



# SONAGAWA

*India-Onagawa KIZUNA project*



**SOCIAL  
ECONOMIC  
ENVIRONMENTAL**

# SEE ONAGAWA

Social, Economic, and Environmental  
perspectives of Onagawa  
: 10+ years from EJET and beyond



## Voices from the Field

Under the umbrella of

### India-Onagawa KIZUNA project

10th year from the East Japan Earthquake and Tsunami  
70th year of India Japan bilateral relations (India-Japan@70)

## About this Publication:

This publication is developed as a part of India-Onagawa KIZUNA project, which was funded by the Keio University Design the Future Fund FY 2021. The Design the Future Fund (DFF) aims to foster people who will lead society with international experiences and perspectives, combining the power to live independently and the power to live in cooperation, which are suitable for future leaders. As part of this project, a small group of students from Keio University conducted intensive research on Onagawa Town in Miyagi Prefecture, with an aim to understand the recovery process of 10 years from the East Japan Earthquake and Tsunami (EJET). This publication provides a glimpse of the lessons derived by the students, based on their analysis of existing literature, field observations and interviews with the local governments and communities.

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## Disclaimer:

In addition to the lessons derived through field observations and primary surveys in Onagawa, the development of this report is also based on the available literature and photographs from different sources. The complete list of referred sources is provided at the end of the report.

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# Contents

03	About this Publication
05	Contents
06	About Onagawa
09	About India-Onagawa KIZUNA project
10	About SEE Onagawa
12	Social Perspectives of Onagawa
14	Traditional Lion Dance
20	Inochi-no Sekihi Project
25	Women's Association
30	Key Lessons
34	Economic Perspectives of Onagawa
36	Local Fishing Company: Takamasa & Co. Ltd.
40	MSMEs & Government's Restoration Policies
45	Community Space Umineko
50	Asuenokibou: Nonprofit Organization
54	Key Lessons
58	Environmental Perspectives of Onagawa
60	High Bridge Diving Company
64	Takamasa Fisheries Company
69	Forest Management In Onagawa
73	Onagawa Nuclear Power Station
77	Disaster Education
82	Key Lessons
86	Key Synthesis Message from Students
89	References

# About Onagawa (女川町)

Located on the Oshika Peninsula in the Tohoku region of Japan, Onagawa is a remote fishery town in the eastern tip of Miyagi Prefecture (some 350 km north of Tokyo). Spread across an area of 65.35 km<sup>2</sup>, the town is made up of mountains encircling Onagawa Bay and a few islands. Facing the Pacific Ocean on eastern side, Onagawa town is also referred to as a town of sea and mountains. Due to its proximity to the Sanriku fishing grounds, one of the world's three most extensive fishing grounds, a wide variety of fish is landed throughout the year, and Onagawa's economy is heavily dependent on fishing and fish processing activities.



On the 11th of March 2011, a powerful earthquake of magnitude 9.0 struck Japan (Epicenter: 130 km Southeast off Oshika Peninsula), and a few minutes later, a series of massive tsunami waves hit the Tohoku coast, devastating over 500 square kilometers area, mainly in Miyagi, Iwate, and Fukushima prefectures. Correspondingly, Onagawa town was also tremendously affected, as a consequence of which 89.2% of its residential buildings were partially or fully destroyed. When the tsunami struck, the steep relief surrounding the Onagawa town blocked the wave, raising the water level to a height of an approximately 5 storey building, which travelled a kilometer inland (Aoki, 2018; Cosson, 2020).



Central area of Onagawa Town, before and after 2011 disaster  
(Image source: Onagawa Town Hall)

Along with the mountains of debris, the havoc left behind a variety of social, economic and environmental implications, as briefly described below:

**Social Impacts:** During the 2011 disaster, a tenth of Onagawa's population died or went missing; and some survivors later left the town. As a result, the local population dropped from 10,014 to 6,790, with 35.3% of the population aged 65 years of age and older. Even though, like many other rural parts of Japan, Onagawa was already facing population decline and aging problems, this adversity has been even more pronounced since the 2011 disaster.

**Economic Impacts:** The industrial base of Onagawa town, including the fishing and fish processing centers as well as shopping areas, incurred substantial losses during the 2011 disaster. Around 80% of the 1,000 boats were also lost, and the restoration of the fishing industry has been a major challenge over the past decade.

**Environmental Impacts:** The unprecedented scale of the 2011 disaster also had significant impacts on the ocean environment, which was reflected in terms of decline in fisheries production, massive accumulation of debris, etc. While the localities were utterly devastated, thankfully, the Onagawa nuclear power plant did not face any problems, unlike the accident that occurred at the Fukushima Daiichi nuclear plant.

Nonetheless, due to its remarkable efforts to swiftly revive and recover (without any seawall), Onagawa has attracted unprecedented attention since the 2011 disaster, which is partly attributed to tangible developments, in form of award-winning multi-story temporary housing and the new station designed by a Pritzker Architecture Prize-winning architect.



Glimpses of Onagawa (Image source: Authors)



# About India-Onagawa KIZUNA project

In the aftermath of the East Japan Earthquake and Tsunami in 2011, the Indian Government sent a rescue team to Onagawa, Miyagi Prefecture, led by NDRF (National Disaster Response Force). In lines with that, the India-Onagawa KIZUNA project is mainly intended to rekindle the connections between India and Onagawa. At the same time, by being witness to KIZUNA, the project aims to get current students and young generations to learn, act and coordinate and be future leaders in the multidisciplinary field of disaster prevention, education, decision-making, communication, and management. Furthermore, the project also worked towards connecting the member (s) of Indian Government's 2011 disaster relief dispatching team with Onagawa to re-think memories and share the experience, by revisiting lessons learned through the deployment of India's NDRF. It is hoped that revisiting some of these experiences will help prepare future generations to tackle similar relief operations in disaster-stricken areas, and in that manner, the project also provides a great opportunity for the students to learn the current recovery issues of Onagawa.

Under this project, two online learning events were conducted (on 15th November and 23rd December 2021), with participation from Onagawa city and community members and students, faculty members of Keio University, and also the Indian Embassy in Japan and NDRF team of 2011. In addition, a field trip was organized to Onagawa from 1st to 3rd March 2022.

Prior to the online events and visit to Onagawa, a series of interviews were also conducted with 20 residents of Onagawa, covering a wide age range, gender and livelihood groups, to hear the voices of local residents. The derived findings were analyzed and published as the Onagawa report. This can be downloaded from:  
<https://indiajapanlab.org/wpIj/wp-content/uploads/2021/11/Onagawa.pdf>

# About *SEE Onagawa*

In lines with the above context, the SEE Onagawa field visit (from 1st to 3rd March 2022) was focused on establishing a broader understanding of social, economic, and environmental perspectives of Onagawa, 10 years from the East Japan Earthquake and Tsunami in 2011. The key objectives of the field visit were two fold:

1. To observe the ground realities, interact with local governments and communities and understand the recovery process.
2. To document the key lessons and observations and disseminate them with undergraduate students at Keio University and youth in India and Japan.

In due consideration of the ongoing COVID-19 pandemic and associated constraints, the participating students first conducted intensive background studies on Onagawa (January-February 2022), followed by online interviews during February 2022, and subsequently, face-to-face interactions were held with the local stakeholders during the field visit. Overall, a total of 20 interviews were conducted with 13 key stakeholders from Onagawa, as listed in the Table below. Thereafter, the detailed findings of the literature analysis and stakeholder interviews are presented in subsequent sections.

No.	Name of Contact Persons	Interview Type
<b>TO UNDERSTAND THE SOCIAL PERSPECTIVES OF ONAGAWA</b>		
1	Mr. Shigeo Suzuki, Chairman of the Council for Restoration of Traditional Lion Dance Performance in Onagawa	Online + Face-to-Face
2	Mr. Tomohiro Suzuki, Participant of 'Inochi no Sekihi' (Onagawa Stone Monuments of Life) Project	Online + Face-to-Face
3	Ms. Mayuka Yamazaki, Author of 'Case Study: Onagawa after the Disaster' Emergence of New Social Ecosystem'	Online
4	Ms. Kayoko Kimura, Leader of Onagawa Women's Association	Face-to-Face
<b>TO UNDERSTAND THE ECONOMIC PERSPECTIVES OF ONAGAWA</b>		
1	Mr. Masaki Takahashi, CEO of local fish-cake maker company Takamasa & Co. Ltd.	Online + Face-to-Face
2	Mr. Sakai Takamasa, Retired Member of the Onagawa Town Council and Chamber of Commerce	Face-to-Face
3	Ms. Rina Iwabe, In charge of Public Relations at Asuheno Ki bo (nonprofit organization)	Online + Face-to-Face
4	Ms. Junko Yagi, Administrative Director of Umineko (a nonprofit organization) and Yume House	Face-to-Face
<b>TO UNDERSTAND THE ENVIRONMENTAL PERSPECTIVES OF ONAGAWA</b>		
1	Mr. Hiroaki Fukuchi, Representative of the PR center, Tohoku Electric Power Co.'s Onagawa Nuclear Power Plant	Online + Face-to-Face
2	Mr. Shigeru Endo, Representative of Onagawa Forest Association and Mr. Komei Mochida, Cruise company 'Kinka San'	Online + Face-to-Face
3	Mr. Masayoshi Takahashi, Owner of the High Bridge diving shop at Onagawa	Online + Face-to-Face
4	Mr. Masaki Takahashi, CEO of local fish-cake maker company Takamasa & Co. Ltd.	Face-to-Face
5	Mr. Mikio Kimura, Principal teacher in Japanese, Onagawa Choritsu Onagawa Junior High School	Face-to-Face

# SOCIAL

SOCIAL PERSPECTIVES OF ONAGAWA

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- 14 TRADITIONAL LION DANCE
- 20 INOCHI-NO SEKIHI PROJECT
- 25 WOMEN'S ASSOCIATION
- 30 KEY LESSONS

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# TRADITIONAL LION DANCE

## INTRODUCTION

A large number of performing arts and festivals are practiced throughout the year in Japan. Amongst these, the 'lion dance' (*shishi-mai* in Japanese, *shishi-furi* of Onagawa) is deeply ingrained in the minds of the people of Onagawa. It is a form of traditional dance in which performers, accompanied by flute and drum musicians, mimic a lion's movements in lion costume. It is commonly performed during the New Year to drive away evil spirits and bring in good luck, but it is also performed at other festivals and celebrations (video example: <https://vimeo.com/183255360>). In Onagawa, the lion dance procession usually goes around the district during the New Year, visiting house by house, and in some of these performances, the lions may bite people on the head to bring good luck. The Japanese lion consists of a wooden, lacquered head called a *shishi-gashira*, often with a characteristic body of green dyed cloth with white designs. It can be manipulated by a single person, or by two or more persons, one of whom manipulates the head. Remarkably, there are around 9,000 variations of the lion dances in Japan and the style of dancing and design of the lion differs by region.



left) Lion Mask of Takenoura Village in Onagawa  
right) Demonstration of lion dance instruments

Historically, the lion dance tradition in Japan is thought to have been imported from China during the Tang Dynasty (during the 8th century) and it gradually became associated with the celebration of Buddha's Birthday. Notably, the first lion dance recorded in Japan was at the inauguration ceremonies of Tōdai-ji in Nara in 752. While there has been an old tradition in China of dancers wearing masks to resemble animals or mythical beasts (like fish, dragons), lion is not native to China and the Lion Dance therefore is suggested to have originated outside of China from countries such as India or Persia and introduced via Central Asia. Nevertheless, the precise geographic origins of lion dance tradition remain to be contested.

### KEY HIGHLIGHTS

1. Practiced as exorcism, to drive away the evil spirits and bring good luck, the traditional lion dance has been an undetachable part of Onagawa people's everyday life.
2. The 2011 disaster had a significant impact on continuity of lion dance, while the massive tsunami also washed away many dance props, costumes, and also some performers.
3. Due to its inherent connection with local community, the gradual restoration of lion dance has provided a forward-looking perspective for rebuilding of Onagawa.

