

Reconstruction towards Resilient Society: Japanese Experiences

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Once a region is hit by a significant level of disaster, “Build Back Better” is an important concept to reduce losses from future events. If the affected region is reconstructed in the similar manner as the pre-event stage, a similar or greater level of impact is expected. Because of increasing exposure due to population growth and increasing hazard level due to climate change, it is necessary to reduce physical and social vulnerabilities in order to mitigate disaster risks.

Japan has been affected by numerous numbers of natural disasters in its two-thousand year history. Even in the last fifty years, Japan was hit by a number of major earthquakes. Based on such experiences, seismic regulations and design/construction practices have been enhanced considerably. The first step for safer society is understanding disaster risks. To understand earthquake risks, seismic observation is quite important. Although Japan had the densest seismic observation networks before the 1995 Kobe earthquake, it was found to be not enough for inland crustal earthquakes. Thus new nationwide seismic observation systems were deployed after the Kobe earthquake. The new seismic observation systems as well as new GNSS network clearly demonstrated the nature of earthquakes in the 2011 Tohoku earthquake and the 2016 Kumamoto earthquake.

Japanese seismic codes have been upgraded based on the experiences from damaging earthquakes, such as the 1964 Niigata earthquake, the 1968 Tokachi-Oki earthquake, the 1978 Miyagiken-Oki earthquake, and the 1995 Kobe earthquake. But as new structures such as high-rise buildings and base-isolated structures are built, new topics such as long-period seismic motion must be considered for these structures. Research and development for safer structures should be continuously promoted as well as the retrofit of existing structures.

To perform such tasks, capacity building of professionals and government officers are necessary together with awareness raising of general public. Japanese experiences from major earthquake disasters, such as the 1995 Kobe earthquake and the 2011 Tohoku earthquake, must be transferred to other seismic prone countries in the Pacific Rim. The SATREPS project sponsored by Japanese Government is one of such schemes of technology transfer to developing and emerging countries. The Government of Japan recently published the examples of good practice for Build Back Better from these major disasters. Reconstruction planning at a pre-event stage with the involvement of all the stakeholders and citizens is suggested to achieve resilient and safer societies.