

## Bangladesh flood map using GIS and remote sensing

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After the development of a flood action plan (FAP) in 1988, the Bangladesh government has led practical actions for nationwide flood management. However, Bangladesh is on its way to improve the capacity and knowledge of sustainable infrastructure and non-structural countermeasures. Local government and communities are also struggling to mitigate flood risk and severe damage. Therefore, a government-driven strategy of capacity building on sustainable flood risk management is an inevitable process to support local authorities' responsibility under the leadership. This pilot study introduced the GIS-based integrated flood management (GiFM) for improving nationwide flood risk management at different levels from communities. First, we proposed the conceptual framework of GiFM to strengthen local government-based capacity focusing on a cost-effective way under the FAP. Then the proposed GiFM employed hydro-GIS geo-database and Earth Observation (EO) data for sharing information on the current flood risk situation including flood monitoring, forecasting and river embankment erosion in transboundary river basins. For flood risk reduction, the prototype of GiFM showed a good example of consultation and action plan to realize high-priority demands at all levels of multi-stakeholders, from decision makers to residents who are living in vulnerable low-lying floodplains of Bangladesh.

Ideas and lessons learned from the study implementation are listed below:

- (1) According to the results of the inventory survey with GIS mapping, most embankment failures along the Manu River concentrate in the outer bends of the river.
- (2) GIS-based maps with MODIS-detected flood analysis can show the conditions of embankment failure and help understand the relationship between the critical points and inundation areas.
- (3) GiFM will be able to improve the prototype of a flood hazard map and contribute to community-based disaster risk reduction and sustainable water related infrastructure management as non-structural measure. In particular, it will be very useful for undetected flood areas in developing countries like Bangladesh.

Keywords: Bangladesh, Integrated flood management (IFM), Flood action, Risk information