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Federal Office for the Environment FOEN

22nd OSCE Economic and Environmental Forum
"Responding to environmental challenges with a view to promoting cooperation and security in the OSCE area"
FIRST PREPARATORY MEETING
Vienna, 27-28 January 2014
Opening Session

Integrated Risk Management to prevent Natural Disasters

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Contents

- Understanding natural disasters
- Approaches to reduce risks
- Principles of integrated risk management
- Situation in Switzerland
- Building capacities
- Conclusion

Understanding natural disasters

- Disaster:
  - serious disruption of the functioning of a community or a society involving widespread losses
  - exceeds the ability of the affected community or society to cope using its own resources
- Result of combination of:
  - exposure to a hazard;
  - conditions of vulnerability that are present;
  - insufficient capacity or measures to cope with the potential negative consequences

Understanding natural disasters

- Usually risk is expressed by the notation:

risk = 

process, frequency, magnitude, location

x 

exposure, value, susceptibility

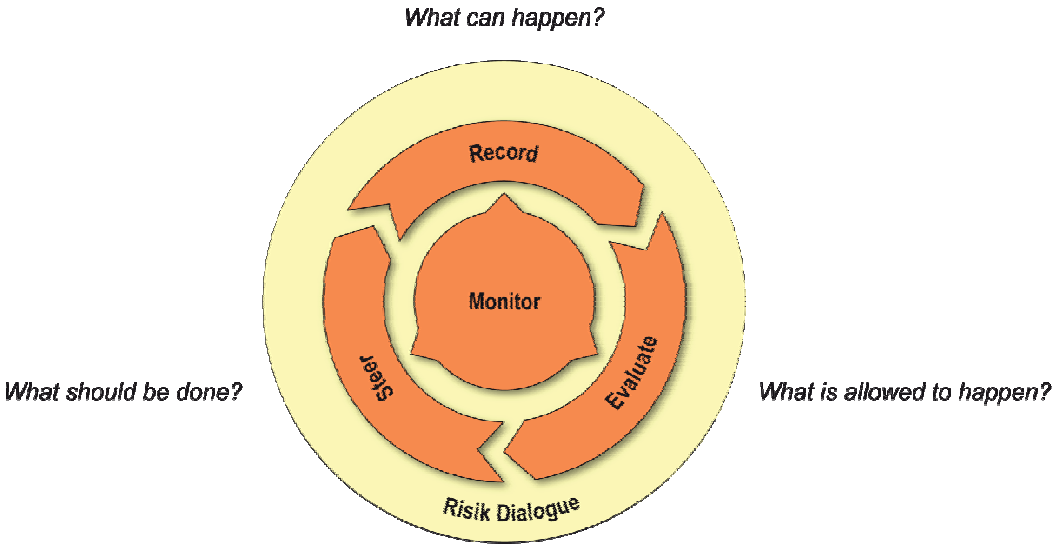
→ The focus on the notion of risk constitutes a shift from hazard-orientated actions to more risk-based approaches

Understanding natural disasters

- Reducing disaster risks means strengthening resilience by:
  - knowing the risks
  - avoiding exposure
  - reducing vulnerability
  - increasing capacity to manage emergencies
  - addressing recovery capacity to overcome disturbance
  - building adaptive capacity for long-term changes

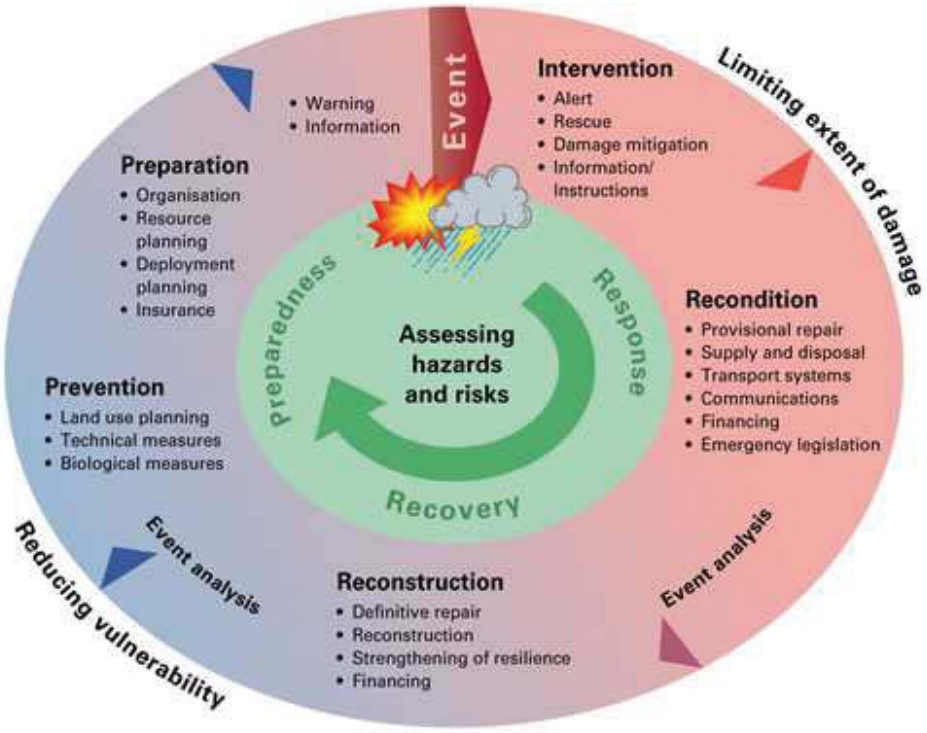
→ Applying an integrated risk management.

