

# **Probabilistic Flood Risk Assessment of Lemyethna Township, Hinthada District, Ayeyarwady Region**

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## **Abstract**

The research area is located in Lemyethna Township, Hinthada District, Ayeyarwady Region in Myanmar. Flood risk assessment is still lacked in this area, making it hard to design and implement effective flood protection measures. The main objective of this research is to analyze the probabilistic flood risk assessment for Lemyethna township. In flood risk assessment, three main factors were considered to carry out this study such as flood hazard, flood exposure and flood vulnerability. This research was carried out by using the integrated techniques between the field observation, geographic information system (GIS) and remote sensing (RS). The flood hazard map was calculated with the different flood events in the last 7 years historical flood. The flood exposure map was calculated based on the various factors of population, cropland, infrastructure which are potential to be exposures in the research area. Flood vulnerability was computed based on population and age composition (under 18 and over 60). Finally, the flood risk map is analyzed by considering the three main factors of flood hazard, flood exposure, and flood vulnerability. Very high- and high-risk level are found in the west of the Ngawun River, due to Ngawun River floods and runoff water flows from highland area in rainy season. Seasonal flood occurred in the research area. The area of very high and high risk is calculated to be 10.33%, and the very low and non-flood areas in the township are the highest percentage of the total area. Flood mapping plays as an important role for protecting human properties and lives, and mitigating disaster risks. The resulting flood risk map can clearly highlight the areas with high levels of risks and provides a valuable tool for designing and implementation of future flood control and mitigation measures in the research area.

*Keywords: Flood, flood hazard, flood exposure, flood vulnerability, flood risk*