## IMPACTS OF 2011 DISASTER AND RECOVERY PROCESS

As the 2011 disaster ravaged the Onagawa town (comprised of 15 villages and two islands), the tsunami washed away most of the houses and belongings of local people. Many of the dance props and costumes of the Onagawa lion dance members (even some performers) were also washed away, and the related equipment and tools (flute, mask) were damaged / lost. In Takenoura village of Onagawa, only 2 of the total 63 houses were reported to be safe as a result of the 2011 disaster. Although the local communities took shelter at emergency shelters (like shrines/ elementary school), the aftermath of disaster brought along enormous challenges and mental trauma, due to the loss of loved ones and livelihoods. Perhaps, it was not just the physical infrastructure damages, but also the loss of social capital or the loss of typical networks of relationships among people, that took a heavy toll on local communities.



left) Impact of 2011 disaster on Takenoura village; center) Emergency shelter of Village Shrine; right) Provision of food supplies at the emergency shelters.  
(Image source: Takenoura community center)

In the post-disaster phase, the local communities were first shifted to temporary shelters at scattered locations across Japan, during which the construction of temporary housing began in Onagawa. After five months of the disaster, many of the residents had been allotted temporary housing units, and the rebuilding of Onagawa took around 5-6 years. Notably, the reconstruction / recovery of Onagawa was executed without constructing any seawall and in



consideration to future disasters. Correspondingly, the residential units have mostly been rehabilitated to elevated areas, and Onagawa society has been significantly transformed. During the reconstruction phase, many people also permanently migrated to other areas, and the declining population of Onagawa is recognized to be a major challenge.



left) Isolated Temporary Shelter (hotel) at Akita Prefecture, where some of the Takenoura community members were shifted after the 2011 disaster (Image source: Takenoura community center)  
right) Rehabilitation of Takenoura village to elevated areas

During the temporary housing phase, the local people of Takenoura village were still trying to cope with the disaster losses, while being faced with adverse situations. At that moment, two local women got an idea to make lion mask through cushion, slippers, and cans. As they started to perform the lion dance, astonishingly, it generated immense positivity and cheer amongst the residents. Amidst all the suffering, lion dance brought tremendous satisfaction, and lifted the heart and spirit of affected people to restart their lives. Ever since, the residents of Takenoura village have had a forward-looking perspective. Even during the reconstruction phase, the residents would meet annually at the village shrine and enjoy the lion dance performances, as it serves as a driving force. Today, that recycled lion mask has become the symbol of rebuilding/recovery of Takenoura and is still preserved in the community center.



Lion dance performance at temporary housing, using lion mask prepared through cushion, slippers and cans (Image source: Takenoura community center)

Even though the importance of lion dance in Onagawa's recovery could not be measured, the local people believe it has a strong connection with heart and mind of local people. The leader of Lion Dance Community in Takenoura village Mr. Shigeo Suzuki emphasizes that "Unless, we can't restart our festivals, we can't say we have recovered from the disaster".



Visuals of Annual Gatherings at Village Shrine in Takenoura and Lion dance performances

(Image source: Takenoura community center)

Gradually, the lion dance practice has now been restored with support from several sources. Even though the number of lion dance groups in Onagawa (20, each fishing village has a lion dance group) has remained the same after 2011 disaster, the number of performers (usually 25-30) have declined, as they either moved away to cities or were killed by the 2011 disaster. To address this

challenge, the younger population is increasingly being involved in lion dance performances, with training and practice of different musical instruments. Further, prior to 2011, the lion dance was usually performed on the water during the Onagawa Port Festival, wherein the performers from each settlement would ride on fishing boats in a maritime parade. However, in the past decade, the regular performances have been challenged by the reconstruction of port and more recently, because of the COVID-19 pandemic.

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# INOCHI-NO SEKIHI PROJECT

## INTRODUCTION

One of the most historically rich beings on earth are the stone monuments, as they help us decipher countless stories of the past. Since at least 5000 years ago, they have been preserved, worshiped, and protected to convey the value they mean. Worldwide, stone monuments are usually described as either natural or human brought stones, that have been engraved to tell stories, illustrate actions, make remarks, or to be used as a memorial or religious purposes. In Japan, a different kind of stone monuments called ‘Sekihi’ in Japanese has been fulfilling this purpose. The ‘sekihi’ are usually long and tall with some engravings on it, and the oldest ‘sekihi’ in Japan ‘Yamagami Monument’ (built by a priest of Hokoji temple in memory of his late mother) dates back to the year 681. Moreover, besides the memorial and religious purposes, the ‘sekihi’ have also for long been a part of post-disaster reconstruction process. Disaster ‘sekihi’ would usually be built in the disaster-stricken areas to share related information and raise awareness. Usually, disasters, such as tsunamis, floods, volcanic disasters, and landslides, would often have stone monuments built. The oldest disaster sekihi in Japan ‘Koryagi Monument’ was built in 1380 for Shohei Nankai earthquake. They have been known for being particularly useful and the most durable means of raising physical awareness and reassurance. In Onagawa also, since the Showa period, various sekihi had been established to remind the local community about tsunami impacts. However, unfortunately, those sekihi were not very helpful or useful during the Great East Japan Earthquake 2011.



left) Oldest Sekihi in Japan (Yamagami)

right) Oldest disaster Sekihi in Japan (Koryagi)

## KEY HIGHLIGHTS

1. Worldwide, stone monuments ('Sekihi' in Japanese) have for long been recognized as the most durable storyteller, and in Onagawa too, various disaster sekihi had been established.
2. During the 2011 disaster, the existing sekihi in Onagawa were found to be not so effective in raising physical awareness, due to which their purpose of lesson sharing was not realized.
3. With a long-term vision of saving lives 1000 years ahead, a group of Onagawa Junior High school students have executed the Inochi-no Sekihi project with multi-stakeholder support.

## INOCHI-NO SEKIHI PROJECT

While recovering from the impacts of the 2011 disaster, unlike other cities, Onagawa has let the younger generation to take lead in co-designing initiatives of city planning and reconstruction, while providing them all necessary support. Engaging closely with the local government in post-disaster reconstruction phase, many ideas were suggested by the local community for rebuilding Onagawa. Amongst these, the Onagawa Junior High School students put forward the suggestion of leaving behind messages for future generations and documenting the derived lessons, and these ideas are now being executed under the Inochi-no Sekihi project. With a long-term vision of “Saving lives 1000 years ahead”, 64 fellow students of Onagawa Junior High School have since then worked to build 21 stone monuments (symbolic of 21 administrative zones of Onagawa before the disaster) around the city at the height till which the 2011 tsunami hit. These Sekihi’s have simple messages engraved on them like: *“This is the point where tsunami hit. So, if big earthquake hits, please escape above this stone monument, and please never let anyone go home below this point”*. It was the tsunami countermeasure plan that the middle-school kids came up with, with a thought of how they can lessen disaster damage in the next thousand years.



(left) Sekihi prototype; (right) New and old sekahi in Onagawa

Even though, Onagawa already had ‘sekihis’ from Showa Sanriku Earthquake, the Onagawa Junior High School students took note of the fact that they were not so helpful during the actual disaster. Accordingly, the prototypes of new sekihis were first developed and the project proposal was first presented to the Onagawa town council. Thereafter, with support from the city’s town council, the students organized several fundraising campaigns. Despite the doubtful opinions of people who were reluctant to do it, the students through their ‘young spirit’ have managed to gain funding support from all over the Japan, with donations of many people and organizations. The stones for the sekihi were donated and processed by a stone shop from a place called “Marumori” in the southern part of Miyagi prefecture. Further, the mass media, such as television and newspapers, covered the “Inochi no Sekihi” project, helping the students to get their voice heard and raise awareness outside their community and city. These manifold initiatives helped aggregate contributions from many individuals, who have donated and helped the project in some ways. Moreover, the project organizers also had the chance to do fund-raising at some big organizations, such as the Ministry of Education at Tokyo, and UNESCO. Through various fund-raising campaigns, the team was able to raise 10 million JPY for the overall project implementation, wherein each sekihi was built with the cost of 450,000 JPY each. The 21st and last sekihi was completed in November 2021.

In addition to the stone monument project, the “Inochi no Sekihi” project team have also been working closely with the town council for few other projects. One of the examples of the projects they have contributed as a team is the idea of preserving a damaged police box that was wrecked during the disaster as a “reminder of the disaster”, as well as for lesson sharing to future generations. This project was completed in February 2020, and it will be the centerpiece of the memorial. This police box, and all the sekihis will be constantly reminding people of what the town went through and not to build a home below the disaster-stricken areas. Moreover, in case of actual disasters, they would give people hope and sense of certainty that they could survive if they could only escape to above the stone monuments. Further, the lessons derived through 2011 disaster have also been published as a textbook by the “Inochi no Sekihi” team.





left) Presenting “Inochi no Sekihi” project  
right) Damaged Police Box

Even though all the 21 planned sekis have now been completed, the “Inochi no Sekihi” project is far from completion. Marking the 10 years after the disaster, last year was only one percent of the ‘thousand years’ that the team is concentrated upon. It has been mentioned that the remaining ninety-nine percent of the project will be mainly focused on “not only creating, but conveying”. In recent years, the team has been working to create the physical things, such as the sekis, textbooks, and disaster remembrance, but now they aim to work towards ‘conveying’ their meaning by storytelling, guidance, and connecting with other people. The communities and new relationships built throughout the project would last a lifetime, and the project products would serve their purposes for 1000 years ahead. Notably, of the 64 students who initiated the project, most of them have now moved to different locations, and only around 10-15 members are still active.

Markedly, since the Onagawa community was faced with challenges of ageing and declining population even before the 2011 disaster, the community was in dire need of some younger voices and initiatives, especially after the disaster. Perhaps, it was one of the key reasons why the project by middle-school kids had earned full support, even when there were doubts and questions by the adults. In that manner, this project has also allowed the younger generation to create and tighten ‘their’ community, while providing them with a feeling of contribution to their city’s reconstruction and recovery. Their involvement, work and contribution has also likely created for them some attachment to their city, which is very helpful considering the declining population of the community. Further, the project brought together not only the students but also the local government, various types of donors, local people, and supporters in and outside the city, serving as a win-win solution to multi-stakeholder groups.



# WOMEN'S ASSOCIATION

## INTRODUCTION

Many studies have been conducted internationally with a focus on community resilience and disaster recovery, for example, on the areas where community activities were thriving before an earthquake and could realize faster disaster recovery (Delilah et al., 2020; Ganapati, 2003; Nakagawa & Shaw, 2004; Plough et al., 2013). In Japan, it is stated that a conception of duty and humanity exists in disaster affected areas, and local communities attach high importance to exchange of good feelings (Yamaguchi, 2016). In addition, regional communication is also regarded as necessary medium of communication in Asian society. However, most of the current research on communication and society has been conducted from a Western perspective, and the history of Asian perspective is still not documented. In particular, there is a lack of research that focuses on the activities of Women's Association, which served as a genuine mode of communication between women in Japan, and the situation before and after disasters, and there are only a few records of it. During World War II, the Onagawa Women's Association was also active as the National Defence Women's Association and the Patriotic Women's Association. It was established in 1947 to enhance people's lives, build the community, improve women's status, and somehow raise Japan out of the post-war social devastation with the help of women. Its main functions were to hold community-based events, such as study meetings to improve social knowledge of members and social service activities such as road safety campaigns, promoting the sound upbringing of young people, and assisting with community development so that all people of the town can live in peace.



Photos of Annual Onagawa Women's Association gatherings  
(Image source: 50 years history of the Onagawa Women's Association booklet)

## KEY HIGHLIGHTS

1. Since the World War II, women's association activities in Onagawa (and other parts of Japan) have played a crucial role in uplifting women's status and community development.
2. Over the years, due to changing social structures, the number of members in women's associations has reduced drastically, and the average age of members is now over 70.
3. Besides the significant impacts of 2011 disaster, the ongoing COVID-19 pandemic has also presented many challenges for continuity of women's association activities in Onagawa.

## HISTORY OF WOMEN'S ASSOCIATION IN ONAGAWA AND POST 2011-DISASTER SCENARIO

Ji (2014) divides the history of women's associations in Japan into four periods in the historical flow from the post-war period to the present: the period of separation, the period of high economic growth, the period of stable growth and the present period. In addition, Ji (2014) attempted to capture the characteristics of activities in each period and discussed the interrelationship between women and local women's organisations. The activities of the Women's Association in Onagawa can be similarly categorised into four periods based on archives and interviews: (a) the separation of the activities of the women's association, which were carried out in solidarity with Japanese nationalism during World War II, into the local community; (b) the period of high economic growth, when many overnight trips and events were held; and (c) the stabilisation of the women's association through various activities, such as cleaning local parks, doing handicrafts, and the establishment of the women's association as an organisation that was able to combine family life. And (d), the current period is a period of stable growth, during which women's association activities centre on volunteer work, the ageing of the population after the Great East Japan Earthquake, and other events.

During the 2011 disaster, most of the records related to women's associations in Onagawa were lost and the only records that remain are those concerning the 50th anniversary of the Women's Association, a few records of the Onagawa Women's Association in the history of Onagawa Town (Onagawa City Office, 1960), and women who remember the activities of the Women's Association (Onagawa Women's Association, 2000). Through these documents, it is realized that around 1950, the Women's Association was very active in Onagawa, with more than 400 members. In the past, women did not have free time and could not leave the house. However, women were free to go out for women's association meetings. In addition, women were usually introduced to a women's association by their mother-in-law, and it was difficult for the wives, who were in a weaker position in the household, to refuse to join. The women who joined a women's association actively engaged in activities such as hosting study tours and luncheons, cleaning the Imperial Palace, visiting nursing homes, and

providing traffic safety education for mothers, allowing the women to communicate with each other, which generally would have been difficult if they had not joined the group.