Approaches to reduce risks



risk management: continuous assessment of risk situation as well as planning and realising protection measures

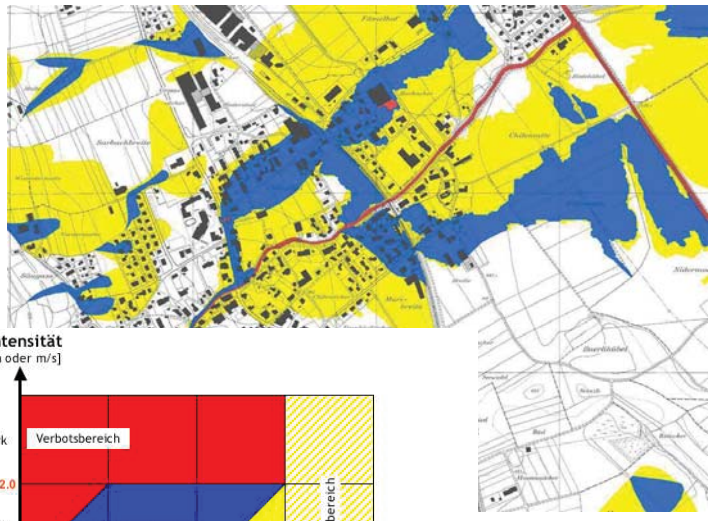
Approaches to reduce risks

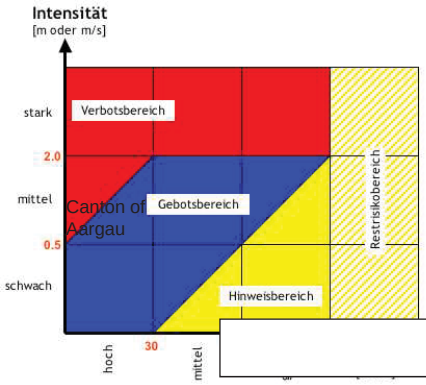


Approaches to reduce risks

Hazard assessment (hazard and intensity maps) **Risk assessment** (loss potential, risk, protection objectives and deficits)
Prevention: planning of protection measures (land use planning, biological and technical measures)
Preparedness (organisational measures, monitoring and warning, information dissemination)
Response: Evacuation, short-term damage mitigation
Reconstruction, contingency planning, insurance
Learning from past events (event analysis)

