

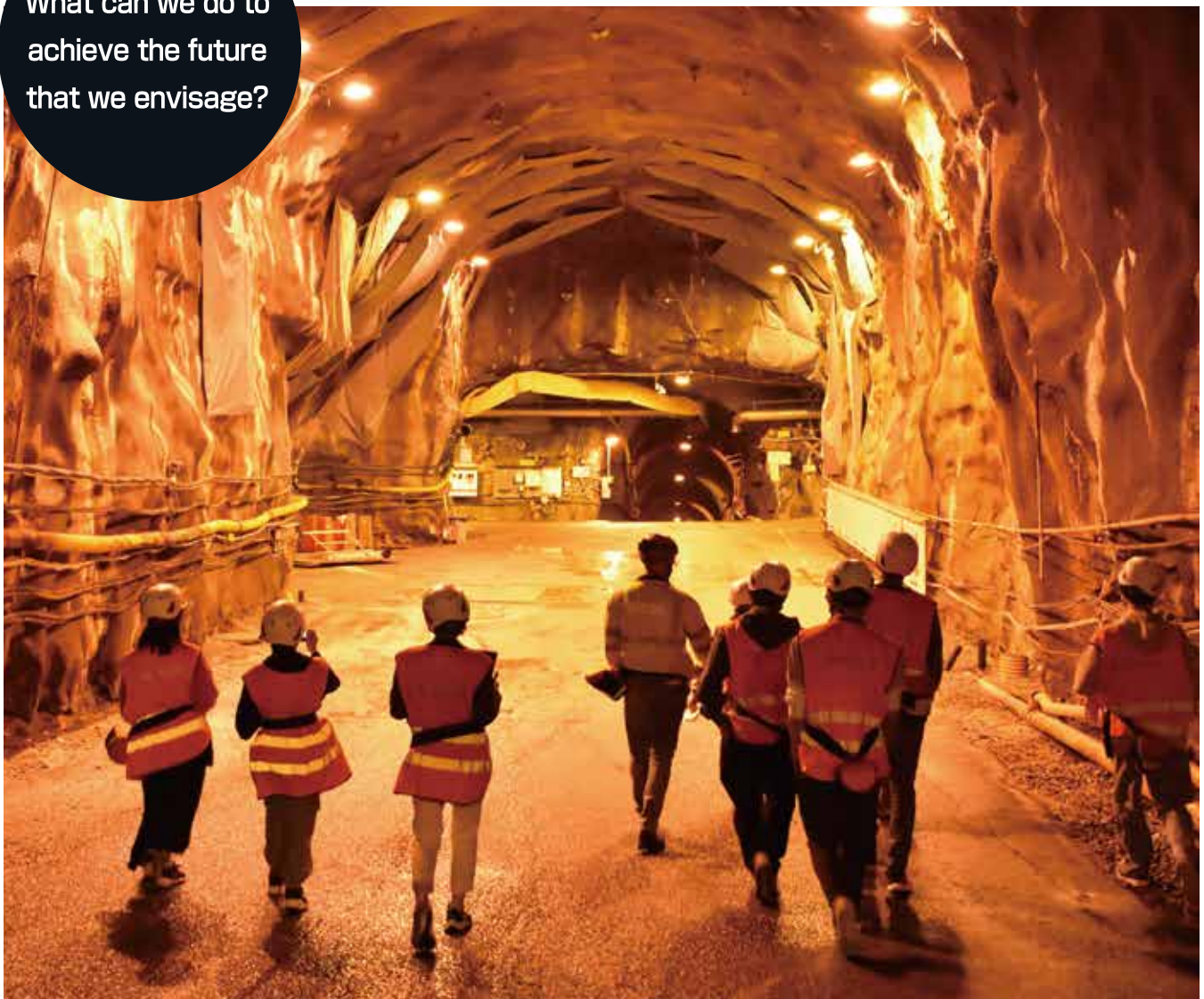
FUKUSHIMA HIGH SCHOOL ACADEMY 2023

Supplementary reader: report on activities from August 2 to September 18

High school students investigate the issue of high-level radioactive waste in Sweden, Aomori, and Fukushima



What can we do to achieve the future that we envisage?



Fukushima High School Academy 2023

Purpose of the Training Program

The purpose of the training program is to increase participants' sense of ownership by making social issues "about oneself," and to develop empathy, cooperation skills, self-expression, and respect for diverse opinions. Through this, we aim to disseminate information on the issues at hand, and the importance of revitalizing Fukushima, both nationally and internationally.

Three areas of the Training Program

- ① Investigate the current status and future perspectives in two countries, Japan and Sweden, in terms of technologies and policies for the final disposal of high-level radioactive waste.
- ② Inform the people of Sweden about the current situation in Japan, including the prefecture of Fukushima.
- ③ Bring back information learned in Sweden, think about the final disposal site in Japan and distribute this information all over Japan and across the world.



"For our hometown, 30 years from now"

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Participants List

• High School Students

- Sota Ito, Soma High School, Fukushima Prefecture
- Narumi Kayama, Haramachi High School, Fukushima Prefecture
- Motoha Oi, Haramachi High School, Fukushima Prefecture
- Natsuki Okawa, Iwaki High School, Fukushima Prefecture
- Rui Okada, Iwaki Sakuragaoka High School, Fukushima Prefecture
- Ryo Ota, Iwaki Sakuragaoka High School, Fukushima Prefecture

- Shota Ebina, Suttu High School, Hokkaido
- Riku Nakayama, Suttu High School, Hokkaido
- Kohei Oya, Rokkasho High School, Aomori Prefecture
- Reika Noda, Rokkasho High School, Aomori Prefecture
- Haruka Kawata, Mito Daini High School, Ibaraki Prefecture
- Ako Shimozono, Fukuiminami High School, Fukui Prefecture
- Honoka Maegawa, Fukuiminami High School, Fukui Prefecture

• Facilitators

- Yui Ito, Third year elementary education teacher training course, Miyagi University of Education
- Shinya Yasumoto, Project Researcher, Center for Integrated Disaster Information Research (CIDIR), University of Tokyo
- Manami Waragai, Able Co., Ltd.
- Shuta Ito, Suttu High School, Hokkaido

Investigating the Future of in Sweden, Aomori

Nuclear Waste Disposal and Fukushima!



Visits to Aomori and Fukushima prefectures

Visit to Sweden

Wednesday, August 2 Arrive at Rokkasho Village in Aomori Prefecture

Participants assemble from Fukushima, Hokkaido, Aomori, Ibaraki and Fukui

Visit to JNFL's PR Center → 

Site tour at Mutsu-Ogawara National Oil Storage Base and Mega Solar Plant ← 

Lecture by Naohiro Masuda, President of JNFL and former superintendent of TEPCO's Fukushima Daiichi Nuclear Power Station ← 

Training Program Opening Ceremony at JNFL's Technology Center in Aomori → 

Thursday, August 3 Tour of JNFL's Nuclear Fuel Cycle Facility

Site visit begins 


Tour of low-level radioactive waste storage center, high-level radioactive waste storage and management center, and spent fuel receiving & storage facility


Depart from Rokkasho village in Aomori → 

Arrive at Hirono town in Fukushima

Friday, August 4 Site visit to TEPCO's Fukushima Daiichi Nuclear Power Station

Site visit to TEPCO's Fukushima Daiichi Nuclear Power Station

Visit to Fukushima Daiichi Nuclear Power Station, with tour of Unit 5's spent fuel pool, dry cask storage area, etc. ↓ 

Lecture by Akira Ono, Chief Decommissioning Officer (CDO) at TEPCO ↓ 

Travel from Fukushima to Haneda Airport by bus

Sunday, August 6 Stockholm

Walk around hotel area in Stockholm 

Review of Japan site visits, presentation preparations ↓ 

Monday, August 7 Travel to Oskarshamn


Travel from Stockholm to Oskarshamn by bus for site visit to Äspö Hard Rock Laboratory 

Tour of tunnel ↓ 




Visit to Sweden

Tuesday, August 8 Visit to Canister Laboratory

Site tour of Canister Laboratory 

Dialogue with Mayor of Oskarshamn ↓ 

Lunch Meeting ↓ 

Bus to Uppsala

Review of the day, presentation preparations ↓ 

Wednesday, August 9 Visit to Final Repository at Forsmark in Östhammar


Tour of Forsmark Final Repository facility ↓ 


Dialogue with staff of Östhammar municipality ↓ 


Dialogue with Ambassador to Sweden ← 


Review at hotel, final presentation preparations ↓ 

Thursday, August 10 Visit to Vattenfall High School

Meeting at Vattenfall High School 

Presentation in English ↓ 

Cultural exchange with students on traditional Japanese culture: Origami, Calligraphy, Kendama (cup-and-ball), and Koma (spinning top) ↓ 



Friday, August 11 Visit to Vattenfall energy company

Visit to Vattenfall 

Short-notice second presentation in English 

← Memorable time at restaurant 

Part 1 Group 1 Activities

A priceless educational experience

● Featured high school students

Reika Noda, Rokkasho High School
Ryo Ota, Iwaki Sakuragaoka High School

● Facilitator

Shuta Ito, Suttusu High School



◇ Learning about the current situation in Japan

Through this training program, we went to Sweden and visited sites in Japan. The purpose of the program was to learn about the current state of technology and policy regarding the disposal of high-level radioactive waste in Japan. On the first day, we went to the Rokkasho Visitors Center of Japan Nuclear Fuel Ltd. (JNFL) in Aomori Prefecture to learn about the set-up and role of nuclear fuel cycle facilities and the process of vitrification. On the second day, we visited the JNFL offices, and toured the High-level Radioactive Waste Storage and Management Center and the fuel storage pool. At the High-level Radioactive Waste Storage and Management Center, we stood just in front of an area where vitrified materials are stored, and experienced first-hand the fact that radiation was being properly shielded by concrete walls.



