

Nuclear Disaster

ShiruManabu

Learn & Understand

FY 2019 Edition

6th Aug - 15th Oct 2019

Students of Fukushima high schools give us their insights from their experiences in the UK and Rokkasho village



[Special feature reports]

What have we learnt?

Learnings from developmentally-advanced regions for the future of regional development
Sellafield: thoughts from British high school students

◎ **Field reports**

The United Kingdom, Aomori & Fukushima

■ **Cover story**

Positive branding of decommissioning as a regional advantage

Regional consensus - the key to a long-term decommissioning process

Leadership required now, for the development of human resources to drive regional prosperity and for the embracing of a long-term decommissioning process as a societal advantage.



List of Participants

- | | |
|--|---|
| Ms. Mana Saito (Shinchi high school) | Mr. Daiki Fukuyama (Odaka industrial technology and commerce high school) |
| Mr. Kou Furuhashi (Shinchi high school) | Ms. Yui Ito (Iwaki high school) |
| Ms. Erika Sato (Soma high school) | Ms. Fuyu Suzuki (Iwaki high school) |
| Ms. Yuka Tadano (Soma high school) | Mr. Hajime Nishimura (Iwaki high school) |
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| Ms. Yoshino Kageyama (Soma high school) | Ms. Maho Kudo (Iwaki Sakuragaoka high school) |
| Ms. Sena Muroi (Soma high school) | Ms. Natsuho Maekawa (Iwaki Sakuragaoka high school) |
| Mr. Souta Hanai (Haramachi high school) | Ms. Kako Sasaki (Iwaki Sakuragaoka high school) |
| Ms. Saeki Hoshi (Soma agricultural high school) | Mr. Takanobu Horii (Yumoto high school) |
| Mr. Hiroto Enei (Odaka industrial technology and commerce high school) | Mr. Toshiyasu Shioya (Asaka high school) |

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UK mission

6th
Aug,
Tue

- Departure ceremony, Naraha roadside station



- Departure, Narita int. airport
- Flight to Abu Dhabi, EY871, 11h 55m



7th
Aug,
Wed

- Transit at Abu Dhabi int. airport
- Flight to Manchester int. airport, EY15, 7h 40m
- Arrival at Manchester

- Free group activity in Windermere, Lake District



- Meeting



8th
Aug,
Thu

- Visit to Sellafield Ltd (Visitor house, Facilities)
- Site tour in two groups, morning & afternoon
- THORP (Thermal Oxide Reprocessing Plant)

- Calder Hall nuclear reactor
- Remote handling training centre
- 3D printing demonstration, Innovation centre



- Meeting



9th
Aug,
Fri

- Visit to WLA (West Lakes Academy)

- Welcome ceremony

- Presentations by Fukushima students (Groups 1 and 2)
- WLA presentation
- Visit to NCiN (National College for Nuclear)

- Networking events



10th
Aug,
Sat

- Training & review at Beacon Museum

- Free group activity in Whitehaven

- Preparation work for London visit

- Meeting



11th
Aug,
Sun

- Visit to Wembley stadium in London



- Arrival at UCL (University College London) dormitory
- Free group activity, shopping mall



- Meeting

UK mission

12th
Aug,
Mon

- Visit to Cambridge University, tour of facilities
- Visit to the Dojima brewery, lecture by Ms. Hashimoto, vice-president



- Free group activity, shopping mall
- Meeting



13th
Aug,
Tue

- Free time in London
- Visit to the Embassy of Japan, lecture by Ambassador Tsuruoka
- Visit to UCL, tour of facilities & lecture



- Presentation (Groups 3 and 4) & Soran-bushi performance in St. James's Church, Piccadilly
- Meeting



14th
Aug,
Wed

- Free group activity in London



- Meeting

15th
Aug,
Thu

- Departure, Heathrow int. airport
- Flight to Abu Dhabi int. airport, EY12, 7h 20m
- Transit at Abu Dhabi int. airport,
- Flight to Narita int. airport, EY 878, 10h



16th
Aug,
Fri

- Arrival at Narita int. airport
- Closing ceremony
- Arrival at Iwaki railway station & Naraha roadside station

Japan mission (Rokkasho village)

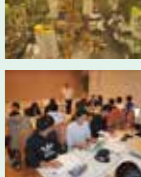
22nd
Sept,
Sun

- Arrival at Rokkasho visitor center via Sendai station
- Uranium enrichment facility
- Low-level waste depository
- Reprocessing control room
- Spent fuel storage
- High-level radioactive material facility
- Mega solar generation plant
- Lecture by Mr. Masuda, president of Japan Nuclear Fuel Ltd.
- Wrap up, guidance



23rd
Sept,
Mon

- Local village office
- Aomori Gennen Technology Center
- Institute for Environmental Sciences
- National Institutes for Quantum and Radiological Science and Technology, nuclear fusion research facility
- Aomori prefecture Quantum Science Center
- Wrap up
- Sendai station via the Rokka Pokka spa



Japan mission

8th
Oct,
Tue

- British WLA high school students' arrival at J-Village



9th
Oct,
Wed

- (WLA) Rice harvesting experience & Nara rice field art
- (WLA) Networking & club activities at Iwaki Sakuragaoka high school



10th
Oct,
Thu

- (WLA) TEPCO Decommissioning Archive Center & Fukushima Daiichi Nuclear Power Station
- (WLA) Hand-copying of a sutra at Dairakuin temple



11th
Oct,
Fri

- (WLA) Interim Storage Facility in Futaba-town
- (WLA) Visit to Futaba-town, "difficult to return" area
- Lunch at Josui restaurant
- (WLA) Taiko-drum performance at the Hirono town hall
- Staff meeting



12th
Oct,
Sat

- (Fukushima students) Orientation at Hatago Inn
- (Fukushima students) Fukushima Daini Nuclear Power Station
- (WLA) Fukushima Daiichi Nuclear Power Station
- Football match, Fukushima students vs WLA at J-Village
- Welcome & networking event, WLA dance performance video
- Wrap up



13th
Oct,
Sun

- Joint meeting
- Preparation work & rehearsal for the presentation, Soran-bushi performance practice



14th
Oct,
Mon

- Final rehearsal
- Conference opening, presentations & discussion by students
- (Fukushima students) closing ceremony
- (WLA) Visit to Asakusa & Odaiba



15th
Oct,
Tue

- (WLA) Departure from Narita int. airport

Panel discussion 1



Special feature report 1

What have we learnt?

• • •

In our visit to the UK, Rokkasho village in Aomori and our home town of Hamadori in Fukushima, what did we see and feel about the experience?

Can we apply the knowledge we acquired to shape the future of our region? Participants from "Hamadori, Fukushima HIGH SCHOOL ACADEMY" talk about their insights.

■ Hajime Nishimura (Iwaki high school)



I feel that our perceptions can differ from the actual facts on the ground. For instance, the reality of ra-

diation issues was not what we had imagined before. I realized that I had an exaggerated image of the issues that was inconsistent with the reality.

■ Toshiyasu Shioya (Asaka high school)

Actual facts brought clarity to what were previously vague ideas and this made a big impact on me. You hear a lot of talk like "Decommis-



sioning? Don't worry about it. Just leave things as they are" or "Just use non-nuclear power". Previously, I only had ambiguous ideas on

these matters, but through my experience in this program, I gained a broader view which made me realize that decommissioning work is much more involved than I thought, and that there are complicated issues when we take into account Japan's energy security.

■ Natsuho Maekawa (Iwaki Sakuragaoka high school)



I was shocked at the amount of serious misunderstandings on my part. I learnt that I should understand things more precisely before expressing my opinion.

We, as residents here, have to have a deep understanding of developments in our region since the nuclear accident so that we can properly relay this to people in other areas, including those overseas. By doing so, we can preserve past memories and prevent harmful rumors, and may be able to come up with new ideas.

■ Yoshino Kageyama (Soma high school)

What should we do to enable people to understand?



Accurate information is vital. For example, the provision of correct information to people stuck on the idea that Fukushima is totally contaminated is necessary to dispel their pre-conceived notions.

Furthermore, we need to keep two things in mind. The first one is persuasion. A persuasive explanation with fact-based data given by a suitable person can make a difference. The second one is information dissemination. The matter of whether we can embed a reasonable, common sense viewpoint deep within our society across a broad base is an important one.

■ Erika Sato (Soma high school)



Relating to that point, a comment by Mr. Masuda, the former Superintendent of Fukushima Daini nucle-

ar power station and former head of decommissioning & contaminated water management, was impressive. He said "information should not be given unilaterally, but should be absorbed naturally."

I learnt that information should be delivered carefully to the right person in the right manner, rather than it being a one-sided affair performed to the satisfaction of only one party.

■ Kou Furuhashi (Shinchi high school)

I learnt presentation skills, in how to express emotional feelings in a speech. I was so moved by speeches given by the head of WLA and Nishimoto-san. I would like to make such a speech which resonates in people's hearts in the future.



■ Fuyu Suzuki (Iwaki high school)

I learnt something about communication too. Visibility of effort in trying to communicate is important. Actually, when I went to a café in the UK, I ended up in a conversation with a gentleman there. Although I was not confident in my

English ability, I managed to have an enjoyable moment with him by making sincere efforts to communicate.



