



UNITED NATIONS | UNOOSA | UN-SPIDER

United Nations Platform for Space-based Information for
Disaster Management and Emergency Response

Current state and challenges for effective use of Geospatial Information for Disaster Management- Lessons learned from the UN-SPIDER technical advisory missions

Shirish Ravan

shirish.ravan@unoosa.org

United Nations Platform for Space Based Information for Disaster Management
and Emergency Response (UN-SPIDER)

United Nations Office for Outer Space Affairs (UNOOSA)



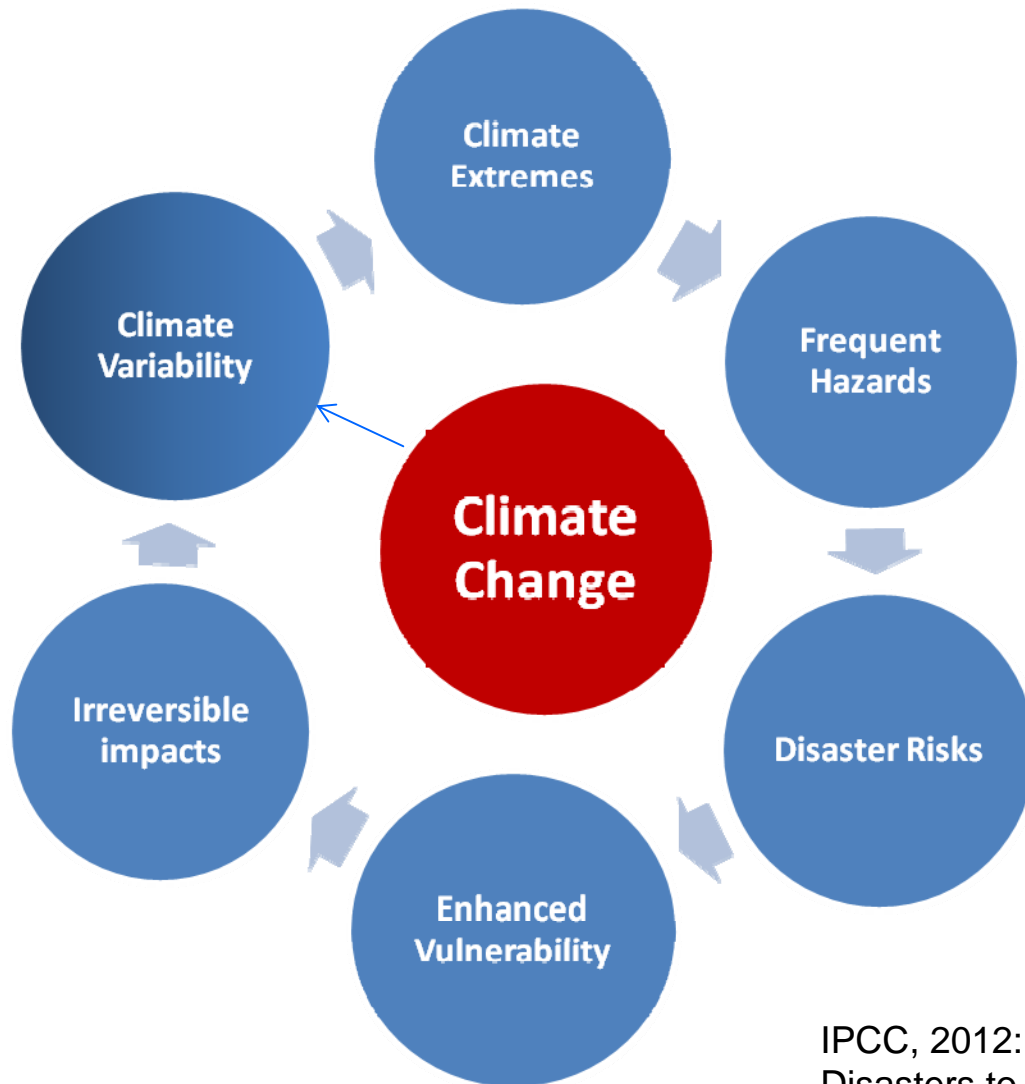


Disaster Risk Reduction (DRR)





