



# Geo-Science Application and Technology for DRM

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Yangon, 19-21 November 2014

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Session 2.9.2

*Building Resilience through Innovation and Partnership*

# Utilizing remote sensing, GIS technology, and other advanced tools for disaster risk assessment



Satellite imagery of a tsunami-hit coast



Flooded areas extracted from satellite data using GIS

Multi-hazard Mapping for National Development Planning



Quantifying Earthquake Risk for Cities and Supporting Vulnerability Reduction Measures



## Disaster Risk Assessment and Monitoring

### Bringing sciences, society, and institution together for disaster risk reduction

- Developing advanced methodologies and tools for risk modeling
- Conducting hazard, vulnerability and risk assessments
- Profiling disaster risk for disaster management planning
- Assessing damages and economic losses from disasters, and estimating future loss given disaster scenarios.
- Promoting the use of risk assessment for risk mitigation and risk transfer
- Building capacities and promoting knowledge transfer

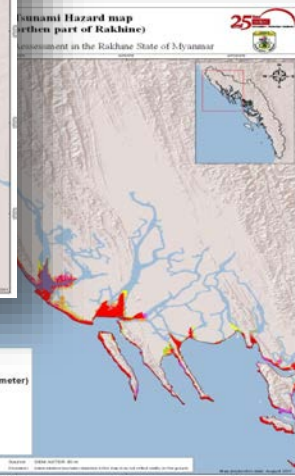
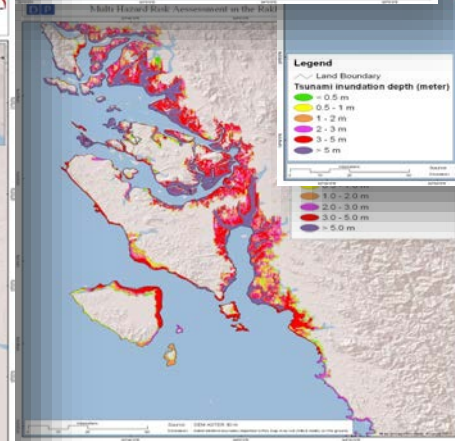
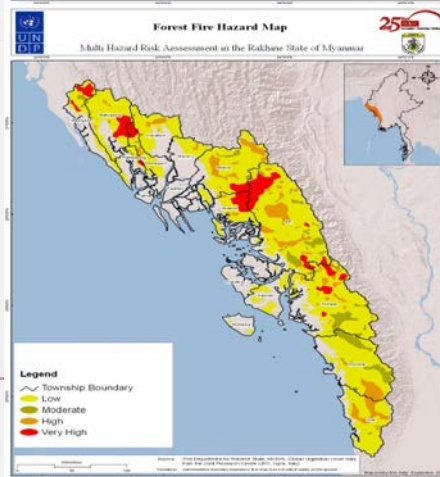
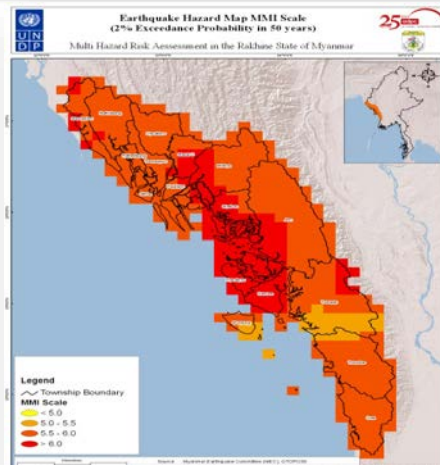
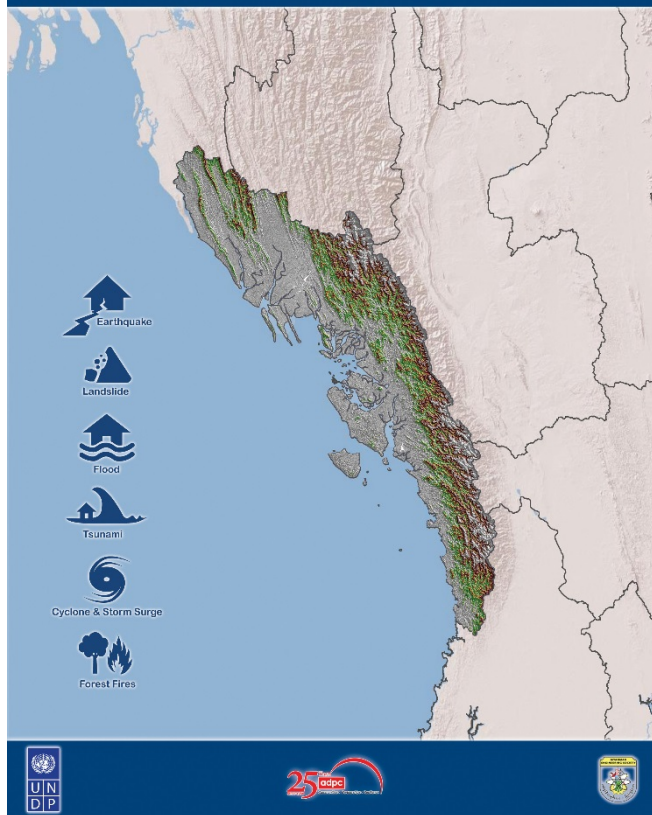
We can conduct risk assessments for a variety of hazards including: earthquakes, floods, storm surge, droughts, epidemics, and landslides.

