Study of process from Winning Lawsuit to conciliation in disaster area of itai-itai disease—How should we recover from the disaster of land contamination by environmental disruption?

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Abstract
The case of recovery from itai-itai disease is exceptional because the injured party won the lawsuit and accepted the apology from the company that caused the damage. It took 40 years for conciliation to be established after the lawsuit was won. Involving lawyers, researchers, reporters, municipalities, and supporters, they realized what they promised at the lawsuit. The contents of the promise included regarding medical compensation, environmental rehabilitation, development as an agricultural town, and restraining the recurrence of pollution. All stakeholders, especially the victim and the perpetrator have made efforts toward realization of the promise. As a result, a trusting relationship, albeit with tension, has been established between them. They are entering a new phase to determine how to share their experiences with others.

Keywords
compensation, conciliation, itai-itai disease, recovery plan, land contamination, public nuisance

1. Introduction

1.1 Problem awareness
In the Great East Japan Earthquake of March 11, 2011, the Fukushima nuclear power plant exploded, a large amount of radioactivity was diffused, and a wide area of land was polluted. In response to this situation, the Environmental Basic Law was revised in 2012. Until then, because radioactive materials were controlled by the Nuclear Power Law, they had been exempted from the list of pollutants. This revision deleted this exemption. However, there has not yet been a situation where solutions for various problems in the disaster area have been found. Policy technology that changes the legal system, as well as the activities of compensation and recovery, should be considered concrete and essential.

1.2 Research background
Although the diffusion of radioactive materials has many different effects from conventional environmental pollution, industrial pollution itself is not new. In particular, serious damage from widespread pollution caused by improperly discharging waste during the operation of large-scale factories and mines has occurred repeatedly in history. Large companies that are involved with government industrial policies are often perpetrators, and local residents are victims. In addition to the difference between the political and economic influences of the perpetrator and victim, there is a significant asymmetry in the information about the contents of the waste and the release and diffusion. Therefore, causes have not been investigated sufficiently, and victims have not been provided with remedies.

In spite of this general situation, the effort in the affected area of itai-itai disease in the Jinzu River basin is a valuable example that was not limited to the plaintiffs win but also led to a full reconciliation between the victim and the offending company in 2013 after 40 years. What does reconciliation after 40 years mean for the affected area?

1.3 Organizing past studies
Itai-itai disease is a comprehensive environmental pollution that is mainly caused due to soil contamination by cadmium,
is positioned as one of the four major pollution diseases, has high social interest, and has a significant amount of related information. Research has accumulated in the fields of sociology and environmental economics concerning the mechanism of damage occurrence and the impact on the region, the identification of epidemics and medical conditions of patients, and the agriculture of soil restoration methods [Note 1]. However, no research has dealt with the process of spatial planning and recovery design that occurs after pollution and damage have unfolded.

Regarding polluted areas, research is being conducted on how to loosely share the target image of environmental restoration by clarifying the personal history of the Nishi-Yodogawa area, along with the transformation of the contaminated urban area.6–8 A series of comparative studies in Europe, the United States, and Japan aiming at brownfield regeneration pointed out the deficiencies in Japan after clarifying the characteristics of the legal system in each country.9,10 In addition, the state of cooperation between the environmental protection administration and city planning in the United States, which is considered to be advanced, has been clarified.11

1.4 Purpose
Based on the above, in the affected area of itai-itai disease, unlike many other pollution-affected areas, there was a process in which victims and perpetrators reached reconciliation. Therefore, it is meaningful to examine this as an example of possible compensation and regeneration after pollution damage.

The purpose of this paper is to examine the actions that should be taken in areas with soil pollution and to obtain specific and essential knowledge in areas where itai-itai disease damage has occurred.

1.5 Research method
This study was conducted through a literature review of past studies and reports, interview surveys with related parties including Mr. Takagi (the representative of the victim organization) and Mr. Shibue (the executive of the perpetrating company), and confirmation of the current situation through field surveys.

2. Summary of Itai-Itai Disease and Characteristics of Damage
Itai-itai disease is “a pollution disease that occurred in the cadmium environmental pollution area of the Jinzu River basin in Toyama Prefecture, with the most severe type of chronic cadmium poisoning, i.e., proximal tubular osteomalacia due to cadmium.”13 A newspaper reporter named the disease as itai-itai and reported it because a victim shouted, “It hurts.”

