



## **After the flood is before the next flood &ndash; post event review of the Central European Floods of June 2013. Insights, recommendations and next steps for future flood prevention**

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In early June 2013, severe flooding hit Central and Eastern Europe, causing extensive damage, in particular along the Danube and Elbe main watersheds. The situation was particularly severe in Eastern Germany, Austria, Hungary and the Czech Republic. Based on the Post Event Review Capability (PERC) approach, developed by Zurich Insurance's Flood Resilience Program to provide independent review of large flood events, we examine what has worked well (best practice) and opportunities for further improvement. The PERC overall aims to thoroughly examine aspects of flood resilience, flood risk management and catastrophe intervention in order to help build back better after events and learn for future events. As our research from post event analyses shows a lot of losses are in fact avoidable by taking the right measures pre-event and these measures are economically – efficient with a return of 4 Euro on losses saved for every Euro invested in prevention on average (Wharton/IIASA flood resilience alliance paper on cost benefit analysis, Mechler et al. 2014) and up to 10 Euros for certain countries. For the 2013 flood events we provide analysis on the following aspects and in general identify a number of factors that worked in terms of reducing the loss and risk burden.

### 1. Understanding risk factors of the Central European Floods 2013

We review the precursors leading up to the floods in June, with an extremely wet May 2013 and an atypical V-b weather pattern that brought immense precipitation in a very short period to the watersheds of Elbe, Donau and partially the Rhine in the D-A-CH countries and researched what happened during the flood and why. Key questions we asked revolve around which protection and risk reduction approaches worked well and which did not, and why.

### 2. Insights and recommendations from the post event review

The PERC identified a number of risk factors, which need attention if risk is to be reduced over time.

- Yet another „100-year flood“ – risk perception and understanding of risk in the population.
- Residual risk and the levee shadow effect – why the population “felt safe.”
- What is the overload case and how to implement it in flood protection systems?
- Decision-making for the future under uncertainty – how to design to acceptable flood protection levels if we haven't seen yet what's physically possible.

### 3. How to protect – practical examples

Finally, we outline practical examples for reducing the loss burden and risk over time.

- „Flood protection hierarchy“ – from location choice under a hazard perspective to mobile flood protection.
- Risk-based approach and identification of critical infrastructure.
- Integrated flood risk management in theory and practical application.
- Role of insurance.