

Strengthening link between Sentinel Asia and the Sendai Framework

What are the best practices and how countries can contribute to the DRR implementation?

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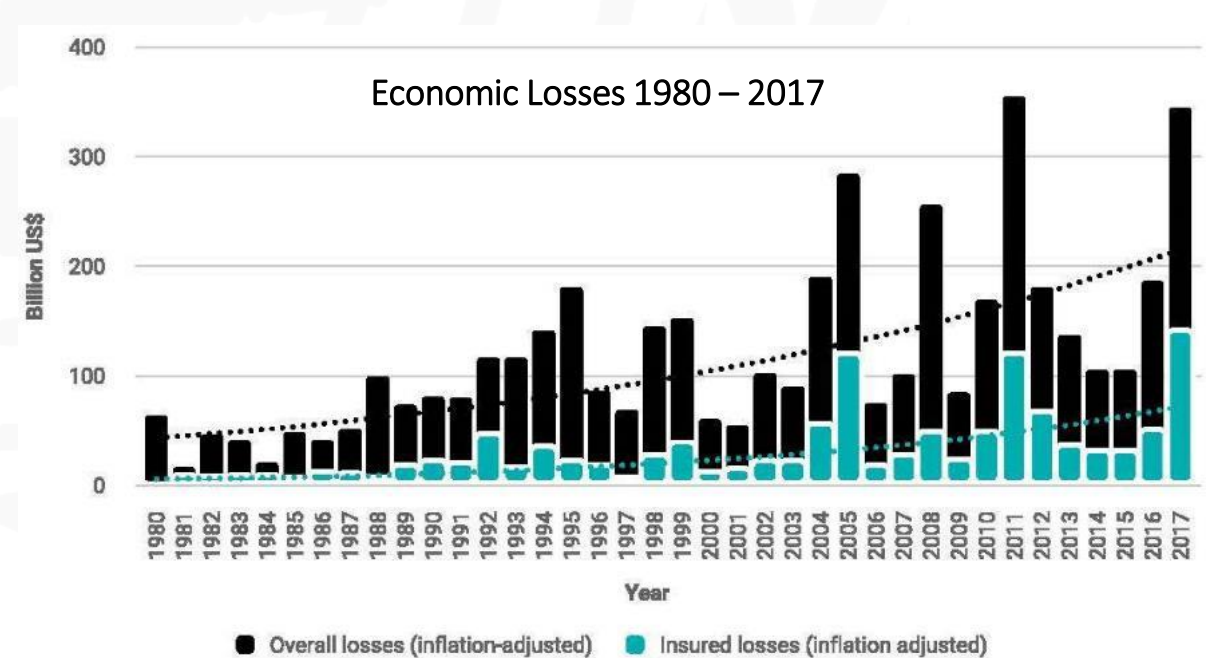
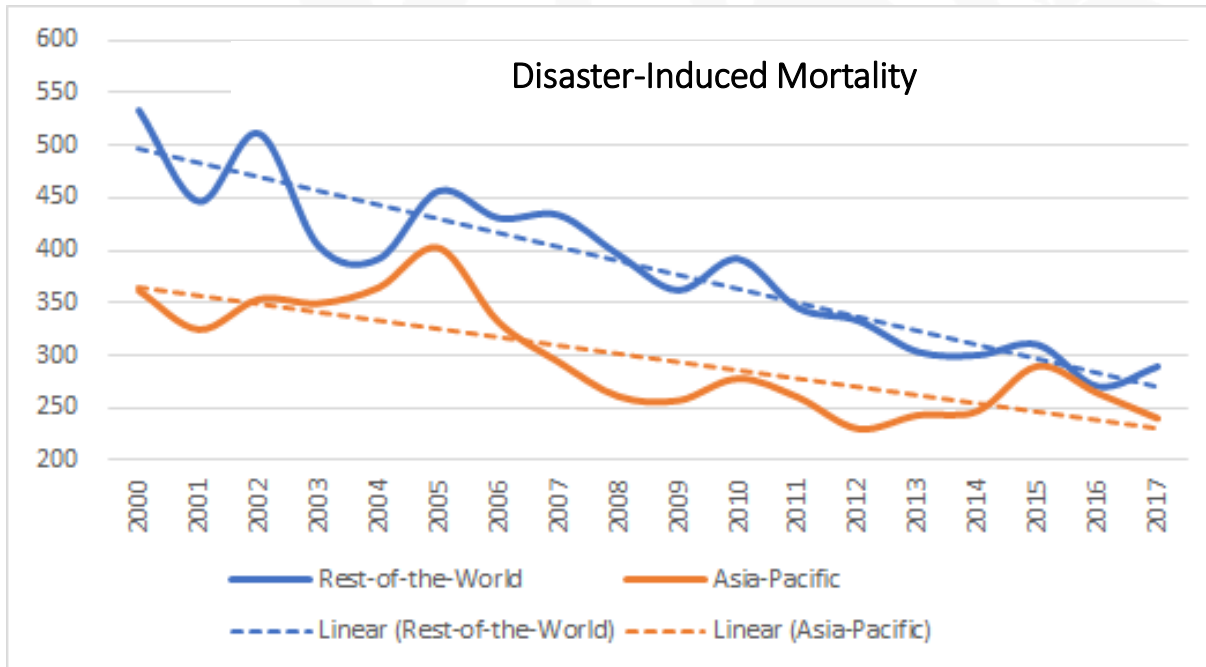
Thanks to Dr. Shirish Ravan, UNOOSA and Dr. Animesh Kumar, UNDRR for their inputs.

7th Joint Project Team Meeting for Sentinel Asia
Nov 14, 2019, Bangkok

Trends in disaster impact in Asia and the Pacific

Decreasing mortality; Increasing economic losses

- **Decrease in mortality**
- **Disaster losses are outpacing the region's economic growth**
- **Annual economic losses stand at US\$675 billion, or 2.4% of the region's GDP (including drought impact)**



Climate Change - the great “risk amplifier”

In the absence of a decrease in emissions, we know impacts of climate change will become more severe.