Climate Change and Disaster Risks

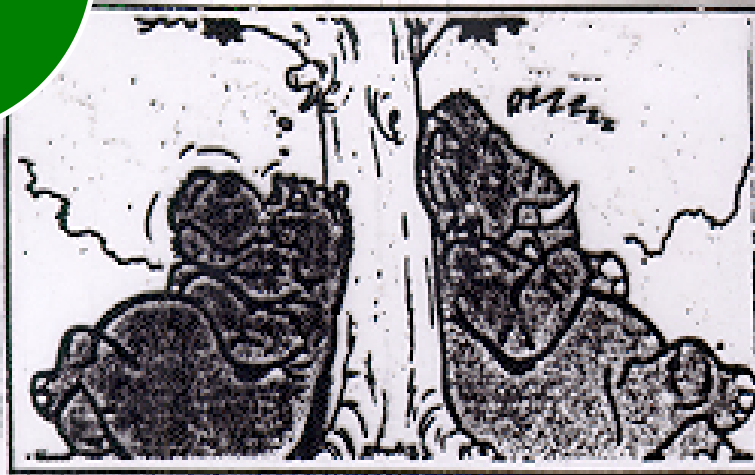


Additional risks due to climate change should not be analyzed or treated in isolation, but instead integrated into broader efforts to reduce the risk of natural disasters.



Ecosystems in DRR and Climate Change

Ecosystem



PEDRR

Partnership For Environment and Disaster Risk Reduction

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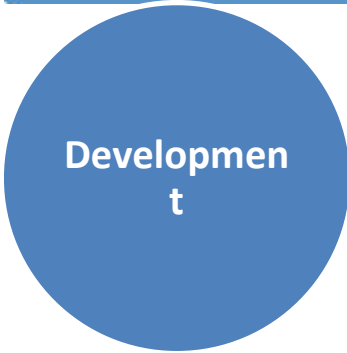


Balanced ecosystems are needed to prevent disasters and reduce its impact

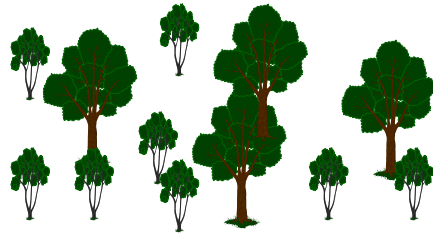
www.pedrr.net



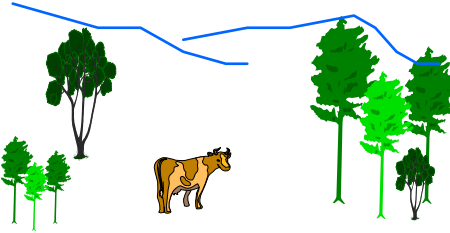
Significance of Geospatial Information



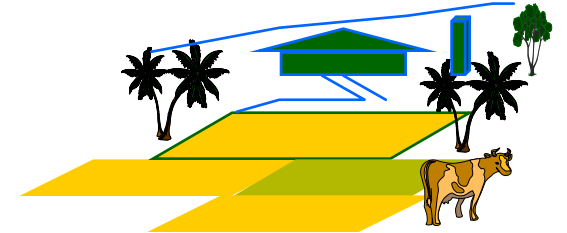
ECOSYSTEM



EDGE



HUMAN HABITATION



ZONATION

CORE ZONE



FRINGE ZONE



ANTHROPOGENIC

CHARACTERISTICS

Biodiversity reserve



Buffer area



Manmade ecosystem

PRIORITY

Ecosystem protection

Ecosystem restoration

Sustainable development

GEOSPATIAL INFORMATION INTERVENTIONS

Ecosystem management
Biodiversity conservation
Habitat characterization
Habitat improvement
Management plans

Ecosystem restoration
Fragmentation study
Monitoring status
Eco-development
Working plans

Landuse planning
Soil & water conservation
Watershed management
Infrastructure planning
Disaster management