These activities can be glimpsed in the only surviving record of the tsunami, published in 2000 to commemorate the 50th anniversary of the foundation. This journal features a message from the President of the Women's Association at the time, interviews with members, and photos and a history of the Women's Association's activities. Most of the interviews with the members about their activities are about their memories of how much they looked forward to the Women's Association meetings, because they were usually involved in the fishing industry and had no time for themselves. In addition, statements such as that by one woman who said she had found her value in life through volunteer work shows that the association allowed women not only to be free from their oppressive situations at home but also to be able to live positive lives while deepening their interactions with other women.

In the present scenario, the number of women's association's members have, however, significantly declined. Due to changes in women's social situations and other factors, the activities of the Women's Association in Onagawa had already entered a period of stagnation even before the Great East Japan Earthquake, and the situation became even more severe after the disaster due to the decrease in the number of members.

A key reason for the decline in women's association members is attributed to the declining birth rate and ageing population. Today, women in their 40s and 50s, who used to play a central role in women's associations, do not have time to participate due to part-time work and taking care of their grandchildren. Further, the social structure that used to prevent women from going out earlier has changed, and women are now able to go out freely and participate in volunteer work and learning opportunities without being affiliated to any women's association.

Although the existence of women's associations in Onagawa, immediately after the Great East Japan Earthquake, is difficult to ascertain due to a lack of records, many people in Onagawa lost family and friends in the tsunami. In the post-disaster phase, many members of the Onagawa Women's Association also lost their houses due to tsunami, and many of them moved to temporary housing or moved to other areas, relying on relatives, which caused the existing community to fall apart. Some members also lost their lives in the disaster.

In such horrific circumstances, many women did not have the presence of mind to consider taking part in women's association activities. Many of the women were also too busy with activities at evacuation centres immediately after the disaster to participate in any related activities. Furthermore, the biggest challenge is that the main women's association activities, such as dinners, workshops, and visits to nursing homes, have become impossible due to the impact of COVID-19. Because most of the Onagawa Women's Association members are elderly, the association's activities have been suspended for more than 2 years due to the members' inability to communicate online. Given this situation, a key challenge for the survival of the women's association is also the lack of communication between young mothers and the elderly. Further, the delay in digitalisation of information for dissemination and communication has also posed a key hindrance to its sustainable functioning.

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ENVIRONMENTAL

- **Important to Recognize the Essence of Local Traditions for Disaster Recovery**

Through the case of Takenoura village in Onagawa, it has been realized that the traditional lion dance although had no direct part to play in disaster recovery, it played a crucial role in uplifting the spirit of disaster-stricken communities, bringing great joy and positivity. In the aftermath of the 2011 disaster, when the affected communities were faced with tremendous disaster losses and uncertain situation, the continuity of their local culture/traditions (like lion dance) in that way played an important role in supporting the revival of the community. Being practiced for generations, it is therefore important to recognize that the traditions of such arts and festivals serve as an undetachable part of people's everyday life. Thus, the essence of such traditions, as an intangible cultural heritage, need to be duly recognized in disaster risk reduction. Since the community members also often link to such traditions as their identities, it also increases their sense of belonging. From a psychological perspective, local traditions can also play a significant role in building community capacities by reducing the risk of young people moving away from the local community.

- **Youth Engagement in Disaster Risk Reduction is imperative for Long-term Goals**

The success achieved by the 'Inochi-no Sekihi' project team in Onagawa clearly manifests the high potential of engaging the younger generation for disaster risk reduction in long-term. Important to note here is how the elderly community members of Onagawa as well as the local government supported and encouraged the youth population to take lead in co-designing the future vision for Onagawa's reconstruction and rebuilding. As a result, not only has the team of Onagawa Junior High School students worked hard to execute their projects through multi-stakeholder support, but they are also dedicatedly working towards their long-term goals of 'Saving lives 1000 years ahead' through lesson sharing. Thus, it is evident how engaging the younger generation can not only contribute towards the futuristic development,

but also instilling in them a sense of contribution and deeper attachment with their community. Particularly, in the context of ageing society of Japan, the younger generation will have a crucial role to play in creating and tightening 'their' community.

- **Adaptation to changing society holds the key to continuity of Women's Association**

While the Onagawa Women's Association was established, since the World War II, with an aim for contributing to the local community and improving the status of women, the recently declining participation in women's association activities reflects the growing need for and importance of adaptation to changing society. Through the historical review, it is evident how women's associations used to be the only opportunity for women to open themselves up to the local community. However, over the years, due to the changing social structures, its active members have declined from 400 (around 1950) to 25, with the average age of members now over 70 years. The 2011 disaster has further worsened the situation, not only in the form of tangible losses to association members, but also because it destroyed most of the historical records related to women's associations activities. Taking account of the current situation and the social impacts of COVID-19 pandemic, there is still a hope for the rejuvenating the women's association, to realize which it will be crucial to enhance participation of women.

## 主要な教訓

- 震災復興には地域の伝統の本質を見極めることが大切

女川町竹浦集落の事例では、伝統的な踊りが、災害復興に直接的に関わることはないものの、被災した集落へ大きな喜びと前向きな気持ちをもたらし、精神を高揚させる重要な役割を担っていることがわかった。2011年の震災後、被災地の人々が甚大な被害により不安な状況に直面したとき、伝統的な獅子振りのような地域の文化・伝統の継続は、地域の復興を支える重要な役割を果たした。このように、代々受け継がれてきた芸能や祭りの伝統は、人々の日常生活と切り離すことができないものであることを認識することが重要である。また、このような伝統は無形文化遺産というだけではなく、災害リスク軽減のために正当に評価される必要がある。そのうえ、コミュニティのメンバーは、このような伝統を自分のアイデンティティとして認識していることが多いため、帰属意識も高まることがわかった。心理学的な観点からみても、地域の伝統は、若者が地域社会から離れていくリスクを軽減し、コミュニティの能力を高める上で重要な役割を果たすことができる。

- 防災への若者の参画は長期的な目標達成に不可欠

女川町の「いのちの石碑」プロジェクトチームが達成した成功は、若い世代が長期的に災害リスク軽減に関与することへの高い可能性を明確に示している。ここで重要なのは、女川町の高齢者コミュニティや自治体が、女川町の復興と再建のための将来的なビジョンを共同でデザインする際に、若者たちに主導権を握ることを支援し奨励したことである。その結果、女川町の「いのちの石碑」中学生チームは、マルチステークホルダーの支援を受けてプロジェクトを遂行するだけでなく、学校の授業を通じて「1000年先の命を救う」という長期目標に向かってひたむきに取り組無事が可能となった。このように、若い世代を災害リスク軽減のための活動へ巻き込むことは、未来の防災発展に貢献するだけでなく、彼らに貢献の意識と地域社会への深い愛着を植え付けることができることが明らかである。特に高齢化社会を迎えた日本では、若い世代が「自分たちの」コミュニティを形成し、より強固なものにするために重要な役割を担っている。



- **社会の変化への適応が婦人会存続のカギを握る**

女川町婦人会は戦後地域社会への貢献と女性の地位向上を目指して設立されたが、近年、婦人会活動への参加が減少しており、社会の変化に適応する必要性と重要性が高まっている。歴史を振り返ると、かつては婦人会が女性にとって地域社会に自分を開放する唯一の機会であったことがわかる。しかし、長い年月を経た現在では、社会構造の変化により、400人以上（1950年頃）いた婦人会の活動メンバーは現在25人にまで減少し、メンバーの平均年齢は70歳を超えるようになった。2011年の震災では、会員の命が失われただけでなく、婦人会の活動に関する歴史的記録のほとんどが破壊されてしまった。このような現状とCOVID-19の流行による社会的影響を考慮すると、婦人会を継続させるためには時代の変化に伴った婦人会の改革という課題がのこされている。

# ECONOMIC

## ECONOMIC PERSPECTIVES OF ONAGAWA

“

- 36 Local Fishing Company : Takamasa & Co. Ltd.
- 40 MSMEs & Government's Restoration Policies
- 45 Community Space Umineko
- 50 Asuenokibou : Nonprofit Organization
- 54 Key Lessons

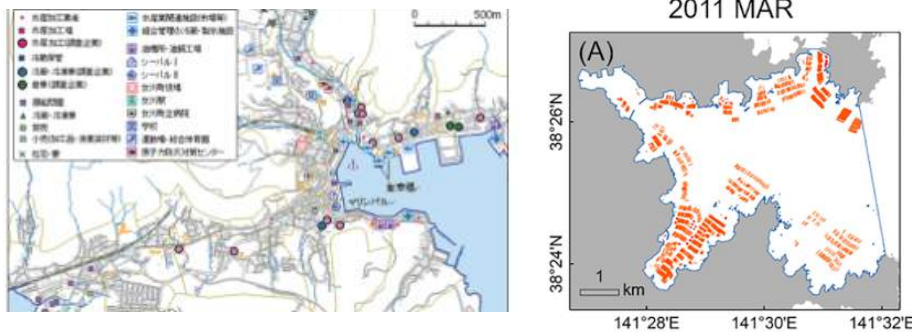
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# LOCAL FISHING COMPANY: TAKAMASA & CO. LTD.

## INTRODUCTION

Onagawa's city center is located deep in a bay on the Rias coast. The area has no flat land other than the seashore and the narrow valley floor of the Onagawa River, which flows into the bay, and there is little room for the labor-intensive factories that are common in rural areas. Located at the southernmost part of a ria coastline, Onagawa Bay has an area of 27.15 km<sup>2</sup>, and is locally known as the "Sanriku Coast", one of the world's three largest fishing grounds. Before the disaster, Onagawa Bay had 1217 long lines and 119 fish cages, and commercial fishing significantly contributed to the economy of the city. More so, Onagawa Town's dependence on fisheries is much higher than that of other Sanriku coastal municipalities. According to the "Number of seafood processing factories by type of business" of the 2008 Fishery Census, Onagawa is characterized by the fact that the majority of factories handle "frozen marine products". This is because most Onagawa Port's landings are dominated by high-catch fish such as Pacific saury, bonito, coho salmon, and sardines.



Distribution maps of major fishery processing plants and related facilities before 2011. Image Source: Zenrin Housing Map (2003), Onagawa Fish Market Buyer Association List (2013.7), Group Subsidy List (2013)

Founded in 1937, Takamasa & Co. Ltd., the fish wholesalers' association, is a leading business operator in Onagawa, that manufactures and sells fish sausage. The CEO of the company is Mr. Masaki Takahashi, the 4th generation of his family business. Currently, Takamasa & Co. Ltd. has nearly 220 staff, whose average age is 32 years old and 70% of them are Onagawa local people. Involved in the entire process from material to the final product of delicious kamaboko, the company has a total revenue of 3 billion yen a year in Japan and Myanmar.

## KEY HIGHLIGHTS

1. Due to its geographic location, Onagawa's economy is highly dependent on the fishing industry, and Takamasa & Co. Ltd has been a leading business operator in Onagawa.
2. The massive tsunami of, 2011, swallowed most of the Onagawa Bay coast and residential areas along the valley, leading to a closure of majority of the local fisheries companies.
3. In the aftermath of 2011 disaster, Takamasa & Co. Ltd. not only supported the local community needs but has also played a crucial role in economic recovery of Onagawa town.

## IMPACTS OF 2011 DISASTER AND POST-2011-DISASTER RECOVERY

During the 2011 disaster, Onagawa's fishing industry suffered a major blow. There were 48 fisheries companies in Onagawa before 2011, but after 2011 disaster, 44 of them were closed. Takamasa was one of the companies where the tsunami did not hit (Yoshimine & Yanagisawa, 2013). In the weeks following the tsunami, countries such as China and South Korea banned seafood exports from Japan due to fears of radiation from nuclear power plant. Consequently, due to the loss of job opportunities, many residents left Onagawa town.

Due to the intense scale of 2011 disaster, Takamasa & Co. Ltd. did not receive immediate help from the government. However, as one of the local fishing companies, Mr. Takahashi immediately decided to open his company's stock of fish cakes and water for the locals. For a whole week, the locals survived on only fish cakes and water, with each person eating only one fish cake a day, and 200 ml of water. Soon, Mr. Takahashi decided to restart his factory because the cakes were needed to feed the people, and just eight days after the tsunami, on March 19, 2011, the production was started again. All the fish cakes were distributed to the locals for free. Help from the government arrived in early April, by this time, about 200,000 fish cakes had been distributed by Takamasa & Co. Ltd. The rival companies were also allowed to use the remaining production line at Takamasa factory, free of charge, to make and distribute fish cakes to the locals. In April 2011, there were only 6,000 people left in the town. Mr. Takahashi realized that if nothing was done, this town he knew would disappear (Sapre, 2013). Takahashi decided to build a new factory in Onagawa 6 months later to provide job opportunities to the locals who lost their jobs, and thereafter, the staff increased from 100 people to 200 people, which partly stemmed the exodus of local people. Mr. Takahashi states that "It was the time for us to do something for our society and hometown". The meltdown of the Fukushima nuclear plant also aroused great anxiety and fear among locals. Following this, Takamasa & Co. Ltd. imported food safety testing equipment, which was the second-fastest factory to make sure the fish product safety. He also allowed the rival company to use this safety test equipment for free, to make sure all the locals were safe.

