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# The Structure of Problems Surrounding the Fukushima Nuclear Accident Evacuees

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**Abstract**

Since August 2011, the sociology study group of large-scale evacuation (SSGLE) has been conducting interviews with residents of the town of Tomioka in Fukushima Prefecture who were forced to evacuate from their home town because of the Fukushima Daiichi nuclear accident. While supporting town meetings organized by stakeholders, SSGLE recognized the following issues: (1) The problems that evacuees have faced are complex and very extensive. (2) These issues are not correctly recognized by policy makers and therefore the present policies do not effectively relieve the affected people. (3) The hastiness of decision making on regional restoration plans has contributed to deterioration of the problems of the affected people, and furthermore, (4) the structure of the Japanese administrative system with its limited degree of local autonomy is behind such issues with planning and decision making. In addition to these issues, it is not possible to deny the existence of public opinion to boost the seriousness of these problems because they don't realize the real situation that both of affected area and evacuees are facing. As these issues are caused by the discrepancies between the premise behind current reconstruction policies and the actual problems that nuclear accident evacuees are facing, the situation might lead to the collapse of the current policy approach and the municipalities themselves. To improve the situation, the following initiatives are required: survival and continuation of the affected communities that solely know and realize the serious problems by the accident, conveying feedback from the communities to the decision-makers by way of local governments, and long-term policies that take account of lived experiences and their changes as time goes on.

**Keywords:** Fukushima Daiichi nuclear power plant accident, town meeting, large-scale evacuation

## 1. Assumptions of the Discussion: The states of Disaster, Damage, and Evacuation Continue Today

First, I will present an overview of the situation regarding the evacuation resulting from the Fukushima No. 1 nuclear power plant accident, as of July 2014, regarding 3 types of evacuation: forced evacuation, voluntary evacuation and evacuation in daily life.

There are two main forms of evacuation observed in Fukushima, forced and voluntary. The former is an evacuation based on an administrative decision, and the latter is an evacuation based on the freely made decision of the person concerned.

After an evacuation directive is lifted in Fukushima Prefecture, some people may continue to stay away from their homes. Although some of these individuals may have been forced evacuees originally, they all fall into the category of voluntary evacuees once the directive is lifted. Tokyo Electric Power Company (TEPCO) pays compensation to the residents who are forced to evacuate from the designated areas. But once the evacuation directive is lifted, the payment to the evacuees will be terminated after certain period (Ministry of Education, Culture, Sports, Science and Technology).

There are many elderly people in the areas who receive compensation for their farming income, but if the directive is lifted, they no longer receive the payments although they can't resume farming. This causes serious problems that the number of poor and needy has increased among the elderlies.

One more status description can be added that we could call "evacuation in daily life," or hesitation to do something because of the nuclear accident. In this status, people experience various limitations in their daily lives. For example, radiation levels remain comparatively high in some areas in the eastern part of Japan. Therefore, the residents in these areas must be constantly concerned about the safety of their food and drink, in addition to their range of activities. We must include these people's life disruptions as part of any summary of the "state of the evacuation." This category also includes those who, once the evacuation directive was lifted, had no choice but to return although they did not want to.

Based on the above, it can be assumed that the actual number of people continuously being affected by the nuclear accident remains higher than the officially certified victims. Even now, the disaster, damage, and evacuation experience continue for those affected by the accident.

## 2. Whereabouts of the Problem

The Nuclear Emergency Response Headquarters regarded the nuclear accident resolved in December 2011, the year in which it occurred. The prime minister at the time, Mr. Noda, received its report and made the official declaration that the nuclear reactors were in a safe condition. However, trouble has continued to occur frequently at the power plant since then. The issue of radioactive contamination of drainage sources was a particularly severe cause for concern during Tokyo's bid to host the Olympics in 2020. Prime Minister Shinzo Abe's "safety declaration" in September 2013 was aimed at wiping out any anxiety in the international community.

At the power plant, work on the decommissioning of the nuclear reactor is still proceeding. Many unresolved problems, including the radioactive leaks from the plant, the contaminated drainage problem, and work delays, still arise continuously at the site. Furthermore, the delays in decontamination and restoration of infrastructure have had considerable impact on the affected municipalities.

