

Adige river in Trento flooding map, 1892: private or public risk transfer?

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For the determination of the flood risk hydrologist and hydraulic engineers focus their attention mainly to the estimation of physical factors determining the flood hazard, while economists and experts of social sciences deal mainly with the estimation of vulnerability and exposure. The fact that flood zoning involves both hydrological and socio-economic aspects, however, was clear already in the XIX century when the impact of floods on inundated areas started to appear in flood maps, for instance in the UK and in Italy. A pioneering 'flood risk' map for the Adige river in Trento, Italy, was already published in 1892, taking into account in detail both hazard intensity in terms of velocity and depth, frequency of occurrence, vulnerability and economic costs for flood protection with river embankments. This map is likely to be the reinterpreted certainly as a pioneering, and possibly as the first flood risk map for an Italian river and worldwide. Risk levels were divided in three categories and seven sub-categories, depending on flood water depth, velocity, frequency and damage costs. It is interesting to notice the fact that at that time the map was used to share the cost of levees' reparation and enhancement after the severe September 1882 flood as a function of the estimated level of protection of the respective areas against the flood risk. The sharing of costs between public bodies, the railway company and private owners was debated for about 20 years and at the end the public sustained the major costs. This shows how already at that time the economic assessment of structural flood protections was based on objective and rational cost-benefit criteria, that hydraulic risk mapping was perceived by the society as fundamental for the design of flood protection systems and that a balanced cost sharing between public and private was an accepted approach although some protests arose at that time.