PROBLEMS | RISK CONCEPT | SUSTAINABILITY | RISK DIALOGUE | EXAMPLES | SOLIDARITY

Sustainability and risk management

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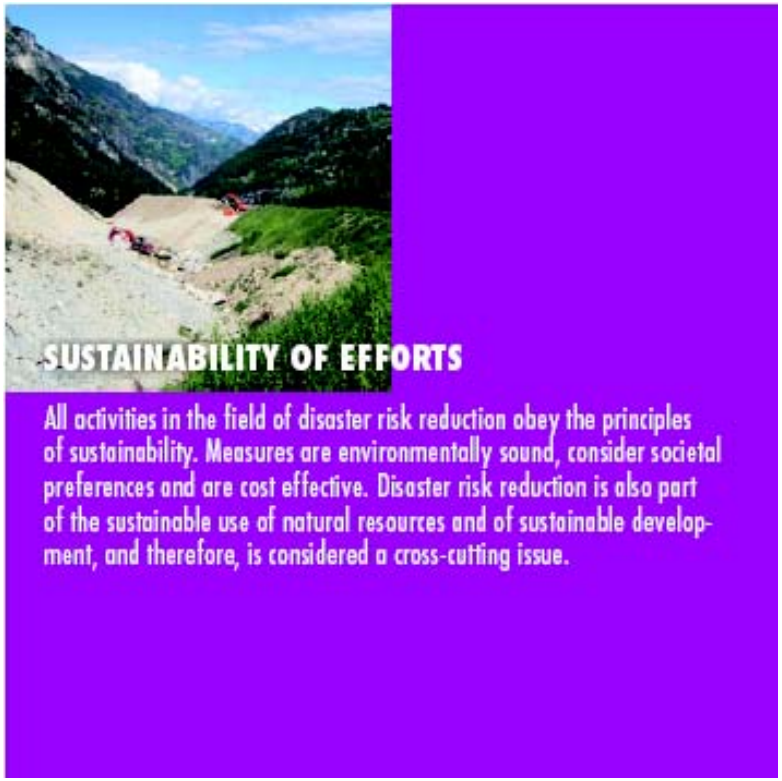
Workshop Mountainous Regions



Sustainability and risk management

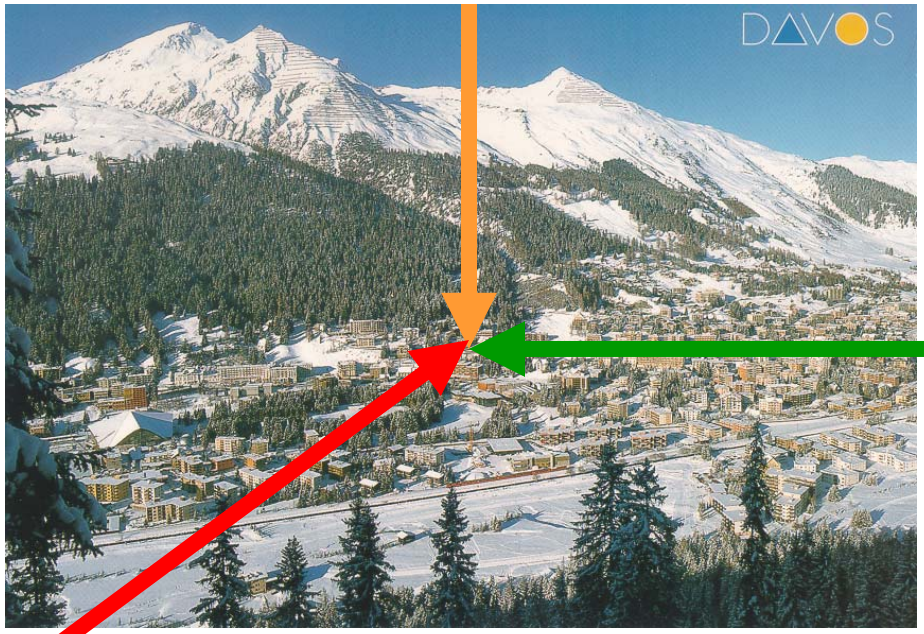
Swiss experience with an integrated approach and lessons learnt for international cooperation.

World Conference on Disaster Reduction (WCDR), Kobe 2005

Overview: aspects of sustainability

How safe is safe enough?

