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1st June 2013; River Gera near Walschleben, Germany: Several hundred helpers transport sandbags along the levee to prevent (or reduce the impact) of flooding (Jens Meyer/Associated Press; www.boston.com/bigpicture/2013/06/flooding_in_europe.html)

UNESCO-IHE Institute for Water Education

Giuliano Di Baldassarre, UNESCO-IHE Delft

KULTURisk

Knowledge-based approach to develop a <u>Culture of Risk Prevention</u>

Instrument: EC FP7, Collaborative project

Duration: 36 months

Start Date: January 2011

Consortium: 11 partners from 6 countries

Project Coordinator: Giuliano Di Baldassarre, UNESCO-IHE Delft

Risk Prevention

*What do we mean by **Risk Prevention**?*

Objective to reduce the risk to an acceptable level
by lessening the potential adverse impacts of natural hazards
through actions taken in advance

Risk Prevention Measures

Initiatives taken before the occurrence of disasters
that aim to avoid the unacceptable risk

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- **Risk prevention** as sensible investment
- The costs of preventive measures

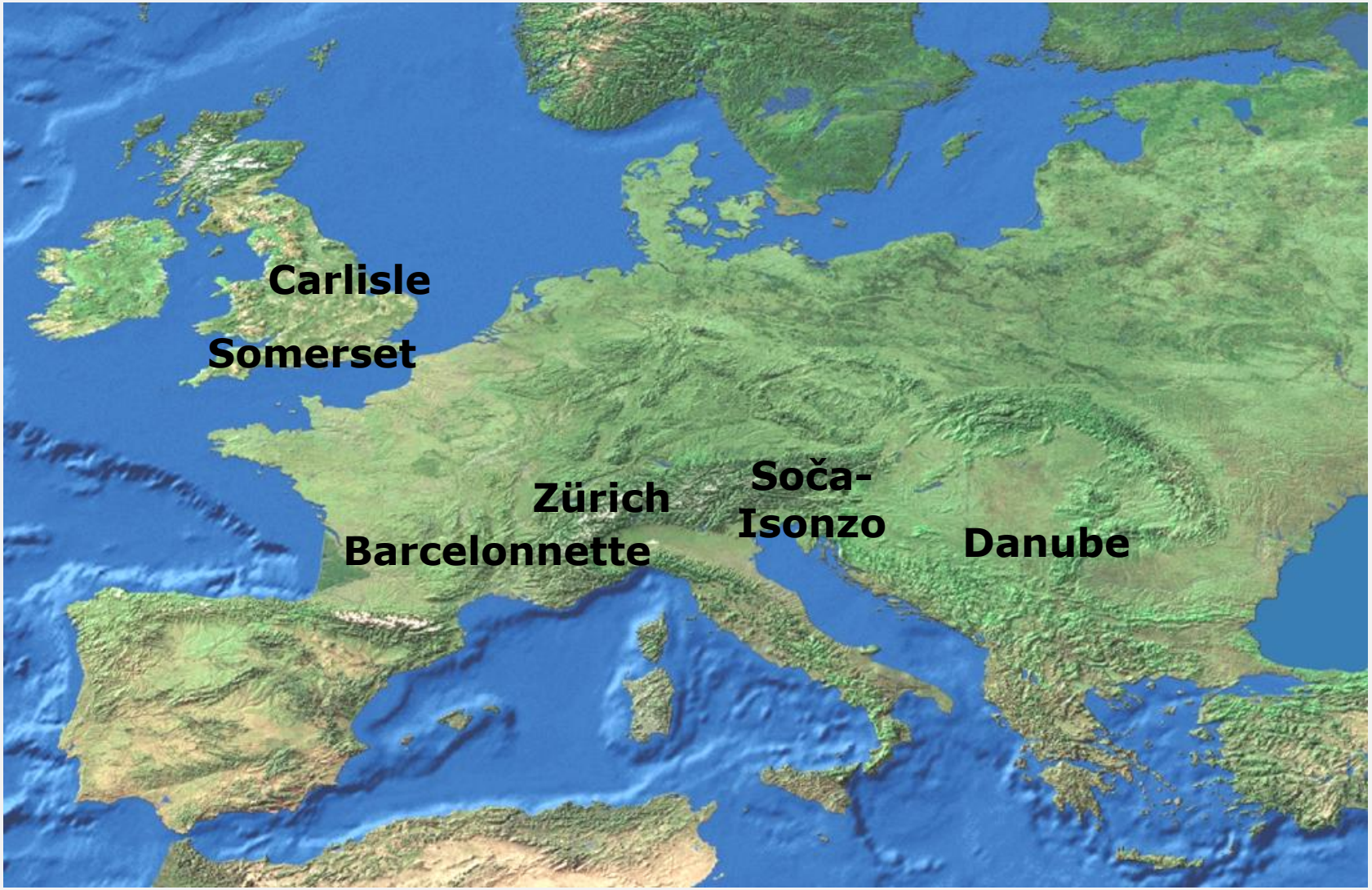
  are less than those of post-event recovery

