Policy makers dialogue and capacity development for disaster risk reduction and management in Asia-Pacific -Harnessing ICT, space technology and GIS

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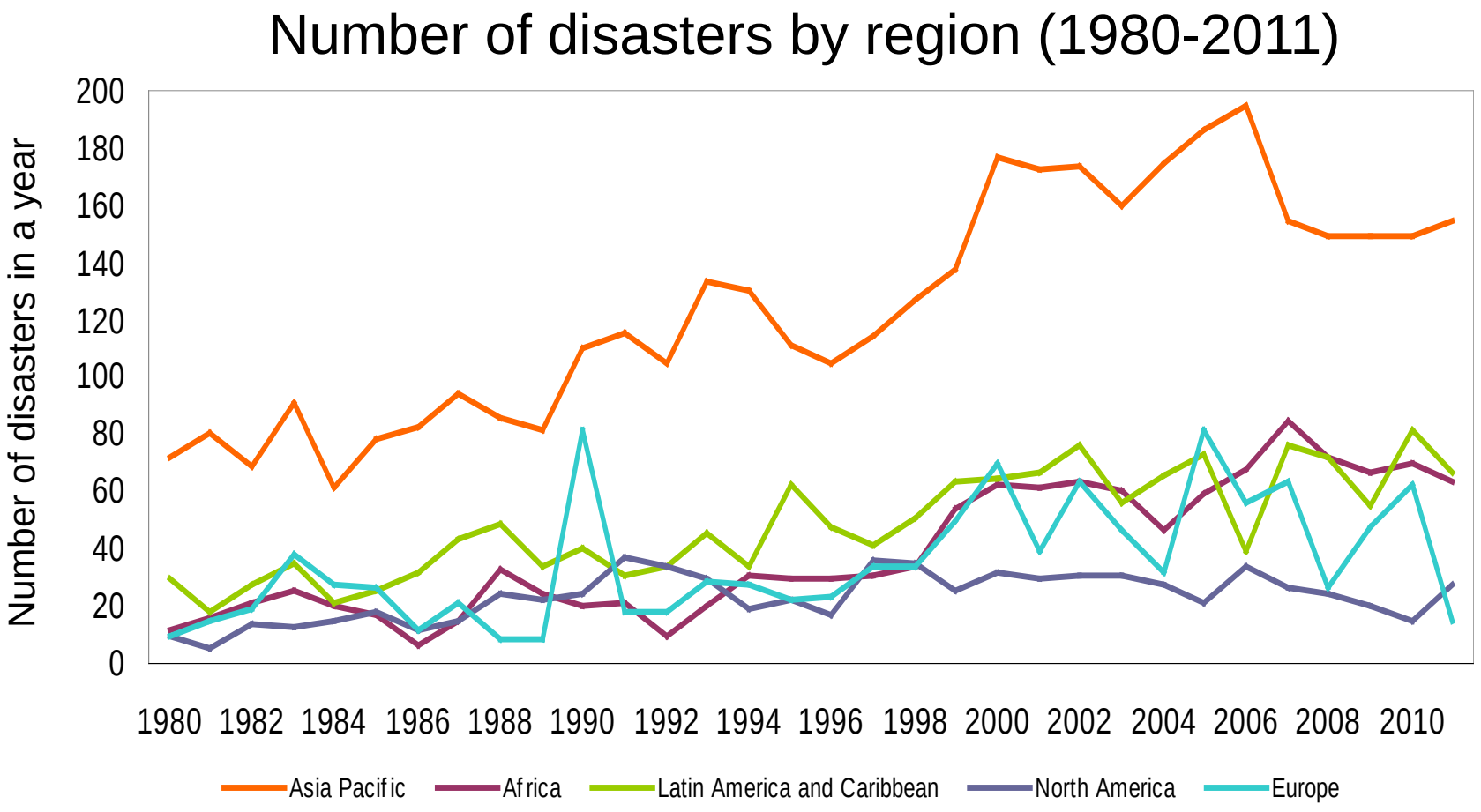
UNITED NATIONS
ESCAP
Economic and Social Commission for Asia and the Pacific

