

NATURAL HAZARD RISK MANAGEMENT CARINTHIA

AN INTERDISCIPLINARY FRAMEWORK FOR MULTI-HAZARD ANALYSIS AND RISK ASSESSMENT

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INTRODUCTION

The number and intensities of natural hazards in alpine regions have increased dramatically over the past decade. At the same time rapid development of settlements and accompanying infrastructure like roads, utilities (sewage, water, electricity, energy) and telecommunication has occurred in these hazard prone alpine regions. Therefore the adaption of existing and the development of new sustainable concepts for efficient risk management of natural hazards in alpine regions is necessary in order to minimize negative impact and damages to life and property. Major requirement and success factor for a sustainable risk management is the interdisciplinary collaboration of sectoral experts, the holistic consideration of multi hazards and the integration of interdisciplinary risk assessment results in regional planning processes.

In 2004 the project “Natural Hazard Risk Management Carinthia” was started with the goal to evaluate, apply and develop methods for efficient risk assessment in alpine regions in order to support sustainable regional planning and development. The project partner network is representing an interdisciplinary team consisting of experts from the regional government of Carinthia, Austria (the departments of water resource management, regional planning, geology and forestry), the Forest Technical Service for Torrent and Avalanche Control in Carinthia and from the School of Geoinformation at Carinthia University of Applied Sciences. The project is funded by the Regional Government of Carinthia and the Forest Technical Service for Torrent and Avalanche Control in Carinthia.

In this paper we will present an overview about the approach, the methodologies applied and major outcomes of this interdisciplinary best practice project.

APPROACH & METHODOLOGY FOR MULTI-HAZARD RISK ASSESSMENT

The approach for an interdisciplinary multi-hazard analysis and risk assessment follows the United Nations Strategy for Disaster Reduction (UN/ISDR) (2004). It defines risk as the probability of harmful losses resulting from interactions between natural and human-induced hazards and vulnerable conditions. This strategy determines the nature and extent of risk by analyzing potential hazards and evaluating existing conditions of vulnerability that could pose a potential threat or harm to people, property, livelihoods and the environment on which they depend. A standardized catalog of protected objects as well as sectoral hazard zones is compiled taking advantage of a comprehensive,

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interdisciplinary geodata infrastructure. By applying the spatial analysis capabilities of Geographical Information Systems (GIS) for a region and considering the intensity and probability of sectoral hazards, the sectoral and total risk and its related damage potential can be calculated. Another key issue for successful risk management is a transparent and open risk communication of the results of the risk assessment process. This is achieved on the one hand by an interactive web application currently implemented as intranet application for experts and decision makers. On the other hand a “Natural Hazard Risk Municipality Report” was developed. This analog fact sheet provides a structured documentation about all hazards one community is endangered. The related risks, damage potential and expected losses are presented in form of tables, diagrams and maps. Figure 1 provides an overview about the different steps in the risk assessment process.

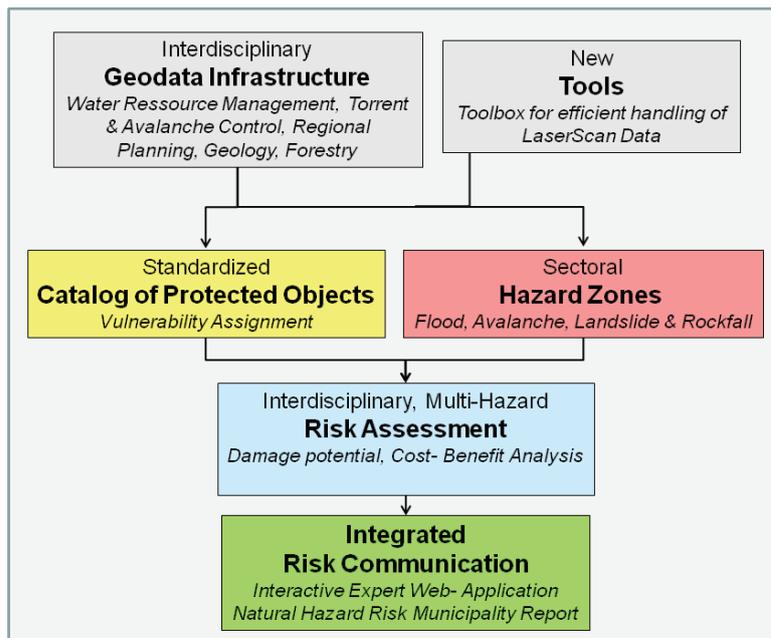


Fig. 1 Project framework “Natural Hazard Management Carinthia”

RESULTS AND DISCUSSION

This framework for interdisciplinary risk analysis and risk assessment has been applied successfully in three pilot project areas in Carinthia. For the first time an interdisciplinary and integrated view on hazards and its related risks is available. The results allow efficient decision support for experts and political decision makers for the prioritization of risk reducing planning activities. Furthermore, the results are key information for any regional development and planning strategies in a municipality. Special emphasize has been given to develop and implement an adaptive and open framework so that additional hazards which might become important in the future (e.g. wildfires) can be directly integrated. Finally, this framework provides promising opportunities for increasing awareness and self responsibility of the public in the context of natural hazards.

REFERENCES

UN/ISDR (2004), Living with Risk: A Global Review of Disaster Reduction Initiatives, Geneva, UN Publications.

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