on me during the program. When a question "If Hamadori (coastal area in the east of Fukushima Prefecture) became a final disposal site candidate, would you support the decision or not?" was asked in a group discussion, I was surprised by the opinions of the participating high school students, because I was the only one with an opposing opinion. Some of these high school students experienced great suffering from the Fukushima Daiichi Nuclear Power Station Accident – how could they remain so calm? I had doubts.

"Maybe they still can't see this as their own



● Fukushima Prefecture Hamadori

problem?" or "Are they being swayed by other people, rather than having their own opinions?" or maybe "Are they just stating opinions that would be approved of by adults?" When I kept making such conjectures regarding their minds, I remembered a TV program.



In the TV program, an author participating asked a broadcaster "What would you think if someone tells you that they are burying radioactive waste in your yard?" The broadcaster had difficulties answering, saying "Oh, I have a small child, so...." Before this question was asked, this broadcaster was conveying a legitimate message to many viewers, saying "This problem is an issue for Japan. It is important that each and every one of us faces it with a sense of ownership." Then the broadcaster turned around and said "Don't bury it in my yard." It felt inconsistent.

However, when I think about myself, can I criticize this broadcaster? Am I not the same right now? I asked myself.

"I want not only Fukushima residents but also all Japanese citizens to be aware of the issues regarding the nuclear power station as something that affects them." This is what I always think, but part of me still doesn't want the waste to be buried in my own yard. I fully realized that I still hold a detached position.

What can I do to make many people, including myself, consider the challenges of Fukushima as something that affects themselves? Issues that Fukushima faces are hard to visualize, and decommissioning also involves a great deal of specialized terminology, making it difficult to understand. To be frank, it's hard to approach. When we held a discussion in one of my univer-

sity classes on the theme of the Fukushima Daiichi Nuclear Power Station Accident, many of my fellow students also said "I do want to learn about it, but it's a difficult subject and hard to understand."

When we look at the SDGs, they target global society. Information is transmitted in a very easily understandable manner regarding what could happen around us if the goals aren't met, and the positive and negative aspects of their effects on our daily lives. It feels as if many people have a sense of ownership. I think that the building of an environment in which we can discuss and consider the issues without resistance was behind the rapid dissemination of the word "SDGs." Is there any way to remove the hurdles regarding the issues of Fukushima so that more people can learn and think about them?



What we need is for young people from Fukushima, like ourselves, to communicate. Young people are able to state their own feelings and thoughts without speculation. I think the hurdles would be drastically lowered, even for difficult issues, if young people just mention the subject. I think we would also be able to communicate with more real and genuine voices.

The issues of Fukushima cannot be solved by the adult generation alone. They will deeply affect our future lives. Even if people move away from Fukushima or aren't from Fukushima, it is still a matter that concerns us all. I hope that a variety of people will feel a sense of ownership and that a wide range of generations, from young people to adults, will cooperate with each other to create the Fukushima of the future.

Round Table Discussion:

# Facing our distant future

Participants of "Hamadori, FUKUSHIMA HIGH SCHOOL ACADEMY"



The five-year training program started with lessons on

“What is revitalization?”

『Hamadori, FUKUSHIMA HIGH SCHOOL ACADEMY』

< 2017 - 2018 >

Visited Belarus, which suffered the serious effects of the Chernobyl accident



< 2019 >

Visited the UK, which experienced a nuclear reactor fire in the 1950s



< 2020 >

Online dialogue with people in Minamata City, Kumamoto Prefecture, who suffered due to rumors



< 2021 >

Visited Rokkasho Village, Aomori Prefecture, which plays a key role in national nuclear fuel cycle policy, and Suttso Town, Hokkaido, which is divided over the question of accepting a survey for final disposal.

