



# Solutions: Examples from Switzerland

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# Natural disasters in the Canton Valais

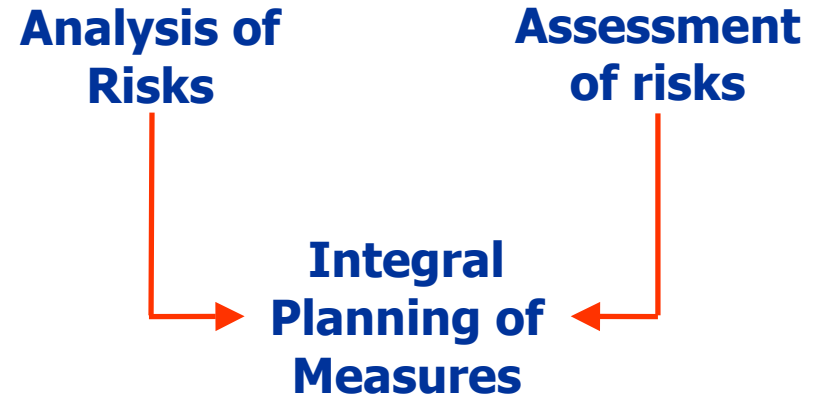


Action is needed...

... Solutions

# Risk concept

The risk concept considers:



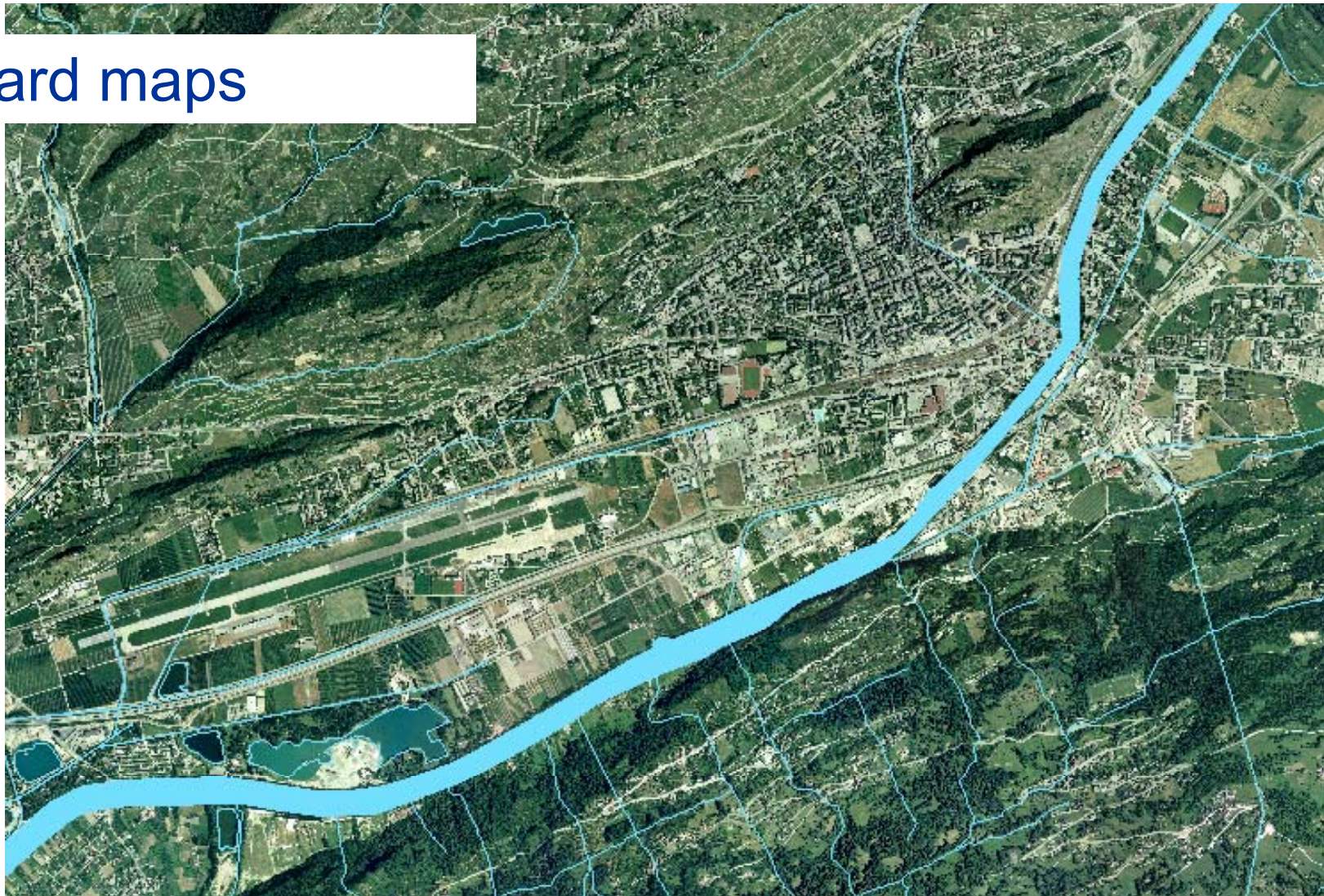
- An in-depth assessment of **all** prevailing hazards
- The definition of protection goals is based on a risk dialogue
- Integral planning of measures where the residual risks require special attention

