

KnowRISK - using risk maps to identify and prevent non-structural problems

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The project KnowRISK (Know your city, Reduce seismic risk through non-structural elements) is financed by the European Commission to develop prevention measures that may reduce non-structural damage in urban areas. Pilot areas of the project are within the three European participating countries, namely Portugal, Iceland and Italy. Damage of non-structural elements of buildings (i.e. partitions, ceilings, cladding, electrical and mechanical systems and furniture) is known to cause injuries, losses, business interruption, and limit the functionality of critical facilities, such as hospitals and schools, causing a significant impact on earthquake resilience. For almost all building occupancy types, at least 70% of the total cost is invested in non-structural components. Most of the non-structural components are vulnerable to a relatively low level of ground shaking. The seismic risk for a particular non-structural component is governed by a variety of factors, including the regional seismicity, proximity to an active fault, local soil condition, dynamic characteristics of the building structure and non-structural components, their bracing and anchorage to the structure and the location of the non-structural component within the structure (FEMA 74, 2005).

Risk maps that depict the extent of non-structural damage grades 2 and 3 expected after an earthquake event can provide basic information that can be used effectively for community risk assessment and planning. The intent is to provide simple and easily understood guidelines for local government entities, fire departments and/or other agencies to conduct risk assessment of their community.

Utilizing the results of this risk assessment, the pilot areas will develop a Practical Guide for the general public and schools with risk reduction strategies, as well as solutions and policies to mitigate the risk. Practical Guide in non-structural risk reduction will include non-structural seismic protection measures which are easily implemented by common citizens and may result in increased domestic safety.

Risk maps will be available to the communities on the KnowRISK website. The objective of distributing hazard and risk maps to the public is therefore to raise awareness and to encourage the public to take action if they discover that they are vulnerable. In order to achieve this objective, such maps must be easily understood and interpreted by the stakeholders.