Research as a Volunteer

- A Case Study of the Resurrection of Fukushima-

2013/03/31

Reported by Department of Global Agricultural Sciences

Group 6

This report is the result of a survey about "Research as a Volunteer".

I'd like to thank the members of "Resurrection of Fukushima" for cooperation.

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CONTENTS

FIGURES

1 INTRODUCTION

1.1. WHAT IS RESEARCH?

Cures for diseases, technology that makes everyday life easier, measures to protect the environment, and discoveries that deepen our knowledge are all possible because of science. Research is necessary for scientific progress, but it is difficult to specify exactly what sort of activities count as research.

The purpose of research can be broadly divided into three parts. 1. To expose the truth behind a particular phenomenon, 2. Bring new discoveries to light, and 3. Deepen our current knowledge and understanding. Simply put, research is investigation. Presently, one of the best ways to ensure research is thoroughly done is to follow the Scientific Method. It is necessary to use a method that follows the principles of science closely to do scientific research. The most common Scientific Method involves making a hypothesis, verification by experimentation, and if the results match the hypothesis, proceeding with sharing of results with the scientific community. If the actual results do not match with expected results, a new hypothesis is created and experiments performed until they do match [1]. The degree of importance and sometimes the order of the steps outlined in Figure 1 differ from one project to another, and can be thought of as guiding principles rather than a solid formula that must be followed.

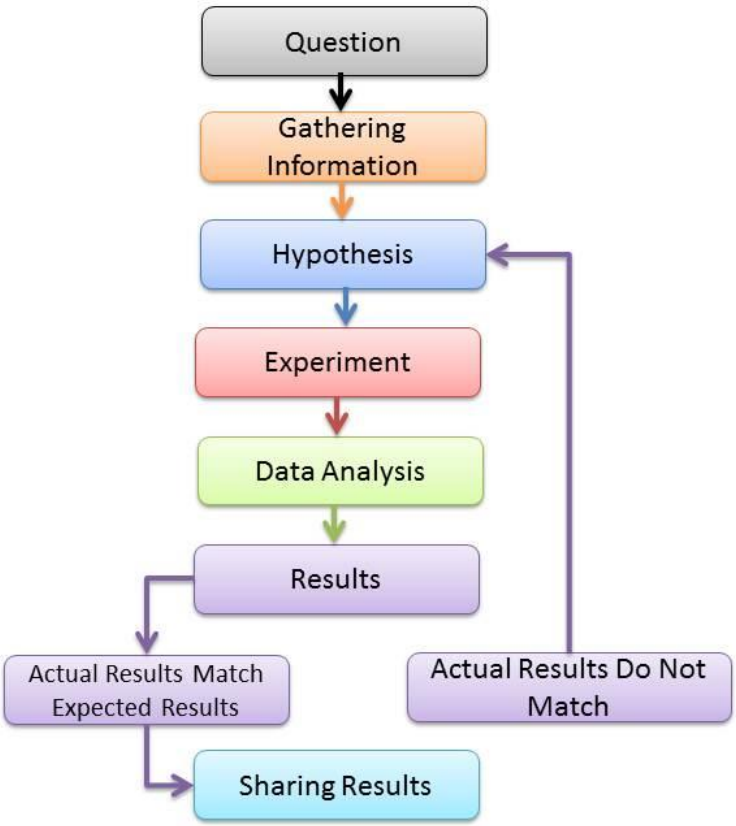

Figure 1.1 Currently Accepted Scientific Method

In addition, other important components include repeatability, external review, and sharing of data and methods。 The results must be reproducible by anyone else following the same conditions to rule out chance. Peer review is a standard in today's professionally practiced science, and very important for any research aiming to be accepted by the scientific society. Experts must be able to come to the same conclusion from the same data. This checks for whether or not the reasoning is sound, but does not justify whether or not the results are true. This is only possible if all of the data is carefully and completely recorded to reduce bias and all data and methods are shared.

Any scientific investigation that follows these basic principles can be accepted by the scientific community as valid research. The content of the research can and does vary tremendously, and while some research topics may be very practical, others might only help to further our knowledge of the natural world, without any practical applications.

1.2. WHAT IS RESEARCH AS A VOLUNTEER?

A. It is difficult to do sound science professionally with good funding and large resources available, so the difficulty of doing sound science without financial support or with limited resources as a volunteer can be imagined.
B. NPO stands for Non-Profit Organization, while NGO stands for Non-Governmental Organization. At present, there are approximately 47,798 NPOs registered in Japan [3].

1.3. IS IT POSSIBLE TO DO RESEARCH AS A VOLUNTEER?

1.3.1. OVERVIEW

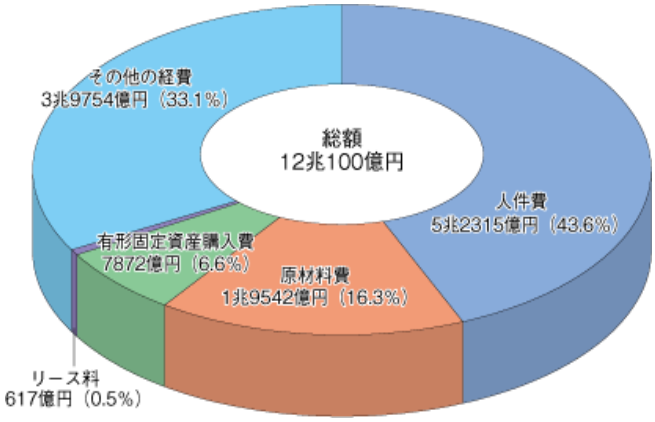

FIGURE 1-2 RESEARCH COSTS OF COMPANIES BY CATEGORY (2010)

From this figure we can see that the largest chunk of costs carried by biotech firms is labor.

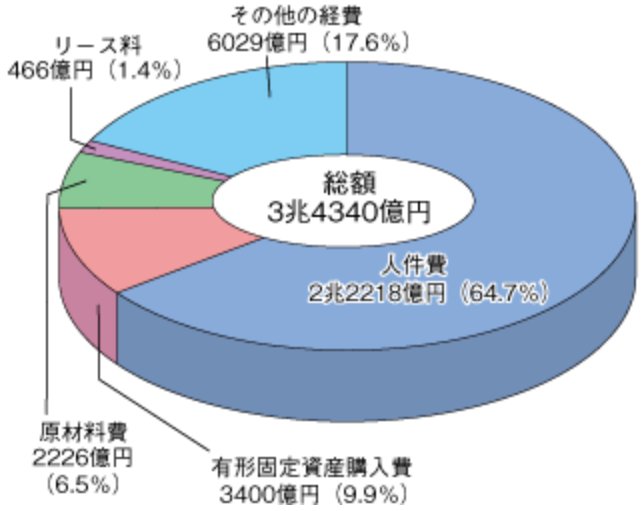

FIGURE 1-3 RESEARCH COSTS OF UNIVERSITIES (2010)

Labor costs at universities are tremendous, at more than 60% of the total research costs.

