

Community Governance in Decontamination Policy after the Fukushima Nuclear Accident: Two Case Studies from the Naka-dori Region, Fukushima, Japan

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Abstract

The aim of this study is to explore the influence of community governance on the determination and implementation of decontamination policies in local communities, focusing on Miharu Town and Koriyama City in the Naka-dori region of Fukushima Prefecture. This study is based on fieldwork undertaken in Miharu Town and Koriyama City. Data were gathered from local documents and interviews. Interviews were conducted with the municipal administrations and neighbourhood associations in charge of post-accident decontamination policies. The results showed that the procedures and contents of the resulting decontamination policies were formulated on the basis of organizational cooperation among municipal administrations and neighbourhood associations in both municipalities. Immediately after the accident, neighbourhood associations participated in the process of determining the decontamination policies of these two municipalities. Networks comprising several neighbourhood associations tackled decontamination in educational facilities and along school routes. In some districts, neighbourhood associations participated in decisions on location and management of temporary storage yards for waste generated by decontamination work. In addition to these institutional factors, land-use-related factors in the spaces used in daily life influenced the procedures and contents of the decontamination policies. These defined the differences between methods of establishing temporary storage yards in Miharu Town and Koriyama City. Our findings suggest that the relationship between community governance and land use deserves more attention in this case, as in the case of other environment problems.

Key words : community governance, decontamination policy, Fukushima nuclear accident, Naka-dori region

1. Introduction

Decontamination is one of the main methods for eliminating radioactive contaminants and reducing radiation exposure in areas used in daily life. After radioactive materials escaped and spread as a result of the Fukushima Daiichi Nuclear Power Station accident in March 2011, the Japanese government legislated a legal framework for decontamination, and the Act on Special Measures concerning the Handling of Radioactive Pollution came into operation from January 2012. Based on ICRP standards, the act set guidelines for decontamination aiming to reduce exposure doses. In the act, two types of decontamination areas were designated: Special Decontamination Areas and Intensive Contamination Survey Areas.

Table 1 presents an overview of the decontamination areas. Special decontamination areas were established in the evacuation zones, which had high level radiation

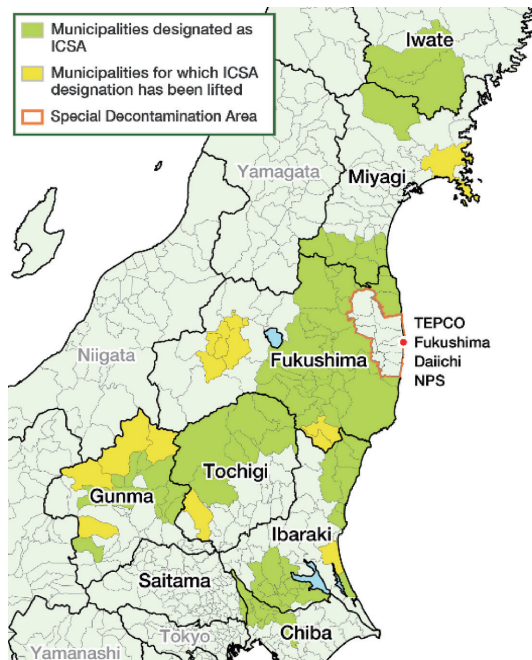
doses. The Japanese government has overseen decontamination policies in these areas directly. Meanwhile, Intensive Contamination Survey Areas (ICSA) were established outside the evacuation zones, where the radiation doses were relatively low level.

As shown in Fig.1, 102 municipalities in eight prefectures were designated as ICSA on December 28, 2011. In ICSA, decontamination was left up to the stakeholders in the local communities. The Japanese government argued that decontamination by the these local communities themselves would most effective because the administrative functions were present, the residents were living there, and it was easy for them to understand the circumstances and the residents' needs (*Basic Policy for Emergency Response on Decontamination Work*, published by Japanese Nuclear Emergency Response Headquarters on August 26, 2011).

The municipalities designated as ICSA, however, had few experts in radiation and radioactive materials and

Table 1 Overview of decontamination areas.

