

## Program

### Technical Symposium / General Assembly 2023 in Bolzano (Italy)

**Date:** 2<sup>nd</sup> May 2023

**Location:** Technical Symposium and General Assembly at NOI Techpark, A.-Volta-Straße 13/A - 39100 Bolzano/South Tyrol – Italy, conference room 3



ing. Fabio De Polo  
**Director Torrent and avalanche control, management Office of the Province of Bolzano**



ITALY

Alto Adige/Südtirol

German lang. 69.15%  
Italian I. 26,47%  
Ladin I. 4,37%

Pop. (31.12.22)

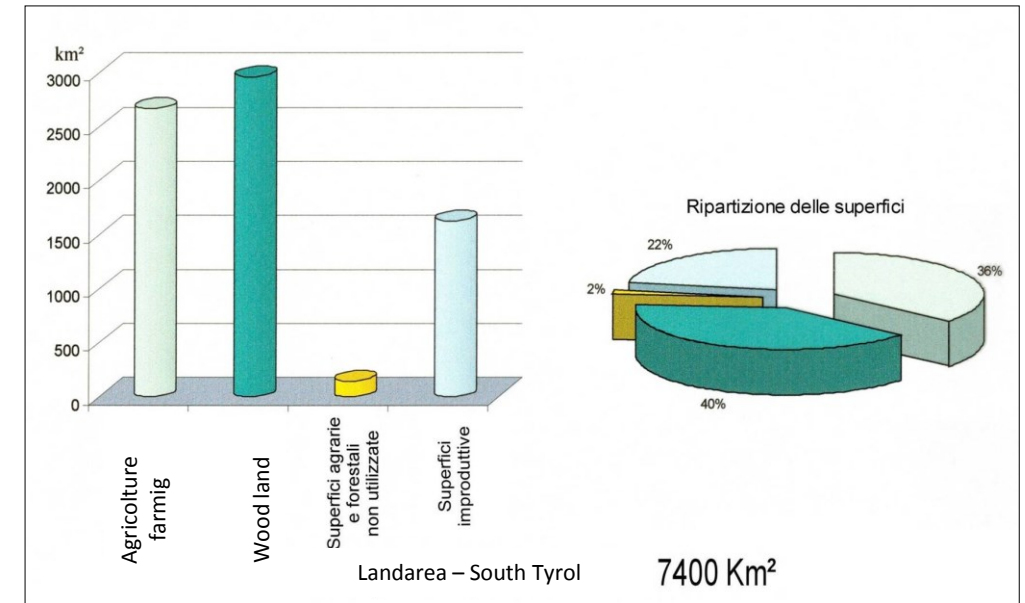
58.851.000

533.267

Sup.(Km<sup>2</sup>)