During the summer of 2011, Temporary restoration began, wherein the Small and Medium Enterprise Agency's group subsidies and other restoration assistance programs began to be applied. By the end of 2012, the construction of a new fishery processing complex began on lands adjacent to the fish market, and an eight-lot temporary factory was completed on the fish market site. These efforts enabled the restoration of fisheries-related functions and the resumption of processing plant operations within 2011 and 2012 (Takano & Abe, 2014).



left) Takamasa's famous fish product "Kamaboko"  
right) Interaction with the CEO of Takamasa

# MSMEs & GOVERNMENT'S RESTORATION POLICIES

## INTRODUCTION

Onagawa is a port town with a thriving fishing industry. Since the establishment of Onagawa Town in 1889, it has been recognized as one of the leading fishing areas in the country, but surprisingly, its development as a regional city is said to have started only after the construction of fishing port in the early Showa period. The cycle of land creation on both sides by cutting down mountains and reclaiming the sea, and the establishment of industries and public facilities on both sides, was repeated. In the course of its history, the town has overcome numerous disasters, such as tsunamis and major fires, with the landscape of the town changing dramatically from era to era.

During the Great East Japan Earthquake and Tsunami also, Onagawa Town suffered heavily with 85% of houses damaged. Immediately after the disaster, the Urban Renaissance 'UR' Agency dispatched staff to the affected areas and has been involved in recovery and reconstruction activities. Land readjustment projects and disaster prevention collective relocation promotion projects have been executed to raise the height of damaged urban areas and develop new urban areas on higher ground. Remarkably, UR is commissioned by the affected municipalities to carry out a full package of projects, from planning to construction ordering and supervision. Disaster public housing development projects is provided for those who have lost their homes due to the disaster and for those who have been forced to evacuate due to the nuclear disaster. The UR agency builds the housing at request of the affected municipality and transfers it to the municipality after completion.



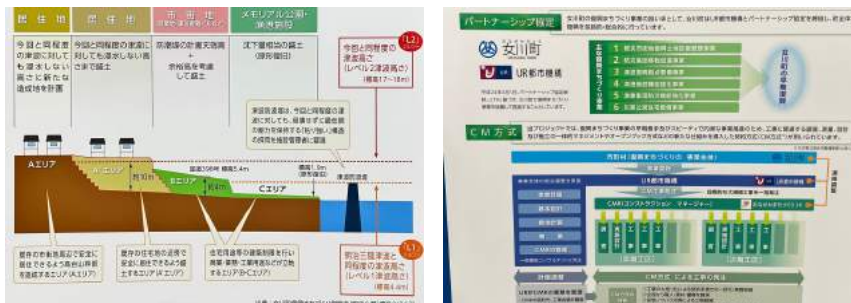
The Urban Renaissance Agency also concluded a partnership agreement with Onagawa Town and was entrusted with various projects, including land readjustment projects, in order to provide comprehensive and integrated support for Onagawa's reconstruction, including the central city area and remote peninsula areas, and to promote early reconstruction in cooperation with the town. To improve the disaster prevention function of the entire town, the UR raised the entire urban area, established commercial, business, and fishery processing areas along National Route 398, and built residential areas on higher ground. Furthermore, the basic urban functions were concentrated in the central area of town, and Onagawa was reorganized into a compact city that attracts people to the center of town.

## KEY HIGHLIGHTS

1. During the 2011 triple disaster, Onagawa Town suffered extensive damages, wherein more than 85% of all residential houses were damaged.
2. Post-2011-disaster, the Urban Renaissance Agency has been comprehensively involved in the development of Onagawa from upland residential areas to the fishing port facilities.
3. The Onagawa Town Comprehensive Plan 2019, which has now been drawn up, has set out the basic direction of town administration following the disaster, along which Onagawa has now been transformed into a compact city with residential areas built on higher ground.

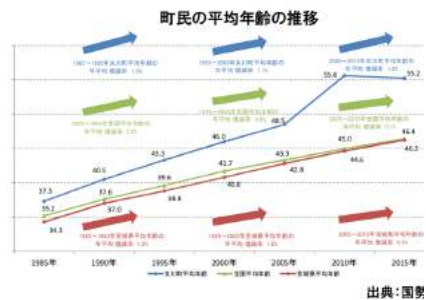
## POST-2011-DISASTER RECOVERY

In September 2011, based on the basic principle of disaster mitigation, Onagawa Town formulated the “Onagawa Town Reconstruction Plan”. However, due to the high rate of damage and the town’s staff shortages, UR was requested by Onagawa Town to provide comprehensive support for reconstruction, and in March 2012, the town and UR signed the “Onagawa Town Reconstruction and Town Development Promotion Partnership Agreement”. This enabled the town to support the reconstruction of the entire Onagawa, including the remote peninsula settlements, as well as the central town area. Remarkably, Onagawa is the only town where UR is comprehensively involved in everything from the development of upland residential areas in the city center to the development of land for fishing port facilities.

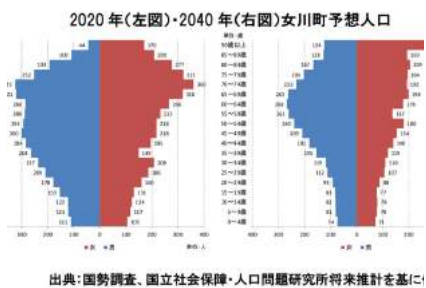
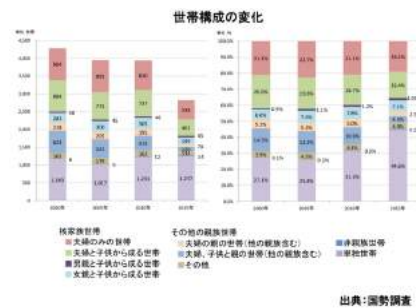


left) Cross-Sectional Image of Onagawa  
right) Business Scheme (Source: Onagawa Machinaka Kouryuukan)

Onagawa’s earthquake reconstruction project was larger in scale than other affected areas, with the land readjustment project in the town center alone being at scale of approximately 220 hectares, as if the entire town were being rebuilt. One of the features of Onagawa’s reconstruction project was the relocation of residential areas to safer ground and the raising of entire town to create a “sea view town” where the view is not obstructed by seawalls.



left) Onagawa Town Population; right) Average Age of Town Residents



left) Change in Household Composition  
right) Projected population of Onagawa Town in 2020 (left chart) and 2040 (right chart) (Source: The Onagawa Town Comprehensive Plan 2019)

Since the 2011 disaster, the number of members of fisheries associations has been declining. However, the tourism sector in the main town is now on the road to recovery, as the number of overnight guests is approaching pre-disaster levels and capacity utilization is improving. While the 2011 disaster caused damage to 3,934 houses (89.2% of all houses), all public disaster housing in the town were completed in 2017 and all residential housing plots were handed over in 2018.

Further, the “Onagawa Town Comprehensive Plan 2019”, drawn up in March 2019, sets out the basic direction of town administration for next ten years following the disaster, while continuing with the remaining projects of the reconstruction. According to the statistical data set shown on the plan, the population of Onagawa, which had been on a continuous downward trend, has significantly decreased to 6,334 inhabitants and 3,154 households, because of the Great East Japan Earthquake and Tsunami. In the backdrop of already declining population, social decline has today become more pronounced after

the disaster. As of 2015, the average age of the town's is 55.2 years old, about 10 years older than the national average. After the disaster, the number of family households, such as households raising children and households with three generations living together, has decreased. As a result, the number of single-person households has remained unchanged, but the proportion has risen to 45%.



出典:女川町統計書



出典:女川町統計書、宮城県観光統計

left) Number of members of fisheries association

right) Number of Employees and Establishments in Onagawa Town

(Source: The Onagawa Town Comprehensive Plan 2019)

To set a strategic plan for Onagawa's sustainable future, it has therefore become necessary for all residents to share the direction of town planning and to indicate the priority issues to be addressed. To share the direction, the comprehensive plan needs to clarify the objectives of what is to be aimed for and how much is to be achieved. The future state that should be aimed for is envisaged, and the current state of achievement is reviewed against this and what needs to be done in the future is considered in retrospect.

The town's industries are also today facing the need for change in the face of technological advances such as IoT/ICT/AI, international competition and a decrease in the number of employees. In the context of a drastically changing social environment, changes in the needs of the town's citizens regarding the administration are to be anticipated. In order to ensure that the comprehensive plan does not become a mere skeleton in response to changes in the social environment, it is necessary to establish a mechanism for making changes to the plan in line with the needs of the town's citizens.

# COMMUNITY SPACE UMINEKO (GENERAL INCORPORATED ASSOCIATION)

## INTRODUCTION

While a calm sea could be seen from the road on high ground in Onagawa, there is a small building on the slope down to the beach called as “Yume House”. It is the base of activities of “Community Space Umineko”, an incorporated association that continues to support post-2011-disaster reconstruction in Onagawa, Miyagi Prefecture. Located in in the Takashirohama area, the building was renovated from a warehouse that miraculously survived the 2011 disaster, while the tsunami caused by the Great East Japan Earthquake devastated Onagawa.

Junko Yagi is the representative of “Community Space Umineko”. The warehouse belonged to Ms. Yagi’s family, who have been in the fishing industry for generations, but after the disaster, building restrictions were imposed in the coastal areas of Onagawa, and no new construction was allowed where the tsunami hit. With an inspiration that “I want to somehow rebuild it without demolishing it”, in April 2014, Ms. Yagi launched a new project to help Onagawa people to realize their dreams. Subsequently, “Yume House” has now become a place where local people can interact and make their dreams come true. Since then, it has been used for multiple purposes, not only as a local cafeteria and community café but also as a place for processing agricultural products and creating woodwork.

In addition to the warehouse, two fig trees also survived the 2011 tsunami, of which although one died, but the surviving one bore fruit two years after the disaster. Encouraged by their vitality, Ms. Yagi decided to cultivate the lands devastated by the tsunami, turning them into fields. With an inspiration to create a field and produce a local specialty product, Ms. Yagi perspires to turn Onagawa into a “fig village”. Today, the orchard on the property contains 140 fig trees of six varieties. The fruit is at its peak in early October. They are processed into a compote and dried fruit and sold. Fig leaf tea has also been developed to stabilize the business outside the fruit harvesting season. It contains no caffeine and is rich in minerals and many people buy it regularly, due to which it has become a key source of income for Umineko. “Although many difficulties have come over the years, but rather than saying its challenging, we work towards saying that we challenged it”, says Ms. Yagi. “We want to create days when we can say that we had more fun than pain”, Umineko’s activities are full of such spirit.

#### KEY HIGHLIGHTS

1. In the aftermath of devastating 2011 disaster, the local community in Onagawa were faced with mental trauma and many people had lost sight of the meaning of life.
2. With a key purpose to make people happy, Ms. Junko Yagi initiated ‘Community Space Umineko’, which engages local community members in different business activities.
3. Engaging with the elderly people, mothers, fathers, and other affected groups of society, Umineko has uncovered unique prospects of income generation. The recently established ‘Yume House’ is also being visited by many people from all over the country, including companies, civic groups, and students on school excursions.

## POST-2011-DISASTER RECOVERY



Cloth Slippers and “mothers” (Source: SEIKATSU-CLUB)

The aftermath of 2011-disaster transformed the lives of local people, whose community was completely devastated. Living in shelters and temporary housing is fraught with anxiety and loneliness. “I am lonely”, “There is nothing to do”, “There is nothing good to do with my life”, Is there anything we can do together with the elderly people, who are losing their energy as time goes by? Amidst all these questions prevailing amongst the local community members, the representative of Umineko, Junko Yagi, came up with an idea of having a shared place where the local community can come together, and also earn a little pocket money. She then saw a pile of T-shirts, that were donated from all over the country. By ripping the fabric into thin strips, knitting them, and crocheting them tightly together, one by one, she created a pair of strong and colorful original cloth slippers that were unique and could not be found anywhere else. Since the raw materials costed no money, its makers could also pass on half the amount of sale. However, it was not only the money from sales that reached the makers. The more cloth slippers were sent out into the world, the more words came back: “Thank you”, “They are very comfortable”, “I want to give them as a present to someone”. The more the cloth slippers were sent out, the more the “mothers” who made them felt warmed by them. And as the products reach people across the country through sales and the makers are paid a fair wage, the “mothers” are gradually regaining their confidence and smiles.





