

LESSONS LEARNED FROM RECENT DISASTERS IN JAPAN AND FUTURE DISASTER COUNTERMEASURES

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1. INTRODUCTION

Due to global warming, meteorological disasters, such as typhoons increasing scale and frequency, heavy rain, heavy snow, and drought, heat waves and cold waves have been becoming severer. Furthermore, in Japan, the damage caused by Tokyo metropolitan inland earthquake and that by a gigantic earthquake along the Nankai Trough, both of which have been threatened for a long time, are expected to be "national critical disasters" that will affect the survival of the country. While, considering the current financial situation, and social characteristics of declining birthrate and population, and aging society, it can be said that efforts to deal with future mega-disasters will be "an all-out effort on the way to be poorer." Moreover, as it is difficult to recover and reconstruct only by post-disaster countermeasures, it is essential to implement risk reduction measures using effectively the time until a hazard strikes, such as strengthening vulnerable buildings and facilities and guiding the population from areas with high disaster risk to those with low disaster risk.

In my talk, lessons learned from the recent disasters in Japan, such as the 2011 Great East Japan Earthquake and Tsunami disaster and the 2016 Kumamoto Earthquake disaster, and how disaster countermeasures should be in Japan in the future will be introduced.

2. LESSONS LEARNT FROM THE 2011 GREAT EAST-JAPAN EARTHQUAKE AND TSUNAMI DISASTER

Since the 2011 Great East Japan Earthquake, I have come to realize that many of the important issues related to disaster management today in Japan cannot be resolved through the conventional specific academic fields or cooperation among a small number of related fields fragmented. While keenly aware of this, I have reaffirmed the threat of nature and the importance of respect for nature and a humble attitude that those involved in disaster management should not forget.

In terms of research, the response to these issues is a combination of structural and non-structural measures based on the results of researches that fuse related fields, including natural science and engineering, the humanities and social sciences, and medicine, etc. Furthermore, comprehensive disaster management that combines industry, governments, and academia with finance and mass media will be important.

However, on the other hand, due to various preparatory measures, both the damage caused by the shaking of the earthquake and that by the Tsunami have been greatly reduced compared to similar cases in the past. There are

also lessons which should be learnt during recovery and reconstruction. But, these are not being communicated correctly, mainly due to media coverage.

3. LESSONS LARNT FROM THE 2016 KUMAMOTO EARTHQUAKE DISASTER

In the 2016 Kumamoto earthquake, strong ground motion repeatedly hit the affected areas, including shaking with a seismic intensity of 7 (highest of JMA scale) on April 14 (foreshock) and April 16 (main shock), and many buildings were damaged. As a result, many people are believed to have been killed or injured, but this is incorrect. It is true that the number of damaged buildings and their degree increased, but it is not correct to say that casualties increased. The reason for this will be explained in my talk.

4. DISASTER COUNTERMEASURES BASED ON JAPAN'S CURRET AND FUTURE SITUATIONS

As mentioned in Chapter 1, it can be said that efforts to deal with future mega-disasters in Japan will be an "all-out effort on the way to be poor." Also, as it is difficult to recover and reconstruct only by the post-disaster countermeasures, it is essential to implement risk reduction measures using effectively the time until a hazard strikes, such as strengthening vulnerable buildings and facilities and guiding the population from high disaster risk areas to low disaster risk ones.

In addition, based on Japan's current and future situations, among "self-help effort (SE), mutual assistance (MA), and public support (PS)", securing and maintaining "SE" and "MA" to compensate for "PS", which will continue to decrease in the future, is a key point.

To solve these problems, it is necessary to shift the awareness of disaster countermeasures "from cost to value" and further to "phase-free." Conventional disaster measures considered to be cost are "one-time-only, non-continuous, and the effects cannot be seen until a disaster occurs." While, disaster measures based on value bring value and brand power to organizations and regions in normal times. With "phase-free disaster countermeasures" which do not separate the phases of disasters and normal times, their main purposes are to improve the quality of life in normal times, and they can also be used effectively in the event of a disaster. I will introduce new businesses which can contribute to improve disaster management capacity of Japan based on these two keywords "from cost to value" and "phase free countermeasures".