Areas	Degree of contamination	Goal for reducing radiation exposure	Decontamination program operator
Special decontamination area	High level	20 mSv/year or less	The Japanese government
Intensive contamination survey area	Low level	Below 1 mSv/year	Municipalities

**Fig. 1** Intensive contamination survey areas.

Source: Results in the Intensive Contamination Survey Area, Ministry of the Environment, Government of Japan (<http://josen.env.go.jp/en/decontamination/>)

few people with experience in decontamination, which is the method of removing radioactive materials. Therefore, decontamination was promoted while learning about radioactivity and radioactive materials through trial and error based on collaboration and cooperation among stakeholders such as municipal administrations, neighbourhood associations, citizens' groups and experts. These stakeholders determined the procedures and contents of the decontamination policies.

Against this background, the content of and progress in decontamination projects differed between municipalities. Kawasaki (2016) noted that there were differences in the formulation and implementation statuses of decontamination implementation plans among municipalities designated as ICSA. According to data from his questionnaire survey on municipalities designated as ICSA, of 40 that carried out decontamination, 12 had completed decontamination (30%) and 28 were in the course of decontamination (70%) as of the end of September 2015 (Kawasaki, 2016). Sato and Abe (2013) noted that policies on building temporary storage yards for radioactively

contaminated soil differed from one municipality to another. In some municipalities such as Fukushima City, no temporary storage yards were set up to begin with. Decontamination waste was stored at the decontamination sites. In other municipalities such as Kawauchi Village, temporary storage yards were set up and radioactively contaminated soil was amassed in several places (Sato & Abe, 2013).

Decontamination is a sensitive issue not only for residents, but also municipal officials. Hence, it is difficult for the stakeholders to build consensuses and work together when dealing with decontamination programs (Edgington, 2017; Isono, 2015). In ICSA, because there may be discrepancies in awareness among stakeholders inside and outside the local communities regarding the implementation of decontamination procedures and the provision of temporary storage sites, measures may not proceed smoothly. In the decontamination policy-setting process, miscommunications and conflicts among stakeholders have been common in local communities since the Fukushima nuclear accident. In some local communities, however, decontamination has been implemented smoothly, and consensuses among stakeholders have ensured they are conflict-free. Based on the above, it is conceivable that collaboration among various stakeholders involved in decontamination programs may determine their content and quality in the local community.

In other words, it is important to focus on community governance to get a clear view of the institutionalization of decontamination policies in local communities. The aim of this study is thus to explore the influence of community governance on decontamination policy determination in local communities, focusing on Miharu Town and Koriyama City in the Naka-dori region of Fukushima Prefecture.

2. Brief Review of Community Governance Literature and Decontamination Case Studies

In this study, we focused on the local community as a place of political decision making where governance is built during disaster recovery. Peters and Pierre (2016) defined governance as a process, where each group of different types of stakeholders congregates towards some collective goal. Above all, local governments play an important role in setting collective goals. Banner (2002) claimed that in recent years, local governments had been shifting their role from administrative to political leadership in civil society. In this study, community governance was regarded as a political process by which various stakeholders—including local governments as a political leader—converged toward the collective goal of decontaminating the local community.

When decontamination is regarded as a political process, it is necessary to pay attention to how risk

assessment and management are performed. This is based on risk communication with dialogue and deliberation by various stakeholders, which is necessitated by insufficient and uncertain information on radioactivity and radiation (Renn & Klinke, 2015: 24–26). Decontamination is intimately connected with risk communication in the local community.

Some research and theories suggest that there are pitfalls to risk communication in a ‘top down’ mode. A ‘top down’ mode of risk communication may miss what the public and stakeholders feel they need to know about environmental radioactivity (Mabon & Kawabe, 2018). In the decontamination policy process, a ‘bottom up’ mode of risk communication is required. Regarding how to formulate a ‘bottom up’ mode of risk communication in the decontamination policy process, Kinoshita notes that risk communication is not limited to issues of information transmission from administrative authorities to the public and stakeholders. He suggests that it is essential to focus on collaboration and coordination among the various organizations involved in the risk (Kinoshita, 2008).

Previous studies have focus on organizational communication by various stakeholders in local decontamination policy processes. Some studies have focused on communication with municipal administrations and community organizations. These studies have affirmed that municipal administrations and community organizations should communicate starting from the occurrence of the accident until formulation of the decontamination implementation plan is complete, ensuring that the decontamination policy proceeds smoothly. For example, Isono notes that municipal administrations that lacked communication with neighbourhood associations at the decontamination implementation planning stage met opposition from the neighbourhood associations and residents when setting up temporary storage yards and were unable to proceed with decontamination as planned (Isono, 2015).