Hazard assessment



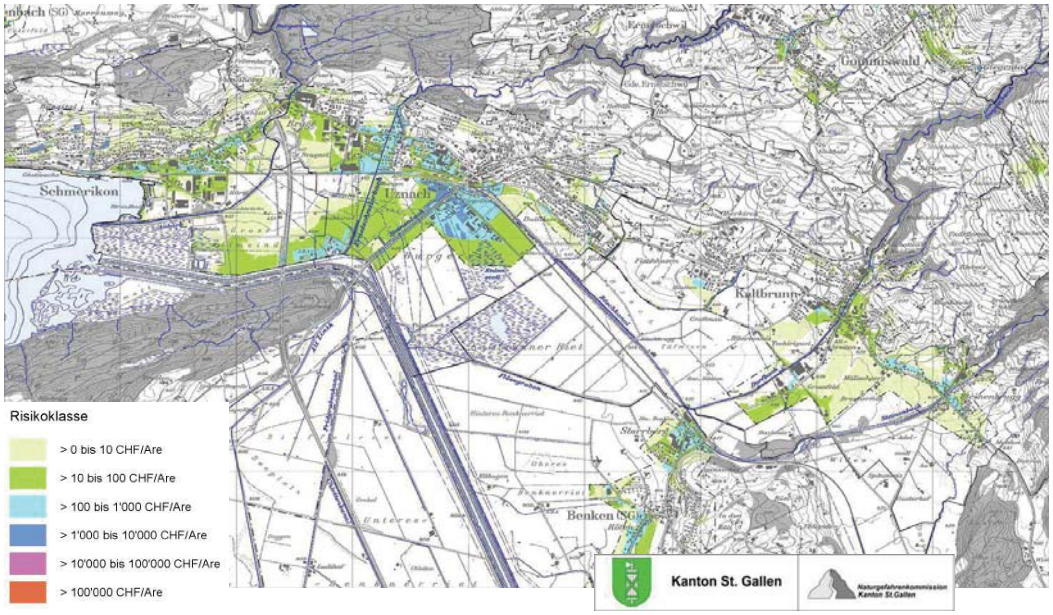


- Detailed hazard assessment
- Scale 1:5,000 - 1:2,000
- 4 hazard categories
- Basis for land use planning

Hazard maps

Risk assessment

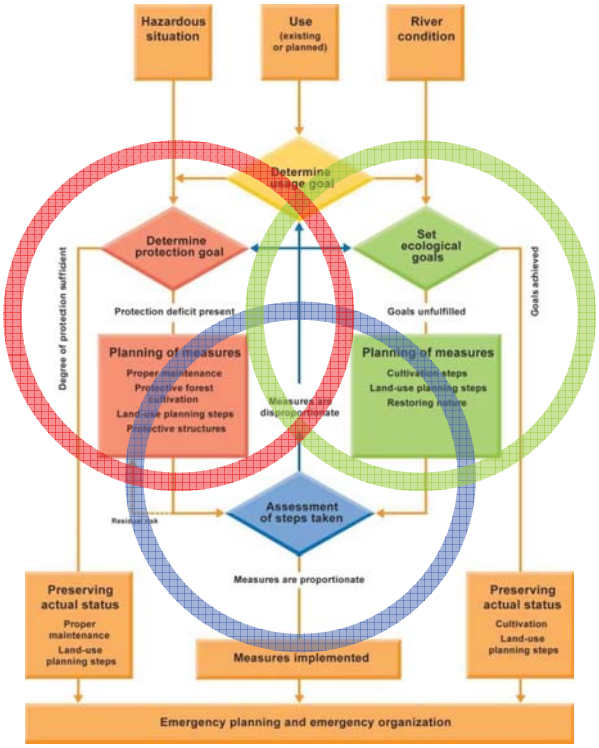
Risk categories (in CHF per 100 square metres)



Risk maps

Linth 2000 project

Prevention: Holistic planning



Social aspects

Economic aspects

Provision of basics
- hazards
- land use (existing / planned)

Definition of goals

Environmental aspects

Planning of measures
- clear priority for sustainable measures
- consideration of all types of measures

Assessment of balance

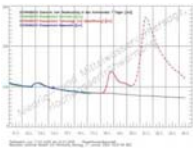
Implementation of measures

Management of residual risks

Preparedness



Collection of data


Modelling, forecasting


distribution of information

Successful intervention


Local interpretation, training, emergency plans

Transmission of data



Issuance of bulletins, warning


Response

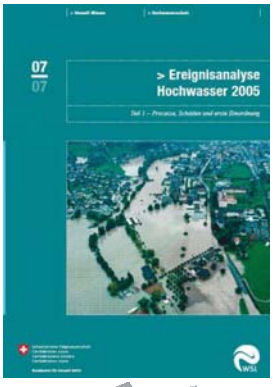
Short-term damage mitigation

Evacuation

Recovery and reconstruction

- Get back to normal as soon as possible
- Better construction of buildings
- Reserve space for nature

Learning from past events



Event analysis
Learning lessons from previous events, corresponding adjustment of strategies.

Monitoring and evaluation
of the current hazard and risk situation. Corresponding adaptation of protection measures.

Risk dialogue
Active participation of municipalities in planning of protection measures.

