

#### Conference presentations:

#### Protection Systems against Natural Hazards - Durability through Systems Engineering? Literaturhaus Munich, 13th and 14th October 2015

- Systems Engineering (SE) und nachhaltiges Bauen: Schutzsysteme gegen Naturgefahren für Bauwerke  
Jürgen Schwarz & Norbert Gebbeken, Universität der Bundeswehr München (D)
- Erhaltungsmanagement in der bayerischen Straßenbauverwaltung im Bereich des Ingenieurbaus  
René Pinnel, Oberste Baubehörde Bayern (D)
- Erhaltungsmanagement von (Verkehrs-)Wasserbauwerken  
Jörg Bödefeld, Bundesanstalt für Wasserbau (D)
- Anforderungen an nachhaltig wirksame Schutzsysteme: System Life Cycle und Life Cycle Management  
Andreas Rimböck, Bayerisches Landesamt für Umwelt (D)
- VOM INTEGRALEN SCHUTZSYSTEM ZU "SCHUTZ SYSTEM ENGINEERING": Weiterentwicklung der Grundsätze des Naturgefahren-Ingenieurwesens  
Florian Rudolf-Miklau, Bundesministerium für Land und Forstwirtschaft, Umwelt und Wasserwirtschaft (AT)
- Das Erhaltungskonzept für Naturgefahrenschutzbauwerke (Wildbach, Lawine, Steinschlag) nach ONR 24800-Serie  
Jürgen Suda, alpinfra Wien (AT)
- PROTECT - Beurteilung der Wirkung von Schutzmassnahmen gegen Naturgefahren  
Stefan Margreth, Eidg. Forschungsanstalt für Wald, Schnee und Landschaft WSL (CH)
- Reconstruction and Adjustment of Torrent Control Structures in Slovenia  
Jože Papež, Hidrotehnik Vodnogospodarsko podjetje d.d.(SL)
- Sammleranlagen - Anpassung und Erweiterung mit zusätzlichen Funktionen  
Stephan Wohlwend, Amt für Bevölkerungsschutz / Naturgefahren (FL)
- Fallbeispiel Guppenrunse, Kanton GL, Schweiz  
Josef Hess, Eva Gertsch, Bundesamt für Umwelt BAFU (CH)
- Integrale Wildbachentwicklungskonzepte zur Optimierung bestehender Schutzsysteme  
Florian Stauder, Technische Universität München (D)
- Redimensionierung der Schutzmaßnahmen im Wildbach Galina  
Martin Jenni, Wildbach- und Lawinenverbauung (AT)

All presentations and the brochure in English and German are available at:

<http://www.alpconv.org/de/organization/groups/WGHazards>

#### Conference of the Alpine Conventions Natural Hazards Platform (PLANALP)

#### "Protection Systems against Natural Hazards - Durability through Systems Engineering?"

#### Summary and Recommendations



**PLANALP Conference, October 2015:  
“Protection Systems against Natural Hazards - Durability through  
Systems Engineering?”**

The high protection standard against natural hazards and subsequent risks in the Alps is a great achievement; however it also bears challenges related to the **costs for maintenance of the related structures**. These costs often need to be covered with the same budget as new protection measures and therefore the budget for new constructions decreases. The implementation of Systems Engineering (SE) in the field of natural hazard protection can help us to find long-term **cost-efficient** and sustainable solutions.

The overall question is probably how the countries across the Alps will develop and how to tackle the subsequent challenges related to the protection from natural hazards. This is an initial point for the change of perspective. The term Systems Engineering summarizes a lot of already taken measures and it is a good approach towards a **sustainable and holistic strategy** for the protection against natural hazards. Since there is no tendency towards an abandonment of Alpine areas, **the need for protection will remain**.

Because we have to convince policy makers but also the general public of SEs added value, **communication** is a crucial instrument. But the whole system of natural hazard protection is complex and so is the related communication. The implementation of SE depends on political decisions and the long-term goals of SE do not always meet short-term policy perspectives. Furthermore SE is a long-term process and the life span of a protection measure is longer than that of human beings. SE requires an interdisciplinary mindset not only for the person planning the structures but also for the general public, policy makers, lawyers etc. We need an **interdisciplinary education** that serves as a multiplier in the field of SE and natural hazard protection.

When we monetarize the effects of SE, the economic benefit is better visible and serves as an argument for communicating the SE approach.

Recommendations:

- SE is a highly complex **compilation of measures** that (sometimes) have been applied in the past. We should integrate existing elements into our new approaches.
- The implementation requires not only **long-term** but also
- An **interdisciplinary** mindsets of all stakeholders. We have to think in a transboundary way.
- A simple, targeted and clear **communication** will be the key for advertising the added value of SE, overcoming existing systems and accepting new paradigms.
- We need a better **monitoring of protection infrastructure**, in order to have better predictions.
- We need a **holistic** consideration of systems and have to take into account the **residual risk**.



**Persistence of Alpine natural hazard protection**  
Meeting multiple demands by applying systems engineering and life cycle management principles in natural hazard protection systems in the perimeter of the Alpine Convention



**Beständigkeit von Schutzsystemen gegen Alpine Naturgefahren**  
Erfüllung vielseitiger Ansprüche durch die Anwendung der Prinzipien des Systems Engineering und des Lebenszyklusmanagements in den Ländern der Alpenkonvention



**More information available at:**  
<http://www.alpconv.org/de/organization/groups/WGHazards>