

## **APPLICATION OF REMOTE SENSING AND GIS FOR FLOOD VULNERABILITY ASSESSMENT AND MITIGATION PLANNING IN MUNSHIGANJ DISTRICT OF BANGLADESH**

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### **ABSTRACT**

The geographical position and topographic composition have made Bangladesh vulnerable to natural disasters. Bangladesh is frequently hit by natural disasters, most of them related to water, like flood, drought, riverbank erosion and cyclone associated storm surge etc. Munshiganj district is situated on the mixed floodplains of rivers the Ganges (Padma), the Brahmaputra (Jamuna), and the Meghna. Every year even during normal rainy season floodwater drains through bordering rivers of the area to the Bay of Bengal. Most of the severe floods affect the area and cause maximum damages to the lives and properties in comparison to other areas. On the other hand, the area is densely populated and the number is rapidly increasing rising the number of people at risk.

A flood vulnerability map of Munshiganj district was created using a hydrological model output (Mike-11), and remote sensing and GIS data. In terms of flood extent and depth, it was found that about 2.61% of the total area of the district falls under high vulnerability, 45.31% under medium vulnerability, 13.96 % under low vulnerability & the rest 38.12% is not vulnerable to flood. Landsat TM data was used to generate a land-use map and combining this land-use with population data, a population distribution map was produced according to land use types. Subsequently, this population distribution map was compared with flooded area for creating a map indicating the population at risk in a flood event. Attempt was made to identify shelters during a flood based on information such as existing schools/hospitals location, topography and accessibility. Prioritization of shelters was carried out based on population at risk during a flood event. Finally, a flood mitigation plan for Munshiganj district based on shelter and evacuation was proposed considering selected shelter's capacities and the accessibility.

**Keywords:** *Flood, Mitigation, Remote Sensing and GIS.*