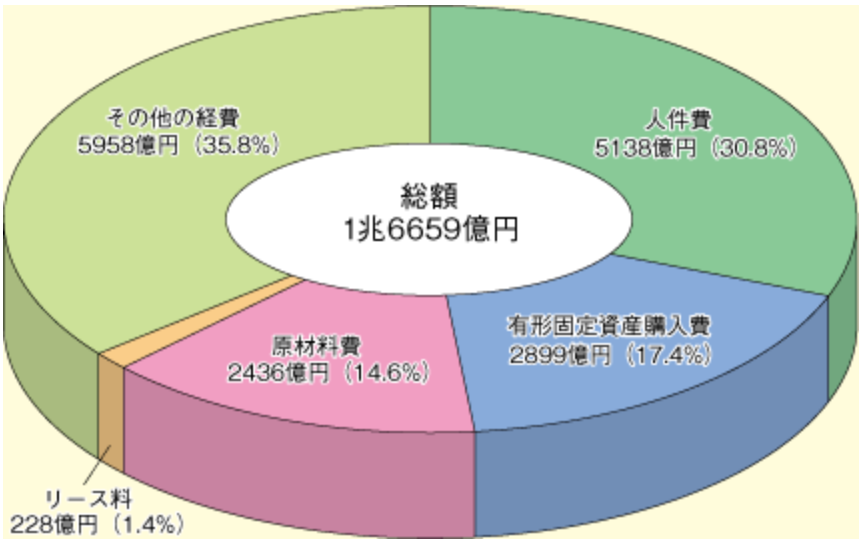

FIGURE 1-4 COSTS OF NON-PROFIT ORGANIZATIONS (2010)

In comparison, labor costs of NPOs are less than half of that of universities are only around 30%[4].

Due to differences in management, guiding principles, and bureaucratic policies, cost distribution of companies, universities, and NPOs vary greatly even if the projects they are working on are very similar.

1.3.2. RESEARCH COSTS

A. Even if the principal investigator agrees to do work on a volunteer basis, for almost all projects, at least some resources in the form of equipment and travel funds are needed. With ingenious experiment design, cost can be minimized but unless the researcher is funded by some outside organization (governmental or not), he has to pay experiment costs out of his pocket. This can be a severe deterrent to performing research as a volunteer.

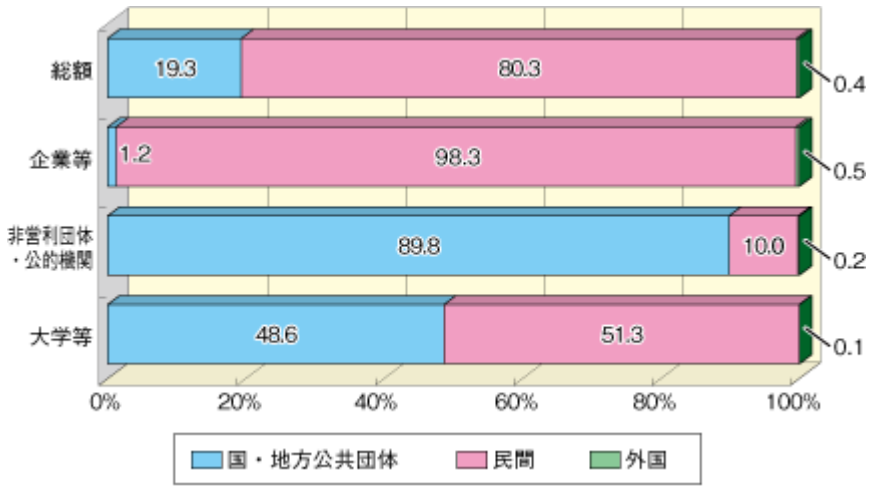

Figure 1-5 Funding Sources (2010)

According to data from 2010, 19.3% of research funding comes from governmental sources, 80.3% from private sources, and 0.4% from abroad.

1.3.3. HUMAN RESOURCES

A. Number of Researchers

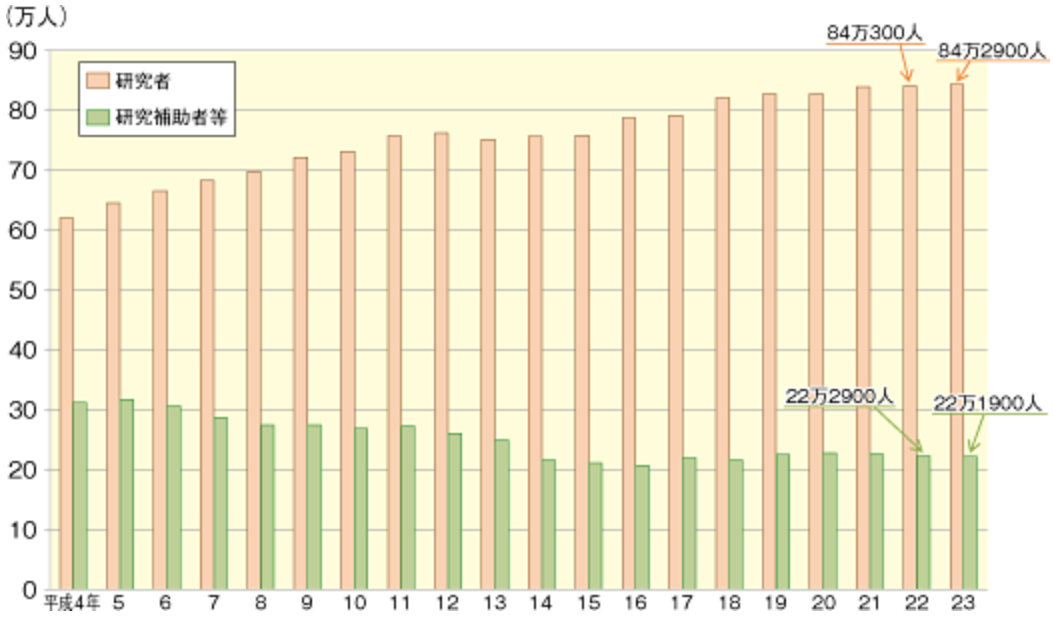

FIGURE 1-6 DISTRIBUTION OF PERSONNEL IN RESEARCH[5]

As of March 31, 2011 the number of people in the research field is 1,064,800. Researchers are in orange and research assistants in green in the graph.

Researchers here are defined as those holding a master's degree from a university (technical colleges not included) or those with similar level of skill and experience. They have specialized knowledge and skill, and includes current candidates of a PhD degree. Research Assistants are defined as those that help with research under the supervision of researchers.

B. Skill

With increasing scientific and technological advances, the tools and techniques we use have increased. This means that there are more and more techniques to learn to perform a typical experiment adequately. Skilled workers are needed to do research.

2. CASE

2.1. SURVEY METHOD

We conducted interviews and participated in activities over two trips with "Resurrection of Fukushima", a NPO based in Iitate village, Fukushima Prefecture.

2.1.1. PERIOD

We visited Iitate village on the following two weekends.