Cadmium was mixed into the wastewater from the factory and waste depot at the Mitsui Metal Mining Industry Company, Gifu Prefecture (hereinafter referred to as the Company). Wastewater contaminated the water and soil of the Jinzu River alluvial fan, which was a rice-growing area centered on Fuyutown in Toyama Prefecture 30 km downstream. Local residents used the water for drinking and cooking, and ate contaminated paddy rice and soybeans, which resulted in health problems from cadmium. In particular, there was frequent damage to parous women who have lived for a long time. The soil contamination had settled in the area.

Half a century after a 1968 complaint, the number of certified patients was approximately 200 as of July 2015, with four survivors as of December 2018 [Note 2].

3. Damage of Itai-Itai Disease and Process of Responses until Win [Note 3]
This chapter focuses on the period after early modern times, the mining situation at Kamioka Mine, the recognition and spread of itai-itai disease, countermeasures, and the social situations in Japan that had mutual effects on the project. The actual situation of each era and the entire process toward a legal win are discussed.

3.1 From Meiji to the war: Insufficient damage response on site and legal system in place
Mitsui-Gumi promoted the acquisition of the Kamioka Mine [Note 4] after the Meiji era, and owing to insufficient oversight, environmental pollution such as smoke damage around the factory and agricultural and fishery damage spread to Toyama Prefecture. In the 1910s, health damage occurred downstream, but the cause remained unknown [Note 5]. Although the Company responded by setting up a detoxification chamber, sedimentation basin, and sedimentation site, there were some areas that did not contain the necessary amount of lime. In 1932, Toyama Prefecture confirmed a high concentration of zinc through a survey and requested further action, and this situation was resolved. However, because large-scale digging and direct river discharge were abandoned, the situation where contaminated earth and sand flowed out during heavy rains continued until just after World War II.

In other words, this was a time when the Company was aware of the environmental changes, decided on an economically reasonable range of response, and acted within that range.

As a nationwide situation, mine poisoning incidents occur frequently. Compensation rules for mine damage were realized by the Mining Law [Note 6].

3.2 From the postwar period to lawsuits and pollution disease certification: Manifesting damage and increasing social interest in pollution
After Japan was defeated in the war, the Kamioka mine operated mainly for zinc and lead, and shipments reached their peak. Since the causal relationship between the cloudy water and the lack of growth of rice was obvious, the Company paid compensation for the agricultural damage that had occurred [Note 7]. Health hazards that had no known causal relationship were left unquestioned. However, the 1946 survey conducted owing to the frequent occurrence of neuralgia-like illness near Miyagawa village in the Jinzu River basin led to the presumption that the damaged area was limited to the Jinzu River basin. In 1948, the relevant municipalities formed the Jinzu River Mineral Poison Countermeasures Council and an organization launched by an agricultural cooperative, and the two merged into the Jinzu River Minerals Countermeasures Council.

Dr. Noboru Hagino, a local doctor, sponsored a medical examination and in 1961 announced the itai-itai disease theory about cadmium intake. However, there were scholars who advocated other causes, which were not accepted immediately, and the damage was intensified. The unity of the affected areas became stronger, and in 1966, the Itai-itai Disease Control Council was formed, President Komatsu, whose mother was a victim, called for the participation of victims’ households, along with the vice chairman of Kumano district in Fuyu-town and Shinbo district in Toyama city. Toyama Prefecture did not try to respond to corporate pollution with
a view toward being designated as a "New Industrial City," but did begin prefectural patient certification and public medical relief.

In other pollution-affected areas, complaints from victims began in connection with Niigata Minamata disease and Yokkaichi pollution. Based on the liability for faultless guarantees secured by the Mining Law, 28 victims of itai-itai disease also came to the Company as defendants in March 1968. In May 1968, the Ministry of Health and Welfare certified the pollution.

Public opinion for strict measures against pollution was to be formed, and in the event of pollution, the concept of the pollution-causing person’s burden has been established so that the person who caused the pollution can deal with that pollution [Note 8].

3.3 Winning Lawsuit: Victims’ request and perpetrator’s response

As a result of the appeal, the victim (the plaintiff), won the legal case. The fact that the court adopted the epidemiological data, which were impossible to explain except as a result of cadmium effects after mapping the contamination status and prevalence to show the locality of itai-itai disease, confirmed the claim of the plaintiff (Figure 1). The relationship between the left and right diagrams in Figure 1 was an evidence to show the nexus between the pollution and the disease that was not recognized by the medical community at that time.

On June 30, 1971, the plaintiffs were fully victorious at Toyama District Court, and the appeals’ trial was also won at the Nagoya High Court on August 9, 1972. Furthermore, two ledges and an agreement were concluded between the plaintiff and the defendant [Note 10].

