



Alpine Strategy for Adaptation to Climate Change in the Field of Natural Hazards

Platform on Natural Hazards of the Alpine Convention PLANALP



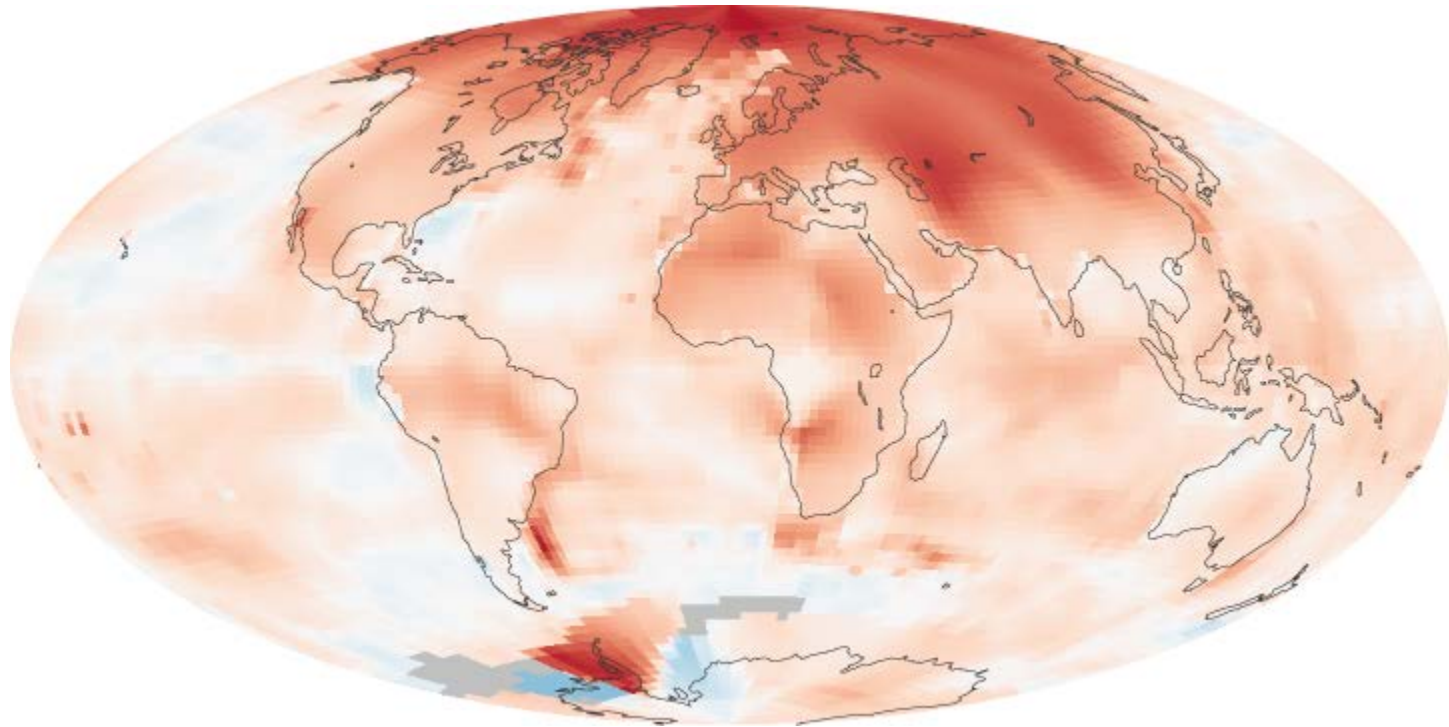
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Member of PLANALP

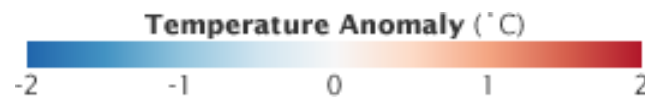
Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management



