

Developing GIS tools for planning, mitigation and preparedness for large-scale emergencies and disasters

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Abstract

Emergency and disaster management involves four stages: mitigation (planning), preparedness, response and relief. Concerned authorities at different levels (central, state, district, etc.) play different roles and have different responsibilities in each phase of emergency and disaster management. Geographic information system (GIS) based tools have been shown to be useful in the response and recovery phases of an emergency. In this paper we propose how GIS based simulation tools can be used in the mitigation and preparedness phases of emergencies and disasters. For the mitigation phase, we try and quantify the cost of building assets that can be used during an emergency and estimate the value (of the assets in terms of persons saved/benefited) based on simulations of certain types of emergencies. We also discuss how this tool can be used by policy makers, decision makers and city planners in modelling and visualising the results of various types of emergencies and plan the response for the same. We then propose a way to use this tool during the preparedness phase for training personnel who would be responders in an emergency. We conclude by describing the challenges associated with developing such tools.

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