- Demonstration via diverse case studies

  (hazards, scales, socio-economic conditions)
- Analysis of different types of preventive measures

  (early warning and preparedness, mapping, risk transfer, structural measures, risk communication, etc…)

KULTURisk: case studies



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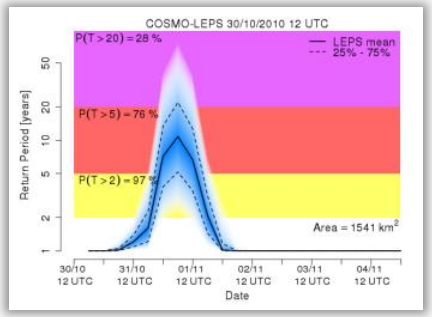
WP1. Methodology to evaluate the benefits of risk prevention

SEVENTH FRAMEWORK PROGRAMME

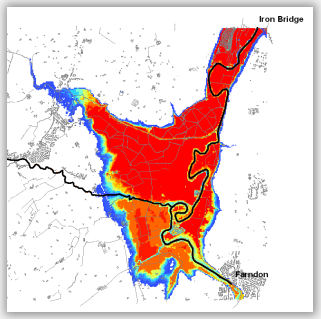
Water-related Disasters: Floods and Landslides



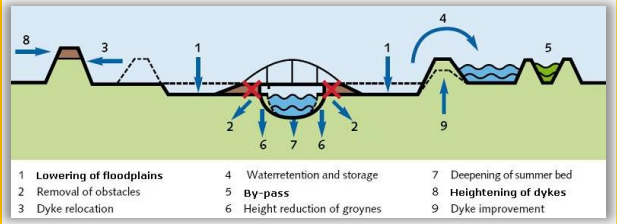
WP2. Early Warning and Preparedness



WP3. Mapping, Planning, Risk Transfer



WP4. Structural Measures



(e.g. Room for the river)

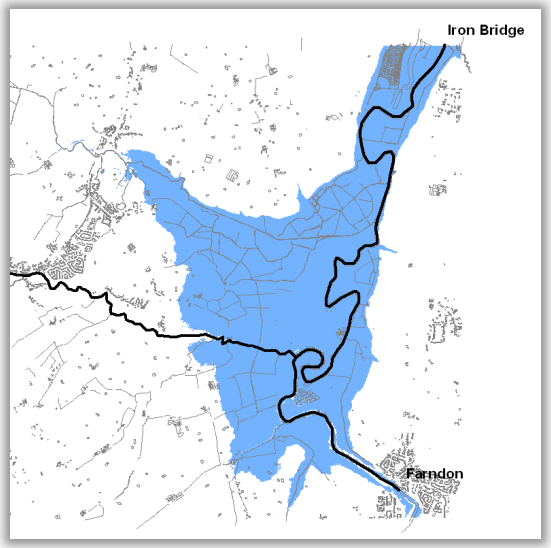
WP5. Risk Communication Dialogue with Stakeholders

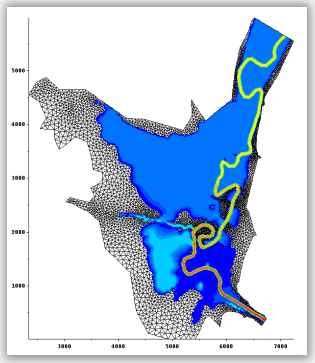
WP6. Validation and generalization to other natural hazards (e.g., fires, earthquakes)