■ Toshiyasu Shioya

Information dissemination and understanding are connected to learning and teaching. When we learn something, it is important to have actual experience. When we visited the Sellafield site, and renewable and nuclear reprocessing facilities in Rokkasho village, hearing the stories of people who actually took part in the response to the accident at Fukushima Daiichi nuclear power station made a big impact on me that I could not have gained via books or the internet.



■ Natsuho Maekawa

The advice from Mr. Tsuruoka, Ambassador to the UK, was profound. He told us that “There is so much information circulating throughout the world. We have to order this carefully ourselves, and then take action or disseminate information without being passive or adopting a defensive attitude”.

He also mentioned that the younger generation is inclined to be passive. Certainly, we have such a tendency. On the other hand, there are some youngsters, like those of us who were there that day, who actively seek to gain an understanding on areas of uncertainty. I hope that more opportunities like this project are available in the future.

—Was there anything in particular that made a lasting impression on you during your experience?

■ Fuyu Suzuki

Mr. Masuda told us that, when faced with a life-threatening situation at the Fukushima Daini nuclear power station, he tried his best to ask his staff for assistance to get the job done, rather than just order them. Everybody must be extremely worried in such a situation but needs to respond. I realized how difficult, but how important, leadership and teamwork are in such a crucial situation.

■ Natsuho Maekawa

I agree. I also learnt that leaders are required to consider solutions from the point of view of their colleagues so that they can follow their leader easily and naturally. When we visited the Fukushima Daini nuclear power station, workers there confirmed to us that Mr. Masuda’s caring attitude set them at ease and convinced them to follow his ideas.



■ Toshiyasu Shioya

Talking about people’s unwillingness to follow a leader, I think that having a clear vision of the future leads to a better process of implementation for many people. I felt that on three occasions during my visit to the UK and Rokkasho village.

Sellafield has a decommissioning plan which will take 100 years to complete. Rokkasho village also has a plan for the storage and transportation of radioactive waste, which provides a clear path to the future. And Mr. Masuda created such a path when he was in charge of Fukushima Daini nuclear power station amid the disaster. I am not confident that my understanding is fully correct, but I believe that by pursuing a goal or target with a practical, concrete plan, we can build the confidence of people around us.

■ Kou Furuhashi

I was impressed by one of the workers at Sellafield. He described his job as being “my own son”. This expression would never come from someone who was working unwillingly. He is betting his life on his job. I would like to be able to call my job “my own son” one day.

■ Toshiyasu Shioya

Sellafield and its surrounding area have a long history. People working in decommissioning there are proud of their long-term contribution to the work. The cutting edge technology developed at the site gives them confidence.

Here in Fukushima, we can adopt a similar attitude toward the decommissioning work. There is a mixture of people with a positive image of decommissioning and people with a negative, almost guilty image. By taking pride in one’s job, the work can proceed more smoothly.

—A negative matter can sometimes turn out to be a source of new discovery. The act of observing a matter from various aspects can be applicable to many cases.

■ Yoshino Kageyama

I gained a fresh perspective through my visits to laboratories and research institutes in Rokkasho village. I was surprised that there were various areas of research and development to utilize nuclear technologies in other industries, such as the medical industry. I was struck by the fact that, despite the negative image of nuclear technologies, they can also be used for positive purposes to forge a brighter future. I think we can apply this attitude in Fukushima too. Precisely because of the nuclear accident, we now have the opportunity to broaden our horizons and areas of activity.



■ Fuyu Suzuki

I would like to comment on the need to broaden one’s horizon. Ambassador Tsuruoka emphasized to us the word “Why?”. My interpretation of this was that it is important for us to look at the facts, dig into doubts and seek to understanding the root of an issue.



■ Yoshino Kageyama

I felt that not only accepting facts, but also considering them carefully myself is necessary. When I heard about the tour plan to visit Rokkasho village, I did not know anything about it. So I researched it on the internet and found that there were many malicious comments. But, I thought that if I believed these comments, I could have been trapped in a negative posture.

I thought “Am I doing the same thing with people who have a bad image of Fukushima? To avoid this, I should see what is happening in Rokkasho with my own eyes”. This was the main purpose of my visit to the Rokkasho project. I found that it was a very clean place that is working toward a brighter future.

■ Toshiyasu Shioya

There are some people who stick to their opinion without observing facts. How to deal with these people in the same community is a difficult issue. It may sound negative, but by patiently interacting with and cooperating with other supportive people around them, we may be able to change the situation.

■ Kou Furuhashi

In this project, we had many hard discussions on the importance of clear opinion expression as part of our group work, which I think gave me important knowledge for when I become an adult.

■ Natsuho Maekawa



It is not easy to express one's opinion clearly, but I will try to improve my ability to do this as I also learnt just how important it is through my experience this time. By exchanging information with others, we can convince them of things, make them feel at ease, or even effect emotional changes.



I am also being stimulated by information from friends and colleagues. I will continue expressing my opinion clearly and listening to those of others.

■ Toshiyasu Shioya

I think that dissemination of the knowledge that we have acquired is important, but further action to use that knowledge to influence those around us is also required.

At the Dojima Sake Brewery in the UK, a bottle of sake was sold for 250,000 yen. Despite this high price for Japanese sake, it was regarded as good value due to its high quality. In Japan, for instance, people tend to be

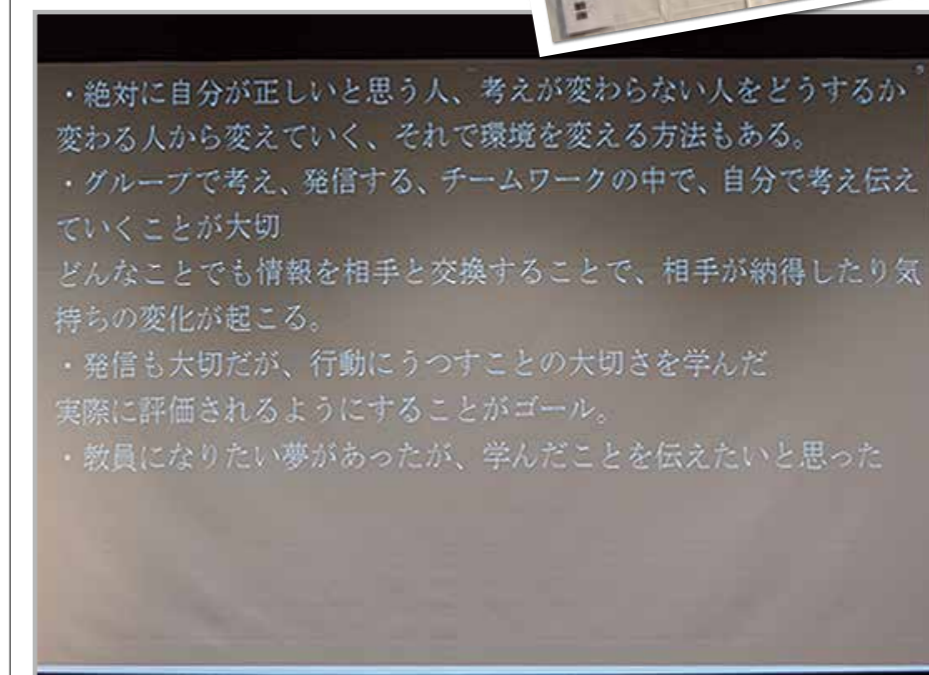


evaluated by their seniority or due to certain constraints. As a result, some people are not valued to a level that corresponds with their actual performance. I would like to use the knowledge I have gained to take concrete steps to create an environment in which people receive a fair and just evaluation.

■ Fuyu Suzuki

I have a dream to be a teacher in Fukushima. I hope that the great stimulation I have experienced through this program translates into an ability to teach students in the future. I want students to take more pride in their home town and be more fond of it. As a teach-

er, I will tell them of the invaluable experience I gained through this project.



Panel discussion 2



Special feature report 2

Learnings from developmentally-advanced regions for the future of regional development

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As over eight years have passed since the March 11 disaster, visible scars and damage in Hamadori have gradually decreased. However, many problems, such as an aging population, regeneration of industry, and shortages of medical and welfare services, have been piling up. It is therefore somewhat difficult for residents to map out their future.

Using their experiences in the UK and Rokkasho village, how can the students dig into the reality of issues concerning Fukushima? What kind of future do they envisage for regional development?

■ Takanobu Horii

(Yumoto high school)



I was interested in the education system in the UK. For example, Sellafield collaborates with the local nuclear

college and has an educational program which enables its staff to learn decommissioning skills. This program is linked to opportunities for academic doctorates and workplace promotions. It would be great if we could have a similar educational system in Fukushima.

■ Souta Hanai

(Haramachi high school)



I heard a story of a Sellafield worker who experienced major plant trouble directly from the person themselves.

They painted a much more vivid picture than if I were to hear the story second hand. People involved in revitalization activities and decommissioning work in Fukushima could also tell of their experiences and skills from an educational standpoint.