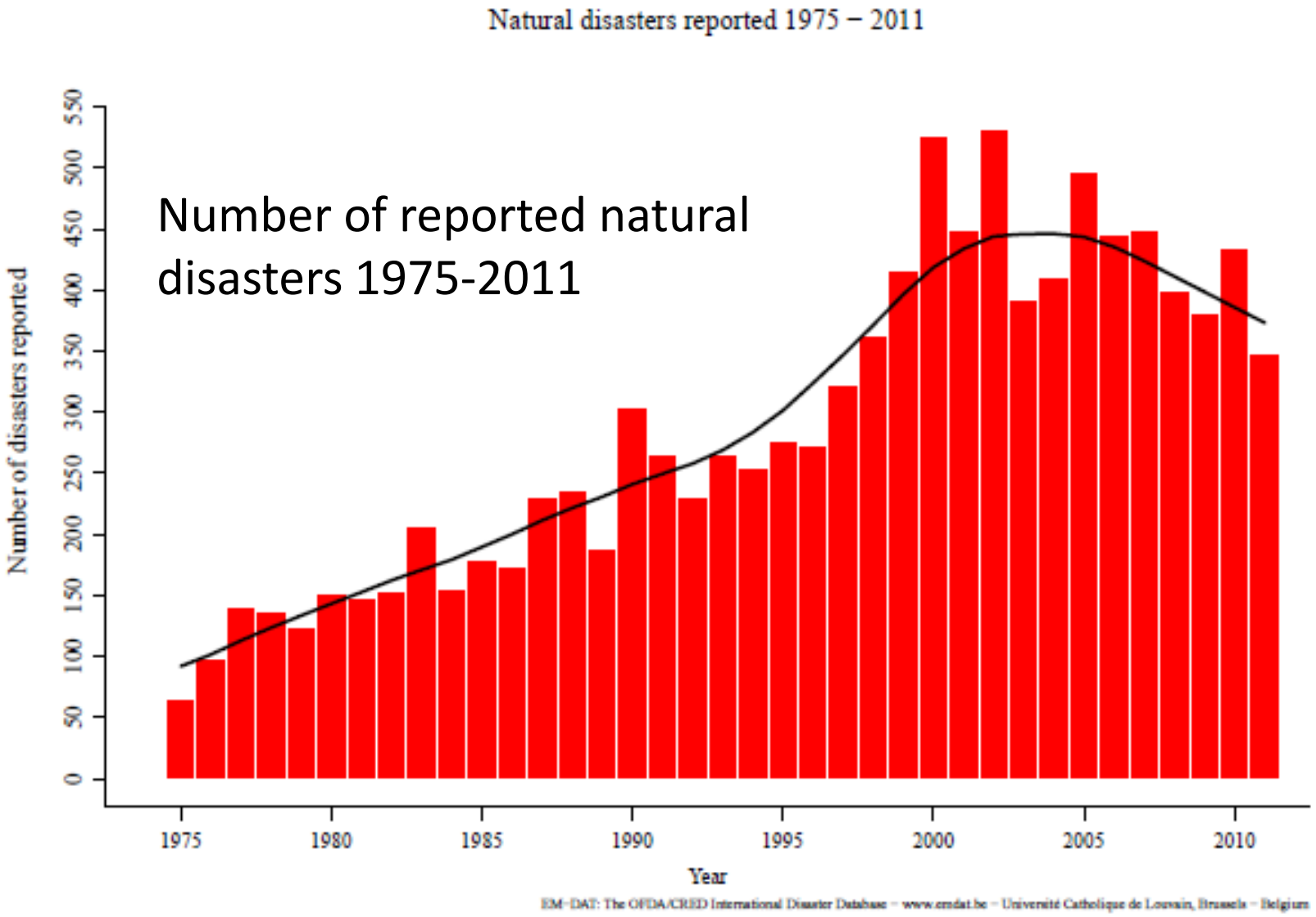
United nations ESCAP is ……

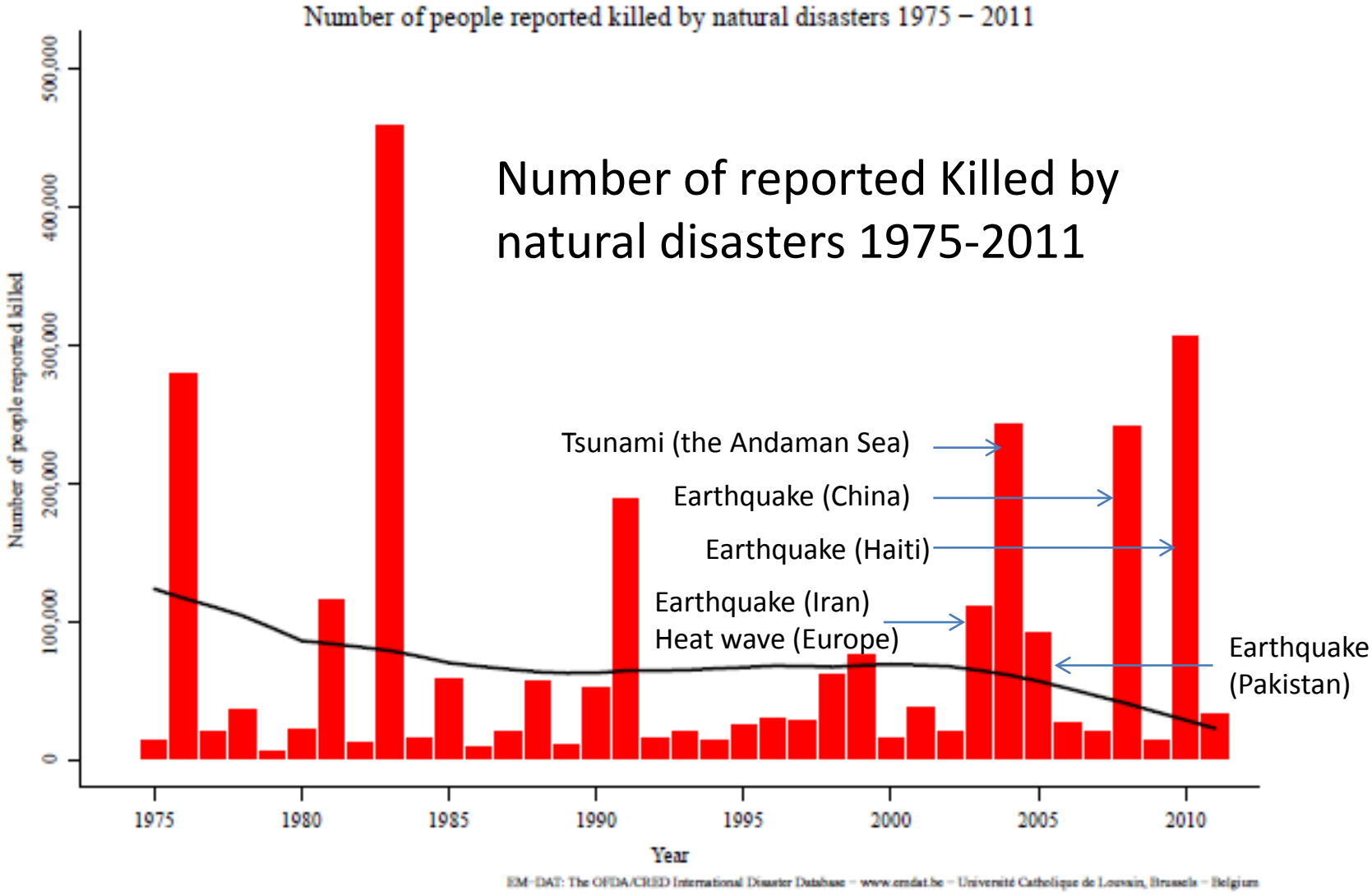
- **The main economic and social development arm for the United Nations in Asia and the Pacific.**
- **To foster cooperation between 53 member states and 9 associate members, from Turkey in the west to Kiribati in the east, and the Russian Federation in the north to New Zealand in the south. The region is home to 4.1 billion people, or two thirds of the world's population.**
- **To provides the strategic link between global and country-level programmes and issues.**
- **To support governments of countries and advocates regional approaches to meeting the region's unique socioeconomic challenges in globalization**