Economic aspects



Ecological aspects

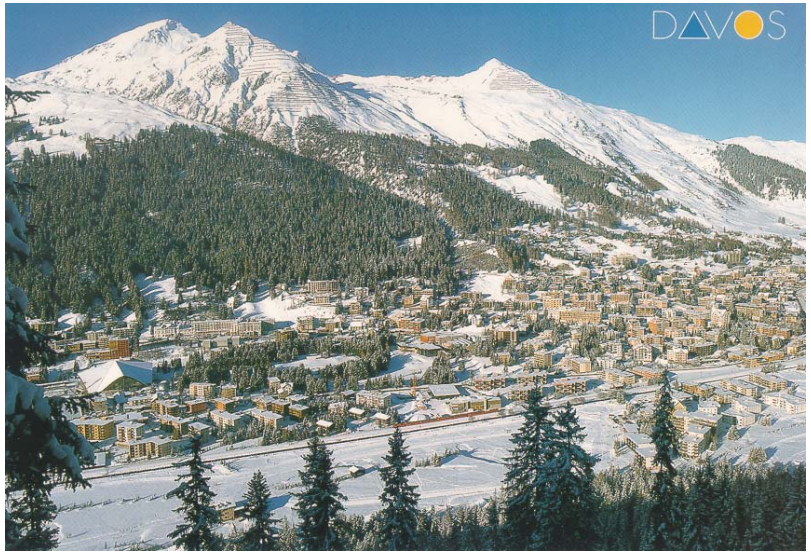
Socio-political aspects

Risk analysis and risk assessment

What can happen?

How safe is safe enough?

What is acceptable?



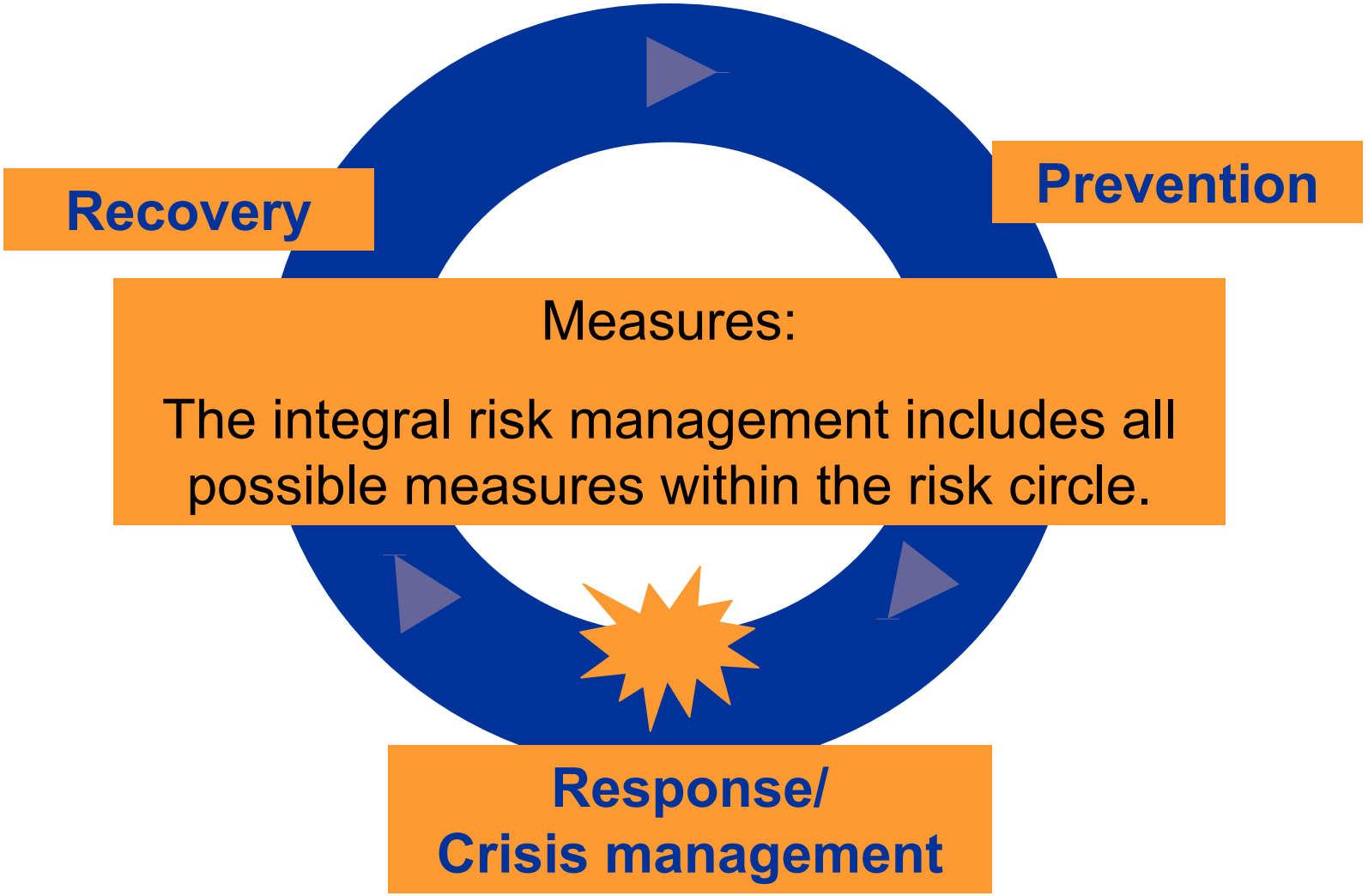
What needs to be done?

