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The Differences in Perception towards the Progress of Recovery between Metropolitan and Coastal Areas in the Great East Japan Earthquake

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Abstract

As Japan continues its process of reconstruction from the Great East Japan Earthquake of 2011, several problems are widely being pointed out. One of the problems in disaster-hit regions is in the varying levels of recovery in different areas. The objective of this paper is to find possible causes of such disparities by comparing two cities in Miyagi prefecture, Sendai City, and Shiogama City. The comparison is based on two studies. The first is on the regional conditions including economic trends to identify the disparities that exist between the two areas. The second study is qualitative and is based on interviews of residents of the regions to verify how such disparities are influencing the people's perceptions toward the progress of recovery. The results indicate that there are clear differences in the levels of the recovery in the two distinct areas, and that gap has significantly influenced their perceptions about the progress of recovery and their well-being. One significant finding from these two studies is that economic disparity is not the main cause of the difference in their perceptions toward the progress of recovery from the disaster as it is often stated in disaster studies, but such perception is due mainly to the disparity in their levels of satisfaction with their local community after the disaster, and that has significant implications for the people's well-being. Based on these findings, the paper identifies lessons and proposes possible solutions to rectify these inequalities.

Keywords: *disaster, the Great East Japan Earthquake and Tsunami, recovery, disparities, well-being*

1. Introduction

More than five years have passed since the Great East Japan Earthquake and Tsunami occurred on March 11th, 2011. The scale of the quake was magnitude 9.0, the largest earthquake to have occurred around Japan in recorded history. The disaster, which extended up to 500km (310 miles) and centered around Iwate, Miyagi, and Fukushima Prefectures, caused massive damage to vast areas of the Pacific coastal line of Japan. The official death toll and the missing have reached 18,455 as of March 2016 and destroyed 130,000 houses, partially destroying 260,000 dwellings. Since the damage inflicted covered such vast areas, the level of damage in each region differed and thus the level of recovery of each area after five-and-a-half years has also been widely varied.

One of the problems which have been pointed out after the disaster is the different levels of recovery in each area within the disaster-hit regions. Bipolarization between the places where recovery is progressing smoothly and the ones where recovery is lagging is becoming evident, and the issue has been picked up by newspapers and television media. According to research on disasters to date, the suffering from disasters become more evident in relatively vulnerable parts of society, and creates inequalities among residents depending on the difference in the people's social environment (Urano, 2014; Wisner et al., 2004). Besides, research has pointed out that disasters affect most negatively society's disadvantaged including the economically vulnerable and the elderly. The existing societal and economic structures give birth to even more disadvantaged for people by expanding existing inequalities, and that expansion leads to inequalities in the progress of recovery.

In one of the hardest hit regions of Miyagi Prefecture following the Great East Japan Earthquake, we can witness such inequalities forming. While reconstruction demand is now buoying the economy in the capital, Sendai City, where the damage was comparatively small to start with, the economy in coastal areas, which experienced greater damage, has been lagging due to factors that existed before the disaster. Shiogama City had already been experiencing such adverse trends as structural reform, globalization,

municipal mergers, population decline and population aging. The disaster added even more damage to such declining areas (Okada, 2012).

This paper discusses two studies in Sendai City and Shiogama City in Miyagi Prefecture. The first study is about the regional conditions of each area comparing trends, including economic factors, before and after the disaster. The second study is a qualitative one involving interviews of local residents to focus on examining the differences in the perceptions toward the progress of recovery, a factor that has not been a focal point of studies thus far. The objective of the research is to ascertain whether inequalities in recovery including economic gaps exist. If they do indeed exist, the paper seeks to find out the causes of such inequalities, and how the inequalities relate to perceptions about the progress of recovery. In particular, the paper explores whether economic factors are the main cause of disparities in the perception of recovery as the existing literature on the subject indicates.

The results are analyzed from the standpoint of the people's well-being. The perception of recovery for each person consists of different factors, so comparing the "perceptions toward the progress of recovery" can be difficult, but the purpose of the study is to understand the disparities in such perceptions in Sendai and Shiogama.

The author believes that understanding the actual situation surrounding the disparities in the perception towards the progress of recovery in different areas may contribute to the correction of such inequalities, and enables formulation of proposals for better reconstruction plans to various actors involved in the reconstruction process, who directly or indirectly have real impact in the lives and well-being of the people in disaster-hit areas.

1.1 Background – Sendai City and Shiogama City

Sendai City is the capital city of Miyagi Prefecture and located in the middle of the prefecture. It is the largest city in the Tohoku region with 786.3 square kilometers and a population of 1.08 million people. Although the Sendai City is an urban metropolis, it is called "The City of the Forest" for its richness of nature and greenery, and more than 30,000 tourists visit it every year. The proportion of the people over the age of 65 is increasing, but there is a high percentage of young people in the city because of the many schools in the area. The city prospered as a castle town after the daimyo (feudal lord) of the Warring State period Masamune Date built the Sendai Castle over four hundred years ago.

Shiogama City is a port town facing the Pacific Ocean located about 16.5 kilometers from Sendai City. The city has an area of 17.37 square kilometers and a population of 53,000. The main industry of Shiogama is fishery. The amount of tuna caught and production of fish products such as fish cakes is ranked number one in the country. The city is surrounded by Matsushima Bay and Matsushima Hill, and most of the flatland is landfill. Partly because of the geographical conditions, there are few businesses coming into the city, and that has been a drag on the city's business activities. Although the city is located in Matsushima Bay which is well known for its scenic beauty (designated as "Tokubetsu Meishou" or "Place of Special Beauty"), the number of tourists has not been increasing as the bulk of the tourists tend to drift to the neighboring Matsushima City.

2. Method

This research draws on two studies in order to assess the difference in the levels of recovery. The first study attempts to clarify the disparity in conditions of the regions, Sendai City and Shiogama City, based on various statistics including economic data collected from Miyagi Prefecture, Sendai City, Shiogama City and The Ministry of Labor. The second qualitative study involves interviews conducted in Sendai City and Shiogama City, with interviewees residing in the two cities, to learn the disparities in the level of the people's perceptions about the progress of recovery.