Asia-Pacific is the most disaster prone region in the world…

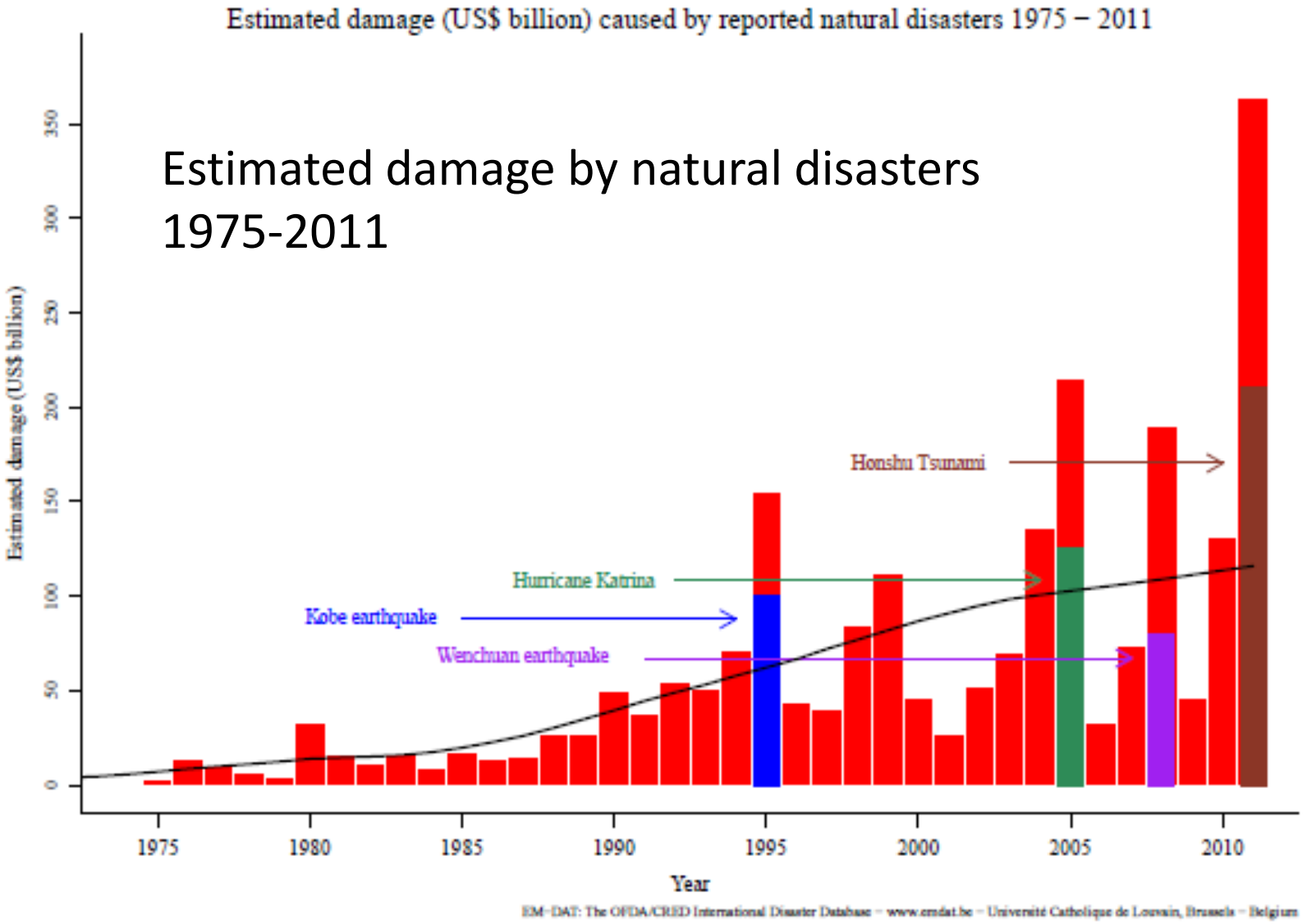


Source: ESCAP based on data from EM-DAT:
The OFDA/CRED International Disaster Database


Natural disasters reported 1975 – 2011
Number of reported natural disasters 1975-2011
Number of disasters reported
0
50
100
150
200
250
300
350
400
450
500
550
1975
1980
1985
1990
1995
2000
2005
2010
Year
EM-DAT: The OFDA/CRED International Disaster Database – www.emdat.be – Université Catholique de Louvain, Brussels – Belgium


Number of people reported killed by natural disasters 1975 – 2011
Number of reported Killed by natural disasters 1975-2011
Number of people reported killed
0
100,000
200,000
300,000
400,000
500,000
1975
1980
1985
1990
1995
2000
2005
2010
Year
Tsunami (the Andaman Sea)
Earthquake (China)
Earthquake (Haiti)
Earthquake (Iran)
Heat wave (Europe)
Earthquake (Pakistan)
EM-DAT: The OFDA/CRED International Disaster Database – www.emdat.be – Université Catholique de Louvain, Brussels – Belgium

Estimated damage by natural disasters 1975-2011



Backdrop

Exposure to disaster risk is growing faster than our ability to build resilience**.**

Expected outcome of the disaster risk reduction;
Substantial reduction of disaster losses, in lives, in the socials, economic and environmental assets of communities and countries

Economic resilience against natural disasters is achievable by preserving and utilizing necessary information harnessing ICT space technology and GIS

Policy Makers Dialogue and Capacity Development for Disaster Risk Reduction and Disaster Management in Asia-pacific
- Harnessing Information and Space Technology and Geographic Information System
23-25 September 2014 UNCC, Bangkok Thailand

Purpose of the Dialogue

To set forth the regional dialogue among policy makers and stakeholders to establish global/regional and national infrastructure and framework of cooperation and integration of ICT, space technology and GIS to maximize the contribution **to achieve substantial reduction of disaster losses.**

Expected outcome of disaster risk reduction in 10 years;

1. **Saving lives at the disaster sites** by collect and provide necessary information for disaster preparedness, warning and response at the disaster site to the people (and communities) who need it, when necessary, in form necessary
2. **Keeping continuity of social and economic activities after disasters** by preserve and provide necessary information for economic resilient activities to the organization (and the people) who need it, when necessary, in form necessary

<table>
<tr><th>Date, Venue</th><th colspan="3">Programme</th></tr>
<tr><td><u>Day 1</u>
Tuesday,
23 September
9.00hrs – 17.00hrs
<u>Conference Room (CR) 3</u></td><td colspan="3">1. Opening
-Information exchange and capacity development-
2. Addressing the Challenges of Disaster Risk Reduction (Country Reports)
3. Humanitarian and Community Support for Disaster response
4. Contribution of Space Technology and GIS for Disaster Risk Reduction and Management</td></tr>
<tr><td><u>Day 2 (AM)</u>
Wednesday,
24 September
9.00hrs – 11.30hrs
<u>Conference Room (CR) 3</u></td><td colspan="3">-Information exchange and capacity development-
5. Applications of Space Technology and GIS for Disaster Risk Reduction and Management (1)
6. Applications of Space Technology and GIS for Disaster Risk Reduction and management (2)</td></tr>
<tr><td><u>Day 2 (PM)</u>
12.50hrs – 16.30hrs
Group Dialogue Session
<u>Group A --- MR-F</u>
<u>Group B --- MR-H</u>
<u>Group C --- CR-3</u></td><td><u>Group A</u>
Dialogue Session
7A. Applications of ICT, Space Technology and GIS for Economic and Business Resilience
<u>Meeting Room F</u></td><td><u>Group B</u>
Dialogue Session
7B. Integration of ICT, Space Technology and GIS for Disaster Preparedness, in situ Disaster Warning and Response
<u>Meeting Room H</u></td><td><u>Group C</u>
Dialogue Session
7C. Strengthening Regional Cooperation Mechanism on the Utilization of Space Technology and GIS for Disaster Management
<u>Conference Room 3</u></td></tr>
<tr><td><u>Day 3 (AM)</u>
Thursday, 25 September
9.00hrs-12.00hrs
<u>Conference Room (CR) 3</u></td><td colspan="3">8. Joint Dialogue and Wrap Up Session
9. Closing Session</td></tr>
</table>