27-28th Oct 2012

17-18th Oct 2012

2.1.2. ACTIVITIES

① VISIT THE VILLAGE

FIGURE 2-1 RADIATION DOSIMETER

FIGURE 2-2 IITATE VILLAGE OFFICE

FIGURE 2-3 RICE CROPPING TEST

FIGURE 2-4 THE DECONTAMINATION

② INTERVIEWS WITH MEMBERS

③ WORK

FIGURE 2-5 HARVESTING

2.2. RESURRECTION OF FUKUSHIMA

2.2.1. WHAT IS RESURRECTION OF FUKUSHIMA?

Resurrection of Fukushima was established in Sasu, Iitate village, Fukushima prefecture on June, 2011. Its objective is to reconstruct people's lives and industry destroyed by the accident of nuclear power plant. Many projects are now in process with the cooperation of victims to reconstruct their lives and industry.

2.2.2. BACKGROUND OF THE ESTABLISHMENT AND THE PRINCIPLE OF THE ORGANIZATION

①Aiming for the reconstruction of nature and people's lives in Fukushima with the cooperation of all generation including young and old people.

There are many ways to do reconstruction, and it is not simple as "decontamination and going back to the village or emigration to other new village".

These are the typical answer for reconstruction, but we also have to think of other alternatives for Iitate village.

②Radioactive contamination

Connecting ideas, willpower, knowledge, and experience of villagers with the technology, technical knowledge about radiation, and ideas from outside of Iitate village will lead to efficient reconstruction of Fukushima.

2.2.3. STRUCTURE OF THE ORGANIZATION

The figure 2-6 shows the implementation system of Resurrection of Fukushima. Resurrection of Fukushima is supported by other organizations, such as Tokyo University. Resurrection of Fukushima has 6 teams working on different projects such as 1 Measuring radiation, 2 Analyzing radiation data, 3 Archiving the data of radiation, 4 Decontamination of farmland and reconstruction of agriculture, 5 Decontamination of living area, and 6 ICT.

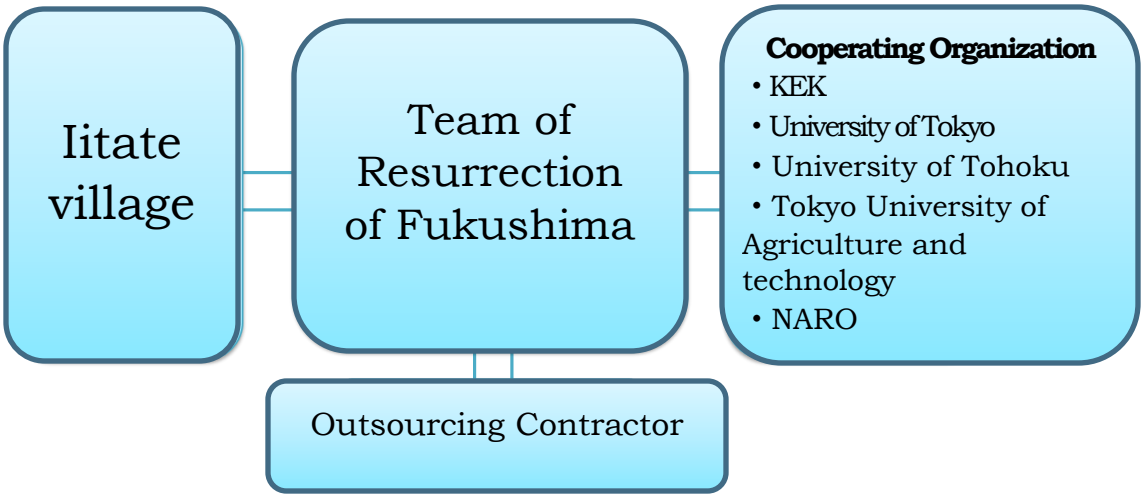

FIGURE 2-6 IMPLEMENTATION SYSTEM (CREATED BY OUR GROUP)

2.2.4. ACTIVITIES OF THE ORGANIZATION

This chapter deals with the representative projects that Resurrection of Fukushima have already been carrying out. It is based on information from the report of Resurrection of Fukushima [6].

① Measuring radiation

Resurrection of Fukushima makes the map of radiation for the whole area of Iitate village. They measure radiation by using GPS and dosimeter, which is able to send data automatically, and have installed these instruments on a car. They drive this car all over the village and collect data.

In addition, they use the portable dosimeter with GPS. They use it when they are walking or using bicycle. The result map of radiation is presented in Figure 2-7.

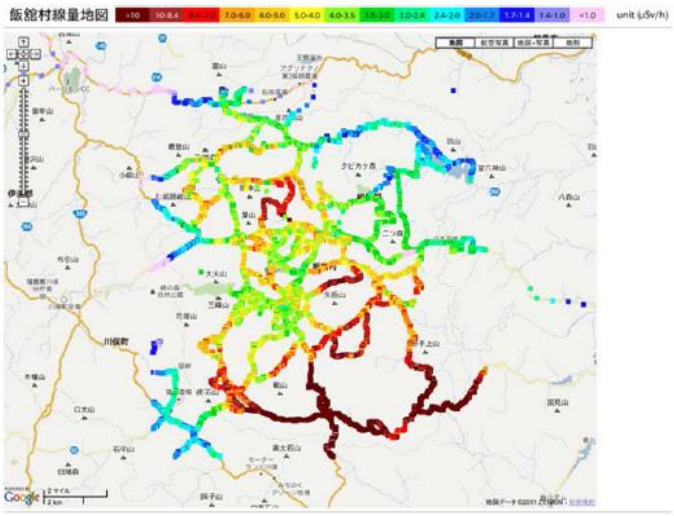

FIGURE 2-7 MAP OF AIR RADIATION DOSE IN IITATE VILLAGE

FIGURE 2-8　PORTABLE DOSIMETER WITH GPS LOGGER

② Measuring radiation in the soil

Studies have shown that cesium is concentrated in the top 5cm of soil from the land surface (Shiozawa, 2011). Figure2-9 shows the result of soil sampling in 20 places in the village. The data was collected by the senior volunteer team.

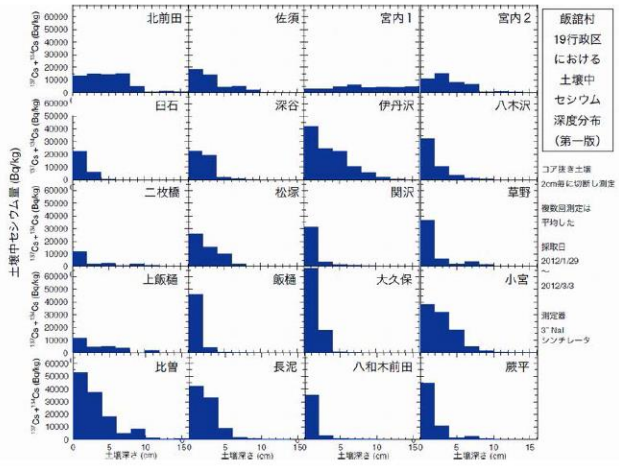

FIGURE 2-9　AMOUT OF RADIATION IN EACH DEPTH IN EACH AREA

③ Observation of radiation, weather, and soil

It is important to consider weather and the amount of radiation in determining the appropriate timing of decontamination. They put the machine showed in figure 2-10 in 5 places in the village and continue with real-time monitoring of radiation and weather.