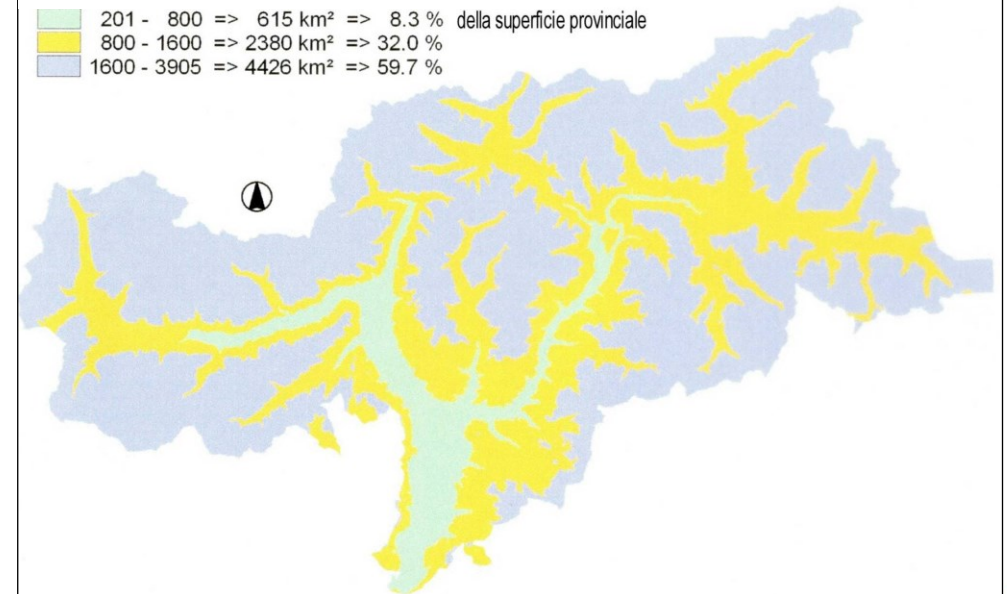
301.401

7. 400



## Altitudinal zones

201 - 800 => 615 km<sup>2</sup> => 8.3 % della superficie provinciale  
800 - 1600 => 2380 km<sup>2</sup> => 32.0 %  
1600 - 3905 => 4426 km<sup>2</sup> => 59.7 %