Climate Change



Global warming 2000-2009
compared to reference period 1951-1980



Source: NASA Earth Observatory 2011



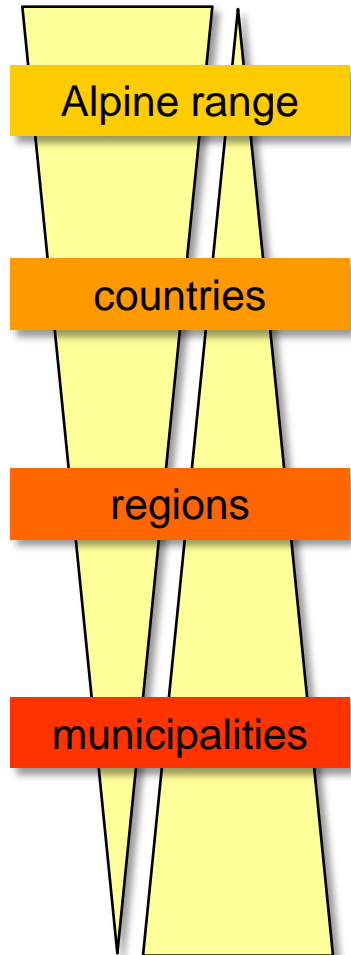
Climate Change

- Not a new phenomenon
- New: speed of change, land use intensity, damage potential
- **Action needed: mitigation and adaptation**
- Importance of adaptation is growing





Climate Change Adaptation



		Climate Change (temperature, precipitation, pressure)				
		Water - surface run off - ground water - water quality - snow - ice	Soil - C-storage - fertility - erosion	Air - ozone - aerosols - particulate matter	Biology - phenology - migration - neobiota	
Adaptation measures	Sectors					
	Agriculture	●	●	●	●	●
	Forest management	●	●	●	●	●
	Energy	●	●			●
	Water management	●	●	●	●	●
	Tourism	●	●		●	●
	Biodiversity management	●	●	●	●	●
	Spatial development	●	●	●	●	●
	Health	●	●		●	●
	Natural hazards	●	●	●		●

● (Mutual) Interaction between climate change impact and adaptation measure




Mandate PLANALP

- Alpine Convention has commissioned PLANALP to develop a **strategy** for adapting to climate change in the field of natural hazards (March 2011)
- Final version until XIIth Alpine Conference (September 2012)



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in the Field of Natural Hazards

Developed by the Platform on Natural Hazards of the Alpine Convention PLANALP

 Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra
Sveiz Confederaziun
Föderal Department for the Environment, Transport,
Energy and Communications BDTKE





Strategy elements

1. **Background:** Climate Change, Natural Hazards and Adaptation in the Alpine Space
2. **Long-term Goals for Risk Management in the Alpine Space** under changing Climatic Conditions - “**Strategy**”
3. **Recommendations** for Integrated Climate-Proof Risk Management in the Alpine Space and Good Practice Examples