Some studies emphasize the role of experts in mediating communication between municipal administrations and various community organizations in the local decontamination policy process. In Kashiwa City, Chiba Prefecture, an ICSA, a round table meeting was organized in collaboration with the municipal administration, agricultural groups and consumers associations with the support of sociologists prior to implementing decontamination. They examined radiation dose measurement methods for agricultural land and set voluntary standard values for the radioactivity of agricultural products (Igarashi & Anshin Anzen no Kashiwa San Kashiwa Shou Round Table, 2012). In the decontamination implementation phase, Kashiwa City administrative officials called on neighbourhood associations, to cooperate in decontamination and set up a “decontamination advisor” to assist these associations

in implementing decontamination from an expert’s standpoint (Fukuda & Akita, 2014; Nakano & Deguchi, 2014; Iimoto et al., 2018). Kashiwa City is known as a successful case in which decontamination was able to proceed smoothly through collaboration among the municipal administration, community organizations and experts.

These studies suggest that the ability of municipal administrations to coordinate and the support of experts are required to facilitate decontamination policy. However, little attention has been given to structural conditions surrounding the community organizations and the ability of community organizations to coordinate in previous studies. To get a clear view of the institutionalization of decontamination policy, it is important to consider the role of community organizations for building consensus among stakeholders from the occurrence of the accident until the implementation of the decontamination policy.

3. Methodology and Case Study Areas

Miharu Town and Koriyama City are located in the central Naka-dori region of Fukushima Prefecture, about 45–60 km from the Fukushima Daiichi Nuclear Power Station (Fig. 2).

Miharu Town has a population of around 18,200, with a *satoyama* landscape and historic townscape of an old castle town. Koriyama City has the second largest population of any municipality in Fukushima Prefecture, with around 335,000 persons (Table 2). This city is the financial capital of Fukushima Prefecture. Urban functions and industries are concentrated and citizen groups and research institutes are gathered here.

Radioactive fallout contaminated the area as a result



Fig. 2 The locations of Miharu Town and Koriyama City.

Table 2 Overview of Miharu Town and Koriyama City.

	Miharu Town	Koriyama City
Population (National Census in 2010)	18,191	335,444
Employment in each sector (National Census in 2010)	Primary sector: 8.3% Secondary sector: 33.0% Tertiary sector: 58.1%	Primary sector: 3.6% Secondary sector: 23.8% Tertiary sector: 68.9%
Spatial radiation dose rate (Published by Fukushima Pref. in 2011.4.1)	0.51 $\mu\text{Sv/h}$ (Miharu Town Hall)	2.14 $\mu\text{Sv/h}$ (Koriyama City Hall)
Decontamination of houses (Published by Fukushima Pref. in March 2018)	5,159	98,485
Temporary storage yard construction policy	Construct in each district (in 7 districts)	Based on on-site storage (in each household)

of the accident. Miharu Town and Koriyama City are specified municipalities among the ICSA, and decontamination has been carried out according to a decontamination implementation plan formulated at the end of 2011. There was a slight difference in the extent of radioactive contamination between Miharu Town and Koriyama City. In Miharu Town, the environmental radiation dose rate varied by district. In some districts, it exceeded 0.23 $\mu\text{Sv/h}$, which was set by the national government as the post-decontamination numerical target for FY2016. In Koriyama City, the environmental radiation dose rate was relatively higher than that in Miharu Town. Especially in the central area of the city, radiation contamination of over 2.0 $\mu\text{Sv/h}$ was recorded. In accordance with the scale of these municipalities, the number of cases of decontamination also differed between the two. Koriyama City had the largest number of housing decontamination cases listed in the decontamination implementation plan in Fukushima Prefecture.

There was also a difference between the procedures and contents of the decontamination policies. In Miharu Town, a temporary storage yard was set up in each of seven districts in the town. In Koriyama City, on the other hand, basically no temporary storage yards were set up, but decontamination waste was stored at the decontamination sites, meaning at each household.

By using qualitative research methods, we investigated the policy processes involved in implementing decontamination policy in Miharu Town and Koriyama City, focusing on policy networks formed after the accident. Based on fieldwork conducted in 2017 and 2018, the following survey methods were used in the current study.