In fact, the full extent of damage to the power plant has not been clarified, although officially the accident is resolved. Furthermore, those affected by the incident continue to be disadvantaged by the prolonging of the evacuation that has increased their suffering, even more than five years after the nuclear accident.

Although the national government has made a safety declaration, the actual situation in the affected area has not been normalized. The restrictions to areas in Futaba Town were lifted on May 28, 2013 by the national government (Yamashita et al., 2013). This means that the affected municipalities will assume responsibility for future policy decisions, such as altering the evacuation zone or setting the time frame for people to return to affected areas.

However, the national government's decisions still have enormous influence over residents' return to and the revival of the affected areas. Due to a lack of consideration for residents, these decisions have become a factor in increasing the evacuees' suffering and obstructing them from rebuilding their lives. TEPCO, the party responsible for the nuclear accident, is also a part of this problem in that it has exerted considerable influence on policy issues including compensation for evacuees and restoration of the affected areas.

Based on the issues already mentioned, this study will mainly focus on the various problems that evacuees have faced for more than five years since the accident. In the following discussion, we will attempt to explain empirically the facts and the structure of those problems, referring to the relationships between various actors and relevant policies.

## 3. Earlier Studies on Nuclear Accident Evacuees

A valuable study on nuclear accidents from the viewpoint of pollution is Nobuko Iijima's "Damage Structure" (1984). Assessments of damage levels and social factors related to each of these levels are described in the study (Iijima, 1984). Another useful study is Harutoshi Funabashi's "Harm Process" (1999) in which he clarifies such process as "containing various, derivative harm, that happens around and threatens victims."

The situation that the Fukushima nuclear accident evacuees have faced includes real effects at the highest damage level, issues of "life and health," and various threats to their livelihoods. The damage and harm processes resulting from this nuclear accident differ substantially from those described by earlier studies. Therefore, we will present a general view of some specific aspects of prior studies: research on damage and responses after an accident and research on nuclear accident evacuation.

In the first category Note 1., the focus is primarily on the situation facing the affected municipalities, the evacuation process, the administrative function reorganization process, and the policy process before and after the earthquake. The second category Note 2. mainly

deals with the issue of forced and voluntary evacuation; however, we should note that there is virtually no research on what we have called "evacuation in daily life," even though this is the most wide-ranging and long-lasting form of evacuation as discussed earlier.

Furthermore, research on the evacuation outside Fukushima Prefecture that focuses on the acceptance of and support for evacuees by municipalities can be described as a third category Note 3..

Survey research has been executed for all three of these research categories. Detailed data should also be collected in the future, because the situations of the affected municipalities and the evacuees keep changing significantly.

The previously cited types of studies are from the micro viewpoint that focuses on the affected parties and local governments. A fourth category Note 4. contains the macro studies that, through quantitative analysis, captured the actual situation of evacuees and multiple affected local governments. These studies are valuable for both grasping the realities of post-accident evacuation and informing reconstruction policy. However, difficulties such as deflection of the respondents have also influenced in some of these studies.

A fifth category Note 5. of studies deals with compensation for problems caused by the nuclear accident and evacuation. This research has encompassed victims' sense of loss of their hometown—that is, the evacuees' material and spiritual losses that they cannot recover at their evacuation destination. This damage is widely regarded as the most basic and common for evacuees and research in this category has explored the possibility of finding new forms of compensation.

These are the main research trends related to nuclear accident evacuations. Among the studies conducted thus far, there has been little research on problems in the relationships between local governments, evacuees, TEPCO, and the national government.

In this paper, based on a case study of the town of Tomioka in Fukushima Prefecture, We examine the problems faced by nuclear accident evacuees, as described below. Through this work, we will discuss the challenges facing the affected areas while touch on other background factors that were mentioned earlier.