3.3.1 [Pledge on compensation for itai-itai disease]

By the date of the signing of this pledge, the number of plaintiffs had increased to the 7th lawsuit, but the Company decided to pay the full amount of treatment expenses and other medical expenses for compensation, as requested by the appeals trail "to those newly identified as patients with itai-itai disease and those who need to be observed."

3.3.2 [Pledge on soil contamination issues]

The Company stated that it was responsible for past and future agricultural damage and soil contamination in the area where itai-itai disease occurred in the Jinzu River basin, including the agricultural damage that was denied during the trial. The burden includes damages owing to contaminated rice and planting restrictions, and project costs or a farmland restoration project based on the Agricultural Land Soil Contamination Prevention Law, hereinafter referred to as the Soil Law.

3.3.3 [Pollution prevention agreement]

Victims had the Company agree to not cause pollution again in the future, conduct onsite surveys with specialists, collect data, provide materials, conduct surveys according to the victims’ requests, and pay for all expenses.

3.4 Process from damage to win

Based on the above, the process of the occurrence of soil pollution called itai-itai disease and the response to the legal win can be organized as a flow of six events.

1. Pollution source generation and neglect

There was a period when neither the victims nor the perpetrator was aware that the environment had changed, but the cause could not be identified. Meanwhile, the existence of the pollution source was left unattended. In addition, there was also a new academic contribution from medical sides.

2. Occurrence of comprehensive damage areas owing to environmental pollution

By leaving the source of pollution, environmental pollution is not limited to the surrounding area, but progresses widely and comprehensively. Water and soil were polluted, and the health of people living there and the damage to the farming and fishing industry became extremely serious. A comprehensive damaged area was revealed.

Figure 1. (Left) Cadmium pollution density zoning, (Right) symptom prevalence ratio [Note 9]
3. Formation of collective independence of victims
A domestic legal system to reduce environmental pollution and realize compensation for victims of industrial pollution will gradually be established. There was also a new academic contribution: the damage was clearly recognized, and the victims were identified. Taking advantage of the traditional ties between rural villages in the affected areas, an organization of victims was established, and a movement mother body was formed to ask for compensation.

4. Pollution certification by plaintiff win
The existence of pollution was recognized by means of litigation, and the existence of the damaged area became clear, although it was not necessarily agreed to in the certification standards. The pollution source was blocked.

5. Perpetrator formation
During the lawsuit, the representatives of the Company, who were the defendants, became perpetrators after being accused by the plaintiffs, and were ordered to pay compensation. The perception that a pollutant was a perpetrator was shared not only with the parties but also with society as a whole.

6. Clarification of compensation details
The compensation items acquired by the local residents who were pollution victims through negotiations with the Company that is the perpetrator are the following three items:

1. Health damage compensation that includes not only damage already occurred but also future damage that cannot be envisaged at the present time.
2. Agricultural damage compensation, including future and environmental restoration.
3. Construction of a system to prevent pollution recurrence.

These three items were clarified as contents to be realized in the future because the perpetrators were aware of the "burden of responsibility” as described in the ledge.

3.5 Brief summary
It should be noted in the flow of the above six events that, at the time of winning, an investigation of the cause and the countermeasures against the pollution source had become possible, but the essential response to the damage was not yet realized. Compensation contents (1) and (2) cover the damage that may occur in the future for the pollution that has already occurred, (2) is responsible for the restoration of the environment as farmland, and (3) requires the construction of a prevention system to be maintained in the future. All require cooperation between the victim and the perpetrator after the agreement is concluded. Thus, the legal victory is not the endpoint for either party.

4. Process from Compensation to Settlement of Itai-Itai Disease Damage
After losing the complaint, the president of the Company expressed his intention to visit the patients' houses and apologize, but the victims refused. In 1976, the Itai-Itai Disease Control Council took the lead in acquiring the "Seiryu-Kaikan (meaning clean flow hall)" activity site, and as a new organization, the Jinzu River Basin Cadmium Damage Group Liaison Council (hereinafter "Coop Association") was formed. A foundation was established in which the independent body of the victims formed before the lawsuit (Chapters 3, 3.4, —3) was continued and strengthened in order to realize the three items of compensation. On December 17, 2013, the Coop Association, continuing its efforts to realize the content, concluded an "Agreement on the Complete Resolution of the Jinzu River Basin Cadmium Problem” (hereinafter referred to as the "Agreement") and accepted the apology of the Company for the first time in 40 years.

The process from winning to reconciliation has been progressed while adhering to the above three items (Chapters 3.4, —4) won by the victims as compensation.

