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Cost assessment of natural hazards in Europe – state-of-the-art, knowledge gaps and recommendations

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Effective and efficient reduction of natural hazard risks requires a thorough understanding of the costs of natural hazards in order to develop sustainable risk management strategies. The current methods that assess the costs of different natural hazards employ a diversity of terminologies and approaches for different hazards and impacted sectors. This makes it difficult to arrive at robust, comprehensive and comparable cost figures.
The CONHAZ (Costs of Natural Hazards) project aimed to compile and synthesise current knowledge on cost assessment methods in order to strengthen the role of cost assessments in the development of integrated natural hazard management and adaptation planning. In order to achieve this, CONHAZ has adopted a comprehensive approach, considering natural hazards ranging from droughts, floods and coastal hazards to Alpine hazards, as well as different impacted sectors and cost types. Its specific objectives have been 1) to compile the state-of-the-art methods for cost assessment; 2) to analyse and assess these methods in terms of technical aspects, as well as terminology, data quality and availability, and research gaps; and 3) to synthesise resulting knowledge into recommendations and to identify further research needs. This presentation summarises the main results of CONHAZ.
CONHAZ differentiates between direct tangible damages, losses due to business interruption, indirect damages, intangible effects, and costs of risk mitigation. It is shown that the main focus of cost assessment methods and their application in practice is on direct costs, while existing methods for assessing intangible and indirect effects are rather rarely applied and methods for assessing indirect effects often cannot be used on the scale of interest (e.g. the regional scale). Furthermore, methods often focus on single sectors and/or hazards, and only very few are able to reflect several sectors or multiple hazards. Process understanding and its use in cost assessment is poor, leading to highly uncertain results. However, sensitivity and uncertainty analyses as well as validations are hardly undertaken.
Important recommendations are that cost assessment can be made more comprehensive by including indirect and intangible effects. Furthermore, the importance is highlighted of identifying sources of uncertainties, of reducing them effectively and of documenting remaining ones. One source of uncertainty concerns data sources. A framework for supporting data collection on the European level ensuring minimum data quality standards would facilitate the development and consistency of European and national databases. Furthermore, an improvement of methods is needed with regard to a better understanding and modelling of the damaging processes. In particular, there is a need for a better understanding of the economic response to external shocks and to improve models for indirect cost assessment based on this. Also models to estimate direct economic damage need to be based on more knowledge about the complex processes leading to damages. Moreover, the dynamics of risk due to climate and socio-economic change have to be better considered in the models in order to unveil uncertainties about future developments in the costs of natural hazards. Finally, there is a need for appropriate and transparent tools and guidance to support decision makers in the integration of uncertain cost assessment figures into decision making.