On the third day, we visited Fukushima Daiichi Nuclear Power Station. We toured the site via bus, and saw a large number of tanks containing contaminated water and ALPS Treated Water. From the observation deck near Unit 1, we saw Units 1 to 4 a few hundred meters away. Even after more than a decade, there were still traces of the accident, and we were struck by the difficulty of decommissioning the reactors. At Unit 5, we actually went inside the reactor building and visited the spent fuel storage pool. During the tour, we also found that the radiation level was low. We'd like people to understand the current situation regarding decommissioning work, and that they can safely visit the site wearing only light clothing.

◇ Learning about Sweden's efforts

Next, we'd like to talk about our training in Sweden. The purpose of this visit was twofold. The first was to learn about Sweden's efforts in advanced geological disposal technology, think about Japan's final disposal situation and spread knowledge of this throughout Japan. The second was to inform people in Sweden about the current status of nuclear power and energy in Japan.

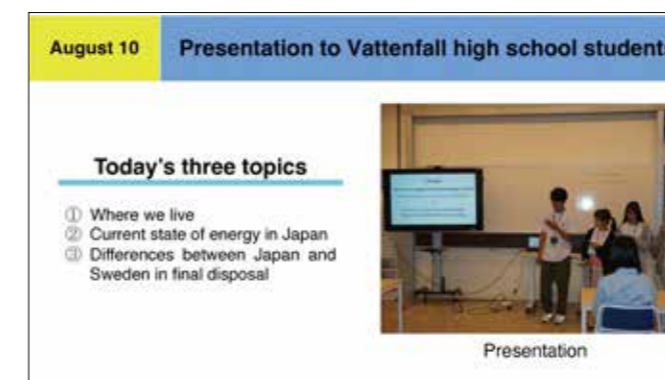
During the training, we visited Äspö Hard Rock Laboratory in Oskarshamn, the Canister Laboratory, the planned Forsmark Final Repository site, and Vattenfall High School. It was a long trip from Stockholm to Oskarshamn (three-and-a-half hours by bus), and from Oskarshamn to Forsmark (about four hours).

At the Äspö Hard Rock Laboratory we went 300 meters underground to see actual machines used in research. Next, we visited the Canister Laboratory. A canister is a container with a lid, in which spent nuclear fuel is stored. Here, we observed copper canisters and non-destructive testing. We felt that information was being given to us in an open manner, as we were allowed to take pictures. At the Forsmark Final Repository site, Hannah, an employee of SKB (Swedish Nuclear Fuel and Waste Management Company), the company that manages the nuclear fuel waste, taught us how to convey information to residents and the importance of communication.



During the final part of our visit, we had a particularly memorable interaction with high school students in Vattenfall. We started by giving a presentation in English about where we live, the current energy situation in Japan, and the differences between Japan and Sweden in terms of final disposal. It was an important presentation that was one of the main purposes of the Swedish part of the training program, so we were very nervous. Afterwards, we had a question and answer session with the theme "Let's think together". The first question we asked was "What do Swedish people think about energy?". We were impressed by their answer that people in Sweden are very interested because it is very cold in winter and energy is essential. The second question was "How do you get accurate knowledge about nuclear power and final disposal?". The students explained that they had learned about nuclear power from childhood, and that they didn't just look up what they didn't understand on the internet, but also went to the companies involved and asked them directly.

Later, the students from Vattenfall gave a presentation on the energy situation in Sweden. Initially, hydroelectric power was the main source of electricity, but nuclear



power has been growing since the 1980s, and in recent years it has become as important a power source as hydroelectric power. As nuclear power is such an important source of electricity, we should think about how to handle final disposal.

◇ Notable impressions from the training program

Ota: What impressed me most during the training program was the energy situation in Sweden. I found it amazing that the country is almost self-sufficient in energy. In addition, the percentage of environmentally-friendly energy such as solar and wind power was high, and I felt that it was close to being carbon neutral.

Noda: I was struck by the fact that Japan Nuclear Fuel's spent fuel pool is almost full. If this situation continues, nuclear power stations in Japan will not be able to operate into the future. The program was a priceless two weeks, seeing so many places with my own eyes. I certainly don't want to stop at this, but continue learning so that I can inform people with more accurate information.



Part 1 Group 2 Activities

Learning from the Äspö Hard Rock Laboratory on how to gain public understanding

● **Featured high school students**

Natsuki Okawa, Iwaki High School
 Motoha Oi, Haramachi High School
 Ako Shimozono, Fukui Minami High School

● **Facilitator**

Manami Waragai, Able Co., Ltd.



◇ Differences between Japan and Sweden



We'd like to present our impressions on how to gain public understanding from our visit to the Äspö Hard Rock Laboratory in Sweden. First, we would like to make a comparison between Japanese and Swedish bedrock research organizations. The Japanese research institute that we will compare with Äspö Hard Rock Laboratory is the Horonobe Underground Research Center in Hokkaido, which conducts research on the geological disposal of high-level radioactive waste.

There are three main differences between Japan and Sweden that we noticed. The



first difference is the size of the tunnels. As you can see in the picture, Swedish tunnels are bigger than those in Japan. The second difference is the ease of access to the research facilities. In Japan, tours of the aboveground and underground facilities are not held at the same time. In addition, children under the age of third grade are not allowed to visit the tunnels. However, in Sweden, even children under school age can enter as long as they wear safety equipment, and anyone can visit at any time. The third difference is the efforts to increase the public's interest in the center. Every year, the Swedish Laboratory holds a marathon event through the tunnels in which the public can participate.

What I felt upon entering the Äspö Hard Rock Laboratory was its large scale. We were also able to see holes with copper canisters, holes with canisters not yet in them, and the large heavy equipment used to put canisters in the holes, which gave us a better understanding of the process of disposal.



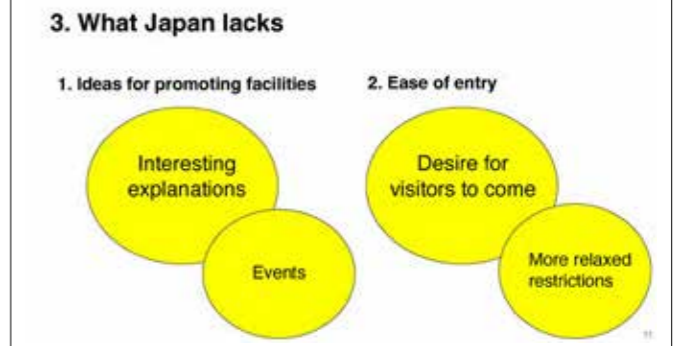
◇ Humor and Ingenuity

What impressed me most at the Laboratory in Sweden was the humorous explanations and initiatives. I felt that they were trying to make us as interested as possible and ensure we remembered the experience. We were even able to take home some groundwater from

450 meters underground as souvenirs. The staff said it was okay, and I had the precious opportunity to taste the underground water. It was a very memorable experience to use my sense of taste in this way.

Next, our thoughts on the Horonobe Underground Research Center in Japan. Since we had never been there, we interviewed someone who had. The Underground Research Center was not as large as the Äspö Hard Rock Laboratory, although there were models of canisters and other equipment. The tour appeared to be something of an afterthought in the course of their research, and the explanations were full of jargon and seemed to be conveyed in a way that was difficult to understand.

This led us to two things that are lacking in Japan. First, the idea of publicizing research facilities. The Swedish approach was surprising and humorous. We could feel their strong desire to communicate to us, and for us to learn from them. On the positive side, Japanese research institutes allow visitors to tour their facilities using VR (virtual reality) from their official websites, enabling them to see places they would not be able to enter in person, whenever they want. However, I believe that actually experiencing something using all five senses is more important because it is easier to understand and remember. In Japan too, I believe we need engaging, easy-to-understand materials and installations, and that we should hold things like events to promote interest. The second point is the ease of access to the facilities. In Sweden, the staff told us that we could come anytime, and I felt that there was a strong desire for people to know about the facility and to visit it. In Japan, the desire for people to learn can be felt from the official website, but we heard from others that the visits are held in between the staff's



research work and that there wasn't really an atmosphere of encouraging people to visit. This is just what we have heard, so we should visit and make our own judgment. However, we would say that the hurdles are high because the range and number of people who can enter the facility are limited. Can't they make it a little easier?