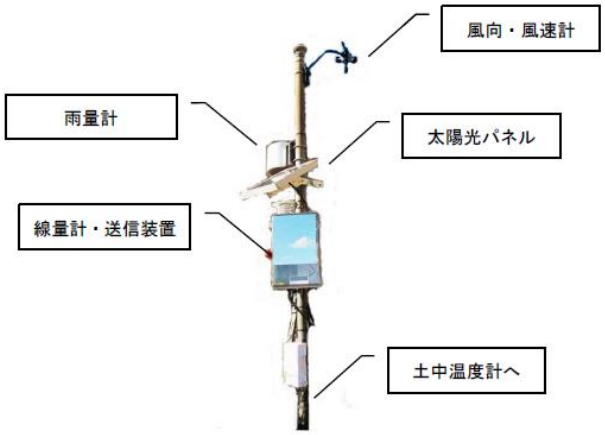

FIGURE 2-10　MONITORING POST

④ Measuring aerosol radiation

They collect the data of aerosol in the air and measure the amount of radiation to determine radiation exposure by breathing air. As a result, they found that internal exposure would be about 0.17 μSv, which is one-to-five thousand of the safety levels in a year.

⑤ Decontamination

Some methods are developed to decontaminate the farmland, living environment, and forest. The method to deal with disposal of radioactive waste is also developed by the organization.

[Farmland] Decontamination by “Taguruma”

This method involves flooding the rice paddy with water and mixing the soil by using “Taguruma”, which is a manual rotary weeder. In this way, cesium attached to clay in the soil turns to muddy water and can be drained off.

[Living environment]

In order to prevent soil run-off out to houses, and to reduce the amount of radiation in the backyards and in the forest surrounding the houses, they cut branches of trees and made a watercourse using the branches.

[Forest]

They try to decontaminate the radiation by cleaning fallen leaves and leaf mold.

⑥ Reconstruction of industry

They experimented by planting rice in paddy fields. They also started to grow fuel-crops, such as rape seed and Italian ryegrass. In addition, they support the new industry in the village.

FIGURE 2-11　MIXING SOIL BY USING “TAGURUMA”

2.3. IITATE VILLAGE

2.3.1 OVERVIEW

Iitate Village is located in Soma district, Fukushima Prefecture. Since its birth in 1956, it has been without any municipal merger for more than half a century.

Rice, livestock and leaf tobacco are the staples of Iitate; for example, the branding of "Iitate beef" had been carried out. In addition to vegetables, floriculture was also thriving. As secondary industry, four manufacturing companies as well as sewing and construction companies’ offices were located. Tertiary industry had been weakened, so that development and promotion of the service industry had been a challenge.

In the village, mountain forest accounted for 74.4% of the total area, 23.013ha. Hence, tourism had been promoted with abundant natural resources such as mountains and swamps. Staples had included many kinds of Doburoku sake and rice wine made of local rice.

TABLE 2-1　LAND USE IN IITATE VILLAGE [7]

Land Use　【total : 23,013ha（100.0%）】			
Paddy	1,431ha (6.2%)	**Cultivation**	1,122ha (4.9%)
Building land	85ha (0.8%)	**Mountain Forest**	17,114ha (74.4% ∗47% of national forests included)
Farm	159ha (0.7%)	**Wildland**	1,665ha (7.2%)
Other	1,437ha (5.8%)		

2.3.2 IITATE VILLAGE AFTER THE EARTHQUAKE

Since the Fukushima Daiichi nuclear accident after the Great East Japan Earthquake, Iitate village has been divided into three zones: difficult to return area, restricted residence area and cancel preparation area (reorganized in July 2012).

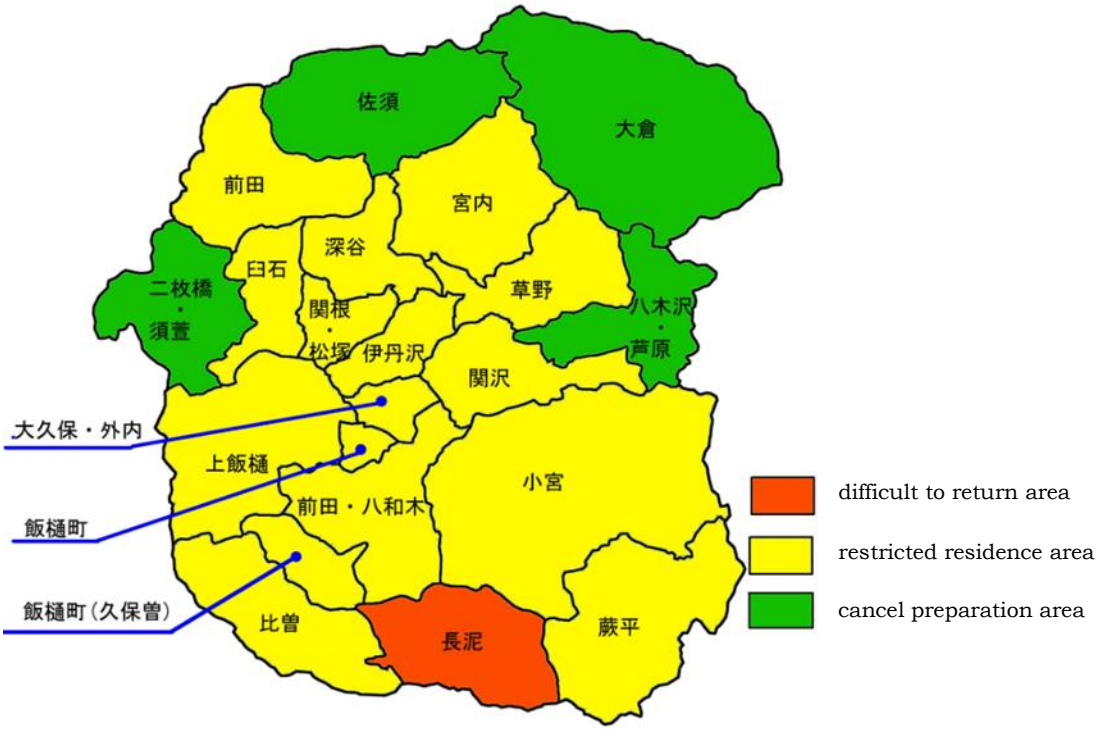

FIGURE 2-12 Figure 2-12 Evacuation Zones in Iitate village [8]

As of December 1, 2012, the situation of evacuation from the village is as shown in the table below.

TABLE 2-2 IITATE VILLAGE EVACUATION SITUATION
(AS OF DECEMBER 1, 2012)

	Number of people evacuated	Number of households evacuated
Outside of Fukushima pref.	514	295
Inside of Fukushima pref.	6059	2742
Inside of the village	100	95
Total	6675	3134

The total area of Iitate village is now under evacuation orders, but an elder care facility, which has 88 people (88 households), is still under operation by permission of the

government. According to the census, official population of Iitate is 5945 people (1689 households) [8]. On the other hand, the number of households evacuated is nearly double as the original number. This increase in number of households means that many families are now living separately due to evacuation.