1. Background

Climate Change, Natural Hazards and Adaptation in the Alpine Space

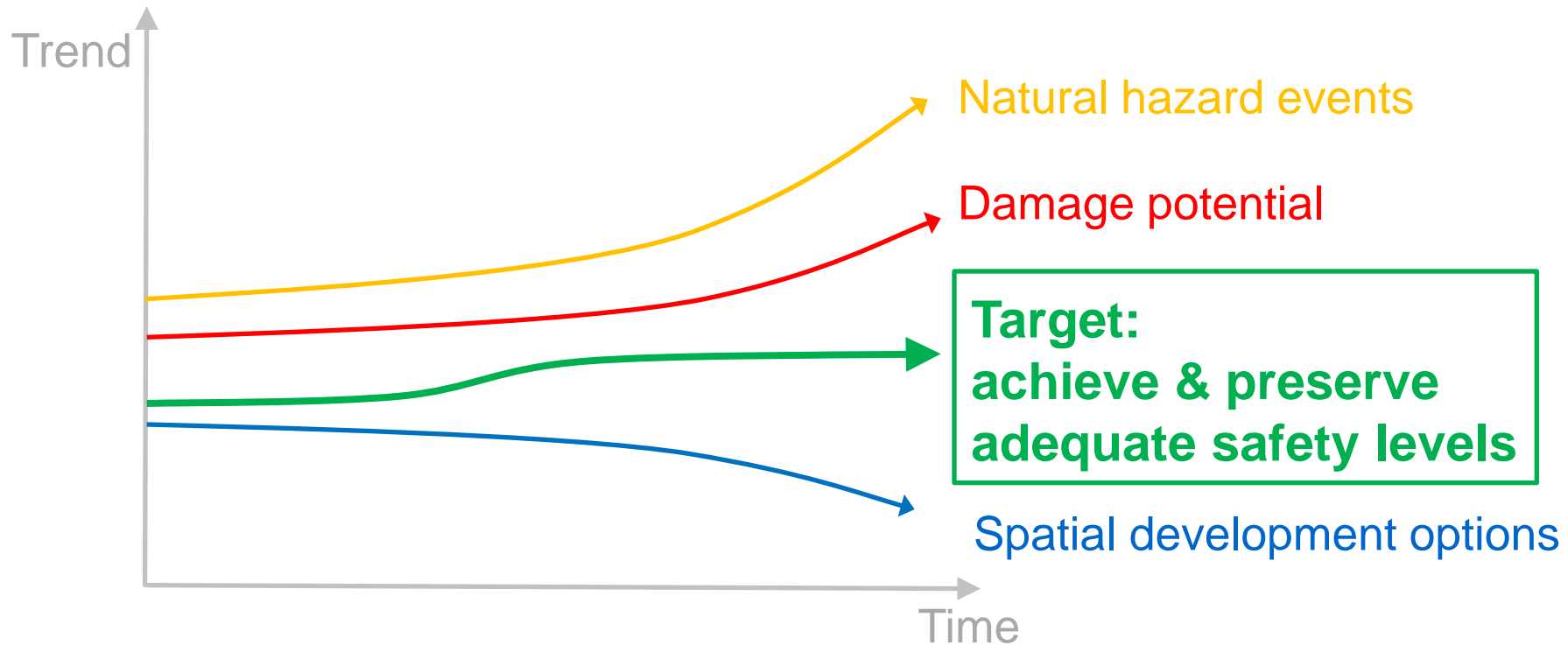
Overview of Adaptation Strategies across the Alpine Space

State	National Adaptation Strategy	Action Plan	Natural hazards key sector?	Regional Adaptation Strategies
Austria	2012	2012	yes	partly in development
France	2006	2011	yes	Rhône-Alpes and Provence-Alpes-Côte d'Azur expected 2012
Germany	2008	2011	partly	Bavaria (2009)
Italy	expected 2013	Action Plans against desertification, droughts and forest fires and for irrigation, health and water resources management	yes	
Liechtenstein	-	-	-	-
Slovenia	expected 2012	expected 2013	partly	not yet predictable
Switzerland	2012	expected 2013	yes	Uri (2011)



2. Adaptation goals

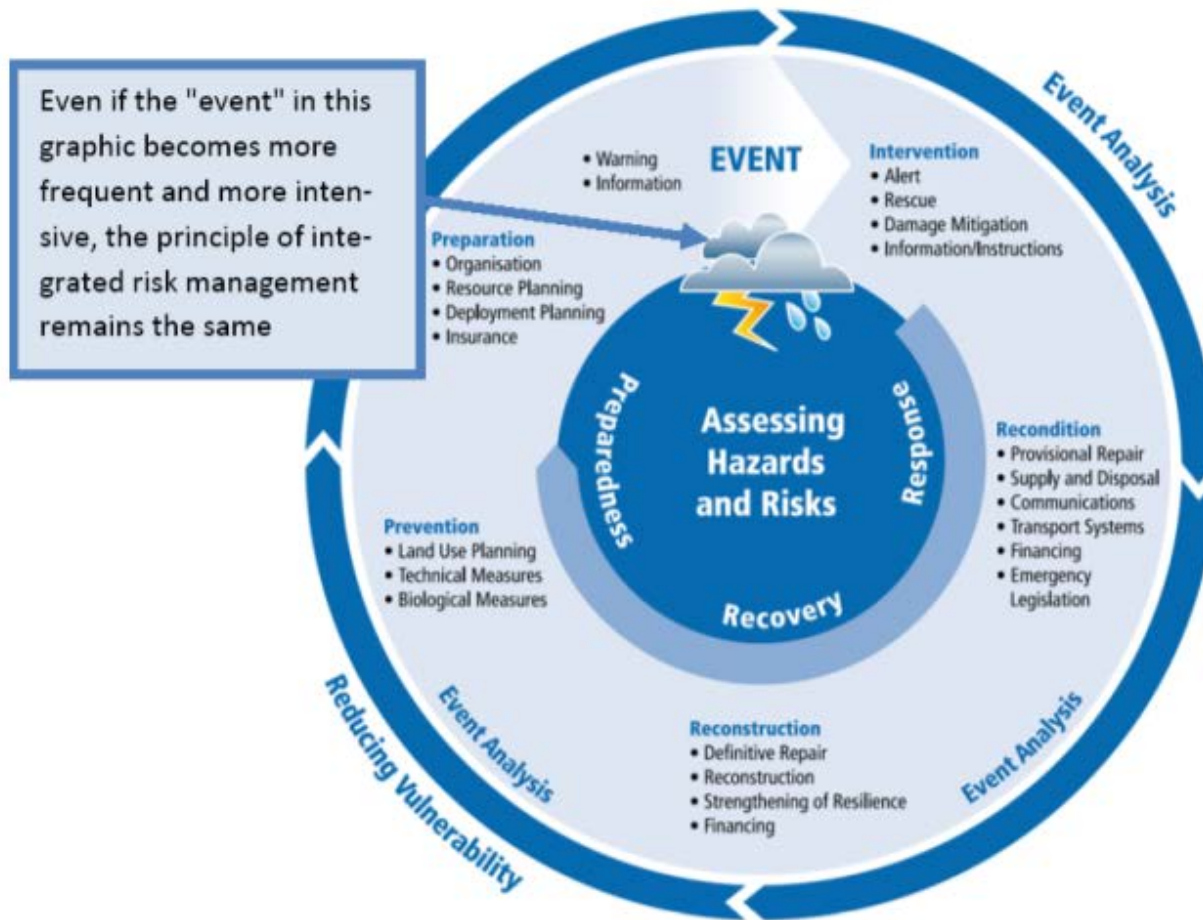
for the Alpine Space under Changing Climatic Conditions