4.1 Health damage compensation including those in the future
Toyama Prefecture has independently promoted medical relief on its own since 1967 (before the complaint), but based on the newly established 1972 “Accreditation of Itai-itai Disease under the Special Measures Act on Health Damage Relief Related to Pollution" has been entrusted by the national government to identify patients [Note 11]. In some cases, it was judged that the victims did not receive national recognition from the pollution and health damage assessment committee as consulted by the governor.

However, in the agreement, the Company decided to implement a system that compensates by extending the range of symptoms and timing more than the national recognition. In fact, the system is not in active use [Note 12]. However, with the aging of local residents who are considering application for certification, the Company can be said to be more reliable in helping victims with health damage compensation.

4.2 Agricultural damage compensation and environmental restoration including those in the future
Farmland totaling 3130 ha was examined to designate the contaminated area based on the Soil Law. Referring to the standards of the Food Sanitation Law, a total of 1500.6 ha of No. 1 area (with contaminated rice with a cadmium concentration in brown rice of 1.0 ppm or more) and No. 2 (where contaminated rice was likely to occur in the surrounding area) was designated as an agricultural soil pollution control area. The No. 3 area of 185.6 ha (having rice with the same concentration of less than 1.0 ppm or more than 0.4 ppm) was identified as a rice production distribution area (Figure 2) [Note 12]. The Company compensated for the areas that could not be planted, and the country purchased the harvested rice in areas No. 2 and No. 3 and processed it as non-food [Note 13].

As for the restoration method, experiments were repeated based on soil changes, and did not need a large amount of contaminated soil to be discharged [Note 14].

An agricultural land-soil pollution control area requires a countermeasure plan consisting of three types: land use plan, restoration work plan, and safety confirmation survey plan. In particular, the land use plan is divided into three categories, the farmland to be continued as farmland and the urbanized land that will be converted into residential land in the future based on consistency with the plan of prefectures and municipalities. The latter was planned for industrial exhibition facilities, athletic parks, commercial facilities, and residential areas. Large public facilities were located on the right bank of the Jinzu River [Note 15]. Owing to the convenience of being located about 5-10 km from Toyama Prefecture, the development of detached housing estates can be seen. The area
diverted from farmland to other uses is a total of 624 ha, which is very large compared to other countermeasure projects [Note 16].

Traffic hazards such as dump truck traffic associated with environmental restoration projects are a consideration. By studying the intentions of farmland owners in urbanized areas and an investigation of buried cultural properties, the government, mainly in the prefecture, proceeded with discussions with residents who were landowners.

Although there were buried cultural properties, and 7 years elapsed, 863 ha (53%) was finally regenerated after 33 years. In March 2012, Toyama Prefecture issued a clean declaration.

In response to the initial situation [Note 17], Mr. Isao Takagi, a current board member of the Coop Association, said the explanations to the residents by the government were polite and trust was strong [Note 17]. As a result of such discussions, the improvement in farmland including separation work for irrigation canals and drainage channels, and widening of the roads was carried out. The fact that the town’s foundation was in place was said to have been an aspect of reconstruction. The idea of relocating from the area because of pollution was not agreed to by the farmers. They could have only one future image, namely making rice again at the same place [Note 18]. It can be inferred that periods of high economic growth, the stable and clear industry of rice-growing areas, and that most of the victims were housewives were reasons why they did not consider relocation at all.

The population of the former Futuyu-town has been steady, but has increased since the 1970 census and has stagnated in Yao-town adjacent to the south [Note 19]. Alternatively, it can be said that an urbanized space with public facilities and a car-oriented society was generally considered desirable. Under

Figure 2. Countermeasure zones along Jinzu River for contaminated agricultural land (dark color) and rice-producing distribution zone (light color) [Note 12]
such circumstances, it would have been easy to envision and share a future image of the region that was integrated with a modern urbanization area while securing farmland for agriculture as the main industry.

4.3 Establishment of system to prevent pollution recurrence

The production of Kamioka mine peaked in the latter half of the 1970s, but the cadmium concentration at the drainage port suddenly decreased immediately after the decision in 1972. According to measurements by the residents in 2010, the cadmium concentration was 0.00007 mg/L at the agricultural water intake for the Kami-san dam (the cadmium water quality standard is 0.003 mg/L or less in the Environmental Basic Law). Onsite surveys have been carried out every year since 1972 by a team formed by local residents and legal and scientific experts (hereinafter, the Study Team). Ongoing monitoring has sometimes prevented the occurrence of new pollution [Note 20]. With the constant efforts of the Study Team and a certain degree of response from the Company, a "tensioned relationship of trust" [Note 21] was established between them. It is very important that the Study Team has the same level of information accumulation and expertise as the Company, especially with regard to facts about the history of itai-itai disease, soil and water pollution mechanisms, and legal knowledge including litigation.