BANGALDESH


Sentinel Asia
Precipitation
Launch 28.Feb. 2014

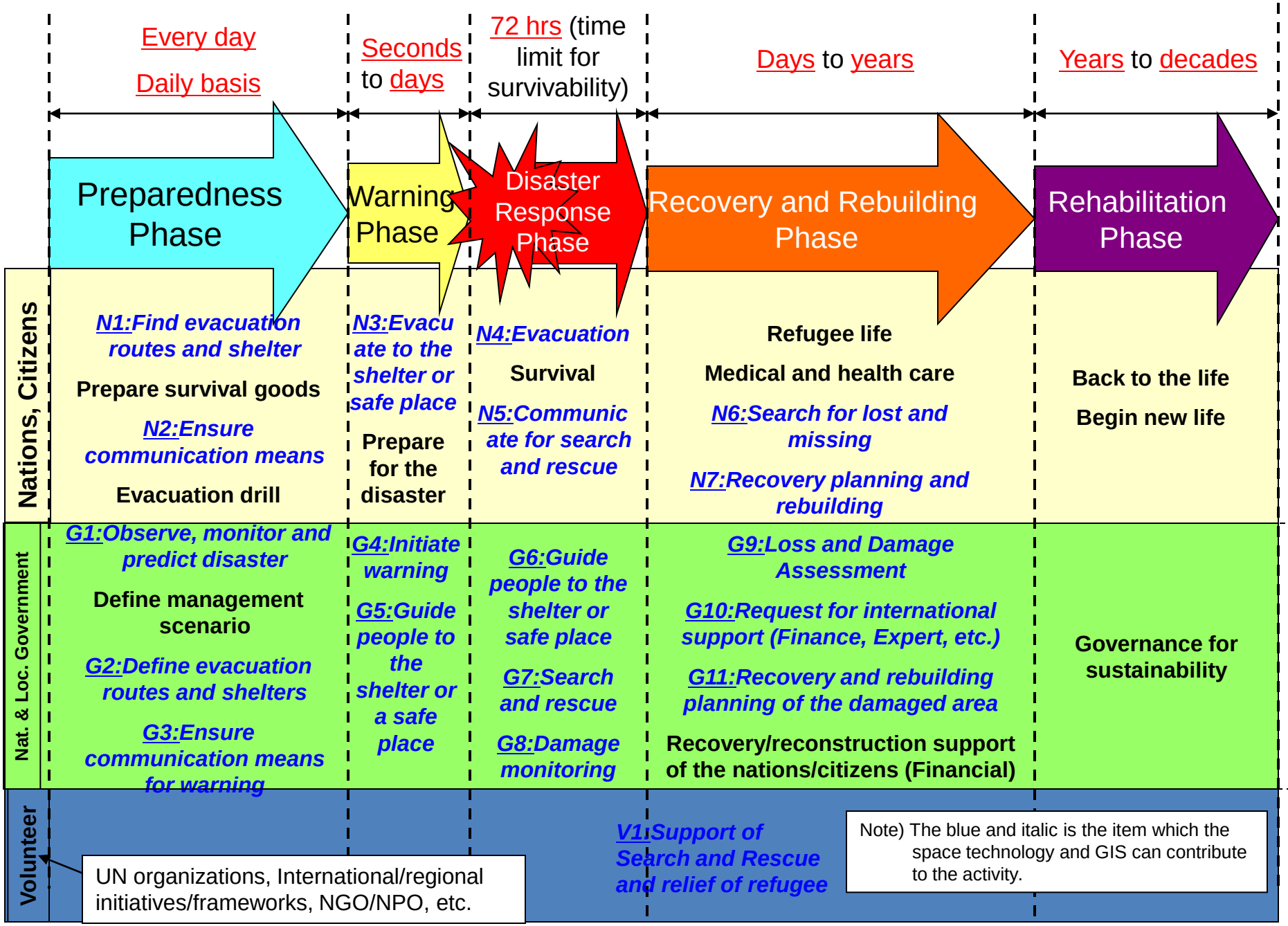
- ***Increased capacity of the disaster management policy makers and stakeholders of Asia-Pacific countries*** on the use of regional framework and initiatives of space technology and GIS for disaster management. **[Day1: Section 2 & 3]**

- ***Set forth regional dialogue to strengthen regional initiatives to support multiple phase disaster management*** (preparedness, warning, response, recovery) of Asia-Pacific countries on the use of space technology and GIS, while respecting the volunteer's position of pursuing their benefits for sustainable activities.**[Day2: Group C]**

