

**The Second Expert Group Meeting
on the Great East Japan Earthquake
- Learning from the Mega-Tsunami Disaster -**

Thematic Session Report

Session: No.2
Session Title: Resilience of critical infrastructures and society
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1) Outline

The Group 2 has addressed the issues concerning resilience of a society and in particular that of infrastructures from a wider perspective. In so doing, the Group examined the impact of recent mega disasters in Asia including the Great East Japan Earthquake and Tsunami and the flooding in Thailand. The following questions have been suggested for points for discussion:

1. What are emerging threats to the resilience of societies and of critical infrastructures based on recent mega disasters in Japan, Thailand or elsewhere?
2. What are current efforts for government and businesses that promote or support critical infrastructure's resilience and thus the resilience of the society?
3. How should resilience and protection of societies and critical infrastructures be further integrated into comprehensive risk- or disaster-management strategies? What are necessary and effective measures to do so?
4. How could countries in Asia further improve effectiveness and efficacy of cooperation in those domains?

For inputs for discussion the following insightful presentations were made by various organizations:

- "Government's Response to the Great East Japan Earthquake focusing on reconstruction" by Mr. YASUDA Goro, Ministry of Land, Infrastructure, Transport and Tourism (MLIT), Government of Japan
- "ICT for Disaster Management toward More Resilient Community " by Mr. IIDA Yoichi, Ministry of Internal Affairs and Communications (MIC), Government of Japan
- "How to share lessons from the Great East Japan Earthquake with the World " by Dr. ISHIWATARI Mikio, World Bank Tokyo Office

- “ADB and Disaster Risk Management” by Mr. MITSUHASHI Hisashi, Water Resources Specialist, Asian Development Bank
- "Thailand Great Flood 2011 : Problems and Solutions" by Mr. Seree Supratid, Rangsit University, Thailand
- "Climate Risks and Adaptation Strategies for Flood Management in the Philippines" by Ms. Dolores Hipolito, Department of Public Works and Highways, Government of the Philippines
- "Disaster Management system of TAJIKISTAN" by Mr. Muhabbat Ibrohimov, Head of the Department of disaster preparedness, Committee of emergency situations and civil defense under the Government of the Republic of Tajikistan
- “Toward JICA's future challenge based on the experience on Asian mega-disaster” by Mr. MINAMITANI Taichi, Global Environment Department, Japan International Cooperation Agency

2) Key messages, outcomes, recommendations

A. New types of threat

- Recent mega disasters in Asia, namely the Great East Japan Earthquake and the flooding in Thailand, show that the disruption of supply chains caused by them has had wide-spread impact on economies often beyond country boundaries. We need to examine these new aspects by comparing Japan’s and Thailand’s cases.

B. Policy challenges

- We also need to reconsider how structural and non-structural measures complement and reinforce each other. Often, there are some gaps between disaster management agencies and development agencies. How to facilitate closer cooperation between them still remains as a challenge.
- Design of infrastructures needs to take their multi-functionality into consideration. For example, embanked roads in the Sendai Plain, namely the east Sendai road, proved to have successfully stopped the inflow of tsunami waters further inland. Likewise, pine trees on Matsushima coast famous for their beauty in Miyagi Prefecture also helped reduce the impact of tsunami. Mangroves in many countries have environmental and economic effects but also disaster mitigation effects.
- Robust communication networks are necessary to enable emergency communication in times of disasters as well as in ordinary times. It has been revealed that tsunami-hit communities in northeast Japan did not receive a series of updated tsunami warning because of power cut and lack of back-up system that might have led to larger casualties.
- Prompt restoration of key infrastructures, such as transport networks, power supply, drainage, etc. is crucial to facilitate relief and recovery operations as evidenced by the operation “Toothcomb” in Japan in the wake of the Great East Japan Earthquake. Likewise, comparison of infrastructures with and those without seismic-reinforcement in the case of Japan has shown that pre-disaster investment

pays off as seismic-reinforcement is effective not only to minimize damages but also to facilitate their quick recovery.

C. Areas for further collaboration

- Redundancy including backup functions, and multi-functionality of infrastructures are important elements which require more policy attention.
- Cost aspects of infrastructure investment require verification of economic return or cost-effectiveness. How to validate them is also a challenge. Is it possible to take the value of human lives into consideration in such calculations/simulations? In return, infrastructure investment should consider not only economic and environmental aspects, but disaster risk reduction aspects as well.
- Acceleration of discussion about how to further promote the mainstreaming of DRM into development is necessary by making good use of recent mega disaster cases and also by considering future possible mega-disaster event scenarios.

3) Conclusions

- International collaboration is required to facilitate countries to make good use of experiences and lessons of recent mega-disasters elsewhere, including Japan's and Thailand's mega disasters, in their individual country's situation.
- World Bank, ADB, JICA, ADRC, UN-Habitat, etc. which participated in the discussion shared interest in how to help countries more ahead towards these objectives.