**Participants:**

- Soya Ota, Third Year Student, Tohoku Gakuin University
- Izumi Sakai, Second Year Student, Akita University
- Saki Kiyonobu, First Year student, Tohoku Fukushi University
- Yui Ito, First Year Student, Miyagi University of Education
- Sora Watanabe, Third Grade Student, Futaba Future High School
- Reina Arakawa, Third Grade Student, Futaba Future High School
- Yumiko Nishimoto, Moderator, NPO Happy Road Net President

**Nishimoto:** In the recent House of Representatives election (votes cast and counted on October 31, 2021), one of the issues was energy policies, including measures to tackle decarbonization and the handling of nuclear power stations. The outlook of the ruling Liberal Democratic Party is for nuclear power plants to be utilized in the future, claiming that they are “necessary” for decarbonization. I wish to hear your thoughts on this.

**Ota:** Despite the Fukushima Daiichi Nuclear Power Station Accident, I think that nuclear power stations will continue to be necessary in

the future. Realization of a decarbonized society will become the global trend, and I expect that thermal power plant operations will be restricted in the future. I think that what we need is to effectively utilize spent nuclear fuel.

**Ito:** Indeed, many countries have stated their intention to reduce greenhouse gas emissions to net zero by 2050. I’m not sure if Japan can really make this happen without nuclear power stations.

**Sakai:** Japan has very few fossil fuel resources in the first place. During the training, I learned that the na-

tional standards on nuclear power station operation have become very strict since the Fukushima Daiichi Nuclear Power Station Accident. I think that the operation of nuclear power stations that have cleared such strict standards is necessary, considering future energy supplies.

**Arakawa:** When we conducted field work in the Futaba District for a school class, I witnessed the fact that the amount of renewable energy facilities has been increasing. But land suitable for establishing facilities is limited, and renewable energy generation is affected by the weather. I doubt that this alone would be sufficient to supply electricity for Japan. We must consider the necessity of nuclear power stations in a positive manner.

**Kiyonobu:** Until recently, I was absolutely against restarting nuclear power stations, as they have made us suffer so greatly. But as I continued learning about our energy situation, I have also learned the reality that we have no choice but to rely on nuclear power stations.

**Watanabe:** If any of the major nuclear power stations in Japan experiences an accident, damage to the surrounding areas will be great. So why not build small nuclear power stations where safety oversight will be easier?

**Nishimoto:** Since the lack of anti-terrorism measures and the issue of neglecting the seismometer failure at Fukushima Daiichi Nuclear Power Station Unit 3 came to light one after another, residents’ confidence in nuclear power stations has been shaken again. What are your thoughts on these scandals?

**Watanabe:** After experiencing a major accident, I thought for sure that both the government and TEPCO were more determined to prevent the recurrence of such an accident, so I was disappointed to hear about issues such as the lack of anti-terrorism measures. I want people on-site to always have a sense of urgency.

**Ito:** I don’t think there is a generation facility for which we can definitely say “it can be operated with 100% safety,” regardless of the type.



**Kasumi Sakai** Born in Minamisoma City, Participated in Belarus Training Program (2018)

We need to check on a regular basis how to respond in the case of an emergency so that the surrounding areas are not affected, and continue drills and training.

**Arakawa:** Indeed, Japan is prone to earthquakes, and no one knows when we will be hit by another great quake. I want people to abandon the idea of “absolute safety” and be thoroughly prepared.

**Sakai:** The Fukushima Daiichi Nuclear Power Station Accident occurred because the emergency power source was lost due to the tsunami. I want them to sincerely reflect on the anti-terrorism measures and seismometer issues and overcome their mistakes.



**Sora Watanabe** Born in Iwaki City, Participated in Training Programs in Suttus Town, Hokkaido and Rokkasho Village, Aomori Prefecture (2021)

**Ota:** When I visited Belarus in 2017 for the training, I thought it was a beautiful and tranquil country. Then, the world saw reports on the Belarus authorities arresting those criticizing the government, which surprised me very much. Japan is said to be the most peaceful country in the world, but we don't know what kind of threats we will have to face because of the situation overseas in the future. This is just an off-chance example, but I want them to thoroughly establish a method to respond to technologies that can be used to bomb nuclear power stations in Japan in a pinpointed manner.