2.1 Study 1 - Comparison of Regional Conditions: Sendai City and Shiogama City

The data used for the comparison as aforementioned were based on the information and statistics publicly released by Miyagi Prefecture, Sendai City, Shiogama City, and The Ministry of Labor. The data used for comparison were the population, number of business offices, municipal tax, job openings, and

trends in people looking for jobs. The data was collected in July 2016, and the data prior to the disaster were compared to those after the disaster.

2.2 Study 2 - Qualitative Study: Perceptions toward the Progress of Recovery by the Two Regions

The second study was a qualitative one mainly based on interviews with residents of the subject regions. This research was conducted between March 2016 and June 2016, and involved interviews with 70 residents in each city, 140 residents in total. The interviewees were male and female adults over the age of twenty and were limited to people who resided and experienced the disaster in the area. The interview took a face-to-face semi-structural style, and each interview lasted about 20 to 40 minutes. The interviews were conducted in all five wards in Sendai City: Aoba Ward, Miyagino Ward, Wakabayashi Ward, Taihaku Ward, and Izumi Ward. In Shiogama, the interviews were conducted in four areas that mainly from the city of Shiogama: West Shiogama, Hon Shiogama, East Shiogama, and The Urato Islets (Katsura Island, Nono Island, Sabusawa Island).

3. Study 1 Findings: Inequalities in the Recovery Based on Regional Conditions

In Sendai City, the death toll and the missing from the disaster have reached 1028[1], which is about 0.09% of the entire population of the city. The coastal areas of the city were severely damaged by the tsunami, but the damage to the central part of the city was relatively small. Based on Table 1, the population since the disaster has increased about 36,000 as people outside the city, who lost their homes or family or were seeking jobs, moved into the city. The number of offices also increased by about 900, which represents about a 2% increase. This gain is mainly attributed to Miyagi prefecture's reconstruction policies which have given preferential treatment to large companies for the stated purpose of "Structural Reform" as well as to the inflow of businesses taking advantage of reconstruction demand and established bases in the city.

In Shiogama City, the death toll and the missing have reached 45, which is about 0.08% of the city's population[2]. The death toll is smaller than Sendai City, but the percentage of people who were in areas that were inundated by the tsunami accounted for about 35% of the population, which is over ten times as much as the percentage in Sendai[3]. The population had decreased by about 2,400 compared to the population before the disaster as some older people left the city in order to seek refuge with their relatives or to find work. The number of business offices decreased by about 17%[4].

By referring to Table 2, in terms of municipal taxes, in Sendai City, individual municipal tax revenue went up about 27%, and corporate municipal tax revenue went up about 29%. In Shiogama City, both individual and corporate municipal tax revenue decreased by approximately 7%.

The information above clearly shows that Sendai City's economical scale was bigger than Shiogama City, and the damage from the disaster was smaller. On the other hand, Shiogama City's economical scale was smaller, and the damage from the disaster was larger. However, the recovery from the disaster has been pronounced in Sendai City while the recovery of Shiogama City has been lagging.

Table 1 Estimated Population Growth/Decline (March 2011 to May 2016)

	5/1/2016	3/1/2011	Growth/(Decline)
Sendai	1,083,446	1,046,737	36,709
Shiogama	53,780	56,221	(2,441)

Source: Miyagi Prefecture

[1] Source: Sendai City. Includes 192 who died outside of the city.
[2] Data released by Shiogama City. Includes 28 who died outside of the city.
[3] Data from Hideaki Matsuyama, The University of Tokyo Interfaculty Initiative in Informational Studies
[4] Shiogama City Statistics. Comparison of 2009 and 2012

Table 2 Tax Revenues (Resident Tax)

Sendai		('000 JPY)
	Individuals	**Corporate**
2011	48,187,578	21,417,291
2014	61,613,619	27,841,976
	27% Up	29% Up

Shiogama		
	Individuals	**Corporate**
2011	2,232,321	364,947
2014	2,091,359	340,177
	7% Down	7% Down

Notes: Data represents gross revenue from resident tax
Source: Sendai & Shiogama City Offices

When looking into the data released by the Public Employment Security Office, or Hellowork, the effective opening-to-application ratio of both Sendai City and Shiogama City rose since the disaster, from 0.54x to 1.31x and 0.34x to 0.75x, respectively. As per Figure 1, the rate of increase is slightly higher in Sendai City than in Shiogama City whose number has risen from a low base and remains relatively low. A look at the details of the data shows that reconstruction-related jobs such as construction, security, shipping and real estate conveyance are pushing up the overall rate in both cities. This means that reconstruction demand is contributing significantly to the improvement of the ratios. The factor that is making the most difference in the increased rates of the two cities is that in Sendai, the rate of other kinds of jobs such as general administrative office jobs has increased due to the rise in businesses established after the disaster.

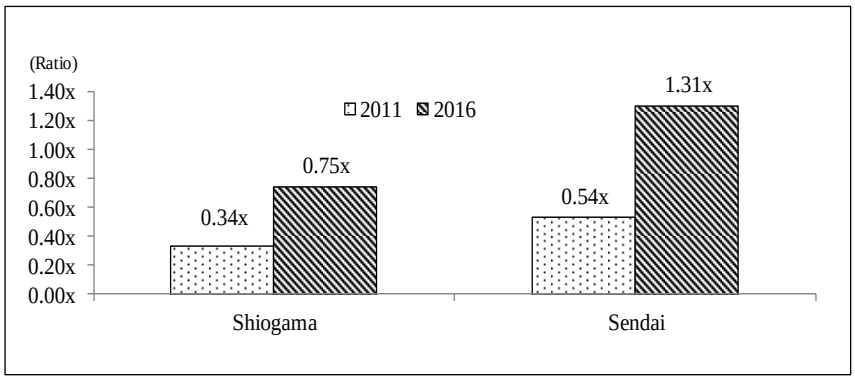

Figure 1 Effective Job Opening to Applicant Ratio
Source: Hellowork

The statistical data on Shiogama City shows that the decline of the city's main industry, fishery, stands out. Therefore, we need also to look at data which is not reflected in the numbers from Hellowork. Based on Table 3, the number of ships that entered into port was 2,294 ships in 2010 but was 1,790 ships in 2014, which represents about a 22% drop[5]. Vehicles used for transporting fish products declined 43% from 11,247 to 7,891. Also, the number of workers in the fishery industry was 387 in 2010, but that number also dropped to 216 in 2013, which is about a 45% decline[6]. These statistics indicate a serious decrease in the main industry supporting the local economy and a lagging process of reconstruction.