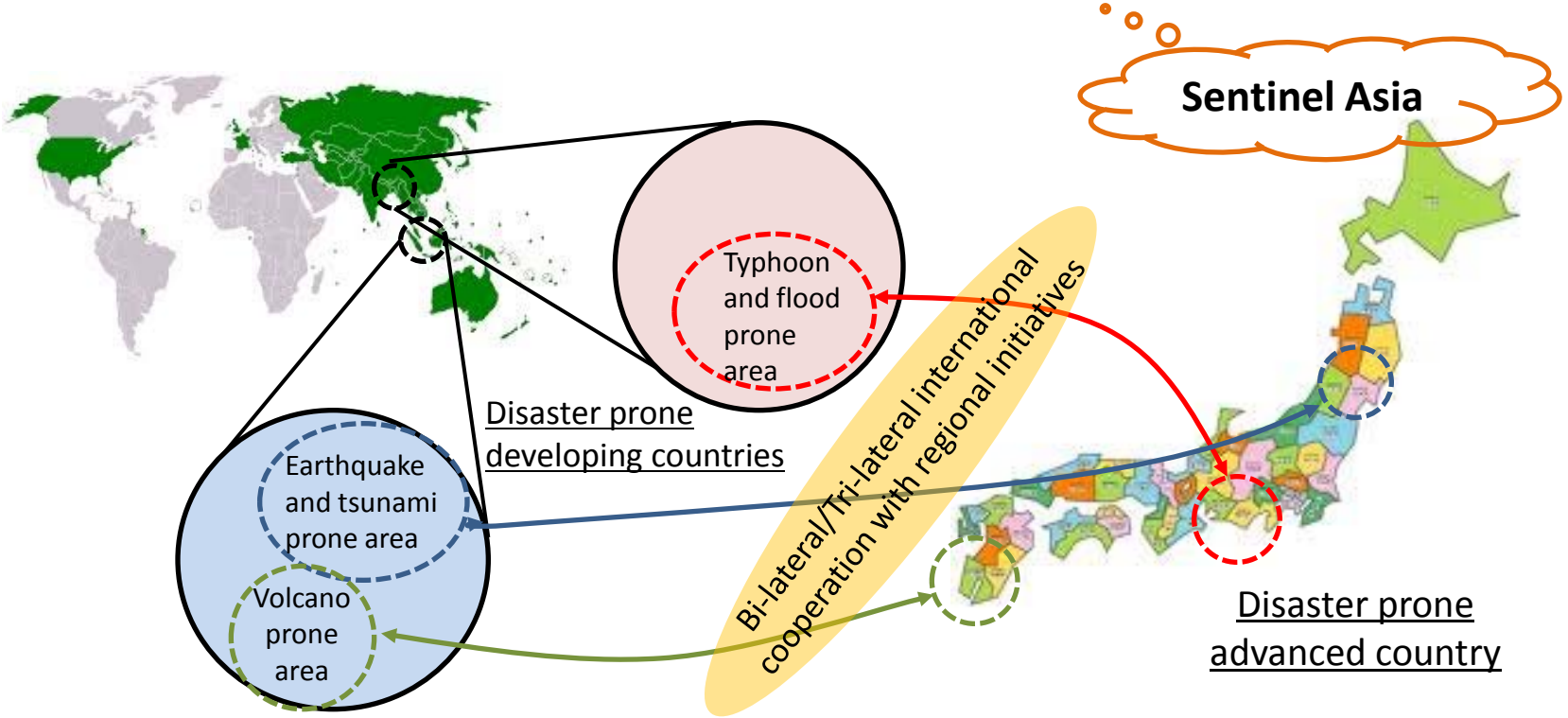
- ***Set forth regional dialogue to strengthen the resilience of economic connectivity*** such as global/regional supply chain for economic activities to support early economic recovery and reconstruction after devastated disasters explore the Asia-Pacific regional cooperation mechanism of information exchange with the support of space technology and web-GIS, such as NSDI, National Spatial Data Infrastructure,. **[Day2: Group A]**

- ***Set forth regional dialogue (WG) to collaborate Multi-GNSS and utilization of portable information and communication technology***, such as mobile phone and GNSS receiver, local commercial media system for information and communication support in personal and community level disaster warning, evacuation, positioning, survival and rescue at the disaster sites.**[Day3: Group B]**

Timeline of the Disaster Risk Reduction and Disaster Management (DRRM)



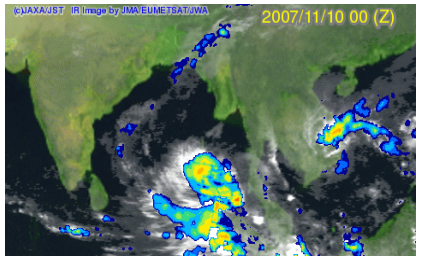
National and local-government level **bi (or tri) -lateral** information exchange on the use of space applications and GIS for Disaster Risk Reduction and Management, supported by each national government and **regional initiatives**



Development of Social Ben… Space Infrastructure (Observation, Communicati… Flood Warning Service