2. Adaptation goals

Integrated approach





3. Recommendations

Based on Good practice examples from the Alpine countries

- Prepare for **emergency** intervention
- Review the climate change **fitness** of existing structural protection measures
- Set up and optimise long-term **monitoring and warning**
- Anticipate and **deal** with new risks
- Adapt hazard and **risk mapping** to changing climate



3. Recommendations

Based on Good practice examples from the Alpine countries

- Enhance coordination between spatial planning and risk management
- Establish a risk culture and initiate risk dialogues
- Strengthen individual preparedness and precaution
- Improve the knowledge base and transfer to practice
- Maintain and improve the functionality of protection forests



Recommendations

→ Italy

Anticipate and deal with new risks

Good Practice Example:

Systematic Analysis and Monitoring of Newly Arising Glacial and Periglacial Hazards in Aosta Valley

Glacial hazards → Ice avalanches



Glacier des Grands Couloirs (Vanoise)
September 1991

©GlaRiskAlp team



Recommendations

→ Germany

Prepare for emergency intervention

Good Practice Example:
Exercise Dike





Recommendations

→ Austria/Liechtenstein

Review the climate change fitness of existing structural protection measures

Good Practice Example:
WLK.Digital: The Austrian
Torrent & Avalanche
Cadastre

Good Practice Example:
Consistent consideration of
excess load for flood
protection measures
(Liechtenstein)