- **Climate hazards are becoming more intense and unpredictable.**
- **Increase in extreme weather events such as tropical cyclones, floods, droughts, and heat waves**
- **Droughts account for 60% of disaster losses in the region**

- **Climate change challenges disaster predictions and early warnings**
- **High population exposure in Asia-Pacific:**
 - **Pacific and other Small Island Developing States are on the front line of disaster risk.**
 - **Half of Asia’s population live in low-lying coastal zone and flood plains.**



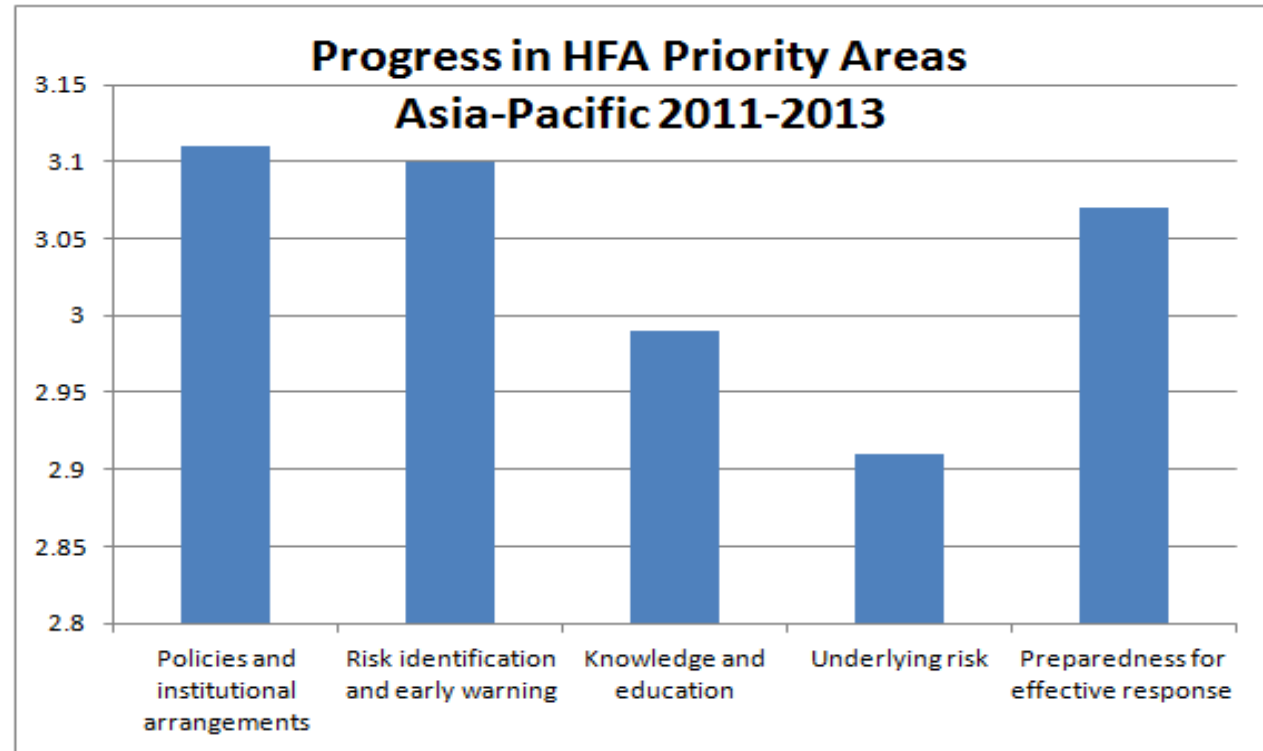
Women fetch water from an opening made by local residents at a dried-up lake in Chennai, India

Drivers of Risk

- **Unplanned urbanization:**
 - Asia Pacific is home to 17 megacities, and 22 are projected in 2040.
 - Asia is home to over 2/3rd of population living in informal settlements.
 - 90 percent of urban expansion in developing countries is near hazard-prone areas.
- **Environmental degradation:**
 - Logging and land clearances have depleted natural protection and increased the risk of floods and landslides.
- **Poverty and inequality:**
 - Poor and marginalized communities are usually forced to live in hazardous areas.
 - Disasters impact the poor disproportionately and slow down/roll-back development gains.
- **Lack of political and weak governance:**
 - Weak institutions and lack of resources to monitor and enforce risk-informed development.

The Hyogo Framework for Action (HFA) learning

- Progress made in disaster management but **much less in reducing risk**
- The space for addressing the **underlying causes of risk in development** under the HFA has not been filled
- Local progress drags behind
- **Risks have increased faster than they have been reduced** and the magnitude of risk is large



13 GUIDING PRINCIPLES

Responsibility for DRR

- States have primary responsibility
- Shared responsibility with stakeholders

Engagement

- All of society
- All state institutions
- Local government empowerment

Approach

- Regard for human rights
- DRR & development relationship
- Multi-hazard & inclusive
- Local expression of risks
- Post disaster action & resolve underlying risks
- Build back better

Partnerships

- International cooperation & global partnerships
- Support to developing countries

