

ABSTRACT

Urban areas in Kenya are growing at an estimated rate of 4.05%, which is expected to increase over the next years. This population growth and its consequent development growth puts strain on the existing flood control structures in urban areas, which are increasingly running out of safe capacity to serve the growing population. When heavy storms occurred in the country during the final two months of 2019, this strain was evident in the level of flooding that took place in different sections of Nairobi. Various roads were permanently damaged, and some residential areas rendered inaccessible. This study was aimed at performing a review of the existing approaches to flood risk assessment, outline the strengths and weaknesses of the existing approaches, and make proposals on how to achieve better quantitative and monetary flood risk estimates for purposes of flood design with higher safety factors. The qualitative factors contributing to urban flood response were highlighted, described and matched to proposed quantitative factors to be applied to monetary risk estimates so as to obtain more accurate assessment. Findings in this study are preliminary, and indicate that for each factor, there is need to collect more detailed information on rates of population growth, house hold occupancy, building type distributions by use and level of use, percentage of estate areas covered by buildings, construction costs per unit area, and net economic earnings by estate. A combined database of this information was also found to be necessary, so that the integrated approach explored in the study can be achieved smoothly in the proposed integrated risk assessment approach. Achievement of the objectives was possible, and the need for more data was only concluded to be for the purposes of obtaining more accurate estimations of flood risk.