[5] Source: Latest data from Shiogama City and Sendai City
[6] Source: Latest data from Shiogama City and Sendai City

Table 3 Number of Ships and Motor Vehicles for Fish Transport[$]

Year	Ships	Motor Vehicles for Fish Transport^	Weight*	Amount ('000 JPY)
2010	2,294	11,247	16,825	9,991,194
2014	1,790	7,891	17,966	8,442,123
Change	-28%	-43%	6%	-18%

Notes: ^Vehicles unit in number of vehicles, *Weight in tons
Source: Miyagi Prefecture

4. Study 2 Findings Inequalities in the Residents' Perceptions toward the Progress of Recovery

This section shows the results of the qualitative research conducted to identify the disparities that exist in the level of people's perceptions toward the progress of recovery between Sendai City and Shiogama City. The qualitative research, which hears testimony directly from local residents, enables us to verify whether the difference in the level of recovery shown in the data and from the information above is directly influencing the local residents' perception toward the recovery, and to understand their perception toward the recovery which may not be understood from various numbers.

Figure 2 shows when the respondents were first asked if they believe the recovery has been progressing in their area. In Sendai City, 40% of respondents answered that it's "progressing," 50% stated "progressing somewhat," 9% said "not progressing so much," and 1% answered "not progressing at all." In Shiogama City, 6% answered "it's progressing," 63% stated "progressing somewhat," 30% said "not progressing much," and 1% answered "not progressing at all."

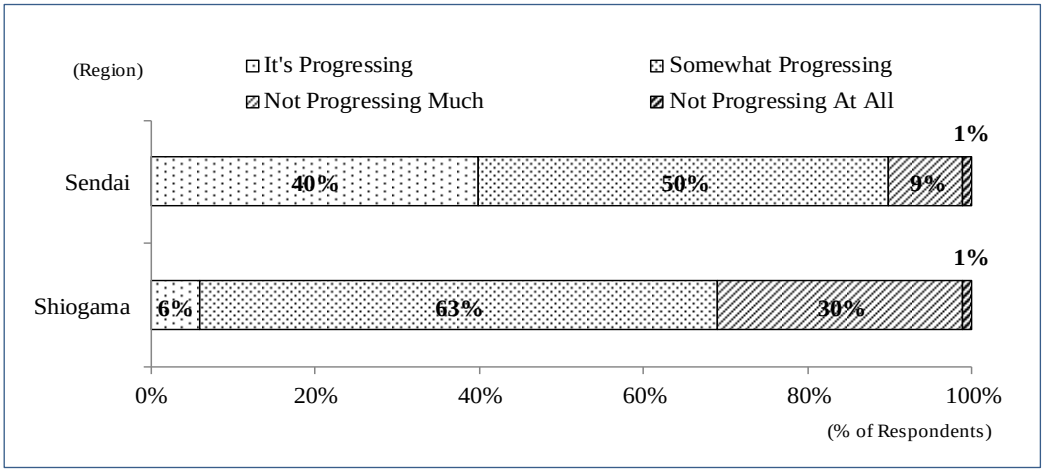

Figure 2 Question: Is the recovery progressing in your city?

Next, in Figure 3, with regards to the question, "Is your life still being affected by the disaster?", in Sendai City, none of the respondents said " it's still affected greatly," 13% said "it's still much affected," 44% answered "it's still affected a little" and 43% said "it's not affected anymore." In Shiogama City, 7% said "it's still greatly affected,"43% answered "it's still much affected," 29% stated "it's still little affected," and 21% said "it's not affected anymore."

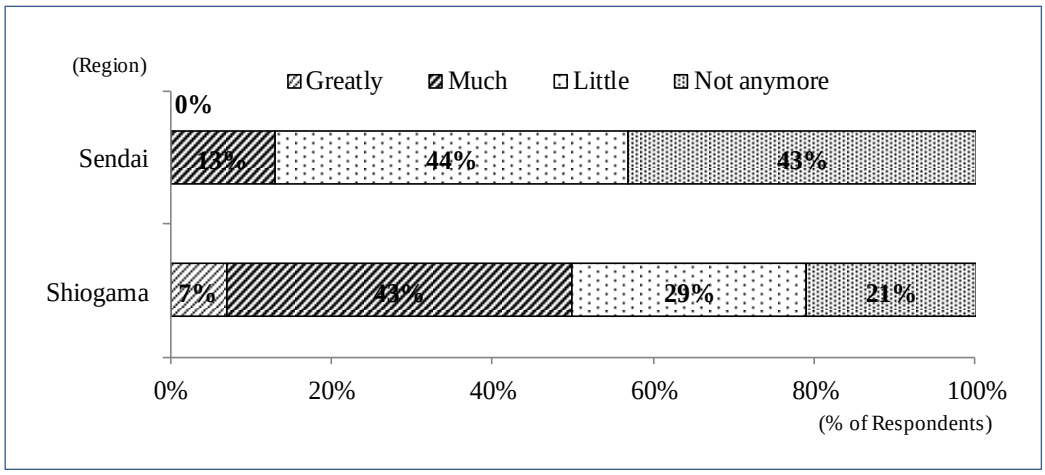

Figure 3 Question: Is your life still being affected by the disaster?

Next, by referring to Figure 4, is about the question, "On a scale from zero to 100, how much do you feel your life has recovered from the disaster?" In Sendai City, 43% of the respondents answered that their recovery was in the score of 90s, which comprised the most respondents. In Shiogama City, 47% of the respondents stated that their recovery was in the 50s, which represented the most respondents. The average was 80 in Sendai City and 62 in Shiogama City.