Adapt objectives to new situations
Protection, utilisation, ecological objectives

Principles of integrated risk management

An integrated risk management:

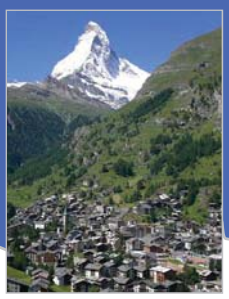
- considers all natural hazards
- respects spatial and process-related conditions
- involves all actors and affected people
- considers all possible means for action
- accounts for future trends
- bases on principles of a sustainable development

Situation in Switzerland

→ Goal: Guarantee equal safety for everyone in Switzerland

Central plateau
→ Main problems: floods, storms, some landslides

Jura
→ Main problems: rockfalls, landslides



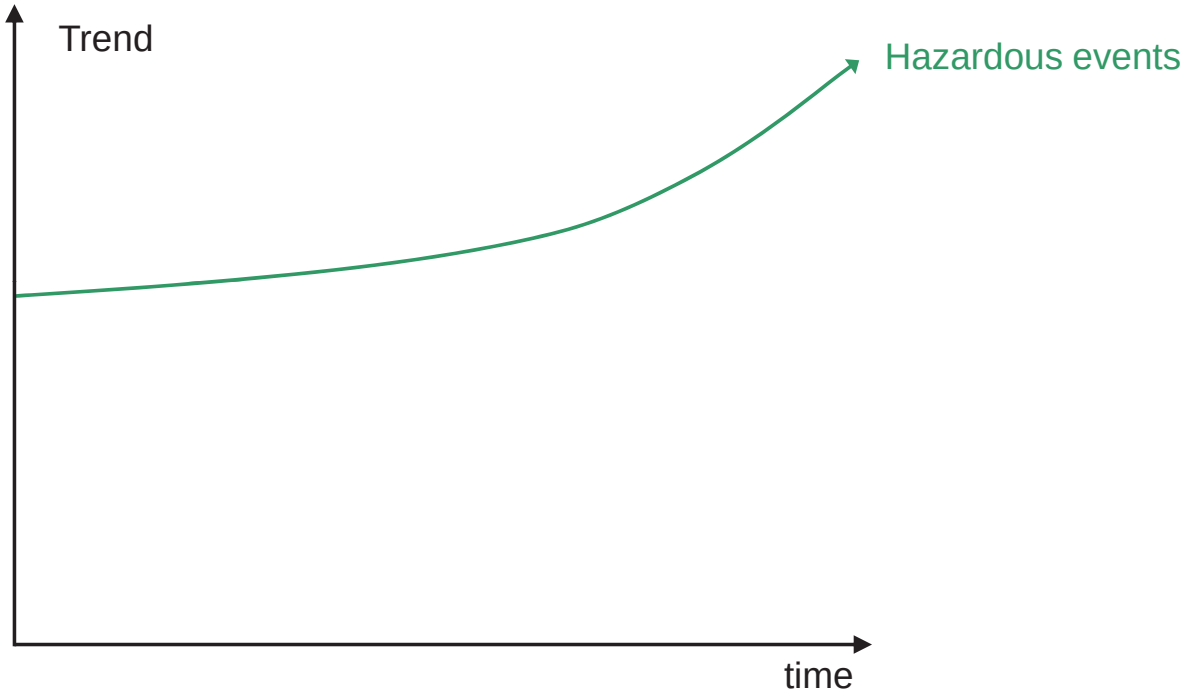
Mountain regions
→ Main problems: avalanches, rockfalls, debris flows, landslides

Situation in Switzerland

- Increase of damage potential (settlements, industry infrastructure etc.) and vulnerability
- Frequent natural events in the past years with major damage (floods 1999, 2005, 2007, avalanches 1999)