However, they have to watch not to occur the pollution again because heavy rains and sediment disasters may happen after mining stopped in 2001. Although the pollution appeared to be suppressed, it can be said that it is very difficult to prevent a case where a natural disaster triggers a recurrence. Thus, monitoring should be continued [Note 22]. Even with full reconciliation, the pollution has not completely stopped.

4.4 Brief summary

Based on the above and following "the process from damage to win," in Chapter 3.4, the process from win to settlement can be summarized as the following three events.

7. Restoration and reconstruction of damaged areas

The environmental restoration not only decontaminated the affected areas, but also improved the environmental performance for agriculture, which is a key industry, and increased the value of the living environment. There was no option to move because the area was contaminated. However, in the affected area, a future image could be drawn that local residents could agree to. This was realized with the legal system and administrative measures as support. Reconstruction was conducted not only to restore the area but also to create a better environment. It can be said that the results have been positively evaluated socially, as an inflowing population exists [Note 23].

8. Construction of social network in affected area

Victims strengthened their collective independence to realize the contents of compensation. The Coop Association considered the victims among the local residents by continuing frequent contact with them. Even if the victim is paid a consolation fee, the health damage may continue, and they might feel they have been left behind by the local network. Victims recognized the Coop Association as their representatives, and an independent body was formed. The Coop Association maintains a strong connection with lawyers. Furthermore, it maintains close relationships with the Company for health damage compensation, Toyama Prefecture and municipalities for environmental restoration, and the Company and scientists for prevention of the recurrence of pollution. In this process, the victims have acquired advanced scientific and legal knowledge and interacted with supporters all over Japan.

In other words, it can be said that the existence of both a network for residents in the damaged area and a network between the affected area and the outside has yielded beneficial results.

9. Beginning of new phase after reconciliation

After the apology was accepted, it can be said that the process entered a new phase. However, as mentioned in the section 4.3, environmental pollution occurred after the mining operation stopped. In addition, there are some patients and observers who need to be certified. Nevertheless, why did the victim side decide to accept the apology at this point, and what does it mean?

First, it can be pointed out that the pollution level in the area along the Jinzu River has become extremely low and can be maintained. Although monitoring the runoff of polluted materials should be continued, the fact that the pollutants may flow out from the Company site is known to both victims and perpetrators, and this has already stopped. It is difficult to assume that pollution will recur. It can be said that the prevention of the recurrence of pollution has reached a level acceptable to the victims, and a system and methodology have been established [Note 24].

As for the local residents, Mr. Takagi is concerned about the aging of the victims and the weathering of the facts. This is why we requested that the public facilities as well as Seiryu Hall be operated by the victims. In response to the request, the prefecture opened the Toyama Prefectural Itai-itai Disease Museum in 2012. There are two types of locations: the victims’ base and the prefectural facility. The former has valuable data such as lawsuit records, and the latter focuses on the relationship between the disaster of pollution and environmental recovery. Nonetheless, the prefectural museum is also responsible for archiving materials, and the victims are working on greening the mountains around the Kamioka mine. This is an extremely environmentally conscious activity. In this way, it can be said that both parties, the victims and Toyama Prefecture, are gradually overlapping their consciousness.

The victims are facing successor issues. The successor problem involves not only the management of Seiryu Hall but also how to deal with the anger and resentment and the history of the pollution-affected areas. The founding fund is not only used for research and environmental conservation, but also for events such as elementary school composition contests [Note 25].

The victims’ representatives are the bereaved family members of the health victims (the first is the mother and the second president is the grandmother’s health victim). In contrast, the representative of the perpetrator’s Company was already in litigation at the time of joining the Company, and later became president and was responsible for clarifying the compensation. Both of them may have thought that they had to reconcile by themselves, considering that the next generation will be far removed from the experiences of a period of severe pollution [Note 26].

In the future, it will be necessary to work toward further sustaining the "tensioned relationship of trust" that was built and maintained over the past 40 years. Mr. Takagi
incorporated the Jinzu River Basin Cadmium Victims Association Council in 2014 with the mission of communicating the damage of itai-itai disease to future generations and how to use compensation for that purpose. In 2015, the Countermeasures Committee for Source Control was established by the affected residents. This is an opportunity for residents and young lawyers to gain scientific knowledge. Empowerment of the victims and the succession between generations will be discussed.

5. Findings: Damage Response Process for Soil Pollution

Summarizing the above, the process of dealing with damage in the affected area, from winning to reconciliation, is as follows.