■ Yuka Tadano

(Soma high school)



A professor at the nuclear college told us that “It is better to educate and develop staff internally, rather than hire capable people from outside at a high cost. They will be more loyal to their workplace and have a deeper connection to the region.”

■ Yui Ito

(Iwaki high school)

A college specializing in nuclear power and radiation is needed in Fukushima. In Japan, the number of people aiming to work in the nuclear industry has been decreasing since 2011. The number of students enrolled in nuclear-related courses in colleges and universities is



also decreasing. There are only three universities which have courses with the word “nuclear” in Japan. Although it seems like that might be all that is needed, this is unthinkable if we consider the situation in Fukushima. Such human resources are vital for decommissioning work, and Fukushima has many opportunities for them to learn and develop their skills.

■ Yuka Minato

(Iwaki high school)



I agree with the idea of having a college here in Fukushima and recommend having it in Futaba-gun, as there are many opportunities and facilities to learn about the nuclear accident and the ongoing decommissioning process, with the nuclear power stations of Fukushima Daiichi and Fukushima Daini.

■ Maho Kudo

(Iwaki Sakuragaoka high school)



There are a lot of people in Futaba-gun tackling problems caused by the nuclear

accident. Making contact with these people would be very meaningful. As has been mentioned, we might be able to learn a lot from those who are actually engaged in solving problems.

■ Sena Muroi

(Soma high school)



We have been talking about academic level education and research opportunities so far. In addition to this, a facility where children in primary schools can have access to educational materials and research would be useful. The reason for my participation in this project was the lack of opportunities to learn about the nuclear field, even though I was living in Hamadori.

■ Toshiyasu Shioya

(Asaka high school)

Keeping in mind what we have discussed today, we should take action so that we can present the features of our region as strengths. Although the idea of decommissioning may sound negative, we should show people the bright future attainable through it, and turn this into an attractive feature of our town.

■ Souta Hanai

The population of Hamadori has decreased since the disaster. One of the ideas to

bring people back is to expand the amount of stable job opportunities.

The decommissioning work will provide stable jobs for at least 40 years. If we can create more job opportunities this will generate more tax income, which will enable us to provide better social welfare services.



—It will take Sellafield 100 years to complete its decommissioning project. This might be seen as a burden on the local community, but some people told us that it is an opportunity to provide stable jobs for 100 years, with the possibility of industrial developments originating from the work.

■ Maho Kudo

Decommissioning does not have a good image, but there are many people working with pride at the Sellafield site. Seeing such people at work may make the local people feel more at ease.

■ Toshiyasu Shioya

A prerequisite for a town to be considered good is that it has good job opportunities. The local area around the Sellafield site has various employment opportunities in addition to jobs in the nuclear industry.



■ Yuka Minato

50% of nuclear college students are women while only 10% of the workforce at Fukushima Daiichi is female. I feel something should be done about this situation. Decommissioning work has an image of being a man's job but the details of the work are not widely understood. Those involved should make an effort to show how interesting the work is and aim to attract more women to the industry.

■ Yui Ito

I heard that, at Fukushima Daini during the earthquake, a female member of staff took on an important job involving care for others – one which men would not have thought to consider – even though it separated her from her family for many days. If I were to work in the

nuclear industry, I would prefer a work place with gender fairness and flexibility in accordance with one's stage of life. Women who are pregnant or have recently given birth sometimes have to go home, for instance, if their baby develops a sudden fever. Diversified workplaces adapt to such cases as necessary. Fukushima Daiichi nuclear power station may be able to attract people by showing that it offers such a workplace.

■ Toshiyasu Shioya

Decommissioning creates new cutting edge technologies and industries related to them. I was impressed by a training facility for drone operations and tests at the Sellafield site. Rokkasho village also has research facilities to develop technologies in the medical and other industries that originally came from the nuclear industry. Technologies for robotics are being developed for the decommissioning work at the Fukushima Daiichi nuclear power station. Such technologies could lead to innovations in the wider robotics industry, which might create good job opportunities.

■ Yui Ito

The decommissioning work at Fukushima Daiichi nuclear power station requires robotics. To develop the necessary technologies, a supportive environment which provides a place for robot tests and services to streamline the research and development work would be useful.

Regional conditions which embrace new technologies and decommissioning, lead-

ing to the revitalization of the area, are necessary.

■ Yuka Tadano

Compared with the positive images of local residents regarding the research facilities in Rokkasho village, feelings about the decommissioning work in Fukushima are much less positive. This gap between local communities and Fukushima Daiichi should be bridged by demonstrating the positive aspects of decommissioning.

■ Toshiyasu Shioya

Creating opportunities to communicate with each other is one idea. As there will likely be both negative and positive people, we need to consider how we can coordinate mixed opinions.

■ Hiroto Enei

(Odaka industrial technology and commerce high school)



They have so-called “site stakeholder meetings” in the UK, where representatives from the decommissioning industry and local residents discuss topics concerning decommissioning work. If we could have a similar meeting here and involve high school students, it would be a good educational opportunity for the younger generation.

—In what areas do you feel that there is distance between yourself and decommissioning or decontamination work?

■ Hiroto Enei

My grandfather is a district official and is struggling to share information on radioactive waste. It seems to be quite difficult to share information with all the local people.

■ Takanobu Horii

We cannot predict when a disaster will happen, just like with the Great East Japan Earthquake or the flood damage here due to Typhoon Hagibis this autumn. However, we might have been able to predict the possible damage due to the typhoon and lessened some of its effects if we had utilized hazard maps well. Therefore, residents should be notified of information on decommissioning work in a comprehensive and detailed way.

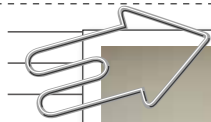


■ Yui Ito

I think the decommissioning has to have a positive brand image. When you talk about Fukushima, many people may think of a good image of peaches and Japanese sake. But some other prefectures also have this. On the other hand, Fukushima is the only prefecture in which there is decommissioning work on severely damaged reactors due to a nuclear accident. I want the work to have a good brand image to be carried forward by the next generation, rather than be stuck with a negative image.

■ Toshiyasu Shioya

In that respect, it is important to share positive thoughts in the region. Through opportunities like today or other educational opportunities, people can feel a connection with each other. As a first step, we should aim to become leaders who proactively disseminate useful ideas and encourage local people to act with us.



Presentation



Special feature report 2

Presentation on Sellafield by British high school students

The “Hamadori, Fukushima HIGH SCHOOL ACADEMY 2019” mission visited West Lakes Academy (WLA), a local high school near the Sellafield site, where the students deepened their exchanges with each other.

The WLA students then visited Japan for the project’s briefing conference and participated in various activities, including site tours at Fukushima Daiichi and Fukushima Daini nuclear power stations and the interim waste storage facility. Their presentation on Sellafield and its surrounding area, and their messages to Fukushima, are given below.

Hello. We are students from West Lakes Academy. Thank you very much for inviting us to such a wonderful country. We appreciate the opportunity given to us today to make a presentation in front of you.

So, we’d like to start our presentation by telling you a bit about where we are from. What do you think of when you think of Britain? For most people, stereo-

types such as a cup of tea, the Queen, and London landmarks come to mind.

Although we do have all these things, it is important to know that Britain is so much more than just London. So, we are here to tell you about Cumbria, which is the county we come from. We hope you can learn a bit more about its culture, history and traditions, as well as the impact of the nuclear industry and

the nature of its presence in our community. For reference, Cumbria, the county we are from, is located in the northwest of England, and we come from a district called Copeland, which is on the west coast. The Lake District is a national park. It is entirely located in Cumbria and it is the largest national park in England. We have the largest mountain in England as well. It is over 900 m. In 2017, the Lake District was recognized



as a World Heritage Site.

Cumbria has a lot of culture and traditions. We have a famous author, Beatrix Potter. She wrote “Peter Rabbit”, which is quite a popular children’s book. We also have a famous poet, Sir William Wordsworth.

We have some weird foods. We have Kendal Mint Cake, which was taken on the first expedition to Everest and across the Arctic. It actually became the first energy bar, and provides good energy for mountaineers.

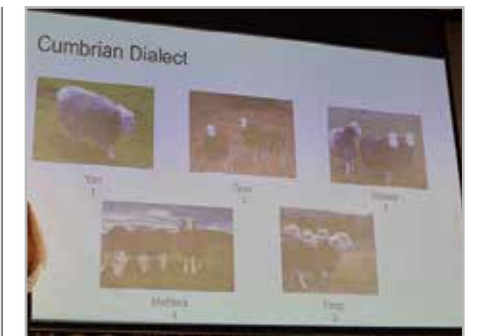
Each local area has its own festival. Our festival hosts the “The World Gurning Championships”, where you wear a horse collar and hold

your face in an as physically strange way as you can.

Cumbria also has a strong connection with the nuclear industry, through Sellafield. It is quite a large part of our community.

On the 10th of October 1957, a fire broke out at the Windscale nuclear reactor in Sellafield. It was an air-cooled graphite reactor.