The first was a document analysis. In this study, we analysed regional data before and after the nuclear accident. The local documents analysed included newspaper articles (from *Fukushima Minpo* and *Fukushima Minyu*), administrative council minutes, local governmental public relations magazines and various

materials concerning local organizations. Materials available about community organizations from before the nuclear accident were collected without setting a target period. Meanwhile, materials issued in the six-year period from March 11, 2011 to March 31, 2017 were collected as materials from after the nuclear accident.

The second survey method was by interview survey. In this study, interviews were held with administrative department officials in charge of decontamination policies in Miharu Town and Koriyama City, and leaders of community organizations such as town planning associations, neighbourhood associations and agricultural groups.

4. Decontamination Policy Process in Miharu Town

From this chapter, the time between the accident and the ICSA designation of Miharu Town and Koriyama City is classified as the “emergency phase” and the time thereafter as the “reconstruction phase” and an overview is provided on how community governance functioned in the stream of decontamination policy processes in the two municipalities.

4.1 Emergency Phase in Miharu Town

In Miharu Town, the “First Representative Ward Mayors Meeting” was held on March 12, 2011, the day after the accident. This meeting doubled as an autonomous disaster prevention association meeting, and information on the damage status and number of evacuees in the town’s seven districts was exchanged. It was decided that a “district disaster response headquarters” would be set up in each of the seven districts of the town, and the community development associations (*machizukuri kyokai*) in each district would manage them. In addition, the representative mayors of each neighbourhood association (*gyousei-ku*) became members of the town disaster response headquarters, and a system for collaboration between the town hall and each district was established.

Miharu Town’s administration collected information on the situation, namely the release of radioactive materials into the atmosphere due to damage to the nuclear reactor, and on March 15, unilaterally decided to distribute a stable iodine agent that was effective in reducing thyroid exposure to residents aged below 39 (7,269 people), without instruction from the government or prefecture (Miyazaki, 2013). Although the decision on the stable iodine agent was made by the upper level of the town administration, two district disaster response headquarters meetings were held before its distribution, and the district disaster response headquarters played a leading role in sharing information prior to the distribution and its related administrative procedures. This suggests that the community development

associations, which were responsible for operating the district disaster response headquarters, were at the core of community governance in Miharu Town immediately after the nuclear accident before the decontamination policy was launched.

Thereafter, the protection of children from radiation became an urgent issue in Miharu Town, as in other areas of the prefecture. The town administration conducted a radiation dose investigation of the schoolyards and playgrounds of the elementary and junior high schools and kindergartens of the town on May 14, 2011, and it was decided that the topsoil would be removed at 16 facilities in the June 23, 2010 fiscal supplementary budget.

In addition, to reduce the radiation dose from radioactive materials in spaces used in daily life such as school roads and parks, where children spend a lot of time, Fukushima Prefecture decided to implement a “Dose Reduction Activity Support Project (DRASP).” In Miharu Town, this project was utilized by residents voluntarily to decontaminate school roads in each district from November 6 to December 8, 2011. The main stakeholders in implementing this voluntary decontamination were the community development associations, neighbourhood associations and parent-teacher associations (PTAs) in each district.

In the case of voluntary decontamination, the community development associations played the role of coordinator for the administration and each regional organization. In Sawaishi district, a rural area in the northern part of the town, the community development association conducted the “Sawaishi District Environmental Protection Measures Meeting” on October 18, 2011 to discuss the implementation system and contents of the DRASP in the district.

However, during the emergency phase in Miharu Town, emergent collaboration involving experts outside the region was also seen. After research volunteers specializing in radiation physics at the Tohoku University Graduate School of Science lobbied experts in the town, and it appeared in the mass media, the “Miharu Misho project” was launched on June 20, 2011. A town subsidy was used to cover the operating costs of the project, and the town’s General Affairs Section (Planning Information Group) served as the secretariat. In the project, a survey of individual cumulative doses among elementary and junior high school students (around 1,700 people) using a badge type dosimeter was conducted along with a soil radiation dose survey at the educational facilities.