1. Pollution source generation and neglect
2. Generation of a comprehensively damaged area due to environmental pollution
3. Formation of collective subject of victims
4. Pollution certification by plaintiff win
5. Formation of perpetrators
6. Clarification and practice of compensation
7. Restoration and recovery of the damaged area
8. Construction of social network in the damaged area
9. The beginning of a new phase after reconciliation

These are organized by location (1, 2, 7), subject (3, 5, 8), and events (4, 6, 9) (Figure 3).
The start of the damage handling process is win –4, clarification of compensation details –6, and settlement –9. Pollution was recognized by winning the complaint, leaving the pollution source –1, and the perpetrator clarified –5. As the compensation details became clear and were put into practice, the victims –3 built a variety of social networks centered on themselves, and the recovery and reconstruction of the damaged area –2 progressed –7. With a possible convergence of the total damage, the victims accepted and reconciled with the perpetrator’s apology –9. In the future, it will be necessary to seek and realize an ideal way to rescue an area that has overcome damage rather than the focus on the framework of victims, perpetrators, and affected areas.

6. Conclusion and Research Limitations

6.1 Settlement party and time
An apology and acceptance of the damage can only be made by the major parties. In the case of itai-itai disease, it took about 40 years from winning the case (1971–72) to reconciliation (2013). Compared with Minamata disease, whose legal dispute is still ongoing 60 years after official recognition, the 40 years for itai-itai seems to be short but is actually very long when considering human life. One might think that 40 years was a necessary period to build a tense and trusting relationship between the victim and the perpetrator. However, this was not an undue burden on the individual victims. Is there any way to reduce the burden? How can support for the victims and the support for the damaged area be established? How should the government and researchers make use of their respective positions and abilities?

6.2 Clarification and realization of compensation contents not linked to lawsuits
It takes a long time from the occurrence of damage to the conclusion of a lawsuit. In the case of itai-itai disease, the occurrence of damage is said to have occurred at least as far back as the 1910s, and it took about 60 years to win the court case. As summarized in Figure 3, the compensation was clarified in the wake of the victory. Measures to respond to future health damage, environmental recovery, and regional reconstruction, and measures to prevent the recurrence of pollution were initiated. However, these should be undertaken regardless of a legal victory.

In particular, environmental recovery and local recovery should be carried out in the normal urban development field. As for environmental recovery, we need a mechanism to monitor the quality of the environment and prevent entities that emit pollution from exceeding the standard value. Thus, we must envision a new city planning methodology that links land zoning and environmental management. In the case of itai-itai disease, the mine and the damaged area were remote, but if the industry that caused the pollution was the key industry in the affected area, how can we envision a new future? It is not yet clear how the region can be regenerated, and this is a future research topic.

6.3 Social structure of affected area
Areas affected by environmental pollution are forced to act as a group to prevent future damage and receive compensation for pollution. In the case of itai-itai disease, because of the clear pollution of soil contamination by cadmium in agricultural areas, collective independence was used in the face-to-face relationship. However, when various damage occurred, or when there was various recognition of damage, it is necessary to examine the location of the damage area and how collective independence can be established.

6.4 Toward knowledge in the Fukushima nuclear disaster area
Finally, I would like to receive suggestions for building a base of knowledge in the Fukushima nuclear disaster area. The decommissioning work at the nuclear power plant that caused the pollution and the maintenance of intermediate treatment facilities did not occur smoothly, and a farming and fishing environment was not established. The damaged area is wide, and the damage situation and recovery situation are also diverse.

Furthermore, the policy of promoting nuclear restart is still different from that of itai-itai disease. It is expected that the state where pollution occurred will not recover, the effects of the damage will continue for a long period of time, and there will be a large number of victims. In addition, the victims may not feel that the perpetrator’s apology or compensation is sufficient. It may be difficult to envision the development of a new region. In such cases, the method for reaching reconciliation will be left as a future research subject.

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The author declares no conflict of interest associated with this manuscript.

Notes
Note 1) In the medical field, research has existed from the early 1960s to the present and the law field followed. Studies have been conducted regarding community-based research, epidemiology, environmental economics, and sociology.

Note 2) According to an article titled Itai-itai Disease, Two Newly Certified Toyama Prefectural Review Board, October 5, 2018 (confirmed October 5, 2019), the Toyama Prefectural Pollution Health Damage Review Board appointed in July 2015 has approved two of the three applicants. A 95-year-old woman who was not accredited was considered “equivalent to observers.” According to Mr. Isao Takagi, a certified patient died in November 2018. Since 2003, Mr. Takagi has been the representative director of the Jinzu River Basin Cadmium Victims Liaison Council, which consists of victims of itai-itai disease.