UMINEKO's Products (Source: Official Website of "Community Space Umineko")

More recently, Umineko has also started to grow fruit trees so that the men who had quit or lost their jobs related to the fishing industry could regain a sense of fulfillment through farming. Subsequently, Umineko also began serving lunch using the local produce at the "Orchard Café Yume House", where volunteers and residents gather. As the activities continued, the number of young people who sympathized with UMINNEKO's dream and came to work have increased, and the scope of the business has also expanded to include the production and sale of fig leaf teas, sweets, and chili powder.

There is also a very clear timeline shown on the official website of Umineko. After the Great East Japan Earthquake struck on March 11, 2011, Umineko started "Mama Supporters" in the month of April, a babysitting program to help mothers with small children in evacuation centers. In July, "Mothers" began knitting cloth sandals. The materials were made from old T-shirts donated from all over Japan as relief supplies. In May 2012, "Umineko House", a base for making cloth sandals, is completed. The house is a place where mothers and volunteers from all over the country can meet and interact. In February 2013, "Umineko" started as a general incorporated association. In March 2013, Umineko began selling "Sanma na Taiyaki", a snack shaped like Onagawa's specialty "Sanma", while the "Fathers" started working in the fields. In April 2014, "Yume House", a new community house, was completed in Takashirahama, Onagawa. In November 2016, "Yume Fest" was held in Nakayama, Yokohama. In March 2018, lunch service ended, and switch was made to café only for food and beverage. Now, during the COVID-19 pandemic, Umineko also receives many orders every day. Although various promotional



events had to be stopped, but the overall impact on business was not significant. In order to keep up with the internet and get better publicity, “Community Space Umineko” has been working on an emoji pack for LINE.



Interview with Ms. Junko Yagi, representative of ‘Community Space Umineko’

Although Ms. Yagi is always looking far ahead in UMINOKO’s activities, but sometimes, when she hears a heartbreaking comment, she instantly recalls the March 11, 2011. “It brings me back to that moment in a flash and makes me realize again that it was still a traumatic experience, and I cannot get out of it. I want to see smiles on everyone’s faces, so I continue with my activities, but I live in conflict every day,” she says. “The survivors are seeing what they saw then. They see the people who finally made it out of the sea alive, and they also see the people who died there. That’s why I want to provide them with more than just “recovery”. In that sense, “Umineko” wants to value the satisfaction of being excited, of being glad that we did what we did, of being able to work so hard because we did it ourselves, of being pleased because we worked so hard to create something.

# ASUENOKIBOU: NONPROFIT ORGANIZATION

## INTRODUCTION

The Pacific coast of the Tohoku region suffered tremendous damage from the Great East Japan Earthquake of March 11, 2011. Even those who survived the tsunami lost their beloved families, property, and places of employment, leaving them in a very difficult situation. After the 2011 disaster, the residents of Onagawa Town formed a civic organization called the Reconstruction Liaison Committee to create a vision for the reconstruction of Onagawa Town and to plan for the future of the town. What is important in this process is that the government, private sector, and non-profit organizations, which used to be independent, now share "people, goods, money, and information" across sectors to conduct town development activities together. Even during grief over the loss of family, relatives, and friends due to the disaster, they looked brightly forward when describing the future of the town, saying, "What kind of future do you want for the town? "Asuenokibou (Hope for Tomorrow)" was accordingly established with the desire to create hope for a better future. In a society with declining population and shrinking economy, the social issues in Japan are becoming more serious and complex. More specifically, Japan's rural areas are anticipating these challenges. Considering this situation, Asuhenokibo aims to become a leader in the "restoration of people's livelihoods and industry," which will also lead to revitalization of the whole region.



left) Representatives of Asuenokibou; right) Promotion video of Asuenokibou

(Source: Asuenokibou Official Website)

SOCIAL

ECONOMIC

ENVIRONMENTAL

## KEY HIGHLIGHTS

1. In the aftermath of 2011 disaster, “Asuenokibou”, a non-profit organization, was created with a vision for a better future of Onagawa, through supporting the reconstruction process.
2. To emerge as a leader in the reconstruction of Onagawa, the organization provides migration support, business start-up support, and corporate training programs in Onagawa.
3. Through its promotion of several activities, new businesses have been born in Onagawa, and local core industries have been revitalized, contributing to recovery of the entire region.

## POST-2011-DISASTER RECOVERY

Amongst the many activities of Asuenokibou, the organization provides migration support, business start-up support and corporate training programs. Migration support is a project to increase the active population in Onagawa through trial immigration programs. This program allows experiencing life in Onagawa for 5 to 30 days on a trial basis. Under the guidance of a local guide, experience of a rural lifestyle is provided that cannot be experienced through sightseeing alone, while making use of shared houses, co-working spaces, and other facilities. However, due to the COVID-19, the trial immigration programs have currently stopped. For the people who want to start a business in Onagawa, Asuenokibou also provides consultation services, including providing knowledge about starting a business and helping entrepreneurs plan for the future. Further, the corporate training programs match ambitious local small and medium business owners with new and recent graduates who want to become entrepreneurs and provide them with management and on-the-job training for a limited period of two years. There are three key reasons for setting up a corporate training program in Onagawa. First, Onagawa has had a high reconstruction speed after the 2011 disaster, due to which it has much knowledge about knowhow and experience, which is worth for the managers and new graduates to learn. The second is that more than 80% of the buildings were destroyed during the disaster, to some extent, it is easy to reconstruct and has many business opportunities in Onagawa. The third one is that Onagawa is a compact society, with limited geography, about 6,000 locals, new solutions are easy to be applied for city planning.

Specifically, Asuenokibou collects and hears local people's opinions and extract local issues, such as excess deer, for the participants to discuss and brainstorm. Finally, the solutions that address the local issue are applied to Onagawa. For example, a key issue identified by the locals is to know Onagawa's image and comments in SNS. When the managers of the PwC consulting company came to Onagawa, they conducted data analysis on SNS to analyze the negative or positive keywords about Onagawa and gave suggestions for the town. Finally, the locals could utilize the result of data analysis to the city promotion. The PwC consulting company has had a long-term connection with Onagawa until

now. The representative of Asuenokibou said, “We would like to expand the scope of our activities as a leader in the reconstruction of people's lives and industry”, “Through our activities, we hope to play a role in providing vitality to overcome the difficulties in Onagawa”.



Interview with the representative of Asuhenokibo

## KEY LESSONS

- **Essence of Private Sector needs to be mainstreamed in Disaster Risk Reduction**

The exemplary role played by Takamasa & Co. Ltd. in the aftermath of 2011 disaster demonstrates how the private sector can play a crucial role in disaster risk reduction. While the government response was delayed due to the intense scale of 2011 disaster, Takamasa & Co. Ltd., as a leading business operator, not only opened their available stock of fish cakes and water for supporting the immediate local needs, but they also worked towards boosting the employment opportunities to curb the outmigration of affected population. Learning from the belief of Takamasa, it is important to realize that a company stays in the community, and it is the community that supports the development and expansion of its business.

- **Harmony with nature is vital to Build Back Better through largescale reconstruction**

While the 2011 disaster caused damage to more than 85% of all houses in Onagawa, the local government signed a partnership agreement with the Urban Renaissance 'UR' agency (Govt. based reconstruction agency) for comprehensive redevelopment of Onagawa. Keeping in mind the disaster vulnerability and topography of Onagawa and the objective to maintain the sea view (rather than seawall construction), a four-zone approach of development is adopted with all residential areas shifted to higher elevation (Zone 4) and the land in proximity to the sea being designated as no development zone (Zone 1). Along this vision, the UR agency has applied a uniform pricing approach to maintain a balance between land use and community, while supporting the recovery of different business sectors for revitalization of local economy.

- **Rediscovering the local identity/uniqueness can support social and economic recovery**

While the 2011 disaster had ravaged most of the Onagawa society, the Community Space UMINeko has over the years worked to capitalize on various opportunities to help support the social and economic recovery of Onagawa. From utilizing donated clothes to make cloth sandals, to turning wastelands into farmland, and promoting the locally developed product of Fig leaf tea, UMINeko has not only been supporting local livelihoods but has also been continually engaging with different groups of society to ensure they have a good experience. UMINeko works to ensure that the local people, having been through adverse circumstances of 2011 disaster, should be economically independent as well as self-motivated.

- **Deepening of Public-Private Partnerships can propel the speed of disaster recovery**

With a vision to support the restoration of people's livelihoods and industry, Asuenokibou has been working together with different sectors and organizations to promote community development. Through its innovative business approach and different support programs like migration support (to increase active population in Onagawa), business start-up support (consultation services), and corporate training programs (sharing the technical knowhow and local experience of post-disaster reconstruction), the organization has brought forth the unique know-how of private sector in Onagawa's reconstruction, which would be impossible for local governments to achieve alone. Taking into account the concerns of declining population and shrinking economy (in Japanese society), deepening of public-private partnerships thus also provide a potential alternative for regional revitalization.

## 主要な教訓

- **災害リスク軽減のために民間セクターの本質を主流化する必要性**

女川の老舗企業である高政株式会社が果たした模範的な役割について着目した。2011年の震災後民間企業である高政株式会社行った事柄は、災害リスク軽減において被災地の民間企業がいかに重要な役割を果たすことができるかを示している。高政株式会社は震災の影響で政府の対応が遅れている状況下、被災地が必要としていた食料としてかまぼこや水を提供しただけでなく、被災者の移住を防ぐために雇用を創出することにも貢献した。高政株式会社の企業信念にもあるように、地元企業は地域に根ざしその発展と拡大を支えるのは地域であることを認識することが重要である。

- **大規模な復興で「Build Back Better」を実現するには自然との調和が不可欠**

2011年の震災では、女川町の全住宅の85%以上が被害を受けた。女川町はUR都市機構（政府系復興機関）とパートナーシップ契約を結び、女川町の総合再開発を行った。女川の災害による脆弱性や地形を考慮し、（防潮堤建設ではなく）海の景観を維持する目的で、すべての住宅地を高台に移動させ（ゾーン4）、海に近い土地を開発禁止区域（ゾーン1）を含んだ4ゾーン方式が採用された。このビジョンに基づき、UR都市機構は土地利用とコミュニティのバランスを保つために均一な価格設定方法を適用し、地域経済の活性化のために異なる業種の復興を支援した。

- **地域のアイデンティティ・独自性を再発見することが、社会・経済の復興につながる**

2011年の震災で女川町は壊滅的な打撃を受けたが、コミュニティスペース「UMINEKO」は、女川町の社会・経済的な復興を支援するために、様々な機会を捉えて取り組んできた。寄付された衣類を活用した布ぞうり作り、荒れ地の農地化、地元で開発されたイチジク茶の普及等、UMINEKOは地域の生活を支えるだけでなく、社会のさまざまなグループがより良い良い環境で生活できるように、継続的に関わり続けている。UMINEKOは、2011年の震災という不利な状況を経験した地元の人々が、経済的に自立し、自発的に行動できるようになることを目指して活動している。



- **官民連携の深化が震災復興のスピードアップにつながる**

特別非営利活動法人アスヘノキボウは、人々の暮らしや産業の復興を支援するというビジョンのもと、さまざまなセクターや団体と連携し、地域振興に取り組んできた。移住支援（女川のアクティブ人口を増やす）、創業支援（起業相談窓口）、企業研修（震災復興の技術ノウハウや地域の経験を共有する）など、自治体だけでは困難な民間ならではのノウハウを生かした斬新な事業アプローチで、女川町の復興を実現している。人口減少や経済縮小が懸念される日本社会において、官民連携は地域活性化の選択肢の一つにもなり得る。

# ENVIRONMENTAL

ENVIRONMENTAL PERSPECTIVES OF ONAGAWA

“

- 60 HIGH BRIDGE DIVING COMPANY
- 64 TAKAMASA FISHERIES COMPANY
- 69 FOREST MANAGEMENT IN ONAGAWA
- 73 ONAGAWA NUCLEAR POWER STATION
- 77 DISASTER EDUCATION
- 82 KEY LESSONS

”



# HIGH BRIDGE DIVING COMPANY

## INTRODUCTION

Around 70% of Sanriku coast, including Onagawa, was destroyed by the 2011 disaster. Refrigerators, TVs, cars, trucks, and fishing gear have since been scattered on the sea floor beneath the glistening waters of Onagawa Bay in Japan's north-eastern Miyagi Prefecture. On July 21, 2012, "High Bridge Diving" opened in Watanoha, Ishinomaki, Miyagi. However, following the devastating tsunami that destroyed the Watanoha area, the High Bridge was relocated to the "Sea Palpier Onagawa" shopping street near Onagawa station (<https://high-bridge1.com/>). The tsunami severely damaged the Watanoha area, but Masayoshi Takahashi (representative of High Bridge) was able to rent a renovated house and open a store at Onagawa station square street as "Seapalpier Onagawa" in December 2015. Highbridge is a PADI-certified dive center which provides a variety of training options and experiences.