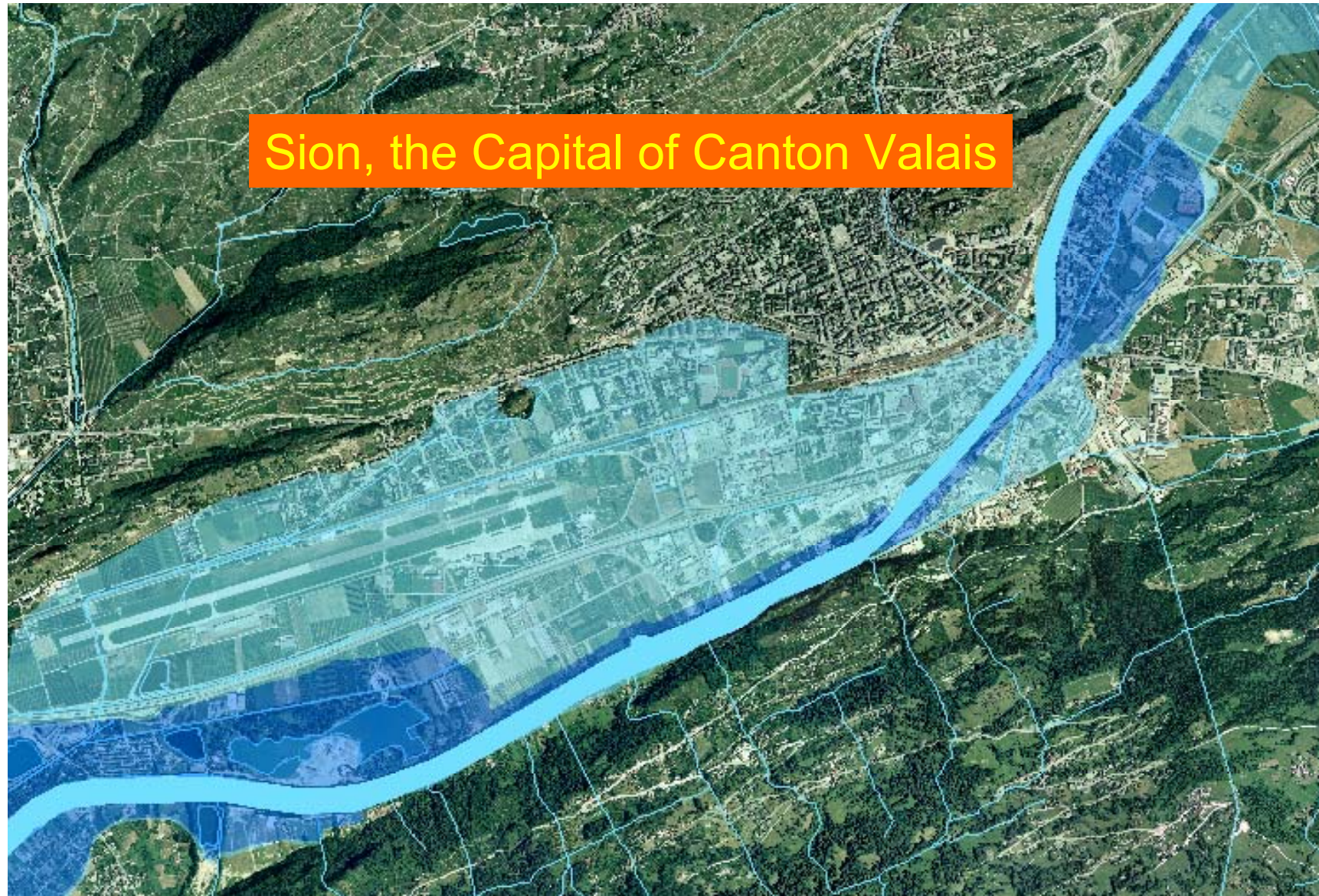
# Integrated disaster reduction approach

The implementation of measures to reduce hazards, vulnerability and risk includes:

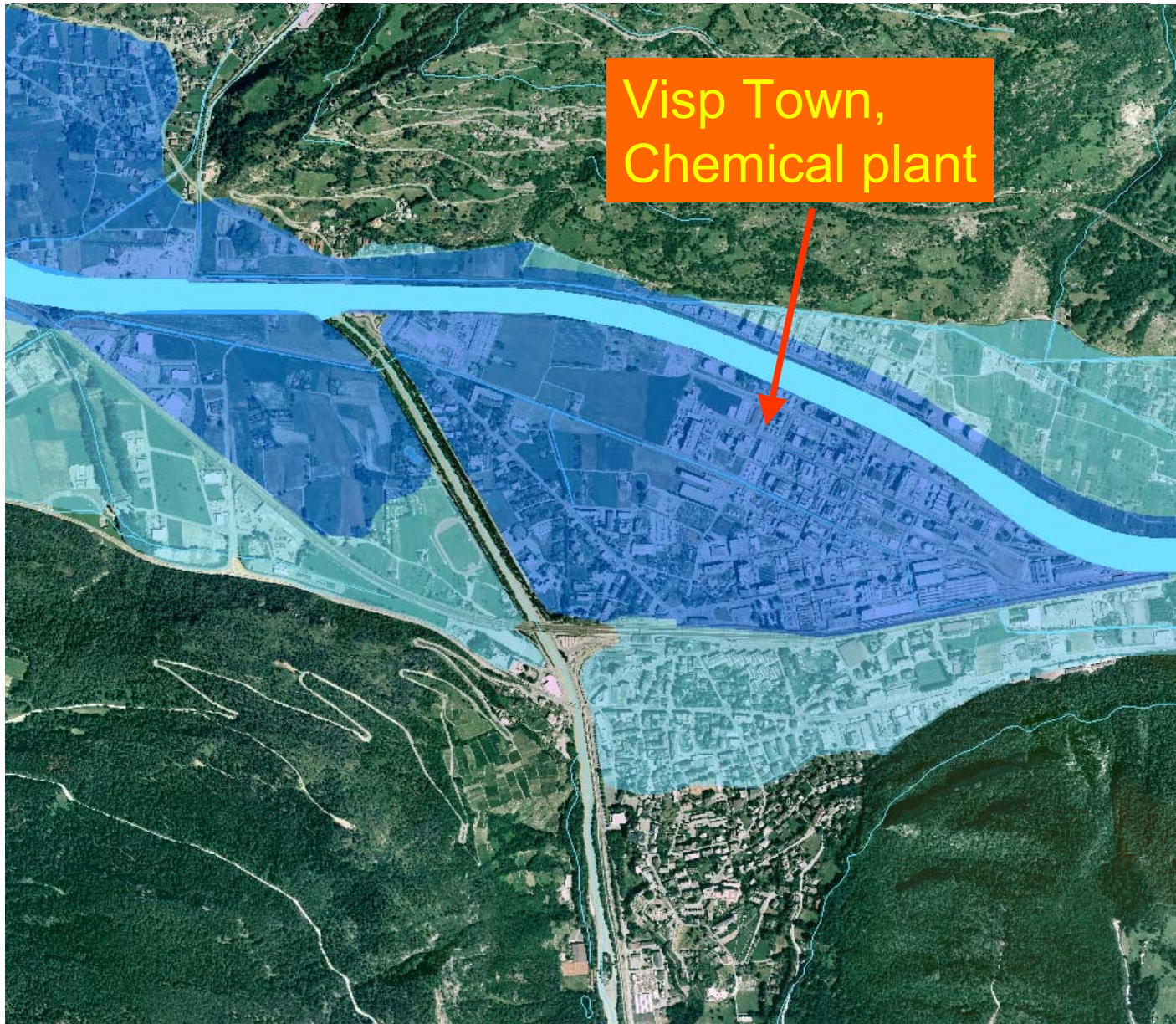
- Planning (e.g. land-use planning, building codes)
- Protective structures (e.g. dikes, retrofitting)
- Preparedness (e.g. early warning systems, emergency services)
- Biological measures (e.g. reforestation)

- Hazard maps





Sion, the Capital of Canton Valais



Visp Town,  
Chemical plant

Expected loss for a  
100-years flood



Today's condition



**\$ 2.2 billion**

If zones fully occupied



**\$ 4.2 billion**



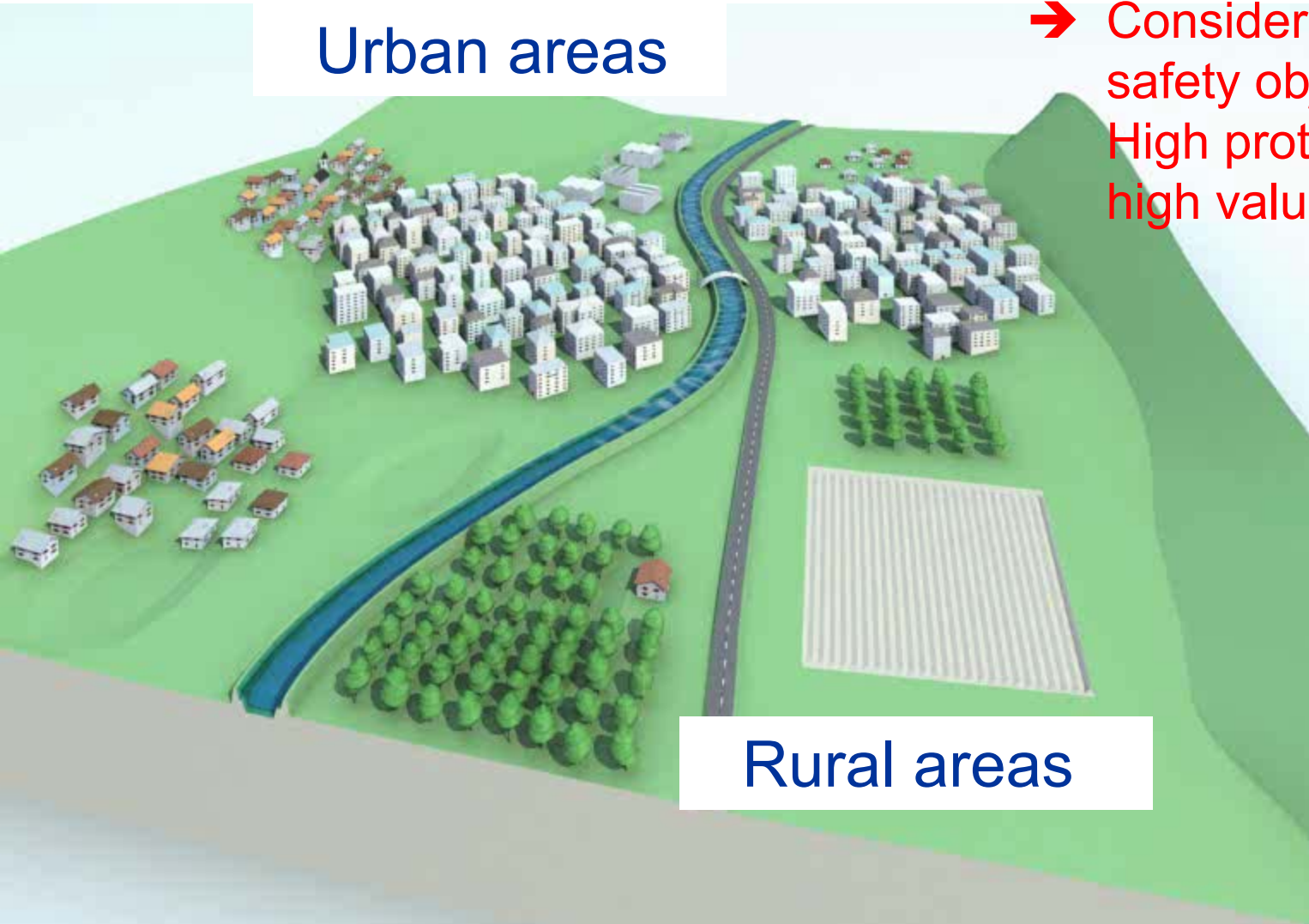
## Economic and socio-political considerations among actors



