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(Article begins on next page)

Understanding vulnerability to natural and quasi-natural hazards: the importance of a local scale perspective for the production of relevant information

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In the coming decades, risks related to natural and quasi-natural hazards will pose a serious challenge at a global level. The variation in frequency of natural hazards, as well as changes in economic, social and environmental conditions will greatly affect the magnitude of their impacts. The Intergovernmental Panel on Climate Change (IPCC), indeed, supports and strengthens the inclusion of social and economic characteristics in the definition of vulnerability. This definition supports, in addition, the idea that major changes occurring at the global level, have different declination at the local level. Therefore, the application of context-oriented perspectives should be seen as the suitable approach to address natural and quasi-natural hazards related issues in local analyses.

In this context, the decision-making system should be better prepared for the future challenges through reliable and unambiguous data concerning hazards and their relationship with socio-economic systems. Therefore, supporting the understanding of vulnerability to natural hazards at local level is an imperative need.

This work offers an insight into the components of vulnerability such as physical and social exposure, sensitivity factors and adaptive capacity of different social systems. This multi-dimensional framework of vulnerability is applied to different scant-data contexts with a local and multidisciplinary perspective in order to understand and improve the availability of information on the vulnerability to natural and quasi-natural hazards, overcoming the main challenge of the scarcity of data in the analysed contexts. These issues have been addressed in the rural areas of Kenya in relation to weather variations and trends, water contamination and vegetation dynamics associated with land degradation that greatly affects the livelihood of these areas. In addition, an assessment of the impacts of Covid-19 in the Arab region was performed in order to identify the most hit areas in urban and peri-urban centres. The sanitary and economic crisis of the Covid-19 pandemic, indeed, provided evidence that most of the countries may be susceptible to unforeseen delays in policies delivery due to the problem of scarcity of data in a considerable number of sectors.

This research highlights and demonstrates that the understanding of the underlying vulnerability of local systems is pivotal to support policy decision-making, in order to get prepared to tackle natural and quasi-natural hazards.