Disaster Resilience

Reference:
Ravan & Roy 1997



Disaster Risk Reduction Regional /Global Issue

Trans-boundary Rivers

- Flood early warning
- Flood plain management
- Water management



Shared Coastline

- Cyclone/tsunami early warning
- Threats due to Sea level rise



ASEAN Region

Shared Eco-systems

- Integrated ecosystem management
- Sustained bioresource utilization



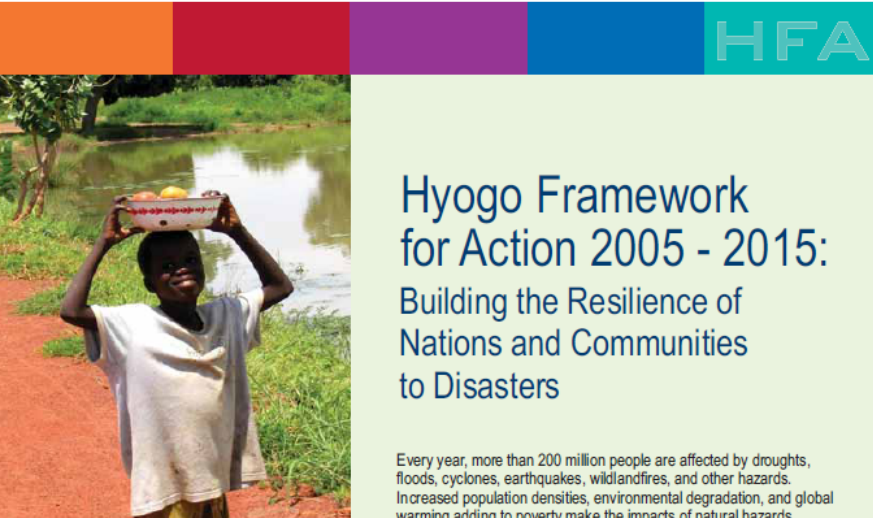
Post 2015 Framework for DRR



International Strategy for Disaster Reduction

Post 2015 Framework for DRR refers to

- Climate Change Adaptation
- Sustainable Development



HFA

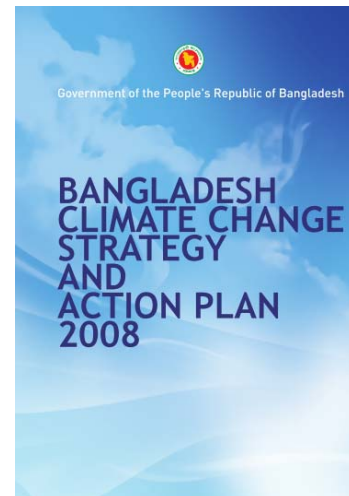
Hyogo Framework for Action 2005 - 2015:
Building the Resilience of Nations and Communities to Disasters

Every year, more than 200 million people are affected by droughts, floods, cyclones, earthquakes, wildfires, and other hazards. Increased population densities, environmental degradation, and global warming adding to poverty make the impacts of natural hazards worse.

The past few years have reminded us that natural hazards can affect anyone, anywhere. From the Indian Ocean tsunami to the South Asia earthquake, from the devastation caused by hurricanes and cyclones in the United States, the Caribbean and the Pacific, to heavy flooding across Europe and Asia, hundreds of thousands of people have lost their lives, and millions their livelihoods, to disasters caused by natural hazards.

“Time is running out. We have less than 8 years left to achieve the goals set in the Hyogo Framework for Action. While some progress has been made, the cruel reality is that – helped by short sighted policies and practices – the vulnerability of our societies continues to grow. I urge all Governments, and regional and local authorities, to make disaster risk reduction a real priority and to accelerate practical steps to make communities safer from disasters. This will mean the investment of human and financial

A dollar invested in disaster risk reduction can save over 4 dollars in relief and rehabilitation costs in future (World Food Programme)