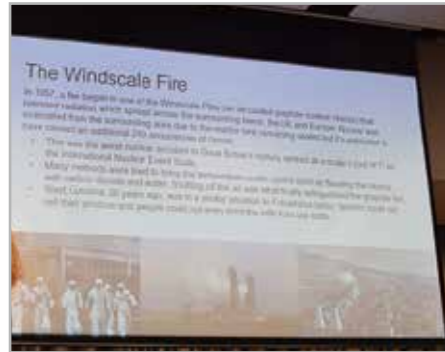
A staff member noticed smoke from the chimney and the spread of the fire. Several measures were taken to control the temperature, such as filling the reactor with carbon dioxide and water, and shutting down the air to extinguish the fire.



West Cumbria was in the same situation as Fukushima 60 years ago. People at that time could not buy lamb or chicken meat and had to dispose of farm milk due to the contamination.

Following the accident, Calder Hall became the first nuclear power plant to connect to the national grid provider. Production of electricity was supposed to last for 20 years, but instead it lasted 47 years.

The site also became a research site for decommissioning, reprocessing of nuclear fuel and so on. The site now has the present name “Sellafield” and it employs 10,000 people, out of which 9,000 are from local areas.



It is said that the rest of the decommissioning process will take more than 100 years. Difficult work lies ahead as radioactive materials still remain in the pools.

Earlier this year, people saw progress as the Windscale chimney began to be removed piece by piece. The current issue is that workers need to develop their skills to be able to contribute in more diverse climates. There are concerns that, as decommissioning work approaches completion in the future, the amount of related jobs will decrease.

To provide jobs after the main work is done, the nuclear industry is working on edu-

cation. For example, "Elevated Horizons" provides skills training for young people in order to reduce their dependence on Sellafield.

In this project we performed an experiment in which we launched a balloon high into the atmosphere. Although it was a very difficult experiment, we really enjoyed it. Sellafield Ltd is one of the sponsors of our school and has a big influence on regions in Cumbria. It has been providing support for the development of local communities. With its huge supply chains, Sellafield continuously supports efforts like ours. The key to this project was "Resilience" – the ability to surmount any major problems that arose. Eventually, we were able to overcome such problems through teamwork.

We had nine project members. By utilizing and combining each member's skills, we tried to find solutions to solve problems. On the day

of the balloon launch, despite windy conditions which could have broken the balloon, we managed to launch it successfully. We were able to retrieve a camera that was attached to the balloon from an area 40km north of the launch point.

We had many failures and difficulties. When we heard that people in Fukushima had overcome hardships due to an accident and failures that they could not avoid by bringing together people who have diverse skills, we felt it similar to the process of our project. We conducted the project last April, but if the Japanese high school students could have joined us at that time, we



would have been able to do it more smoothly and quickly.

Because most of us have never been to Japan before, we only had images of Japan from news media. We thought the weather here would resemble the cold weather in Cumbria, but we were surprised by the difference in the Japanese weather, which is a mixture of very hot days and rainy days.

We had an unusual experience too. We experienced the typhoon that was passing through here. It is heartbreaking to hear of the major damage to the region.

We felt that Tokyo was not as crowded as we had thought. One thing that matched our preconceptions, however, was that everything in Japan was well organized, and done in an efficient manner. We were especially sur-



prised by the punctual departure of trains.

We would like to express our sincere appreciation to all those who have worked to enable us to have a safe and enjoyable stay. We cannot overstate our gratitude for this week's unbelievable and exceptional experience.

This exchange program was far more than a normal trip. Through it, we have built deep ties with the next generation, who will be responsi-



ble for the future of their communities.

The importance of such ties cannot easily be described with mere words. We believe that the wonderful people here in this conference room will create a bright future.

Each one of us here today has the ability to achieve great things. We hope our ties will last long into the future, and that this future will be full of hope. Thank you very much again for this life-changing experience.





Kako Sasaki Natsuho Maekawa Fuyu Suzuki Yuka Minato
(Iwaki Sakuragaoka high school, year 2) (Iwaki high school, year 2)

We explored London and learnt of its culture and history. We were proud of the popularity of Japanese manga there.



●Field report 1



Study trip The United Kingdom

“Seeing is believing” is a phrase that has been handed down for generations. We were assured of its implications this summer. Our generation is expected to grow to bear the responsibility for revitalization, with decommissioning work at Fukushima Daiichi and Fukushima Daini nuclear power stations set to continue for more than 30 years. We would like to uncover some clues that will help us engage with this future. This is why we journeyed to visit the UK, where decommissioning efforts have been in progress since before such a need arose in Japan.

After our return to Japan, we visited Fukushima Daini nuclear power station and Rokkasho village, which plays an important role in the nuclear fuel cycle. We directly experienced the situation on the ground and interacted with the people involved.

The experience overturned our previous assumptions and broadened our perspective. We would like to share what we have learnt with as many people of our generation as possible.

Here are the places we visited!

Sellafield

~ Decommissioning stretching over 100 years ~

A must-visit when thinking about decommissioning at Fukushima Daiichi and Fukushima Daini nuclear power stations. It is the frontier of the British nuclear energy industry, with more than 200 nuclear facilities on a huge site with an area about 130 times that of Tokyo Dome. In the 1940s, the Windscale nuclear plant started operation to produce plutonium for nuclear weapons. It suffered a fire accident in 1957 and caused serious radioactive contamination in the surrounding area, calling into question its safety. The world's first commercial nuclear power plant, “Calder Hall”, and other facilities at the site gradually finished operations due to declining profitability and the aging of facilities. Decommissioning work began and is expected to last until 2120.



The decommissioning projects are led by the government pouring in almost 300 billion yen, which could be controversial if it were in Japan, but there is almost no public opposition. More than 60 years have passed since the fire accident, and the culture and character of British people differ from those of the Japanese, but one of the big reasons for the public's acceptance may be that stable local employment will last for 100 years. Decommissioning in Fukushima should be established as a main pillar of regional revitalization as well.

National College for Nuclear

~ Human resource development closely associated with the decommissioning site ~



A national school for higher education, specializing in nuclear energy and decommissioning. It was established a few years ago. Many teachers dispatched from Sellafield are passing on their skills obtained from their experience at the site. Most of the graduates from the college join Sellafield and the nuclear industry. Such a professional education and training system is necessary for the decommissioning in Fukushima also.

Beacon museum

~ Exhibition of Regional History and Decommissioning ~



A museum adjacent to Sellafield. There are plenty of exhibitions with digital technologies and interactive features. It is easy to learn about the history of, and accident at, Sellafield, as well as the decommissioning process. The museum provides a deeper insight into the history of the region, including its relationship with the nuclear industry and decommissioning.

Scenery, outskirts of Sellafield

~ Looking for clues on the coexistence of decommissioning and the region ~



Sellafield is located in the immediate vicinity of the Lake District, famous as the location for “The Tale of Peter Rabbit”. We enjoyed sprawling, idyllic views dotted with sheep from the bus window. We could not imagine such a view in Fukushima for now. We would love people to visit the area and meet the local people to see how well decommissioning and communities can coexist.



The British Museum

The Greek temple exterior is very eye-catching. When we visited, a large banner depicting the manga “Golden Kamuy”, with its main character and heroine, Asirpa, was displayed at the entrance. In 2016, this manga was awarded the grand prize as the most popular in Japan. One of the largest special exhibitions of Japanese manga and animation was being held at the British Museum, and we realized their popularity and the high regard they are held in. A lot of manga and animations focusing on Hamadori, including Futaba-gun, have been created since the earthquake disaster and the nuclear accident. How about accelerating such endeavors to attract inbound tourists?

University College London (UCL)



One of the top universities in the world. Professor Shinichi Onuma, originally from Fukushima, gave us a lecture on the history of UCL. Patriots of the late Tokugawa period, who contributed to the modernization of Japan, studied at this university. We resolved firmly to improve our English abilities upon hearing the words of Professor Onuma: “You cannot be connected to the world unless you speak English”.

The London Dungeon



An attraction showcasing historic incidents in London, such as the Great Fire of London, the spread of the Black Death, Jack the Ripper and so on. The actors and actresses portraying people related to such incidents put on excellent performances. Although we had some difficulties understanding the language, we enjoyed our visit and were able to deepen our knowledge of the history of London thanks to their realistic performances. In Fukushima too, presenting information with some flavor of entertainment may attract the interest of people in younger generations, and help to prevent the spreading of harmful rumors and the fading of memories regarding the earthquake and nuclear accident.



Visits to notable places

Many places to go: London

[Abbey Road]



The world's most famous zebra crossing, which appears on the Beatles album cover.

[Wembley Stadium]



The home stadium of the England national football team. The largest stadium in the UK.

[Big Ben]



The tall clock tower overwhelmed us. It is currently undergoing repair work.

[Buckingham Palace]



The official residence of the British royal family. The changing of the Queen's Guard at the palace is a must-see traditional event.

[King's Cross station]



Harry Potter's journey to the wizardry school was initiated from this station.



Realization of the wonderfulness of Japanese foods abroad

The typical British food “Fish & Chips” is a dish of deep fried white fish such as cod, served with fried potatoes. We had this many times during our stay. The dish has a long history. It was born and became popular during the Industrial Revolution in the 18th century as a cheap working class food that provided plenty of energy. We also enjoyed steak and other foods and found that most were relatively simple. The idea among British gentlemen of the past - that “dainty foods are ugly; modesty is a virtue” - may still exist now.



