



A methodology for flood risk mapping at the local scale for Civil Protection purposes

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Risk associated with weather-induced hazards is worldwide continuously increasing due to the increase of urbanisation and exposed settlements in flood-prone areas. This asks for the implementation of more effective mitigation strategies, able at the same time to strengthen the community resilience at different territorial levels.

This study aims to propose an innovative methodology to better understand, study and analyse the vulnerability and capacity of exposed elements in order to improve the Italian Civil Protection (CP) Plans and consequently the public preparedness and the self-protective response at community level. This can support better mitigation strategies design and their relationship with decision making processes at local level.

The methodology assumes a reference scenario of a “flash flood” – that requires an immediate and efficient response of the civil protection system – and develops starting from the regulatory reference framework of the EU Floods Directive (2007/60/EC).

The main assumption of this study is that for CP purposes risk should be estimated by considering all its components of hazard, exposure, vulnerability and capacity; in addition, exposed elements must be characterised by reference to the local context through the active involvement of population, administrations and stakeholders.

In our methodology, the risk estimation has been enriched quantitative scale with information gained by the stakeholder involvement – both on hazard and on vulnerability and capacity of the considered exposed assets. These data constituted the input variables of the model for formalising the procedures and the actions to be undertaken, that by so doing are more suited to the territory.

Thanks to the participative process, scientific analysis can be enriched with local knowledge, resulting in a detailed mapping and characterisation of elements to be considered in the definition of risk mitigation strategies, additionally strengthening coordination and collaboration between institutions and citizens and then community resilience.

A case study has been developed on the scholastic framework of Serra Riccò, a small municipality in the hinterland of Genoa.

The result was a detailed mapping of schools – based on accurate vulnerability and capacity data – which provides decisions support in actions, interventions and resources sorting thank to an actual and shared representation of the territory.

The process has helped the whole community to understand the importance of developing shared mitigation strategies. This constitutes the starting point for the development of a community vision on strategies to face with risk, ensuring the improvement in risk mitigation and management effectiveness, thus bolstering community resilience.