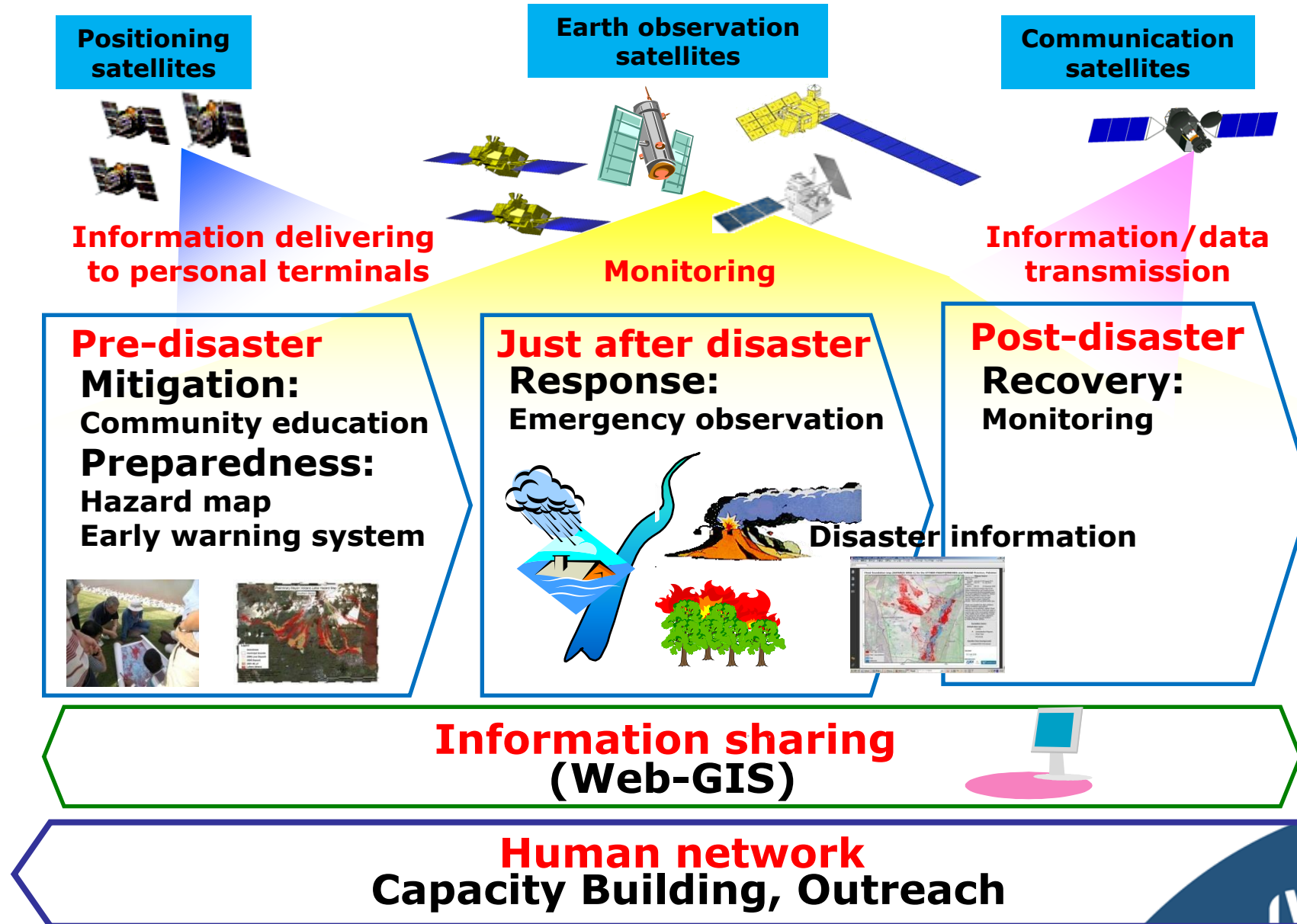
Sendai Framework for Disaster Risk Reduction: 2015- 2030

4 PRIORITIES FOR ACTION	Priority 1 Understanding disaster risk <i>Policies and practices for DRR should be based on an understanding of disaster risk in all its dimensions of vulnerability, capacity, exposure of persons and assets, hazard characteristics and the environment.</i>	National and local dimensions	Regional and global dimensions
	Priority 2 Strengthening disaster risk governance to manage disaster risk <i>Disaster risk governance at the national, regional and global levels is of great importance for an effective and efficient management of disaster risk.</i>		
	Priority 3 Investing in disaster risk reduction for resilience <i>Public and private investment in DRR are essential to enhance the economic, social, health & cultural resilience of persons, communities, countries, their assets, as well as environment</i>		
	Priority 4 Enhancing disaster preparedness for effective response, and to “Build Back Better” in recovery, rehabilitation and reconstruction <i>Strengthened disaster preparedness for response, recovery, rehabilitation and reconstruction are critical to build back better</i>		

Sendai Framework for Disaster Risk Reduction: 2015- 2030



Concept of Sentinel Asia Step 3



How Sendai Framework
addresses the learnings and the
members of Sentinel Asia?

From managing disaster to managing risk

- **Outcome:** Substantial **reduction of disaster risk and losses** in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries ...
- **Goal:** **Prevent** creation of new risk, **Reduce** existing risk and **Strengthen resilience**
- **Scope:**
 - Adds slow-onset, small-scale, biological and man-made hazards
 - Increases the scope of action in recovery, and reconstruction to Build Back Better

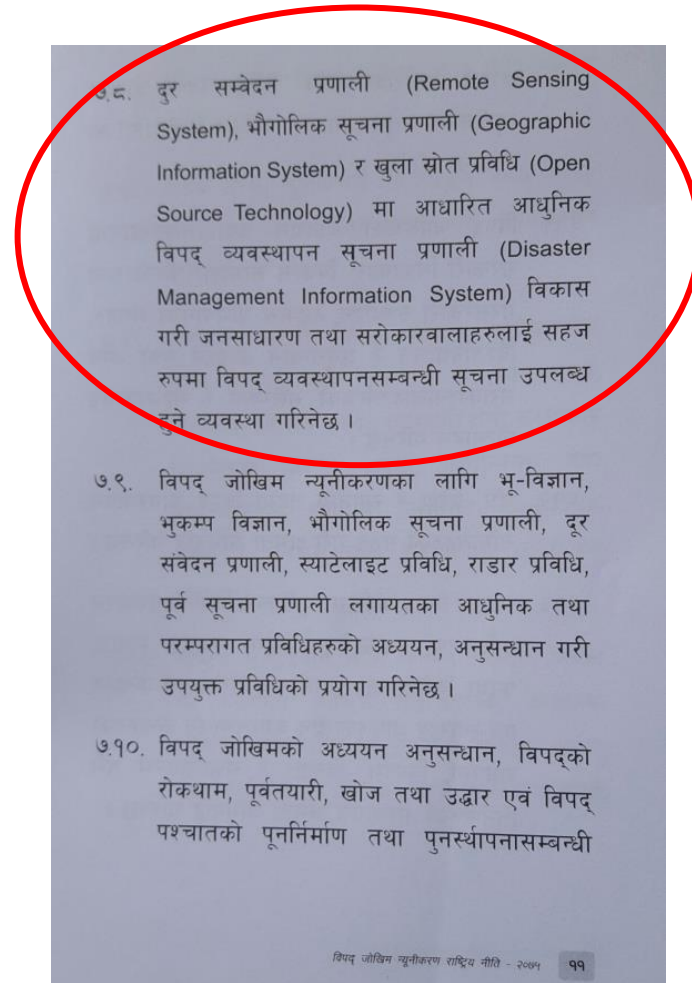
Target E: Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020