1858



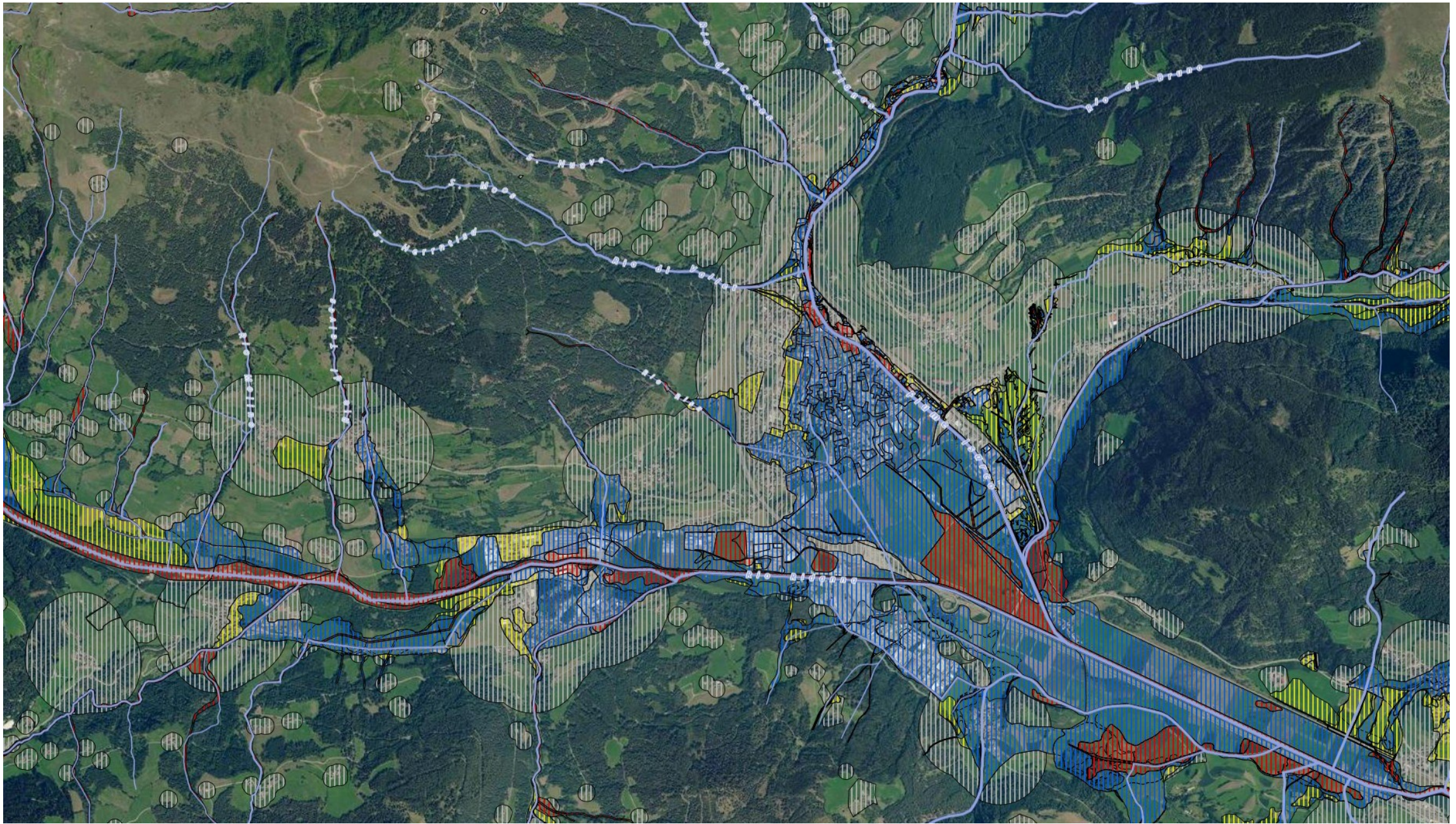
1945



2015

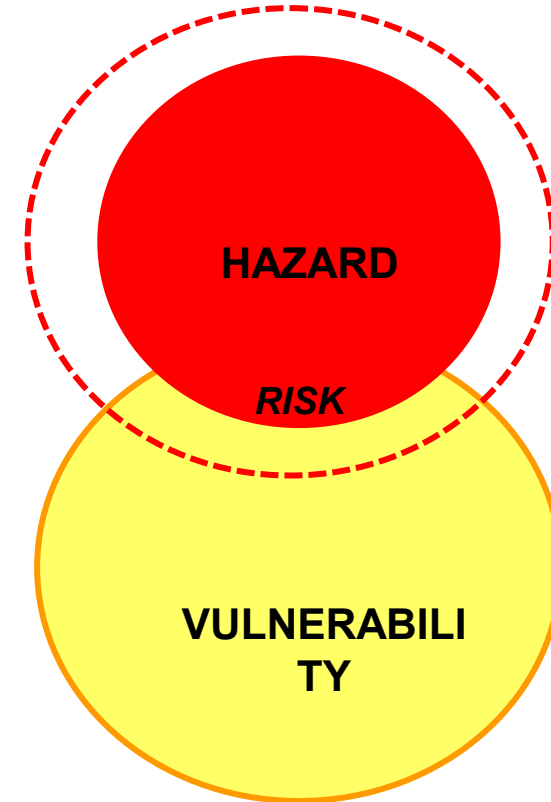
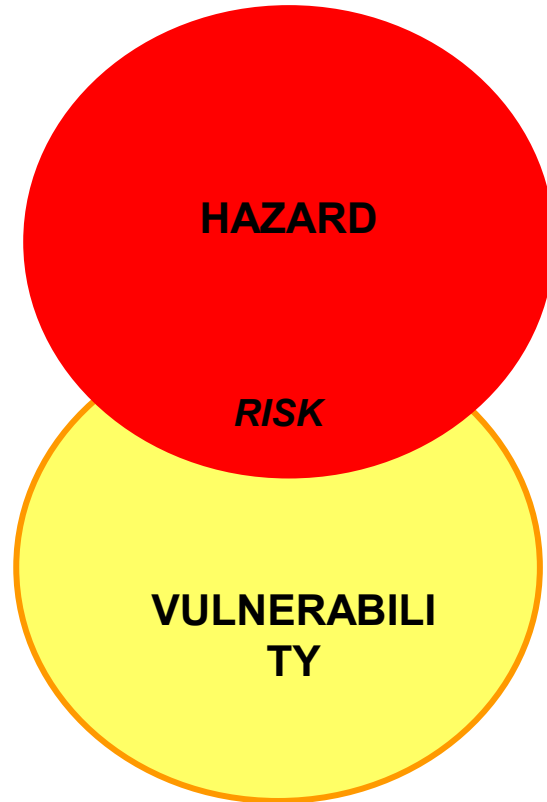








