

**Committee on Disaster Risk Management**

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**Water-related Disasters & Activities of  
Sub-Committee**

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# Noah's Ark

- The flood begins, and the waters prevail until all the high mountains are covered fifteen cubits deep, and all the people and animals and creeping things and birds of the heavens are blotted out from the earth, and only Noah and those with him in the Ark remain.

the Book of Genesis (chapters 6-9)

# Tsunami

- Although floods and droughts have been main issues in water-related disasters, Tsunami is now given more emphasis due to the occurrence of following events.
  - 2004.12.26 Indian Ocean Tsunami  
(M9.1 earthquake, over 10m high tsunami, 230,000 deaths)
  - 2011.3.11 Great East Japan Earthquake  
(M9.0 earthquake, 40m high tsunami, 21,000 death and missing, 535km<sup>2</sup> inundated areas)

# Great East Japan Earthquake

- The 3.11 disaster is significant in the way it affected the modern industrialized country, not only by its direct damage but also by its indirect or consequential damage.
- The physical direct damage to buildings and infrastructures has been estimated to be 17T¥ , 220 B\$, while the total amount of loss cannot yet be estimated.
- World-wide impact due to disruption of supply chains in agriculture, fishery and manufacturing industries can not be estimated.

# Fukushima

- The N-Plant accident has given greater impact to the world.
- Direct damage to the facilities and buildings is slight.
- Indirect damage including evacuation and business loss by harmful rumor is 5 to 10 trillion yen or 63 to 125 B\$. Further damage is being caused until the reactors would be stabilized.
- The global policy of energy and climate change shall be affected.



# Water-related Disasters are persistent

Persistent tendency in occurrence of severe floods, droughts.

- Brisbane River flood, Australia, January 2011 (15,000 inundated houses, thousands of evacuees)
- Flood in south-eastern Brazil, January 2011 (530 deaths)
- Drought in Yangtze, China, May 2011 (the first drought in half a century)
- Mississippi river flood, United States, May 2011 (the worst since 1937 flood)
- Famine is being caused by drought in Somalia with thousands of refugees to Kenya

# Expect the Unexpected

- After the 3/11, to cope with unexpected phenomenon of 1000 year-return period has become more important.
- Integration of structural (hard) measures and non-structural (soft) measures is indispensable as already been pointed out in the WDRM guideline and the UNESCO manual that was developed in line with the guideline.
- Damage reduction has been considered more feasible than damage prevention. This also has already been indicated by the guideline.

# WFEO & UNESCO Guidelines on Water-related Disasters, 2009





# Activities of CDRM Members

- Besides analysis of disasters, exchange of information and preparation of the guideline, the members of CDRM has been involved in the field investigations of such disasters as indicated below.
  - Brisbane River flood, Australia
  - Cyclone Orissa, India
  - March 11 Tsunami, Japan
- Reports on these disasters will be made in the meeting today and in the panel session scheduled tomorrow.

# Lessons learned from investigation

- Natural hazard shall exceed the expectation
- Warning and Evacuation are essential
- Dykes and breakwaters are effective
- Embankment of highways and railways and R-C buildings are effective for tsunami
- Transportation net work must be implemented so as to have back-up for emergency logistics
- Timely dissemination of information is essential
- Handing down of memory of damage is essential
- Improving DRM project appraisal by B/C method

## Action Plan 2011-2012

- Improving the information network and HP.
- Publishing the Revised Guidelines on Disaster Risk Management for Water-related disasters.
- Consolidating the sections of tsunami, drought and landslide in the guideline for water-related disasters
- Organizing the 6<sup>th</sup> Joint International Symposium on Disaster Risk Management.
- Implementing the field investigation of disasters.
- Organizing the panel on DRM and the CDRM meeting at Engineers Congress and Executive Council meeting in Slovenia in September.
- Studying appraisal method of DRM projects.