Our risk assessments have been used for contingency planning, disaster mitigation planning, vulnerability reduction planning, and developmental planning.

# DRAM

# Multi-Hazard Risk Assessment in Rakhine State - Myanmar

## MULTI HAZARD RISK ASSESSMENT IN THE RAKHINE STATE OF MYANMAR







Satellite  
Image

Building  
footprint  
Digitization





Satellite  
Image

Building  
footprint  
Digitization





## Building footprint Digitization





## NATIONAL AND PROVINCIAL RISK ASSESSMENT, CAMBODIA 2014

National Committee for Disaster Management

June 2014

## BASIC COMPONENTS OF RISK ASSESSMENT

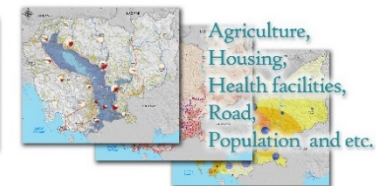
## Hazard

Natural physical phenomenon which can lead to a loss of life or damage to objects, buildings and the environment.



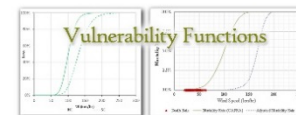
## Exposure

People, property, systems, or other elements present in hazard zones that are thereby subject to potential losses.



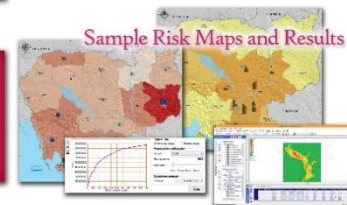
## Vulnerability

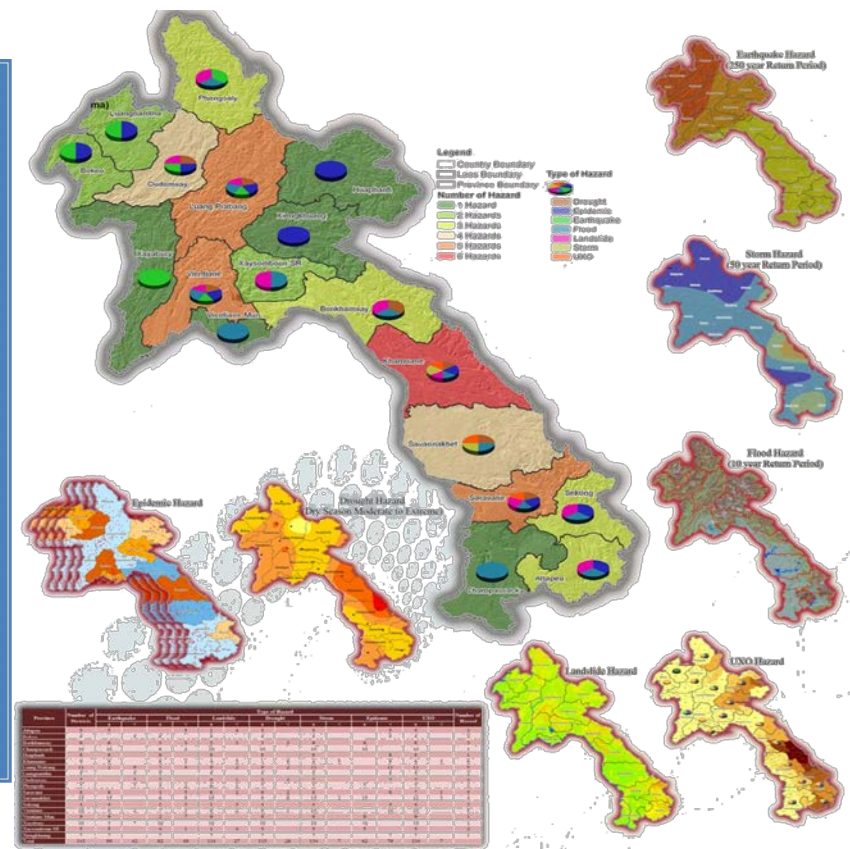
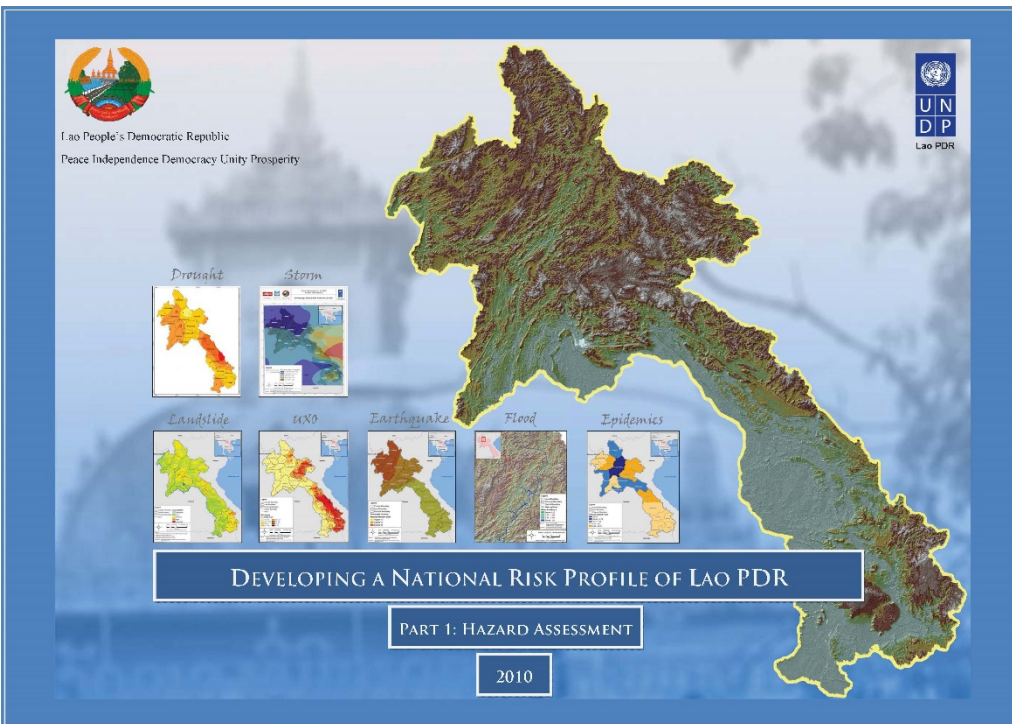
The level of possible loss or injury or damage to humans, objects, buildings and the environment which can result from the nature hazard.