# RISK MANAGEMENT THROUGH HAZARD REDUCTION





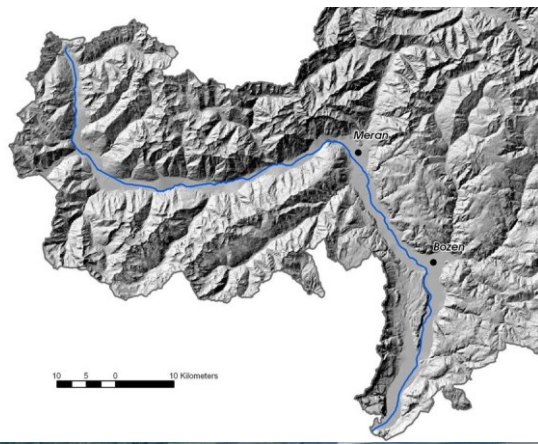
## Solda Sulden Ortler Ortles









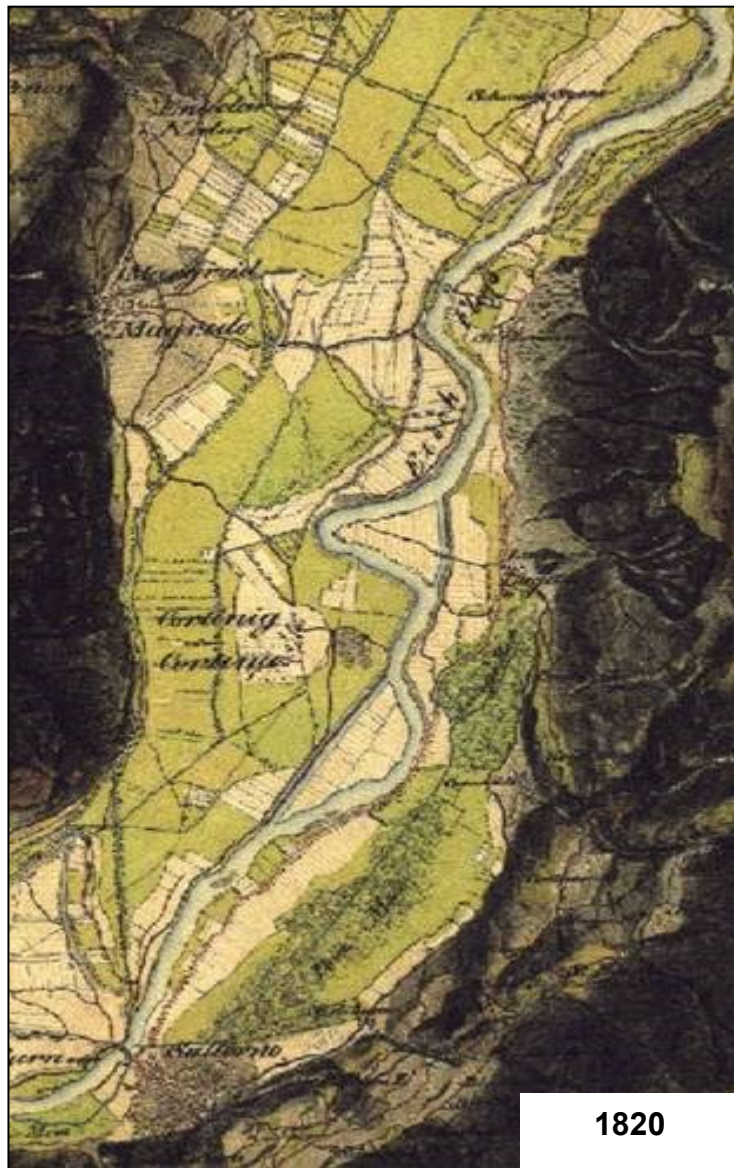


## ADIGE RIVER





69,97 km - lenght



66,78 km - lenght



62,77 km - lenght







Etsch Salurn



Etsch Laas