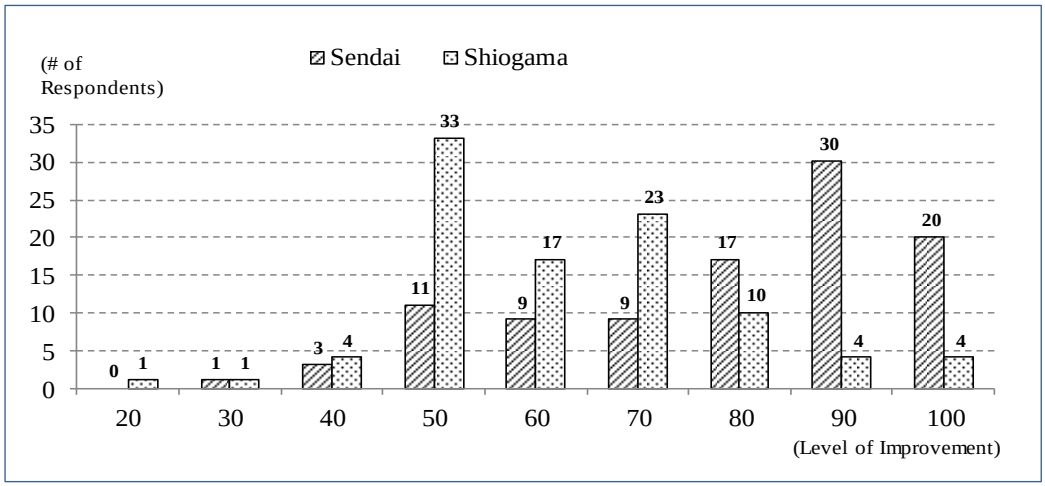

Figure 4 Question: On a scale of 0 to 100, how much do you feel your life has improved since the disaster?

With regard to the question about the respondents' financial situation, based on Figure 5, in Sendai City, 4% stated that their financial situation is better after the disaster, 79% said unchanged, and 17% stated their financial situation is worse after the disaster. In Shiogama City, none of the respondents said it is better after the disaster, 84% said unchanged, and 16% stated that it is worse after the disaster.

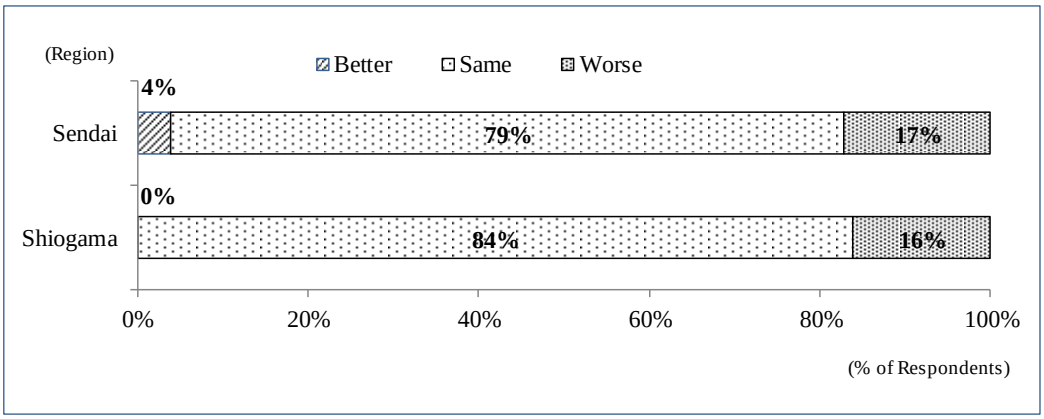

Figure 5 Question: Is your financial situation better or worse after the disaster?

By looking at Figure 6, with regard to the question, "Are you satisfied with the community to which you currently belong?" In Sendai City, 71% said "satisfied," 24% stated "not satisfied." In Shiogama City, 47% answered "satisfied," and 50% said "not satisfied."

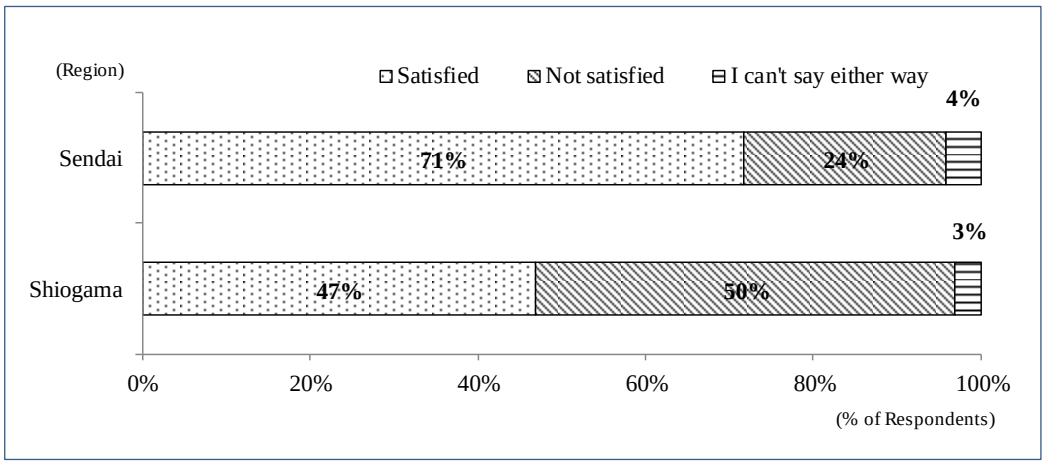

Figure 6 Question: Are you satisfied with the community to which you currently belong?

5. Discussion of Results from Study 1

First, as Okada states, a comparison of the statistics of each area's regional condition shows that there are indexes that are above the pre-disaster level in Sendai City, but the indexes of the coastal area, Shiogama City show that its recovery is lagging.

The causes of this disparity must be considered. An inspection of the minutes of the Great East Japan Earthquake Reconstruction Design Council clearly reveals that the government was trying to push forward the reconstruction along with an economic growth strategy in the name of "creative reconstruction." In effect, the government placed special priority on the economic recovery of the entire Tohoku region by focusing on the region's function as part of a supply chain of global businesses without considering the unique needs of each area and recovery of small-scale fishermen, farmers or other individuals' living conditions.

For example, the prefecture opened fishing rights to corporations and relaxed regulations in the Agricultural Land Act by applying the "Special Zone System" to consolidate fishery and agriculture. The prefecture also made an effort to attract more corporate businesses to the region. With regard to the fishery

industry, which is the main industry of Shiogama City, the prefecture decided to aggregate the function of fish processing and distribution in order to expedite a fast recovery. This was done by selecting 60 ports out of 142 in the prefecture (about 40% of the ports affected by the disaster), as "base ports" so that the prefecture can invest their limited resources intensively[7]. However, this meant that many individual fishermen who base their livelihoods on small ports with supporting industries (primary industry to tertiary industry) have been unable to revive their livelihoods[8].