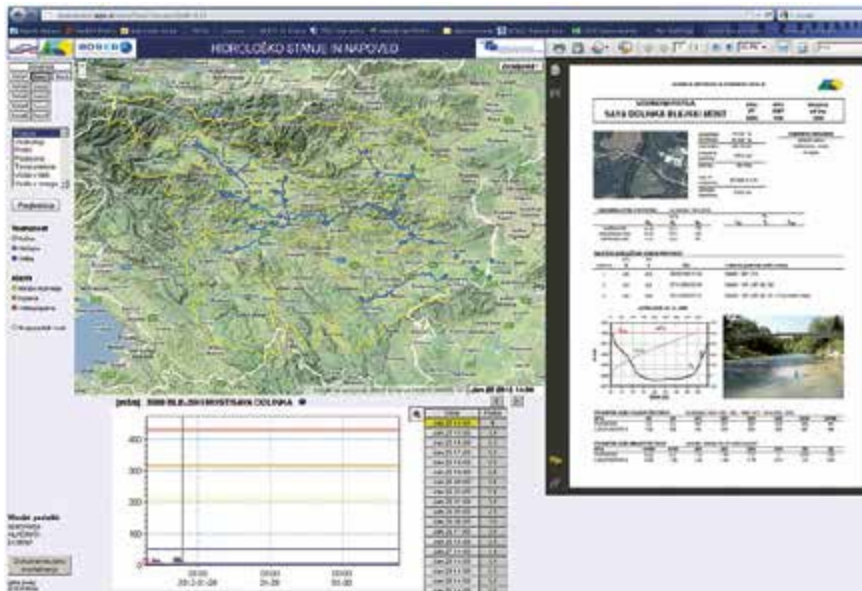
Recommendations

→ Slovenia

Set up and optimise longterm monitoring and warning

Good Practice Example:

Implementation of a flood forecasting system on the rivers Sava and Soca and the Hydroalarm System



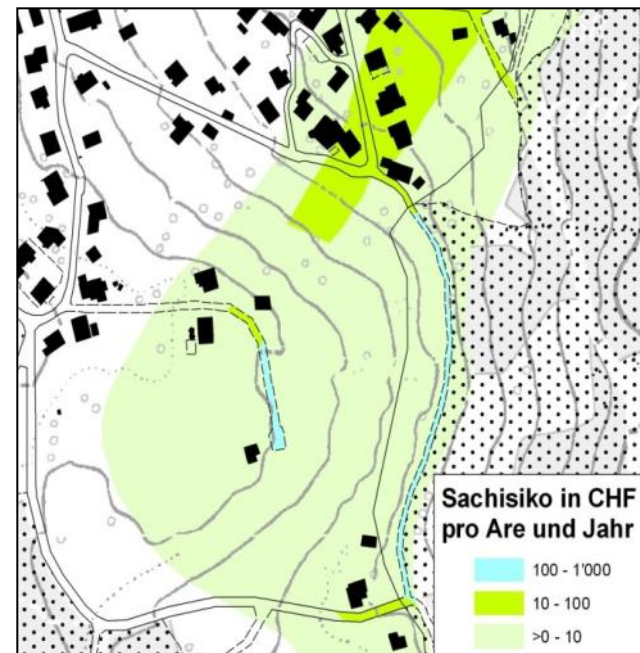
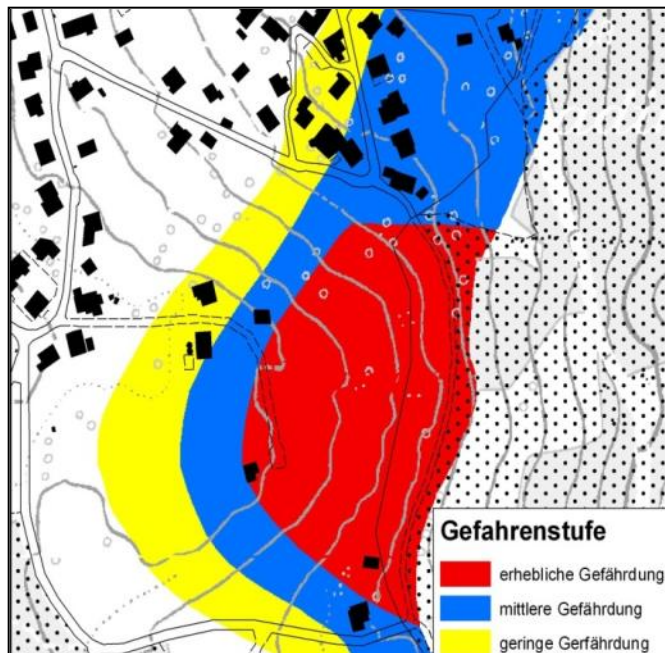