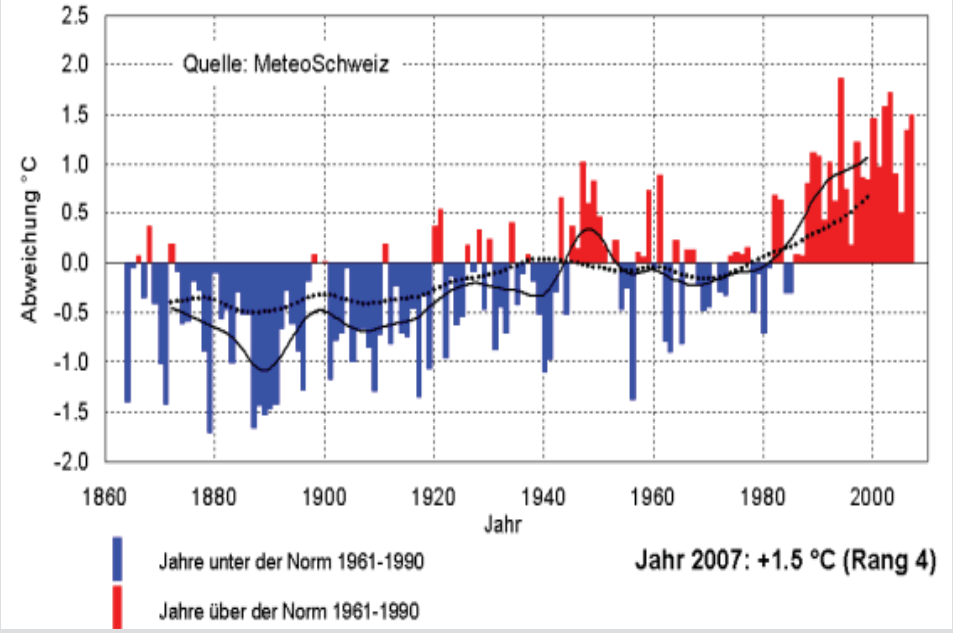
- Major natural disasters in the last 150 years led to a review and new formulation of the protection policy
  - 1868 floods → Law on the Forests resp. Flood Control
  - 1951 avalanches → First hazard maps
  - 1987 floods → Paradigm shift, integrated risk management

