

How to learn from past gigantic complex disasters to prepare next Nankai Earthquake

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Japan's countermeasures for mitigation were not enough multidisciplinary before the 2011 Tohoku tsunami. Not only low disaster awareness of people, but also our disaster experts have potential to enlarge the 2011 tohoku tsunami disaster. One of the reasons is narrow and high specific area of expertise. We repeat same mistakes, however we have not noticed in the different area of expertise.

We believe that education is one of the most effective countermeasures to prevent from repeating the same mistakes and pass down living lessons to future generations and published "World handbook on local disaster management experiences".

Key Words : *tsunami, complex disasters, awareness as outsiders, disaster education, developing countries*

1. TITLE PAGE

(1) Japan's countermeasures to disasters

The 2011 Tohoku tsunami revealed that Japan's countermeasures for mitigation were not enough multidisciplinary. The tsunami caught Japanese unguarded and enlarged disaster. One example, Coast Act covers tsunami, however River Law did not include tsunami countermeasures before 2011.

(2) Could we transfer disaster lessons to next generations?

In addition to this, people repeated the same mistakes that it had in its long tsunami disaster history. After the disaster, Japanese have belatedly remembered many precious lessons and important information from past experiences.

One example is "Tsunami TENDENKO," old, local evacuation advice that strongly encourages each individual to save one's own life first. Another

example is "Don't build houses below where this stone stands," a lesson that is engraved on a memorial stone on a hill of a coastal town called Aneyoshi, Iwate Prefecture, to remember a historical tsunami disaster. "Namiwake Shrine" in Sendai City is still another example with its name from the story of the shrine having protected people from tsunami waves ('Namiwake' literally means 'dividing waves').

Many places in the Tohoku area have developed their own unique tsunami cultures to pass down to future generations.

2. Awareness as outsiders in "SHIMAGUNI"

Tohoku area had not had a tsunami disaster for 50 years after the 1960 Chilean tsunami. The 2010 Chilean tsunami caused only a little damage to the local fish industry. People had gradually lost tsunami disaster awareness over the years. In this sense, a magnitude (M) 9 earthquake hit the area at a worst

timing. For Japanese today, it was an extreme scale of disaster that they had never experienced. People did not make use of the ancestor's lessons to survive.

3. Awareness as outsiders in “SHIMAGUNI”

The 2004 Sumatra tsunami occurred just 7 years ago. The magnitude was about M9, very similar to that of the Tohoku earthquake. Japanese could have used the Sumatra disaster to remind themselves of lessons from their past experiences. Why couldn't Tohoku people and Japanese tsunami experts make use of those lessons?

Japanese are said to show little interest in the outside of the country. It may be this tendency that makes it difficult for Japanese to learn from other countries.

Japan could have learned good lessons from past nuclear accidents too, such as the one at the Three Mile Island plant in the United States, but unfortunately it is difficult to say that they did.

4. Narrow specific area of expertise

In addition, experts face a similar problem. They tend to focus on their study fields, paying little attention to other areas. Soon after the serious accident in 2011 at the Fukushima nuclear plant, another nuclear accident, though rather small in scale, occurred in 2012 at the Oyster Creek nuclear power station in the United States due to Hurricane Sandy.

In both cases, local people were not informed of the troubles. One of the important lessons learned from the Fukushima case is quick provision of accurate information for the general public. However, this was not applied to the Oyster Creek case though luckily it did not develop into a serious trouble.

The two cases resulted from different hazards, tsunami and hurricane. They may take different expertise to study but there are always similar lessons experts can learn from other areas.

5. Conclusion

I would like to point out five points as follows:

1. It is difficult for human beings to pass down living lessons to future generations over decades.
2. It is difficult for human beings to predict events beyond their experience.

3. Human beings usually underestimate the danger because they tend to make judgments based on their own experience.
4. It is difficult for human beings to make use of lessons from disasters in other countries because of an instinct for self-preservation that makes them think that disasters seldom occur to them and they can survive if they occur.
5. Experts tend to pay little attention to disaster cases in other fields even if the cases have something for them to learn.

6. A step forward

ICHARM started collecting historical living lessons for 14 hazards from all over the world before the 2011 Tohoku tsunami to publish a disaster guide book mainly for children and their mothers. Along the way, the Tohoku tsunami occurred and we decided to include lessons related to the disaster. This guide book 'World handbook on local disaster management experiences for beginners.' has just published in March 2013 for people in developing countries¹⁾. It is translated in at least 15 languages and made available free of charge.

We believe that education is one of the most effective countermeasures to prevent from repeating the same mistakes and pass down living lessons to future generations. We have to prepare for not only next Nankai earthquake but also sharing our experiences with people all over the world due to return to their assistance for Japan in the 2011 Tohoku tsunami from the world.

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