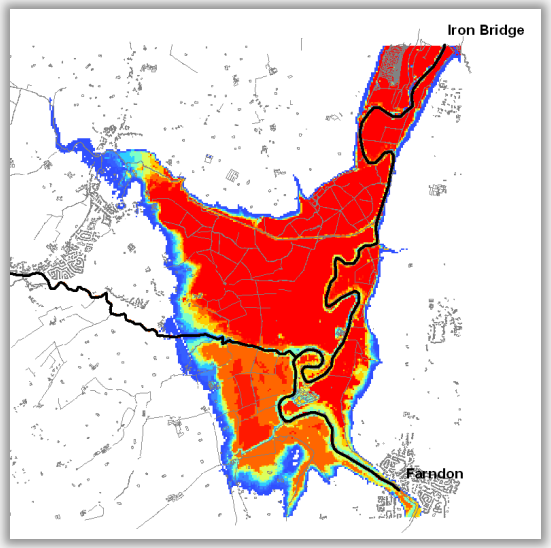
Novel Aspects: Uncertainty

Risk prevention requires the use of uncertain models

Example: flood mapping and urban planning



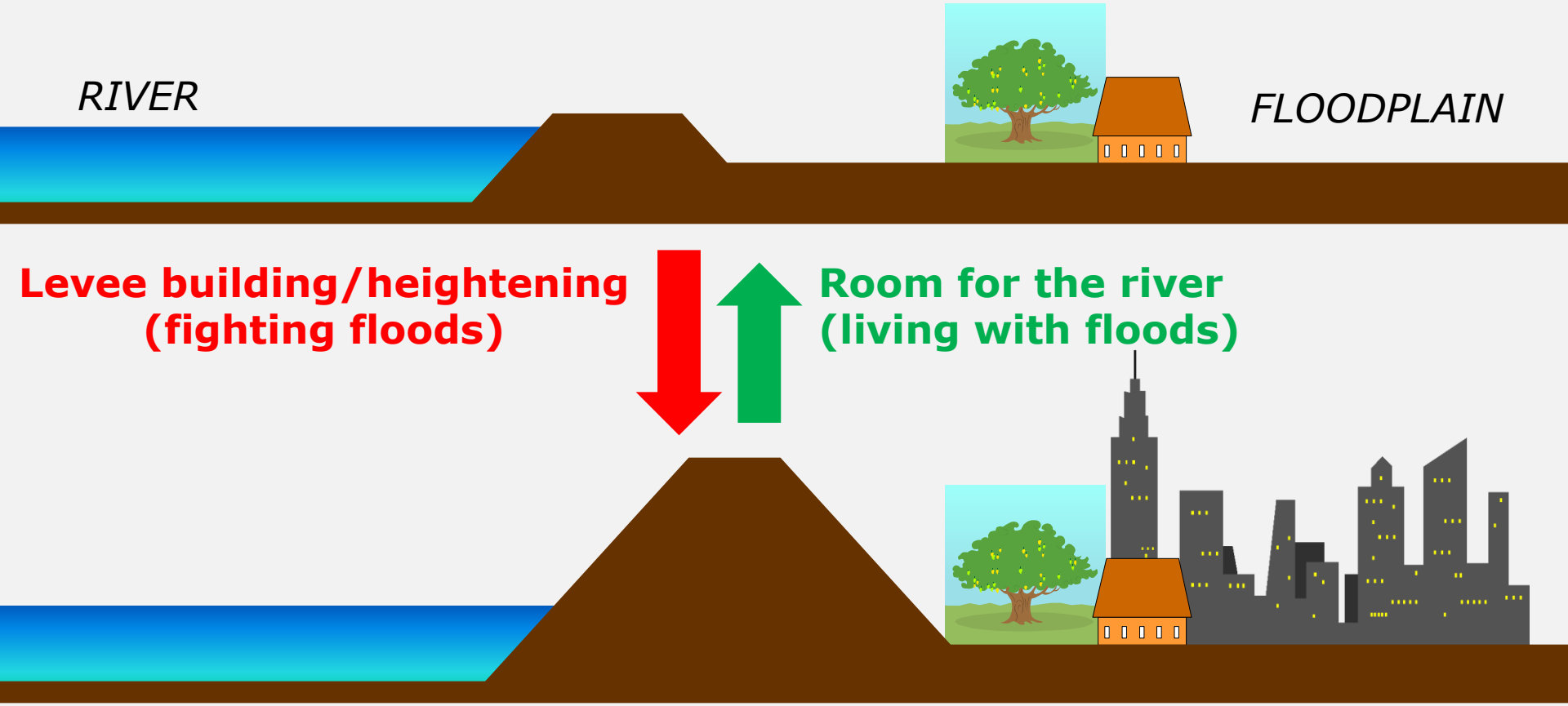




Recognize, Estimate and Communicate Uncertainty

(Bates et al., 2005; Beven, 2006; Pappenberger et al., 2007; Di Baldassarre et al., 2010; Neal et al., 2011; Mazzoleni et al., 2013)