Recommendations

→ Liechtenstein

Adapt hazard and risk mapping to changing climate

Good Practice Example:
Countrywide Hazard and Risk Maps



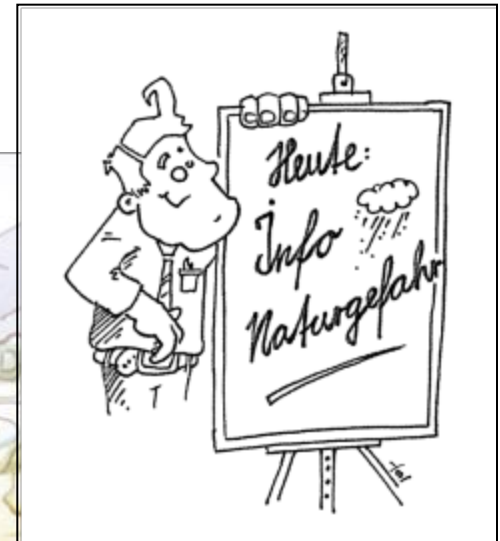
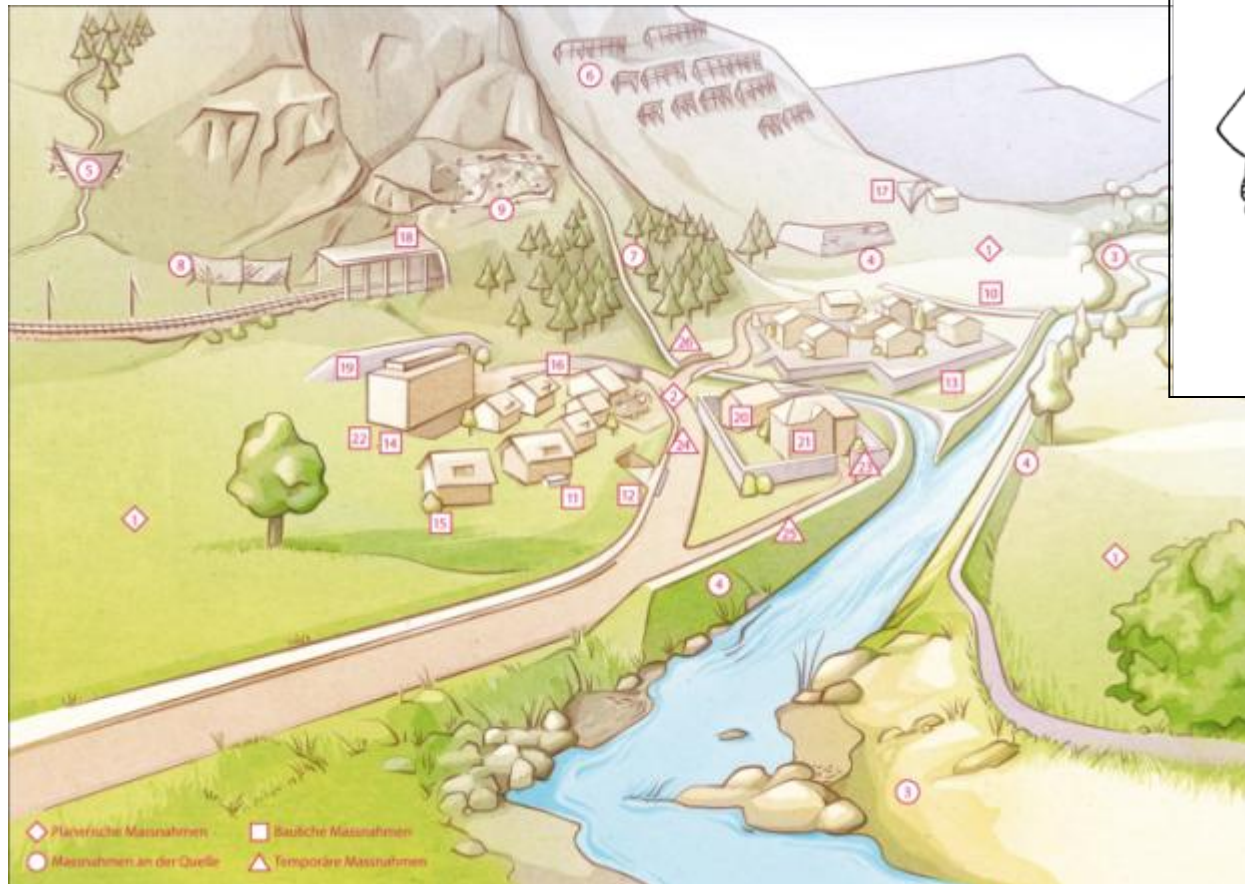