Iitate village office has now moved to Fukushima City. The village is sharing information with people inside and outside through public relations magazine named "Kouhou Iitate," and the website specialized for information related to the earthquake [9].

2.3.1. FROM THE ACCIDENT OF NUCLEAR POWER PLANT TO NOW

In this chapter, articles about Iitate village in the newspaper from 11th March in 2011 to 9th January in 2013 are summarized.

①SPECIFIC PLANNED EVACUATION AREA AND THE EVACUATION

31th March, 2011

IAEA (International Atomic Energy Agency) detected twenty million becquerel of Iodine 131 in 1 square meter in the soil of Iitate village and pointed out that "Villagers need to evacuate". The Nuclear and Industrial Safety Agency's stance was that "We don't know the evacuation area would be expanded" and "We will take time for further consideration".

11th April

In the morning, Japanese government declared that they will not expand the evacuation area with radius of 20km of a concentric circle, but they will expand it based on the result of monitoring and detailed analysis. In the afternoon, government designated Iitate village as "Planned Evacuation Area" and indicated villagers to evacuate to outside of the area by the end of May.

15th May

The plan to evacuate about five thousand villagers to the outside, starting with households which has babies and pregnant women within the end of May was enforced. Iitate village searched one thousand houses for one month, but that was the half of the required numbers of house. Reservation of houses in evacuation area was tough and 1427 people out of about 6200 villagers had nowhere to go on 31th May. On June, about 90 percent of the villagers had already evacuated.

22th June

Iitate village moved its office to Iino area in Fukushima city and declared opening of the new office.

7th July, 2012

Government decided to change its policy by defining 3 separate areas depending on the amount of radiation because of the request from Iitate village.

1."The area difficult to come back" This area has over 50 mm Sv of the amount of radiation exposure in 1 year and prohibited to enter.

2. “The area preparing for the lift of prohibition of entering” This area has under 20 mm Sv.

3. “The area restricted for living” This area has over 20 mm Sv, but under 50 mm Sv.

January, 2013

There is no one living in Iitate village except people in “Iitate Home”.

②CONTAMINATION IN FARMLAND AND EXPERIMENT OF DECONTAMINATION

12th April, 2011

It was discovered that there were 8 places in Namie town and Iitate village with radioactive cesium level beyond the standard of planting rice in paddy field. Iitate village decided not to plant any crops this year.

22th April

The restriction of planting rice in paddy field with radioactive cesium beyond the standard was exercised by the government.

28th May

The Ministry of Agriculture, Forestry, and Fisheries and Fukushima prefecture started to experiment with decontamination in the soil. They tried three ways of decontamination.

1. Removing the surface of the soil by heavy machine

2. Draining paddy fields, mixing soil so radioactivity is absorbed, and draining the muddy water.

3. Planting sunflowers, which was thought to absorb cesium.

20th August

One of the laboratories in National Agriculture and Food Research Organization started an experiment of decontamination of cesium in paddy field. They used the method that hardens the surface of the soil by using a fixation agent and rip the hardened soil by heavy machines.

28th September

Iitate village made an official announcement of the plan of decontamination in the village. According to the announcement, the decontamination will lead to a livable environment under 2 years, arable farm land under 5 years, return forests to their original state in 20 years. They also said that radioactive waste would be put into the box made by concrete and leave it in the national forest area temporarily.

7th November

Ministry of the Environment started a detailed survey of radiation dose in the area where the government has a responsibility to decontaminate. They made a detail map of space measuring dose of radioactive distribution, especially focusing on living environment area.

7th December

Self-Defense Forces started the decontamination on a n large scale. Before large scale decontamination, they decontaminated the office of Iitate village by using high pressure washers and metallic brush to make a base of decontamination. [22]

Dose of radiation in the air 1 meter from the land decreased from 4.39 micro Sv per hour to 0.96 micro Sv per hour in turf grass in front of the office on 7th December. Self-Defense Forces withdrew from decontamination efforts on 26th December.

2.4. THE RESEARCH ACTIVITY OF THE ORGANIZATION

2.4.1. THE MOTIVE FOR THE ACTIVITY

Because there are many people in Resurrection of Fukushima with different backgrounds, the motivation for the activity is also different for each person. So, we classified some common motives heard from interviewing in this chapter.

LIST 2-3 CLASSIFICATION OF MOTIVES FOR PARTICIPATION

Motive	The voice of the member
・Companionship	"I take part in the efforts because the victims and I have are from same hometown. I want to and feel I can do something for them."
・Feeling of pride in using the most advanced technology for decontamination	"I'm proud that our method of decontamination is most advanced." "I feel that we are getting good results from decontamination."
・The pleasure that their volunteer work match with local people's demands	"I think there are many people that feel happy to work for other people's lives. Being helpful for other people's demands is a very important reason for participating in this volunteer organization."
・The sense of mission that our generation should take the responsibility of the accident	"I think it's difficult for young people to work for the reconstruction for their entire life, because they have many things they want to do. Old people have the responsibility for this problem and should deal with it."
・Fun to make new friends and meet with new people	"It's fun to meet new people and make new relationship. Something fun or interesting is important factor to continue our activity. Local people are also having fun to participate in the activity."
・To know the real situation	"To know what people really think in Fukushima, it's necessary to go there."

As the list shows, not only the motives which are related to helping people in Fukushima such as "companionship" and "the sense of mission that our generation should take the responsibility of the accident", but also the motives which are related to having fun to do the activity of the Resurrection of Fukushima such as "fun to make new friends and meet new people" are important for participating to the activity.

2.4.2. THE COST OF RESEARCH

As we mentioned in chapter 2, many projects in Resurrection of Fukushima are ongoing. In this chapter, we would like to talk about how the cost of the activity of the organization is managed.

①OBSERVATION OF RADIATION、WEATHER, AND SOIL

About the cost of the project of observation of radiation, weather, and soil is based on the interview of professor Mizoguchi. In this project, 5 monitoring systems are set on Sasu (The house of Eitoku Sugano, The house of Muneo Sugano, 2 machines in Mt.Myojin, the planet observatory station of University of Tohoku).

The cost of the field router and sensors for observing soil and weather are covered by the budget of the project that is showed in the List 2-4.

The activity of Resurrection of Fukushima was assisted by Mitsuibussan Kankyo Fund of 2012 as “The experiment and practice for the reconstruction of livelihood and industry in Iitate village, Fukushima”. Also, Adaptable and Seamless Technology transfer Program (A-STEP) of Japan Science and Technology Agency(JST) assists the organization.

Moreover, one of the sensors is borrowed by the Japanese Society of Irrigation, Drainage and Rural Engineering. This sensor is originally donated by the companies AINEX and Decagon to the Japanese Society of Irrigation, Drainage and Rural Engineering.