In addition, the nuclear accident at the Fukushima Daiichi Nuclear Plant affected the export of Miyagi's marine products. Miyagi has been famous for Hoya (sea squirt) farming. The latter yearly catch used to be about 9,000 tons and 70% of that was exported to South Korea before the disaster. However, following the nuclear disaster, South Korea took measures to ban imports of marine products from eight prefectures in Japan including Miyagi, effectively closing the distribution channel for the hoya business.

There are other reasons that contributed to the decline in Shiogama's fishing industry. Shiogama had been known for its large volume of its catches of tuna fish. However, adverse trends such as restrictions on the amount of tuna caught by the movement to protect marine resources, increases in fuel costs and the fishing license fee, and the aging factors for fishermen were already progressing prior to the disaster. These issues were compounded by the fact that some fishermen had to move out of their homes to live in temporary housing after the disaster which made continuing their work difficult. Therefore, the decline of the industry in Shiogama City accelerated as a consequence.

On the other hand, Sendai City has been experiencing a brisk economy as many reconstruction related businesses from inside and outside the prefecture flowed into the city to take advantage of demand from recovery and reconstruction which is expected to be up to JPY20 trillion (or US$200 billion) [9], and many of the businesses set up branch offices in the city. In addition, there are many companies from inside and outside Japan entering the Sendai market as the city adopted the "Reconstruction Special Zone System" and relaxed restrictions in the agricultural, fishery and medical industries. As one example, in Asuto-Nagamachi town in Sendai City, which is designated as a redevelopment district, construction projects are progressing rapidly. Currently, there are some commercial developments in the area, such as large-scale shopping centers and apartments, which is a radical change from before the disaster when the city consisted of many vacant lots and industrial parks. One resident who moved into Asuto-Nagamachi from outside Sendai City after the disaster said "I moved in this area just by chance, but I feel lucky. I want to settle down here." This comment is representative of the level of satisfaction by residents of Sendai City.

6. Discussions of Results from Study 2

The results of the qualitative study clearly show that the perception toward the progress of recovery in Sendai City is more positive than the perception in Shiogama City. The difference in the people's perception toward recovery also confirms Okada's statement that there is a disparity in the recovery from the disaster between big cities and other coastal areas.

As mentioned in the beginning, the basic viewpoint of disasters, that vulnerable parts of a society become visible in disasters, and that social vulnerability creates disparities in disasters and that leads to the disparities in the level of recovery. The study on the case of Sendai City and Shiogama City also supports this idea in many ways.

Here, the vulnerability that existed in Shiogama City needs to be explained. First of all, Shiogama had issues of population decline and an aging society. The pace at which these phenomena had been developing was more rapid than that of the nationwide figures before the disaster, and the population had been estimated to decline from 56,897 in 2010 to 41,025 in 2035, a 28% decline, and people over the age of 65 had been estimated to increase from 27.1% of the city's population in 2010 to 40.1%, twenty-five years later[10]. The fishing industry is a key industry of Shiogama City, and this region already had problems of

[7] Jiji Tsushin, December 8, 2011

[8] Tomohiro Okada, Regional Reconstruction from the Earthquake – Recovery for the People or Taking Advantage of "Structural Reform" Reconstruction? Shin Nihon Shuppan, 2012

[9] Hiroaki Okada, Regional Reconstruction from the Earthquake – Recovery for the People or Taking Advantage of "Structural Reform" Reconstruction? Shin Nihon Shuppan, 2012

[10] Source: National Institute of Population and Social Security Research

aging fishermen. However, the disaster accelerated the problem as there were fishermen in advanced age who decided to retire after the disaster, had to leave the region after losing their homes, or had to give up fishing in order to recover from other damage to their lives. In addition, the pace of decrease in population accelerated as some residents moved out of the city to find better job opportunities. This situation not only leads to a population decline but also to separation of households and breakup of families.

Besides these problems, the regional industry of Shiogama had already been declining before the disaster due to the policy of economic and structural reforms. However, the region suffered another blow as the central government and Miyagi Prefecture pushed ahead with the strategy of "Creative Reconstruction," as mentioned earlier. This strategy did not place priority on the recovery of each small-scale population unit and individuals in the region. Without making sufficient effort to listen to the needs of these residents, as a consequence, there is a gap between the municipality's reconstruction policies and a vision of recovery that residents hoped to realize. The so-called "massive embankment issue" and the "high ground migration issue" were examples of such reconstruction policies.

In this way, disasters tend to become more visible in vulnerable parts of society and socially vulnerable people tend to bear the risks of disasters unequally.

However, this qualitative study has revealed one commonly accepted theory about disasters that does not hold in terms of the people's perception toward the progress of recovery from a disaster: that lags in recovery occur to people whose economic status is weaker, a trait that is said to be a major vulnerability in disaster studies.

One notable point from the findings of the qualitative research is that, in response to the question, "Is your financial situation better now or before the disaster?", in Sendai City, the answers, "better now" and "unchanged" accounted for 83%, and in Shiogama City, there were no "better now," but "unchanged" accounted for 84%. The totals are almost the same in the two cities. However, the data regarding the level of the perception of recovery told a different story. In the question regarding the level of progress (Figure 3), Shiogama City had an overwhelming number of people who said recovery was not progressing. Also, on a scale of 0 to 100 (Figure 4) for the progress of recovery, Sendai City was 80 and 62 in Shiogama City, an 18 point difference between the two cities.

What is making the perception toward the progress of recovery for people of Shiogama City much more negative? One possible clue is the difference in the levels of satisfaction toward their local community between Sendai City and Shiogama City, and not for economic reasons. According to the results of the qualitative study, in Sendai City, 71% of the respondents are satisfied with their current local community, and on the other hand, in Shiogama City, 47% of the respondents answered that they were satisfied with the current local community. There is a 24% difference between the two cities. In Shiogama city, 50% of the residents said that they were not satisfied with their local community, more than twice the number of Sendai City which was 24%. One can infer that people are more influenced by their ties to the community or that the levels of satisfaction with their community influence residents' perception towards recovery.

The definition of "local community" has been suggested by many scholars, but in this paper, the community is defined as places, society or group of people who share a common residential region and relate to each other in production, government, customs, and culture.