# EMBANKMENT FAILURE MECHANISMS

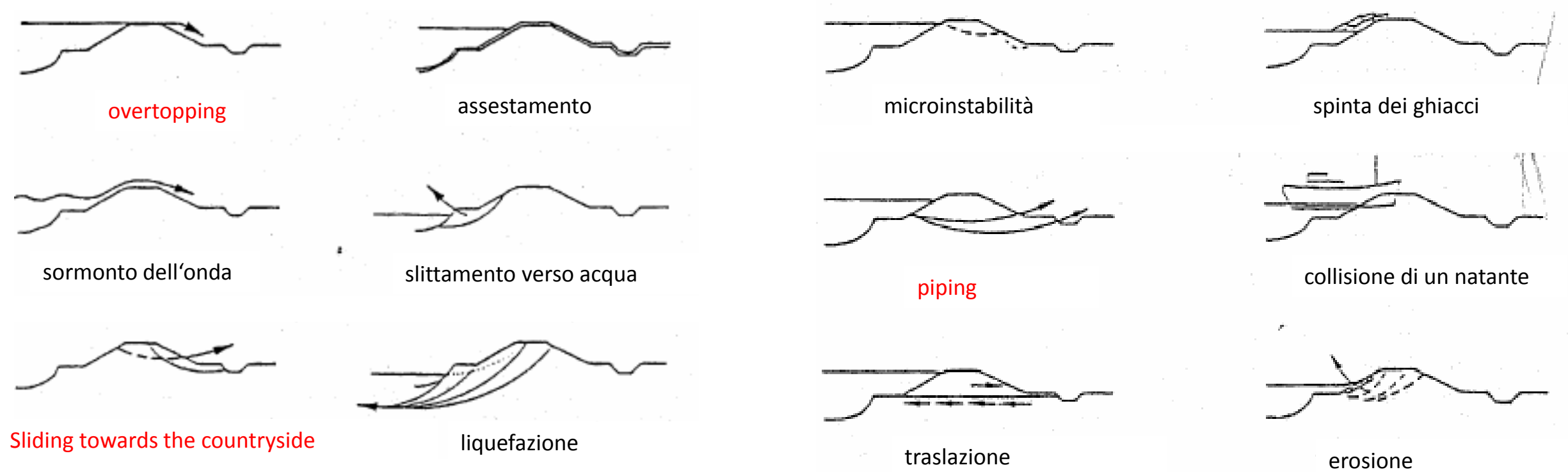
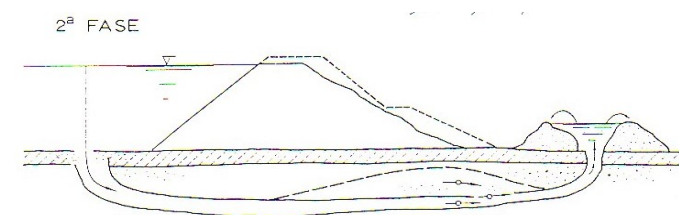
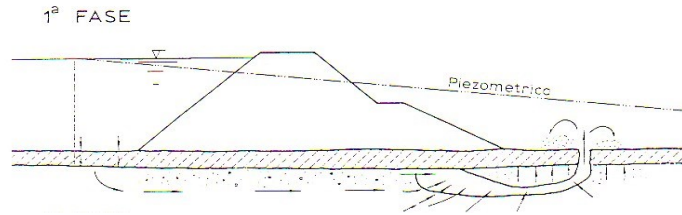


Figura tratta da: Problemi geotecnici relativi alle arginature fluviali ed alle sponde di fiumi e canali, CISM – F. Colleselli