LIST 2-4 THE NAME OF A PROJECT AND THE USAGE

Name of the organization and the name of the project	**Usage**
Meiji University “Support for reconstruction from the earthquake and research of disaster prevention”	Transportation fee Purchasing some of the monitoring post
Mitsuibussan kankyo fund “Support for the activity (Support for the reconstruction)”	Purchasing some of the monitoring post
Japan Science and Technology Agency(JST) “Adaptable and Seamless Technology transfer Program (A-STEP)” “Revitalization Promotion Program”	Purchasing machines

②ANALYZING SAMPLES

It is necessary to check the amount of the radiation and the radiation material of the samples including radiation material for radioactive contamination examination, decontamination examination, and examination of growing rice plants. To analyze these samples strictly, it is important to have technology or machines of specialized agencies. Resurrection of Fukushima can make it possible by making relationship with two organizations.

1. Graduate School of Agricultural and Life Sciences, The University of Tokyo (UTAL)

Graduate School of Agricultural and Life Sciences, The University of Tokyo received "The request for cooperation of research and examination to reconstruct agriculture and forestry in Iitate village " from the chief of Iitate village Norio Sugano. So UTAL started to cooperate with Iitate village from October 2012 to September 2014.

Resurrection of Fukushima asked Laboratory of Radio-plant Physiology to analyze samples.

2. High Energy Accelerator Research Organization(KEK)

This organization is in a cooperative relationship with Resurrection of Fukushima and they analyze samples.

④ OVERHEAD COST

People who participate in the activity should pay food, transportation and motel fee by themselves. If they stay at "Furusato Taiken School", which is supporting the organization, they can stay at a cheaper price than usual.

So, the research activity of Resurrection of Fukushima is supported by assistance from funds, budget of each project, cooperative relationship with specialized agencies, and payment by the participants. That is why this organization can maintain their activity.

① TIME

Because the members of Resurrection of Fukushima are busy with their job, they volunteer mainly on Saturday and Sunday. So, the members do their activities about 10 days in a month. Time for the activity depends on each member, but one of the member works from 8:00 am to the evening. They sometimes participate only 1 day when they can't do 2 days. Thus, each member participates in the activity of the organization with their own limited schedule as much as possible.

② WORK FORCE

Basically, about 10 to 15 members participate in the activity in Iitate village. The member's background and their job are various. For example, not only researchers, but also a journalist, president of an IT company, and Iitate villagers are participating in this organization.

③ PROBLEM TO BE SOLVED

(1)THE PROBLEM OF RESURRECTION OF FUKUSHIMA

As the realm of activity of the organization expands, the secretariat becomes busier, so they do not have enough time and people to maintain their organization. Thus, they need volunteers to help the secretariat in Tokyo area now.

(2)HARDSHIP OF THE MEMBER

In this section, the hardship for participating in the activity is mentioned. The voice of member I, who tries to develop the technology of decontamination, is mentioned in below.

I mentioned that even though the new technology of radioactive decontamination is developed, its technology may not be applied to Iitate village on a large scale. Also government shows some ways of decontamination and the decontamination based on long term decontamination scheme is enforced under these official ways of decontamination. It is necessary to develop more efficient, environment-friendly, and cheap decontamination technology, but there will be many steps to make these technologies practical. This is the difficulty of developing technologies.

3. CONCLUSION

In 1.4, we presented the material and necessary elements when doing research as a volunteer. Based on it, in 2.4 we took up the NPO “Resurrection of Fukushima".

In conclusion if they meet the following conditions, doing research as a volunteer is possible.

- Enough people can be secured
- Enough budget and funds to purchase necessary materials for research]
- Motivation and enthusiasm of each participant

The organization manages basic elements that are required in order to practice the research, people, goods and money to continue activities.

When we met the members we noticed an additional factor: motivation.

The members of the organization are not necessarily from the Northeast area of Japan. It turns out that the core members who gather every weekend journey from Tokyo. In the interviews, a strong sense of mission, sense of crisis and the joy and challenge to work as an organization based in the region.

The special characteristic of volunteer activities is that monetary rewards are not the principal aim. Not only the resources, the connections of people that expand their activities are also essential.

4. THOUGHTS

This chapter shows the each thought of members of the Group 6 who visited the Iitate village and Resurrection of Fukushima and interviewed local people and the members of the organization.

① KYOKO ARAI

Before the first visit, Iitate, where the entire village was under the evacuation call, was unimaginable for me because I mainly had been to the coastal areas since the massive earthquake. Whenever I had visited cities in so-called "disaster areas," even though the streetscapes had vanished, there had been signs people's lives and many encounters. Then in a village without people, how can one think about community development? With this question, I went to Iitate for the first time.

"There is no visible damage here," after a half-day activity in the village, a Resurrection of Fukushima member mentioned. The biggest difference from the coastal areas is that nothing can be a trigger for people to visit. Like the debris left by the tsunami, physical damage needs many hands for reconstruction. By providing a base, the NGO aims to let more people to come to the village comparatively hardly accessible.

One more thing that I got interested in was the members' motivation. In addition to their self-pride and the sense of responsibility related to the decontamination technique, and the sense of mission like "clean up the mess" of their own generation, I found that the new relationship between people inside and outside, or even among the members brought them pleasure on every weekends. There was definitely peoples' collaboration in Iitate, where I initially had thought like "a place with no one."

When people participate in the disaster recovery process, there is no clear line between insiders and outsiders. Sometimes the boundary is quite unclear, and people with different relationship or position will together work for the future. This way of collaboration exists not only in the disaster areas or in this country, but also in developing countries, or all over the world. Many word such as "disaster areas," "disaster victims," "volunteers" became more familiar after the earthquake. So where are the "disaster areas"? Who are the "disaster victims"? I would like not to stop facing these questions.

② TAKETO OTA

【The accountability】

Through this interview survey, what impressed me the most was stories about persisting discrimination for evacuees from Iitate village. It was often said that discrimination is caused by the discriminator's lack of knowledge about radiation.

Why such discrimination without any ground exists? I think it is due to people's distrustfulness toward officially brought out information about radiation from Japanese government, Tokyo electric power company (Tepco), internet and so on. Likewise, Mr.S described in interview, governments of some countries and nuclear authorities claim dangerousness of this incident while Japanese officials and Tepco claim the safety of it.

Furthermore, official radiation giger counter in Iitate indicate lower giger readings than real occasion because of the design and the report from this counter is undervalued (Our team has checked with other counters). This "undervalue" is noted on internet too. In this occasion, if people cannot feel comfortable but feed distrustfulness, it adds up.

In fact, it is very difficult to gather accurate data about how harmful radiation is for human bodies. Because there are only limited cases in which human bodies are exposed to radiation and experiment on human bodies is, as it goes without saying, never allowed.

Therefore, we only are able to analyze limited statistical data about past cases like Chernobyl. These statistical data can be interpreted by so many ways as readers like. The interpretation and conclusion can depend on ones thought. For example, about Chernobyl, International Atomic Energy Agency (IAEA) claims that rise of childhood cancer was the singular heart damage for humans, while some scientists, like Yury Bandazhevsky, claim that other kinds of cancer and even cardiac illness increased then. However, most information about health impairment which is emitted by government is optimistic like former one, and the explanation about pessimistic opinions like the latter one are seldom seen.