**Nishimoto:** Now that over ten years and nine months have passed since the quake and the Fukushima Daiichi Nuclear Power Station Acci-

dent, give us your honest opinions on how the government, TEPCO, and the media have responded to the affected areas.

**Kiyonobu:** I exchanged opinions with people from the government and TEPCO during my training, but I had a strong impression that they only discussed what was advantageous for them, including the example of the energy policy. Many of their responses did not answer the questions, and some high school students lost their confidence and wondered if the problem was the way they asked the questions. But this was not the case. I want the people concerned to respond with sincerity.

**Sakai:** Indeed, it did feel as if they were trying to conceal negative aspects, such as their mistakes. But these things are what our generation wants to know so that they can teach a moral lesson for the future. Speaking evasively on the truth and taking the stance of trying to conceal what is disadvantageous to them makes them poor adult role models.

**Watanabe:** I also had the same impression. They were

trying hard to play up their past achievements. We are asking these questions because they are important when we consider the future, so I want them to be straight with us.

**Ito:** The distance between the government/TEPCO and residents is considerable. There were also times when I felt that they were being "condescending" during the lectures. I want people from the government and TEPCO to make efforts to reduce the distance by having more opportunities such as school visits and holding face-to-face dialogs with students, rather than only giving us one-way explanations.

**Arakawa:** The way the media transmits information is also an issue. When I visited Fukushima Daiichi Nuclear Power Station, people from TEPCO were complaining that "they only report the negative aspects, even though the decommissioning is making progress." It is true that you can walk around many areas on the premises without wearing protective gear. I want the media to report the reality, including the fact that the decommissioning is making progress.

**Nishimoto:** Even for a nuclear power station which has not experienced an accident in the first place, decommissioning takes approximately 30 years. However, TEPCO has not changed its goal of completing the decommissioning of Fukushima Daiichi Nuclear Power Station in 2051, which is in 30 years' time. Do you think this is possible?

**Ota:** I honestly cannot believe that they can achieve decommissioning within another 30 years. Our young generation will continue to face the issue of decommissioning. Without their honest opinions, we can't visualize the future of our home.

**Kiyonobu:** First of all, we don't know how long it will take to establish the technology for the fuel debris, which is said to be the hardest aspect. I want them to show how long each decommissioning task is expected to take based on realism, rather than wishful thinking.

**Sakai:** But I also think it is important to adhere to the stance of achieving the goal without fail. Some residents are moving toward revitalization, believing in that.

**Watanabe:** Residents wish for the swift completion of decommissioning, but taking another perspective, couldn't we also say that the longer it takes to decommission, the more jobs and employment opportunities there will be for the local people?

**Ito:** I think that is correct. If we can establish the technology to extract debris, that's something we can be proud of and show the whole world. Researchers will come to Japan from overseas. I am not that insistent on decommissioning being completed quickly. The most important point is that it is completely safely and thoroughly, while contributing to the area's economy.

**Nishimoto:** The air radiation dose level in areas where people have lived, excluding the Difficult-to-Return Zones, is less than 0.1 microsievert. But some residents within and outside of Fukushima feel concerned. What kind of activities can we promote to dispel the negative image of the affected areas?

**Sakai:** I remember that they were proactively pro-



**Soya Ota** Born in Soma City, Participated in Belarus Training Program (2017)

moting efforts such as the dissemination of glass badges (personal dosimeters) and thyroid tests when I was little, but this is not so much the case anymore. Part of it is probably the fact that the environment has become safe, but I also feel a sense of discomfort. Belarus was still conducting regular tests on residents even 30 years after the accident. The measure of safety is different for each resident, so I want them to distribute glass



● High school students interact with Belarusian students through calligraphy



**Reina Arakawa** Born in Hirono City, Participated in Online Training Program with people in Minamata City, Kumamoto Prefecture (2020)

badges to those who desire one.