Of course, all the food tasted good, but I realized how great Japanese food is. Compared with British food, Japanese food has better nutritional balance and is visually more appealing. I'd like to work in a food-related job in the future and introduce the world to the wonderful produce from the rich hills and seas of Fukushima. Thanks to this project in the UK, I was able to reconfirm and strengthen my determination to do so.



Yuka Minato



Already 7 pm, but still plenty of sunshine. The inspiring beauty of streets lined with brick buildings under the setting sun.

A trip to identify problems and

explore the future of Japanese energy

●Field report 2



Fukushima & Aomori



TEPCO Fukushima Daini Nuclear Power Station

~ What should be done? Problems in the decommissioning process ~



Fukushima Daini nuclear power station was officially earmarked for decommissioning in July 2019. It is situated on land encompassing Tomioka town and Naraha town, 12 km south of Fukushima Daiichi nuclear power station – the site of the nuclear accident which led to a meltdown of nuclear fuel. Its four reactors started operations between 1982 and 1987.

Due to the tsunami created by the Great East Japan Earthquake, cooling functions were temporarily lost at Units 1, 2 and 4. Fortunately, these were later restored, enabling the site to avoid a severe accident such as a meltdown. We actually visited the site and went into one of the reactor buildings, stepped into a space right under the reactor vessel and had a look at the control room for nuclear fuel operations.

Surprisingly, it was a quiet place, when we had only known it as very busy from media footage. It seemed to be in a stable condition, but the decommissioning work will take more than 40 years to complete. There are many issues involved, such as the securing of human resources for the long-term work and the creation of new industries as alternatives to nuclear power work.

TEPCO decommissioning archive center

~ Exhibitions replete with the latest technologies ~



An information center for Fukushima Daiichi nuclear power station opened in November 2018. It has a huge screen to show images of the actual situation and on-going work at Fukushima Daiichi nuclear power station. Projection mapping technology is used to present detailed information on contaminated water management and so on.

Thanks to such efforts to attract visitors, we were able to learn in detail why the accident happened and how the decommissioning work is being implemented.

Interim Storage Facility for Removed Soil and Waste

~ A view of our lost home town ~



Contaminated soil removed from various regions in Fukushima prefecture will be stored at these facilities for 30 years. Expansion work for the storage facilities is going on in a huge area across Okuma town and Futaba town, where Fukushima Daiichi nuclear power station is also located. Large amounts of soil from the temporary storage areas of many municipalities are transported to the facilities one after another.

The national government promised that the radioactive waste stored here will be removed outside of Fukushima prefecture for final disposal by the year 2045. But the place for this final disposal has not been decided yet. This area used to feature beautiful green land and fields where people enjoyed peaceful lives and children played cheerfully. The national government needs to keep its promise.

Fukushima Daini nuclear power station has 10,000 spent nuclear fuel rods. Local residents are anxious about the highly radioactive fuel stored on the premises of Fukushima Daini nuclear power station, and Fukushima prefecture and local municipalities have requested the removal of this fuel out of Fukushima.

TEPCO promised to respect their request, but the spent fuel storage area in Japan Nuclear Fuel Limited's (JNFL) reprocessing facility is almost full. Currently, there is nowhere for the fuel to be taken.



JNFL reprocessing facility

~ How to achieve commitments ~



The nuclear facilities are situated in Rakkasho village, in the southern part of the Shimokita peninsula. Here, spent fuel from nuclear power plants nationwide is supposed to be stored and reprocessed into new nuclear fuel as part of the "nuclear fuel cycle".

We visited the reprocessing factory, one of the important facilities in the nuclear fuel cycle, and the visitor center. We learnt the background to why the nuclear fuel cycle is so important in Japan, which is a country with little in

the way of natural resources.

Unfortunately, the reprocessing factory construction work has faced technical problems, and the completion date has been repeatedly postponed. As a result, it is still not in operation.

What will happen to the spent nuclear fuel from Fukushima Daiichi and Daini nuclear power stations? What is the reason d'être for the nuclear fuel cycle?

This visit to JNFL must give us pause for thought on the future of nuclear power.



National Institutes for Quantum and Radiological Science and Technology

~ For the safety and peace of mind of local residents ~



Here, research was taking place on the environmental effects of radioactive materials from reprocessing facilities in the region. A staff member explained to us experimental research on mice which had been exposed with low level radiation, where the results showed no significant effects on the mice.

Research that attempts to assure local residents of their safety was being conducted there.

Rakkasho village Nuclear Fusion Research Center

~ A small sun on the earth ~

The goal of this facility is the achievement of "nuclear fusion generation" - a technology that has the possibility to solve global energy problems. Harnessing the same phenomenon that occurs in the sun will make it possible to extract a large amount of energy from a small amount of fuel. That is why nuclear fusion is called "A small sun on the earth".

We have a negative image of the word "nuclear" because we experienced the nuclear accident, but the research taking place here may realize a dream of humankind.



Fostering future generations to complete the decommissioning

Our home towns have to face an “exceptional situation”: the simultaneous decommissioning of a total of ten nuclear reactors at Fukushima Daiichi and Daini nuclear power stations. The challenges in this unprecedented, difficult work will continue for more than 30 years. That is why human resource development is so important. Mr. Ukyo Momma and Ms. Yuka Tadano, both from Soma high school, discussed methods of human resource development based on their learnings from the UK.



Ukyo Momma
(Soma high school)



Yuka Tadano
(Soma high school)

Do we need more colleges in Fukushima?

Yuka Tadano

It will take more than 30 years to complete the decommissioning work at the nuclear power stations in Fukushima.

Ukyo Momma

JNFL in Rokkasho village, Aomori prefecture can store radioactive waste for 100 years. The number of employees there is 2,800, which is quite large. The work seems to require a long period of time and a considerable amount of human resources.

Yuka Tadano

People with highly specialized knowledge and skills are vital at decommissioning sites. Taking this situation into account, we should have a college in Fukushima that special-



Sellafield's decommissioning process will take more than 100 years

izes in nuclear technology for human resource development.

Ukyo Momma

I certainly agree with the idea of having a college, but I just wonder if we need it in Fukushima. Even if we had the college here, nobody would come unless they had an interest in nuclear technologies. Therefore, we should make changes in compulsory education concerning nuclear technologies in Fukushima.

Learnings during childhood are priceless

Yuka Tadano

I visited a local high school in the UK, West Lakes Academy, near the Lake District. Probably because of its proximity to the Sellafield site, students there had been learning about nuclear and radiation matters since childhood. When we attempted some quizzes on radiation at WLA, the students from Fukushima were struggling to answer them while the WLA students did so quite easily.

They seemed to have detailed knowledge on radiation thanks to the long-term education since their childhood.

Ukyo Momma

Not only that, things experienced during childhood can broaden our horizons and cause us to become more interested in them later. As I was raised in an environment with cattle on a dairy farm owned by my father, I like animals and would like to be a veterinarian in the future. My childhood experiences still remain in my mind and actually affect my decision making for the future. So, more people might be interested in nuclear colleges and jobs in the nuclear industry if they had the opportunity to learn about nuclear-related subjects during their childhood.



Yuka Tadano

Considering societal issues like population decline, the low birth rate and an aging population, local young people will leave the region to attend colleges outside of Fukushima unless we have a place to learn about nuclear issues and technologies. As a result, graduates of those colleges in other prefectures may take jobs there. So, even if the number of people entering the nuclear industry increases nationwide this may not solve the problem of a lack of human resources in Fukushima.

Collaboration between colleges and companies

Ukyo Momma

At the nuclear college in the UK, students are able to secure jobs at the Sellafield site after their graduation. This scheme has brought great benefits to both sides. Many people are attracted by the proposition of a stable job in the future and so want to enroll in the school, and the company can gain access to many skilled people willing to join it.

Therefore, I recommend that TEPCO engage in collaboration with colleges in other prefectures so that students with nuclear expertise can come to Fukushima. That way, we can attempt to solve the issue of human resource shortages.

Town planning with education at its core

Yuka Tadano

That is a good idea, but we need more. Fukushima has to be an attractive place to live. I believe that even if there are stable jobs provided by collaborating companies, not many people would come to the region.

First of all, town planning is a crucial aspect in attracting people. We should have a nuclear college that is an integrated part of radiation education and town development. Although nuclear power stations and radiation are often negatively regarded as frightening things, they actually have many merits. Nuclear-related jobs are stable and can make a positive contribution to the future. If we had such a college in this region, more people would be drawn

to Fukushima and, with an increasing population, our towns would develop organically.

Ukyo Momma

I agree. Initially, I thought that we should make changes to the compulsory education in Fukushima first. But, after our discussion, I think we should do it on the national level to secure human resources from all parts of the country.

Yuka Tadano

A professor at the nuclear college in the UK told us that “It is better to educate and develop staff internally, rather than hire capable people from outside at a high cost. They will be more loyal to their workplace and have a deeper connection to the region.” These words makes me think that we should foster human resources locally by having a college in Fukushima.