Bhutan National Adaptation Programme of Action

National Environment Commission
Royal Government of Bhutan



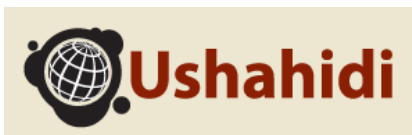
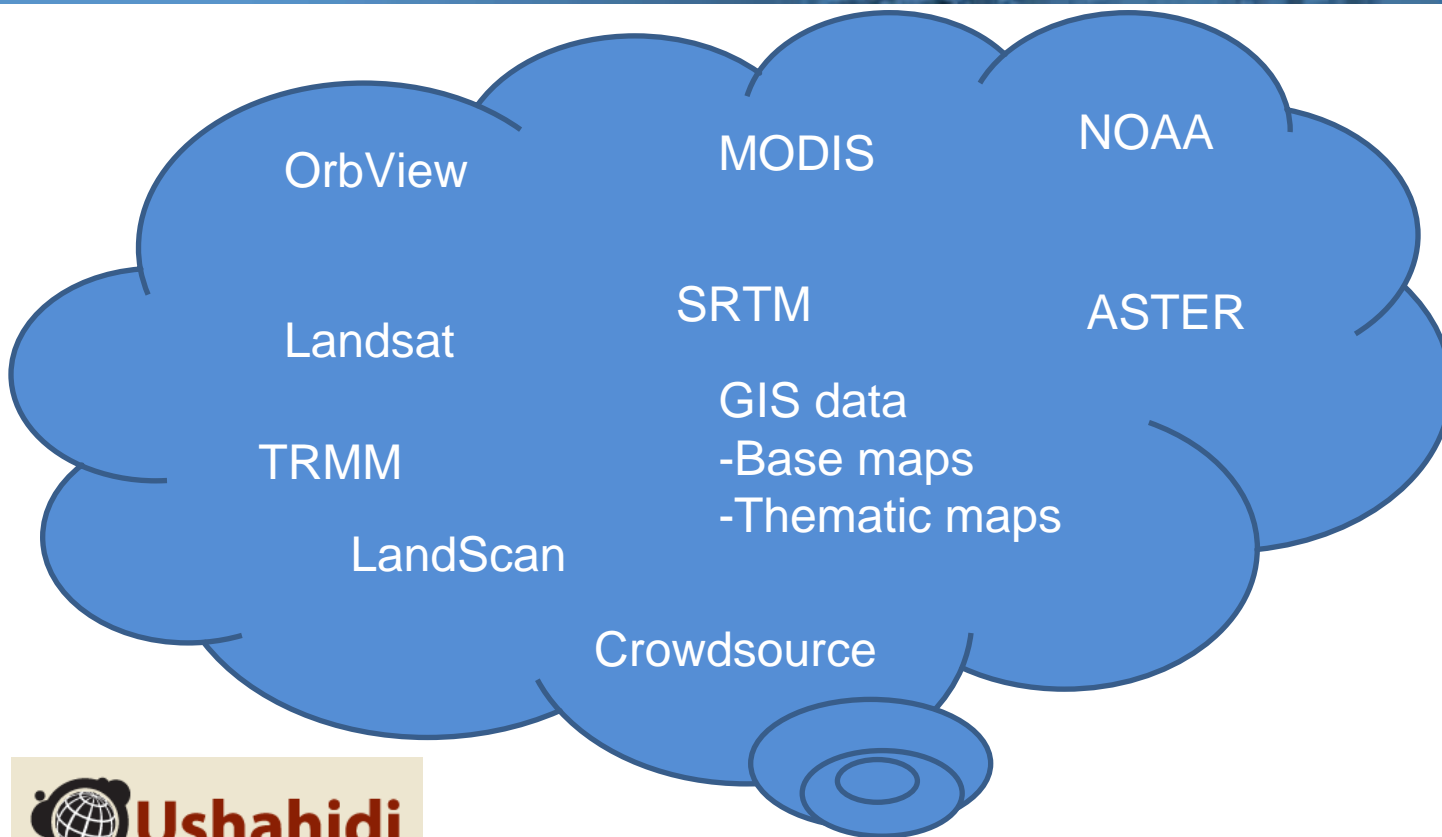


Earth Observation satellites and products – Changing Dynamics

GLCF



NOAA



- Predictions of weather extremes
- Early warning
- Monitoring of disasters and risks



'Space' in Disaster Risk Management



Global scale



Local scale

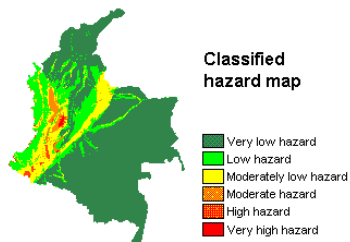


- Mitigation & Preparedness Planning**
- Vulnerability and risk assessment
 - Modelling impact
 - Early warning