◇ Deepening understanding of final disposal

In summary, we thought that the method of presenting information was a key factor in how memorable it would be for people, and in triggering their desire to learn further. The more people investigate a subject in detail, the more knowledgeable they become and the higher the level of understanding we can reach. The training in Sweden made me realize once again that Japan still faces many issues regarding final disposal. If more people deepen their understanding of final disposal and consider the issue as their own, I believe that this will help greatly in solving the problem. If the problem is not solved, the effects will be felt in our generation of high school students. It is, of course, important for high school students to gain knowledge and interest, but adults - who can change society today - should not be ignorant of Japan's problems. The efforts of those actually involved with the work are fundamental in giving people the opportunity to gain knowledge.

Part 1 Group 3 Activities

Importance of communication

● Featured high school students

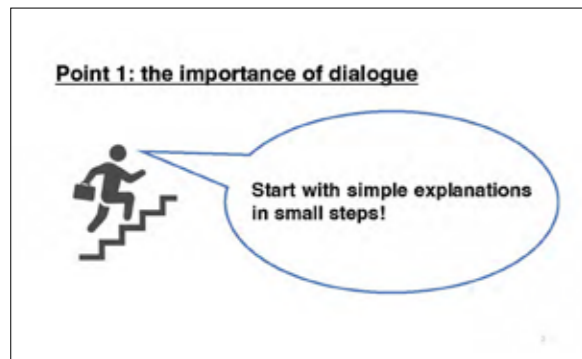
Narumi Kayama, Haramachi High School
Shota Ebina, Suttsu High School

● Facilitator

Yui Ito, Third year elementary education teacher training course, Miyagi University of Education



◇ Three key terms that are important for dialogue



We were most impressed by Hannah, the lady at SKB who is in charge of communication with local residents on matters of final disposal. There are four things that stood out for us. The first is the importance of dialogue. In Sweden, when explaining the issue of high-level radioactive waste to residents, they talk about it step by step, rather than immediately employing technical terms which would be difficult to understand at the start. For example, they begin with a short talk of about 10 minutes, and then they extend the time to 15 minutes, 30 minutes and 1 hour. Hannah mentioned that you can increase the residents' level of knowledge by holding repeated dialogue.

She also told us three key terms that are important for dialogue: patience, good shoes and communication. Patience is important as it takes a long time to raise the residents' level of knowledge and to talk to opponents and gain their trust without people becoming emotional.

Good shoes are needed to visit and talk to many residents. Communication is important as dialogue should be conducted whilst taking on board the other party's opinions.

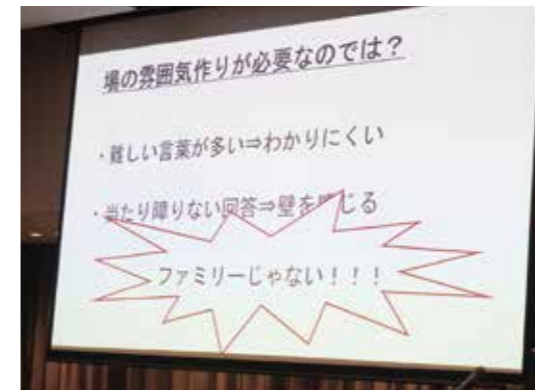


The second of the four things that stood out for us is information transparency. We've stressed many times that this is important, but we still don't really know what information transparency is. That's why we'd like to ask you. What do you think information transparency is? Third, in order to build trust with residents, the communicator should clarify their position: tell people what they do, how they do it and why they do it, and state the facts to those who disagree, from a neutral standpoint. Number four is Hannah's personality. On the one hand, she had a friendly disposition with no language barriers, but on the other hand, she also had a passionate side in that she took responsibility and made sincere efforts to address the issue of nuclear waste disposal, and she was also able to deal with opponents calmly.



The data we have seen on the level of support for the construction of a final repository for high-level radioactive waste in Östhammar, Sweden over the past decade shows that support for the project has remained at around 80%. We believe this can be attributed to Hannah's style of communication.

◇ The link between communicator and listener



We believe that communication means sharing opinions and feelings with the other person, including eye contact and gestures as well as words. To communicate, it is essential to "play catch" with the listener. We want to build relationships where we can communicate as equals, not just be taught by others. To do this we need to find ways of creating a suitable atmosphere. I heard a lot of difficult-to-understand technical terms in Japan, and had the impression that people were only talking about what they wanted to say one-sidedly. I wondered if they really wanted to be understood. Also, when we asked questions, many of the answers we received were bland and seemingly according to the manual, and I felt a barrier between us and the PR staff. The atmosphere was harsh, in contrast to Hannah, who was like everyone's mom.

However, Japan does also have its good points, which I felt when I went abroad. That is, many Japanese have a sense of responsibility and complete their work. They also have the ability to explain details carefully without being sketchy. I think that taking advantage of Japanese people's attention to detail will lead to better communication.



◇ Solving problems by devising ways to communicate



Finally, take a look at these materials from Japan and Sweden. Which one is easier to understand? I think many people will find the Swedish materials easier. The Japanese materials convey enthusiasm for communication, but there are so many sentences and pictures that it's hard to know where to look. The Swedish materials, on the other hand, have only two photos, so we can quickly understand what they are trying to tell us. I have the impression that people in Japan explain what they want to explain one-sidedly, without being conscious of the need to enable the listener to understand. In Sweden, they are more conscious of communicating to the listener, and they use materials that are easy to understand visually, so the information comes across easily. Japan should communicate more creatively. If such problems are not solved, the issue of final disposal will not proceed smoothly.

Part 2 Panel Discussion

Where in Japan will the final disposal site for high-level radioactive waste go?



• Coordinator

Shinya Yasumoto, Project Researcher,
Center for Integrated Disaster Information Research (CIDIR),
The University of Tokyo

• High School Panelists

- Kohei Oya, Rokkasho High School
- Haruka Kawata, Mito Daini High School
- Sota Ito, Soma High School
- Rui Okada, Iwaki Sakuragaoka High School
- Riku Nakayama, Suttsu High School

participated in this training program because I thought that if I went to Sweden, I would gain understanding of this process, so I could apply that knowledge to Japan's case and understand better what should be done.

Kawata: There's a nuclear power station in Tokai village, where I live. I was interested in nuclear power because of its proximity to my home, but I did not have much knowledge about it, so I joined the training program to learn about this.



Haruka Kawata,
Mito Daini High School

Training program motivations and impressions

Yasumoto: First, please tell us about your motivations for participating in Fukushima High School Academy.

Oya: Originally, I was interested in why Japan's final disposal site for high-level radioactive waste had not yet been decided. I



Kohei Oya, Rokkasho High School

Ito: In the future, I would like to work in a job related to community development. Sweden is well advanced in the area of final disposal sites, and I participated in this program because I wanted to learn how to engage in dialogue with local residents and how to form trusting relationships with them.



Sota Ito, Soma High School

Okada: I was interested in issues that are being discussed on a global scale and the areas of cooperation between countries in response to them. The program attracted me as it would give me the chance to visit Sweden and actually see and experience the situation on the ground for myself.



Rui Okada,
Iwaki Sakuragaoka High School

Nakayama: I participated last year as well, and students from the Hamadori area in Fukushima and Suttsu town had a chance to interact with each other in their respective hometowns. From there, my interest was piqued and I decided to participate again this time. My hometown is involved in a literature survey, so I wanted to learn more about this and its related issues.



Riku Nakayama, Suttsu High School

Yasumoto: Suttsu town is currently in the process of conducting a literature survey to select a final disposal site for high-level radioactive waste. The issue has not yet been finalized, and the town is still struggling to decide whether to proceed with the survey process. So, for the discussion that follows, I would like you to consider how to proceed with the selection of such a final disposal site for high-level radioactive waste in Japan, and what is needed to achieve this, based on your experience in Sweden.

First of all, what were some of the things that impressed you during your training program in Japan and Sweden?

Oya: What impressed me the most in Sweden was that, compared to Japan, they explained a great deal of things using simple words and documents, and were very understanding to people who had no knowledge of the subject.

Kawata: What impressed me the most was the importance of dialogue. Almost everyone at SKB commented on the importance they place on dialogue, and this made me realize just how vital it is.

Ito: I'm interested in the areas of dialogue and trust-building. In Sweden, people were active in their efforts, not passive. If they wanted a dialogue with someone, they would even go to their house for the purpose. It was interesting because this kind of active mindset is a little different from Japanese people's behavior.

Okada: What impressed me the most was the energy of the employees at SKB: they repeatedly discussed the issue of high-level radioactive waste. If participants were busy, SKB's explainer visited their workplaces to hold a dialogue. I was impressed by their active stance and their kind support with respect to dialogue.

Nakayama: I visited many places in Sweden and was impressed by the fact that people who explained things to me there said almost the same thing. For example, many people said that you could take pictures, or that they use SNS to openly share information.

What is needed in Japan to make progress on final disposal?

Yasumoto: So, reflecting on your experience from the training program, what do you think is necessary to make progress on the final disposal of high-level radioactive waste in Japan? Please give us some quick thoughts on this.



Oya: I think the understanding of local people is the most important thing for me.

Kawata: I think it's important to deepen our understanding through dialogue with the locals.

Ito: I think knowledge is the most important thing.

Okada: I think the most important element is dialogue.