E-1: Number of countries that adopt and implement national DRR strategies in line with the Sendai Framework for Disaster Risk Reduction 2015-2030

E-2: Percentage of local governments that adopt and implement local DRR strategies in line with the Sendai Framework for Disaster Risk Reduction 2015-2030



Nepal Disaster Management Strategy refers to Remote Sensing, GIS and Open source technology



Link between Priority 1 and Target E

Understanding disaster risk is required
for
a risk informed DRR strategy and
sustainable development planning

- UNDRR

Earth Observation in DRR Strategies

Advanced Earth Observation systems provide 'SPATIAL RISK INFORMATION'

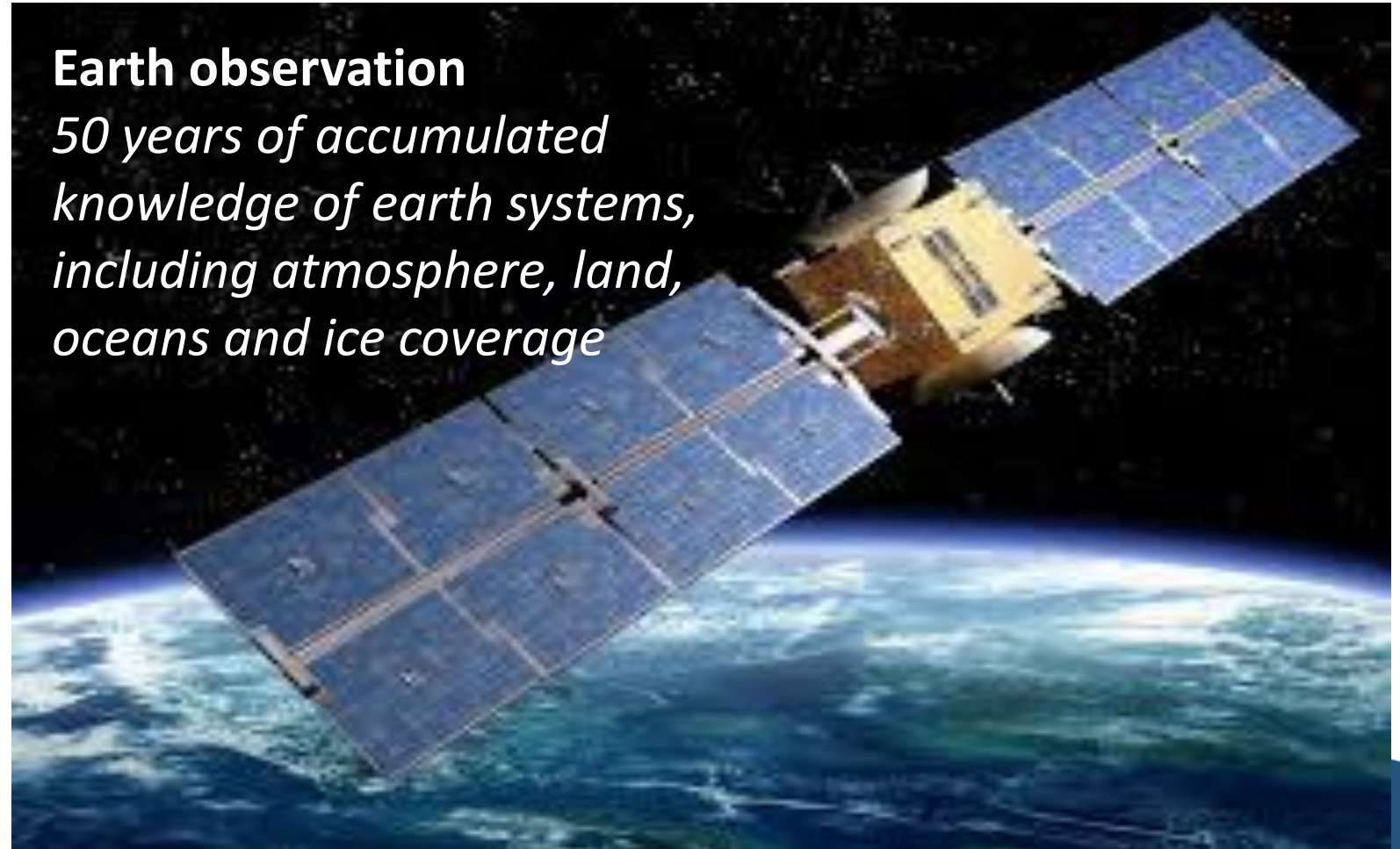


Enhanced understanding of the 'RISKS'



Strategies based on 'RISK INFORMATION' lead to factual DRR STRATEGIES

Earth observation
50 years of accumulated knowledge of earth systems, including atmosphere, land, oceans and ice coverage