## Risk

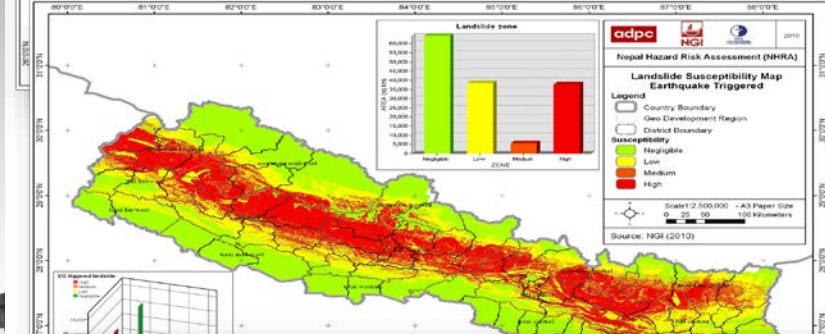
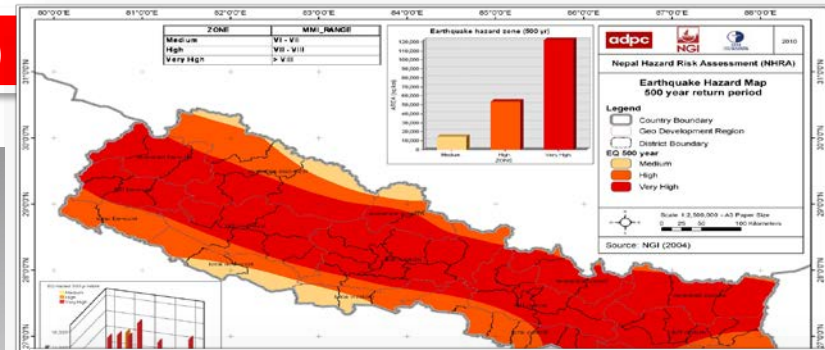
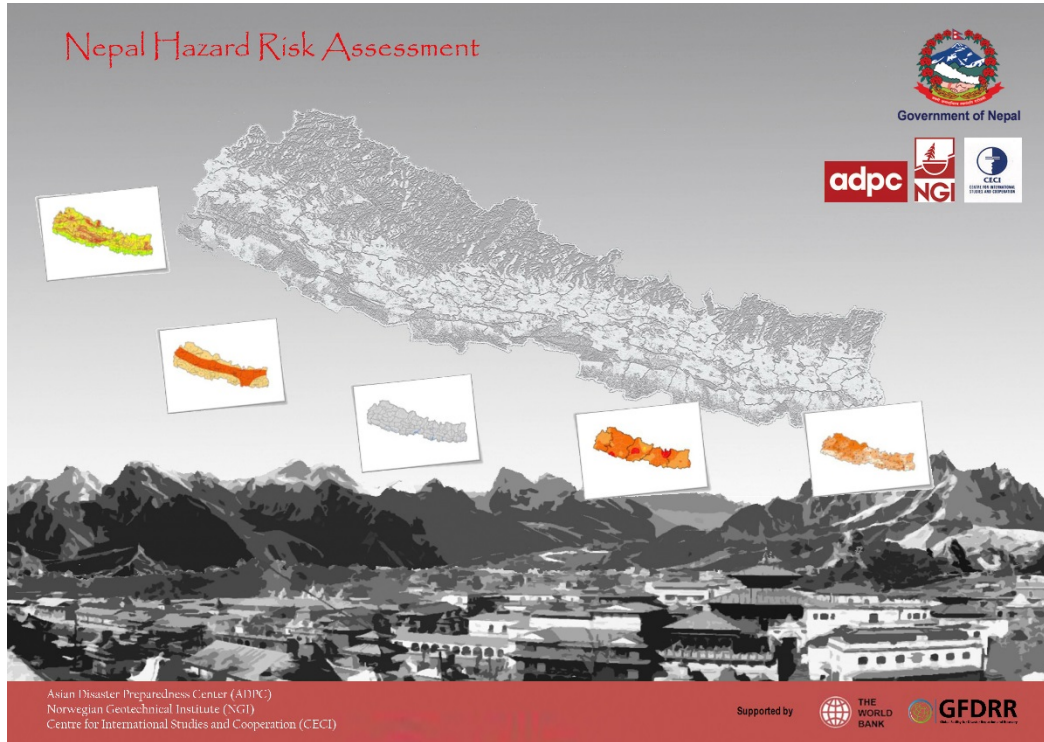
The probability of harmful consequences, or expected losses (deaths, injuries, property, livelihoods, economic activity disturb or environment damage) resulting from interactions between hazards and vulnerability.