But it is easy to get not only optimistic information these days but the pessimistic information by the Internet— spread through many people. It is typical example that Mr. Yu Tanaka (Rikkyo University part-time teacher) ,who has been famous as an anti-nuclear power plant group since before 3.11 earthquake and nuclear incident, has quoted the opinion of Bandazhevsky through on-line interview

I think the present condition that the opinion of the government inclines toward optimistic views while many kinds of opinion can be seen by many people escalates the uneasiness of people. For example, in the questionnaire (1366 effective replies) which area symbiosis design laboratory of the Nihon University performed in the Iitate village electors, it turned out that 33.2%of respondents feel "Only the information which inclined toward pessimism can be obtained" while 16.0% of them think "Only the information which inclined toward rosy views about the radioactivity risk can be obtained and 29.9% of them answered as "I'm trying not to care about a radioactivity risk as much as possible ".

People who feel deviation for the disclosed information about radiation or who try to divorce oneself from reality to maintain their mental health still exist in large number in Iitate.

Moreover, since the infrastructure used as information sauce, such as the Internet, television, a newspaper, will not very change when Iitate is compared with other parts of Japan, it is not hard to imagine that the distrust and uneasiness regarding radiological information have widely spread over whole Japan.

Furthermore, the existence of "Nuclear-village" has been increasingly known after the accident by people. Nuclear-village means group of the stakeholder who has gotten huge profits by construction and management of the nuclear power plant, such as electric power companies, dynamo makers, politicians, and mass media.

When I inquired the “Village”, I certainly understood that “Village” can generate a huge economical profit, because the electricity bill of Japan is decided by the method named as "Full-cost-system." In this system which is designated by a law, the profits of regularity (about 3.5%) may be added to the cost which power generation took to the electric power company, when electric companies collect an electricity bill. It means that the more Tepco applies cost, the more Tepco profits.

And the cost of a nuclear power plant is high. If it is said correctly, while power generation cost is cheaper than other power generation methods, miscellaneous expenses are expensive such as post-processing of nuclear waste, advertising expenses, and donation for stakeholders . They are calculated as power generation costs, and added to the bill (November 23, 2011　Tokyo Shinbun). It becomes possible to cover up the increase of the actual electricity bill, stating atomic power "power generation" as low cost as a result. And it is considered as institution installation expense, and a large amount of profits are created for media as advertising expenses, and are given to a self-governing body or a politician as a donation at a major manufacturer.

This structure of the Village has been known generally and widely.

As the Government, Tepco, or members in “Nuclear-village” only emphasize the safety of reactors or the radiation and neglect pessimistic opinions toward radiation without enough answer, there is no question about what many people feel distrust.

If the Japanese government and an electric power company have an intention of wiping away this fear of insecurity, they should listen to opinions against reactor or safety of radiation, and answer to them explaining about the safety of radiation and the necessity of nuclear power plants through understandable ways for ordinary people.

For example, the paper of Bandazhevsky is dismissed by saying that its logic is not sound and this kind of criticism can be seen also on on-line. If it carries out from people with special knowledge, it will not be difficult to refute the contents of this paper. If the government shows the interpretation of a paper, and if a counterargument is brought forth in the form which many people can understand, many people must be able to feel easy thinking “There are faults even in the opinion which claims dangerousness of the radiation".

However, as it is now, the government fails those efforts and does not provide an outlet to the voice which opposes the government's opinion or doubts the necessity for radiation risk assessment or a nuclear power plant for the government.

This gives people the impression that "Japanese Government might have hidden inconvenient information", and I feel the numbers of those who have distrust and uneasiness in radiation information are increased certainly. And these distrusts and insecurities seem to lead to a growing "discriminations without scientific compliance".

In order to wipe away insecurity for radiation from people, the explanation to radiation should be first shown in the form which many people can understand.

In order to obtain the understanding, " stakeholders in "Nuclear-Village mustn't give the impression in which "the stakeholders are keeping secrets about radiation.

In order to eliminate such impression, the people in "Village" must disclose wider information about radiation or reactors as easy-comprehensive forms even if this may damage Village's short time profit.

Although repeated, if Village people, especially about the government and Tepco that have responsibility of this disaster, plan to save people troubled with discrimination, I want the Village to explain about "Real dangerousness" of radiation, and the "Real necessity" for a nuclear power plant.

This is the biggest thing which I hope to say after the trip to Iitate village.

③ PRIYANKA SONI

When I first said I wanted to study abroad in Japan a year after the Great Eastern Japan Earthquake, my parents and friends strongly opposed by decision, quoting rumors and exaggerated news. Among the many reasons why they did not wish me to go to Japan, the one that stood out the most was the fact that earthquakes will continue and the instability of the nuclear situation. My mother worried that if I live in Japan, I may not be able to give birth in the future. One of my friends told me in a serious tone that his brother who was stationed in Okinawa was diagnosed with oral cancer a few months ago. He was convinced it was because of the radiation from the nuclear power plant failure. Everyone thought that my going to Japan was like intentionally and unnecessarily throwing myself in a dangerous situation.

Before I came to Japan, a came across an article on my Facebook newsfeed titled "Read this and restore your faith in humanity". In the article, there was a feature called "Retired scientists work on cleaning up the nuclear mess so young people don't have to", which I found very moving. It didn't mention the name of the organization, but I'm quite sure it was talking about Resurrection of Fukushima. I thought it was absolutely amazing from the bottom of my heart. Humans are social animals while being selfish at the same time–especially when it comes to self-preservation and survival–but I still believe that everyone has an altruistic side to them. Searching for an answer to why people do volunteer activities, I decided to join this group.

Actually visiting Iitate village, meeting with people from Resurrection of Fukushima, and talking to people who had to evacuate because of the nuclear disaster made me not care about the philosophy behind it all. The feeling of wanting to do something to help was overpowering. Iitate village is blessed with natural beauty, but not seeing any damage to buildings or roads, and not seeing anyone waking around was sort of creepy. Since radiation can easily spread through water or wind, I thought decontamination would be next to impossible and thus, could not comprehend why people would want to devote their precious weekends to a seemingly impossible task.

While interviewing one of the core members of Resurrection of Fukushima, I was told by member M that “even if the goal is not visible, we have no choice but to do the tasks in front of us”. That was like a push on my back for me, and made me want to follow in their footsteps.

④ HANAE YOKOKAWA

Since I visited the Iitate village for interviews, the work related to Resurrection of Fukushima has increased. It was not related to my study but I wanted to take the time to help with their work. My motivation was the something I felt when meeting the members of the organization.

Of course it is difficult to think about the victims from far away. I never had visited the disaster area since the earthquake. Even thinking of the victims and the people in the affected areas when I watch news, there is no feeling of reality, it was buried in the day-to-day life so quickly.

After I visited Iitate village, I was finally hit with reality upon talking with people and seeing the scene. I think it was the most meaningful point that I felt obvious reality of the disaster area and victims there. It is necessary experience for the people on the top who feel they know the whole story only by imagination.

I felt strongly that I want to do something for them after I became aware of the victims and the affected areas. Resurrection of Fukushima is a platform where you can fulfill your desire. There is definitely something that each person visiting can do.