Priority 1



Priority 1

Glacial Lakes and Glacial Lake Outburst Floods in Nepal - ICIMOD

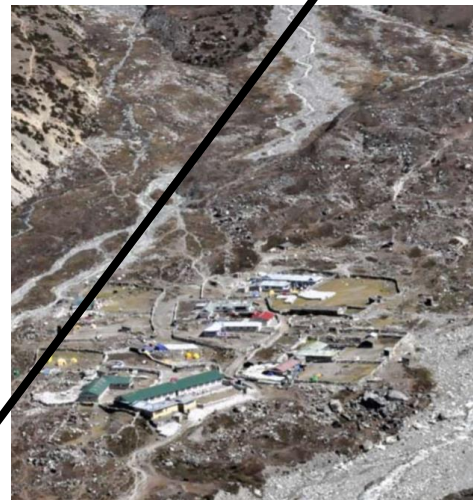
Increasing risk of GLOFs is a main concern in the Hindu Kush Himalayas

Approximately 200 glacial lakes have been identified as potentially critical

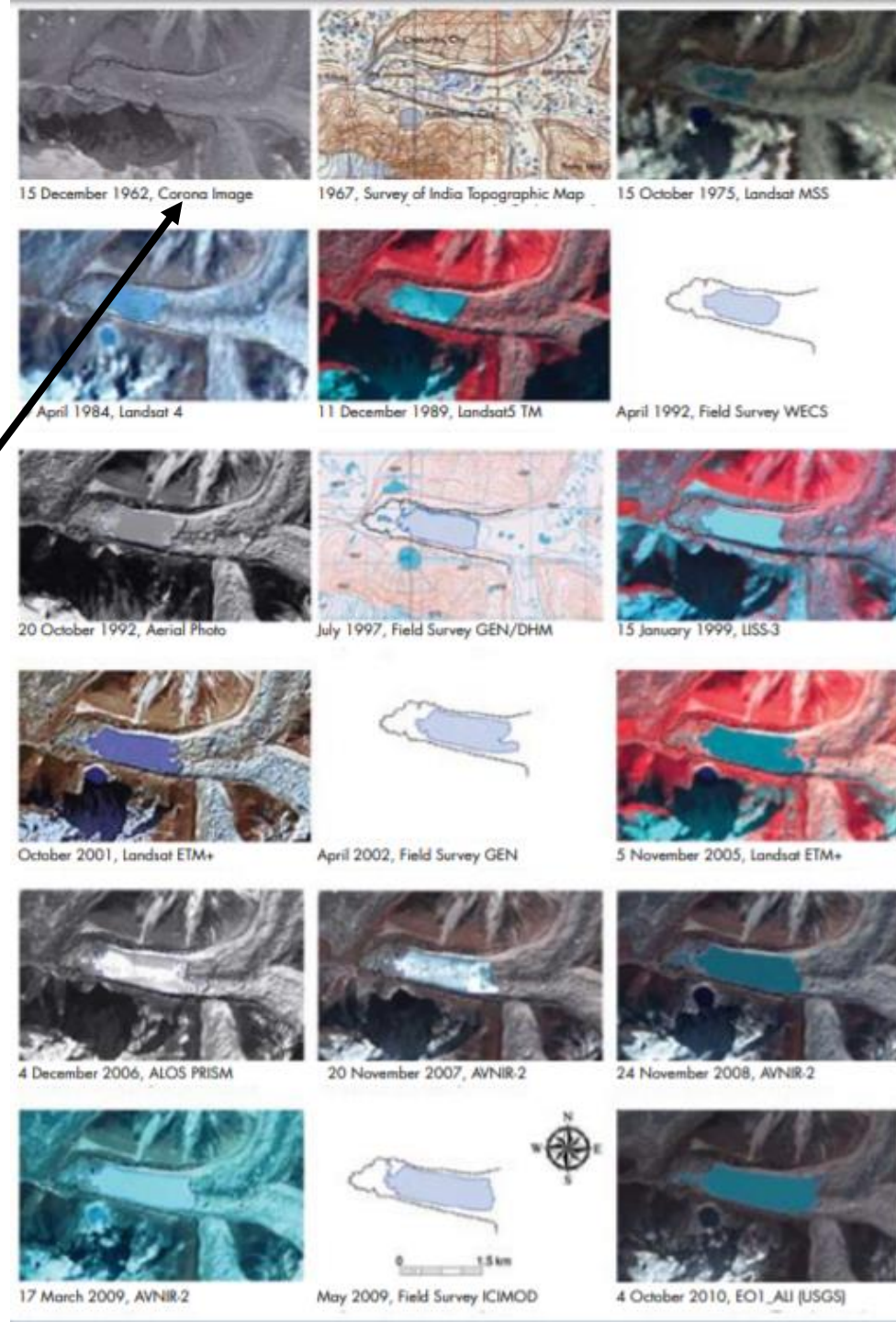
Such information is critical for Disaster Risk Strategy and related policies and actions.

CORONA, first space reconnaissance satellite collected over 800,000 images in 1960s, which were made public in 1995

Priority 1



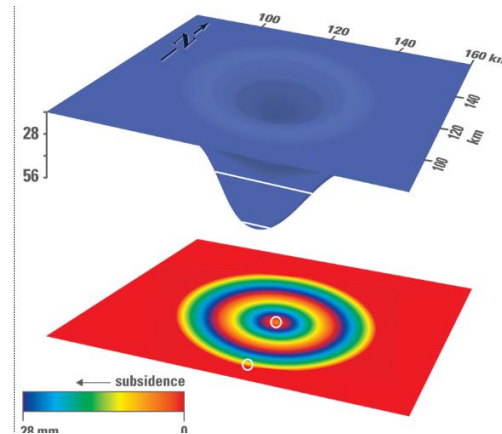
Imja Tsho lake and downstream village, Nepal, October 2010



Space provides evidence based risk information

Predicts and computes risks invisible to human eyes

GNSS based surveys and InSAR analysis gives reliable estimates of the subsidence in an urban environment