# Piping



**Dangerous phenomenon also if discharges are low, especially if the water is turbid**





Deep soil mixing



Sheet piling



Cutter Chain

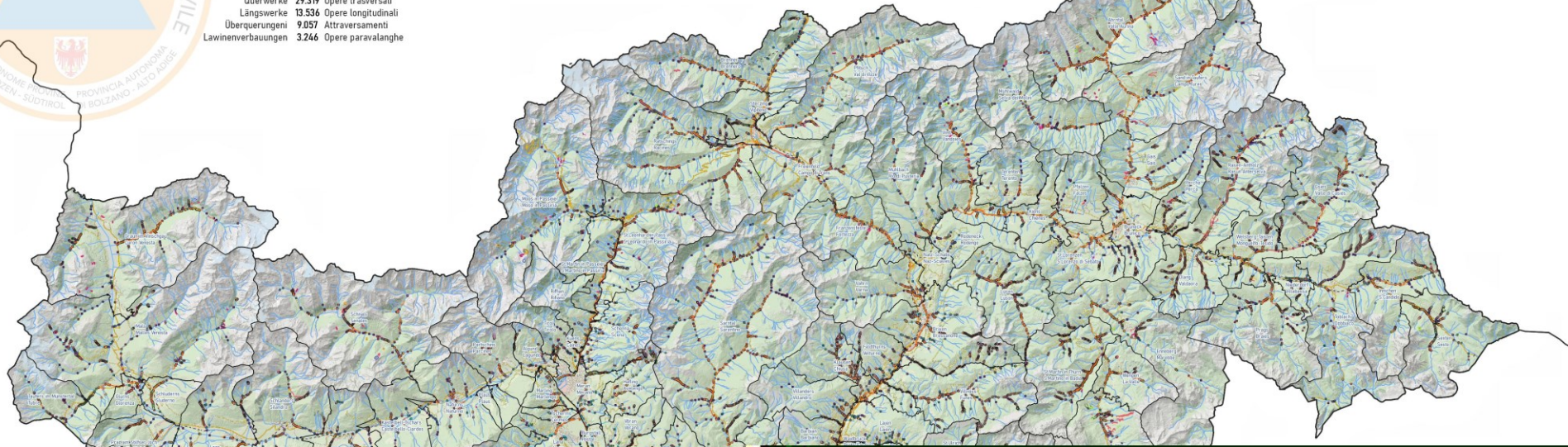




## Wildbach- und Lawinverbauungsarbeiten in Südtirol Opere di sistemazione idraulico-forestale in Alto Adige

Ausgeführt vom Funktionsbereich Wildbachverbauung der Agentur für Bevölkerungsschutz - Stand 2022  