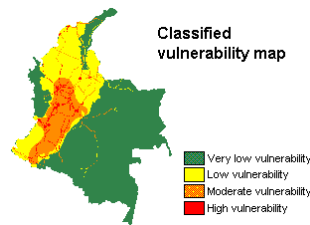
- Emergency Response**
- Specific event
 - Rapid provision
 - Map information
 - Support crisis management

- Recovery & Rehabilitation**
- Situation maps
 - Time series
 - Monitoring

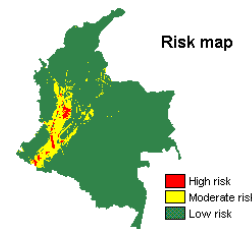
Life Saving Products



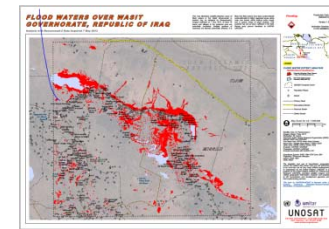
Hazard maps



Vulnerability maps



Risk maps



Response maps



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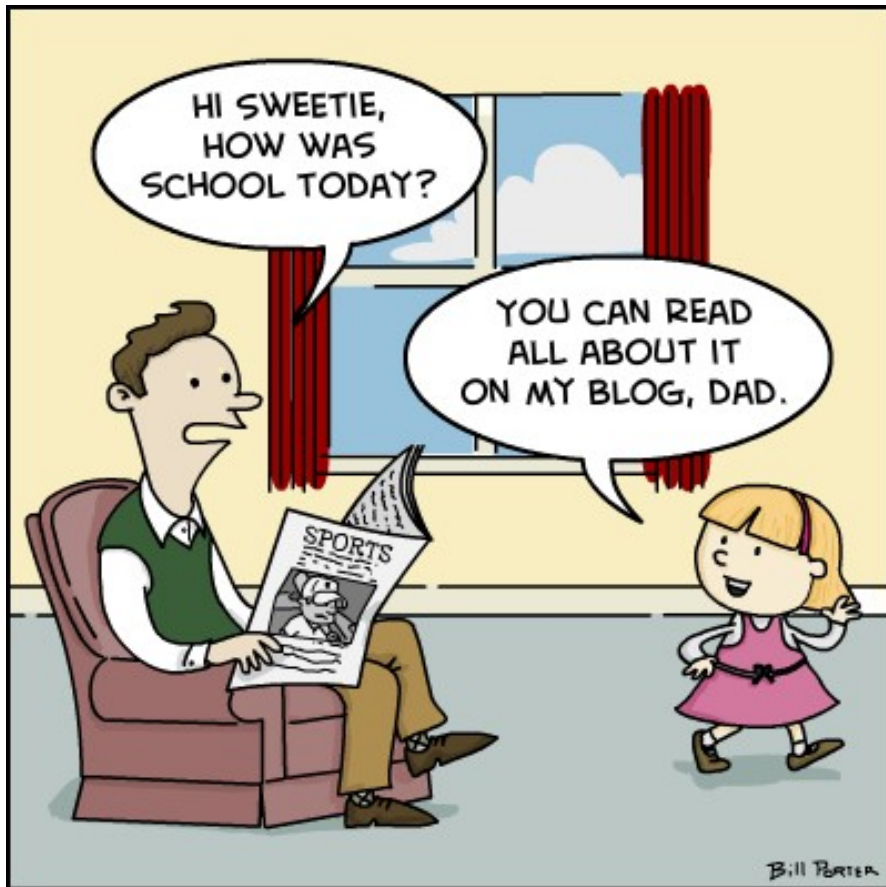
Advanced Earth
Observation
systems provide
accurate '*Spatial
Information*'

Accurate
information
leads to better
understanding of
the '*Facts*'

Strategies based
on '*Facts*' lead to
precise *action
plan*



UN-SPIDER bridges the Gap



Decision makers / End Users (Disaster managers)