Note 3) The descriptions in Chapters 3 and 4 are mainly based on the literature and interviews with Mr. Takagi.

Note 4) The Kamioka mine is said to be old, and it declined at the end of the Edo period. After that, when entering the Meiji era, unification of all mountains for the rich country was required by the government, and the amount of mining increased owing to Mitsui-Gumi (the predecessor of Mitsui Mining Co., Ltd.), which proceeded with the acquisition.

Note 5) In 1935, the existence of the disease itself was recognized. This is clear from the fact that Mayor Shimpomura requested the Ministry of Home Health to investigate the cause of the strange disease.

Note 6) In the latter half of the Meiji period, the mining industry prospered in the midst of repeated wars and industrial devotion, and the Mining Law was enacted in 1905 with the philosophy of shifting from national proprietary to freedom of mining management. In contrast, it was in 1901 that Mr. Shozo Tanaka, a very famous politician, tried to directly appeal to the Emperor on the Ashio mine poisoning case, and the mine poisoning case still continues. To avoid conflict between residents, mining companies have used the customs of donating compensation, donations, and local promotion expenses. According to 36 page of Miyamoto (2014), the victim farmer and Sumitomo Metal mining
signed a smoke pollution prevention agreement in 1910 in the Toyo region. However, as mine damage continued, the 1939 amendment to the Mining Law included a provision for compensation for mine damage. According to Yoshiida et al., despite the 1939 China and Japan War period, the no-fault compensation rule was established “based on the movement of long-time victimized farmers.” The compensation rule, as long as it does not hinder the production and increase of mining capital, involves the adoption of a monetary compensation principle, the second justification of restoration, and a government-sponsored restoration project with state assistance = replacement of the perpetrator’s burden by the state.” This was “relatively easily enacted because the intention and negligence of capital remained unquestioned.”

Note 7) In 1945, the Kamagaya sedimentation site was destroyed, and in 1956 the Wasaboso sedimentation site was destroyed by heavy rain, causing downstream agricultural damage. In 1948, compensation was initiated by the Company.

Note 8) There are also related legal statutes such as the 1967 Pollution Control Basic Law, 1969 Law on Special Measures for Relief of Health Damage Related to Pollution, 1970 Pollution National Assembly, 1970 Pollution Prevention Business Expense Business Burden Act, and 1971 Law on the Prevention of Soil Contamination of Agricultural Land. As symbolized by the Food Sanitation Act of 1970, the quality of food directly linked to environmental pollution was also sought.

Note 9) Surveyed in Showa 42/43, targeted at females over 50 years old. Reprinted from Miyamoto (2014), sourced from Shunichi Kono’s Hokuriku Public Safety Magazine No. 23, Volume 2.

Note 10) Negotiations occurred between the plaintiff and the defendant the day after the appeal proceedings took place at the Company headquarters.

Note 11) To identify itai-itai disease, the following criteria are used: (1) the victim must live in a contaminated area of itai-itai disease and have a history of exposure to cadmium, (2) not congenital, developed after adulthood, (3) tubule injury, (4) osteomalacia with osteoporosis to satisfy all conditions that are observed. If you miss (4), you will be listed as a person observation required.

Note 12) Itai-itai certified patients can now receive compensation and pay for medical expenses through a 1973 medical compensation agreement with the Company. Furthermore, according to the agreement, the Company implemented the “Jinzu River Basin Residents Health Management Support System” and pays a lump sum after confirming the residence history and renal dysfunction given cadmium’s effects on the kidneys. This is not recognized as a pollution disease by the government. When this system was established, an estimated 500-600 people were assumed, but only 137 people actually received payment (until the end of November 2016). Please refer to Nihon Keizai Shimbun, December 19, 2016, and “Itai-itai disease, relief of uncertified people does not proceed,” April 28, 2018, https://www.nikkei.com/article/DGXLASDG16HCK_Z11C16A2CR0000/. According to local doctor Keiko Aoshima, kidney problems often have no subjective symptoms, and care and attention are required for consultation and application. She pointed out that some patients, especially among the unapproved aging population (80% of applicants are over 80 years old) would not appear and appeal because they wanted to avoid discrimination and prejudice.

Note 13) It was announced at a talk by the Minister of Agriculture and Forestry that the country would purchase contaminated rice that had a cadmium concentration of less than 1.0 ppm and more than 0.4 ppm. Then, 0.4 ppm was adopted as a new standard value that became stricter than before owing to the 2011 revision of the Food Sanitation Law.