This local diving company aims to attract people visiting the sea in Miyagi prefecture with the hope that it could serve as a bridge between people and the sea. Since the 2011 disaster, this diving company has had a significant role in conducting volunteer activities. The March 2011 earthquake killed many people and caused significant damage in the city of Onagawa. It is realized through the interview with the company representative, Masayoshi Takahashi, that this company also assists in the rescue of victims who have drowned at sea. Since the opening of this shop, after the tsunami, the company has offered a variety of diving activities, such as the diving course. In the opinion of Masayoshi Takahashi, diving and giving back to Onagawa, his hometown, is one way to help and be involved in the reconstruction of Miyagi region.

Over the years, scuba diving volunteers have been led by instructor Masayoshi Takahashi to help clean up tsunami debris from the coastline. In 2016, the High Bridge company taught Yasuo Takamatsu how to dive so that he could look for Yuko Takamatsu (his wife) who became a victim of tsunami in 2011. Further, at one point, Takahashi and his team also found several remains and debris. Until now, the company has been involved in volunteer activities, specifically inviting young people to dive and fall in love with the marine environment. Many activities are carried out, such as cleaning the sea waters of garbage; this activity is carried out on a regular basis. Furthermore, Mr. Takahashi believes that diving can also serve to monitor fauna and their ecosystems in the sea. In addition, the company has also published the Sanriku book, so the people can learn more about the sea ecosystem in Onagawa.

## KEY HIGHLIGHTS

1. While Sanriku is recognized as one of the world's three most extensive fishing grounds, it is also recognized as a unique coast holding many varieties of fauna, that is rare in Japan.
2. Taking account of widespread impacts of 2011 disaster, the High Bridge Diving Company (a PADI-certified dive centre) was established in 2012 to serve as a bridge between people and the sea of Miyagi, while also contributing towards Onagawa's reconstruction.
3. Over the years, the High Bridge has not only organized volunteer activities to keep the sea clean, but has also encouraged young people to learn about sea environment.

## POST-2011-DISASTER RECOVERY

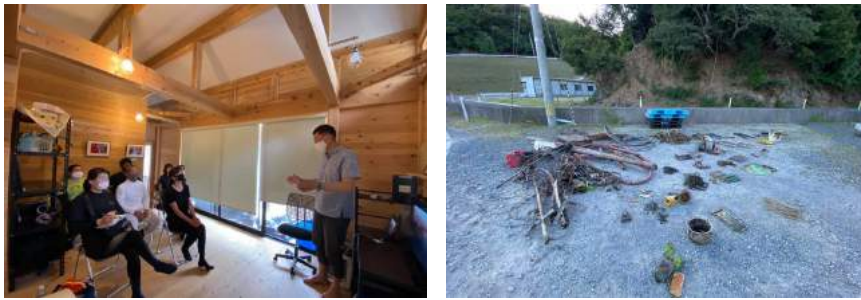
It is estimated that the 2011 tsunami threw around five million tons of debris into the sea. Most of the boats sank near the coast, endangering marine life and contaminating the ocean floor. A third of the large patches that could be tracked on satellite images floated away. Following the tsunami, a local diving company assisted the residents in locating victims who drowned in the Onagawa Bay. Subsequently, the owner of High Bridge opened a diving shop to help tsunami victims, while also working to reconnect the people with the sea. Although the diving camera is mainly used to photograph the underwater environment/sea marine, until about six years ago, the High Bridge company was also utilizing their camera (shown below) to assist people in rescuing victims.



left) Diving Camera; right) Diver of High Bridge Company (Source : <https://high-bridge1.com/>)

High Bridge company also focuses on other recovery-related activities like for cleaning sea environment and donating Sanriku Fish Book. It is intending to further incorporate a better understanding of marine environment in young people by inviting them to dive and observe the marine ecosystem. Then, as a form of love and care for marine life, the cleaning up trash activities are also carried in the sea. The amount of debris that flowed into the sea after the Great East Japan Earthquake amounted to about 3.5 million tons. During the diving activities, considerable waste has also been found in deep sea which was mostly plastic. The owner of High Bridge also informed that plastic waste has been found in 700 species of marine life. Due to that reason, the company has decided to voluntarily continue sea cleaning activities regularly. In addition, this company also provides basic diving courses and underwater photography courses to young people who want to improve their diving skills.

Through the interview with Masayoshi Takahashi, we also learned that this company frequently conducts research on seaweed by collaborating with universities so that it continues to grow well in Onagawa and adds value to the town. In addition, the High Bridge company has also donated approximately 8,000 copies of the Sanriku Fish Book, to Ishinomaki, the Onagawa nursery school, and each elementary and junior high school. This book is about the sea fauna of the Sanriku coast. The first volume of this book was published in 2015, and the second volume was successfully printed and distributed in 2021. According to the owner of High Bridge diving company, despite the fact that the tsunami occurred ten years ago, many people are still afraid to return to the sea.



(left) Providing training to young generations; right) Cleaning waste from sea (Source : <https://www.facebook.com/HighBridge111/>)



Sanriku Fish Book Volume 2

Through their diverse activities, the High Bridge diving company has been contributing its part to protect marine ecosystems of Onagawa and assisting Onagawa in returning to its pre-tsunami state. The consistency with which these actions are being carried out and the way it invites youth to participate in diving activities is a visionary action because youth will become leaders in the future. While it is still difficult to instill a love of the environment and foster trust for people to return to the sea, this company has been playing an important role in Onagawa's recovery process.

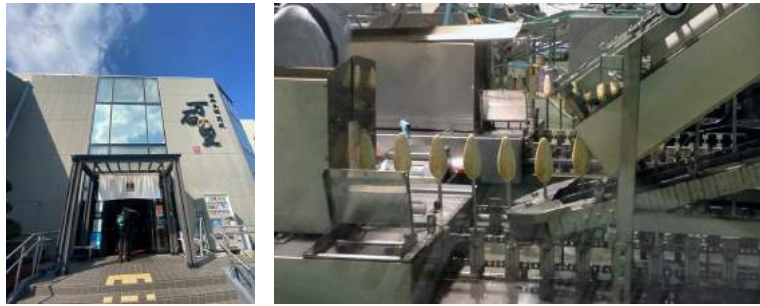
# TAKAMASA FISHERIES COMPANY

## INTRODUCTION

Sanriku is said to be one of the world's three major fishing grounds, with a huge wealth of various fish species. Despite the large catch, there is still an abundance of fish throughout the year. Due to these reasons, Onagawa has for long had many industries focusing on fishing and fish processing. One of the leading business operators in Onagawa is the Takamasa Co., Ltd, which was established in 1937. Mr. Masaki Takahashi, the CEO of the company, is the fourth generation of his family's long continuing business, which endeavors into creating processed fish products. After the Great East Japan Earthquake, Takamasa Co., Ltd. has made significant contributions toward the reconstruction of Tohoku region, including for the Onagawa Town. Due to the environmental consequences of 2011 disaster, Takamasa has gradually expanded its business into Myanmar and Bangladesh. While Takamasa manufactures and sells processed fish products, it also provides technical advice on minced fish meat in Myanmar and has many charity programmes in school management. Furthermore, the company is well-known for selling kamaboko.

For about eighty years, Takamasa has been making the famous kamaboko in Onagawa City, Miyagi Prefecture. In the early days, only five or six women used to work for manufacturing, and they made dried bonito and dried fish by hand. However, gradually with the advancement of technology, the company introduced machines to start full-scale production in 1972.





left) Takamasa Company Building; right) Processing Kamaboko  
(Source : <https://en.japantravel.com/miyagi/takamasa-onagawa-honten/7487>)

SOCIAL

ECONOMIC

ENVIRONMENTAL

## KEY HIGHLIGHTS

1. Due to unlimited supply of fish in Onagawa Bay, Takamasa has been developing processed fish products. The company has two overseas branches, in Bangladesh and in Myanmar.
2. After the 2011 tsunami ravaged the Onagawa town, Takamasa assisted the local communities by distributing free food to residents and to evacuation centre.
3. To further support the sustainable rebuilding of Onagawa, Takamasa also worked to enhance the job prospects for local population by accepting more and more employees.

## POST-2011-DISASTER RECOVERY

While the 2011 earthquake severely damaged the Onagawa Town, the consequent tsunami reached the depths of the mountains, destroying around 70 percent of all buildings in Onagawa. During the disaster, Takamasa Company assisted the affected people in Onagawa Town by providing free distribution of 70,000 pre-shipment kamaboko left in the factory. When the power supply vehicle arrived a few days later and only one production line moved, Takamasa made 120,000 fried kamaboko and delivered it to the evacuation centre. Takamasa's priority at the time after Great East Japan Earthquake and Tsunami was to provide job assistance, as Onagawa Town had lost more than 70 percent of its buildings, as well as many job opportunities. After the earthquake, Takamasa built a new factory with an aim to reduce fixed costs and secure profits for their products, but on the other hand, the company was also trying to increase employment to support the local population affected by the 2011 disaster. While the Onagawa residents were being forced to leave the town and relocate to another city in search of employment, Takamasa decided to accept these workers even if the number of employees exceeded the required number to secure a permanent population in Onagawa.

Today, after 10 years, Onagawa has changed a lot. But the town is gradually attaining the state of pre-disaster levels, in terms of fishing and fish processing. However, with the declining birth rate and the accelerating decline in the population, even if the original Onagawa was recovered, it would only be poor. Reflecting on this, Takamasa aims to really protect people's work. Takamasa is known to have provided a significant push for the reconstruction of Onagawa, and the company still has a "company stays in the community" philosophy.



Famous Fish Cake in Takamasa Company Fishery

Even during the off season or during any unforeseen interruptions to the company's business (like during the ongoing COVID-19 pandemic), Takamasa has continually been paying a regular salary to their employees. Also, unlike before 2011, the part-time/temporary employees can today gradually become full-time employees. Takamasa has also recruited new employees and increased the number of employees from around 100 before the earthquake to around 180. Of course, there were financial difficulties. However, Takamasa was one of the representative companies in Onagawa and decided to go ahead and make Onagawa a good city. After the 2011 disaster, Takamasa has also strived to ensure a good quality of fish for Kamaboko, as the concerns of potential radiation from nuclear power plant were prevalent widely. The quality of kamaboko is determined by the raw material. There are several things that techniques and recipes can cover.

Takamasa, as a local company, is also involved in a variety of initiatives. For example, immediately following the earthquake, when many Japanese were sensitive to radioactive substances, Takamasa purchased a radioactivity inspection device and, implemented a free inspection programme for not only Takamasa products but also for other foods produced in the town. Takamasa is also working hard to attract many visitors from outside the area. Holding a music festival with many famous musicians, DJ events from Tokyo, attracting sightseeing buses, and so on. As a company that lives with Onagawa, Takamasa would like to continue to be a company that can demonstrate its strength in a wide range of fields such as industry, economy, culture, and employment.



left) Electric Stove with Zero Carbon

right) Interview with CEO of Takamasa

For the environmental aspect, the entire kamaboko production process is electric (a first in the industry), resulting in zero carbon dioxide emissions from the production facilities. Takamasa have introduced an aqua filter to remove oil smoke from the fried fish cake production line. The factory has been designed to be environmentally friendly.

Even though their business was also affected by the tsunami, Takamasa Company assisted greatly in dealing with the disaster in Onagawa Town. Takamasa has previously participated in numerous humanitarian activities, not only in Onagawa, but also in countries such as Myanmar. Takamasa supports tuition for Myanmar children so that they can continue their education because CEO Takamasa believes that smart children are the city's bright future. The father of the CEO also often said that the company is for the people. His grandfather also said, Give back to the locals, as the company has grown because of them only. Remarkably, the support of Takamasa has benefitted everyone in Onagawa, be it in terms of local fishing resources, or to the people working in high politics. In several such ways, Takamasa company has continually been working towards their belief of giving back to local people.

# FOREST MANAGEMENT IN ONAGAWA

## INTRODUCTION

Forest management is crucial for Onagawa, as forests cover over 79% of its total area and 53% forest area is covered by plantation. In total, Onagawa's forests cover an area of 5185 hectares, of which only 231.15 hectares is owned by the prefecture, and the rest are owned by the private actors (individual or companies) or the local government. The above data was provided by the representative of local forest management organization during the interview. The Onagawa Wood Cycle is responsible for the management of forests in Onagawa, wherein presently there are only 6 members, and their representative is Shigeru Endo, a local resident.