The author conducted further research on this matter and uncovered the following information regarding the issues of the local community. The man in his 60's who lived on the Katsura Island in Shiogama City and moved to temporary housing in the mainland said, "I used to live in an environment where I was surrounded by neighbors that I had known since childhood and had the feeling that I was living together with my family and the people around me, but now I'm living alone in a temporary house and don't know most of the neighbors. It feels harder in some ways. There is going to be a drawing for new housing, but I hear it is going to be difficult to get housing that I want. There are going to be people who will be forced to move to places far inland, but that would be too much for me since it would be inconvenient and I would be isolated."

A woman in her 70's living on the Katsura Island said, "We used to get along better before the disaster, with a spirit of helping each other and communicating more. Something has changed us after the disaster. But maybe we can't help it because the disaster was such a devastating life and death experience for everyone."

Another man in his 70's mentioned the psychological effects after the loss of his community by the disaster. "Only a few died on our island, but the damage of the tsunami was extremely big and so many residents lost their homes and had to move off of the island. The population was declining but now its worse, and it feels lonely."

Further, a man in his 30's living in the city said, "For me, recovery means 'change,' but we cannot see any change in our community. There is no visible change around us. When even young people like me can't see it, I'm sure older people who do not move around a lot are feeling it even more."

A fisherman in his 60's expressed his opinion saying, "The tide embankment project that the prefecture is pushing ahead in our area is troublesome. The prefecture is stubbornly pushing forward with their project, but that tells how much they don't know what fishermen's lives are like."

A point in common among these opinions is that the residents value their sense of belonging to their community and the wellness of their local community. These people count this feeling as a more important part of their lives. Even though their financial situation didn't change materially, the fact that their community was damaged by the disaster by neighbors moving out or the fact that they started feeling negative about their community affected the wellness of their lives. Even though their damaged houses were repaired with subsidies by the government, and they can carry on with their lives with no major financial problems given the pensions they receive, or even if they were compensated for disposal of their unsellable products, their feelings are affected by factors other than financial. Instead, they are affected by the quality of their lives which may not be replaced with financial and material factors. Further, it can be said that those non-economic factors have led to significant disparities in the people's well-being between Sendai City and Shiogama City.

What has been said in disaster studies to date is that socially vulnerable people who are economically vulnerable tend to have less access to various resources, which leads to less access to political influence, and that leads to disparities in the level of recovery. Undoubtedly, Shiogama City was saddled with more vulnerability with a smaller scale of economy and more aging and declining population. However, this study has revealed that economic issues were not the primary reason for the negative perceptions toward the progress of recovery by the people of Shiogama.

6.1 Case Study: The Massive Tide Embankment Issue, a Cause of Suffering for Residents in Shiogama

One of the major local issues for the community in the reconstruction process in Shiogama City is the tide embankment issue, as one of the residents in the interview mentioned. This issue has led to negative feelings by residents toward the recovery and is representative of reconstruction policies that ignore the needs of many local residents. Many tide embankments, whose total length was about 190km, in the hard-hit prefectures of Miyagi, Iwate and Fukushima were severely damaged by the disaster. After the disaster, Miyagi Prefecture conducted scientific simulations in cooperation with experts in order to set a new standard for tide embankments in the prefecture. The proposal called for new heights for the tide embankments which assume tsunamis that are estimated to occur every 100 to 150 years. Some of the proposed embankments exceeded T.P. 10 meters (T.P.= height from the average sea level of the Tokyo Bay) including those that are almost 15 meters high. However, this plan was met with strong objections from local residents.

The major complaints from the residents were that the embankments would take away scenic views, thus harming the quality of residents' lives and would negatively affect the tourism industry. Such high, lifeless walls would make life akin to living within huge prison-like walls and would make work difficult for fishermen as it is important for fishermen to be able to monitor conditions of the sea from the shore. The walls would actually be dangerous for residents and fishermen as they would not be able to notice even if there is an accident at sea. In the case of another tsunami, the walls would pose even more danger as residents would not be able to see a tsunami approaching and would not to be able to escape. Moreover, some proposed embankments even for *uninhabited islands* were estimated to cost about JPY20 billion or about USD20 million of taxpayer funds.

In response to complaints made by residents, the governor of Miyagi Prefecture flatly refused to revise the plan, at the beginning, saying that protecting the lives of people in Miyagi is the first priority and the height of the embankments was determined based on a proper scientific basis. Further, the governor even refused to change his position on the construction plans for the uninhabited islands[11].

However, following persistent criticism from residents and the general public, the prefectural government showed a change in their stance. In March 2014, the governor of Miyagi said that they could try to reach common ground with residents through discussions regarding the extra height they included in the estimate. That was effectively an announcement that the plan would be substantially revised[12]. Since then, there were some contentious cases that were successfully resolved after both sides agreed to compromise, but there are still some cases that are still in deadlock as of July 2016, and the residents are still contesting the height of the embankments.

The embankments of Nono Island in the Urato Islands are an example. The original height announced by the local municipality after the disaster was T.P. 4.3M, but the residents of the area have been in opposition about the height. The residents complained about the municipality's plan, and the municipality compromised and proposed to lower the embankment to T.P. 3.3M. But the residents did not accept the municipality's new proposal saying one meter does not make a material difference in the view and such a wall would still make the residents feel like they are living in prison and would harm the quality of their lives. The municipality and the residents have still not reached an agreement. The negotiations are at a standstill between the prefecture, which asserts that no further compromise is possible, and the residents who state that the prefecture needs to be more flexible in listening to the request of residents. Some residents have said that they met with the municipality, but the officials never listen to the voice of the residents.

Based on events to date, what is behind the conflicts between the municipalities and residents is the municipalities' lack of effort to try to understand the point of view of residents and lack of flexibility to resolve problems.

Needless to say, maintaining the safety of the region is important. However, people's "wellness of life" is not made up of just safety. Miyagi Prefecture has apparently put too much emphasis in scientific simulations, but such science is not absolute since the assumptions such as scale, location and timing of potential earthquakes cannot be one hundred percent certain.

Amartya Sen, economist and philosopher, states the well-being of a person can be seen in terms of the quality (the 'well-ness', as it were) of the person's being. Living may be seen as consisting of a set of interrelated 'functionings,' consisting of beings and doings. […] an evaluation of well-being has to take the form of an assessment of these constituent elements. (Sen, 1995)

If residents cannot have scenic views which have always been an important part of their lifestyle, the quality of residents' lives would seriously deteriorate. Also, the lack of views would negatively affect the tourism and fishing industries which have been the source of their livelihood for many residents. Such drastic change harms and could eventually lead to the disappearance of the community.