## 4. Subject of Study and Method

### *4.1 Research Objective and Method*

#### 4.1.1 Overview of Tomioka Town

Tomioka is located about 10 km south of the Fukushima Daiichi nuclear power plant; Fukushima Daini nuclear power plant is located on the southern boundary of the town, between Tomioka and Naraha. The town's population had increased since 1971, when Unit 1 of the Fukushima Daiichi nuclear power plant started operation, and leveled off at about 16,000 people after 1995 (Ministry of Internal Affairs and Communications, 2010). The composition of the population by age is as follows: children (0–14 years), 14.2%; working-age population (15–64 years), 64.7%; and elderly population (65 years and older),

21.1%. According to the 2010 census, the industrial composition ratio of the town is 5.3% primary industry, 30.0% secondary industry, and 64.6% tertiary industry. The town's estimated gross product in the fiscal year 2010 was about 121.4 billion yen. Of that total, about 78.1 billion yen came from electricity, gas and other public utilities (64.4% of the total), and 12.7 billion yen (10.5%) came from the service sector. The breakdown by industrial sector shows that the town has a strong relationship with power-related business, with a primary focus on the nuclear power plant.

Early in the morning on March 12, 2011, the day after the Great East Japan Earthquake, an evacuation order covering a radius of 10 km from the Fukushima Daiichi nuclear power plant was issued by the Prime Minister's Office and forced all residents of Tomioka to evacuate (Yamashita et al., 2013). As of September 1, 2016, 15,053 people have been evacuated from the town; of these, 10,780 are currently residing elsewhere within the prefecture and the others are living outside it (Tomioka town website).

#### 4.1.2 Outline of "Tomioka child future network" (TCF)

TCF is a self-help network organization comprised of members of the parenting generation who were evacuated from the town. Many of them have been forced to make important decisions such as work, residence and children's education while living as refugees. Furthermore, there has been great suffering and anguish, in part because of conflict between parents and children. TCF was established in February 2012 as a voluntary organization with approximately 100 members. The town meetings examined in this paper are among the TCF activities designed to heighten the influence of evacuees' voices on policy issues (TCF website).

### *4.2 Research Method*

This study adopted two primary methods of analysis: the KJ method Note 6. (Spool, 2004) developed by Kawakita Jiro, and participant observation Note 7. at TCF town meetings. Participant observations, categorized according to the time elapsed after the accident, were used to capture the specific problems faced by evacuees and their intensity. On the other hand, use of the labeling approach contained in the KJ method captured more objectively the problems experienced by a wide range of evacuees.

#### 4.2.1 Participant Observation at Town Meetings

In this paper, we examine the life situations of evacuees based on the results of eight town meetings held by TCF between July 2012 and March 2013.

These town meetings had two primary features. One is that they were closed meetings, limited only to townspeople. This approach was adopted so that participants would feel free to say anything they wanted, including expressing anger, anxiety, or worries related to their lives as evacuees. Researchers supporting the meetings were required to play only a support role, such as recording the proceedings of the meeting, and were not permitted to express their own opinions. Another feature is that TCF arranged discussion groups for categories of participants such as senior citizens, housewives, and property holders.

The members of SSGLE extracted and organized all participant remarks from each town meeting; in the following sections, we analyze the content and meanings of these remarks.

4.2.2 Extracting Problem Structure Using the KJ Method

In this study, to understand the problem structure including the external environment surrounding the evacuees, we use the KJ method in combination with the participant observation analysis described earlier. We reorganized resident comments from the town meetings into 1,052 statements on the meaning of problems and issues in their evacuation experiences. The KJ method was applied to analyze these data. Using the labeling results in the first stage of the KJ method, we extracted the problem structure of the nuclear accident evacuation (Figure 1).

## 5. Frame of the Problem Structure Surrounding the Nuclear Accident Evacuees

### *5.1 Problem Structure of Nuclear Accident Evacuation*

We will start by showing the basic framework of the problem structure, which was organized based on the labeling information obtained with the first stage of the KJ method (Figure 1). The most common expressions of problems by evacuees concern their being deprived of the life and livelihoods that had existed in their home town (① in Figure 1).

The evacuees' sense of loss has grown as their evacuation has been prolonged, and their anxieties related to livelihood and health due to the effects of radioactive contamination do not appear to have any easy way of being resolved (② in Figure 1).

In this unstable environment, evacuees have faced various problems with regard to returning home and rebuilding their lives (③ in Figure 1). A major concern is their sense of responsibility for and anxiety about their children's future. This concern is shared among many residents, regardless of gender or age (④ in Figure 1).