Nakayama: I thought the understanding of the residents was the most important thing.

Yasumoto: So, what made you think that way?

Oya: I'm currently attending Rokkasho High School, and when I talk about nuclear fuel with other students, there are quite a few who think that JNFL (Japan Nuclear Fuel Ltd.) is a power station. There are many people in Rokkasho who have a good impression of JNFL, and they don't think badly of it even though they don't have any knowledge about it. In addition to that, one of the things I learned in Sweden is that the residents trust the company so much that they feel it is safe to entrust these operations to it, and I saw that local understanding in terms of trust in the company is important.

Nakayama: In Suttu town, where the literature survey is now being conducted, there are some people who are for the project and some who are against it. I believe that there are many residents who say they're against the project because there are a lot of people around them who are against it, even though they do not understand what it means. I felt that such

people needed to have an understanding of the situation, so I thought that understanding by the residents was the most important thing.

Ito: I believe there's a branch office of NUMO (Nuclear Waste Management Organization) in Suttu town. Are there any opportunities for dialogue held by NUMO?

Nakayama: I honestly don't think that NUMO is well known in Suttu town. The reason I say this is that I know NUMO has an office in the town, but I don't know what they do there, and I suppose other residents don't know either. I found out that NUMO holds dialogues once every month or two with Suttu's mayor or the town council, but I would like to ask NUMO to invite the town residents too so that the two sides can interact more with each other.



Oya: I learned that dialogue with residents is important. I was wondering if it might be a good idea to hold some classes at high schools for students, or other young people who will be responsible for leading society in the future. What do you think?

Nakayama: I too believe that such classes are essential. However, before that, I would suggest that those who take part in training programs like this give presentations at their respective high schools first.

Oya: The classes I had in mind were something like NUMO people going to junior high schools or high schools, giving a simple explanation first, and then the next week teaching a little more difficult content. Were you all thinking along the same lines?

Nakayama: I'd like to have such classes at schools, but this is not actually being done. I think it's important for the people at NUMO to make time for things like this, and create as many opportunities for engagement as possible.

Yasumoto: So, why do you think knowledge is important?

Ito: First of all, as a premise, I believe that lack of knowledge is not in itself a bad thing. However, I think it is completely wrong to put out incorrect information on SNS and expose millions of people to it. So, I think that what people need to do is to get correct information and knowledge from reliable sources by themselves. I hope that the government and the companies that are engaged in related business also create opportunities to disseminate their knowledge all over the country.

Okada: With no knowledge, one can't decide whether information is incorrect. What should we do about this?

Ito: I would like to ask the government and companies like TEPCO, JNFL, and others to put well-founded facts on SNS and websites so that people will feel reassured when they see the facts.

Kawata: You mention that you'd ask companies and others to teach the correct information and you'd like people to acquire knowledge on a national scale, but since the national scale is so large, it would take a lot of time to teach the information correctly, and we would also have to consider costs and methods. Do you have any thoughts on that?

Ito: Even in Fukushima prefecture, where I live, there are more than a few people who have the wrong information. I think this number would increase if it were on a national scale. Therefore, I think it's important to provide proper information and knowledge, even if the amount is small. It's also important to start with something small-scale and build on it, like they do in Sweden, and take a long-term view. I would ask adults to make their best efforts in this regard, and would hope that they can do so.



Oya: I've seen the opinions of opponents on SNS and websites, and what they say is that they have no trust in the government or TEPCO in the first place. I think that even if you give out information to such people, they won't believe what you're saying. How do you think you can get them to believe you?



Ito: To be honest, I'm still not sure about that. My question to you all is, what do you think people would need to believe in order to gain the correct knowledge?

Yasumoto: I'd like to ask the audience to comment on that later. Before that, what do you think is needed to foster trust?

Ito: I still believe that dialogue is important. In Sweden, they've been engaged in dialogue for 40 years, and I believe that currently 80% of the population is in favor of the proposal as a result of this years-long dialogue. It took a long period of time to finally gain the support of the public, and I think Japan should put this into practice as well.

Okada: I believe dialogue is necessary because I think it's very good for people to meet others who have different opinions from their own and have the chance for their opinions to change for the better. I think that people should speak out with their opinions and share them with others, as in Sweden. So, I felt that creating opportunities for dialogue is the most important thing we need to do.

Kawata: I also think it's important to have dialogue with people who do not have much knowledge. I believe that by communicating with such people, we can increase the level of knowledge and gain their trust, which will lead to better understanding by the local people.

Nakayama: I feel that dialogue used to take place in Suttu town before, but now it seems to be decreasing, so I wanted to ask NUMO and the mayor to provide opportunities for all of us to be involved.

Ito: In terms of fostering dialogue, in Sweden the image of nuclear power is not inherently negative, but in Japan, I think most people have a negative view because of the atomic bombings, nuclear accidents, and radiation exposure incidents like the Tokaimura nuclear accident. And the storage tanks at JNFL are already almost full. We only have about 20 years left to tackle this, so how do you think we should have a dialogue like they do in Sweden in such a short period of time?

Okada: In Sweden, the government and SKB have done a lot of hard work and made repeated efforts by continuing to engage in small-scale dialogue in order to get to where they are today, but even if Japan is doing a similar thing, we're not seeing the effects. So, it is important for NUMO to engage with the public and explain their work. This would help to build trust. I do wonder exactly what it is they're aiming to do.

Yasumoto: I will ask NUMO to comment on this later as well.

Kawata: I also think transparency in the conversation is important. Without transparency there's little hope of fostering understanding, so I hope NUMO will make a concerted effort in this regard.

What if your town were to become a final disposal site?

Yasumoto: Now, I would like to move on to another topic, and that is to discuss how you would react if your hometown were selected as a final disposal site.

Nakayama: If my hometown were to be selected, I'd be in favor of the project. One reason is that a literature survey is now underway in Suttsu town, but nuclear power generation happens in many places throughout Japan. There was an accident at the nuclear power station in Fukushima, and there were a lot of harmful rumors, but I don't think this is an issue only for the people in Fukushima. Electricity generated by nuclear power is used



in various places, and we have to think of Japan as a whole, so I'd be in favor of this.

Ito: You mentioned that this is a nationwide problem, but there are no nuclear facilities in Suttsu town right now. Some say that the site should be located in an area where there are currently nuclear facilities. What are your thoughts on that?

Nakayama: If we locate the site at existing facilities, we would only do so until a final disposal site is available. Once the disposal site is decided, I think it would be better to transport the materials there.

Oya: When I went to Suttsu town in the summer, I heard that the town was famous for oysters and basil. I am wondering what you think about the reputational damage that might occur if it became a final disposal site.

Nakayama: Suttsu town has received some money for conducting the survey, and we hope that this will be used to promote the community. I think it would be good to have not only money but also other support for industries in the town that suffer the most from reputational damage.

Oya: For example, I fear that fisherman could lose their livelihoods. What kind of support do you think is necessary for those who lose their livelihoods?

Nakayama: In terms of support, I know that money alone won't cover it, but other than that I can't think of anything else we should do right now.

Ito: Honestly speaking, if my hometown were to become a final disposal site, I would hardly be overjoyed. Fukushima has been suffering for more than ten years since the nuclear accident. If a final disposal site were to be built there amid this situation, I am sure there would be reputational damage again. I don't want to see the area suffer any more, so I really wouldn't want it to be built. I'd rather not put it this way, but Hamadori is an area that has already been contaminated once and, since that is the case, the logical rationale would be to put something contaminated in a contaminated area. I wouldn't really want the disposal site to be placed there, but if it's for the good of the country and society, I'd be willing to allow it.

Oya: In the immediate aftermath of the accident, some areas of Hamadori were uninhabitable. But now the restrictions are gradually disappearing and people are returning. If the area becomes a final disposal site, I think it would further harm these people. They're relatively few in number, so may not have much of a voice. What do you think about that?

Ito: I think that wherever the final disposal site is located will inevitably suffer damage. I believe that the lack of knowledge among the public is the reason for the reputational damage that is occurring. I'd like to see the government and corporations provide the public with thorough information on the situation so that the damage caused by rumors can be minimized.

Oya: There are about 100 million people in Japan, and I think a lot of people will suffer from rumors if knowledge is insufficient. What exactly do you think we should do to enable such a large number of people to acquire the knowledge they need?

Ito: I believe that this issue will continue to be a problem for 40, 50, or 60 years – not only for our generation, but for our children and grandchildren as well. Therefore, I hope that the government will make sure that this issue can continue to be taken up by our children and grandchildren.

Kawata: If the disposal site were to be located in a town that has previously been contaminated, I think there would be more



opposition than in other areas, and because of this, it would be even more important than in other areas to provide explanations and support. What kind of support do you think would be needed?

Ito: I know the government and business people are eager to explain the situation, even at its current status, but I would like them to make that known to us as well.

Okada: I tend to think I'd rather avoid having the site in my area if at all possible, even if I had to sign a petition. However, this is not a problem that can be postponed – it is an issue that must be addressed somewhere along the line – so I think that one way is to accept this and take pride in the fact that we have placed it in our area. Of course, there would be concerns about harmful rumors afterwards, but I think we need to change our mindset to one of gratitude for the siting of these nuclear waste disposal facilities in our area. I'd like to ask this of people in other prefectures too.