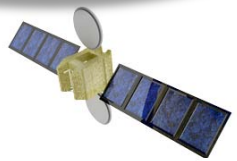
Satellite communication

Satellite observation



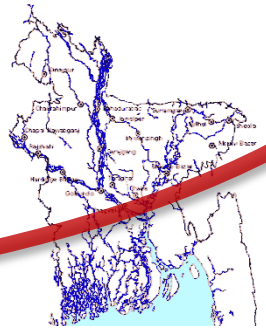
Real-time glo…

Precipitation measurement from space

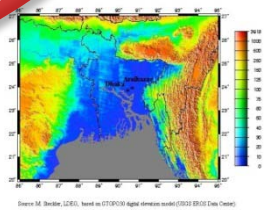


Data relay

Satellite observation



3D topo data
Land cover data



Water runoff simulation

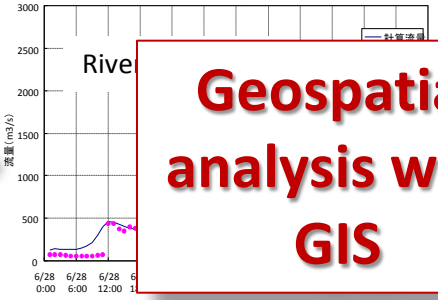
Satellite positioning

Satellite Positioning

QZS can be used for emergency forecast

Estimating people distribution for better evacuation guidance

Data sharing with cellular phone network



Geospatial analysis with GIS

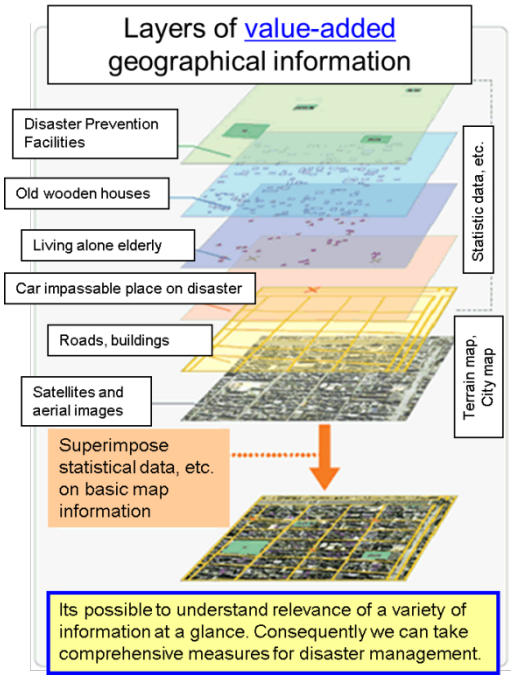
Information dissemination to people through cellular phone