The evacuees did not indicate they felt the policies developed by county and national governments had helped to reduce or resolve their problems. The results of the labeling work using the KJ method show that residents primarily believe that zone restructuring decisions were based on the convenience of the policymakers and administrators, and were not designed to be for the welfare of town residents. In other words, people think that the national and local governments focused on reaching a quick settlement of the nuclear accident through compensation and the return of evacuees to their homes (⑤ in Figure 1). Furthermore, many of the evacuees believe that the local government has given unfavorable treatment to evacuees living outside the prefecture (⑥ in Figure 1). Evacuees are worried not only about the national government's policy to press evacuees for the early return, but also that the reality of the primary damage has faded in the minds of the general public (⑦ in Figure 1).

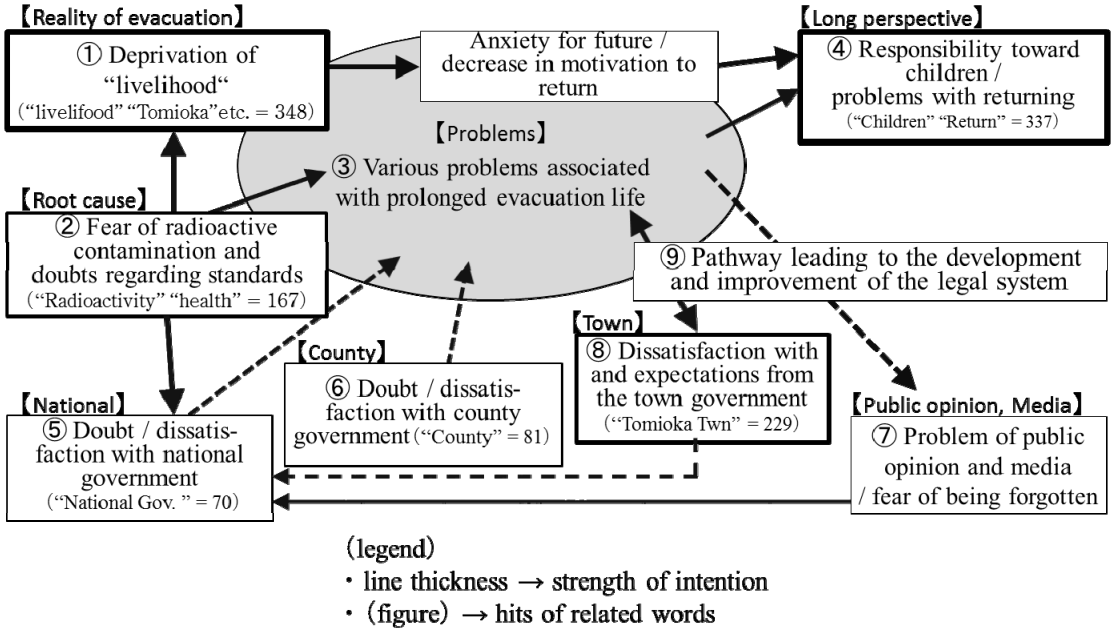


Figure 1. Basic frame of the problem structure surrounding the nuclear accident evacuees

In addition, evacuees feel that they have received limited information from the town office and that actions by the town congress have been largely invisible (⑧ in Figure 1). To address the various government administrations more effectively, some of the residents have wanted to aggregate the voices of various residents (⑨ in Figure 1).

*5.2 Radioactive Contamination and Health Anxieties: The Root Causes Are the Nuclear Accident and Consequent Unsafe Condition of the Power Plant*

Although anxieties about the effects of the radioactive contamination on health and livelihood were given as main causes of the evacuees' problem structure, we should note one particular aspect of the problem (② in Figure 1). Because the people in Tomioka had to evacuate because of the risks resulting from a nuclear accident, these concerns emerged only after the evacuation. However, the root of the problem is the risk of an accident in the first place. Therefore, for the evacuees and affected local governments, unless the fundamental problem of the potential risk of another nuclear accident is resolved, the return home and regional reconstruction cannot occur.

However, two major problems are hidden here. One is the policy trend in both the national and local governments toward promoting quick return home and rapid reconstruction. Another is the fact that public confidence in TEPCO, nuclear power plants, and the national government has collapsed, and the distrust of these entities continues to increase.