Oya: I think it's a wonderful idea to make people feel gratitude, but I heard that even in Sweden it took about 40 years to get to that point. Japan has a bad impression of nuclear power because of the atomic bombings and the Fukushima Daiichi Nuclear Power Station Accident, and I think that reputational damage is unique to Japan. I think it would be difficult to dispel such rumors and make people feel thankful for the facilities, especially with only about 20 years left to go. What are your thoughts on this?

Okada: I agree with you in that unlike Sweden, where efforts have been made over a long period of time, Japan does not have much time. However, I believe that harmful rumors should not exist, and I would like to see more discussion on this point among adults.

Kawata: To be honest, I'd be against the final disposal site with the current state of dialogue in Japan. Comparing SKB and NUMO, in SKB, they emphasize communicating with people, talking directly to them, and having small-scale conversations, and that's why they are understood by everyone and people remember their faces. However, NUMO is not well known, and even in Suttu town, where the literature survey is now underway, there are people who do not know about the organization. This training program was the first time I learned about NUMO myself. Since awareness is that low, we don't know how to react when told that we're undergoing the selection process. I am against it because I don't like the idea of proceeding without a clear understanding of what is going on.



Okada: In terms of not being able to remember faces, I think that people's first impressions are very important. The person who spoke to me in Sweden was cheerful, with lots of gestures and facial expressions, and I got the impression that they spoke with confidence. However, the person who explained things to me in Japan seemed angry and stiff. In Sweden, people were very welcoming of questions, but in Japan, it was difficult to ask questions. I wonder why they act that way, and I think it is an area for improvement.

Messages to adults

Yasumoto: I'm sorry to have to leave it here, but in closing, since we have the opportunity, could you please say a few words on what you felt about the training program to the adults?

Oya: I think Japan is doing a pretty good job in the area of transparency. For example, they have built nuclear power station PR facilities, and live-streamed an experiment on raising flatfish in tritium water on YouTube, which I think makes it easy to understand the safety of nuclear power. But there are too many technical terms, and when you actually listen to what they say, it's difficult to understand. So, when explaining things, even if the person you're talking to is an adult, I'd like you to think about using simple words, so that even elementary and junior high school students can understand what you're saying.

Kawata: We are facing this issue head on, and if a question comes up that is difficult to answer I want the adults to face it head on too, rather than trying to evade it. I think that would make things better.

Ito: I think we have gained some knowledge about final disposal through this excellent training program. But I think the majority of people still don't have such knowledge. I think it'd be difficult to hold this kind of training program many times, but if we could scale it down with an eye to making it more widely available to people and increasing their

knowledge a little, that'd be great. I would wish people the best of luck in this.

Okada: I was reminded through this training program that there are so many high school students who have opinions and ideas about nuclear power. That is why I realized that it is very important to keep repeating small-scale dialogues like we had in Sweden. Even though this is a step-by-step process and the effects may not be seen immediately, it is very important to take it seriously.

Nakayama: At first, I had no intention of participating in this training program. But I felt that I had to go in order to make a difference in my hometown of Suttu town. In the end, I actually went and learned many things for the first time, and I was able to grow as a person.

Yasumoto: Thank you very much. With that, I would like to conclude our panel discussion.



Comments



● Mr. Yuki Baba,
Member of the House of Representatives,
Electoral district: Fukushima Ward 2

Ladies and gentlemen, I think this two-and-a-half hours of discussion and presentations was a very enjoyable and worthwhile time for everyone. I would like to express my heartfelt gratitude to all the high school students who have been our eyes, our ears, and our five senses in the various training sessions. I think that the responsibilities you have taken on are in some ways heavier than for others, because this was not something that everyone could experience. There are a lot of kids that haven't been able to experience something like this. And there are a lot of adults that didn't know the information you gave us. With this in mind, I would like you all to continue to convey your information diligently to each and every person.

Your talk today has made me think: just what is "right"? Is what you all think right? Is what we feel really right? I think there are two sides to being right. There's a zealous desire to know and learn, and there's a safe space to tolerate failure. When these two sides overlap, I think it leads to one becoming right. These aren't actually my words. Last time we were here, Kotonosan gave us an appropriate Japanese word "Tsumugiai", which means "twining of thread". I believe that through dialogue, by allowing our thoughts to intersect and enabling us to move forward together, as if twining a thread, we will all be able to achieve our goals. That's why this gathering today is so important. Even though there may have been a few difficult truths for adults to hear, we're creating a space where failure can be tolerated and people can feel safe. And there are high school students who really want to take on this challenge. I think today has been a very useful exercise because it has enabled a valuable clash of souls.

As the youngest member of the National Assembly, I would like to throw my own soul into hard debate with the government. I expect the government to come right back to us on the discussion, the private sector to take care of its own role, and the students to continue their tenacious efforts in the same spirit. I'd like to thank the students for holding this event, and for all your hard work. Thank you very much.



Comments



● Mr. Yasuhito Nii,
Director-General,
Fukushima Reconstruction Promotion

I'd like to thank all of the high school students who presented today. I've heard many home truths concerning the government, and I'd like to say a few words from among the senior participants.

I think it's wonderful that the high school students went to Sweden and Rokkasho village themselves, and have presented what they saw with their own eyes and felt for themselves, all the while continuing to learn. From the standpoint of the Ministry of Economy, Trade and Industry, where I am based, as well as national government civil servants, I believe that the revitalization of Fukushima must be rooted in the local people's wishes.

I believe that "dialogue" and "communication" were the key words in today's presentations. Some people pointed out that Japan is more formal than Sweden and that the government materials are difficult to understand. I very much regret the government's shortcomings. That said, "understanding" is difficult. The government says that "building understanding" is important, but I think that the local people who actually live in the area may feel resentment at being told what to do from above.

I think that as we move on it will become more and more important to have real "dialogue" and to communicate on an equal footing. On the issue of the final disposal site, it's hard to figure out how best to get the word out, not just to a few engaged people, but to the whole nation as well.

I have been working on a local-based approach for the revitalization of Fukushima, and what I have in mind is "Compassion and Reason". "Reason" means being logical and knowing what is right. "Compassion" is feeling.

For something to lead to action, it is not enough for one to understand the issue simply with the human mind. It must resonate in the heart in order to convince people. It is the empathy part of the process. You can communicate your feelings to the person in front of you. But the person in front of you isn't enough: you have to communicate them to the 120 million people of Japan, and to the world. You can't spend your whole life trying to talk to hundreds of millions of people. So, what should you do?

That's where "Reason" comes in. As I say, how do we get the truth out there and make sure this process continues into the future? We need to convey our message among the people of the current generation, their children, and their grandchildren. We need to connect the generations of our country, especially since Japan is a resource-poor country.

We are going to do this now, without putting it off. Even though the ALPS treated water issue too has caused great concern, we cannot postpone it so we are dealing with it.

We will complete the decommissioning and realize the reconstruction of Fukushima. We won't hide from the difficult problems, and that includes the issue of the final disposal site. We will tackle them via our "local-based approach" whilst adhering to the principle of "Compassion and Reason". The government will keep this at the forefront of its actions. And to the high school students, as you spoke about in today's presentations, whatever may happen in the future I hope you will continue to tackle these issues. And I'm certain that you will.

Once again, I'd like to thank the great efforts of Ms. Nishimoto and everyone else involved. Endeavors such as this are only possible with the support of many people. And for me personally, it has also been a great learning experience. Thanks so much to all of you.



● Special Feature 1

“Communicating and conveying information as a stakeholder”

Communication and getting the message across as a stakeholder



Ryo Ota,
Iwaki Sakuragaoka High School



We saw working vehicles with actual canisters, and the shafts where the canisters are placed, which I thought made for an interesting facility for visitors. Visitors can also take home the gushing groundwater as a souvenir, or taste it at 450 meters underground.



In this way, the facility was designed to appeal to the senses. The impression of the facility was that it was intended to be memorable. I was also told that a marathon was held for local residents through the tunnels, 450 meters underground.



Communication in Sweden

I felt it was especially important to convey information about the disposal of high-level radioactive waste through the Fukushima High School Academy 2023. The Swedish Nuclear Fuel and Waste Management Company (SKB) is responsible for geological disposal research and site selection, and we visited several facilities managed by them.

One of them, the Äspö Hard Rock Laboratory in the municipality of Oskarshamn, which conducts geological disposal research, is equipped with an elevator that can descend 360 meters underground in about 90 seconds. From there you can visit underground passages down to about 450 meters below the surface. If a site accepts visitors, people can visit at any time. Even children of elementary school age and younger can visit the site if they use the correct safety equipment. A full-scale canister for spent nuclear fuel was displayed along the tour route, and visitors were able to touch a buffer material called bentonite that is used around the canister.

I felt that SKB has put a system in place to accommodate anyone at any time, and that it was conducting public relations activities while valuing the participation of local residents. In my opinion, it is essential for Japan to have the same kind of information dissemination that SKB has in Sweden.