Management of natural risks

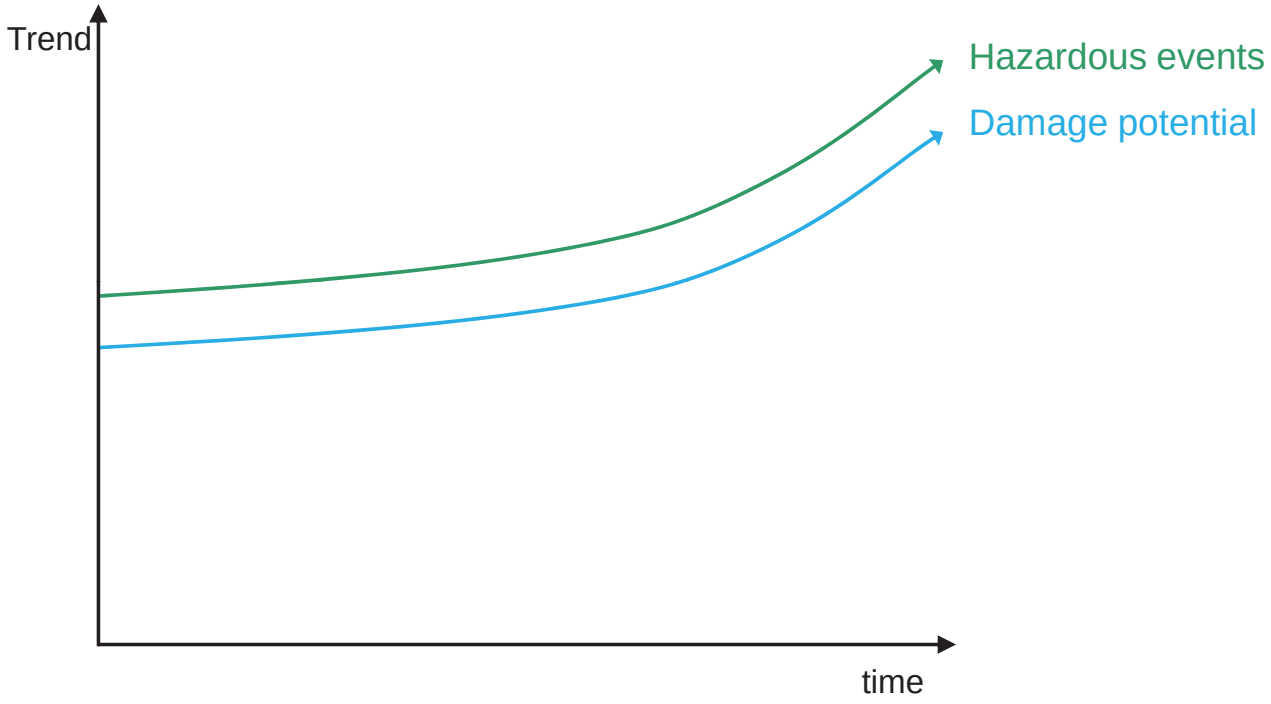


Management of natural risks

Temperature in Switzerland 1864 – 2007
Deviation of the average

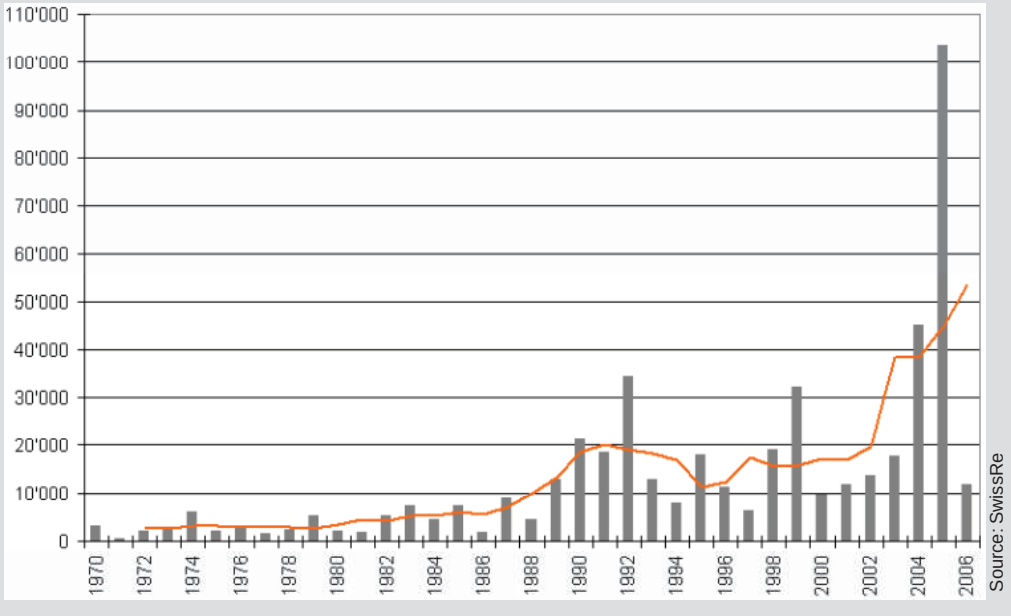


