

SEISMIC RISK IMPACT ON URBAN CULTURAL HERITAGE: ANALYSIS AND MITIGATION PLAN OF A CASE STUDY IN THE PROVINCE OF NAPLES

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Topic 1: Vulnerability of culture heritage to hazards and preventive measures.

Abstract

The recent seismic events produced a large number of damages and losses. An important step for the reduction and mitigation of seismic risk at urban scale requires assessment of the physical vulnerability of buildings. This study attempts to perform seismic vulnerability assessment of a sub-urban sector of the historic centre of Sant'Antimo, a district of Naples (Italy), in order to assess the expected damage scenarios as a consequence of seismic events. The vulnerability analysis was carried out by means of an index-based methodology integrated into a GIS tool, in order to identify the structural units most susceptible at damage due to earthquakes. Furthermore, the by changing magnitude and epicentre distances, possible damage scenarios were predicted for the quantification of losses in terms of collapsed and unusable buildings and human casualties.

Finally, once identified the risk, a set of retrofitting techniques were considered and analysed taking into account their contribution for the reduction of the seismic vulnerability of the sample of buildings analysed.

Keywords: Vulnerability assessment, seismic attenuation law, expected damage scenario, loss estimation, retrofitting techniques, seismic risk mitigation.