Missing link

Providers of geospatial information



UNITED NATIONS
Office for Outer Space Affairs

Network of Regional Support Offices

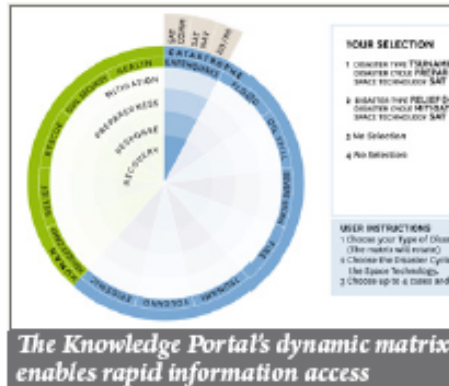


Activities

- Knowledge Management
- Technical Advisory Support
- Capacity Building
- Fostering Cooperation

Knowledge Portal

The **UN-SPIDER Knowledge Portal** is a web-based tool for information, communication and process support. Users can find and share case studies, guides and products through the portal.



Fostering Cooperation

UN-SPIDER bridges the gap between the space and disaster management communities. **UN-SPIDER fosters alliances and creates forums where both communities can meet.**



UN-SPIDER Activities

Technical Advisory Support

UN-SPIDER provides support to countries in assessing national capacity and in evaluating disaster and risk reduction activities, policies and plans with regard to the use of space-based technologies.

Capacity Building

UN-SPIDER facilitates capacity building and institutional strengthening, including the development of curricula and an e-learning platform (e-SPIDER).



...and many more



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Joint publications – UN-SPIDER and JBGIS



Joint Board of Geospatial Information Societies

United Nations Office for Outer Space Affairs

Geoinformation for Disaster and Risk Management *Examples and Best Practices*



The Value of Geoinformation for Disaster and Risk Management (VALID)

Benefit Analysis and Stakeholder Assessment



International Council
for Science - GeoUnions

Joint Board of Geospatial
Information Societies

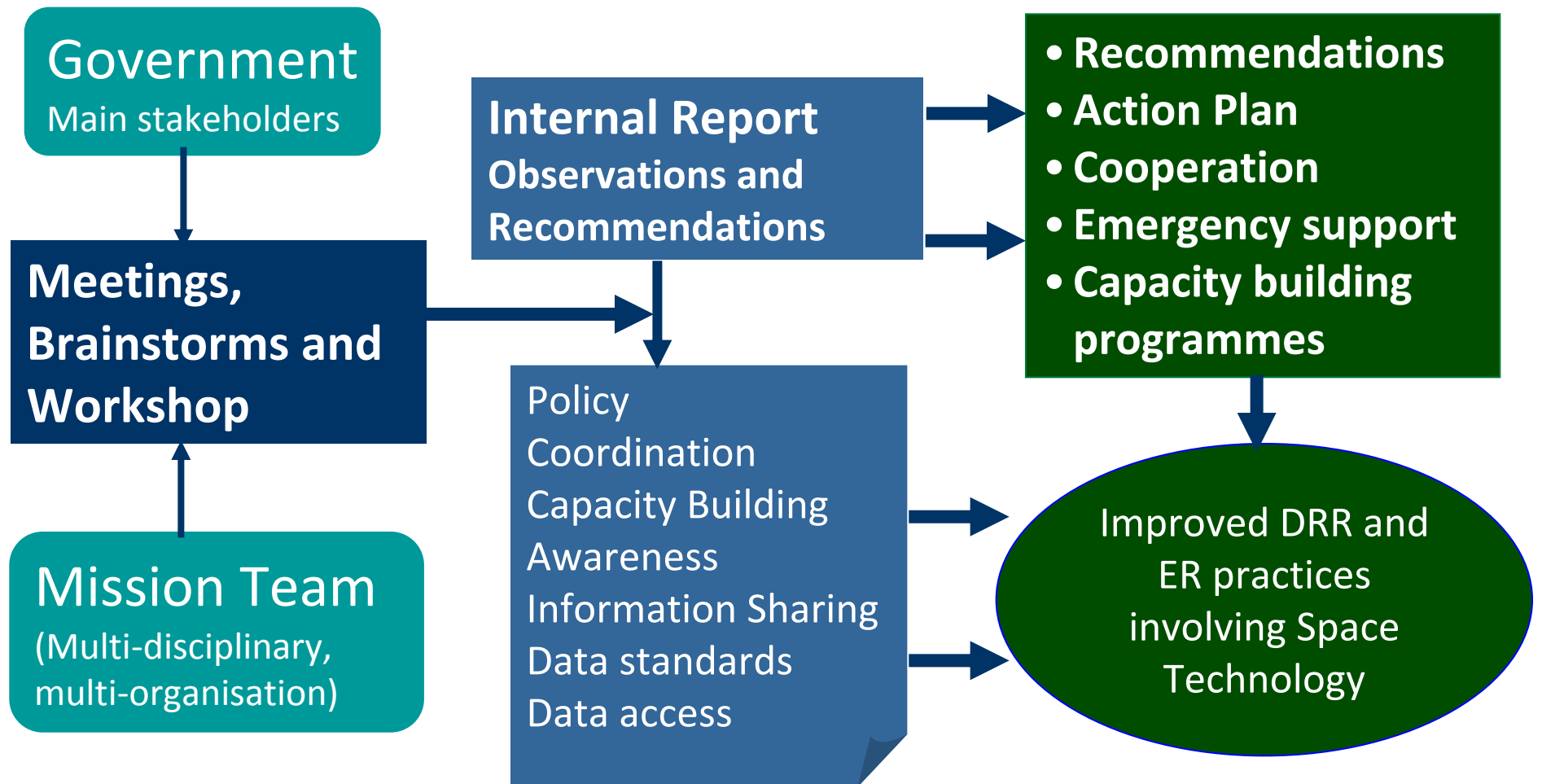
United Nations Office
for Outer Space Affairs

