

Debate of ecosystem-based disaster risk reduction in Moune District, Kesenuma City after the 2011 Tsunami Disaster

ICHINOSE, Tomohiro^{1*}

¹Faculty of Environment and Information Studies, Keio University

A magnitude 9.0 earthquake struck the northwestern Pacific Ocean off northeastern Japan on 11 March 2011. The subsequent tsunami wrought destruction on a massive scale. The government's proposed reconstruction plan, released in June 2011 (<http://www.cas.go.jp/jp/fukkou/english/pdf/report20110625.pdf>), explains that we need to change our attitudes about disaster prevention. For example, although 10-m breakwaters erected in Taro district of Iwate Prefecture worked well against a tsunami caused by the great Chilean earthquake of 1960, they were destroyed by the 2011 tsunami, which killed 200 people and flattened 1,000 houses there. We have to recognize that we cannot completely protect ourselves against natural disasters. Kesenuma City was one of the most heavily damaged regions in Miyagi Prefecture, where more than thousand people were died by the tsunami and fire caused after it, and 230 people are still missing. Kesenuma City is famous for fisheries, especially bonito and pacific saury. However, 2667 people worked primarily at the fishery in Kesenuma City in 2005, only 7.4% of the total employees. Many food processing factories concentrated in the center of Kesenuma were totally destroyed, most of which were located on the reclaimed land. The 77 bank estimated that Kesenuma City lost half of its GRP and one-third of its employment from the earthquake. I analyzed old land uses of the tsunami disaster area in the city center using an old topographical map in 1913, which is the oldest modern one in this area. The result showed that 49%, 17%, 10%, 8% and 7% of affected area was rice paddy, water body, urban area, conifer forest and coast, respectively. Most of water body should be reclaimed from the sea and conifer forest should consist of pine trees along the coast. Miyagi Prefecture has been presented with plans for breakwaters ranging from 5.0 to 11.8 m in height, even though the most recent tsunami topped 12 m. Most breakwaters, totally 25 kilometers, have been already constructed along Sendai Costal Area. A fishing village in Kesenuma, called Moune, has submitted a formal request to the mayor of Kesenuma to withdraw the plan for its 10-m breakwater, because most households will relocate on a new residential area constructed by the government. Moune was the first district to decide the relocation plan to upland and request it to the government.

The district is already famous for its afforestation movement, called Mori wa Umi no Koibito (The Forest is a Lover of the Sea). In 1989, an oyster farmer named Shigeatsu Hatakeyama started planting trees on the hills around the village to preserve the seawater quality for his oysters. His activities have influenced previously-uninterested residents to object to the breakwater plan. Also, Moune has a strong community before the disaster. Four people were killed by the tsunami, but most were survived by helping each other. An association for relocation of residential area has been established since the middle of April 2011, then the general meeting has been held every month. I will discuss ecosystem-based disaster risk reduction of Moune District through the three-years survey.