Urban areas

→ Consider differentiated safety objectives:  
High protection only for high values

Rural areas



To increase design discharge ...

1. Rising/strengthening of dikes

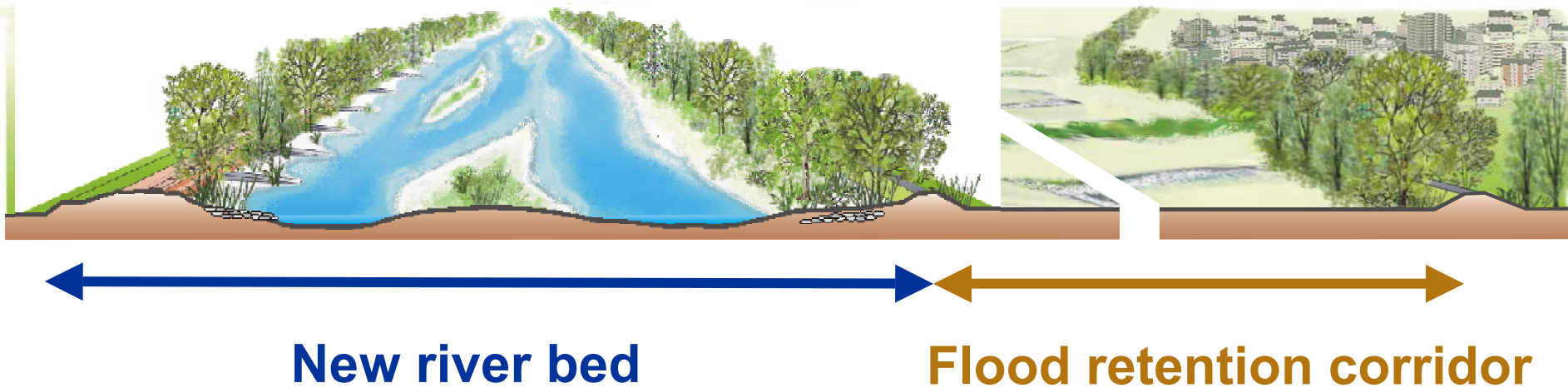


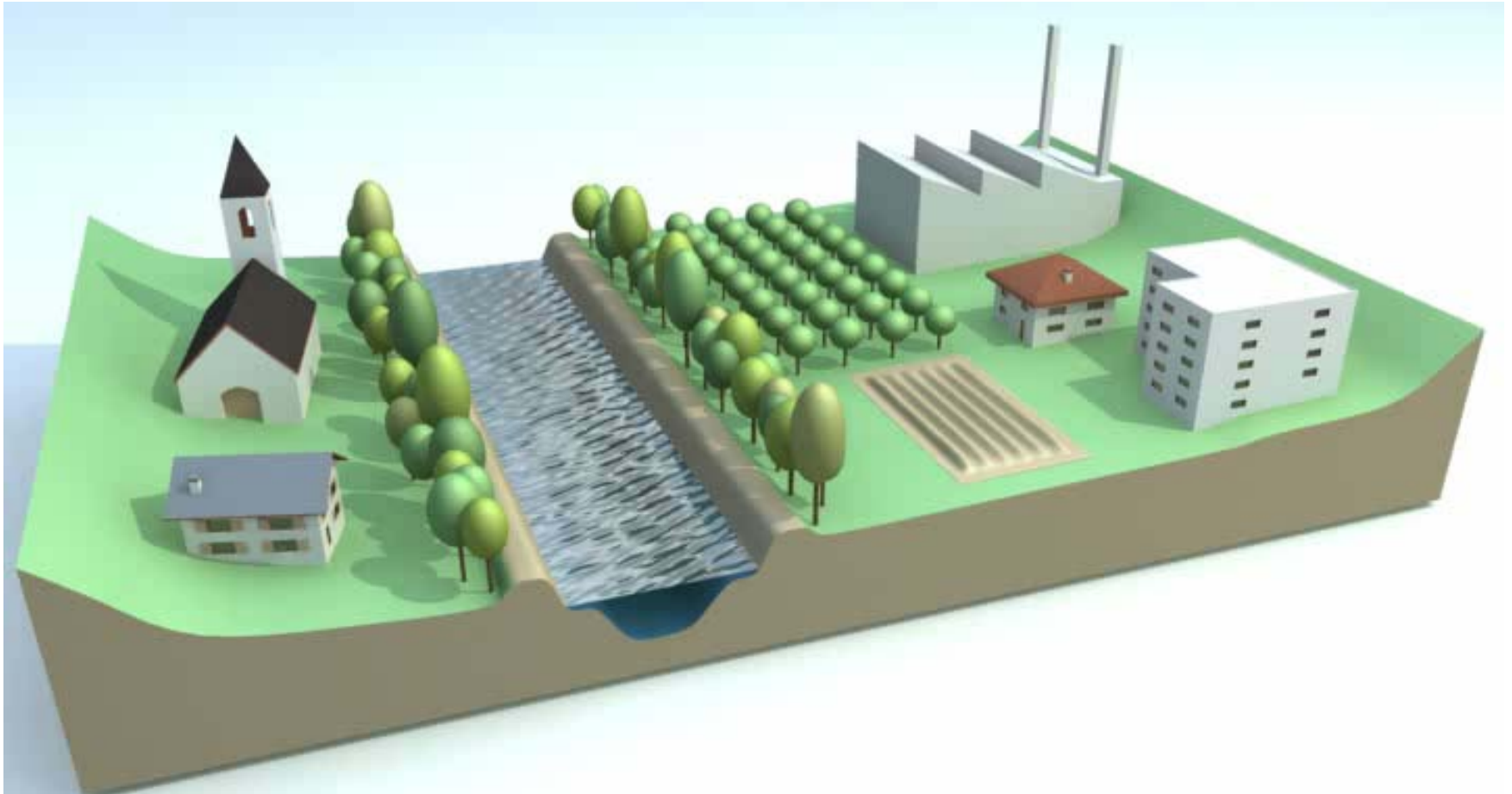
2. Increasing of river width (providing more space)



