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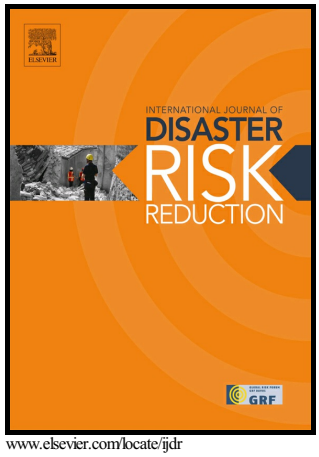

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Sustainability assessment of flood mitigation projects: An innovative decision support framework

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Abstract

Sustainability assessment methods have been emerging around the world, mostly for national or regional level plans, but very few are related to flood mitigation projects. This article proposes a new innovative decision support framework for sustainability assessment (SA) of flood mitigation projects throughout the project life cycle, focusing on two main aspects: sustained flood mitigation by the project, and enabling of sustainable development of the floodplain. This study has employed a review of the life cycle of flood mitigation projects, a review of sustainability assessment methodologies, consultations with experts and case studies involving two flood mitigation projects in Australia. Conforming to the project life cycle, the decision support framework is developed incorporating five stages: 1) contextualizing the project with regard to floodplain sustainability, 2) SA during planning and implementation for integrating sustainability issues in the project, 3) SA during a flood event to assess the sustainability performance of the project 4) SA at periodic intervals, and 5) SA at the stage of modification or changing to a new project. The framework has adopted a multi-criteria analysis (MCA) approach using sustainability criteria and indicators to determine the sustainability index for the project. This paper describes the process of selecting indicators, defining the weightages and scores for indicators, and determines a sustainability index for various stages of the project. This framework will enhance decision making for sustainability of flood mitigation projects. Adapting this framework to projects in other development sectors is also envisaged.

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