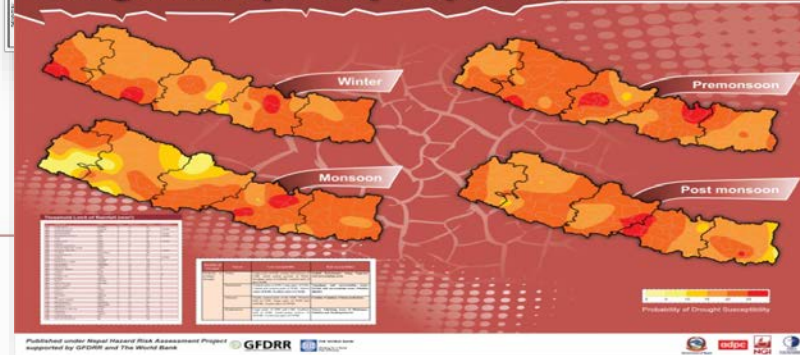




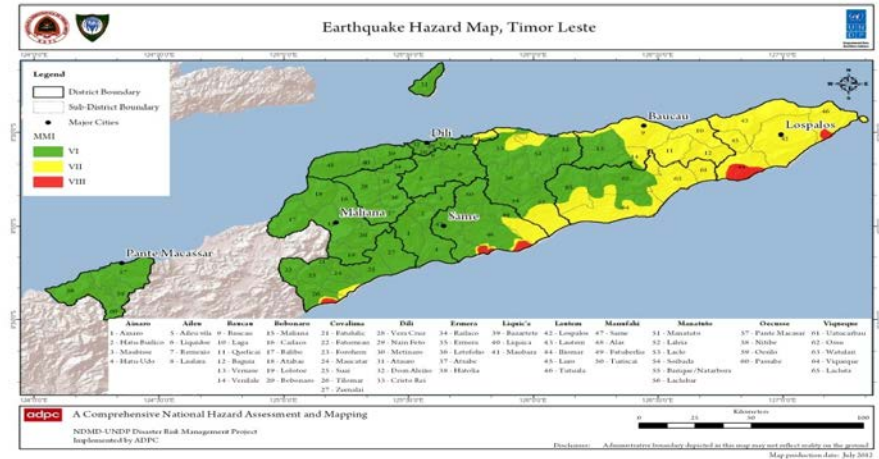
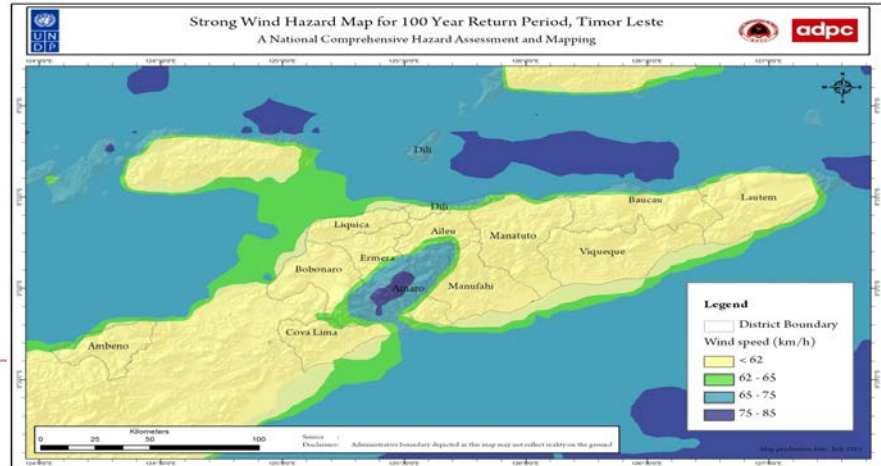
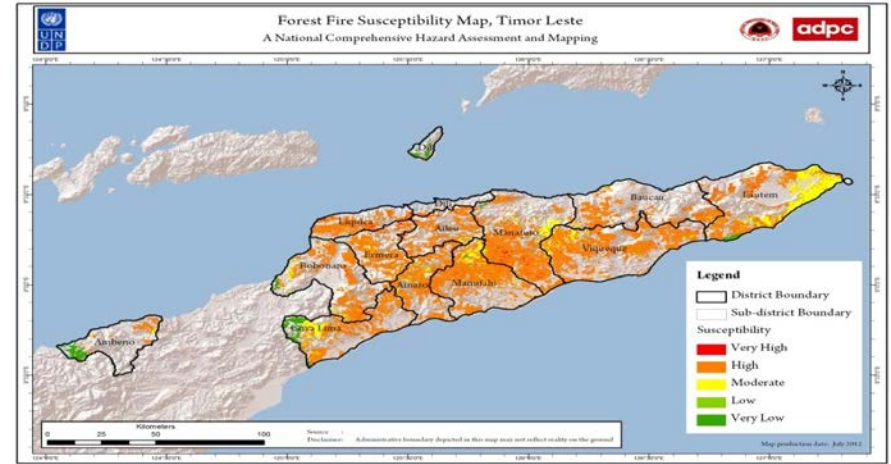
# Nepal Hazard Risk Assessment ( national scale )