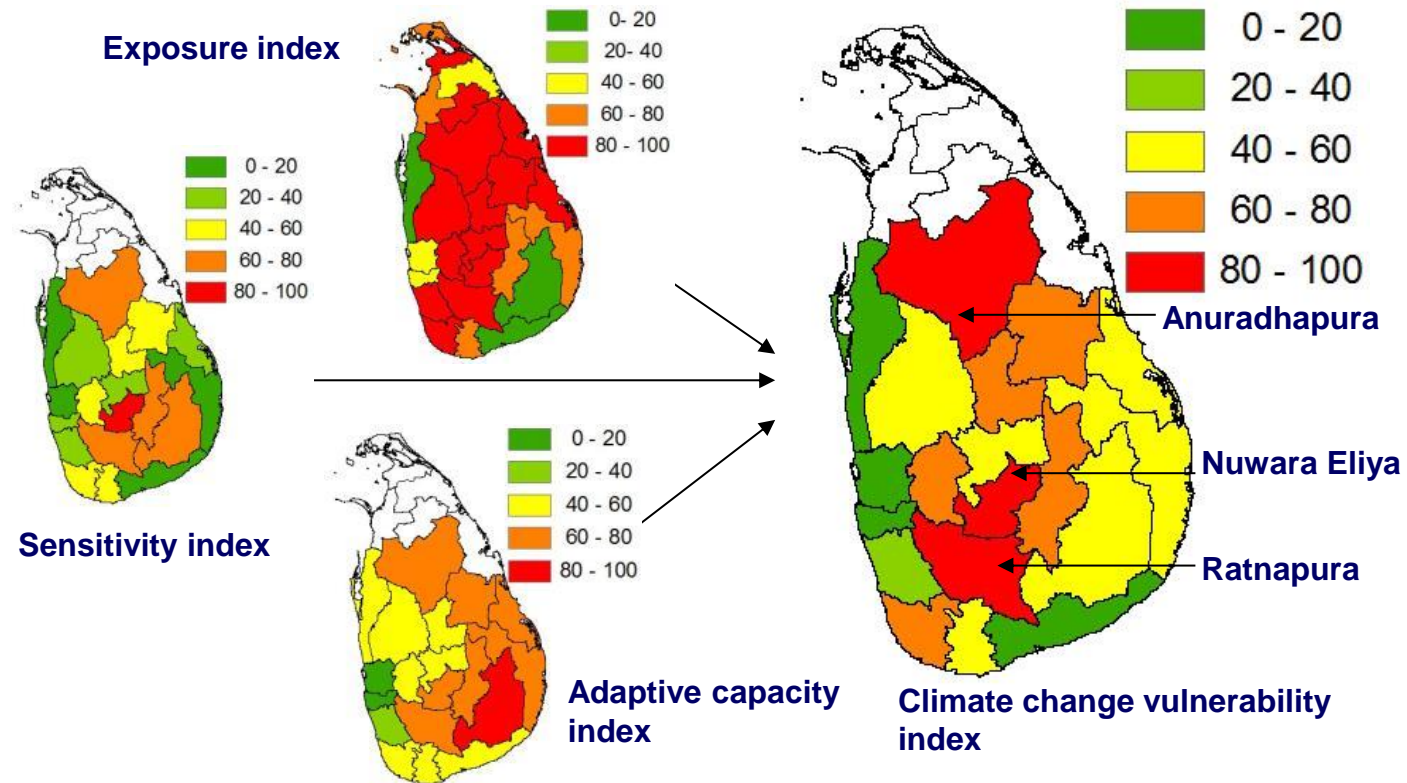


Jakarta sinking fast: Experts (*The Jakarta Post*)
North Jakarta alone could be 90 percent underwater by 2050

2011 floods in Bangkok is related to land subsidence
(Over 800 deaths, USD 46.5 billion economic loss)

Some areas will be more affected than others:

Identifying vulnerability hot spots for climate change to design locally relevant adaptation measures



Priority 1

Integrated Drought Risk Management (IDRM) Framework



Monitoring & Forecasting / Early warning



- Understanding drought risk for planning;
- Indices/ indicators linked to impacts and action triggers;
- Feeds into the development/delivery of information and DSS

Vulnerability & impact assessment



- Identifies who and what is at risks and why?
- Involves monitoring/archiving of impacts to improve drought characterization
- Coping capacity of the communities

Mitigation & response planning and contingency measures



- Pre-drought program and actions to reduce risks (short and long-term);
- Operational drought contingency plans during drought disasters;
- Safety net and social program, research and extension



