

Impact of Flood on the Built-up Environment: A Case Study of Baddegama DS Division

KGES Dias^{1#}, WKH Kalpitha¹ and NV Wickramathilaka¹

¹ *Department of Spatial Sciences, General Sir John Kotelawala Defence University,
Sri Lanka*

#36-sps-0003@kdu.ac.lk

Floods, a recurring phenomenon primarily in low-lying basin areas can be interpreted as beneficial for improving soil structure and cropland products, but they can also be viewed as one of the most catastrophic natural disasters adversely affecting human life and the environment. The main reason for flooding in Baddegama area, is the Ging River flowing through it. The purpose of this research is to help prevent the damage caused due to the lack of proper understanding of the flood risk in built-up areas. To identify the riskiness of the built-up area, it should overlay the flood inundation map and built-up area map. To create a flood map, five criteria were selected according to the ideas of well-knowledgeable people who lived in the Baddegama area. Land Use and Land Cover (LULC), slope, rainfall, soil, and water features were identified as the criteria that were affected by the flood in the area. An analytical hierarchy process was used to scale the criteria, and the weighted overlay method was used to create the flood map. LULC map as well as a built-up map were created using a Landsat 8 image and a method of supervised classification. The built-up area map was created after performing the Normalised Difference Built-up Index (NDBI). Most built-up areas in the Baddegama are under moderate flood risk. Further, 14% of built-up areas are at high risk. As a final output of this study, the riskiness levels of the built-up area could be used when establishing evacuation centres.

Keywords: *Normalised Difference Built-Up Index (NDBI), supervised classification, weighted overlay*