*5.3 Possibilities for Long-Term Policy Development*

Currently, as already noted, a major challenge facing the evacuees is their responsibility toward and resulting anxiety regarding the futures of the affected children (④ in Figure 1).

Many of the evacuees are struggling to decide whether to migrate or return home, and are considering their children's growth, their aging parents, and their own aging. In this regard, it should be noted that the residents are considering their future life planning in accordance with the stage in the lifecycle of their family or generation—e.g., caring for parents and children's upbringing. This indicates that evacuees expect the return and reconstruction process to continue in stages for many years to come.

With respect to local government policies on return and reconstruction, many residents have expressed complaints, as mentioned earlier (⑧ in Figure 1). In this regard, we would like to add some comments based on the results of one TCF public meeting Note 8.. Many residents did not know what the city government had been doing. However, through the public meeting, it was discovered that there is no significant difference between the residents and the local government regarding recognition of the existing problems, and that the local government has submitted various petitions and requests to the national government and TEPCO. Moreover, although residents were unaware of the decision-making processes, the national government had decided on various policies. They made the residents doubtful about attitudes of the local government.

The problems shown in box ③ in Figure 1 were recognized equally by the residents and the local government. However, criticisms and complaints by residents regarding the local government have increased as residents could not see the decision-making processes. It is presumed that this discrepancy exists because the local government's actions are largely invisible to the residents. At the public meeting, a local government representative stated, "We share the voice of residents while also expressing the anxiety and frustration that we are experiencing, and we intend to appeal our voices to the national government."

The statements of the local government representatives and residents who spoke at the town meetings indicate that the residents can have a pathway leading to the development and improvement of the legal system only through the local government (⑨ in Figure 1).

## 6. Conclusion

Based on the previously mentioned considerations, the overall structure of the issues surrounding evacuees can be summarized as follows. Among the evacuees, deprivation of livelihood is the biggest problem. However, the root causes of the various evacuation-related problems are the doubt of "non-convergence of the accident" and "distrust of national government." Therefore, if these serious issues are not resolved, the various problems that occur during evacuation life will not be resolved either.

Furthermore, national government has been promoting rapid return and reconstruction within 5 to 6 years after the accident. But contrary to the governments' position, evacuees expect the return and reconstruction processes will continue for decades.

The people of Tomioka well know the local governments understand the difficulties of the residents. However, because of the administration and legal systems force the local government to obey the decision made by the national government. To improve such unreasonable situation incrementally, both the people and the local government need to raise

their voice continuously.

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## Notes

Note 1. Kawazoe and Urano (2011), Ohashi and Takaki (2012), Kanno and Takaki (2012), Yanagisawa and Kikuchi (2012), Sato (2012, 2013).

Note 2. Yamashitta and Kainuma (2012).

Note 3. Matsui (2012), Takaki (2012).

Note 4. Tamba (2012), Imai (2011a, 2011b, 2012).

Note 5. Kanai (2012), Yokemoto (2013).

Note 6. The author asked Yamaura Haruo to assist with analyzing the speech data using the KJ method. Yamaura has contributed to the spread of the KJ method, working with Kawakita who developed the method. Yamaura has been engaged in training and guidance in the medical and welfare sectors in universities, companies, and governments.

Note 7. The author belongs to SSGLE on Nuclear Evacuation, Tomioka Team." This group has worked on several studies related to the nuclear accident evacuation. The members of the Tomioka Team (as of June 2014) are Akihiko Sato (Fukushima University), Ryosuke Takaki (Iwaki Meisei University), Kahoruko Yamamoto (Tokyo Metropolitan University), Yusuke Yamashita (Tokyo Metropolitan University), Masayoshi Kato (Fukushima University), Katsuhiro Matsui (Niigata University), Yuko Matsusono (Shukutoku University), Mashiho Suga (Kansai University), and Sanae Yamamoto (Tokoha University).

Note 8. TCF held a public meeting, called the "Tomioka future meeting," on February 16, 2013, with the aim of exploring constructive approaches toward rebuilding the town. At the meeting, leading policy issues of concern for the local government and residents, obtained from the results of the town meetings, were presented. Scheduled speakers included the minister of reconstruction, the minister of environment, the mayor of Tomioka, the chairman of Tomioka Council, TCF members, and the present writer. (The two ministers were absent on the day due to other public service responsibilities.)