**Ota:** Now that over ten years and nine months have passed since the Fukushima Daiichi Nuclear Power Station Accident, decontamination has progressed all over the area, and the radiation level has definitely reduced. If children were to wear

glass badges, I expect that they would show safe levels. If we were to make such data from glass badges worn by many children widely available, it would provide a strong basis for the fact that the radiation levels of affected areas are safe.

**Kiyonobu:** It is important that those who have concerns about the affected areas actually see the current situation. I myself witnessed everyday life beginning to return to the affected areas as I participated in cleaning activities for National Route 6 and summits on disaster prevention. I'd like to see the proactive hosting of hands-on learning opportunities and have many people visit the areas.



● Visit to TEPCO Decommissioning Archive Center to deepen our understanding of the current decommissioning progress

**Nishimoto:** Opinions are divided on releasing the treated water into the ocean. What are your thoughts?

**Kiyonobu:** When I learned that the government had decided on the policy to release it into the ocean, I frankly became enraged, wondering "What are they thinking?" After that, I had an opportunity to attend a



● Treated water storage tanks at Fukushima Daiichi Nuclear Power Station

lecture from the person in charge in the government. We kept asking questions about our doubts, and I learned that standards must be strictly cleared when releasing the water and that it was safe.

**Arakawa:** I think seeing more and more tanks being built to store treated water will give Japanese people the impression that "reconstruction is not happening in these areas" more than anything.

**Ito:** I also feel that we have no choice but to release it into the ocean. The amount of treated water will

continue to increase in the future. If storage tanks are no longer needed, it will also prove that reconstruction is making progress.

**Sakai:** It is not the case that water harmful to people or the environment is being released. I also feel that we have no choice but to re-

lease it into the ocean. The distance between people from the government/TEPCO and residents is considerable in the first place, so I think it is important for companies with understanding of the release to communicate in their own words to people around them, including their employees, that it is safe.

**Ota:** When we visited Suttu Town in Hokkaido, where surveys are being held to select the final disposal site for radioactive waste, the mayor was struggling, saying "people against the idea would not understand, even if we demonstrate to them the basis for its safety." I too think we have no choice but to release the water into the ocean, as we are starting to run out of places to build storage tanks. The opinions of opposing people are also important, but they should come up with countermeasures rather than simply opposing the current plan.

**Nishimoto:** Some people are concerned about harmful rumors spreading because of the water being released into the ocean. How can we narrow the gap between those accepting the



**Saki Kiyonobu** Born in Soma City, Regular participant in activities such as clean-up work for National Route 6

release and those opposing it?

**Ito:** Water containing tritium was released even before the Fukushima Daiichi Nuclear Power Station Accident, and overseas nuclear power stations have released water with much higher concentration levels than the water to be released into the ocean from Fukushima Daiichi Nuclear Power Station. We need to patiently explain these facts.

**Kiyonobu:** But I don't think we can completely remove harmful rumors in any case. For example, I might like a certain celebrity, but others may not. We each have different senses. If we focus too much on the opinions of those opposing purchases of Fukushima products, we will be unable to



**Yui Ito** Born in Iwaki City, Participated in UK Training Program (2019)

move forward with the revitalization work.

**Sakai:** I wonder how many harmful rumors there currently are. It also feels as if the strength of the words on the part of the opposing people is overpowering those who don't mind. When thinking about the issue of recurring harmful rumors, even if 99 people agree with the release, as long as one

person is opposing it these rumors would have an effect. We should further communicate safety matters and other aspects to those who support Fukushima products.

**Watanabe:** But I don't want them to give up on continuing to convey the message of safety to people who oppose the plan. I also have the impression that the media is instigating harmful rumors about things that may not even happen. Isn't that the true issue causing such rumors?