To include extreme events ...

## 3. Channel with confined flood plain





Differentiated safety objectives and protective structures according to land-use intensity.

# Technical solutions in urban areas



# Low-cost technical solutions in urban areas



# Individual flood proofing





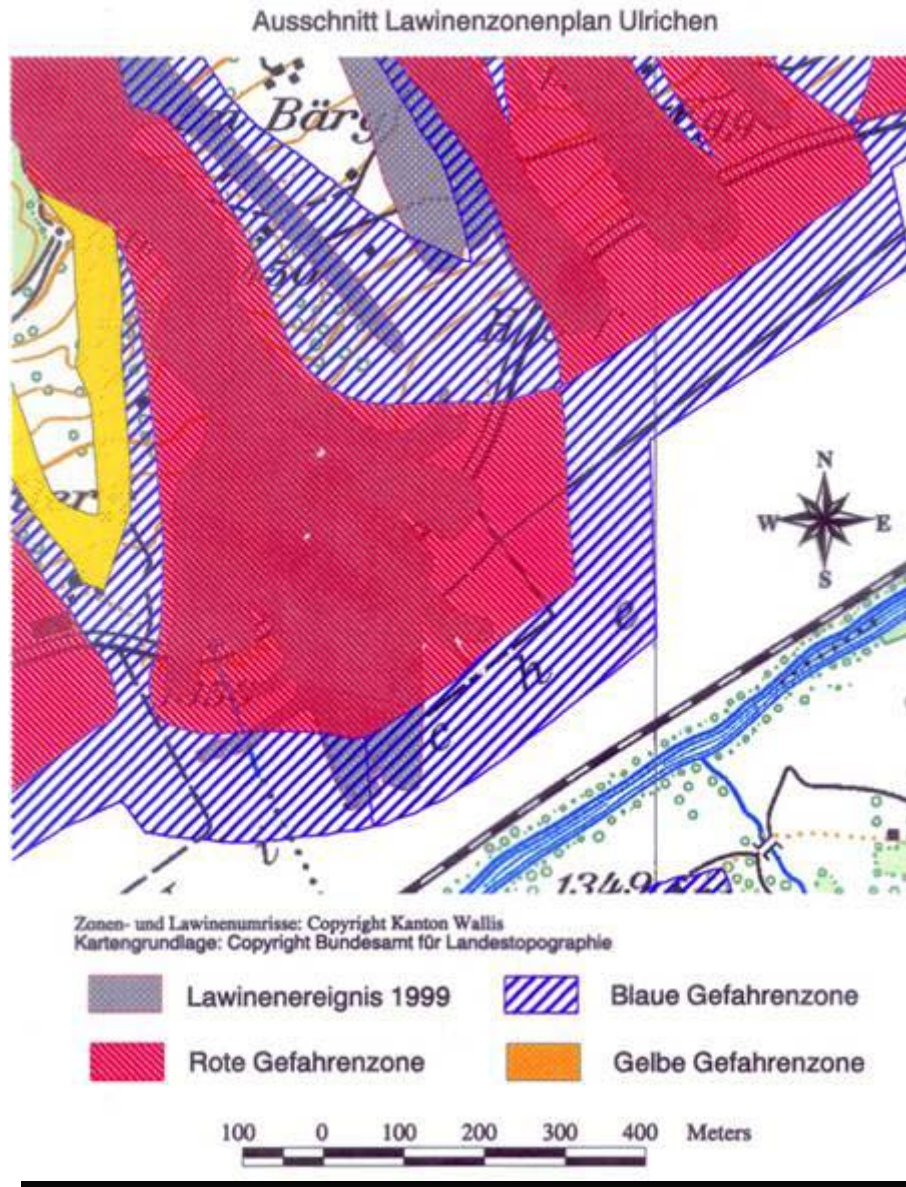
# Avalanches

# Hazard assessment



# Zoning of avalanches

(Hazard map for Geschinen/Ulrichen – Niderbach)



