

## **Panel Discussion 3**

### **Broader application of Scientific Knowledge in DRR**

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The panel discussion addressed the issue of transferring knowledge and information generated from scientific study and research to practical purpose of reducing the disaster risk. Illustrations were made on several Asian cases of use of scientific technology for all phase of disaster risk management and a need was highlighted for broader network and partnership to reach to the end user for effective application. In the session, some expert presentations were made in specific hazard based DRR application like seismic and flood risk management where as some deliberation were on use of space technology for all type of hazards. There was a presentation on issue of defining, documenting and disseminating the DRR technologies.

Prof. Mohsen Ghafory-Ashtiany, IIEES moderated the session discussion where expert panelists provided their expert opinion and information on how can fruits of science and technology be made available for common use.

Mr. Oliver van Damme from UNITAR presented the activities of the operational satellite applications programme "UNOSAT".. He opined that the number of people at risk of disaster is increasing due in particular to climate change and that they can get benefit from use of space applications to reduce their vulnerability. Mr. van Damme presented cases showing how space-based tools are applied in emergency relief, early recovery and disaster prevention. He emphasized that the potential use of space technologies, which are neither sophisticated nor expensive, is largely unexploited, and hence there is a need of partnership at different levels for developing capacities to make broader use of satellite applications for DRR.

Mr. David Stevens, UNOOSA briefly presented the history and current status of satellite application. He mentioned that despite the small size of the office of UNOSAA, it is contributing significantly for the various use of satellite including that for disaster risk management. With a United Nations General Assembly resolution to establish UN SPIDER program for providing universal access to the satellite information to all stakeholders of DRR, the office has been a gateway for space based information, a bridge to connect space communities and DRR communities and also a facilitator for capacity building and policy devising in use of space technology for DRR. He urged all national and local government to access the data through UN country offices and make use of the technology.

Professor Hiroyuki Kameda, NIED raised issue of identifying useful technology and knowledge for DRR. Prof. Kameda made three categories of implementation technology: implementation oriented technology (IOT), process technology (PT) and

transferable indigenous knowledge (TIK). He emphasized that technology like base isolation or remote sensing could be example of IOT but other R&D results such as coastal greenbelt technology to reduce tsunami effects, seismic enhancement of masonry buildings, etc., non high-tech but studied in advance research methodology, are also important components of IOT. Example of process technology may include demonstration of simple improvised shaketable for convincing people of use of seismic resistant technology. Likewise, the case of Bangladesh, and Japan of elevated houses can fall into the category of TIK for DRR. Prof. Kameda later gave brief account of a new project- DRH Asia which is characterized by DRH database, DRH forum and DRH links, where all attributes are in line with implementation of HFA.

Panelist Dr. Bhakhtiar Nurtaev from Institute of Geology and Geophysics of Uzbekistan presented a case of Uzbekistan on application of scientific tool in earthquake mitigation. He reminded the 1966 Tashkent earthquake which struck the Tashkent city centre with large scale of damage even though the magnitude scale of earthquake was small. He highlighted the various risk factors associated with demography, geographic location, and urban setting in addition of geological factors to be considered while assessing the seismic risk of communities and cities. He presented a case of risk matrix analysis employed for Tashkent city in RADIUS project. A case study of seismic retrofitting of school building under national program of education facility improvement was presented where DRR education to children is also being well integrated. He emphasized for need of capacity building to use the scientific technology by the users- community, governments.

Ms. Mandira Shrestha, ICIMOD presented a case of flood risk management by use of satellite rainfall estimate. She highlighted the high level of hazard in the Himalayan region attributed to its geography and meteorological characteristics. While she explained the various structural and non structural measures in flood risk mitigation in the region, special focus was on use of satellite rainfall estimate (SRE) for improved flood forecasting and timely warning. Accurate rainfall estimation is very essential to reduce the impact of floods. Given the low density of hydro meteorological network and the sensitivity of data in the region SRE is one of the best appropriate approaches to estimate rainfall as well as provides an opportunity to fill in the data gaps. The satellite based rainfall estimates as the NOAA CPC RFE2 can then be used as input to a stream flow modeling system like the Geospatial stream flow model in basins to forecast rainfall-induced runoff. She also gave a brief account of various activities of ICIMOD in DRR.

Dr. Nikolai Breussov from Geo-geographic Research Centre of Kazakhstan presented a paper on assessment and mitigation technologies applied in Kazakhstan. He explained the research work of the centre which is numerous application of scientific tools for geo hazard mitigation namely- seismic and landslide hazards. With use of scientific tools it is possible to make long, medium and short term forecast of earthquakes. A case study of seismic microzonation of Almaty has been presented, where digital mapping of city was made for seismic risk management. He mentioned that researches on risks from natural disasters in Kazakhstan are giving foundation for planning measures for reducing their results. However, methodical basis of estimating risks has not been developed enough. Preventing negative results of natural disasters is important and noble challenge for international community, but what the most important for DRR is citizens and government to be ready themselves

for the natural disasters. Dr. Breussov highlighted the contribution made by international institutions including UN agencies in this effort and sought further collaboration for making better use of scientific tools for disaster risk management

Professor Usupaev from Institute of Applied Geoscience of Kyrgyzstan presented a case of Kyrgyzstan in research application field for geo-dynamic hazard reduction. He acknowledged the support from various contributors to make the advance research study in Kyrgyzstan, which are transferred into risk reduction measures like detection of tectonic movement, land slide hazard detection. He also presented a example of satellite use in glacier lake outburst flood mitigation.

In a concluding remark from session moderator, Prof. Ashtiany highlighted the need of capacity building to effectively use of scientific knowledge. He urged 'Zero Tolerance' approach for full compliance of building code in building design wherever the scientific knowledge allows so. He mentioned the case of Iran where comprehensive approach of seismic risk reduction is applied. Professor Ashtiany further stated that the natural events and hazards such as earthquakes are the fact of earth and the only solution is prevention and preparedness. Enough know-how exists in Asia and world in achieving safety and thereby sustainable development. Here the implementation is the main problem. This requires effective governance and management for integration of risk reduction into development process.

In his message, to decision makers, Prof. Ashtiany urged to use the existing knowledge towards implementation of "Zero Tolerance" policy of knowledge and code violation. He cautioned that we have moral responsibility of answering our children and future generation on how we have used know-how on saving their lives.

*In summary, the session provided a very good example of application of scientific tools for risk reduction. It urges better coordination and partnership among stakeholders to make the information and knowledge available to end users. It was evident that large potential use of scientific tool is unexploited and there is need to better interface between stakeholders including that among scientific communities and policy and planning authorities.*