

**DECLARATION**

**MAINSTREAMING**  
**DISASTER RISK REDUCTION INTO**  
**URBAN DEVELOPMENT PLAN OF**  
**NUWARA ELIYA, SRI LANKA**

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## ABSTRACT

This dissertation mainly focused on how to mainstream disaster risk reduction aspects into urban development planning process of Nuwara Eliya Municipal Council (NMC) Urban development plan with regard to potential disasters and level of vulnerability in the area. Therefore, problem statement was constructed based on the present urban development planning process of the country. The present urban development planning process do not adequately assessed the disaster risk and risk reduction aspects in urban planning process while, Disaster Management Centre (DMC) do not have adequate techno-legal framework and policy to intervene the urban development planning process. Therefore, the main objective of the study is to scientifically assess the level of vulnerability of each Grama Niladhari (GN) division located within the Nuwara Eliya Municipal Council, for potential hazards, and review the gaps and identify the opportunities in the existing planning process and legal framework to mainstream disaster risk reduction into urban development plan. The objectives of the study was achieved constructing a Multi Hazard Vulnerability Index (MHVI) produced on Geographical Information System (GIS) platform while stakeholders involved in development planning process were analyzed based on their functions and roles and the guidelines, policies and legal enactments. This study primarily based on both quantitative and qualitative data collected through key informant questionnaire, published reports, journals, articles, census data and the digital data produced by the Survey Department of Sri Lanka. Multi Hazard Vulnerability Index was developed based on five major parameter identified after reviewing various vulnerability indices developed by other parts of the world namely population, built environment, land use, economic status and the level of education which includes 12 sub parameters along



with 51 impact elements for each 12 sub parameters. The results and analysis of the study was presented based on the Multi Hazard Vulnerability Index developed for NMC. According to the analysis, Nuwara Eliya Central (15.32%) GN division was classified as highly vulnerable GN division for multi hazard scenario. Sandathenna (12.77%) and Bambarakele (10.43%) GN divisions were fallen into the high vulnerability classification while four GN divisions mainly, Nuwara Eliya west (9.15%), Kalapura (8.30%), Hawaeliya north (7.23%) and Hawaeliya east (6.60%). There were five GN divisions fallen into low vulnerability classification namely, Nuwara Eliya (5.74%), Hawaeliya west (5.53%), Magastota (4.47), Bulu Ela (4.26%) and Kelegala (3.83%) while Kalukele (3.19%) and Shanthipura (3.19%) GN divisions were classified as very low for multi hazard scenarios. Additionally 9.13% of the total land area within Nuwara Eliya municipal council consisted land above 30° gradient. According to the legal provisions the areas above 30° gradient were protected by the CEA act no 47 of 1980. Although, these laws were existed lack of knowledge and the awareness of the existing legal provisions and the enforcement hinders the local authorities and the regulatory agencies to take necessary precautionary actions. Nineteen stakeholders involved in urban development planning process were interviewed and out of that nine institutions interviewed were functioning as regulatory bodies in urban development planning process at local level. According to this study Disaster risk reduction measures were not incorporated into Nuwara Eliya urban development plan due to lack of scientifically analysed information on level of vulnerability for each GN divisions within the NMC area for potential disasters. Therefore, this study recommended planners to adopt scientifically constructed Multi Hazard Vulnerability Index to determine the level of vulnerability when land zonation process conducts in the future revision of the Nuwara Eliya Development plan.