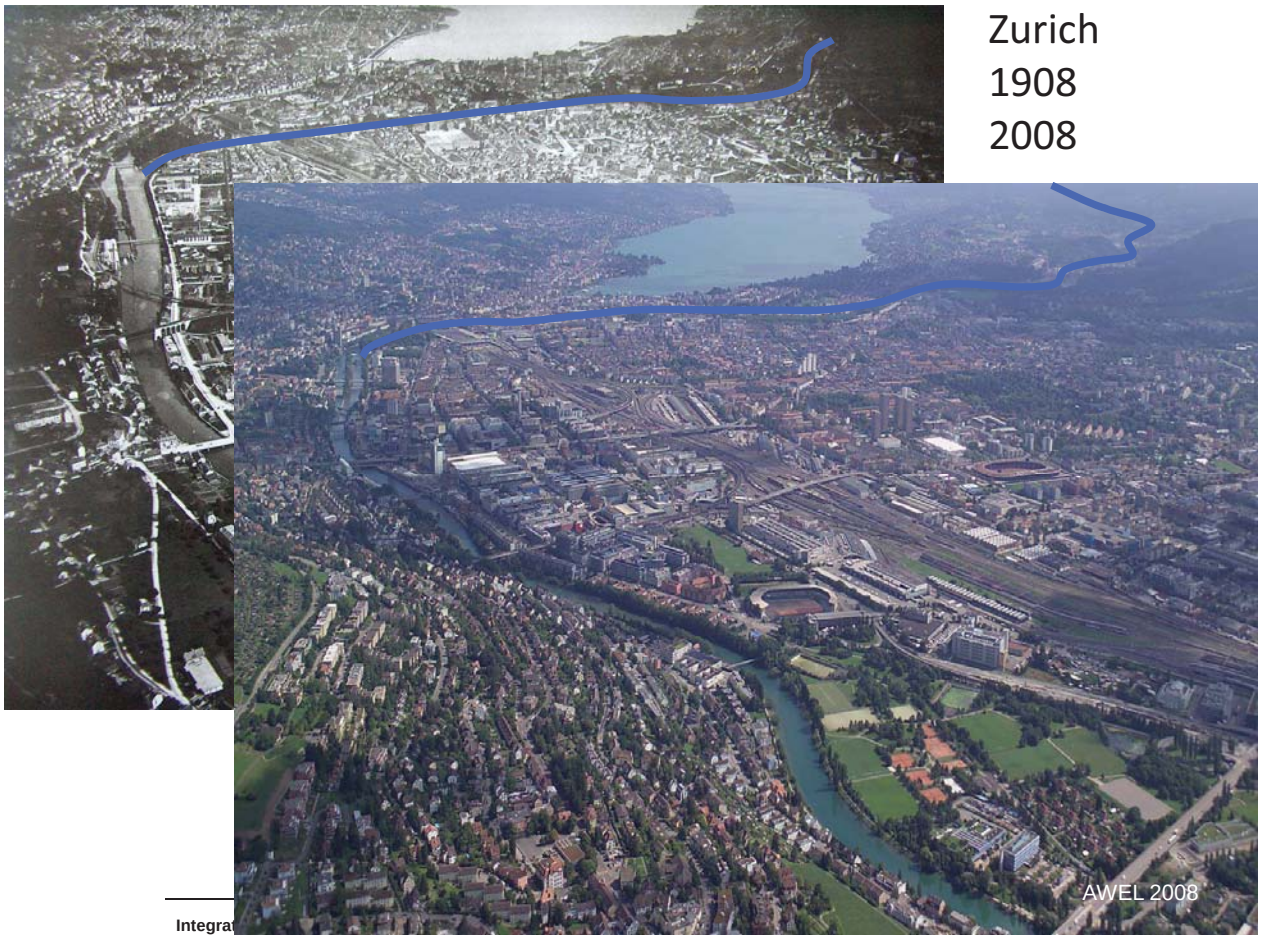
Management of natural risks



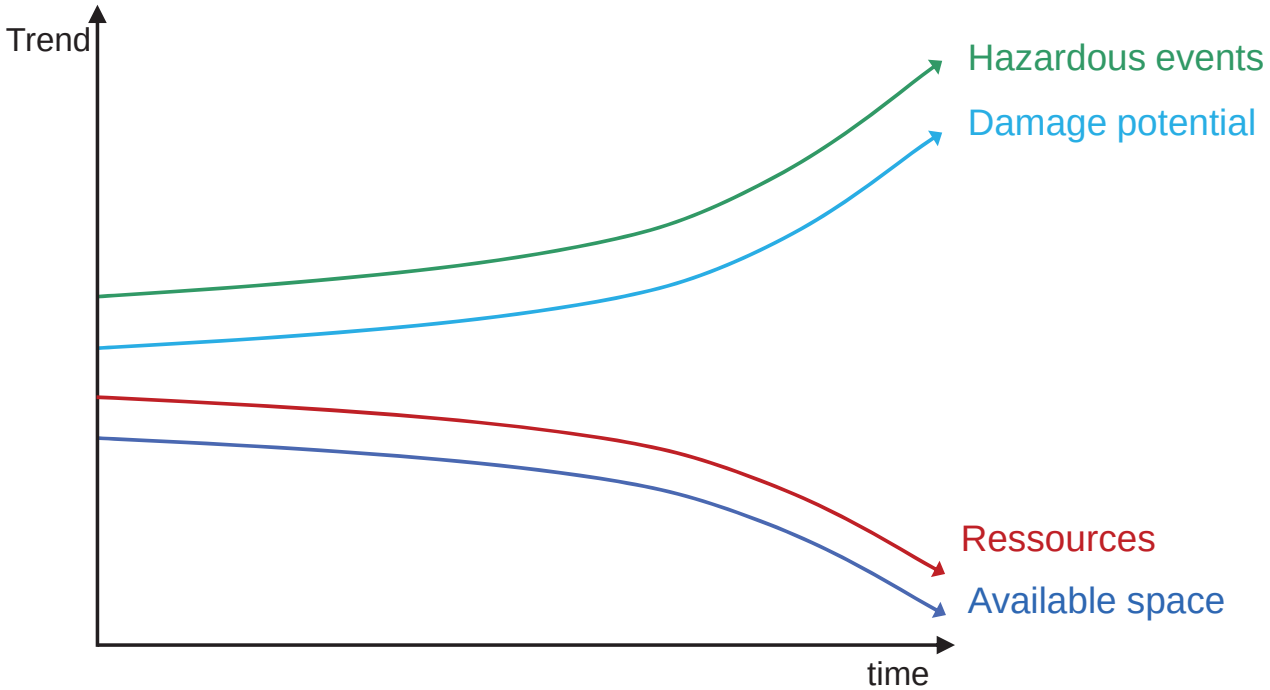
Management of natural risks

Insured damage from natural hazards worldwide
1970-2006, in Mio USD, price level 2006