4.2 Reconstruction Phase in Miharu Town

On August 26, 2011, the Nuclear Emergency Response Headquarters formulated *Guidelines for Decontamination by Municipalities*. Subsequently, after the enactment of the Act on Special Measures, the Ministry of the Environment formulated and announced

Decontamination Guidelines on December 14, 2011. These guidelines provided policies on radiation dose survey measurement methods and decontamination methods for buildings, roads, soil, plants and trees. Since then, whole-area decontamination became the focus of measures against radioactive materials in the ICSA. Based on these guidelines, Miharu Town’s administration formulated a decontamination plan on December 1, 2011. The town administration held discussions with the resident representative (union organization of neighbourhood associations, *Gyousei-kuchokai*) and the town council prior to formulating the decontamination plan. When formulating the decontamination implementation plan, however, they had no opportunity to inform the residents of the plan and hear their requests.

Miharu Town established a policy of proceeding with decontamination from the areas where the temporary storage yards for decontamination waste such as soil generated by decontamination were located. In this instance, the community development associations were responsible for determining the location of the temporary storage yards and carrying out routine management in each district. Some community development associations in the town established departments and committees within the association for sharing information on surface decontamination and determining and managing the location of temporary storage yards.

In Iwae district in the western part of the town, the “Iwae District Decontamination Promotion Council” was established on June 27, 2012 within the association to share information on the decontamination implementation plan from the town’s Decontamination Measures Section and hold discussions on the location of temporary storage yards.

The officers included representatives of the town council and landowners, in addition to the head of the neighbourhood associations. The technical conditions (required area, land lease fees, etc.) of the temporary storage yards presented by the town administration were aligned with the residents’ interests (inclinations of landowners and reactions by surrounding residents) (Fig. 3).

To realize consensus building for the construction of temporary storage yards, it was important to focus on the



Fig. 3 Temporary storage yard for decontamination waste in Iwae district, Miharu Town. (Photo by authors on March 21, 2018)

role of community development association leaders. They found suitable private land in their district and negotiated with the landowners for construction of temporary storage yards. One of the study interviewees, a representative of Iwae district's community development association, described the actual state of communication among stakeholders such as neighbourhood associations and landowners in the temporary storage yard construction process as follows:

We decided where to put the waste from decontamination. In our Iwae district, there was no suitable public land for temporary storage yards. So we held a meeting of the community development association, where presidents of the neighbourhood associations exchanged information about private land with each other.

In the end, we argued over details, negotiated with the landowners and got approval.

(Source: Interview of Iwae Community Development Association representative, on December. 22, 2017.)

His narrative indicated that there were many chances for discussion among the leaders of the community development associations. They persistently negotiated with landowners to construct temporary storage yards.

This was possible because leaders of the community development associations were familiar with the ownership of private land in their districts.

Figure 4 illustrates the decontamination policy process in Miharu Town. The vertical columns list the decontamination policy items of each fiscal year on the horizontal axis. It is necessary to focus on the emergence of an organization in each district. This row shows that even immediately after the accident, community organizations were involved in the decontamination

policy process. They consistently cooperated with the town government starting from just after the accident.

5. Decontamination Policy Process in Koriyama City

5.1 Emergency Phase in Koriyama City

After the accident occurred, Koriyama City's administration launched topsoil removal from schoolyards at 15 public elementary and junior high school and playgrounds at 13 public nursery schools before any other municipality from the end of April 2011 (Fukushima Minyu, April. 26, 2011). However, the city administration faced resident's strong opposition in its briefing session held on April. 27, 2011 for residents who were candidates for hosting storage yards for removed soil.

Koriyama City's administration failed to build a consensus for decontamination with residents from the beginning of the decontamination policy process. According to an evaluation of the city administration officials, the radioactive substances contained in the removed soil did not reach a level that would impair the environment or health. However, not only the residents but also the city administration officials lacked sufficient knowledge and technical skills regarding radioactivity at that time. It is assumed that uncertainty regarding radioactivity then may have generated this consequence.

