**Development of a Web Application through a Mobilized Crowdsourcing Platform to Enable Participatory Risk Sensitive Urban Development**

Kangana N.1\*, Kankanamge N.2, De Silva C.2, Goonetilleke A.3, Ranasinghe D.1 and Mahamood R.1

1Research Assistant, Department of Town & Country Planning, Faculty of Architecture, University of Moratuwa, Sri Lanka

2Lecturer, Department of Town & Country Planning, Faculty of Architecture, University of Moratuwa, Sri Lanka

3Professor, Faculty of Engineering, School of Civil & Environmental Engineering, Queensland University of Technology, Australia

nukangana@gmail.com

***ABSTRACT***

Flooding is the most frequent and destructive natural disaster currently facing Sri Lanka. Rapid urbanization and changing precipitation patterns are exacerbating the situation, leading to extensive socio-economic damage and disrupting countless lives. Despite the availability of technology-based applications that can raise disaster awareness and improve management, these tools are not fully utilized in Sri Lankan communities. The study addresses the critical issue of insufficient awareness and the lack of formal early flood alert mechanisms within Sri Lankan. Although, recent technological advancements offer opportunities for community to engage in sharing early disaster warnings among their networks, they remain underutilized. The community engagement in disaster management is still minimal, reducing the preparedness and resilience of vulnerable communities. To address this, a platform integrating a crowdsourcing-based mobile application with a web application was developed, aiming to make disaster management and response inclusive through community involvement and advanced remote sensing technologies. A flood vulnerability assessment model was created using 30 years of historical flood data and nine conditioning factors, including topographic features, weather-related variables, hydrological networks, land cover, and soil type, with Sentinel-2 satellite imagery for the Kelaniya watershed area enhancing the model's accuracy. The mobile application facilitates real-time data collection from individuals in flood-prone areas, who can report on flood levels, affected locations, and other critical information. This crowdsourced data undergoes rigorous verification to ensure accuracy. Once validated, the information is visualized on a web application, serving as a vital communication tool for both the community and disaster response authorities. The methodology includes developing the vulnerability assessment model, creating the mobile application with integrated crowdsourcing techniques, and conducting trial workshops to engage the community and validate the platform with the contribution of relevant authorities. Mobilization strategies are proposed based on insights from these community interactions. By prioritizing community participation and utilizing cutting-edge geo-information technologies, this research significantly contributes to building resilient and proactive urban communities in Sri Lanka. The findings demonstrate the substantial potential of combining crowdsourced data with remote sensing to enhance disaster management and community resilience.

**Keywords:** Community engagement, Crowdsourcing, Flood vulnerability assessment, Remote sensing,