**Ota:** I also can't help but think that we have no choice but to wait for time to pass before such rumors disappear. In Belarus, though, knowledge was spreading through children who learned about radiation in

schools teaching their parents and grandparents. This kind of knowledge dissemination was completely the opposite of that in Japan, and it was very useful.

**Arakawa:** Indeed, if the younger generation, without constraints or preconceptions, learns about the properties of tritium and understands the safety themselves, I think it will be an effective method of promoting deeper understanding if they can then create opportunities to explain their findings to friends or discuss the matter with those close to them, such as their parents at home.

**Nishimoto:** No one has been able to picture the future of Fukushima Daiichi Nuclear Power Station after decommissioning. What is the ideal future?

**Sakai:** I think we should keep the buildings – with their safety secured, needless to say – to serve as a negative legacy and teach a moral lesson that such a disaster should never be repeated. I think that visitors will come from all over the world, leading to the rejuvenation of the area.

**Watanabe:** The Atomic Bomb Dome has remained in Hiroshima. I can feel their strong determination to teach a moral lesson to later generations, without shying away from the painful past.

**Ito:** Indeed, the idea of keeping them is not bad. But I also think that the feeling that “decommissioning is complete” may be diluted if the buildings are still there.

**Kiyonobu:** What will they do about the maintenance costs if we kept the buildings?

**Sakai:** That's something we must think about, but there's something more than the maintenance costs that we need to consider. If we turn the land into a vacant lot, we will lose the opportunity to directly witness the site where the tragic Fukushima Daiichi Nuclear Power Station Accident happened. Isn't that truly a great loss?

**Arakawa:** I too think it should be turned into a vacant lot. I think it will pain those around the nuclear power station every time they see the buildings. My friend is using Minecraft (a video game where you build

buildings with blocks) to try to recreate what Futaba County used to look like. Even if we don't leave the nuclear power station buildings themselves, I think such approaches are also useful.

**Ota:** I agree with Sakai-san. I think it is important to leave the buildings, like historical remains, so people will never forget the Fukushima Daiichi Nuclear Power Station Accident. But I do also fully understand local people wanting the buildings gone. The younger generation must have repeated, thorough discussions to determine the ideal future for the site.

**Nishimoto:** “Voting rights at 18 years old” is now in effect, and the younger generation has obtained the right to cast a vote on politics, including on the future of our energy policy. But the voter turnout was low for 18-19 years old and early 20s, at under 30%, in the recent Lower House election. How can we raise the young voter turnout?



● Deepening our understanding through a special site visit to the Chemical Analysis Building in Fukushima Daiichi



● Thinking about the future with Belarusian students



● Learning about the current situation at Fukushima Daiichi through a lecture at its new main office building



**Ota:** My vote may only be worth one out of tens of thousands, or even hundreds of thousands, but I do have the awareness that a vote can bring great change to the future of the younger generation and the whole of Japan. But despite my bold words, I didn't vote in the recent Lower House election. I feel ashamed.

**Ito:** But I do understand your feelings. My resident card is back at home, and I couldn't vote in the election in October 2020 for reasons including being busy with classes. I think there are many students in the same situation. I am certain that the voter turnout would drastically increase if there is a system to vote on smart-

phones. Now that digital technologies are well established, I think this is easily achievable. The government encourages young people to vote, yet they don't establish such an environment. I can't help but have the suspicion that there are political parties and politicians who will suffer if the voter turnout increases among the younger generation.

**Arakawa:** I didn't have the right to vote in the Lower House election, but my friends who went to vote said, when I asked for their opinions, that they weren't sure who to vote for and therefore voted without paying a lot of attention. The policies of each candidate are unclear, and the younger

generation still has little interest in politics in the first place. I think the administration and schools both need to promote efforts to raise their interest level.