On the other hand, there was a swift response from the private sector regarding decontamination. From April 2011, community organizations such as neighbourhood associations (*Chounai-kai*, *Gyousei-ku*) and PTAs launched decontamination work and radiation dose surveys in areas used in daily life such as school roads

Policies	Fiscal Year 2011 (3–9)	Fiscal Year 2011 (10–3)	Fiscal Year 2012	Fiscal Year 2013	Fiscal Year 2014–
Decontamination Work	Removal of topsoil in schoolyards and playgrounds (2011.6.22–)		Modeling of decontamination work (2012.4–)	Decontamination of houses and roads (2012.6–2016.12)	
			Decontamination of public facilities (2011–2016.9)		
Temporary storage yards			Construction of temporary storage yards (2012.4–2015.3)		
Emergence of an organization in each district	Disaster control headquarters (2011.3.12–)	Voluntary decontamination activities (2011.11.26–12.18)	Decontamination Promotion Committee		
Local Gov. and residents communication	Study sessions on the Great East Japan Earthquake (2011.5.5–2012.5.29 / 4 times)				
	Briefing session for residents about topsoil removal at schoolyards (2011.6.2–)	Consultation on decontamination plan between town gov. and neighborhood associations (2011.11–12)	Briefing session for residents about the construction of temporary storage yards (2012–2015)		

Fig. 4 Decontamination policy process in Miharu Town.

Source: Authors, referring to Fukushima Action Research on Effective Decontamination Operation (FAIRDO), 2013.

and school facilities. Table 3 indicates that the main voluntary decontamination related activities in each district had multi-organizational cooperation.

In Koriyama City, community organizations had already launched their decontamination activities before the city government released its manual on decontamination to the citizens on October 1st, 2011. In addition to that, their decontamination activities were not based on the city administration's requests.

5.2 Reconstruction Phase in Koriyama City

Koriyama City's administration formulated a decontamination plan on December 27, 2011. The city administration held briefing sessions for all households and districts to formulate a decontamination plan. In this plan, the city administration promoted a policy of carrying out the decontamination program in collaboration with residents, neighbourhood associations, PTAs, volunteers and local companies (Murayama et al., 2015).

Utilizing the DRASP, Koriyama City's administration gave grants to community organizations for decontamination activities in areas used in daily life. A total of 919 community organizations applied for the grants in three years: 622 in 2011, 264 in 2012 and 33 in 2013. It was the neighbourhood associations—who were the main parties responsible for voluntary decontamination—that utilized the grants. Before the accident, Koriyama City had 662 neighbourhood associations. Of these neighbourhood associations, 385 (58.2%) applied for the grants. DRASP was carried out throughout the city, but there were some districts where it was not possible to construct temporary storage yards because no suitable land could be found.

In some districts, decontamination wastes generated by the community decontamination activities were stored in parks and open spaces of their respective districts after

coordinating among the city administration and community organizations. In Kikuta district in the northern part of the city, decontamination wastes were buried underground in public land (city-owned land) at a sports park (Fig. 5). The city administration proposed this method to the leaders of community organizations (Kikuta-machi Kucho-kai, the *chounai-kais* and PTAs).

The city administration and community organizations cooperated with the construction industry association in implementing storage of decontamination waste by this method. The fact that the leader of the construction industry association lived in the Kikuta district and was friends with the leader of the community organization also helped facilitate adoption of this method. The background to realization of this method of decontamination and temporary storage of decontamination waste is the existence of collaboration among city administration, neighbourhood organizations and the construction industry association.

In some districts, decontamination wastes were buried underground in private land. In Kurume district in the central part of the city, around 5,000 square meters of shrine-owned land was designated a temporary storage yard for the soil removed during decontamination of a residential area after mutual consultation between the residents.

The district's federation of neighbourhood associations (*Kurume-machi Choukai Rengokai*) had responsibility for overall land use management for the construction of temporary storage yards. The federation set up a countermeasures headquarters within the association to carry out decontamination. The headquarters conducted voluntary decontamination activities in coordination with 13 neighbourhood associations and PTAs. After the voluntary decontamination was completed and the decontamination of residential areas was launched by the city administration, the leader of the federation negotiated with organization owning the land (the shrine association), decontamination contractor and city

Table 3 Voluntary decontamination activities in Koriyama City.

Date	District	Organizations	Contents	Participants
26 April 2011	Saikon	Elementary school	Decontamination work	—
11 March 2011	Tomita	PTA	Decontamination work	50
16 June 2011	Akagi	Voluntary disaster prevention organization	Radiation dose survey	—
9 July 2011	Houzan	Neighborhood associations	Radiation dose survey Decontamination work	—
Late September, 2011	Citywide	Small-scale enterprises PTAs	Radiation dose survey Decontamination work	50

Source: *Fukushima Minyu*, *Fukushima Minpou* and Public Relations Koriyama (*Kouhou Koriyama*).



