IMPLEMNTATION OF HAZARD MAPS

DAMAGE REDUCTION THROUGH SPATIAL PLANNING

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INTRODUCTION

The August 2005 flood caused the largest amount of damage ever recorded in Swiss history. Six deaths and an estimated value of three billion Swiss francs of property damage were reported. This event pointed out the need and usefulness of Hazard Maps and the necessity for spacial planning to provide proper risk prevention and the risk management. Through the combination of well co-ordinated prevention and precaution measures, and appropriate interventions systems derived from hazard mapping, significant damage can be avoided or reduced in many parts of Switzerland.

The 2005 flood also pointed out the need for more implementation of hazard mapping in geographical spatial planning of urban or rural areas through out Switzerland. Thankfully, these recent events have caused many Cantons and local Municipalities to further examine in detail the actual state of affairs concerning the spatial planning and building legislation for their particular area.

Professional geophysical bodies around the world highlight hazard maps as a necessity and an important instrument in making decisions regarding risk reduction in urban and rural land planning. Unfortunately, there are still many obstacles that thwart the implementation of Hazard Mapping. Acceptance from local authorities can be 'cool' to say the least, because of the direct effects of these implementations on local populations. (e.g. expensive building codes , restrictions of building permits in certain areas, etc.).

IMPLEMENTATION OF HAZARD MAPS

In Switzerland, approximately 1/3 of the country has already been Hazard Mapped. On analysis of the 2005 flood in Switzerland, Hazard Maps are looked at with a critical eye and scrutinized for their validity, their application and implementation. From this on going analysis, suggestions for future procedures regarding risk management of land use areas and the necessity of Hazard Mapping will be drawn up.

Logistically, Hazard Maps represent the technical foundation for land use planning and also for building regulation and building permit procedures in the Swiss municipalities and Cantons. In addition, they presently provide the basis for nearly all guidelines for damage reduction through local emergency planning systems.

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Different implementation models for Hazard Mapping can be found in many Cantons across Switzerland (definition of hazard zones in land use planning vs. reference ranges in land us planning). In most of the examined Cantons, the transfers of the Hazard Map to spatial planning are already embodied in their legislation.
In order to supply further information for the municipalities, most Cantons compiled data, in which the transfer of the hazard map into land use planning was described. All of this proves that the present day implementation of hazard maps must be scrutinized and discussed by professional bodies in order to sanctify their usage in areas around Switzerland.
But it also has to be mentioned, that the implementation of hazard maps is still in its infancy in many municipalities around Switzerland. The priority of hazard mapping has only come into play since the flood in 2005.
Conclusions about the formulation of possible recommendations for risk management in land use areas can be drawn from various already implemented building regulations in many municipalities. Many building projects take place in already settled areas, and many of them within natural hazard zones posing a threat to the risk management of the area. (The measures planned by the federation are adapted building methods for blue and yellow zones. But the variety of effects and the variety of the buildings make only in a few cases clear and simple regulations possible.) Therefore, apart from the specialized technical questions, the development and procedures are primarily examined e.g. the calling in of specialized cantonal institutions and external consultants.

GOAL OF THIS STUDY

The goal of this study is to provide a better understanding of the different ways for effective land use risk management and preventive measures.
The following questions are to be answered:

- How were contents of the Hazard Map transferred to the land use planning?
- How do building regulations in various Cantons take into consideration the hazard zones (building prohibitions, restrictions etc.)
- Was the space requirement of running waters considered and/or for measures?
- Could damage be avoided and/or reduced?

METHODOLOGY

In order to answer these questions, 12 cantons in Switzerland were selected primarily the ones most affected by the 2005 flood. Many of these Cantons already have experience with implemented hazard maps in their municipalities. Through interviews with various Canton authorities and through analysis reports, the above stated questions were addressed and a few case studies could be identified and submitted for careful examination.
Because of the small number of these case studies, it is not possible to draw generally accepted statistic data about the effectiveness of special planning measures from this research. However, the case studies show that measures concerning special planning positively affect development damage, mainly through avoiding giving building permits in hazard zones and through adapted and more concise building methods regulations.

Keywords: hazard maps, spatial planning, risk management, risk reduction