Note 14) The restoration method has become an embedded soil method in the upper and middle basins, and an additional soil method in the downstream region. In 1989, the prefectural pollution control special land improvement project “Jinzu River Basin” was started. The burden on the Company was 39.39% based on an assumption of 100% when the pledge was signed. As a basis for this, the prefecture raised the characteristics of the region based on the Pollution Prevention Business Expenses Act and the business activities of nonexistent businesses. According to page 515 of Miyamoto (2014), based on the Mining Law, it is a faultless liability system, so miners who discharged cadmium must bear the burden. The industry field was aware of the crisis and moved some members of the Liberal Democratic Party. This is called the “butterfly” phenomenon of the mid-1970s.

Note 15) The figure shows the central part of Futuyu-town where itai-itai disease frequently occurred, as indicated by the location of Hagino Hospital and Seiryu Hall where the victims died. Many large public facilities are located in the right bank of the Jinzu River. There is also only riverbed airport in Japan. These public facilities were planned and built around the 1960s.

Note 16) According to Huang and Nakayama, at the time of drafting the 1976 “Land Use Plan for Southwestern Toyama City,” the diversion area for factories, residential land, and industrial land was 850 ha, but this was rejected by residents without financial support. There was also a white paper. However, as the project progressed and gradually moved closer to Toyama city area, the area of non-agricultural land increased.

Note 17) According to an interview article with Mr. Yoshinori Kawai, who was in charge of business in Toyama Prefecture’s arable land division at the time, the target of the annual business progress briefing was the beneficiary of that project, but they were also victims. Thus, he received severe questions from them. “The only thing we could do was to work alongside the beneficiary = the victim, and we were in a difficult position.” Close attention has paid to land readjustment, redevelopment of water facilities, complicated differences in restoration methods, protection of buried cultural properties, restriction of truck transportation of customer land, etc.

Note 18) Interview with Mr. Takagi at Seiryu Hall, November 27, 2017. Some residents did not consider relocation. It seems that the patients were mostly elderly parturition women, and it was unthinkable that the “house” was influenced by the situation of the bride, who was not the mainstay of the family. Since the area of each rice field has been expanded to improve the efficiency of farming work, there has been a collapse in the water supply, and the preference is currently responding.

Note 19) According to the national census, the number of residents in Futuyu town increased from 1970 (22,788) to 2000 (34,528), but the population in Yaw town adjacent to the south decreased slightly from 23,032 to 22,322.

Note 20) In 1991, a previous site survey revealed that the site of the aging zinc electrolysis plant was highly contaminated, so a renovation plan was announced. It was found that the planned factory site was also contaminated with high concentrations of cadmium. It was
requested that the construction be stopped until pollution prevention measures were established. It can be said that the recurrence of pollution has been prevented.

Note 21) “Trust relationship with tension” are Mr. Takagi’s words. This was heard many times during the interview and is considered to be very important.

Note 22) After the completion of all mining in 2001, during heavy rains in 2004, contaminated oil spilled, causing pollution. An onsite survey in October 2017 called for further measures in view of the heavy rain disasters that occurred frequently across the country in recent years.

Note 23) According to Karasawa and Kubota 19, in the case of the Great Hanshin-Awaji Earthquake, residents in the affected area recognized that there was a large inflow of people from outside after a disaster area social evaluation was conducted in the affected area. To that end, the injured people had a positive understanding of the post-disaster process.

Note 24) The perpetrator is informed after a judgment that the plaintiff wins the case = the defendant loses. The perpetrator’s site has a goal of convergence and resolution of monetary compensation for health victims, the cost of recovery from environmental pollution, and requires a pollution prevention system from the Company. There seems to have been a certain degree of response to this request. It can be said that it had a great influence on the attitudes of the perpetrators thereafter.

Note 25) This is an initiative that began in FY 2017, and there were 892 submissions in FY 2018.

Note 26) According to Mr. Shibue, as mentioned above, the president was retiring in 2010. If he could not solve the problems, he felt that only younger people would remain, and they would not be able to solve them anymore. He asked for setting the table of the consultation and appealed that he would like to set a goal on how to reduce the concentration of the Jinzu River. He thought the quality of the stream was too good and could not be made clearer. He thought his desire to set a goal should cause a big fire for the victims. However, the Coop Association tried to accept his idea. He felt that the Coop Association understood what he was saying. Some of the victims were dissatisfied, and they felt that the decision to accept the apology has been very serious meaning for the Coop Association. The victims’ representative Takagi said that a “tensioned-filled trust relationship” was established. Because those words were very glad and proud of for the perpetrator’s representative Shibue, he felt that he had received a gold medal. There was a deep relationship, and for the first time, they reached a settlement. Mr. Takagi is also the author of 13, and shares information with victims.

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