Fig. 5 Work to bury waste generated by decontamination of school roads in city-owned land (sports park) in Kikuta district, Koriyama City. (Photo by Kikuta-machi kucho-kai)

Policies	Fiscal Year 2011 (3–9)	Fiscal Year 2011 (10–3)	Fiscal Year 2012	Fiscal Year 2013	Fiscal Year 2014 –
Decontamination Work	Removal of topsoil in schoolyards and playgrounds (2011.4–5)		Modeling of decontamination work (2012.2–8)	Decontamination of houses and roads (2012.10–)	
		Decontamination of public facilities (2011–2016.11)			
Temporary storage yards					Construction of temporary storage yards (2014.8–)
Emergence of an organization in each district	Voluntary decontamination activities (2011.4–2013)				
Local Gov. and residents communication	Briefing session for residents about topsoil removal of the schoolyards (2011.4.27)	Briefing session on community decontamination programs (2011.10.20) Briefing session on decontamination plan (2011.12.11)	Briefing session on modeling of decontamination work (2012.5.19)	Briefing session on decontamination in each district (2012.10–)	

Fig. 6 Decontamination policy process in Koriyama City.

Source: Authors, referring to Fukushima Action Research on Effective Decontamination Operation (FAIRDO), 2013.

administration. The background to realization of this land use management for construction of temporary storage yards was the leadership of the federation uniting the district's community organizations. Since the president of the federation also served as an officer in the community organizations in the district, it was easy to coordinate with the leader of each organization.

Figure 6 illustrates the decontamination policy process in Koriyama City. It is necessary to focus on consensus building between the city administration and residents, which was difficult in the emergency phase. It also bears repeating that, voluntary decontamination activities by community organizations preceded administrative efforts in Koriyama City.

6. Conclusions and Discussion

In this paper, we explored the influence of community governance on the determination of decontamination policies in local communities, focusing on Miharu Town and Koriyama City. The findings of this paper can be summarized in three points.

First, the procedure and contents of decontamination policies in Miharu Town and Koriyama City were formulated based on continuous organizational cooperation among municipal governments and community organizations starting from immediately after the accident. As shown in the case of Kashiwa City, opportunities and venues to coordinate the interests of multiple stakeholders before the details and policies of the measures for radioactive materials are determined and implemented are also required (Igarashi & Anshin Anzen no Kashiwa San Kashiwa Shou Round Table, 2012). By necessity, the procedure and contents of decontamination policies in local communities are determined based on

limited information on radioactivity, and it is necessary for stakeholders to share awareness when making decisions and implementing measures. The state of consensus building on topsoil removal from the schoolyards in Koriyama City during the emergency phase suggests as much.

Second, the procedure and contents of the decontamination policies of Miharu Town and Koriyama City were formulated based on land ownership in local communities. When public land is used as a temporary storage yard for removed soil, coordination between the municipal administration that owns the land and the community organization that represents the residents is required. On the other hand, when using private land, coordination between organizations owning the land and community organizations such as neighbourhood associations is required.

Third, micro-negotiation tactics, which are carried out by community organizations leaders, contribute to smooth progress of decontamination policies such as establishment of temporary storage yards. Previous studies have pointed out the importance of residents' involvement in governance in the decontamination policy process (Moriguchi, 2015). The findings of this study suggest a role of community organization leaders as actors in community governance for decontamination policies. There should be more attention to power structures that serve in the relationship among community leaders in decontamination policies.

As shown in Figs. 4 and 6, there were differences in the decontamination policy processes between Miharu Town and Koriyama City. In Miharu Town, smooth communication between the town administration and residents was observed immediately after the accident. On the other hand, in Koriyama City, there were

miscommunications between the city administration and residents at the same time. It is presumed that the key factor determining the difference is experience in communication between the government and residents during the emergency phase.

Decontamination constitutes risk communication over land use in the local community. The findings of this study suggest that the relationship between community governance and land use deserves more attention, as it does with regard to other environment problems.

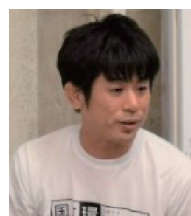
However, it cannot be said that among the ICSA, Miharu Town and Koriyama City had particularly high air dose rates. In terms of future tasks, it may be necessary to analyse cases by controlling non-social factors such as air dose rates and categorizing community governance in the ICSA.

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