Geophysical Research Abstracts
Vol. 16, EGU2014-13035, 2014
EGU General Assembly 2014

Development of a module for Cost-Benefit analysis of risk reduction measures for natural hazards for the CHANGES-SDSS platform

Julian Berlin (1), Thom Bogaard (1), Cees Van Westen (2), Wim Bakker (2), Eric Mostert (1), and Emile Dopheide (2)

(1) TU Delft, Netherlands (J.R.Berlin@tudelft.nl), (2) ITC University of Twente, Enschede, Netherlands (c.j.vanwesten@utwente.nl)

Cost benefit analysis (CBA) is a well know method used widely for the assessment of investments either in the private and public sector. In the context of risk mitigation and the evaluation of risk reduction alternatives for natural hazards its use is very important to evaluate the effectiveness of such efforts in terms of avoided monetary losses. However the current method has some disadvantages related to the spatial distribution of the costs and benefits, the geographical distribution of the avoided damage and losses, the variation in areas that are benefited in terms of invested money and avoided monetary risk. Decision-makers are often interested in how the costs and benefits are distributed among different administrative units of a large area or region, so they will be able to compare and analyse the cost and benefits per administrative unit as a result of the implementation of the risk reduction projects.

In this work we first examined the Cost benefit procedure for natural hazards, how the costs are assessed for several structural and non-structural risk reduction alternatives, we also examined the current problems of the method such as the inclusion of cultural and social considerations that are complex to monetize , the problem of discounting future values using a defined interest rate and the spatial distribution of cost and benefits. We also examined the additional benefits and the indirect costs associated with the implementation of the risk reduction alternatives such as the cost of having a ugly landscape (also called negative benefits). In the last part we examined the current tools and software used in natural hazards assessment with support to conduct CBA and we propose design considerations for the implementation of the CBA module for the CHANGES-SDSS Platform an initiative of the ongoing 7th Framework Programme “CHANGES of the European commission.

Keywords: Risk management, Economics of risk mitigation, EU Flood Directive, resilience, prevention, cost benefit analysis, spatial distribution of costs and benefits