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How do we best estimate the socio-economic impact of fluvial floods in urbanized environments?

Elisa Longo (1), Giuseppe Tito Aronica (1), Giuliano Di Baldassarre (2), and Micah Mukolwe (3)

(1) University of Messina, Department of Engineering, Messina, Italy (garonica@unime.it), (2) Department of Earth Sciences, University of Uppsala, Uppsala, Sweden, (3) UNESCO-IHE, Institute for Water Education, Delft. The Netherlands

Flooding is one of the most impactful natural hazards. In particular, by looking at the data of damages from natural hazards in Europe collected in the International Disaster Database (EM-DAT) one can see a significant increase over the past four decades of both frequency of floods and associated economic damages.
Similarly, dramatic trends are also found by analysing other types of flood losses, such as the number of people affected by floods, homeless, injured or killed.
To deal with the aforementioned increase of flood risk, more and more efforts are being made to promote integrated flood risk management, for instance, at the end of 2007, the European Community (EC) issued the Flood Directive (F.D.) 2007/60/EC.
One of the major innovations was that the F.D. 2007/60/C requires Member State to carry out flood risk maps and then to take appropriate measures to reduce the evaluated risk.
The main goal of this research is to estimate flood damage using a computer code based on a recently developed method (KULTURisk, www.kulturisk.eu) and to compare the estimated damage with the observed one.
The KULTURisk methodological framework and its operational approach SERRA (Socio-Economic Regional Risk Assessment) are developed upon the well-established Regional Risk Assessment literature, with specific focus on:
− the integration of physical/environmental dimensions and the socioeconomic ones;
− the consideration of social capacities of reducing risk
− the economic evaluation of risk that goes beyond the direct tangible costs for
decision support on risk mitigation measures;
− the integration of Climate Change Adaptation (CCA) in Disaster Risk Reduction (DRR)
The study area is the German municipality of Eilenburg, which in 2002 was subjected to a destructive flood event.
In according to KULTURisk Methodology, two major classes of data are considered to evaluate flood risk damage, i.e: hydraulic data for the Hazard (water depth, flow velocity and maximum hydrodynamic force) and economic data to assess Exposure and Vulnerability (agriculture and urban area, and roads infrastructure).
This study shows the possibility to extend the lesson learned with the Eilenburg case study in other similar contexts.
The outcomes of this test provides interesting insights about flood risk mapping, which are expected to contribute to raise awareness to the flooding issues, to plan (structural and/or non-structural) measures of flood risk reduction and to support better land-use and urban planning.