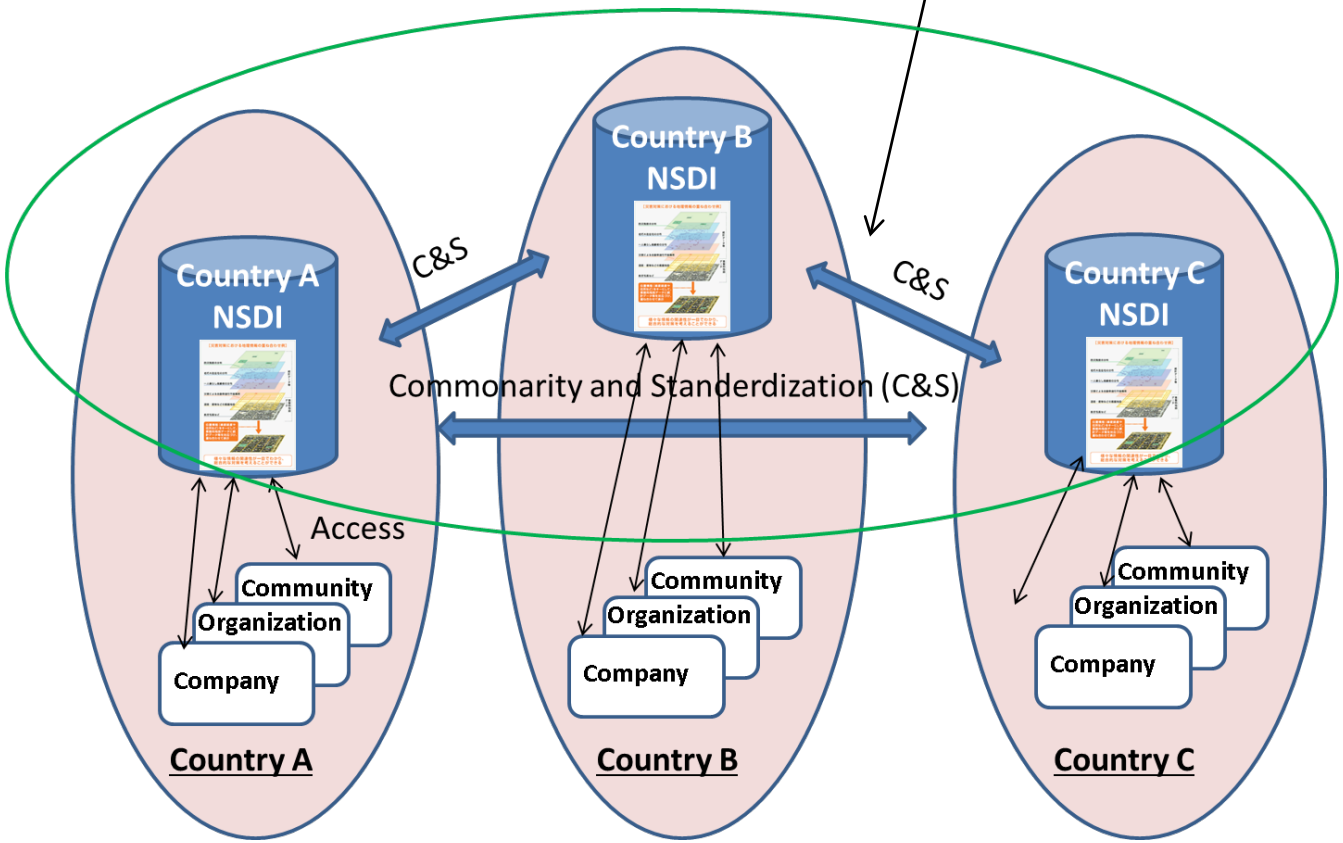
Water level forecast
Flood forecast

Platform for GIS data sharing among countries and economies

NSDI Regional Cooperation Framework

NSDI: National Spatial Data Infrastructure





Economic community **specific layers for BCP (Business Continuity Plan) and sustainability of supply chain as well as land use planning and design** will be added as some of Value-added Layers of NSDI

Provisional roadmap for infrastructure and framework

Expectation to Sentinel Asia STEP-3

(Do what UN and International Charter cannot do.)

- Collaboration of space agencies and disaster management authorities → Should substantially contribute to disaster management
- Not only for disaster response, but also for disaster preparedness, warning and recovery
- Comprehensive utilization of space technologies; remote sensing, communication and GNSS
- Enhancement of WG activities

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Thanks!

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Draft Recommendations

- To promote a public and private partnership framework in all stages of disaster risk management (from prevention, prediction, preparedness/response and recovery) containing principles, standards, and mechanisms for reducing risk and ensuring economic and business resilience.
- To continue developing methodologies, benefiting technological development, for economic and business resilience including the conventional BCP, BCM, and other innovations such as the Area BCM.
- To improve the access to easy-to-understand, useful, and applicable data and technology, particularly to SMEs and developing countries, including through downscaling, cloud computing and open data policy.
- To establish/broaden national and regional mechanisms 1) to improve access of data and technology by SMEs and Developing Countries; 2) to foster cooperation among NSDIs; and 3) to facilitate conversion systems of national geodetic reference systems to global standards (and vice versa).

Plans for Next Collaborations

4. All the participated countries including CSN were encouraged to address the challenge by the information exchange, capacity building and cooperation with the volunteer activities of regional initiatives such as Multi-GNSS Asia and GESTISS, regional research institute such as AIT, and activities of national institutes of advanced countries such as National Institute of Police Science, University of Tokyo and Keio University of Japan, global/regional public communities/unions such as ABU and ITU, Space Organizations such as Chinese Satellite Navigation Office, JAXA, GISTDA, and volunteer activities by private sectors.
5. As the implementation of the 5-Year Plan of Action, ESCAP will support bilateral information exchange and cooperation between a country and regional/national/private initiatives for innovative technologies to accelerate developing countries' autonomous and positive action to reduce the death toll of natural disasters.