Communication and Confidence building



What we have learned from Sweden is that it is important for the national government and relevant organizations to get accurate information out to the public without delay or concealment. We heard about the importance of communication from Hannah, an SKB employee, at the office of the proposed repository near the medium- and low-level radioactive waste disposal site in Forsmark, Östhammar municipality.

We heard that in the past, when SKB started surveys to decide the disposal site without explaining the process to the residents, they were strongly opposed by the residents and their relationship was poor. However, SKB's communication strategy is now well established, and the relationship with the residents is apparently good. In addition to PR brochures, the company also uses SNS as a means of communication to reach a wide range of generations. In addition, it conducts various initiatives, such as dialogue meetings for local residents, facility tours, and classes in schools. In Japan, the Ministry of Economy, Trade and Industry (METI) and Nuclear Waste Management Organization of Japan (NUMO) are the main parties that not only provide information through the media, but also visit places



where people live and work, such as schools, companies, and organizations. We believe it is necessary to conduct activities continuously over time, such as holding information sessions and giving lectures. Hannah, the SKB employee, told us that the most important thing in communication is the creation of an initial trigger. Specifically, she explains to residents that the first visit to their home or workplace will only take 5-10 minutes, then the second visit will take 15 minutes, the third visit will take 30 minutes, and the fourth will take 60 minutes. The company seems dedicated to raising the residents' level of knowledge whilst gradually gaining their trust. I was particularly impressed by the phrase “patiently making the rounds, engaging in dialogue” and the fact that they are sincere when dealing with opponents and take the time that is necessary to get their work done. There is a tendency in Japan to give a lot of information all at once. But it may be necessary to take this opportunity to change that.

In the next talk by several SKB staff members in Sweden, I experienced first-hand that their manner of speaking and their use of slides were quite different from the lectures we'd had in Japan, and our ability to comprehend the information was greatly enhanced. First of all, the initial introduction to the talk was different. I don't know if it was because we were foreigners or not, but there were drinks and sweets, and we were able to listen in a relaxed way while we were drinking and eating. I felt that it was really important to create an atmosphere in a place like this. The SKB staff emphasized that our talks were “dialogues”, but in Japanese

lectures and briefings, there is an atmosphere where not even a sound should be made, and people are often reluctant to ask questions. Maybe the speaker is speaking so perfectly that they portray an aura whereby no questions are asked, but there seems to be a lot of room for improvement in this area. And SKB's slides were very simple, with a headline statement and two pictures. In Japan, it is no secret that people use many words on their slides. In this case, the listener may not be sure where to focus their attention and this may inhibit their understanding. So, in Japan too, instead of using the same slides for all lectures, people should choose what they want to teach, and narrow this down to create slides that are easy to understand and appropriate for the audience. In my opinion, a lot of people would then be more interested in the information and have a better understanding of it. Thus, all the students who were to present became aware of the need for "easy to understand slide presentations" at the debriefing session after the Swedish training program.

Hannah was friendly. She was easy to talk to. She is a public relations professional and has lived in the district for more than 10 years. In fact, she has received many questions from local residents, and I was drawn to Hannah's humanity (professionalism), such as the fact that she has created an environment where people can have casual conversations with her even when they see her at the supermarket around town. It made me realize that the human element is an important aspect of the person conveying the information. So I asked NUMO later how the situation was in Japan, and they said that they were also working on developing human resources for public relations, and that there were NUMO employees like Hannah. In the future, I would like to attend one of their talks. In terms of their interaction with the residents of Suttu village and Kamoenai village, the places that are involved in the literature research, they said that they have visited all the houses in the Kamoenai, but not yet in Suttu. It seems to me that we need to think about why this gap exists.

Fostering understanding among the younger generation

In my opinion, we as the younger generation must also actively think about the issue of high-level radioactive waste. If we suppose that it will take 20 years just to study the site and 10 years to build the repository, we can guess that it will take 30 to 40 years from discussions to the start of the actual waste disposal, so we can't put off this issue any longer. From this point of view, it is an event that our generation will certainly have to face. Perhaps the senior people who have been handling this will be gone by that time, and suddenly our generation will assume this responsibility. So, on the basis of my experience in Sweden, I will also do my best to disseminate information. Previously, I had thought that "what I conveyed" would be "what was understood" by the other person, but I have now learned that the information I convey will only be understood if the person hearing it understands the content correctly. First, I will share information with people around me, like friends and relatives, paying careful attention to make sure that I convey my information correctly and in a way that is appropriate for the other person. Through my club activities, I also come into contact not only with high school students in my prefecture, but also with students and contemporaries in other prefectures. I plan to share information about managing high-level radioactive waste and decommissioning, including the disaster in Fukushima Prefecture and the path to revitalization. I hope that I will be able to pass on knowledge not only to my contemporaries, but also to people from a wide range of generations, and that many people will consider the issue to be one of their own.



Special Feature 2

A new way of thinking and "taking ownership"

Preparing for an uncertain future by confronting the present



Motoha Oi,
Haramachi High School



My thoughts on Japan following the training program

Informing Swedish high school students about the current energy situation in Japan and Sweden was one of the goals of this training program. As I prepared for the program, I began to feel a great sense of crisis over the fact that Japan's energy self-sufficiency rate is extremely low.

Electricity is essential to life. In Japan, more than 70% of thermal power is generated via fossil fuels, which are imported from other countries. However, fossil fuels are a finite resource, and as such resources become scarcer



in the future, exports will undoubtedly decline. What happens then? Fossil fuels will no longer reach resource-poor Japan, and power generation will become impossible. Perhaps this nightmare scenario may actually come true in the near future.

I came to think that nuclear power is needed for Japan's future. Even though the topic of the training program was "Nuclear Waste Disposal", I was also reminded of the merits of nuclear power, which can produce a large amount of electricity with little fuel. Another way to increase self-sufficiency is, of course, to use renewable energy. However, in Japan, which has a narrow land mass, there is a limit to how much electricity can be supplied by renewable energy alone. It requires a suitable natural environment, appropriate weather, and sufficient space. As a result, I am of the opinion that Japan must have an energy mix that includes at least a certain amount of nuclear power.

If we take nuclear power to be necessary, then of course we have to have a "disposal site". In Japan, however, this site has not been decided, and some municipalities have refused to conduct a literature survey, which is the first

step in selecting a site. Is that really all we can do? Whether Japan increases its nuclear power or not, the country will continue to accumulate nuclear waste from its nuclear power generation thus far, and the current waste storage facilities have reached their capacity limit. This limit is expected to be exceeded within a few years, so the selection of a disposal site must move forward quickly and cannot be postponed.

Differences between Japan and Sweden

One of the most memorable responses in my interactions with Swedish high school students was that they said: “I’m interested in nuclear power because I need electricity in my life and I can’t live without it”. In my opinion, this is an idea that few Japanese people have. They tend to think it’s just natural to have electricity. But can this really be said for Japan, where electricity self-sufficiency is low? Through our presentation, we felt that this concept differed greatly in Japan and Sweden.

In Sweden, several municipalities volunteered to become the final disposal site. The decision was eventually narrowed down to two: Forsmark and Östhammars. In Forsmark, which was chosen as the site for the repository, municipal officials said in unison: “take responsibility” and “take pride” in the fact that they are the custodians of Sweden’s nuclear waste and the country’s future. In Östhammars, which was not selected, local supermarkets held “commiserations sales” due to their disappointment at not being selected. I think this shows how much these local governments wanted the repository. Unfortunately, such a thing is unthinkable in

today’s Japan. Sweden has few earthquakes and has had no nuclear accidents, whereas Japan has had atomic bomb attacks and the Fukushima Daiichi Nuclear Power Station Accident. It also suffers many natural disasters, such as earthquakes. Many people are worried about what’s going to happen in the future.

But isn’t it possible for Japan to have a Swedish mentality, no matter how different the situation? Japan is becoming more electrified and automated, and electricity is essential in this regard. The use of nuclear power is also essential to continue to produce electricity as we have up to now. Therefore, a permanent disposal site is absolutely necessary. We must have a sense of “responsibility” and “pride” in hosting a nuclear waste repository in one’s own area and in securing Japan’s energy future.



Nuclear energy in Japan and taking ownership of the issues

I have mentioned Japan’s need for nuclear power, but there is more to it than that. First of all, because everyone has different values, it’s normal for people to agree or disagree with nuclear power. I’m not a diehard advocate of nuclear power, so I don’t think about how to convert the naysayers into being pro-nuclear power. So what exactly do we need?

I think people should consider the situation along the lines of “There is no guarantee that there will be electricity in the future, so how do I take ownership of this issue?” Japan’s development has been founded on the basis of electricity. If Japanese people want to continue living as they do now, and want to lead more comfortable lives in the future, they will need

more electricity. However, Japan will be at a disadvantage going forward. Therefore, it is necessary for each citizen to look at this situation as “his or her own” and feel the need to act as much as possible. Since electricity is used by everyone, it is safe to say that all citizens are involved in this. In other words, people seeing the future of electricity as their own issue should be a foregone conclusion. But that’s not the case. It can be said that people who don’t have an opinion and just take electricity for granted are included in the problem.