**Kiyonobu:** I also have friends who said "I will vote for whomever my parents choose." They are only influenced by their parents and don't even know what policies candidates have. Still, they complain when problems occur in national politics. This isn't right. I hope we can have the willingness to voluntarily learn about politics and be proactively involved.

**Sakai:** If the voter turnout among the younger generation doesn't improve, wouldn't politicians focus only on policies for those in 60s through 70s, with their higher voter turnout? They should continue proactively utilizing influencers on SNS and other platforms who strongly and sincerely believe in the importance of voting, and continually appeal to young people in a manner that will truly convince them that "voting is cool."

**Nishimoto:** I'm concerned that memories of the quake and the Fukushima Daiichi Nuclear Power Station Accident will increasingly fade away in the future. What can everyone do to prevent this?

**Ota:** First of all, I want many people to be interested. In order for this to happen, we must research the authenticity of information and truly understand it, instead of being affected solely by information transmitted by the government, TEPCO, and the media. And I wish to communicate what I learn to people close to me first.

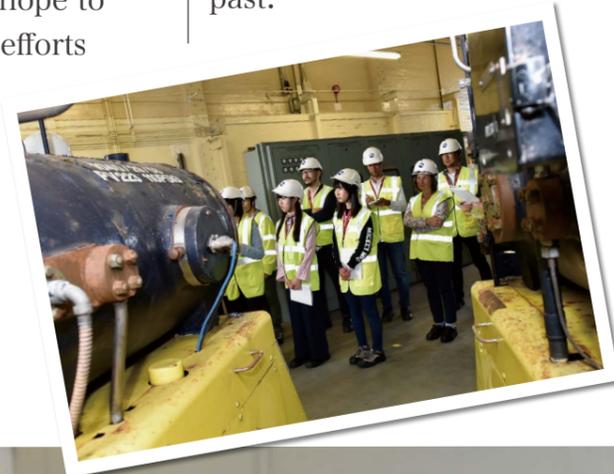
**Watanabe:** I think you are absolutely right. It is important to directly listen to residents who continue facing reconstruction issues until we can be fully convinced that this is the right way to go, and to communicate information in our own words.

**Sakai:** We are not celebrities with influence in the world, but I wish to communicate what I learn to as many of my friends as possible so that they will be interested. It is important to act.

**Kiyonobu:** I aim to become a teacher. The road to decommissioning completion is long. Even the generation after ours may have to be involved. I hope to gain knowledge so I can give accurate explanations when children have questions about reconstruction efforts after the quake and the Fukushima Daiichi Nuclear Power Station Accident.

**Arakawa:** I too am aiming to become an elementary school teacher. I hope to continue making efforts so that young people can see reconstruction as an issue that is close to them.

**Ito:** I think it is still important to teach knowledge about the quake and the Fukushima Daiichi Nuclear Power Station Accident in the field of education. We had opportunities to learn about disaster prevention when I was in elementary school, but I believe they hardly discussed the nuclear power disaster. I feel that there are many aspects that we must make efforts in so that we can prevent people from forgetting about the past.



● High school students learning about the 100-year plan decommissioning work at the site

# Understanding nuclear disasters

## Some things can only be learned by seeing with one's own eyes.

The training project for high school students that started in 2017 ended in 2021. Through the passage of learning, we met people with various senses of values, communicated with them, and broadened our own views.

People from different countries have different views on revitalization. Even in Japan, what residents think varies widely once you step into another prefecture. Looking at our hometown, some returned there, and others decided to live in a new place.

Therefore, we hope to find answers that people agree to while respecting each other, and envisage a future where everybody can live happily. Here, we look back on our training using photographs.