Recommendations

→ Switzerland

Establish a risk culture and initiate risk dialogues

Good Practice Example:
Action Plan on Risk Dialogue





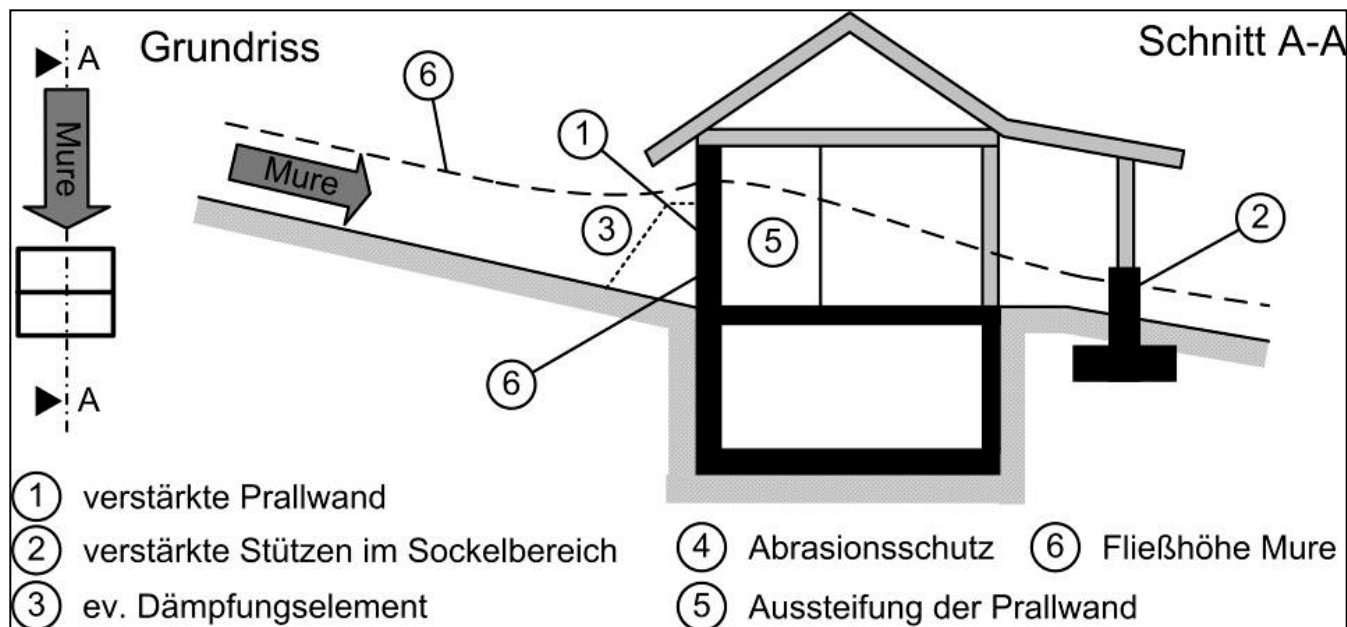
Recommendations

→ Austria

Strengthen individual preparedness and precaution

Good Practice Example:

Planning and Construction of Buildings threatened by Natural Hazards according to “Local Structural Protection – A Practical Guideline”





Recommendations

→ France

Improve the knowledge base and transfer to practice

Good Practice Example:

Climatologic study of natural avalanches over the last 50 years in the French Alps