I’d also like to ask you to consider how you feel about people who don’t know much about nuclear power and who are expressing opinions based on speculation: whether their thinking is a firm opinion founded on correct information, or a product of their imagination created by their own impressions. The more people know about the current situation, the less likely they are simply to think “nuclear power generation is dangerous because of radiation”. I hope that people actually come to terms with the issues before expressing their opinions for or against.

What I can do now and in the future

What I can do now to help other people “take ownership” of the problems that Japan faces is to hold on to my opinions, armed with the truth of what I have actually seen and heard on this training program, and to spread the information to as many people as I can.

Both in Japan and in Sweden, the information that was given by the actual employees was convincing: it really got through to me. I think that was because I listened to them based on the fact that they actually worked in the industry. In other words, the information that our eyes, mouths, and hearts transmit through what we experience is surely of considerable value. However, no matter how much information we transmit, it is not easy to reach a large number of people. There must be a lot of influencers out there if that’s the case. It is important for the listener to be able to “personalize” opinions in order for them to be truly heard. We are at a time in our lives between high school student and adult, so I think we can have opinions that

are childish and realistic at the same time. Those of us who are able to express opinions along this exquisitely fine line have the potential to become a new source of encouragement for others to take ownership.

In Japan, the decision on the disposal site is at a standstill, and this issue will undoubtedly fall to our generation as we grow up. The most important thing is to have that sense of ownership and continue to engage in issues affecting our uncertain future. To do this, we must stay alert and engaged and keep learning. It is necessary to listen not only to your own ideas, but also to a variety of opinions, including those for and against, from your friends and the people around you. I want to form my own opinions and not stop thinking about the present situation and the future, even though I am neutral in this.

My dreams for the future are not clear yet. I have a strong desire to work closely with people in my community and help them live better lives. I would like to become an adult who can make the most of the experiences and opinions that I have gained through this training program for the future of others and for my own.



Facing Reality: Seeing for oneself

“Learning from Sweden’s advancements” and “Status report on Aomori and Fukushima Prefectures”

We wanted to see for ourselves. In the summer of 2023, 12 high school students from Fukushima, Hokkaido, Aomori, Ibaraki and Fukui prefectures, where nuclear power facilities are located, visited sites related to high-level radioactive waste in the Nordic country of Sweden, and in Rokkasho village in Aomori Prefecture. Many people began to think about nuclear power plants again after the Fukushima Daiichi Nuclear Power Station Accident, and the disposal of nuclear waste is a global issue. How do you feel about this from your own perspective? During the summer when we were 16 or 17 years old, we explored JNFL's nuclear fuel cycle facilities in Aomori, and a nuclear waste repository in Sweden, where we witnessed the country's efforts in the area of geological disposal and in building a final disposal site. It is our desire to share our knowledge with people across generations who have not had the opportunity to visit such places. With this in mind, we present an overview of laboratories in Sweden and Japan. We hope it will encourage you to think about this issue.

“Learning from Sweden’s advancements”

SKB's Final Repository



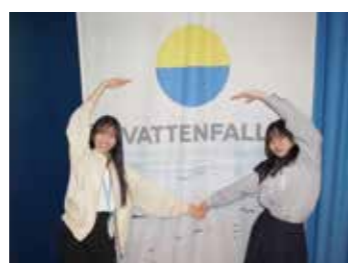
The company responsible for building and operating the repository is the Swedish Nuclear Fuel and Waste Management Company (SKB). Hannah, their spokeswoman, gave us an explanation. Forsmark nuclear power plant is nearby.

Vattenfall High School

A boarding high school run by an energy company, Vattenfall. Many of the students' families work for nuclear companies. The visiting Japanese high school students divided into three groups and presented in English on the current situation in, and differences between, Japan and Sweden regarding nuclear waste disposal. Presentations were also made by Vattenfall students. We deepened our exchange by introducing them to elements of Japanese culture: Origami, Calligraphy, Kendama (cup-and-ball) and Koma (spinning top). We also visited the dormitories where the students live. We played ping-pong there and strengthened bonds between students across borders.



Vattenfall



Europe's largest power company. The company briefed us on its renewable energy initiatives, and we gave a presentation in English.



Äspö Hard Rock Laboratory

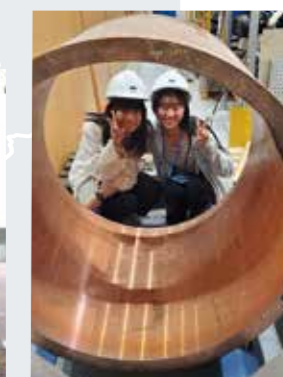


There is a tunnel deep underground, about 450 meters at its deepest point. The steepest point has a 40 degree inclination. Bacteria and fungi from tens of thousands of years ago have been found in the rock formations and they are used in scientific research. A marathon is held there every year and the facility has a close connection with the city nearby. You can take home underground water as a souvenir at the exit. You can taste it and it tastes like...



Canister Laboratory

Here, researchers are studying canisters. These are covered containers that hold spent nuclear fuel for its final disposal. The canisters are made of corrosion-resistant copper. Researchers use X-rays and ultrasound to check for problems in the welding of the lids. A real canister is on display in front of the research center, and you can take photographs standing on it.



Hannah-san

Hannah is an SKB spokesperson. She told us that in order to select the site for the final repository, SKB spent a long time explaining to local residents the lessons it had learned from past mistakes. She highlighted “patience” and “transparency” as the most important points, and said “you need to have good shoes” to build trust through repeated visits. She also stressed the importance of communicating in a language that is easy to understand. Hannah’s easy-to-understand explanations completely captivated us.



Ambassador to Sweden



The Japanese Ambassador to Sweden, Masaki Noka, gave us an overview of Sweden’s energy situation and culture. He also talked about his experience in the Ministry of Foreign Affairs and the work done by diplomats and others, including the relationship between nuclear energy and diplomacy in terms of fuel and technology. The ambassador has worked to lift import restrictions on Japanese food products. He also touched on Swedish national identity, which is similar to that of the Japanese. We sat in a circle with him and he answered questions casually. He also introduced us to “fika”, a Swedish custom of conversation over sweets.

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Walking around Sweden

Episode I

Summer travels

In Sweden, the crayfish fishing season begins in August, making it a summer tradition, as with eels in Japan. Supermarkets have special sections and party supplies. There are often pictures of crayfish in the restaurants along the street. Look out for them!



Episode II

Snack time

“Fika” is a Swedish term for a break from work or housework to drink coffee or tea while eating something sweet. The word “fika” is like a backwards version of the Japanese word for “coffee”. It might be a coincidence, but it’s a funny thing to us. This custom is not just a coffee break, but is said to have an important meaning. It is said to improve concentration at work, along with communication with superiors and colleagues.



Episode III

Tips on choosing souvenirs

It’s convenient to buy souvenirs in the tourist area of Gamla Stan. Horse figurines are very popular, but they can be expensive. We recommend cute keychains, mugs and handbags. Note that “PRC” stands for “People’s Republic of China”, so watch out if you want something made in Sweden!



Facing Reality: Seeing for oneself

“Status report on Aomori and Fukushima Prefectures”



JNFL: Japan Nuclear Fuel Ltd.

The facilities include a low-level radioactive waste burial center, a high-level radioactive waste storage and management center, and a spent fuel receipt and storage facility. Test operations for a reprocessing facility and construction of a MOX fuel fabrication facility are underway to recycle spent fuel used in nuclear power stations. The facility is a management center that stores vitrified materials obtained from the reprocessing of high-level radioactive waste and you can actually stand on vitrified materials. The reprocessing process is explained in an exhibit at the PR Center.



TEPCO's Fukushima Daiichi Nuclear Power Station

A large amount of contaminated water is generated here due to the pouring of water onto nuclear fuel (debris) that melted in the nuclear accident, groundwater flowing into the buildings, and rainwater. Although the water is purified by a multi-nuclide removal system (ALPS), tritium, which is a radioactive substance, cannot be removed and this “treated water” is stored in tanks at the site. TEPCO estimates that the tanks will become full between February and June 2024. Therefore, the government decided to dilute the treated water with seawater and began discharging it into the sea on August 24, 2023. Flatfish and abalone are being raised at the site in the treated water to study the effects of radioactive materials. In the future, research will be conducted on how to remove the debris.



Welcome to a Storybook World



[Spectacular scenery]

Gamla Stan is a tourist area. No matter where you take pictures, you’ll always get a great shot. The photo in the big square is sure to be a memorable one.



[Location from Kiki's Delivery Service]

This is the city where the Ghibli anime is set. It is on top of a hill, facing the sea. As we were tourists, we set off to find the Märten Trotzigs Gränd, which is said to be the narrowest street.



[Nobel Museum]

This is located on a large square in the center of Gamla Stan, where the Stockholm massacre took place. The building was originally the stock exchange, which was built in 1776. The museum sells goods that you can only buy there, like chocolates with a portrait of Nobel.



[Spectacular library]

A cylindrical-shaped room, where you’re surrounded on all sides by books, is the centerpiece of the Stockholm Library. Some tourists come from Japan just to visit this place. Entry is free.

[Photo with a statue]

There are a lot of bronze statues all over the city. Why not create some memories by taking a photograph with them? You can feel Sweden’s history up close.