Novel Aspects: Exploring Risk



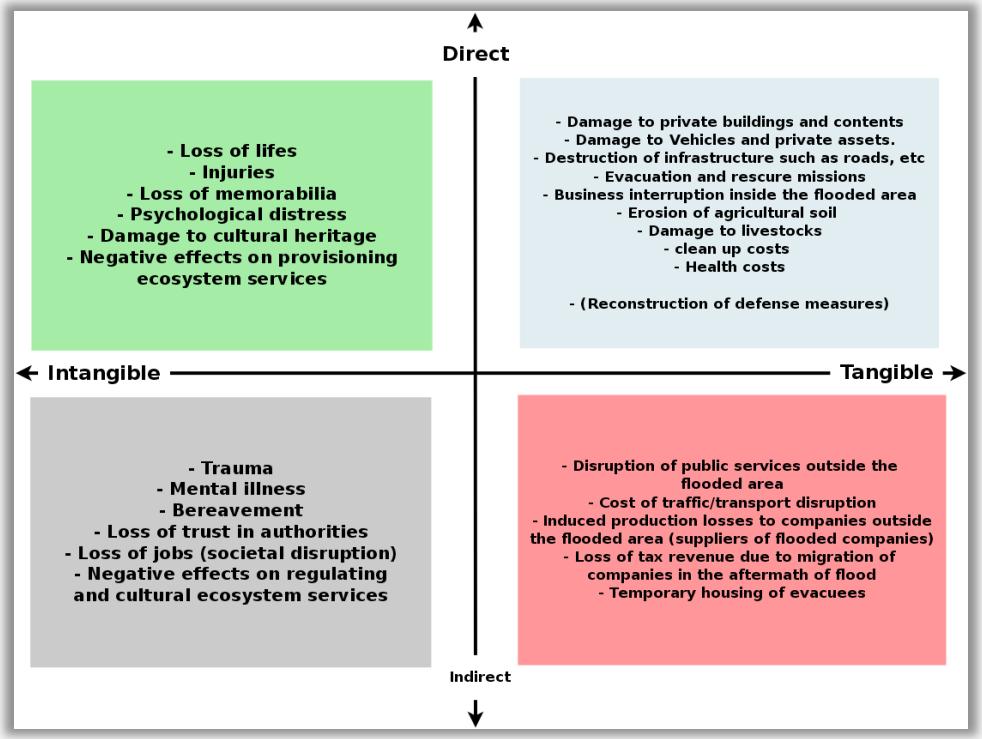
Risk = Hazard x Vulnerability x Exposure

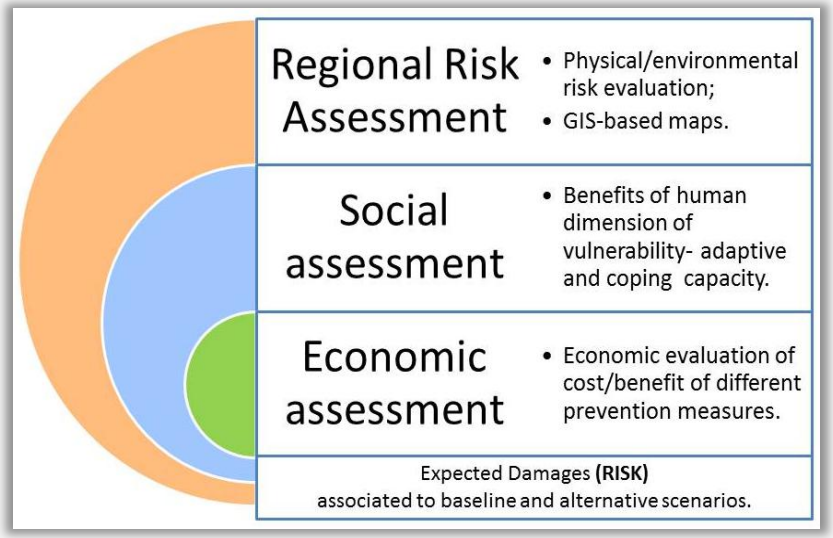
Levee Paradox: decreasing Hazard triggers increasing Vulnerability and Exposure

(White, 1945; Merz et al., 2007; Di Baldassarre et al., Natural Hazards, 2009; FP6 FLOODsite; Jonkman, 2010)