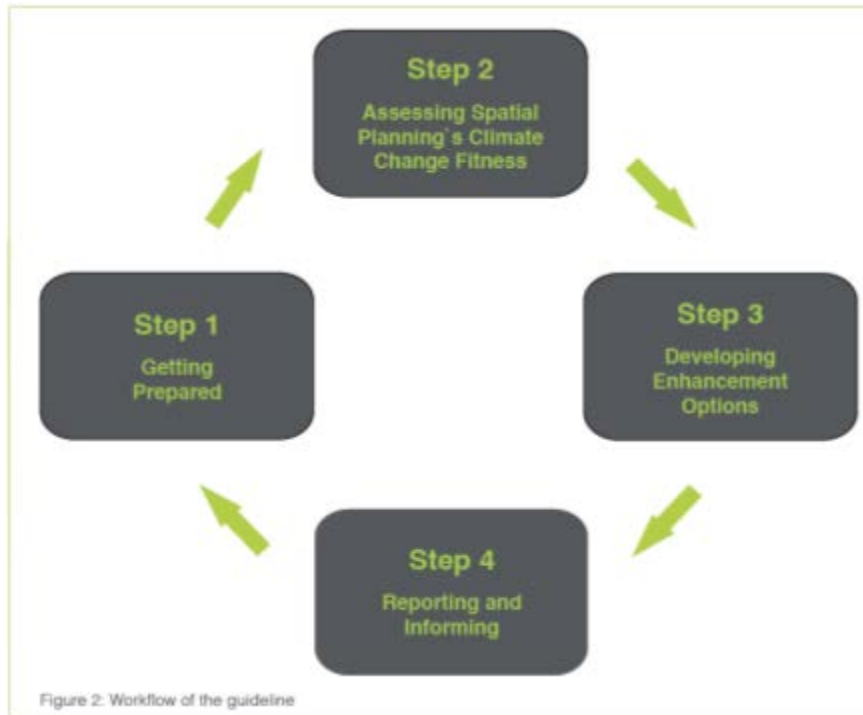




Recommendations → CLISP Project / Transnational

Enhance coordination between spatial planning and risk management

Good Practice Example:
Guidance for Assessing the Climate Change Fitness of Spatial Planning



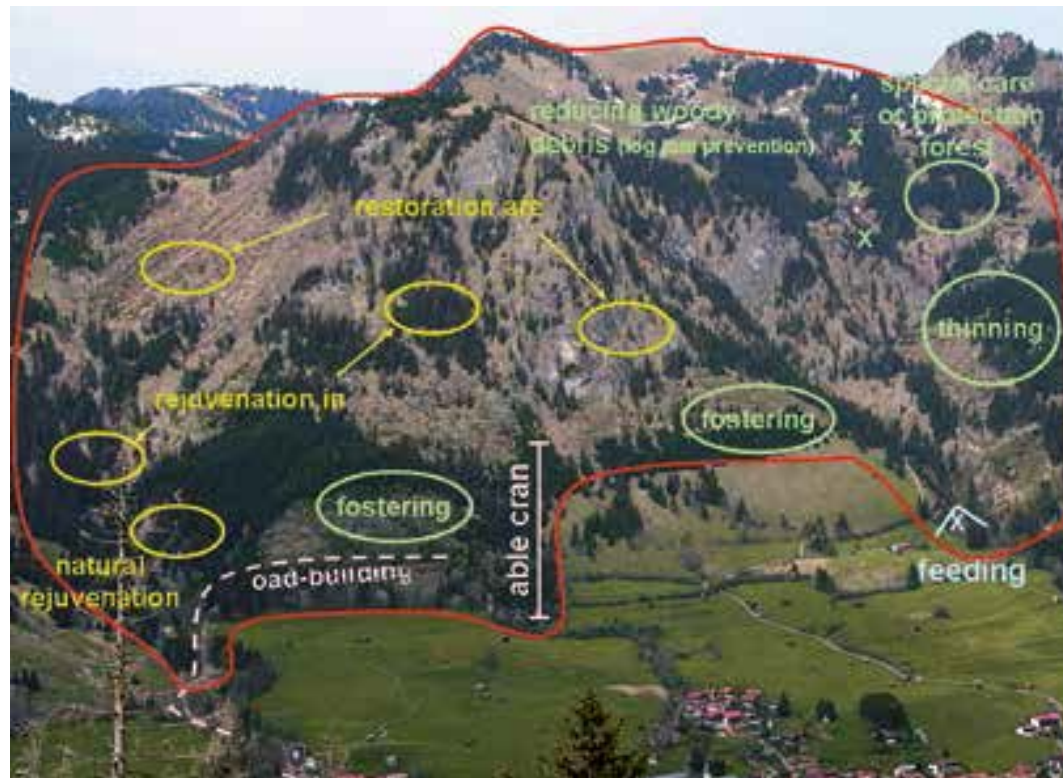
http://www.clisp.eu/content/sites/default/files/CLISP_Transnational%20Planning%20Strategy.pdf



Recommendations → Germany

Maintain and improve the functionality of protection forests

Good Practice Example:
Mountain Forest Initiative






Download the document



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> Information material

> search “Alpine strategy”

www.planat.ch/en/marketing-materials-detail-view/datum/2013/01/03/alpine-strategy-for-adaptation-to-climate-change-in-the-field-of-natural-hazards/