Ukyo Momma

If we are to have a college, the region will require infrastructure improvements. With improved infrastructure, we may be able to create towns that are pleasurable to live in.

Yuka Tadano

Certainly, a new college will contribute to better town development.



WLA has advanced educational programs on radiation

Future education

Ukyo Momma

Through this project, I gained the feeling that Japanese nuclear and radiation-related education was lagging behind compared with that in the UK. Therefore, we should change our outdated education environment.

Yuka Tadano

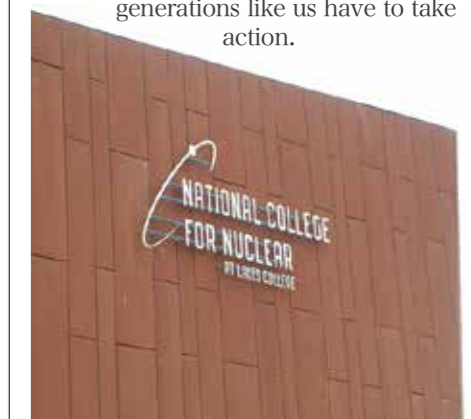
By making changes to Japanese education, we may create more opportunities to learn about nuclear issues and more people may become interested in the nuclear industry.

Ukyo Momma

Once many people have a deeper understanding of nuclear matters, more positive ideas than negative ones will be generated.

Yuka Tadano

To make Fukushima a more attractive place to live and work, those in younger generations like us have to take action.



Preventing the fading of memories

1 Preparation for unknown disasters

Souta Hanai, Haramachi high school



The fading of memories is not just a problem for other people. My own memories of the Great East Japan Earthquake are vague and many things have disappeared from my mind. Everyone can suffer from the fading of memories. As a person who experienced the earthquake disaster, I think that we should preserve heritage from that time as a link to the past in order to remind people of the events that took place and prevent the fading of memories. For instance, there are many houses and facilities, like Futaba-Minami primary school, which provide a visual reminder of the actual situation at the time. But these properties have to be demolished in the process of reconstruction work by local municipalities. And not all local residents necessarily want to remember the past.

How about recording scenes of towns and buildings with Virtual Reality (VR) technology? VR technology would allow us to store images for the long-term, and can allow people who were not present during the earthquake disaster to experience it in a very vivid and realistic manner.

In addition, some parts of the reactors, the equipment and the vast land subject to decommissioning work at the nuclear power station should be preserved and utilized for an archive center or for college educational materials. These preserved facilities and materials would serve both to preserve the memory of the disaster, and provide educational opportunities for nuclear-related technology and skills development. They may also help to prevent the propagation of harmful rumors.

Currently, facilities that aim to pass on memories of the earthquake disaster and nuclear accident, and disseminate information at home and abroad

are being built at the “Memorial and Revitalization Zone” in Futaba town, Hamadori. The main facilities will include an archive center, where information on records and learnings from the earthquake and nuclear accident, and educational opportunities for people from Japan and overseas, will be available. In addition, a memorial park for the deceased and an industrial exchange center for social services and conferences will be built, which will also demonstrate people’s strong determination to revitalize the region. Memories of the events will be passed on to people from all over the world, which will hopefully help to prevent harmful rumors. But there are also plans to build another archive center in Tomioka town. I think that having too many similar facilities in Hamadori will diminish their significance. Local municipalities should collaborate with each other to develop facilities in the same area with a common goal.

In terms of the zone I’ve just mentioned, the key issue will be how to attract the maximum number of visitors. Regular events like lectures on disaster experiences or technical seminars for businesses are necessary. And, just like the visitor center in Rokkasho village, combining accommodation facilities with educational functions in the same area will enable the zone to cater to off-campus courses for schools and training conferences for businesses, which will generate more opportunities to attract many people. I think that creating opportunities to invite a large number of people to the Memorial and Revitalization Zone is very important.

By maintaining links to the disaster and sharing useful learnings from people’s experiences of it, rather than leaving them as mere past incidents, we will be able to prevent the fading of memories.

Preventing the fading of memories

2 We will pass on what we have learnt

Takanobu Horii, Yumoto high school



Those in younger generations like us have to play a key role in preventing the fading of memories and the spreading of harmful rumors. We participated in the project “Hamadori, HIGH SCHOOL ACADEMY 2019” and visited nuclear facilities undergoing decommissioning in the UK. Later, we also visited Futaba town, which has a zone where evacuation orders and restrictions are still in place, the Interim Storage Facility, Fukushima Daini nuclear power station and other nuclear and disaster-related areas in Fukushima. Through those visits, we learnt many things about radiation and nuclear issues. When we visited TEPCO’s decommissioning archive center, we were able to gain direct information from the exhibitions on the process of the accident, countermeasures taken to mitigate malfunctions at the plants and the workers’ protective gear at the time.

At Fukushima Daini nuclear power station, I learnt that radiation levels inside and outside of the reactor buildings were much lower than I thought. I also found out that Sellafield in the UK has strong ties with local communities and creates jobs which are welcomed by local people. Furthermore, it is collaborating with a local college and a local high school (WLA).

In this way, I found information and facts which I would not have been able to obtain without actually going to these places. I was able to learn the real situation in areas affected by the disaster. Projects like this are good opportunities for us to visit and learn from facilities at home

and abroad, and they may prevent the fading of memories and the spreading of harmful rumors. On the other hand, this kind of project requires a lot of money, which means it is impossible to implement a similar one on a large scale.

The younger generation, including students, should go out and learn. To do that, junior high schools and high schools should have in their educational curricula initiatives such as on-site-training, school trips and off-campus learning. There are some schools which run school trips to the Hiroshima Atomic Bomb Dome and facilities related to peace education. The area around the nuclear power stations in Fukushima would also be suitable for school trips on disaster prevention, as the region suffered a major natural disaster. Thus, I think that some of the structures of Fukushima Daiichi nuclear power station, Futaba-Minami primary school and so on have to be preserved as they are, and that we should develop the region proactively with facilities that preserve an image of the actual situation in towns at the time of the disaster.

People of the younger generations hold the key to the future of Fukushima. We have to have the right knowledge, disseminate this to society and pass it on to future generations so that we can prevent harmful rumors and the fading of memories.

A female Japanese leader in the UK



DOJIMA SAKE BREWERY

■ Dojima Sake Brewery started brewing Japanese sake in Cambridge, UK in October 2018

■ The premises measure 330,000 square meters and were formerly an aristocratic manor house. They contain fruit gardens, a pigeon house and other notable features. A shrine to the god of sake and a Japanese garden are currently under construction.

■ The first Japanese company to start a sake brewery business in the UK.

There are female leaders active in the UK. We met two famous women, Hashimoto, vice president of Dojima Sake Brewery in the UK. We would our meeting with Ms. Kiyomi Hashimoto, who kindly gave us a lecture.

The Dojima brewery was built on the site of a former aristocratic manor house, located in a vast field in the UK. A phrase by Ms. Hashimoto that made a particular impression on us was “Weak points can be turned into strong points.”

Ms. Hashimoto told us that “The Japanese are quite modest and not good at self-expression.” In general, this is regarded as a weak point in the international community. But she said that “This characteristic of Japanese people can be a strong point.” In many cases, people in other countries tend to be assertive, but sticking too much to one’s own opinion often exaggerates the discussion. The Japanese are good at listening to the opinions of others objectively and taking them into account in their actions. The word “compromise” may sound negative, but it is a vital skill in coordinating differing opinions.

Qualities required of a leader

We learnt two things from Ms. Hashimoto’s lecture.

One is the importance, and the difficulty, of “changing one’s way of thinking”. Negative things may also be thought of as positive. Her lecture gave us the confidence to go out and make our mark on the world.

The second is the importance of the “continuous dissemination of one’s own opinion”. Ms. Hashimoto expended a great amount of effort in her attempts to secure the land for the brewery. The land had a long history and great value, so was difficult to purchase. She held numerous meetings with local people to gain consensus and finally achieved her goal. Just like Ms. Hashimoto, we would like to express our desires, then make them a reality to create a brighter future.



Learnings from our experiences

We also had the chance to hear from a British brewer making Japanese sake every day at the Dojima brewery. We were impressed by the fact that he was so proud of his profession. He referred to his sake as “my child”. This demonstrated his passion for his job and his love of Japanese sake. Like him, we will also work hard so that we can call our jobs “my child”.

Ms. Michiko Koshino, fashion designer, and Ms. Kiyomi like to talk about our experience at the Dojima brewery and

Kou Furuhashi, Shinchi high school
Hiroto Enei, Odaka industrial technology
and commerce high school



Pride in a bottle

Two types of Japanese sake are brewed at the Dojima brewery. Both cost 150,000 yen a bottle. This sounds very expensive for Japanese sake. Why are they selling well?

One of the factors is the gentrification of sake. According to Ms. Hashimoto, sake has an unfairly low reputation for its value. So, she wanted to increase its perceived value by setting high prices, and eventually succeeded in doing so. She says that world-renowned restaurants sometimes refused to take sake simply because of its low price. Despite its high value, attempts to sell sake to such places would never clear the first hurdle, so her solution has been to raise its value.

