



## **Multidisciplinary approach to increasing Resilience in communities versus the hydrogeological and volcanic risk**

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A given area may be exposed to different natural hazards, such as landslides, floods, earthquakes, volcanic events etc. which could affect usual human activities at many levels. The goal of our work is to increase the resilience level in communities exposed to natural hazards through an innovative and multidisciplinary research approach integrating engineering, geological, medical and sociological skills. We are going to use an analytical approach to consider simultaneously the Natural Environment and their dwellers, taking into account the sanitary protocols. We'll start by studying the hazards to which the Natural Environment could be exposed evaluating the deriving risks level through technical studies. For each scenario it's vital to assess the defining aspects such as magnitude and frequency, through a statistical analysis of the specific data-bases in possession of relevant Authorities in charge. Regarding the Inhabitants, it's also vital to analyse the dwellers Risk Perception and their Historical Resilience through a sociological and psychological approach, in order to define the specific information and education program on natural risks. This study is of particular relevance, as even the most advanced risk management plan could fail if locals are not aware and informed about it. A correct disaster management policy must consider the medical role as paramount. Emergency first aid and emergency medicine are to be considered specific field of partitioning, and to be seen as the most appropriate way to deal with a dire situation, especially when the resources vs. magnitude of event ratio is low. The study of best practices helping to improve the resilience and reaction of areas exposed to different natural hazards with different socio-cultural layers is hence crucial. A possible model is to directly involve the residents into controlling the environment and improving/detailing the risks' and emergency areas mapping. These make the population more aware of both risks and reaction measures, with a correspondent increase in resilience. Some municipalities in Campania Region (Italy) have already undergone the phase of assessment of risks perception and historical resilience through questionnaires submitted to residents. In some District of Campania Region (Italy), apps for mobile devices have been developed, in order to activate a bi-directional flow of information between local authorities and single citizens. Another level of participated monitoring could be issuing to residents low-cost, specifically designed devices, such as seismic micro-sensor and/or CO<sub>2</sub> gauges to be positioned in schools. With advantage both information/education and monitoring. Local authorities have recently started to consider medical emergency assistance in disaster-affected areas as a specific tool to activate and use to handle such situations as best as possible. The results of these studies will result in: the development of an early warning network specifically targeted on each area and run by specifically trained operators; specific skills for medical personnel to be mastered to handle civilian casualties and/or shocked people in huge numbers; the locals in a condition of improved knowledge and preparedness, to the point to be involved actively in the program in a community-based monitoring procedure (participated monitoring).