



DATA COLLECTION AND INVENTORY COMPILATION METHODS FOR SEISMIC RISK ASSESSMENT: APPLICATION OF REMOTE SENSING TECHNIQUES FOR BUILDING INVENTORY UPDATE

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Structures, utilities, systems, population and socio-economic activities constitute the “elements at risk” in urban areas. The physical elements are the built environment such as buildings and lifelines, while the social elements are represented by the demographic data. For the assessment of earthquake risk and losses in a city, region or country, it is necessary to compile inventory databases of elements at risk. Inventories of the exposed elements should be classified on the basis of pre-defined typologies. In order to ensure a uniform interpretation of data and results, typology definitions need to be compatible with the fragility/vulnerability functions. The sophistication and completeness level of inventories will also determine the level of analysis to be used in seismic risk/loss assessments.

The EC FP7 Project SYNER-G (Systemic Seismic Vulnerability and Risk Analysis for Buildings, Lifeline Networks and Infrastructures Safety Gain, <https://www.syner-g.eu/>) aims at developing a unified methodology to assess vulnerability at a system level considering interdependencies between elements at risk, belonging to different systems and between different systems as a whole at city and regional scale. SYNER-G considers four main categories of systems: i) Buildings-reinforced concrete and masonry, ii) Utility Networks-Water, waste water, gas, oil, and electricity, iii) Transportation Networks-Roadways, railways and harbour systems and iv) Critical Facilities-Health-care and fire-fighting facilities. In the present paper, updated taxonomy definitions for the typical European elements at risk within each system are provided. An overview of the available databases/data sources at a global scale and particularly for Europe is represented. Data sources and collection methods for the compilation of inventories for the purpose of seismic risk assessment are categorised into three groups: Census and owner/operator data, ground surveys and remote sensing techniques. Designated templates for collecting, archiving and processing data on the typical European elements at risk within systems are provided. An example case application for updating the inventory database of Thessaloniki city by means of remote sensing is presented.

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