www.un-spider.org

JBGIS
Joint Board of Geospatial Information Societies



UN-SPIDER Technical Advisory Missions





Technical Advisory Support and Missions

ASIA

1. Bangladesh
2. India
3. Indonesia
4. Lao PDR
5. Myanmar
6. Sri Lanka
7. Vietnam

Pacific

1. Fiji
2. Samoa
3. Solomon Islands
4. Tonga
5. Vanuatu



Sri Lanka



Myanmar

Africa

1. Burkina Faso
2. Burundi
3. Cameroon
4. Cape Verde
5. Chad
6. Congo
7. DR Congo
8. Gabon
9. Ghana
10. Kenya
11. Malawi
12. Mozambique
13. Nigeria
14. Sudan



Solomon Islands



Technical Advisory Missions to Vietnam



Mission team

- UN-SPIDER
- UN OCHA
- CANEUS, Canada
- NDRCC, China
- ITC, Netherlands
- CNES-CNRS University, France
- Pacific Disaster Center, USA
- Chinese Academy of Sciences
- Delta State University, USA
- GERENDIS, Spain
- GREEN Mindanao, Philippines



Technical Advisory Missions to Vietnam

Visits to following agencies

- Disaster Management Centre (DMC)
- Department of Dike Management
- Flood Control (Standing Office of Central Committee for Flood and Storm Control - CCFSC)
- National Institute of Agricultural Planning and Projection (NIAAP)
- Spatial Technology Institute (STI), Vietnam Academy of Science and Technology (VAST)
- National Remote Sensing Center (RSC), Ministry of Natural Resources and Environment
- Hydro-Meteorological Forecasting, Ministry of Natural Resources and Environment
- UN Disaster Risk Management team
- Department of Survey and Mapping
- General Department of Land Administration



**One day workshop:
Attended by over 60
officials**





Technical Advisory Missions to Vietnam

Classes of recommendations

- Policy and Coordination
- Data access, availability and sharing
- Capacity Building and Institutional Strengthening
- Specific recommendations to address various stages of disaster management
 - risk reduction,
 - early warning,
 - emergency response etc.