# What we learned over the past five years

## 2017

Visited Belarus




## 2018

Visited Belarus



## 2019

Visited the UK  
(Sellafield, London)  
Aomori Prefecture  
Rokkasho Village



## 2020

Visited the Futaba District,  
Fukushima Prefecture



## 2021

Visited Suttu Town,  
Hokkaido




## Keywords for us to envision the future

# keywords

1

### Repeated dialog

Every person has their own views and values. When discussing revitalization issues, some will agree with suggested solutions and others will disagree. I would like both sides to explain their reasons, discuss the issues, and understand each other to slowly but steadily put together tangible revitalization plans. Denying each other will not bring anything good to the table.

2

### Take ownership of issues

In my opinion, adults are gravely responsible for not having been able to prevent the Fukushima Daiichi Nuclear Power Station Accident. But the road to decommissioning is long and uncertain, and it has become a cross-generational issue involving us, the younger generations. Everybody needs to learn about problems concerning decommissioning and raise their voice in their own way. That will drive us toward the creation of a better future.

3

### Think how best to be understood

Communicating sounds easy, but is difficult in reality. We can say that information has been communicated only when the people receiving that information have understood it correctly. SNS has become prevalent among us, and it has become easy to deliver our opinions to the world instantaneously. I would like to disseminate information standing in the shoes of the target audience, taking into account age and other factors.

4

### Do not let memories fade away

Memories of the earthquake disaster and lessons learned from the Fukushima Daiichi Nuclear Power Station Accident must be passed down from generation to generation, in the hope that they will save someone's life when a similar disaster occurs sometime, somewhere in the future. We, the younger generation, were very young when the earthquake disaster occurred, so I would like to learn more about "that day".

5

### Continue to take on challenges

The decommissioning of Fukushima Daiichi Nuclear Power Station is a venture into uncharted territory. Precisely for that reason, there is a possibility that new world-class technology will emerge in Fukushima. In the life we are to live, we surely will face failures. Still, I would like to rise up, face things head on, and turn situations into a positive to create something new.

6

### Let's set off on a journey of learning

Seeing is believing. It is important to check things by seeing them with one's own eyes. Only by journeying out of our hometown may we learn something new. We may also encounter things that challenge our previous convictions. Let's broaden our horizons.

Editor's postscript

## (Five years of sensing future possibilities)

M E S S A G E



NPO Happy Road Net  
President: Yumiko Nishimoto

I would like to help develop future leaders who can take on the challenge of the long, tough, and unprecedented path toward revitalization. This training project started in 2017 with that thought in mind. And now, in 2021, thanks to the cooperation and support of many people, this project that has spanned five years has been successfully completed. I would like to extend my sincere gratitude and appreciation to all those involved.

High school students participated in this training project with high aspirations, and the question "What I can do to help with revitalization?" in their mind. However, almost every year, I witnessed some of them becoming bewildered by the content of the training. Lecturers requested the students to state their own thoughts on the issues Fukushima is facing, and tasked them with a lot of homework to do between lectures. Some questions were highly technical and difficult to answer even for adults, including myself.

But through their stresses and struggles, the students gained knowledge and abilities that will help them to pioneer the future. Watching their steady development thrilled me with expectation. I clearly remember feeling that maybe they would easily overcome the challenges and tasks that lay ahead. After five years of this training project I honestly believe that "Nothing is impossible".

The path that leads to the end of the COVID-19 pandemic is yet to be found. We had to change some sessions that we originally planned to do overseas or outside the prefecture. Even so, I believe that there are things that cannot be taught in schools, and wish to continue to take every opportunity to help support the development of high school students.

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Our friends who participated in this training program, “ShiruManabu”

2017



● Belarus Program, 2017  
[Photo at Chojniki Memorial]

2018



● Belarus Program, 2018  
[Photo at "Khatyn" Memorial complex]

2019



● UK Program, 2019 [Photo at Sellafield]

2020



● Futaba County Program in Fukushima, 2020  
[Photo at Decommissioning Archive Center]

2021



● Final Year Program, 2021 [Photo in Suttsu Town, Hokkaido]

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