The high plantation percentage in Onagawa is directly related to the historical context. During the World War II, most of the forests in Onagawa were destroyed because of the scarcity of fuel. After the war, the government pursued the forest plantation program at large scale. At that time, the balance of the ecosystem was not considered as the prior factor. Consequently, the monoculture ecosystem has today become a serious problem in Onagawa. As the predators have vanished in this area, the population of deer has kept on increasing. The threat of rising deer population to the new planted trees, bushes, grass is obvious, and the local organization has been dealing with this problem, since before the earthquake in 2011.



Archive photo of the reconstruction in Onagawa after the 2011 disaster

The direct impact of 2011 disaster on Onagawa's forests was not as serious as compared to that on the physical infrastructure, as most of the forests are in mountainous area. Even so, the forest area has decreased due to Onagawa's largescale reconstruction. Presently, the local government and forest management agency are working to enhance ecosystem balance.

#### KEY HIGHLIGHTS

1. While Onagawa's land area is predominantly covered by forests, majority of them are privately owned and their efficient management has been a challenge for local government.
2. Although the 2011 disaster did not have any direct damage on the forests, but the post-disaster reconstruction planning of Onagawa has influenced the forest landscape.
3. The recovery of forests has now started along with replanning of town, still the rising deer population a key concern in rebuilding the balance of ecosystem.

## POST-2011-DISASTER RECOVERY

Even though the direct damage of the earthquake and tsunami to the forest in Onagawa was not obvious, during the replanning of the whole town, some forest had to be cut down to cut out stone to raise the town and build new residential areas. On the other hand, to protect these new residential areas, the enforcement civil work also had additional impacts on the forest environment. As compared with the data before the 2011 earthquake, the forest area has now decreased by 2%, according to the representative of the forest management organization.

Over these years, the forest management organization has continually cooperated with the local government for recovery and replanning of the forest from 2015, as the replantation of the forest forms a crucial part of the recovery plan. The Onagawa Wood circle was established from that time to dedicatedly work towards the recovery of forests. Last year, the local forest management organization replanted and maintained 9 hectares of forests, and they are planning to further replant more areas to improve the diversity of trees for the monoculture ecosystem problem. For example, the Onagawa Wood circle have tried to introduce more bees into the forest from last year, but the effect has not been obvious till now.



left) Work photos of Onagawa Wood circle (provided by representative); center) Deer in forest of Kinkasan of Onagawa; right) Students visiting Kinkasan

Moreover, the rising deer population is emerging to be a key challenge for the recovery of the forests. The deer population in Onagawa is supposed to be around 5000 to 10000. As the predators have vanished in this region, the damage of the deer to new trees, bush, grass have been obvious. For now, the forests in Onagawa basically comprise high trees, and the deer could be seen normally in different areas. In the past, the Wood circle have tried several measures to keep the deer away from the new planted trees such as the protection fence and inviting external hunters. Last year, they decided to persuade the local government to give allowance to hunt the deer, as a result of which nearly 280 deer were exterminated. In the future, how to deal with the deer problem and the ecosystem will be essential for forest management of Onagawa: to rebuild the balance of the forest ecosystem and to leave an attractive forest to the next generation. Therefore, for an organization with only 6 members, strategic cooperation with the local community will be the theme of future work.



# ONAGAWA NUCLEAR POWER STATION

## INTRODUCTION

Located about 15 kilometers south of Onagawa station, the nuclear power station of Onagawa is owned and operated by Tohoku power. It is one of the two nuclear power stations owned and operated by Tohoku Power, and one of the earliest nuclear power stations in Japan. During the early years, the nuclear power station covered an area of 161 hectares, and the freshwater for it was sourced from the Kikakami River (Nuclear Regulation Authority, 1970). As of now, there are 3 reactors in Onagawa nuclear power station, all of them are BWR type (boiling water reactor), the same type with the Fukushima nuclear power station. The power of the reactors is 524 Mega Watts for the reactor 1, and 825 Mega Watts for the reactor 2 and 3. The reactor 1 has applied for the demolishment in 2019, which was approved by the Nuclear Regulation Authority in 2020 (Tohoku Power, 2020). The others have applied for the reoperation; however, their approval is still in process.

The history of Onagawa nuclear power station is marked with conflicts and understanding with the local community. In 1967, the Onagawa region was first considered as suitable for the construction of nuclear power station (Onagawa Town, 1991), then in 1968, the Tohoku Power decided officially to build the nuclear power station in Onagawa (Onagawa Town, 1991). However, from 1970, opposition from local community started and has continued (Onagawa Town, 2022). During the interview, the representative of the PR center of Onagawa nuclear power station mentioned that some members of the student movement cooperated with the local opposition organization, therefore the condition was

more complex after that. However, the Tohoku power continued to try to communicate with local people and attempted to persuade the community. Gradually, more and more residents changed their attitude towards the nuclear power station. Further, the impact of the oil shock backed up this attitude change. Later, the compensation agreement with the fishing association and security agreement with local government were signed after the oil shock. During the construction of nuclear power station, the safety of the nuclear power station was emphasized regarding the opposition, especially the countermeasures to the earthquake. In 1983, the Onagawa nuclear power station started the first power transmission and kept functioning till the earthquake in 2011 (Onagawa Town, 2022). The nuclear power station of Onagawa was considered as remarkably undamaged in the earthquake of 2011 by IAEA, and some researchers considered it as a result of the measures over the whole life cycle, including the countermeasures applied during the construction, such as building the sea wall based on the highest tsunami in recorded history (Ibrion et al, 2020). However, due to the accident of Fukushima, the Onagawa nuclear power station has had to stop and receive the inspection of the Nuclear Regulation Authority, as per the new standards.

#### KEY HIGHLIGHTS

1. Owned and operated by Tohoku Power, Onagawa nuclear power station is one of the oldest in Japan, and its history is marked with conflicts & understanding of local community.
2. Although the 2011 disaster did not cause any direct damage on Onagawa nuclear station, its functioning has been interrupted due to the Fukushima accident and new regulations.
3. Presently, the Onagawa nuclear power station is making heavy investments to execute the necessary reinforcements, and it is hopeful to restart operations in the coming years after regulatory inspection by the Nuclear Regulation Authority.

## POST-2011-DISASTER RECOVERY

During the earthquake and consequent tsunami of 2011, the damage to Onagawa nuclear power station was mainly related to the tsunami. The seawall at that time was designed to prevent the power station from a 14 meters high tsunami, therefore the seawater did not enter the main buildings of the power station. However, the cooling system had a direct connection with the sea, and some buildings of reactor 2 were affected by the seawater. Although the oil tank of reactor 1 collapsed, but all the reactors were shut down successfully, as revealed through the interview.



left) Damage of earthquake and tsunami to the Onagawa nuclear power station (Image source: provided by Tohoku Power); right) Onagawa nuclear power plant in Miyagi Prefecture (Image Source : <https://english.kyodonews.net>).

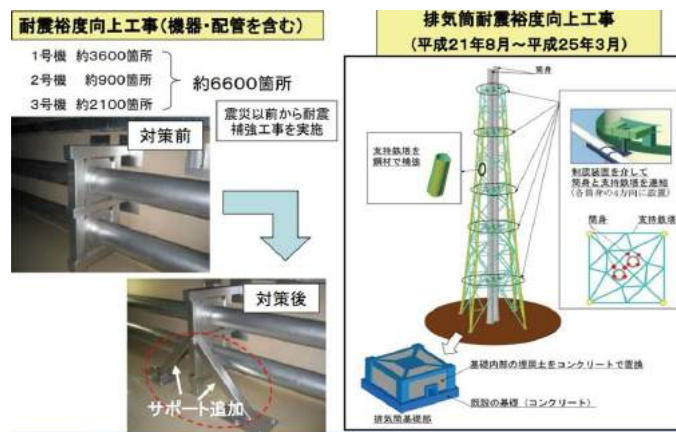
After the 2011 earthquake, the Tohoku Power began to prepare for the recovery process. The seawall was further lifted to the height of 29 meters and earthquake countermeasures were adopted. In 2013, the Tohoku power applied for the investigation of the Nuclear Regulation Authority. However, the investigation team pointed out the need for more countermeasures to the earthquake and tsunami, therefore the Tohoku power is currently executing the reinforcements of the facilities and seawall to prepare for the next investigation.



left) Enforcement of sea wall (Image source : Tohoku Power)  
right) Onagawa Nuclear Station

Through the interview with the representative of the PR center of Onagawa nuclear power station, we learned that the costs of these enforcements were near to that of a new nuclear reactor as half of the seawall had to be enforced by cement soil to prevent sinking of the supporting poles in the seawall, and 6600 points have been enforced to meet the request of the new standard. The representative of the PR center further informed that the enforcement measures may finish by 2023, after which they will receive another inspection.

The most unique point in the recovery of Onagawa nuclear power station is that the approval to restart operations, from the local community and the prefecture, was earlier than other nuclear power station with BWR type reactors. In other cities or towns, the impact of Fukushima resulted in strong opposition to restarting nuclear reactors. From this view, the obstacles for the re-operation of Onagawa nuclear power station will be only the inspection of the Nuclear Regulation Authority, and it might be the first nuclear power station with BWR type to re-operate after the 2011 disaster in Japan.



Enforcement of the facilities of the reactors  
(Image Source: provided by Tohoku Power)

# DISASTER EDUCATION

## INTRODUCTION

The ramifications of 2011 Great East Japan Earthquake and Tsunami are well-known by international communities. The 2011 disaster manifested in environment's mass destruction, impacting millions of lives in Japan. From the population of 10,000 in Onagawa, 900 of them lost their lives. While the tsunami had only affected five percent of the town's area, ninety percent of the population lived in these areas; thus, impacting majority of the residents. Despite the reverberations of the disaster, the city of Onagawa has been able to rise from the rubbles and the emotional clutter emanated by the catastrophe. Onagawa serves as an exemplary example to not only disaster-stricken areas but also developing and developed cities in different aspects of community development, mainly the physical and social environment. The revitalization and redevelopment of Onagawa has been commended-by several research institutions, local organizations, and other regions within the country- owing to the city's focus on emphasizing essential facets such as inclusive community engagement, psychological aid, temporary housing, food provision, tourism, and disaster education.

After the 2011 disaster, the shift in focus to disaster education has certainly changed the narrative and approach of younger generations towards unprecedented disasters. Prior to the occurrence of the disaster, the residents were cognizant of the regular emergency drills and basic procedures in cases of earthquake; however, the correct protocol for tsunami was not known to many people. As a result, in the minutes between the first earthquake and the

tsunami, some returned to their homes and businesses while others faced difficulty in evacuating to higher grounds. Prof. Rajib Shaw from Keio University explains that, “While talking to locals you realize that many people didn’t know about the three-wave system of tsunamis, and because of this many started working right after the earthquake instead of evacuating. Onagawa town planner Toshiaki Yaginuma further explains that, “a basic sense of awareness was strikingly absent at the time of tsunami”. Hence, newly developed programs, drills, and activities were adopted to give adequate information to young students in schools about disaster preparedness and the necessary actions that one should take. After the disaster, disaster education in Onagawa is not merely about occasionally participating in drills and lectures; instead, it instills a sense of acuteness and promptness into children through practical courses. The courses in disaster education now focus on giving students hands-on experiences for building their muscle memory to be beneficial in situations before and after a disaster. Students are now compelled to repeatedly do a task or activity to complete the course designed for their grade. This thoughtful take on disaster education aims to spread awareness to other members of the local community through young children.

#### KEY HIGHLIGHTS

1. During the 2011 disaster, around 900 people in Onagawa lost their lives despite the set evacuation procedures, disaster training and drills, which is attributed to lack of awareness.
2. Based on the many lessons learned from the 2011 disaster, increasing emphasis and a practical approach is now being applied towards disaster education in schools of Onagawa.
3. In addition to adopting new courses, conducting regular drills and evacuation procedures to increase awareness amongst students and other community members, the schools are now laying high emphasis on educating children through hands-on experiences.

## POST-2011-DISASTER RECOVERY

The 2011 disaster has left a profound and devastating impact on Onagawa and its surrounding regions. Nevertheless, several lessons in disaster planning and policymaking were learned from this unforeseen event. At national and local levels, various changes and developments have consequently been made to existing frameworks of city's overall redevelopment. Schools were one of the prominent places that underwent major changes pertaining to their approach towards educating younger generations. In fact, the newly constructed Onagawa Elementary and Junior High School has today emerged as an icon of successful reconstruction and recovery in north-eastern Japan, the many reasons for which include the development of advanced infrastructure and facilities and its emphasis on disaster prevention education. Onagawa elementary and junior high school students were some of the first people to have learned about disaster preparedness through the newly established disaster prevention education system. The merge of elementary and junior high schools was primarily to foster collaboration and allow younger students learn from the experiences of their seniors. The two major components of the new disaster prevention education framework are disaster prevention learning and various evacuation drills.