## Drought Susceptibility Map of Nepal



# National Risk Profile of Timor Leste( national scale )





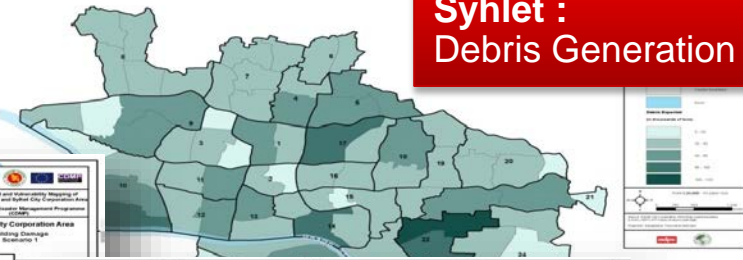




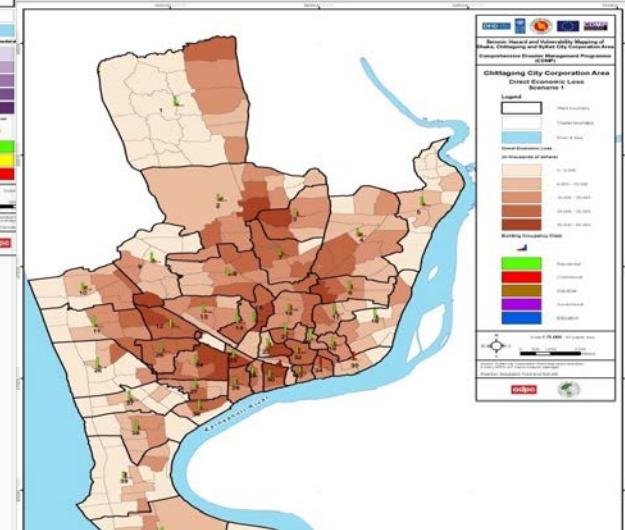
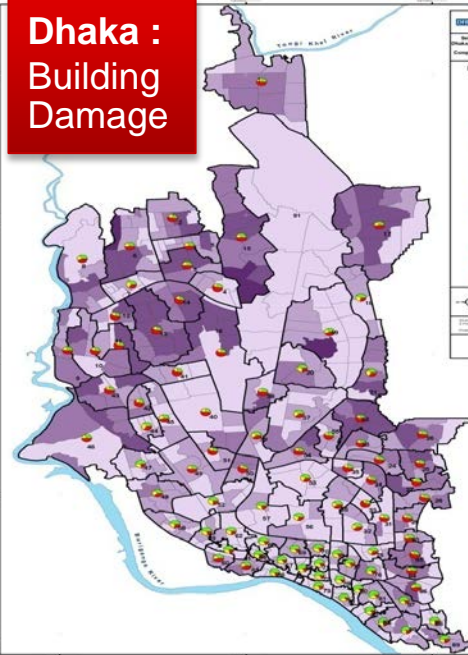
# Disaster Risk Assessment for City Level

Comprehensive Disaster Management Programme (CDMP)  
Ministry of Food and Disaster Management  
Government of the People's Republic of Bangladesh