Secondly, she also makes efforts to inform a broad array of people about the high quality and value of sake. Sake has a taste that is equal to or better than any product in any other country, and its brewing techniques are highly developed. At the Dojima brewery, all the main ingredients - rice, malt and yeast - are imported from Japan. Hard water taken from an underground stratum created in the glacial period goes through a softening process, and careful temperature-control management is applied for the fermentation process.

This demonstrates the ability of Japanese sake brewers to use sophisticated production techniques to make high-quality products. Ensuring that people across the world are aware of this will surely help to increase the value of sake. When we first heard about sake costing 150,000 yen a bottle we could not believe it, but after visiting the Dojima brewery and seeing its operations, and understanding the rationale behind the pricing, we can now see why this is the case.

Despite the impact of harmful rumors, exports of Japanese sake made in Fukushima are increasing. But domestically in Japan, consumption of sake is declining. Learning from Ms. Hashimoto, I want breweries in Fukushima to make continued efforts so that Fukushima’s sake can acquire a good brand image. That will help to dispel any harmful rumors.



The spirit of leadership

During the training sessions for this project in the UK and Japan, we had many opportunities to communicate and interact with successful people on the front lines of various fields.

In order to tackle the unprecedented challenges inherent in revitalizing Fukushima, we, as the younger generation, would like to become leaders that can contribute to the future of our home towns. We would like to share what we have learnt on “the spirit of leadership”.

◇ Calm perspective

Mr. Masuda is the president of JNFL, and former superintendent of Fukushima Daini nuclear power station, where he managed the situation immediately after the earthquake.

He stated to us that, in the case of an emergency, the lack of a calm perspective can threaten the lives of colleagues. He advised us always to remain calm so that we can make the best decisions.

Sena Muroi, Soma high school



Ambassador Tsuruoka

◇ Do not hesitate to express your opinion

Ambassador Tsuruoka and Ms. Hashimoto told us that “Japanese people are cooperative but quiet”. Although having a cooperative personality is important, being too quiet will not benefit society.

As the work involved in the revitalization of our region is unprecedented, a variety of opinions from diverse industries, including researchers, is required. I too would like to express my opinion without hesitation in society.

Toshiyasu Shioya,
Asaka high school



Ms. Hashimoto, Dojima Brewery

◇ Never rest on your laurels

I had a chance to meet the fashion designer Ms. Michiko Koshino in London. Though she is a leader in the fashion industry, she also runs a sushi restaurant to tell people of the excellence of Japanese food.

I learnt that it was valuable to keep attempting new things. I want to work in the food industry in the future. The fight against harmful rumors will go on, but I will continue to tell people of the appeal of foods from my home town so that the world will start accepting them again.

Yuka Minato, Iwaki high school

◇ Ability to make propositions and take action

Successful Japanese people in the UK all have an excellent ability to make propositions and act on them.

The decommissioning work, Innovation Coast Initiative and efforts to dispel harmful rumors are at the stage that we, as the younger generation, have to think about them as our responsibility. We must take on board a variety of opinions and proactively seek solutions.

Kou Furuhashi, Shinchi high school

◇ Thoughtfulness

Selfishness is not a good trait. We have to consider what is required by carefully observing the surrounding situation with a broad perspective.

The road to revitalization will be fraught with various problems, but I would like to listen to the opinions of those around me, and step forward and act.

Natsuho Maekawa,
Iwaki Sakuragaoka high school



Mr. Masuda, the former superintendent of Fukushima Daini nuclear power station



Ms. Michiko Koshino, world-famous fashion designer

● Cover story 1

Yui Ito, Iwaki high school

Positive branding of decommissioning as a regional advantage

Why I participated

I would like to be a medical doctor for the regional medical service in Fukushima in the future. I have many classmates who want to live in convenient metropolitan cities, rather than in Fukushima. That made me think about how we should develop our towns to make them attractive to young people. I thought that I should start by learning from developmentally-advanced regions which have similar problems. That is why I decided to participate in this project, “Hamadori, Fukushima HIGH SCHOOL ACADEMY 2019”.

Differences between Japan and the UK

We visited the UK and learnt of the past fire accident at the Windscale nuclear plant and subsequent decommissioning of the facilities. During my stay, I noticed some differences in perception between Japan and the UK.

The first one is the differing attitudes to radiation between the two countries. For many Japanese people, their impression of the word “radiation” is along the lines of “dangerous”

or “frightening”, but it was not perceived as particularly dangerous by the British people I spoke to. I then realized the differences in perception between the two nations.

The differences in the perception of nuclear decommissioning are large too. In Japan, decommissioning is becoming increasingly important since the accident at Fukushima Daiichi nuclear power station, and new nuclear-related businesses have emerged. As this is an area of industry that did not exist before the accident, nobody knows much about it - even my mother, father and friends, born and raised here in Fukushima. Furthermore, as the industry deals with “radiation”, Japanese people do not have a good impression of it in general. In contrast, jobs related to decommissioning were regarded as “cool” in the UK. I was astonished by this difference between the two countries.

There were more differences. According to the report, “Statistical topics No. 80: leading female scientists in Japan” (2014, Ministry of Internal Affairs and Communications), only 8.6% of researchers in

Japan’s nuclear sector were female, while the UK had 70% female researchers in its radiation sector. It is exciting to hear that so many women are active in this field in the UK.

I also learnt about some actual examples of radiation technologies utilized in the medical services field for medical checks and treatments to ease the burden of patients.

Regional development in Hamadori

Given what I had learnt, I tried to think about the problems involved in the development of Hamadori.

Firstly, we need to change people’s perceptions of the decommissioning industry. In general, Japanese people do not care much about decommissioning, and do not have a good impression of it.

The reasons for this are a lack of information on decommissioning and insufficient knowledge regarding radiation. Therefore, if Japanese people were to realize that the decommissioning industry is an attractive one, we would be able to get more young people interested in it.



What we need now is “positive branding of decommissioning”. The decommissioning industry has to be properly understood and established as part of Japanese industry. There are many aged nuclear power stations in Japan and overseas. I believe that the decommissioning industry that is newly emerging in Japan will gain a foothold and develop further. That will serve as a trigger for the revitalization of not only Fukushima, but Japan itself.

Problems in the “positive branding of decommissioning”

There are two problems in the process of creating a “positive branding of decommissioning”.

The first one is appropriate information dissemination. A lot of information is available on Fukushima

Daiichi and Daini either from media coverage or via the internet. But I have a feeling that much of this is negative and incites anxiety. It is evident that steady progress is being made in the decommissioning work after eight years involving trial and error since the accident. To create a positive branding of decommissioning, people in Fukushima and nationwide need to be informed of this encouraging situation.

The second one is the dispelling of harmful rumors. I belong to a chemistry club at my school. We deal with many types of chemical agents in our club activities, and we try to learn the characteristics of each to avoid hazardous situations and ensure safety. To create a “positive branding of decommissioning” it is similarly important to have proper knowledge and understanding of radiation and radioactive materials through the compulsory education system and oth-

er educational opportunities during childhood.

My proposals

I have read the website for the “Fukushima Innovation Coast Initiative” and I understand that it will bring together cutting-edge research facilities in an area close to our home. I thought about ideas to improve the image of Hamadori, where these developments are going on.

For example, Taisei Corporation has an advertisement animation which is well known in a wide range of age groups. Since the “GAINAX” animation studio is in Fukushima, I wonder if we could create such an advertisement locally by collaborating with the studio. And how about making a catch phrase which could help shake off the negative image of decommissioning. For instance, using the English word “decommissioning”, or an abbreviation rather than the Japanese word “hairō” written in kanji. I hope decommissioning becomes an aspirational job which is favorably portrayed in TV dramas.

My ideas as a high school student might not be good enough and I do not have the capability to plan and implement something by myself, but I will keep learning and thinking until we have a Hamadori that is full of life, with more young people wishing to live and work in their home towns.

● Cover story 2

Toshiyasu Shioya, Asaka high school

Regional consensus - the key to a long-term decommissioning process

Decommissioning is not an easy challenge

It will take 30 to 40 years to decommission Fukushima Daiichi. On hearing this superficially, it may sound like it's a simple process that will follow a concrete plan.

But decommissioning is not that easy. That is what I learnt from the project curriculum in the UK and Japan.

Current problems

What kind of problems are there? Some clues were available from TEPCO's archive center. One is the need to gain the understanding of people in society regarding the decommissioning process. Some people may feel opposed to the decommissioning work if they do not know much about why it requires a lot of money and sophisticated technologies.

There are other problems related to spent nuclear fuel and the treatment of nuclear fuel debris. Although these have to be stored somewhere, the place for their final storage has not been decided. The feelings and emotions of people in Fukushima and Japan are directly related to these problems. Consensus building with local people is becoming increasingly important in order to proceed with the decommissioning and the revitalization of Fukushima.



Amid the 100 year decommissioning process

Let me talk about the decommissioning process at the Sellafield site. Sellafield Ltd has a decommissioning plan which will take about 100 years to complete. The work is currently progressing steadily. The word "decommissioning" there covers not only nuclear power plants but also the whole premises of the Sellafield site.