Scandinavian Culture and Climate in Data

■Climate

August is about 15 degrees, which is about half that of Fukushima Prefecture, where it reaches nearly 40 degrees. Visitors should be aware of this difference in temperature. It can get cold when it rains, so be sure to bring a jacket.



■Distance and time difference

Distance from Japan: 8000 kilometers. It’s a long 16 hour trip including layovers, so you need to be creative about how you spend your time on the plane. The time difference is minus 7 hours including daylight saving time.



■Food

Sweden’s rye bread is famous. Breakfast is served in the same buffet style as in Japan, with bacon, prosciutto ham and scrambled eggs. Restaurants are expensive. In terms of supermarkets, “Coop” is a good choice for ordinary people, as in Japan. It’s convenient for buying sweets and drinking water, and you can get a lot of souvenirs there.



■Prices and currency

Prices are much higher than in Japan. Sweden is said to be the country where electronic payments are the most popular, and its cashless society is well advanced. The currency is the Swedish krona (SEK). As of August 2023, 1 SEK was 13.42 yen. On the banknotes there is a picture of “Pippi Långstrump”, or “Pippi Longstocking” (known in Japan as “Naga-kutsushita no Pippi”).



Unavoidable challenges of high-level radioactive waste

Regardless of the pros and cons of nuclear power, the final disposal of high-level radioactive waste (nuclear waste) is an unavoidable issue!

Due to the operation of nuclear power stations thus far, Japan has already accumulated spent nuclear fuel. However, a decision has not yet been made on the main disposal site.

■ Sweden: a leading country Operation expected in the late 2030s

Japan plans to reprocess the spent nuclear fuel to extract usable uranium and plutonium, then mix the remaining waste liquid into glass (solidification) and dispose of it as high-level radioactive waste in stainless steel containers, at a depth of more than 300 meters underground. The Nuclear Waste Management Organization of Japan (NUMO) will take the lead in implementing the project.

Sweden is one country where the final repository site has been selected. Forsmark is located in the municipality of Östhammars, about 120 kilometers north of the capital, Stockholm. Spent fuel from Swedish nuclear power plants will be disposed of in rock about 500 meters below Forsmark. Unlike Japan, Sweden does not reprocess spent fuel, and buries it in copper containers.

In 2022, the Swedish government approved a proposal for the Swedish Nuclear Fuel and Waste Management Company (SKB), a company

established jointly by four utilities, to implement the final disposal plan. Actual disposal is expected to begin in the late 2030s.

■ Japan's uncertain future No time to waste

In Japan, literature surveys have been ongoing in Suttu and Kamoenai villages in Hokkaido since 2020. This is the first step in selecting a disposal site, but the future is uncertain. In September 2023, the city of Tsushima in Nagasaki Prefecture, which had been considering undertaking a literature survey, announced that it would not move forward with this due to “insufficient consensus among citizens.”

As of 2023, Japan had about 190,000 tons of spent nuclear fuel, according to the Ministry of Economy, Trade and Industry. The fuel is managed by each nuclear power plant, and the total capacity of all facilities is about 240,000 tons. This means that the storage volume has reached about 80%. The issue of final disposal is approaching the point where it cannot be postponed, but this is not being discussed nationally.

High-level radioactive waste is created because we use electricity. Anyone who has used electricity has a responsibility for this disposal.



What should we learn from Sweden? “Dialogue-oriented attitude and youth education”

Sweden has been working towards final disposal for about 40 years. Japan has a lot to learn!

■ Local support 86% Focus on dialogue

According to an annual survey conducted by the Swedish Nuclear Fuel and Waste Management Company (SKB), which is responsible for the implementation of disposal in Sweden, 86% of the people living in the area where a repository is planned to be built in 2023 support the plan. Local residents and employees cited “dialogue with residents”, “transparency through disclosure of information” and “education of young people” as ways to gain trust in disposal.

SKB officials were proud of the 86% figure and said that it “shows that we have gained the trust of the residents”, but added that “the process takes time”. They explained that “Sweden has never had a nuclear accident, and we have confidence in nuclear power, but when it comes to waste, it's a different story. The waste will not simply disappear”. This gave us an insight into their years of hard work.

■ Past failures What you need is “a good pair of shoes”

The emphasis on dialogue comes from bitter experiences in the past. At the beginning of the process to select the disposal site, two local governments started surveys without providing explanations to residents. As a result, the referendum was rejected and SKB withdrew. This failure led to an emphasis on dialogue with residents.

Since then, SKB's employees have worked to explain things to people who cannot attend information sessions, and they have gone to people's homes and workplaces to hear opinions from people who are not satisfied. SKB's spokesperson said, “You need a good pair of shoes to gain trust”. The mayor of Östhammars, where Forsmark is located, said, “People are afraid of things they don't understand. We should explain clearly how it is done and who is responsible for it, and they will understand it better”.

SKB's emphasis on dialogue and public relations was evident in its manner of discussion with the Japanese high school students. The three employees who spoke with the students at each facility they visited all had more than 10 years of experience in public relations. The materials were brief and used as a way to communicate with those listening. When giving explanations, they said they made a conscious effort not to talk about difficult topics at first and to let people gain knowledge gradually.



The public relations style at nuclear facilities in Japan that the high school students visited during the training program was in stark contrast to that in Sweden. The materials were filled with difficult words, and the high school students seemed to feel that the lecture-style explanations were very one-sided.

■ “Education from an early age is important”

The Swedish high school students with whom we exchanged views expressed positive opinions about nuclear power generation, indicating a strong interest in energy. We heard opinions such as “Young people in Sweden trust nuclear power because they learn about it”, “We cannot live without energy”, and “Fossil fuels have a negative impact on the environment”.

“Education from an early age is important. There are no shortcuts”, said the mayor of Oskarshamn, where the repository research facility is located. Children in the city will, without doubt, be educated about final disposal, including visits to the research facilities. “Young people will also be responsible for final disposal in the future. So we have to pass on the information”, said an SKB employee.

What about Japan? Is the energy education good? In fact, many of us said, “I learned about Japan's energy situation for the first time through this training program”.

The final disposal of nuclear waste, as well as the issue of how to provide energy for Japan, must be faced by every citizen. To advance the discussion, it is essential to acquire knowledge. To this end, creating equal opportunities for everyone to be educated about energy is the best and quickest way for Japan to solve these problems.

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 TEPCO's 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

Disposal of high-level radioactive waste is a looming challenge

M E S S A G E



Yumiko Nishimoto,
Managing Director,
NPO Happy Road Net

More than 12 years have passed since the Great East Japan Earthquake and TEPCO's Fukushima Daiichi Nuclear Power Station Accident. While attention has been focused on decommissioning work and the release of treated water, the disposal of spent nuclear fuel and high-level radioactive waste, which continue to accumulate, is a pressing issue. In August, 13 Japanese high school students visited various nuclear facilities in Japan and Sweden to think about the disposal of high-level radioactive waste from their own perspective and to consider their own future. The students came from the Hamadori area of Fukushima Prefecture, a region that suffered in the disaster; Suttsu town in Hokkaido, where a literature survey on geological disposal is being conducted; and Rokkasho village in Aomori Prefecture, together with Fukui and Ibaraki Prefectures, where nuclear power-related facilities are located.

Some of the students came to the training knowing nothing about final disposal. However, as they toured the facilities and discussed what they had experienced among themselves, they realized that they had to deal with the issues of energy and disposal. I will never forget how they confidently expressed their opinions from the training program at the debriefing in September.

I think it is the responsibility of adults to give children a chance to learn. The children of today will be responsible for leading the society of tomorrow, and the disposal of high-level radioactive waste is a task that will fall to them. The high school students who participated in this training program were able to learn about this issue, but what about other students? I feel apprehension that they may suddenly be confronted by this in the future without having the opportunity to learn about the challenges. Shouldn't adults be responsible for providing children with education, and with the opportunity to learn about high-level radioactive waste and Japan's energy challenges?

Of course, we must also take action in order to address these challenges. We must work together to move forward in a positive way. However, it cannot be said that the discussion about final disposal in Japan is moving forward. To put it in stronger terms, there is even an element of turning a blind eye. I want to be an adult that children will be proud of in the future, saying "The adults worked hard to solve the problem back then, and they solved it". Children want adults to take their responsibilities seriously.

We will continue to conduct our human resource development programs, because there are so many things that students can't learn in school. And students will continue to make efforts to gain the knowledge and experience they will need in the future.

Planning and Publishing



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High school student visit to Sweden in summer 2024 for “Future of Nuclear Waste Disposal” training program



FUKUSHIMA HIGH SCHOOL ACADEMY 2024

Happy Road Net, a nonprofit organization, is conducting an educational project in which Japanese high school students learn about the disposal of high-level radioactive waste (nuclear waste) from nuclear power stations. The project includes an overseas training program and, in 2024, we plan to visit Sweden once again. The students will hear from local officials, residents, and other high school students about the process of selecting the final disposal site and how to foster understanding with local residents. We look forward to sharing what we learn with you!



At the site where the Forsmark final disposal facility is to be built

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High school students investigate the issue of high-level
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