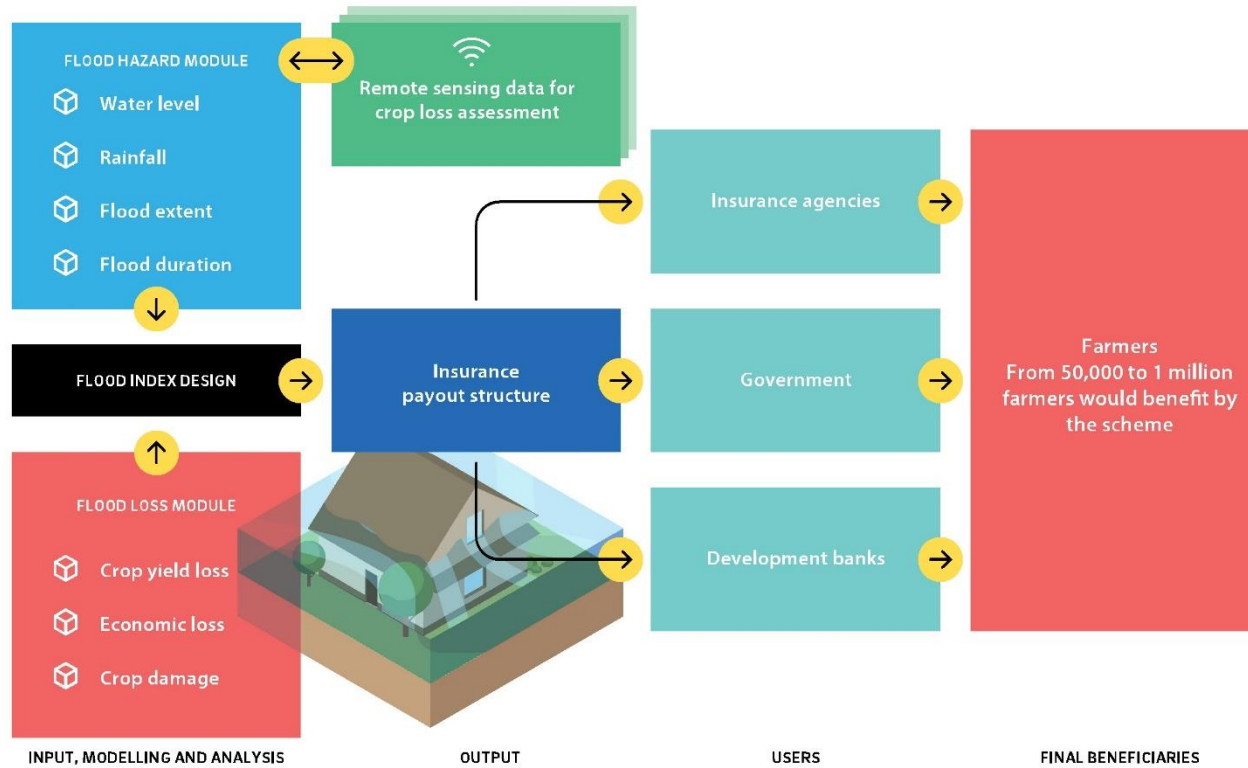
- Meteorological, Hydrological, and Agricultural Droughts
- Drought bulletin

- Drought vulnerability
- Impact evaluation
- Risk transfer using index insurance

- Drought declaration
- Support national policies

Priority 1 to 4

IBFI – Flood proofing communities and agriculture resilience...



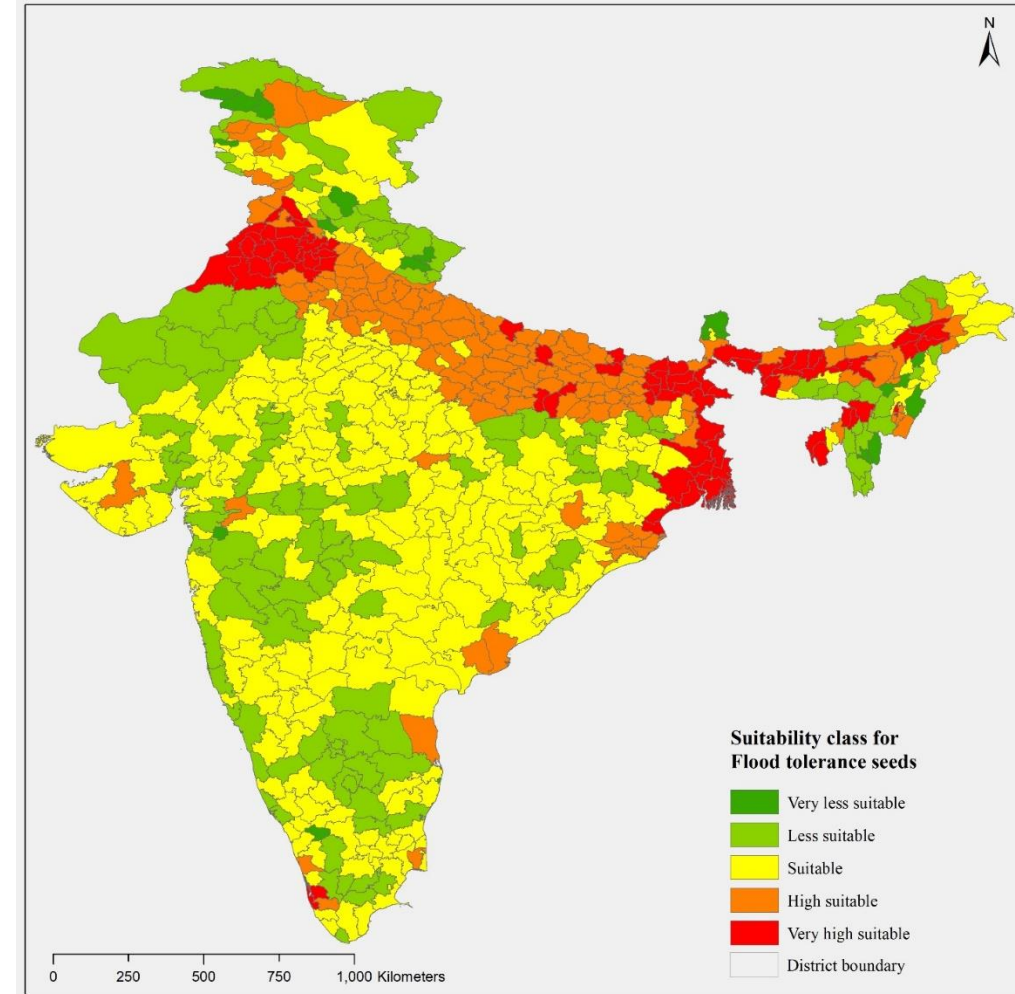
Source: Amarnath, 2017.

Priority 3

Priority 3 and 4

Space technology to strengthen climate resilience policies

- Climate change is posing increased flood risks
- Climate adaptation and resilience (A&R) is a new challenge
- **Policy**
Introducing **flood resilient seeds** to cope with climate variability using historical flood frequency, depth and duration with biophysical information namely Soil type, Soil organic matter and pH, land use and drainage condition to help the disaster affected farmers with the climate resilient seeds;
- Bihar (India) a flood-prone region, the assessment estimated approx. **5194 ton** (0.05 t/ha) for a flood affected Kharif-paddy area of 103,891 ha;
- Thus, risk information contributes to climate resilience policies.

