**Effect of the Eco-Based Flood Mitigation Projects on Urban Flooding: A Case Study in Sri Jayawardenepura Kotte**

Wijesooriya H.S.\*, Manjula Chathuranga, Dinusha K.A.

Department of Spatial Sciences, Faculty of Built Environment and Spatial Sciences, General Sir John Kotelawala Defence University, Sri Lanka

\*hswijesuriya20@gmail.com

***ABSTRACT***

*This study investigates the impact of eco-based flood mitigation projects on urban flooding in the Sri Jayewardenepura Kotte Divisional Secretariat Division (DSD). Urban flooding has become a critical issue due to rapid urbanisation and climate change, necessitating effective structural and non-structural strategies in the disaster mitigation process. The objectives of the research are to analyse flooding patterns, map Land Use and Land Cover (LULC) changes associated with eco-based mitigation projects, and assess the correlation between these changes and flooding occurrences in the study area. Additionally, a temporal analysis of rainfall variations was conducted to provide further context to the flooding events. To achieve these objectives, the study employs advanced Geographic Information System (GIS) technology. ArcGIS was utilised for detailed LULC classification with 84.4% overall accuracy, enabling the identification of temporal changes in LULC. The Inverse Distance Weighting (IDW) interpolation technique was applied to analyse rainfall data, offering insights into precipitation patterns and their relationship to flooding incidents. The analysis reveals a significant association between increased precipitation and major flood events, indicating that higher rainfall intensities contribute to urban flooding. Furthermore, the study identifies substantial LULC changes related to mitigation projects, highlighting rapid urbanisation, wetland decline, and the restoration of wetlands through eco-based mitigation efforts. It was found that the expansion of built-up areas exacerbates flood risks, while wetland recovery through eco-based flood mitigation programs acts as a natural buffer against flooding. The findings underscore the importance of targeted interventions for urban flood resilience. This research offers critical insights for sustainable urban planning and flood management, emphasising the need for integrated approaches that incorporate ecological solutions to enhance urban resilience. In conclusion, the study provides a comprehensive understanding of how eco-based flood mitigation projects, such as Beddagana and Diyasaru wetland management projects, influence urban flooding. Incorporating ecological strategies from projects such as Beddagana and Diyasaru enables cities to more effectively manage urban flooding, offering vital insights for policymakers and planners to develop resilient and sustainable urban environments.*

*Keywords: Eco-based flood mitigation, Geographic Information System, Inverse Distance Weighting.*