TA 9307: Strengthening Climate and Disaster Resilience of Myanmar Communities Disaster Risk Modelling

GIS application

26 September 2018
Project synopsis

Title: Disaster Risk Modelling
Part of: TA 9307: Strengthening Climate and Disaster Resilience of Myanmar Communities
Aim: Improving understanding of disaster and climate risk among government officials at national level and officials in Ayeyarwady Region
Duration: 10 Months
Starting: 18 January 2018
Client: Government of Myanmar / Asian Development Bank
Implementing agencies: MSWRR (Relief and Resettlement Department), MOTC (Department of Meteorology and Hydrology ), MONREC (Environmental Conservation Department)
Consortium: Deltares, subcontracting RoyalHaskoningDHV and Wageningen University & Research
Scope of Work

• **Undertake disaster risk modeling** at the national level and for Ayeyarwady Region;

• **Strengthen capacity of government staff** on disaster risk management (DRM) and climate change adaptation (CCA);

• **communicating the results** to the decision makers from different ministries and to the Township Planning and Implementation Committee and Township Disaster Management body in Ayeyarwady Region;

• presenting the data and the results of the disaster risk modeling in an **open source GIS platform** to be housed by the Government of Myanmar.
Products of this project

Flood and storm risk models
Open GIS Platform which contains data and model results
Disaster risk maps (for floods and cyclone storm surge and winds)
- “What are the most risky places?”
- “Who / What is at risk?”
- “How much is at risk (monetary value)?”
- Will the risk change in the future (e.g. CC)?”

Can be used for:
- Planning purposes (land use planning)
- Investment decisions (public / private)
- Protection measures (costs and benefits=avoided damage)
- Preparedness measures / planning for relief
- Impacts of Climate Change
- And more…
The project

Climate Change Scenarios
Flood control measures

- Hydro-meteorological data, elevation data, embankments etc.
- Hydrological / Hydrodynamic Modeling

- Exposure maps
- Flood hazard maps for selected return periods
- Socioeconomic scenarios and adaptive measures
- Land use, household and infrastructure data

- Exposure
- Flood Risk Maps
- GIS application

- Hazard
- Coping measures
- Vulnerability assessments
- Damage and casualties functions

- Vulnerability
Moddeling

- National scale flood model
  - HEC-HMS & WFLOW-SMB (Simple Bucket Model, CSIRO)
- Cyclone Wind Hazard Model
  - DMH developed tools for cyclone wind hazard modelling
- Storm Surge Hazard Model
  - Delft3D in FEWS storm surge forecasting system

Modeling on Ayeyarwady level
- Sobek is used (2D model)
Exposure

- Population data (including % male, Female, population groups, female headed households)
- Agricultural data
- Livestock
- Aquaculture
- Housing data
- Landcover map
- GDP
- Schools
- Power plants / power lines
- Post offices
- Highways (& main roads)
- Rural roads
- Special economic zones
- Projects van DRD for Water supply, offgrid, evergreen project.
Still looking for GIS data on

- Rail roads (we have a pdf map but no GIS data)
- Powerplants (we have a pdf map but no GIS data)
- Highway data (OSM but doesn’t cover everything)
- Hospitals
- Firestations
- Other public buildings
Calculate the risk with the Delft Fiat tool
Demo

- [https://arcg.is/85b4y](https://arcg.is/85b4y)

Myanmar Disaster Risk Platform

Welcome to the Myanmar Disaster Risk GIS Platform. This platform is developed for the TA project “Strengthening climate and disaster resilience in Myanmar”. The spatial data from this project is stored in this platform. The data will help you to:

- Understand climate and disaster risk in Myanmar
- Undertake disaster-resilient investments

Information in this platform can be found on:

- Hazard
- Exposure
- Risk

On the last slide it’s possible to combine and create your own maps.

Hazard maps
Exposure data