6. As the implementation of the 5-Year Plan of Action, ESCAP will facilitate to continue the dialogue among countries and innovative technologies' relevant initiatives, organizations, institutions, communities and private sectors to establish regional and national infrastructure and frame work for cooperation, collaboration and contribution of the innovative technology of ICT, space technology and GIS to reduce the death toll by natural disasters.

Plans for Next Collaborations (cont'd)

- The followings are discussed from Group B Dialogue Session.

1. All the participants recognize that most of the innovative information and space technologies such as information super highway, mobile phone and its networks, broadcasting networks, GNSS, micro satellite constellation, GIS as well as applications for their utilization, have great potential of substantial contribution to disaster management.
2. All the participants recognize that collaboration and integration of these innovative technologies will contribute to save the lives from natural disasters by providing rapid, precise and necessary information for disaster preparedness, warning and response.
3. All the participants recognize that most crucial challenge to be addressed is, establishing comprehensive infrastructure and/or framework for collaboration and integration of those innovative technologies to contribute not only to advanced and wealthy countries, but also to developing countries including the Countries with Special Needs (CSN).

Utilization of satellite remote sensing and GIS

During emergencies, the utilization of such technologies is heavily focused on rescue; however application during the development, recovery and reconstruction phases has great potential.

The usage of such technologies should be normalized into everyday and non-emergency contexts in order to be more effective during disaster and emergency situations.

Preparatory work to develop base maps, such as digitizing urban design and buildings, can still take place using archived imagery and could be much more cost effective in terms of image availability, while providing necessary information in the instance of a disaster.

Satellite imagery and information processing tools to analyze and create end products is still needed to effectively use space-derived information.

Capacity building

There was a need to build the capacity not only of technical people analyzing space-derived information, but also the end users, such as district level administrators working on disaster management, to ensure that they have the right information in an understandable format that they can quickly use. Often there is a gap in the terminology and technical language between various sector specialists which makes interpretation of information difficult.

Capacity building efforts should focus on training of trainers and field staff rather than only those analyzing such information.

Enhancing regional cooperation

Participants acknowledged that DM has many dimensions and is multi-disciplinary; therefore building multi-disciplinary partnerships are very important.

The non-emergency use of space-derived information through cooperation mechanisms has great potential and efforts should be made to expand regional cooperation networks and agreements to the provision of support, space-derived information and technical knowledge to broader sustainable development issues.