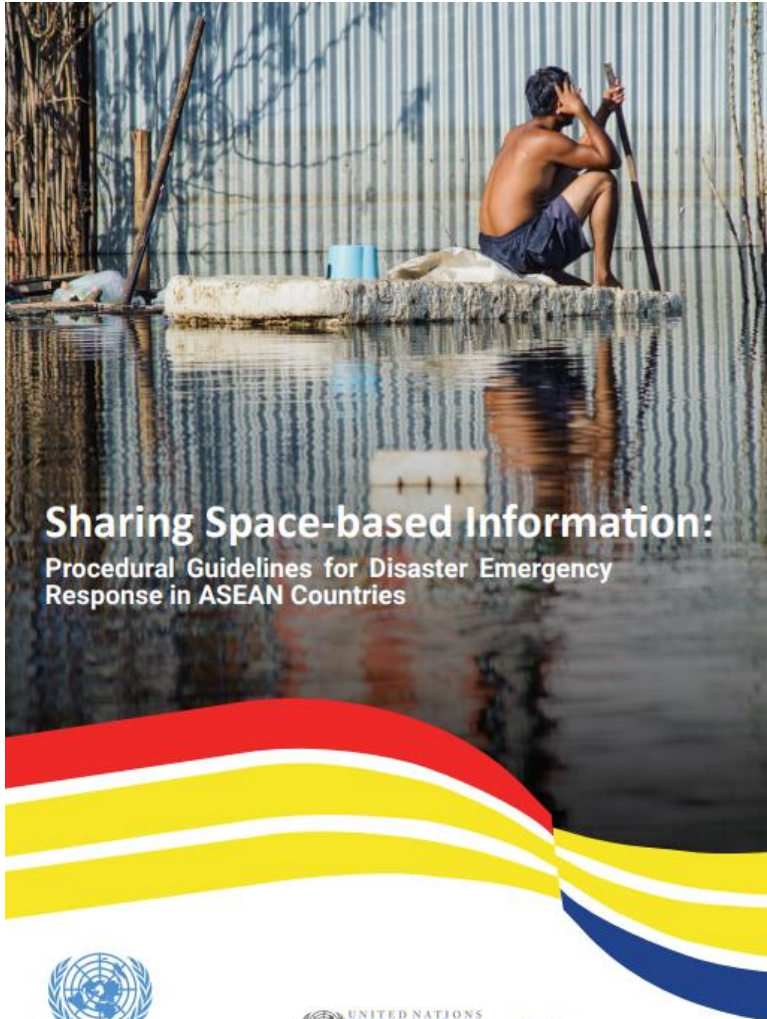


Emergency response mapping support



International Charter
Space and Major
Disasters





Sharing Space-based Information:
Procedural Guidelines for Disaster Emergency
Response in ASEAN Countries



ARMOR



ONE ASEAN
ONE RESPONSE



1st edition



EMERGENCY MAPPING GUIDELINES

Working Paper

Draft Version 1.0 - March 2014



International Working Group on Satellite-based Emergency Mapping (IWG-SEM)



A policy perspective

Disaster Risk Reduction

DRR Strategy

Reference to Earth observation, GNSS and geospatial technologies in DRR strategy, disaster management act, standing order, plans...

Geospatial policies or National Spatial Data Infrastructure

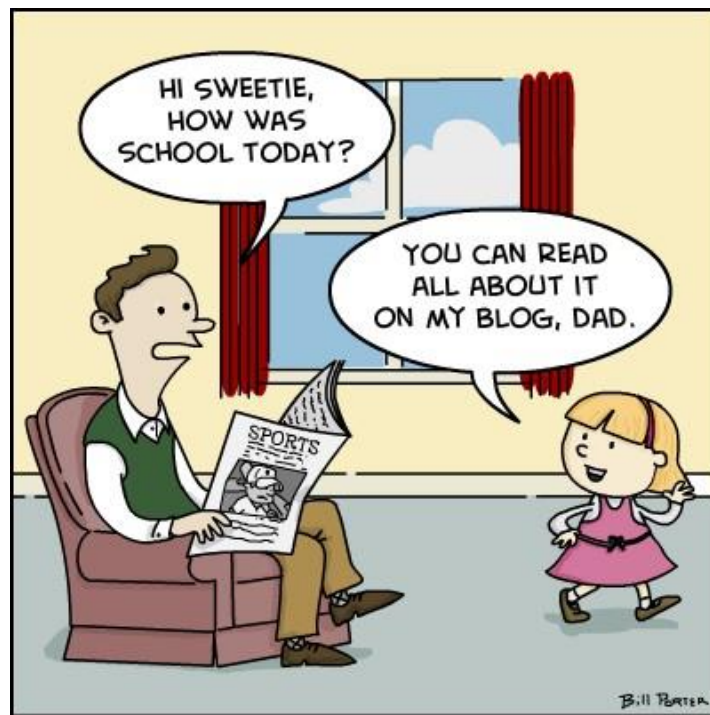
Ensure systematic data generation, standardization, data access, sharing, capacity to use and so on

Capacity building strategy

Trained manpower with DM agencies and stakeholders

Concluding messages

- **Understanding disaster risk** is a non-negotiable requirement for DRR strategy and risk informed development.
- **DRR strategy that is based on risk information** translates into **right policy and action**.
- **Space-based technologies**, mainly Earth observation and navigation, play an important role in providing such risk information.
- **DRR strategy that incorporates use of space-based information** would also drive related policy instruments - **geospatial policy and capacity building strategy**
- **International collaboration and partnerships** for the collection, sharing, and analysis of space-based data among the providers and users is critical
- **Capacity building** at national, regional and international level needs to be a consistent effort
- **UN-SPIDER** offers a platform to provide comprehensive technical advisory support



**Providers of Earth
observation information**



**Decision makers
(Disaster managers)**



Thank You

Failing to prepare is Preparing to fail