Novel Aspects: Exploring Risk

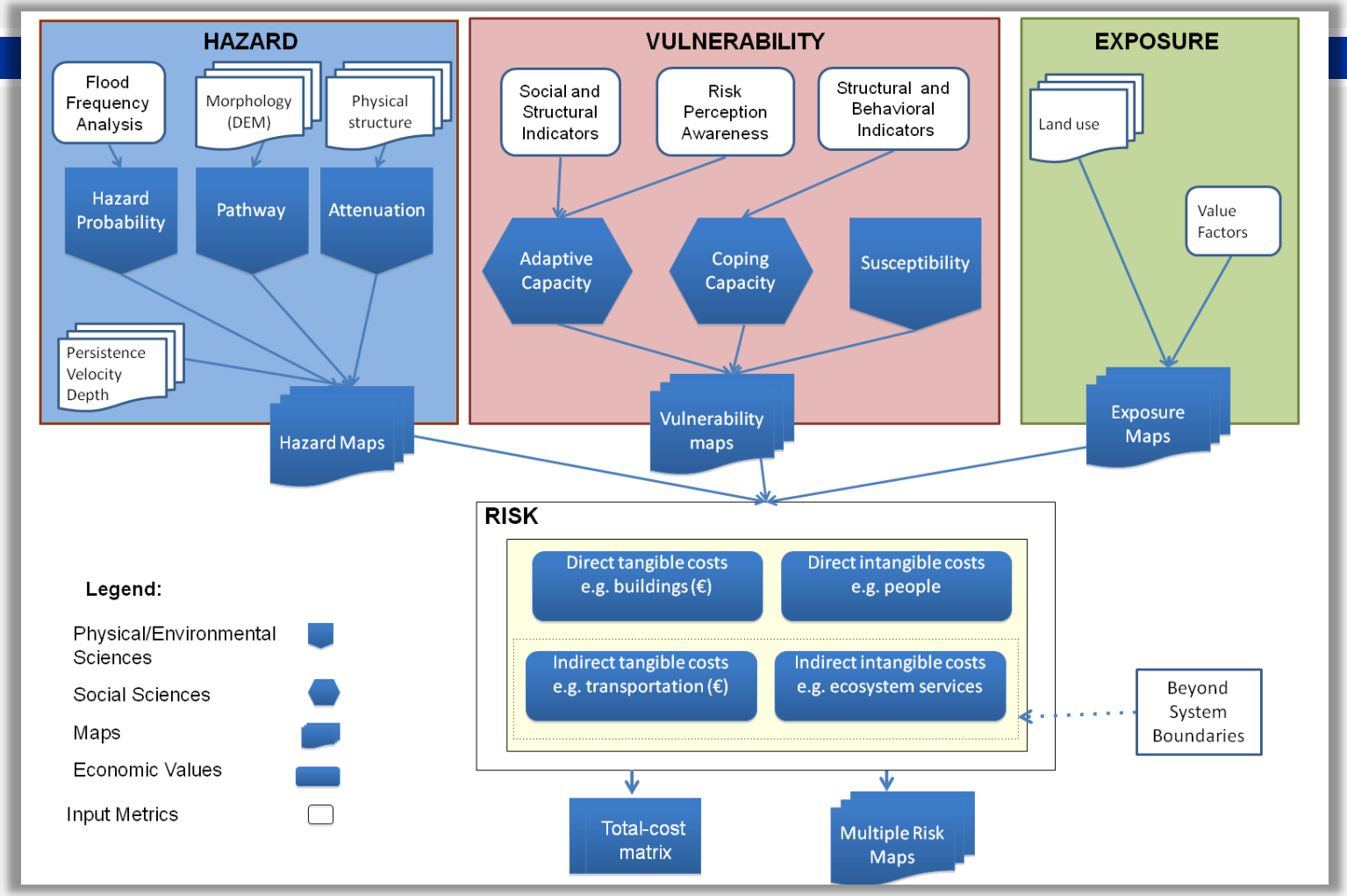
- The costs of water-related hazards are difficult to quantify (direct, indirect, tangible and intangible costs)
- Intangible costs largely neglected





(Penning-Rowsell et al., 2003; Jonkman et al., 2008; Merz et al., 2010; Balbi et al., 2011; Gallina et al., 2013*)*

KULTURisk Methodology



Not a rigid methodology

Allowing for fine tuning to local conditions and data availability

(Torresan et al., 2012; Balbi et al., 2012; Giupponi et al., 2013)

Reasons to be optimistic

- KULTURisk Logo (artistic version)
- Catastrophic disaster of the Vajont dam occurred 50 years ago (9 Oct 1963)
- UNESCO "cautionary tale" at the International Year of Planet Earth (1998)

- The Italian State officially apologized for the Vajont disaster (16 Sept 2013)
- Head of the Civil Protection, Franco Gabrielli, and the Italian Minister of Environment, Andrea Orlando
- The Vajont dam disaster could have been avoided
- Spend less on roads and more prevention of hydro-geological risk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50 ANNI VAJONT TUTTI I

50 anni Vajont: mea culpa Stato per ferita aperta

Prefetto Gabrielli e ministro Orlando chiedono scusa residenti