

## The earthquake risk in Switzerland and the federal mitigation measures



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# The earthquake risk in Switzerland

## **Moderate to low hazard**

On a worldwide scale, the earthquake hazard in Switzerland is moderate to low. A higher hazard affects the regions of Valais, Basel, Central Switzerland, the Engadin and the St. Gallen Rhine Valley. An earthquake of magnitude 5 on the Richter scale is expected in Switzerland on average once every 10 years, and a magnitude 6 earthquake once every 100 years. The strong earthquake that devastated Basel in 1356 had an estimated magnitude of 6.5.

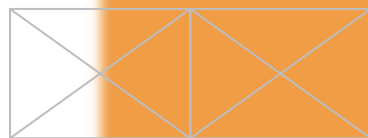
## **Largest risk: Threat of huge financial losses**

The high financial loss potential makes earthquakes the most important of the natural hazards in Switzerland. Approximately 90 per cent of existing buildings in Switzerland have not been designed to resist earthquakes or have been designed for obsolete seismic requirements – they could therefore be seismically inadequate. The reinsurance industry in Switzerland expects damages worth of approximately 7 billion Swiss francs for magnitude 5.5 to 6 earthquake and approximately 40 billion Swiss francs for a magnitude 6 to 6.5 earthquake.

## **A seven-point earthquake mitigation program**

The Federal Council has recognized the threat: A Centre was created to coordinate seismic mitigation measures. This Coordination Centre is part of the Department of the Environment, Transport, Energy and Communications (DETEC). Within its sphere of responsibility, it launched a seven-point earthquake mitigation program for the period 2001 to 2004.

## **The next earthquake will certainly come – how do we manage this risk?**



# Systematic application of the building codes for new constructions

## Until now there have been no systematic checks

For new buildings and constructions dependent on the Confederation for permits and/or financing, compliance with the seismic provisions of the building codes has until now not been checked systematically.

## Federal and special buildings

The Confederation has recognized, however, that these building code provisions must be strictly enforced for all federal constructions. This applies to buildings and special constructions for which the Confederation grants subsidies or gives building permit approval, and includes public infrastructures, nuclear power plants, dams, airports, railways, cable cars, highways, pipelines, electrical and telecommunication installations.

## Enforcement of the building codes

Since January 1<sup>st</sup> of 2001 the federal administration can only authorize or subsidize new buildings and constructions which fully comply with the seismic requirements of the current SIA building codes. The responsible agencies have to conduct the appropriate checks.

**Apply the building codes – and keep an eye on the costs**



## Careful seismic control of renovation projects

### Earthquake-proof?

From now on, all federal buildings and constructions, which are scheduled for major renovation, will be examined from a seismic safety standpoint. This will be done by the Department of Defense, Civil Protection and Sports (DDPS) in conjunction with the Federal Department of Finance (FDF).

### Earthquake-proof!

Wherever substantial inadequacies are noticed, appropriate preventive measures will be implemented based on a cost-benefit analysis.

**Safety vs. costs: There must be an appropriate balance**



## Inventory of existing buildings

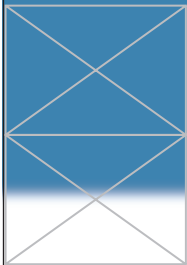
### Buildings at risk

The building portfolio of the Confederation includes more than 4'000 public buildings, housing the offices of 18'000 employees. About 500 civilian and military buildings and constructions of the Building Classes II and III (important infrastructures and lifelines) are located in the regions of Basel, Central Switzerland, the Engadin, the St. Gallen Rhine Valley and the Valais, i.e. in areas of higher earthquake hazard (zones 2, 3a and 3b of the Swiss seismic hazard map).

### Possible protection

The DETEC, together with the responsible Departments, is conducting an inventory these 500 buildings. This inventory includes an assessment of the earthquake hazard and vulnerability, as well as of the possible protection measures and associated costs.

**It is essential to know the risk, in order to be able to respond to it effectively!**



## Determination of the threat to the cultural heritage

### Unique objects

The Department of Defense, Civil Protection and Sports (DDPS) will identify the seismic vulnerability of the most important historic constructions in Switzerland before the end of 2004. If required, appropriate protection measures will also be identified.

### National and regional importance

Through this measure the seismic risk will be assessed for important constructions listed in the Swiss inventory of historical objects of national and regional importance.

Some things cannot be replaced...



## Improvement of the legal basis

### **A constitutional mandate is missing**

Since 1874 the Confederation has the legal basis to order suitable protection measures against frequent natural phenomena such as avalanches, debris flows, and floods. However, for earthquakes – the natural hazard with the largest loss potential – the Confederation has no constitutional mandate.

### **Preliminary work is ongoing**

An important step will be taken in summer 2002 with the organization of an official consultation on propositions to correct recognized deficiencies in the Swiss Constitution.

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**Existing gaps must be filled rapidly**



# Clarification of the insurance of earthquake damages

## Insufficient insurance coverage

Earthquake insurance is not available in Switzerland. Even though insurance companies have set-up a voluntary pool for coverage of earthquake losses, it must be assumed that available funds only cover a very small portion of the seismic risk.

## Financing – but how?

Until the end of 2004, the Department of the Environment, Transport, Energy and Communications (DETEC), in cooperation with the Federal Department of Justice and Police (FDJP) will identify possible financial solutions for the coverage of large seismic losses. They will also clarify to what extent the insurance companies would make voluntary contributions and what type of earthquake insurance coverage is possible.

## Who pays in a worst-case scenario?



## Prepare a detailed disaster response plan

### **Be prepared for an emergency**

A far-reaching disaster response plan must be prepared for the event of a strong earthquake. The goal is to create the necessary conditions for the targeted and effective preparation and intervention of the different organizations involved.

### **Leave nothing to chance**

This concept will be compiled by the Department of Defense, Civil Protection and Sports before the end of 2004. It will include scenarios, standard working documents, procedures and check lists to be used by cantons, municipalities and private industries.

**Act now – before it is too late!**



# The Coordination Centre for Seismic Risk Mitigation

## A center of authority

Since September 1999, the Federal Office for Water and Geology (FOWG) in Biel has been in charge of the seismic prevention activities of the Confederation. For this purpose, it created a Coordination Centre for Seismic Risk Mitigation (CCSM) in January 2001.

## Various tasks

A major task of the Coordination Centre is the development of a coherent policy for seismic risk mitigation and the coordination of the corresponding measures on a federal level. It is also in charge of the creation of a seismic inventory of existing federal buildings, as well as for the elaboration of guidelines and recommendations for construction professionals, owners and authorities.

The Coordination Centre advises and supports the entire federal administration. It also manages projects and collaborates with the federal agencies responsible for the implementation of important measures in the construction industry.

## Contact us – we can help



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