Risk Analysis

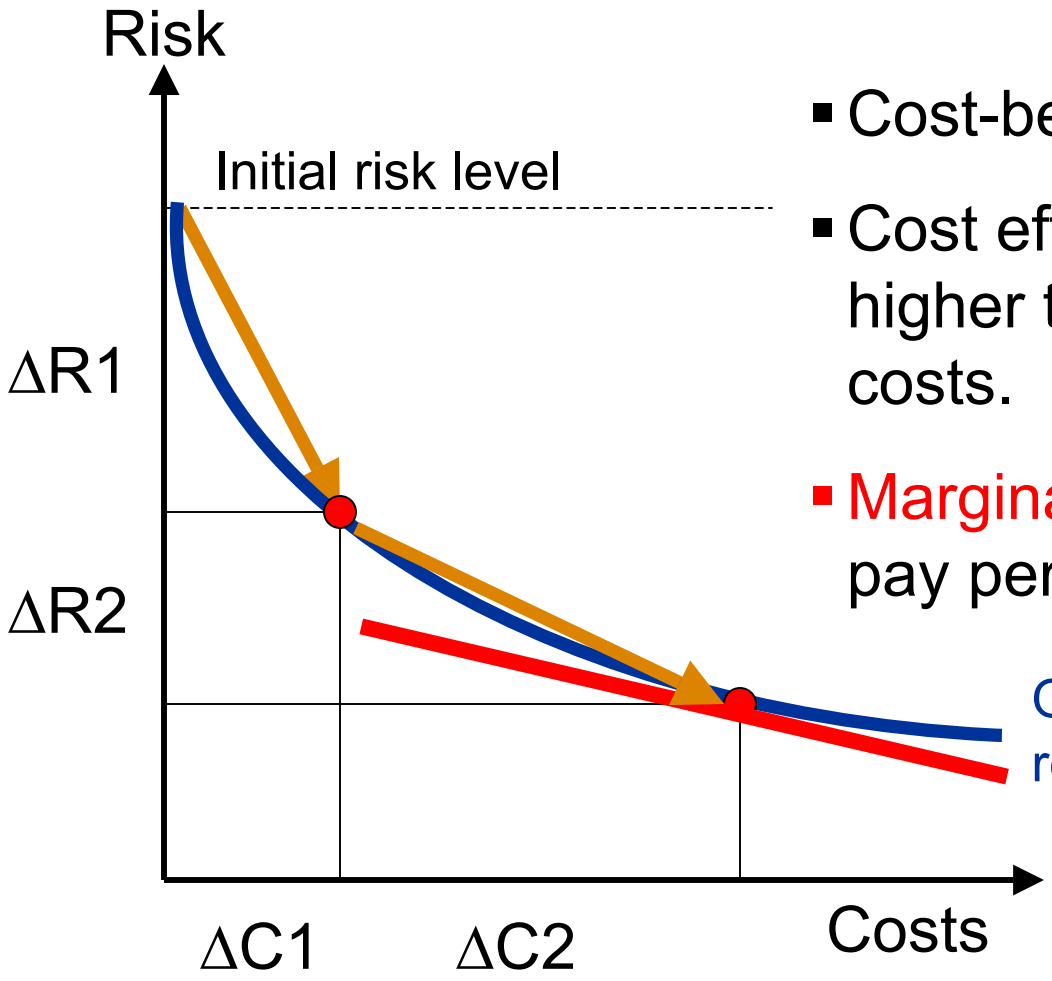
Risk Assessment

Integral Planning of Measures

Mechanisms of the risk circle



Economic aspects



- Cost-benefit relation.
- Cost effectiveness has to be higher than the marginal costs.
- Marginal costs (willingness to pay per life saved)

Optimised curve for risk reduction costs

Socio-political aspects

- Marginal cost: collective risk covered with willingness to pay
- Individual risk: probability of individual death is fixed (to be comparable with other risk situations)
- Safety against natural hazards is a question of priorities and has to be seen in context with other targets such as education, health care etc (part of sustainable development).
- Integral risk management as part of sustainable development (preventive measures)
- Critical aspect in recovery: Reallocation of resources needed, originally to be used for e.g. investments in education, health care, welfare.
- It needs political balance between long-term investments for prevention and short-term measures.