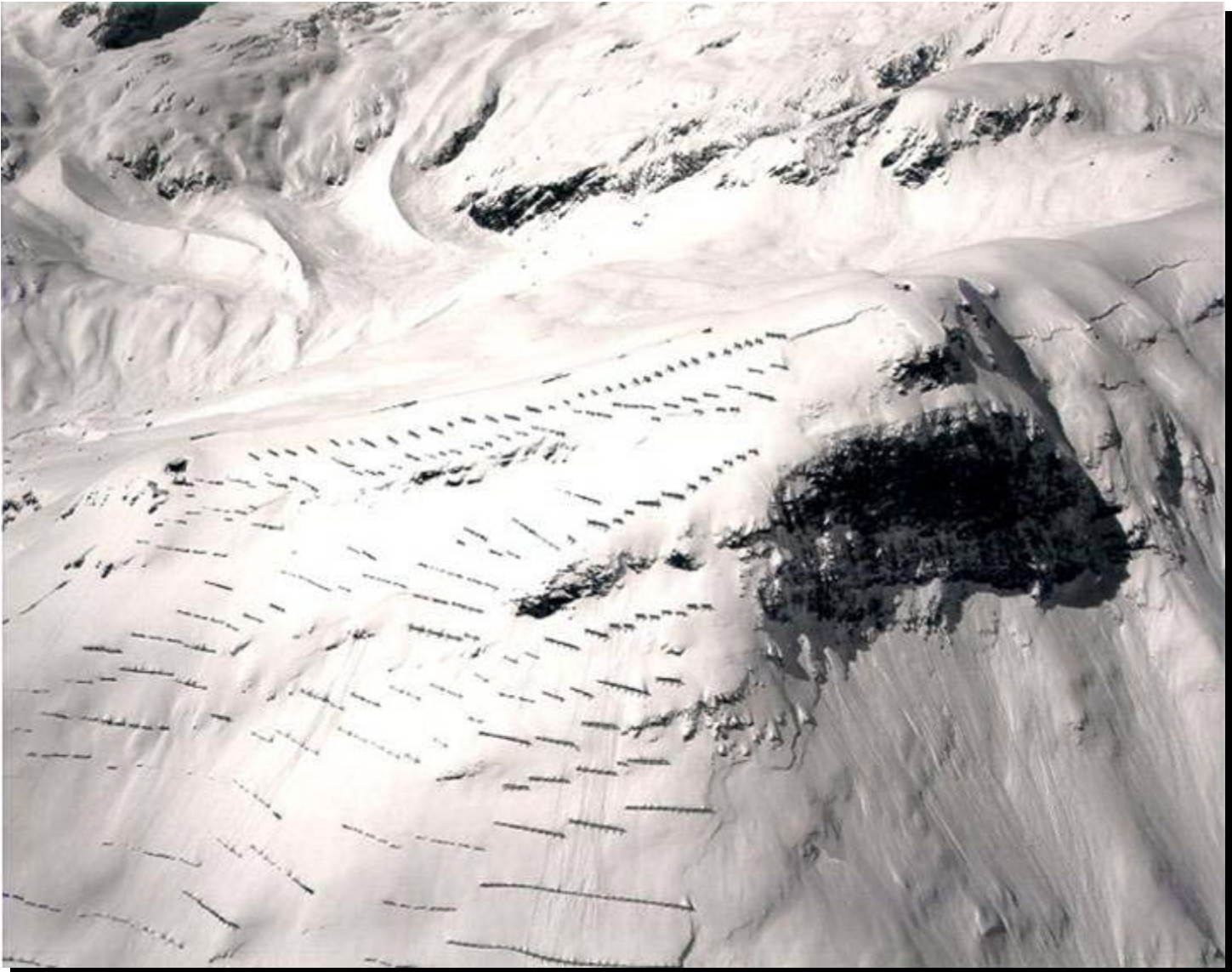
# Biological measure (reforestation)