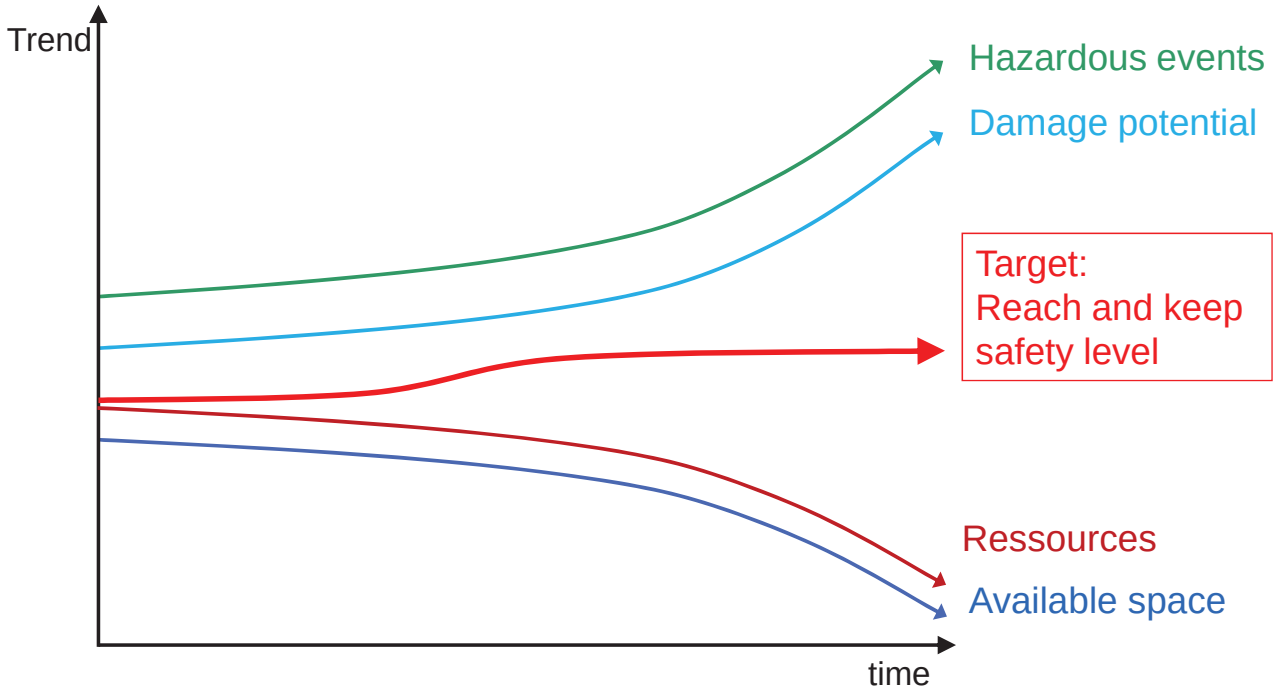


Management of natural risks



Management of natural risks

Management of natural risks



Task sharing in natural risk management

- Federal authorities: Legislation; policy; guidelines; financial support; support of research, education; warning and alerting
- Cantons (26): enforcement of laws; cantonal structure planning; hazard mapping; cantonal emergency management
- Municipalities (2408): communal land use planning; building permissions, local emergency management
- Insurance: mandatory insurance (all buildings), covering the remaining risk
- Property owner: local protection; precautionary measures

Building capacities

- Study courses at technical colleges and universities on natural hazard understanding and assessment as well as on engineering
- Education and training of emergency management units
- Formation of local hazard advisors
- Advanced training and experience exchange among practioners
- Establishment of monitoring equipments and forecast models
- Cooperation between authorities, stakeholders etc.
- Optimisation of Early Warning and Alerting and improvement of interdepartmental cooperation through the “Steering Committee Intervention against Natural Hazards”

Conclusion

- We have to live with natural hazards, however we can reduce their adverse effects.
- New risks should be avoided by adaptation of land use and reduction of the damage potential.
- Necessary funding and resources for prevention at all levels should be provided.
- Past disasters offer important lessons to develop adapted strategies.
- All involved players have to be sensitised and trained.
- Close co-operation between the involved actors is a key factor.

Thank you very much for your attention