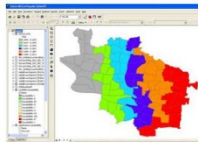
## Sylhet : Debris Generation



## Dhaka : Building Damage



## Chittagong : Economic Loss



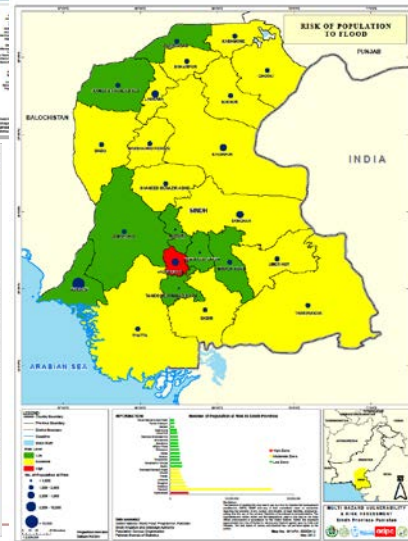
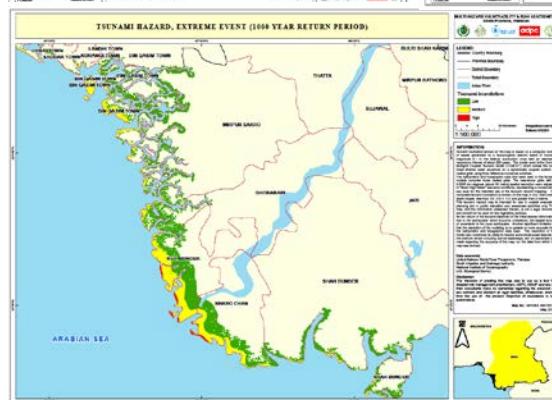
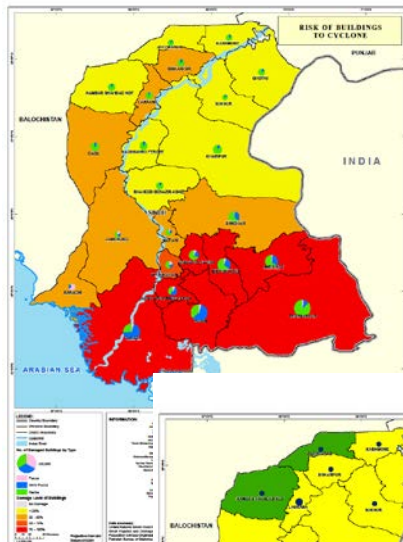
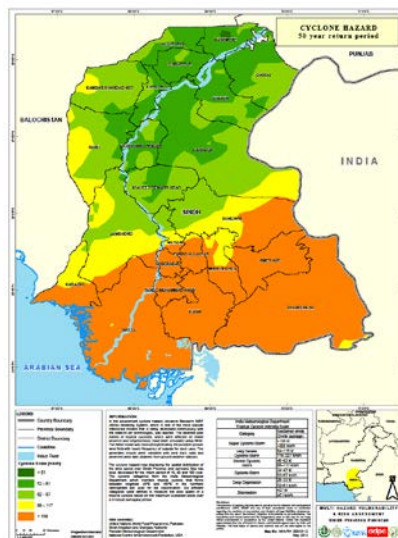
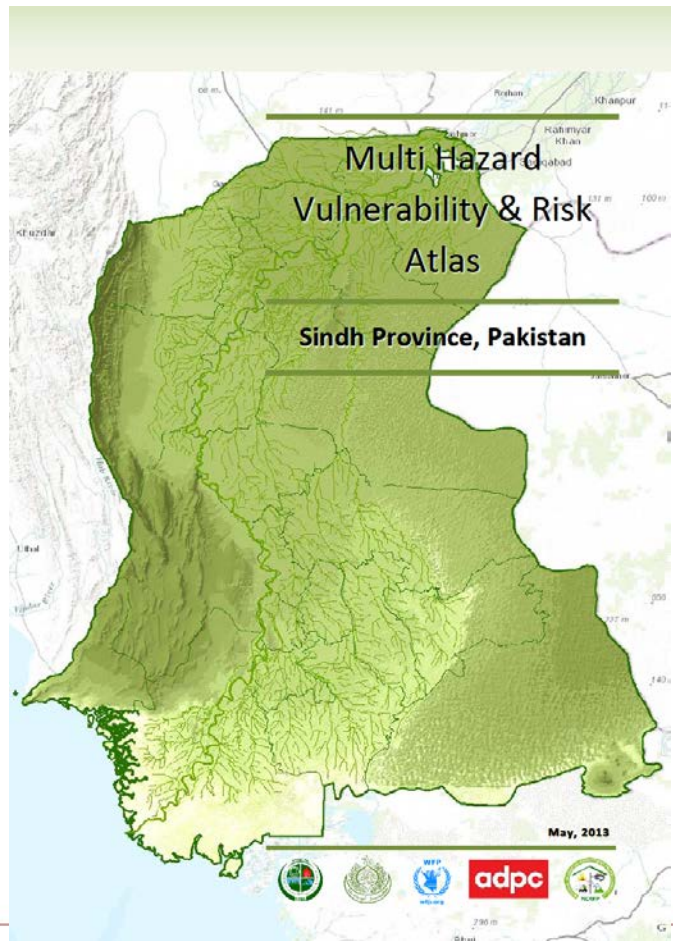
Report C  
Fragility Study  
Reinforced Concrete Building  
in Dhaka, Chittagong and  
Sylhet City Corporation Area

