



MULTICRITERIA DECISION MODEL FOR RETROFITTING EXISTING BUILDINGS

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In this paper a model to decide which buildings from an urban area should be retrofitted is presented. The model has been cast into existing ones by choosing the decision rule, criterion weighting and decision support system types most suitable for the spatial problem of reducing earthquake risk in urban areas, considering existing spatial multiattributive and multiobjective decision methods and especially collaborative issues. Due to the participative character of the group decision problem "retrofitting existing buildings" the decision making model is based on interactivity. Buildings have been modeled following the criteria of spatial decision support systems. This includes identifying the corresponding spatial elements of buildings according to the information needs of actors from different spheres like architects, construction engineers and economists. The decision model aims to facilitate collaboration between these actors. The way of setting priorities interactively will be shown, by detailing the two phases: judgemental and computational, in this case site analysis, collection and evaluation of the unmodified data and converting survey data to information with computational methods using additional expert support. Buildings have been divided into spatial elements which are characteristic for the survey, present typical damages in case of an earthquake and are decisive for a better seismic behaviour in case of retrofitting. The paper describes the architectural and engineering characteristics as well as the structural damage for constructions of different building ages on the example of building types in Bucharest, Romania in compressible and interdependent charts, based on field observation, reports from the 1977 earthquake and detailed studies made by the author together with a local engineer for the EERI Web Housing Encyclopedia. On this base criteria for setting priorities flow into the expert information contained in the system.