Sen also states that to realize the freedom to live various different lifestyles and of well-being is valuable (Sen, 1995). In linking this perspective to the issue of the embankments in Miyagi, the government's insistence on emphasizing safety by implementing the high embankments deprives residents' freedom of choice to live desired lives. This forceful act of depriving residents of freedom would further expand the disparities in recovery and also in the capabilities between Sendai City and Shiogama City.

As stated previously, behind the negative perceptions toward the progress of recovery of residents of Shiogama City, there is a strong influence from the low level of satisfaction toward their local community rather than from economic factors.

[11] Miyagi Prefecture Website, July 8, 2012 Minutes

[12] From the minutes of the press briefing by Governor Matsui in March 2014

7. Lessons Learned and Proposals to Improve the Well-being of Residents of Areas Whose Recovery is Lagging

This section discusses lessons learned from the studies and attempts to propose how the quality of lives may be improved, and well-being may be created in areas whose recovery has been delayed. The key actors are the municipalities, local residents, volunteers and aid workers from outside and the mass media.

7.1 Improvements in the Reconstruction Policies by the Government and the Local Municipality

A key lesson from these studies is that reconstruction policies by the central government and the local municipality influence the level of recovery in each disaster-hit area, and this influence, in turn, affects the level of people's perception toward the progress of recovery.

The results of the comparative study of regional conditions of the two cities show that the central government and the municipality pursued hardware-centered reconstruction policies under the name of "Creative Reconstruction" which has not brought ample benefits to disaster-hit areas. These policies placed emphasis on economic growth from reconstruction businesses and from big businesses that had bases in Tokyo with supply chains in the Northern and Southern Kanto regions. The policies failed to put top priority on the recovery in the life of each individual, thus creating disparities in recovery in different areas. In addition, the divided government at that time delayed the formulation and the execution of reconstruction projects such as the effort to buy up trade receivables of companies, farmers and fishermen's unions that were affected by the disaster, and thus delayed the rebuilding of local businesses affected by the disaster[13].

Further, as mentioned previously, structural reforms which gave priority to large-scale businesses, relaxation of regulations for private companies using the special administrative area system, consolidation of farmland and fishing ports, building of massive tide embankments on the coastal area, and attraction of new corporations exacerbated the disparities between the big city and other coastal areas.

What is required of the government and the local municipalities is an emphasis on the point of view of the "Human Recovery," a concept that Professor Tokuzo Fukuda of Tokyo University of Commerce (Currently Hitotsubashi University) proposed after the 1923 Great Kanto Earthquake. He proposed this concept in response to the Imperial Capital Reconstruction Design announced by the then Interior Minister and President of Imperial Reconstruction Council, Shinpei Goto. The reconstruction design, as declared by the government, placed top priority on hardware projects, but Fukuda asserted that the recovery of people is more important than the construction of buildings, upgrading infrastructure, the rebuilding of the major cities and the recovery as a whole. In another word, he emphasized the importance of placing maximum priority on the "right of life" and the recovery of the people affected by the disaster and the recovery of individuals[14]. When defining the "right of life," it means the importance of lives, businesses and works for people's survival. Spanning space and time, his idea has meaning for the current state of Japan which is trying to recover from the East Japan Earthquake.

In order to realize a more effective reconstruction from the disaster, rather than placing priorities as mentioned above, governments need to understand the unique attributes of the region and help the economy get on a more virtuous and sustainable path. The local municipalities need to try not to use government subsidies for the disaster in a one-off fashion but need to utilize those resources to construct drivers of growth and recovery.

7.2 Ties between Local Residents and Volunteers

When the Great Hanshin Earthquake occurred in Japan in 1995, a significant number of volunteer workers from all over the country rushed to the disaster area. The movement received much attention and the year 1995 in Japan came to be called the First Year of Volunteers. This trend is still continuing, and 1,492,000 volunteer workers thus far have contributed to disaster-hit areas of the Great East Japan Earthquake (As of May 31st, 2016)[15]. Given their large number, volunteer workers have recently started to

[13] Tomohiro Okada, Research of Problems with Local Governments, "Disaster Reconstruction and Local Governments", Local Government Research Company, 2013

[14] Tokuzo Fukuda, Fukkokuban Principles and Problems of Reconstruction Economics, Kansai University Publishing, 2012

[15] The National Council of Social Welfare HP

exercise significant influence on disaster hit areas besides their general aid work, and have been helping rebuild the community for disaster-affected residents.

There's one case on Katsura Island in Shiogama City in which a family of local fishermen on the island started a new business venture based on a proposal from student volunteer workers. Some volunteer workers became interested in the fishermen's oyster cultivation during their volunteer activities and requested the fishermen to allow volunteers to try oyster cultivation. Based on this experience, the fishermen started oyster cultivation for tourists as a new business. During the months of February and April, tourists visit the area and seed the oysters, putting them on a rope. The following February, the tourist return to the area and harvest the oysters that have grown to maturity.

Five years after the disaster, the new business has expanded, although little-by-little, and currently customers have expanded through word-of-mouth and internet marketing.

Most of the volunteer workers are students living in the major cities with little experience with nature, and these volunteer activities have been a source of joy for them. Further, fishermen's families are discovering newfound values in their work as they interact with outsiders that had absolutely no knowledge about fishing. Hearing the reactions of customers such as "I had never seen the seedlings of oysters!", or "I didn't know the seedlings are bound by ropes like this," the fisherman's families have been pleasantly surprised that volunteers are impressed with things that they had completely taken for granted. This experience has turned out to be an unintended opportunity for the residents to discover value in their lives they had never realized.

Similar to this case on Katsura Island, there have been some cases in disaster-hit areas in which local people have rediscovered values of their livelihood and jobs from new points of view of volunteer workers and activists from outside. Cases such as these are leading to critical, new roads to recovery for the local community.