July 20

Submitted By







# Spatial Information and Data Portals for DRM

The screenshot shows the Myanmar Disaster Risk Decision Support System (DRM) portal. The header features a logo and the title "Myanmar Disaster Risk Decision Support System". Below the header is a navigation bar with links: Home, Map, References, Charts, About Us, Contact Us, and User Guide. The main content area displays a world map with a red outline of Myanmar. Below the world map is a detailed map of Myanmar, showing its borders with neighboring countries (India, China, Laos, Thailand) and internal regions. A legend indicates "Risk Assessment Initiative". The right sidebar contains a "What's inside" section with links to "Rakhine Risk Assessment" and "Earthquake Risk Assessment of Mandalay". Below this, there is a detailed description of the Rakhine Risk Assessment study, which assesses the vulnerability of communities in Rakhine State to various natural hazards. The study was conducted in 2011. Logos for UNDP and ADPC are visible at the bottom.

The screenshot shows the Multi Hazard Risk Information Portal of Ministry of Planning Investment (MHRI-MPI). The header includes a navigation bar with links: HOME, LAYERS, MAPS, DOCUMENTS, PEOPLE, and SEARCH. The main content area features a welcome message and a description of the portal's purpose: to provide a platform for hosting geospatial data of hazard and risk that can be used by a wide range of stakeholders. It is an easy-to-use interface allowing users for integrated creation of data and map visualizations, which is developed for Ministry of Planning Investment (MPI) under the Mainstreaming Disaster and Climate Risk Management into Investment Decision (MDDIC) Project with financial support from the World Bank who is acting as administrator of grant funds provided by Japan under the Japan Policy and Human Resources Development Technical Assistance Program to support the Government of Lao PDR (GoL). The project's goal is to support the Government of Lao PDR in its efforts to strengthen the institutional authority and implementation capacity of the Government of Lao PDR at national and sub-national levels to mainstream disaster risk management and climate change adaptation into public infrastructure investments, thereby potentially decreasing the vulnerability of the population and national economy to climate change and natural hazards. Below the main text is a "LATEST LAYERS" section with two layers: "Irrigationheadworks" and "storm\_hazard". Each layer includes a thumbnail map, a description, and a "Download" button. A "CONTRIBUTE" section on the right explains that users are permitted to explore the Multi Hazard Risk in Cambodia, browsing the pre-composed maps, which are presumably useful in creating safer environments in many dimensions. Further customized maps shall be composed using the cartographic tools provided, as per user requirements. An "Upload Layers" button is also present. The footer includes a "Powered by GeoNode version 2.0.1 Developers" notice and logos for UNDP and ADPC.



# THANK YOU

FOR YOUR ATTENTION



<http://www.adpc.net>



<http://www.drrprojects.net>



Group: Asian Disaster Preparedness Center



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