# Area of reforestation



# Structural measures steel supporting structures



# Structural measures

## Wood snow rake



# Structural measures

## Steel snow-nets



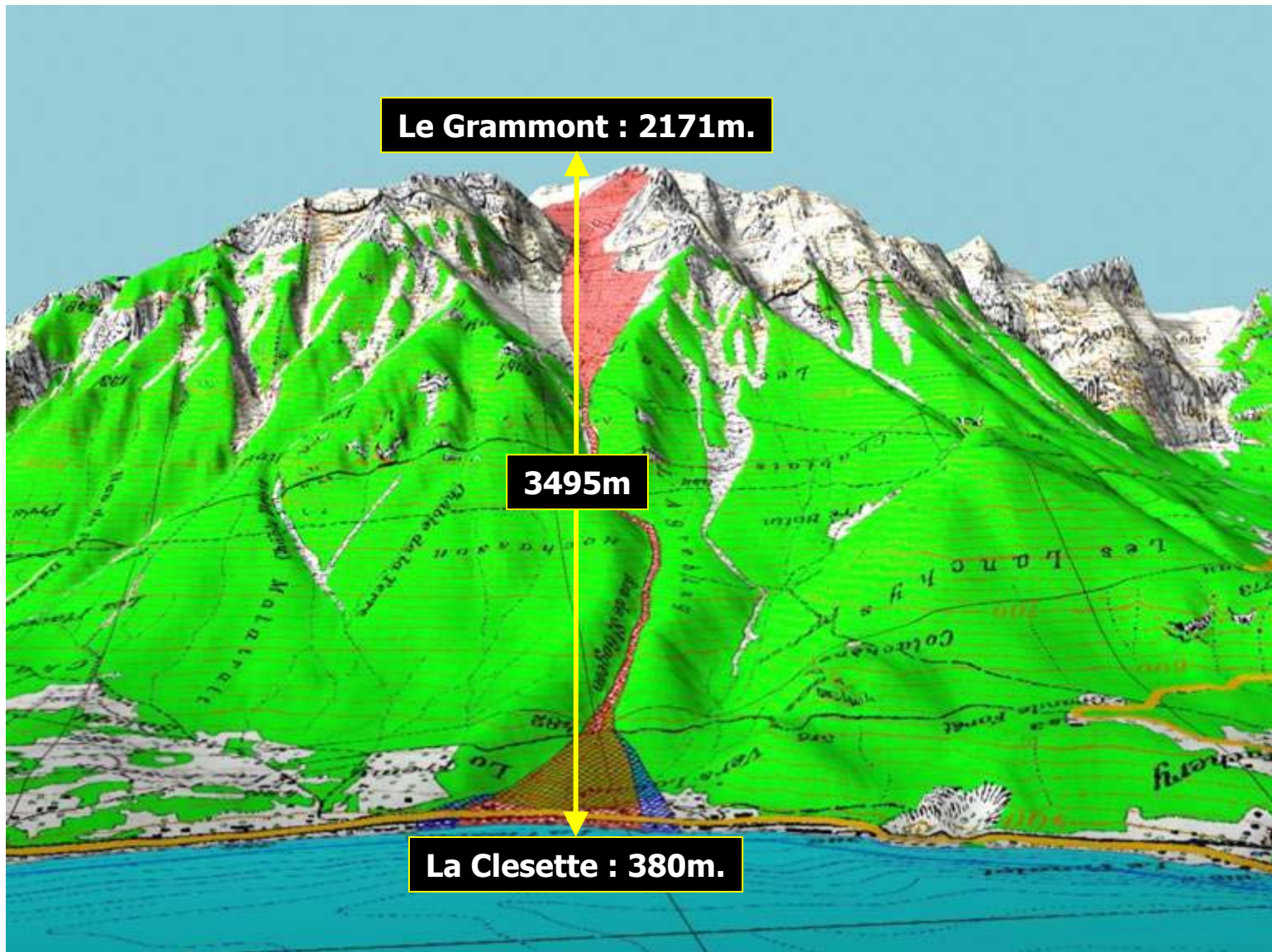
# Structural measures

## Training dikes

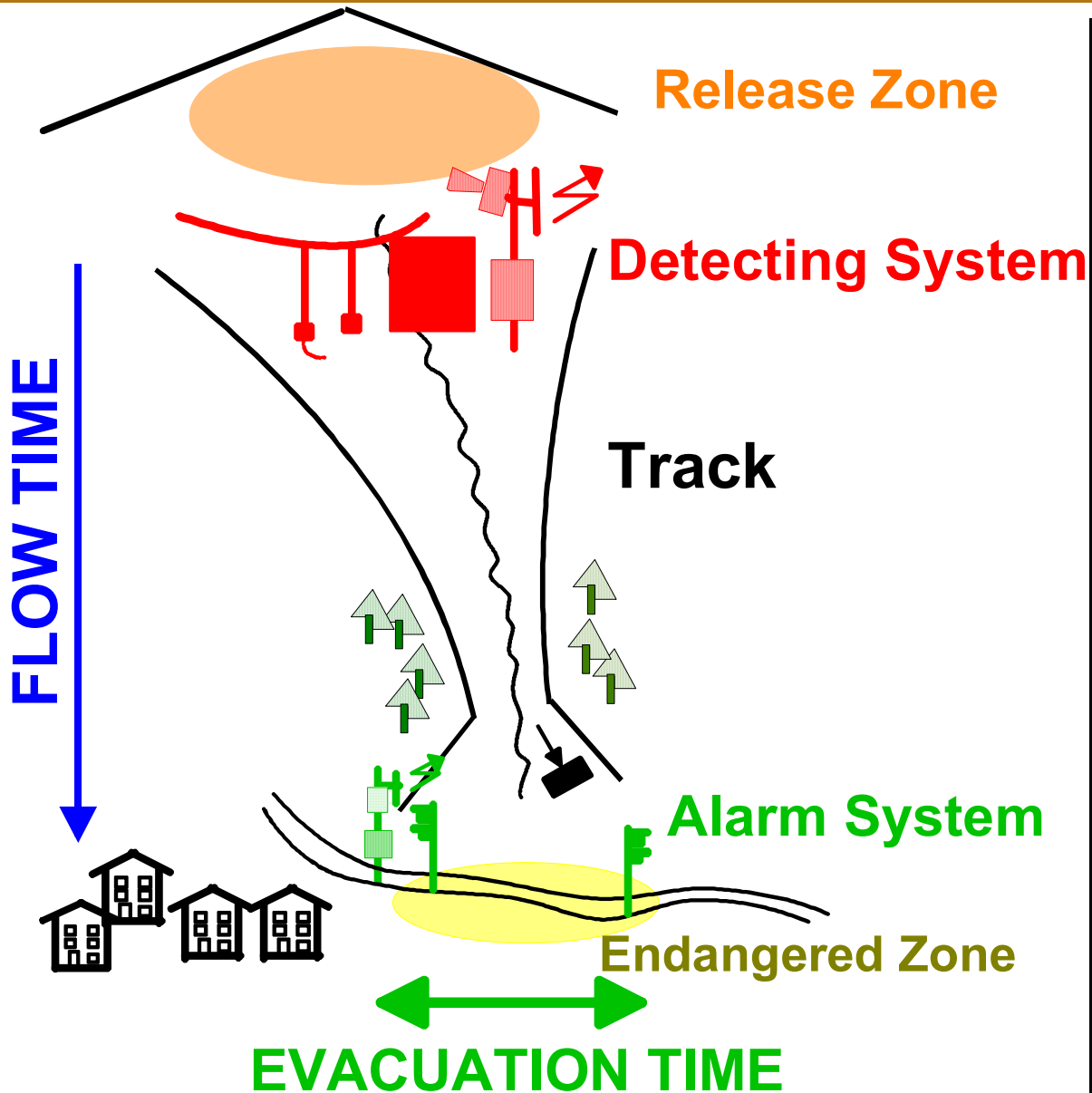




# Preparedness Avalanche in St.-Gingolph



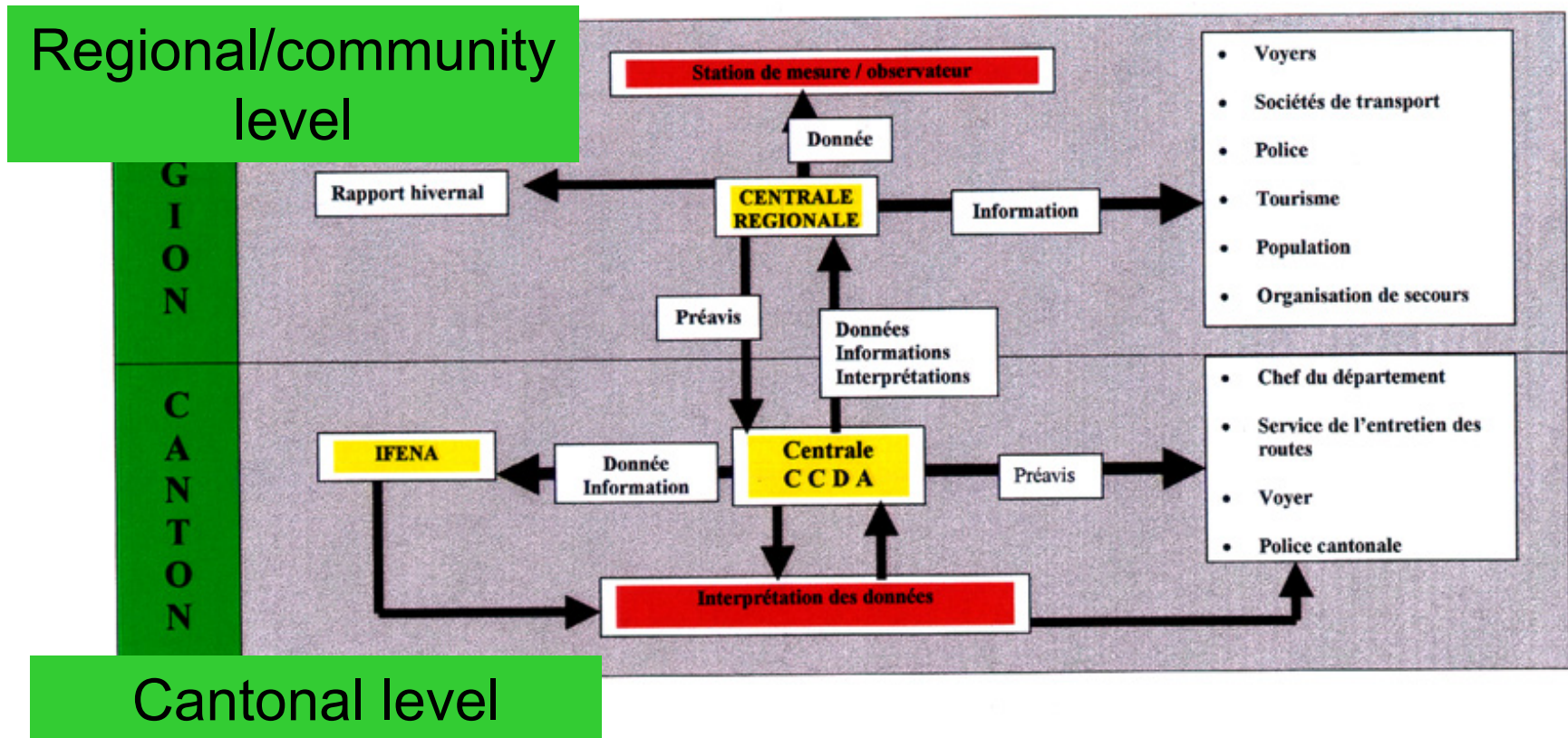
# Preparedness Early warning system



# Emergency management

## Organisation of the security service

CONFIGURATION D'UNE STATION DE MESURE :  
CENTRALE REGIONALE- CENTRALE CCDA



# Emergency services

## Regional security services in Canton Valais



# Lessons learnt

- Only an integrated approach will succeed in sustainable disaster reduction
- The dialogue on risks is the key to go from risk perception to risk awareness
- Include all actors in the planning and implementation of measures
- Differentiated protection objectives are the key for ecological and economic considerations.
- There is always a remaining risk and emergency planning is a must (e.g. Early Warning Systems)



# Dialogue on Solidarity