Eseguite dall'area funzionale bacini montani dell'Agenzia per la Protezione civile - stato 2022

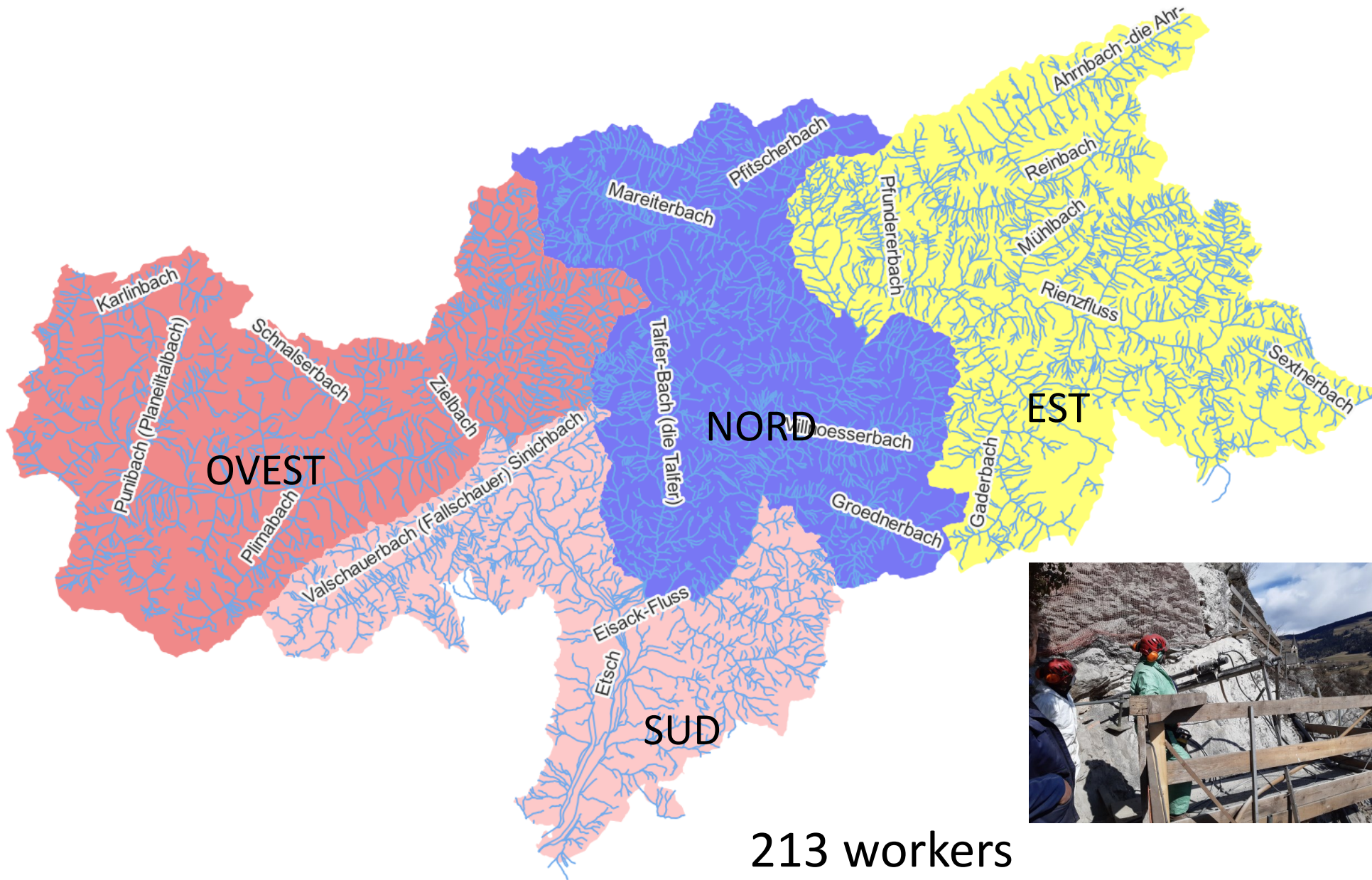
Anzahl - Numero	
Querwerke	29.319 Opere trasversali
Längswerke	13.536 Opere longitudinali
Überquerungen	9.057 Attraversamenti
Lawinverbauungen	3.246 Opere paravalanghe