Technical Advisory Missions to Vietnam

Follow up actions

- Wide dissemination of the TAM report and recommendations to all stakeholders
- UNDP and UNRC offices in Vietnam to consider the recommendations in disaster management related programmes
- High level intervention (at ministerial level) to encourage data sharing and follow up of recommendations on Data Policy.
- UN-SPIDER and DMC to organise relevant short term training programmes in Vietnam.
- UN-SPIDER to facilitate the capacity building for the staff of Vietnam Government
- Familiarisation study tours of one or two overseas operational "centres of excellence".
- UN-SPIDER to act as the bridge during emergencies to supply EO products
- VinAWARE, a technical assistance project undertaken by PDC will facilitate the integration of geospatial and early warning information



After debriefing presentation to the Vice Minister of Agriculture & Rural Development



Challenges observed through UN-SPIDER Technical Advisory Missions

UN-SPIDER TECHNICAL ADVISORY MISSION TO VIETNAM
Bringing the Benefits of Space to Humanity



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United Nations Platform for Space-based Information for Disaster Management and Emergency Response

- **State of geospatial information (baseline, thematic and operational datasets)**
 - Case 1: Does not exist with authorities
 - Case 2: Exists, but not complete and well structured
 - Case 3: Exists but not accessible to other agencies
- **Access to high resolution and all weather data**
 - Budget provision to buy post disaster data
 - Access to existing data archives
- **Policies and mechanisms for data sharing**
 - Policies should leverage on potential of geospatial data
 - Disaster Management laws/plans/policies should enforce mandatory use of geospatial information for DRR



United Nations Platform for Space-based Information for Disaster Management and Emergency Response
(UN-SPIDER)



Report of the
Technical Advisory Mission
to
Bangladesh

19 – 23 June 2010



Challenges in mainstreaming geospatial information in Disaster Management



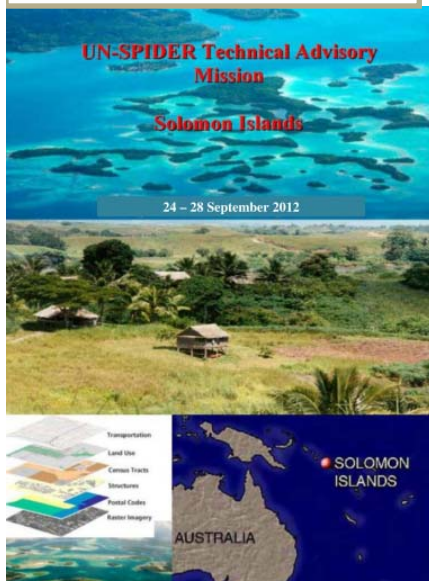
United Nations Platform for Space-based Information
for Disaster Management and Emergency Response
(UN-SPIDER)



Report of the
Technical Advisory Mission
to
Myanmar

19 – 23 March 2012

- Capacity to use space based information in relevant agencies
 - Disaster Management agencies needs capacity to coordinate with providers of spatial information
 - Take benefit of capacity building initiatives of UNOOSA regional centres
- Lack of information preparedness for effective response
 - Geospatial Information scattered in different ministries poses challenge
 - Data interoperability, SDI framework needed





UN-SPIDER Capacity Building Efforts



Training Programme on Space Technology Application in Disaster Risk Reduction and Emergency Response (2-4 April, 2012)

National training programmes in 2013

Sri Lanka

Mozambique

Myanmar

Cameroon

Bangladesh

China



International training programmes in 2013

China- with NDRCC and APSCO

UN Affiliated Regional Centre in India (With ESCAP and IWMI)



Follow up activities



UNOSAT

Emergency Support Mechanisms

OCHA
ESCAP
UNDP



Space Applications Initiatives

UN-SPIDER

Technical
Advisory Support
partners

UN Affiliated Regional
Centres

Asia, Africa, Latin America

Regional Support
Offices & Partner
Organisations

Capacity Building, outreach, technical support



UN-SPIDER – upcoming events

21-22 October 2013: Interactive training workshop “Advances in Space Technology in Disaster Risk Reduction” for NDRCC, China

23-25 October 2013- United Nations International Conference on Space-based Technologies for Disaster Management - "Disaster risk identification, assessment and monitoring“ in Beijing.

27-31 October 2013: International training on Flood Risk Mapping, Modeling and Assessment using Space technology



2012 UN-SPIDER Beijing Conference



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*United Nations Platform for Space-based Information for
Disaster Management and Emergency Response*

Bringing benefits of the space to humanity

Shirish Ravan

shirish.ravan@unoosa.org