SOCIAL

ECONOMIC

ENVIRONMENTAL



top) Sabemishi Course (Image source : School Presentation)

bottom) Critical Care Course



Further, the ‘Disaster Prevention Learning’, mainly involving students and teachers, is divided into three learning methods: a) Marukoyama disaster education, b) Miyagi disaster prevention supplementary, and c) Memorial service. The Marukoyama disaster education consists of three courses that need to be completed in junior high school. The first course is called the ‘Sabameshi Course’, which is taught to students in their first year of junior high school. This course teaches students to survive after the earthquake. Students learn how to cook using a plastic bag in case of an emergency as there are high chances of water shortage after disasters. Plastic bags could be used to prepare food with a minimal quantity of water. The second course is called the ‘Critical Care Course’, which is taught to students in their second year of junior high school. This course teaches students AED and CPR and are given a certificate on completion of the course. The third course is called the ‘Disaster Volunteer Center Management Training Course’, which is taught to students in their final year of junior high school. This course gives students hands-on experience in running an evacuation center. Students play varying roles, such as managers, evacuees, and volunteers.



left) Disaster Volunteer Center Management Training Course (Source : School Presentation); right) The parent drive-through pick-up training (Source : School Presentation)

The various ‘evacuation drills’ include five types of evacuation training: evacuation when leaving school (between home and school), parent drive-through pick-up training, earthquake and tsunami drill, fire drill, and nuclear disaster prevention. Students are provided with maps with routes and shelters around them to evacuate whenever necessary. These maps inform students when, where, and how to go in case of a tsunami or earthquake. Students could also refer to these maps when they are not on school premises. The parent drive-through system is designed to pick up children from school without physically getting off the car. Each parent is given a unique identification card. Upon arrival in the school premises, they are supposed to show the card to the



staff, and subsequently, the staff informs the child about their parents' arrival. When the car reaches the pickup spot, the student arrives and is taken home safely.



left) Evacuation map routes when leaving school (Image source : School Pamphlet); right) Evacuation drills when students leave school (Image source : School Pamphlet)

The Onagawa Junior High School Chief Teacher, Mr. Mikiyo Kimura, aims to strike a balance between the existing projections and preparedness and the unexpected (beyond our predictions). He believes that achieving that balance will bring us one step closer to disaster preparedness. Also, he has been working on creating an “Earthquake/Tsunami Disaster Prevention Education Curriculum” for nine years. He hopes his curriculum raises awareness amongst the youth and the older generations. Lastly, Mr. Kimura strongly believes that educating children is the closest and the fastest means to spread a message across different communities. He tries to make children understand reality through various educational programs, activities, and drills. Through children, he hopes to spread awareness to different members of society and make them understand the bitter reality of a similar incident happening again in the future.



left) Lessons from Earthquake (Source : school pamphlet) center) and right) Earthquake/Tsunami Disaster Prevention Education Curriculum (Source: school pamphlet)

## KEY LESSONS

- **Environmental Sustainability needs to be endorsed as a shared responsibility of all**

Beyond the socio-economic impacts, the 2011 disaster also had significant implications on coastal ecosystems and marine life in Onagawa. With a belief that environment sustainability is a shared responsibility, the High Bridge diving company, since 2012, has been playing an active role not only in reconnecting people with the seas of Miyagi, but also organizing volunteer activities to clean up tsunami debris, rescuing victims, supporting maritime research and knowledge sharing about underwater sea environment.

- **Economic Revitalization also relies upon Social and Environmental Revitalization**

Takamasa Co., Ltd, one of the oldest and leading business operators in the fish processing industry of Onagawa, emphasizes that a company should always support the community, as it is the community that helps a business expand and flourish. With that belief, the company has significantly contributed towards the social and environmental recovery of Onagawa in many ways including, the immediate provision of food and water for affected people, employment boost, environment friendly production, expansion to other countries, etc.

- **Effective Management of Forests necessitates Strategic Community Engagement**

Even though the 2011 disaster did not have any direct impacts on the forests of Onagawa, their sustainability is challenged due to its monoculture plantation and poor maintenance. While the forests lands in Onagawa are largely owned by private actors, it is important for the local government to seek for strategic cooperation with the local community. The Onagawa Wood circle has accordingly been established to realize this purpose, however, there is still a need for upscaling their activities to rebuild the balance of forest ecosystem.

- **Renewal of Nuclear Power Station relies on Safety Standards & Community Support**

The 2011 disaster did not cause any direct damage to Onagawa nuclear power station, however, the accident at Fukushima station has had widespread repercussions. New regulatory standards have been setup for operating nuclear power stations and inspection of the Nuclear Regulation Authority has become must. Herein, courtesy to the initial community engagement by the Onagawa nuclear power station (during its establishment) and its safety enforcements, most of the residents have a positive attitude towards nuclear energy.

- **Disaster Education in Schools with Hands-on Training leads to Community Awareness**

Despite the set evacuation procedures, disaster training and regular drills, more than 900 people had lost their lives in Onagawa during the 2011 disaster. Realizing the need for hands-on training, the schools in Onagawa have adopted the disaster prevention education system, as a means to spread awareness to other members of local community through young children. Today, disaster education in Onagawa instills a sense of acuteness and promptness into children through their practical courses, which form a part of academic curriculum.

## 主要な教訓

- **環境の持続可能性はすべての人が共有する責任として承認される必要がある**

2011年の東日本大震災は、社会経済的な影響だけでなく、女川町の沿岸生態系や海洋生物にも大きな影響を及ぼした。2012年以降ダイビング会社ハイブリッジは、環境の持続可能性は社会共有の責任であるという信念のもと創業した。このようにハイブリッジの活動は宮城の海と人々を再び結びつけるだけでなく、津波瓦礫の清掃、被災者の救助、海洋研究の支援、海中環境に関する知識の共有、そしてボランティア活動を組織するなどし、積極的に女川の手と環境への役割を果たしている。

- **経済活性化には社会・環境活性化も欠かせない**

女川町の水産加工業の老舗である株式会社高政は、「企業は地域を支えるものであり、地域あってこそその企業である」と考えている。この信念のもと、同社は女川町の手と環境の復興に、被災者への食料や水の即時供給、雇用の拡大、環境にやさしい生産、海外への進出など、さまざまな形で女川町へ大きく貢献してきた。

- **森林の効果的な管理には、戦略的なコミュニティの関与が必要**

2011年の震災は女川の手と森林に直接的な影響を与えなかったが、震災以前から見られた単収の植林や森林の不十分なメンテナンスにより、女川町の手と山の状況の持続可能性には大きな課題がある。女川の手と森林は私有地が多いため、行政が地域社会と戦略的に連携していくことが重要である。そのために女川ウッドリサイクルセンターが設立された、森林生態系のバランスを再構築するためには、ウッドサークルの活動の継続的な拡大が必須である。

- **原子力発電所の再稼働は安全基準と地域社会の支援に依存する**

2011年の震災では、女川原子力発電所に直接的な被害はなかったが、福島原発の事故は広範囲に影響を及ぼしている。そのために、原子力発電所の運転には新たな国の規制基準が設けられており原子力規制庁の検査が必須となった。女川原子力発電所は、設立当初から地域との関わりを持ち、安全性を徹底してきたため多くの女川町住民が原子力に対して前向きな意見を持っている。

- **学校での体験型防災教育が住民の意識改革につながる**

女川町では、避難経路の設定や防災訓練、定期的な訓練を行っていたが、2011年の震災では900人以上の尊い命が失われた。そこで、女川町の学校では、子どもたちを通じて地域の人たちに防災意識を高めてもらうために、防災教育システムを導入した。現在、女川町の防災教育では、教科の授業の一環として行われる実習を通して、子どもたちへ防災に関する鋭敏な感覚と迅速さを身につけることを念頭においている。



# KEY SYNTHESIS

MESSAGE FROM STUDENTS

After the 2011 disaster, the revitalization and redevelopment of Onagawa has been widely commended in current literature, due its focus on various facets such as inclusive community engagement, psychological aid, temporary housing, food provision, tourism, and disaster education. Based on the field experiences and the interviews with multi-stakeholder groups at Onagawa, this report has further brought into limelight the social, economic, and environmental perspectives on the ongoing recovery works 10 years after the disaster. Taking due account of all the derived lessons, summarized below are eight key synthesis messages:

## **1. Visible versus Invisible Recovery**

In the post-disaster recovery process, often the focus is put on visible components like physical infrastructure development, investments, economic growth, etc. However, it is also important to investigate the invisible aspects like the mental well-being of individuals residing in the town, which are often overlooked. In Japan, there is a saying that the city of Kobe is still recovering from the impact of the Great Hanshin Earthquake Disaster of 1995 earthquake, even after 27 years, and that reflects the invisible socio-psychological recovery. This phenomenon also necessitates deeper exploration in Onagawa and other affected regions in Tohoku.

## **2. Connectivity is a Key Aspect**

Thinking beyond the physical infrastructure development, the importance of connectivity also needs to be realized in other aspects like urban-rural connectivity, forest-ocean connectivity, public-private-community connectivity, inter-generational connectivity etc. In Onagawa, we have seen how different initiatives like Inochi-no-Sekihi (inter-generation), disaster education in schools (parents-teachers-students), Asuenokibou (public-private), are focusing on this aspect, and these practices need to be further upscaled. In Japan, three types of help are widely recognized in context of disaster risk reduction: self-help, mutual help, and public help. The 2011 Tohoku disaster has further mainstreamed the network help component, which is related to connectivity.

### **3. Positive Spirit**

Remarkable in their post-2011-disaster recovery efforts, the positive spirit of Onagawa community has been the key to their transformation. The local community's camaraderie and collaboration have aided them greatly in their recovery process from various angles, such that all stakeholders have been eagerly working to make a difference by creating a new environment for future generations, rather than replicating the old city of Onagawa. In addition to the sacred places (like Kinkasan Island), community activities like lion dance, youth activities or women activities have been the key to their positivity.

### **4. Youth Engagement for Long-term Vision**

Looking at the current reality of decreasing population and an aging society in Japan, the engagement of younger generation in various development aspects and disaster risk reduction has become more important. More so, because this can also potentially help align towards long-term goals. Through the Inochi-no Sekihi project of Onagawa, it has been seen how the younger generation have not only taken the lead, but have also been working towards long-term goals, which is very relevant in the current context. Likewise, there is also a need to encourage younger people involvement in other aspects of social, economic, and environmental recovery and revitalization.

### **5. Documentation and Knowledge Preservation**

While the changing climate is intensifying the disaster occurrences, lesson sharing is increasingly becoming more important. Through the case of women's association in Onagawa, it has been realized how the loss of historical records can hinder the continuity of social activities/ ancient traditions. At the same time, it has also been observed how the documentation of good recovery practices in Onagawa (like by the lion dance group in Takenoura, Inochi-no Sekihi and High Bridge Diving company) has led to widespread information sharing and community awareness.

### **6. Multi-Stakeholder Collaboration is a Win-Win Approach**

Through the field interactions in Onagawa, all different stakeholder groups are found to be working to make Onagawa a more beautiful place to live in. In their efforts, projects like Inochi-no Sekihi have brought together multi-stakeholder groups, like students, local government, donors, local people, supporters in and outside the city, to realize the desired outcomes. The importance of private sector in disaster situations is also reflected through the role played by Takamasa company and Asuenokibou. While human resource is key to development planning, the participation of entrepreneurs and younger generation needs to be further encouraged.

## 7. Creation and Rediscovery of 'Onagawa Brand'

While the 2011 disaster has attracted many eyes to the Sanriku coast, this should be seen as an opportunity to promote the region. As port towns and fishing villages on the Sanriku coast, are in themselves rare as compared to the inland areas, there is a huge potential to rediscover the tourism prospects of Onagawa and creating the "Onagawa Brand" for processed marine products. Through the efforts of UMINOKO, it has been seen how through innovative ideas, opportunities could be uncovered even in adverse situations. It is just important to take a fresh look at what is available locally and how demand for it could be created in local and outside market.

## 8. Adaptation to Uncertainties

The ongoing COVID-19 pandemic has currently affected the whole world, and the uncertainties associated with it have also to an extent hindered the recovery works in Onagawa. Superimposed on this challenge are the concerns of changing climate and social structures. Be it in terms of addressing the consequent decline in fish catch or decline in social activities, emphasis should be put on mainstreaming adaptation to unforeseen circumstances through innovative ideas. Like, for instance, the thoughtful take on disaster education in Onagawa is intended to prepare the local community for any future disasters. The zone-based redevelopment approach of Onagawa and relocation of residences to higher ground also takes into account the future disaster vulnerability of Onagawa.





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