ca. 29.300 dam-like structures  
ca. 13.500 bank protection structures  
ca. 9.000 river crossings (e.g. bridges)  
ca. 3.200 avalanche protection barriers







213 workers  
25 teams  
ca. 35-40 mio€/year



## Check dams



Bolzano 2 May 2023 - F. De Polo



## Check dams

Albes Albeins : rio Eores – Afererbach









# Sediment trap with an open check dam

Prato alla Drava Winnebach: Kirchbergbach-Walderbach





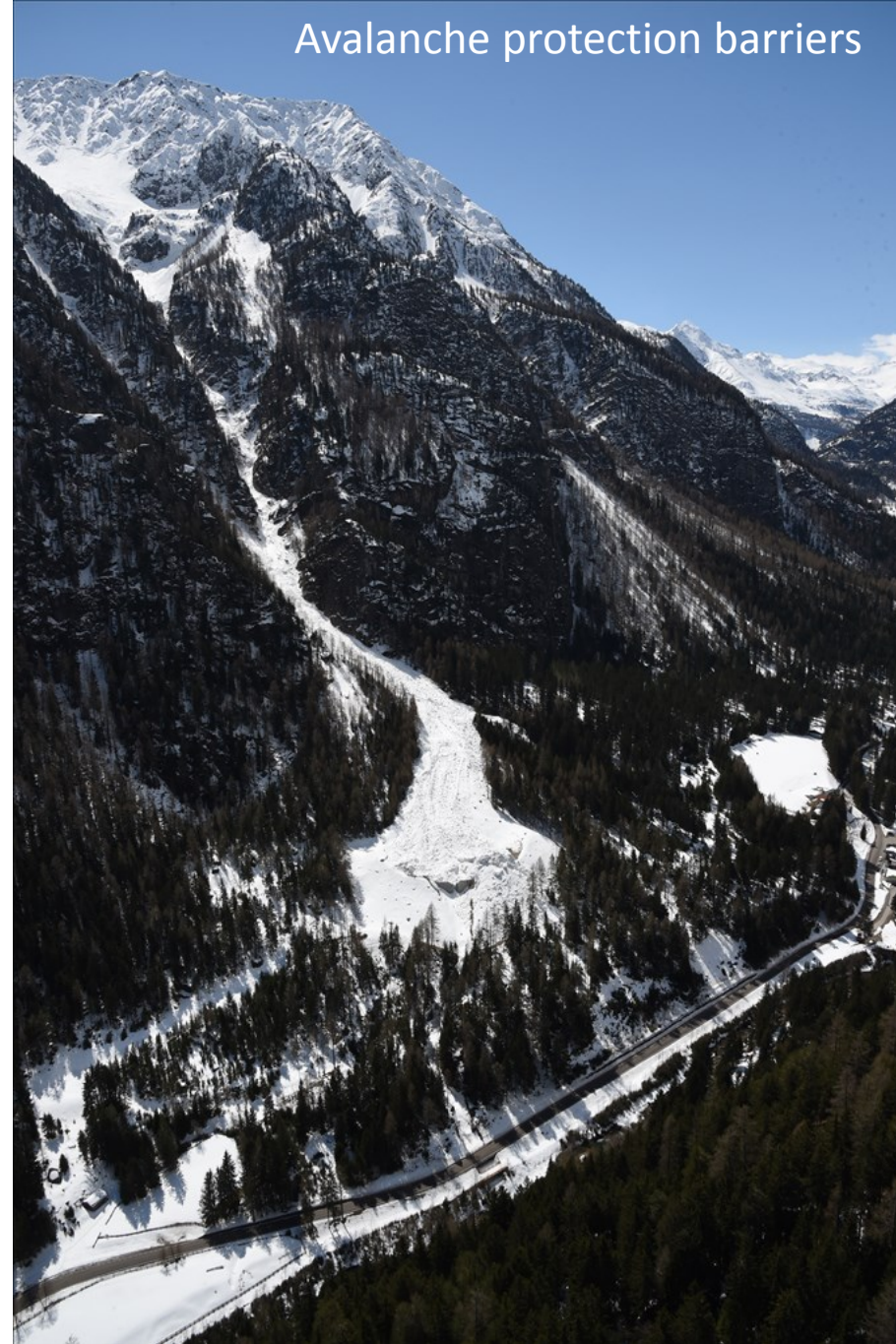
Debris flow event on 05 settembre 2011; Cengles  
Tschengels LASA



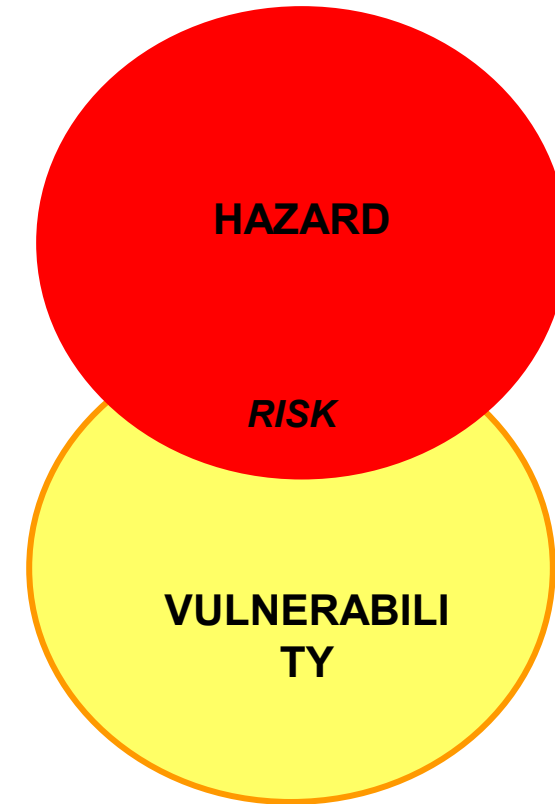
Torrente Tina –Tinnebach 2009  
Chiusa-Klausen







Avalanche protection barriers





# Avalanche protection barriers





# Avalanche protection barriers