According to its staff, Sellafield Ltd has been making efforts over a long period to build up a trusting relationship with local communities. When they build new facilities, they explain the work in detail to local people to seek their understanding of its necessity. Through these efforts, they have gained consensus from the local communities.

As symbolized by one of the world's oldest commercial reactors, the Calder Hall reactor, Sellafield has a considerably long history. I initially thought that people's perceptions of nuclear power stations and decommissioning might change over time, but my assessment was incorrect. It seems that there is still some negativity toward the site and the plans for the final disposal of radioactive materials.

Despite this, local people's impressions of decommissioning in the UK were not as bad as those in Japan.

Differences between the UK and Japan

I have thought about the differences between the UK and Japan to find some clues to help solve the problems regarding decommissioning in Japan.

Firstly, there is a difference in whether decommissioning was anticipated or not. Decommissioning work at the Sellafield site was "anticipated" to some extent after years of plant operation. Therefore, people were not greatly distrustful or suspicious when the plans were announced. On the other hand, decommissioning at Fukushima began suddenly due to the earthquake in a manner that "nobody anticipated". Sellafield has a concrete definition of its decommissioning, but Fukushima Daiichi does not. That is why many Japanese feel that the decommissioning decision is vague and unclear.

Secondly, there is a difference between the two nations in terms of energy and generation technology. In the UK, new nuclear power stations are being planned and built, taking environmental issues and generation costs into account. In Japan, however, the government reviewed its national energy plan, resolving to reduce the country's dependence on nuclear power generation. That has led to a difference in public sentiment regarding nucle-

ar power between the UK and Japan. As the underlying situation is different, the way to build up consensus might also be different.

Pre-conceived ideas on decommissioning and nuclear power are difficult to change. But we have to change them in order to proceed with decommissioning and revitalization. Thus, the need to build up a trusting relationship with local people in Fukushima becomes inevitable.

We can expect developments in cutting edge technologies both for decommissioning and for other industries, as the work requires high-level technologies.

Sellafield Ltd has a training facility for the operation of robotics. Learning from this, Fukushima might also be able to develop a robotics industry. In addition, Fukushima prefecture is positioned as a hub for the renewable energy industry in the national energy plan.

Our strong hope for the development of our region will create a foundation to forge a new vision of the future.



Summary

In thinking about the future of Fukushima, the value of learning from Sellafield cannot be overstated. Furthermore, it is no exaggeration to say that it is vital for the future of Japan.

Even those who have heard of Three Mile Island or Chernobyl may not see the relevance of the relation between Sellafield and Hamadori. For many people, it may be the first time they have heard the name "Sellafield".

Sellafield can be seen as a microcosm of universal problems concerning frictions between the areas of energy and science & technology as dealt with by the nuclear industry or industrial society, and society at large. Calder Hall nuclear power plant is one of the oldest commercial nuclear power plants in the world. It was in operation between 1956

and 2003, and is currently in the process of being decommissioned. Beside it sits the Windscale nuclear power plant, which suffered a fire accident in 1957. This was one of the earliest severe accidents at a nuclear power plant, evaluated as Level 5 on the International Nuclear and Radiological Event Scale (INES). The site also houses the THORP facilities, which reprocess a large amount of spent nuclear fuel from Japan.

We can see the history of the relation between humans and nuclear power, from its dawn to the present situation. Sellafield experienced frictions between it and society concerning severe accidents or the treatment of waste earlier than did Japan. The high school students visited the site, together with the reprocessing facilities at Rokkasho village in

Sellafield's "time-scale"

Hiroshi Kainuma, Associate Professor, The Kinugasa Research Institute, Ritsumeikan University

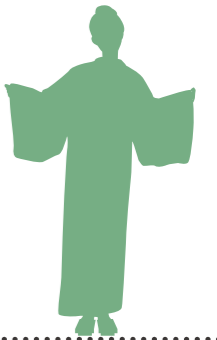
Aomori prefecture, Fukushima Daini nuclear power station and the Interim Storage Facility. They tried hard to deepen their knowledge and hone their thoughts.

There were many issues to study at Sellafield, which differed from those encountered by the high school students that visited Belarus the previous year. The most important one is the "time-scale" at Sellafield. It has almost 50 years' experience of coexistence with nuclear accidents and decommissioning. In addition, there is a planned process that stretches over 100 years. How is the government going to support this and provide effective and sustainable schemes so that the local people and society can receive the education and learning opportunities they need to grow? One realizes the limits to the time-scales that

people have thus far followed at Fukushima - the basic premise of year-long projects, 5 to 10-year overall outlooks, or decommissioning and contaminated soil removal over 30 to 40 years - and therein can be found some clues for improving the current situation.

Through the Hamadori, Fukushima HIGH SCHOOL ACADEMY 2019 project, high school students learnt a variety of things that they will be able to utilize in their future lives. How will they employ this knowledge in 30 or 40 years' time, on a time-scale which many present adults cannot hope to have? Their potential is unknown, but this report at least provides a starting point. I wish sincerely for the seeds planted via their work to blossom magnificently in the future.

The high school students introduced people to the culture of Fukushima and Japan and deepened their exchanges with British people at WLA and St. James's Church.



The future

Looking to the future with the younger generation

Yumiko Nishimoto
President, NPO Happy Road Net

The 10th spring since the Great East Japan Earthquake and accident at Fukushima Daiichi nuclear power station will soon be upon us. As decommissioning of the Fukushima Daini nuclear power station has been officially announced, decommissioning work covering a total of ten reactors, including those at Fukushima Daiichi, will now take place. Many issues lie ahead for our home towns, such as the securing and training of human resources for the long-term decommissioning process, the creation of new industries as alternatives to the nuclear industry and the mapping of a future for our region following completion of the thirty-year decommissioning work.

Revitalization stretching into the future will be a huge burden for our children. Despite this, high school students must stand ready to become future regional leaders, claiming ownership of the associated issues as they consider how to shape the future of their home towns. With the aim of nurturing the next generation of leaders, we began in 2017 to send high school students

to other countries where efforts were being made to tackle the aftermaths of nuclear accidents. The United Kingdom was chosen as the backdrop to our third project. We visited “Sellafield”, a vast complex with a series of nuclear facilities that is tackling a one hundred-year decommissioning process, and had the opportunity to observe the local way of life there. After returning to Japan, we visited Fukushima Daini and the reprocessing facilities at Rokkasho village in Aomori prefecture, and deepened our learning with the key phrase “Decommissioning, Industry and Region”.

The road to decommissioning is long and arduous. To overcome unknown hardships, new ideas and a new sense of values are vital. Using the knowledge gained from their experiences in the

UK and Japan, the high school students made some proposals such as the necessity of a new college, positive branding of decommissioning and so on. They also expressed some biting home truths about projects such as the Innovation Coast Initiative, which they described as being “run by adults” such as government officials. I am certain that their sincere efforts to face the future of our region will enable them to forge a bright path forward.

Our work to foster human resources will continue. We will step forward boldly together with the younger generations for the sake of revitalizing our region.



Editor's postscript

If you look around the world, the Japanese way of thinking is not always adequate. Approaches to revitalization can differ depending on the country. Therein, we may discover information useful for the future of our home towns and food for thought from others' mistakes.

High school student visitors to the UK realized that the decommissioning work at the Sellafield site has created new, cutting edge technologies and generated employment in the region. That gave them hope for the future of Fukushima. On the other hand, they had mixed feelings about the fading of memories among the general public regarding the past fire accident at the site. The accident seemed to be regarded as part of history. Their experiences overturned conventional wisdom, broadened their perspectives and provided a boost for their personal growth.

Most of this booklet was written by the high school student volunteers themselves, hoping to share their experiences in the UK and Japan with people of the same generation. They worked hard to construct a vision of the future by visiting decommissioning sites, speaking to those tackling the challenges there and attempting to seek coexistence with local communities.

Some of you may have different ideas or opinions after reading this booklet. That is a good thing. Decommissioning in Fukushima is a journey into the unknown, and the fog of uncertainty may impede our path. But the younger generations, who will take on the responsibility of revitalization, will be able to lead us to a bright future by thinking hard and presenting contrasting ideas and values. We hope this booklet serves as one tool for them to do so.



Planning and Publishing



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Summer 2020 mission to the USA for Hamadori high school students. Now recruiting applicants!



Hamadori, Fukushima HIGH SCHOOL ACADEMY 2020 to be held soon

NPO Happy Road Net will plan and host an overseas educational project for year 2 high school students from Hamadori, Fukushima. We will visit the United States in summer 2020.

One of the main places of focus for our visit is Hanford in the state of Washington, where plutonium production for the “Manhattan Project” - the US nuclear bomb development program during the Second World War - was conducted. Later, through the era of nuclear disarmament, it became an advanced region which achieved remarkable progress in revitalization and regeneration through the science and agriculture industries.

The project will provide an opportunity for high school students to learn about a developmentally-advanced region which still has radioactive waste problems but is stepping forward into the future, thereby gaining a deeper understanding of the situation in Fukushima. We welcome your participation and support.



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