My work was to help an experiment conducted by a volunteer group. It was “Circle Madei.” This circle consists of the staff of department of Agriculture, University of Tokyo. It was formed from the feeling that "I want something to help for the reconstruction of the earthquake." For projects of the Resurrection of Fukushima, they undertake a simple experiment and time-consuming sample making for radiation testing. Using the time of a lunch break or after work, they do the work on a volunteer basis. Like this through the organization, a lot of people who want to something are able to put into action.

I want to see things go well in the future, and look forward to seeing how the thoughts of people involved in the organization and performance of a number of projects bear fruit.

⑤ LEO WATANABE

I participated in the activity of Resurrection of Fukushima with some confusion, because I couldn't grasp the theme of our group, which is "Is it possible to do research as a volunteer?" In the house of head office of Resurrection of Fukushima, there were many people who were much older than my father, talking or discussing about their volunteer activities enthusiastically and joyfully. I felt I want to become like these people when I saw that situation. I thought maybe they are more energetic and enthusiastic than me even though I am much younger than them. I was amazed by their enthusiasm and disappointed by the lack of mine.

The motives for participating in the Resurrection of Fukushima vary from member to member, but every member tried to work for Iitate village as much as possible. This attitude makes this organization well organized.

One of the special characteristic of Resurrection of Fukushima is working with villagers for the reconstruction. This cooperative attitude with villagers is very important to promote reconstruction smoothly, but this is lacking in the reconstruction of Japanese government. So the experience of Resurrection of Fukushima related to cooperation with villagers is useful for governmental projects. Also Resurrection of Fukushima can understand villagers voice better compared to the government, so its role will be bigger than now. One of the members said that cooperation between people from the outside of Iitate village and village people make something new. I don't know what it is, but I'm interested in cooperative working between villagers and outsiders, so I want to continue research on it.

5. AS A STUDENT

① FROM INTERVIEW

The first objective of our group is to figure out what we can do for Iitate village. And we consider about it much more than before when we visited Iitate village. In this chapter, we would like to show some villagers comments, which made us more passionate to seek something we can do for them.

[Student A] Are there any comments or advice for college students that want to do something for the village people?

[Member A] If there are people who want to come to Iitate village, I would like you to invite them to come here. And I hope they will tell what they experienced to other people. I think it is important to spread information from the local level. I guess there are many people who want to come here if they have chance. So it' s good if these people can come here.

[Member B] Please know this situation. Once you see it, it will be different to understand information compared to before. It will be different from how you receive the information from the mass-media until yesterday. Also I would like college

students to study hard. We don't expect much than you think. I think this severe situation won't change easily. It will take more than 10 years.

② ACTIVITIES

① INFORMATION DISSEMINATION

The members visited Iitate village and Resurrection of Fukushima at least once.

As for sending information that we has seen, heard and felt, we will publish an article own way in the facebook.

URL reference : http://www.facebook.com/tokuronG6

FIGURE 5-1 FACEBOOK PAGE

② TRANSLATION AS A VOLUNTEER (SONI)

Member O's words during our interview when we visited Iitate left a deep impression on me. When we asked what can we do as students to help, he answered that it was enough that we came to the village and observed the situation with our own two eyes. However, in the end he said that honestly, he didn't mean to sound harsh but he didn't expect anything from us. He may have meant it in a nice way, saying that even if there is nothing you can do, you don't have to feel responsible but I was shocked to hear that. I was frustrated that I couldn't do anything. Was there really nothing that I could do? Thinking about things I could do, things only I could do, the conversation turned to how the English version of the site is not up to date. I thought ah, that's it! As a native English speaker, I am the perfect candidate to translate the website into English. I wanted to spread information on the latest

nuclear condition, news about Fukushima, and the emotionally moving work of Resurrection of Fukushima to outside of Japan.

When I said I wanted to do it, I was handed a sample script to translate. I joined the translation efforts of the organization in December 2012. Lacking technical knowledge and confidence in my Japanese abilities, I was quite anxious about it but there was no way but do it. If you have the motivation and willpower, you can find something to do for sure. Everyone brings a different skill to the table, be it a technical skill or personal skill, and all of that is necessary for Resurrection of Fukushima.

③ STUDENTS AND NUCLEAR ACCIDENT (YOKOKAWA)

① PRESENTATION

December 1st 2012, in the event “Students and Nuclear accident“ organized by the students at Hall Nakajima, department of agriculture, the university of Tokyo, I introduced the Resurrection of Fukushima.

The students they major in various course presented in the event. The purpose of the event is to think the nuclear accident deeply with students.

② CONTENTS

The purpose is to tell the real atmosphere of the organization and make the audience feel familiar with them.

At the beginning of the presentation, we broadcasted their activities using the Internet for about 5 minutes and the message from Mr. Kanno who is a director of the organization. We also said the thought of members of the group 6.

There is a comment “I had a negative image to nuclear accident including such as" the poor). But It was good to know the positive fact that they are working positive :).“

I thought I can tell their positive attitude while receiving the harsh reality.

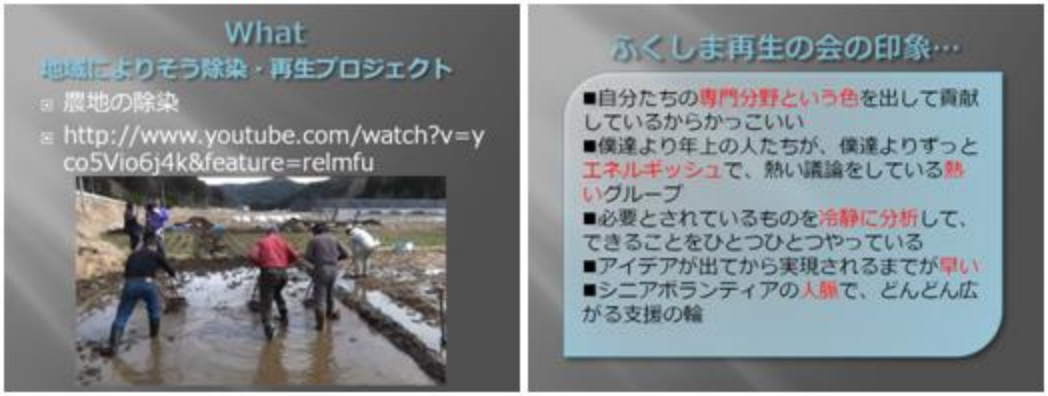

FIGURE 5-2 CONTENTS

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[13] Nikkei e-news 2011/6/22 1:20

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IN CONCLUSION

It has almost been two months after we visited Iitate in the foliage season. We now are able to feel closer to the village, and also have a far more concrete image than before when facing the issue if decontamination, which has been often reported through the media. Since Iitate is one of the least visited places in the “disaster areas,” we greatly appreciate this opportunity and feel responsible to process and share our experience.

As mentioned in the last chapter, we are beginning to try to deliver some information around us. From now on, we will keep giving interest to this issue, and will experience, visit, and learn more.

"We old men have to clean up this mess of our own generation," one of "Ara-Koki (around 70 years of age)" members said. We younger generations would like to live in the post-earthquake Japan, together with the affected places and its people.