Ecological aspects

- Disaster risk reduction is part of sustainable use of natural resources
- Nature to include in planning process of measures
- Nature needs space (flood plains)
- Biodiversity to be guaranteed
- Eco-engineering measures in favour of technical measures
- Risk reduction measures to be seen in the context with other targets (environmental protection, biodiversity, etc.)

Safety in a context with other goals

Hazard situation

Define protection goals

Planning of measures

Environ ment

Define ecological goals

Planning of measures

Realisation of combined measures

Organisational measures

Example: avalanches
Organisational measures include early avalanche warning, evacuation, road closing, crisis management, etc.).

Economic:
- high cost-benefit ratio
- system has to be operable over years

Socio-political:
- Settlements and infrastructures not protected - pressure on political decision makers in catastrophic situation
- People have to be aware of what to do

Ecological:
- no environmetal degradation due to technical measures

Technical measures

Technical measures include avalanche barriers, road galleries, deflection dams, road tunnels etc.

Economic:

- Today's costs as an investment to prevent future losses.
- Longevity has to be guaranteed
- maintenance costs in the future

Socio-political:

- Investments compete with other goals
- Life and property protected

Ecological:

- Techn. measures may influence environment and reduce biodiversity

Ecological measures

Ecological measures, e.g. protection forest, reforestation, erosion control

Economic:

- Good cost-benefit relation

Socio-political:

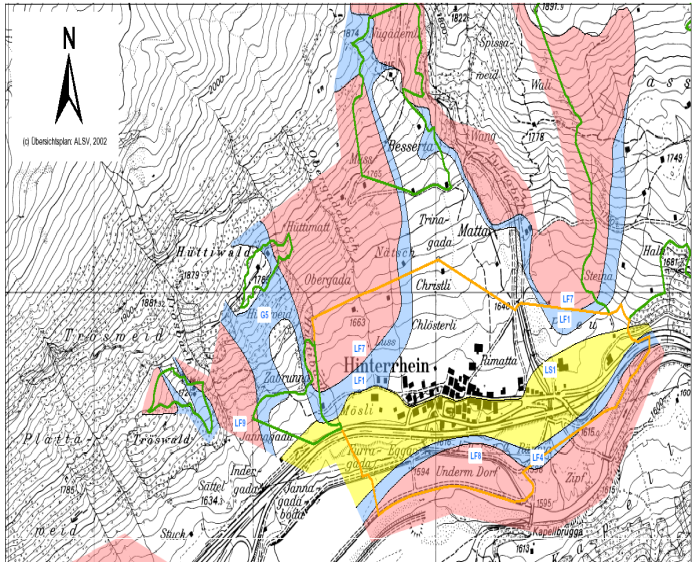
- Excellent public perception
- Ecological measures highly accepted by the public

Ecological:

- Ecological measures in favour of technical measures (environmental protection, increase in biodiversity, etc)

Land use planning measures

Hazard mapping and land use planning as a consequence are an important and efficient measure.



Economic:

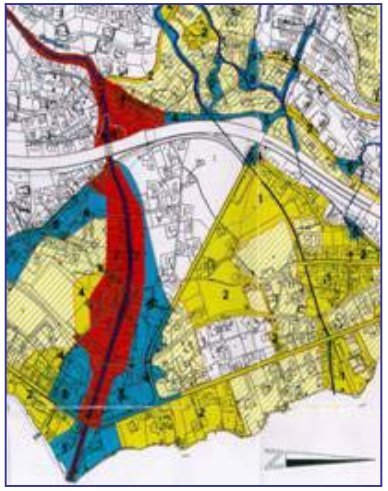
- Excellent strategy to avoid or limit risk
- exploitation profits might get reduced.

Socio-political:

- limits are imposed to property rights
- requires a risk dialogue

Ecological:

- Environmental aspects guaranteed



Lessons learnt

- **Coping with risks due to natural hazards means coping with societal decision making.**
- **Measures to avoid or reduce risks have to be:**
  - **effective and efficient (marginal cost principle)**
  - **Environmentally sound**
  - **Part of sustainable development**
  - **Within socio-political preferences**
  - **Established in a public-private risk-dialogue**

Risk Dialogue

Next speaker: **Thomas Rageth**

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