7.3 Efforts of Residents

The residents have been making great effort to recover by themselves, as they realize their lives will not recover relying solely on the government and the municipalities. As mentioned earlier, the fishing industry, Shiogama City's main industry, was severely damaged by the disaster and many fishermen decided to give up their work as a consequence. The amount of the total catch of Shiogama has been continuing to decline partly due to global trends such as the restrictions on catching tuna, which had already been widening before the disaster. The disaster has exacerbated this decline. In this environment, there is one sector that has been growing since the disaster, and that is the wakame seaweed cultivation. The wakame growers cooperated with each other and restarted their work soon after the disaster even though their lives were severely damaged. To improve the yield from wakame, the growers tried various practices such as leaving more space between each net of wakame seeds to avoid overcrowding and to grow bigger and better quality wakame. The experiments turned out to be successful, and the catch has increased from 164 tons in 2010 to 322 tons in 2012, almost double the yield. Their efforts are continuing by making further use of fishing areas that are rich in nutrients.

In addition, residents are making efforts to recover and further develop their area by trying to attract more tourists, reviving a beach and some local festivals that that were discontinued after the disaster. The local festivals such as The Shiogama Port Festival and swimming at local the beach had been important parts of the people's lives throughout their history. Thus reviving these customs and activities is invaluable for the improvement of the quality of the residents' lives.

With regard to the role of government, it is imperative that the government policy enables residents to help themselves such as in the above cases and rebuild their communities and livelihood. Government efforts such as building large tide embankments and Creative Reconstruction have not aided residents on this front.

7.4 The Role of Media

Finally, among the actors involved in disasters, the influence of media is getting more attention in recent years. A detailed discourse on the role of media is outside of the scope of this paper, but the subject is worth mention.

In the case of the Great East Japan Earthquake, various aid from outside, including volunteers, donation of money and goods were provided to disaster-hit areas. One of the key attributes of the disaster was that the damage extended to vast areas. One issue that was pointed out after the disaster, partly because of the sheer vastness of the damage is that appropriate amount of aid was not delivered to each area on a timely basis. There were some areas that got little aid although the damage was extensive, and there were some areas that experienced relatively small damage, but aid was abundant and concentrated. The same can be said about the amount of reporting by the media. Some areas received large amount of media coverage while other areas received scant coverage.

Studies in reference to the Great East Japan Earthquake and Tsunami have revealed that the amount of media reporting influenced the amount of donations (Miura 2012, Numada et al. 2013, Matsuyama 2013).

There are some reasons for the disparity in the amount of reporting in disaster-hit areas. First, there was a tendency to give more media coverage of areas with more population and areas that were tsunami-inundated rather than to report on areas with more casualties and missing people (Matsuyama 2013). This meant that the media preferred to report on areas with more visually sensational scenes. As a consequence, coastal areas with fishing and farming villages which had less population were downplayed. Second, studies revealed that areas that have branches of the media companies such as Sendai City and Ishinomaki City tended to be covered as those areas were easier to access, and areas whose roads were damaged and were difficult to access had much less reporting. Third, in terms of Miyagi Prefecture, people in the area originally held the belief, based on their past experiences, that big tsunamis could hit the northern coast of the prefecture but that there would not be large tsunamis in the southern coast. That false belief is said to have negatively affected the beginning stages of reporting by the media.

Amartya Sen (2009) explains the importance of media freedom. Investigative journalism can unearth information that would have otherwise gone unnoticed or even unknown. Sen also says that media freedom has an important protective function of giving voice to the neglected and the disadvantaged, which can greatly contribute to human security (Sen, 2009). Further, Sen adds that media can give leaders of a country strong incentive to take timely action to avert crises (Sen, 2009).

Private television companies tend to have difficulty with fair reporting as they deal with viewer ratings and sponsors. The companies have been criticized for their sensationalism and unfair reporting, but the original responsibility of democratic media was to pick-up neglected voices and to convey diverse voices to the audience. As Sen says, it is critically important for people's capabilities.

Aid activities, including the donation of money and goods, and volunteers play extremely important roles in the circulation of resources following disasters. In order to mitigate the disparities in the level of rebuilding in each area, the reporting needs to be improved so that appropriate aid can be delivered fairly depending on the level of damage and need.

8. Conclusion

This paper focused on the disparities in the level of recovery from the Great East Japan Earthquake and Tsunami. The field research focused on Sendai City and Shiogama City to verify the existence of disparities in recovery between a big city and other coastal areas. The studies clearly showed that there indeed exist disparities between Sendai City and Shiogama City. Further, this disparity in the level of recovery of each area is clearly having an effect on the levels of perception toward the progress of recovery in each area.

Here are the likely causes of the disparities in recovery between Sendai City and Shiogama City. In Sendai City, whose economy had been stronger, the damage from the disaster was smaller than that of coastal areas, whose economic situation had been weakening. Sendai City benefited disproportionately after the disaster because many businesses from inside and outside the country gathered in the city to take part in reconstruction projects. On the other hand, the local industry and the community of Shiogama City were more severely damaged, compounding the previously existing problems and vulnerabilities in the area such as aging and declining population. Furthermore, the recovery of local small businesses such as fishermen and individuals were not given much priority by the government and Miyagi Prefecture as they pushed forward reconstruction policies of "Creative Reconstruction," which are aimed primarily to lead to the

economic growth and structural reform of the entire country. As a result, these policies led to the decline in the quality of life of individual Shiogama residents.

The disparities in the progress of recovery between the two cities and the expansion of such inequalities indeed show that the vulnerabilities of the area become evident by disasters and expand the damage as stated by earlier studies on disasters. However, the key finding in the case of Shiogama City through this research is that their economic vulnerability is not the primary reason for their low perception toward the progress of recovery. The factor that matters to residents of Shiogama most is the collapse of and the damage to their local community.

To improve this situation, first, the government and the local municipalities need to rethink their policies of reconstruction that place most importance on national interests and consider policies that enable the use of and add value to the uniqueness and characteristics of the individual area. Second, based on the local residents' experience with volunteer workers and other aid workers from outside the region, the residents' ability to make use of new connections and collaboration to create new value in the area has been found to be important. Third, enabling local people to help themselves to revive their area is crucial. Moreover, lastly, the media, which plays a major role in the allocation of resources following disasters, needs to strive for more fair reporting based on the amount of damage in an area and on need as such information flow has been found to influence the amount of donation and support in disaster-hit areas.

For the reconstruction of the areas which have vulnerabilities such as aging or a decline of industries, it is indispensable for us to consider not only how the working of politics, economics and society need to be, but also to consider the recovery of the individuals' lives, securing the livelihood of the residents, and recovering and improving the local community and their identities, which the residents have valued for a long time.

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