



Factors influencing homeowners' seismic risk mitigation behavior: A case study in Zeytinburnu district of Istanbul



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ABSTRACT

In Turkey, seismic risk reduction in urban areas has gained significance since 1999 Marmara Earthquakes. As the launched legislations could not be integrated into land-use planning in a comprehensive way, homeowners has made the prior responsible for risk reduction. However, the factors that influence or constraint their risk reduction behavior in a voluntary environment are not known. This study intended to search out these factors to envisage suitable policies. Regarding the self-protective theories and their implementation in the natural hazard filed, the research has assessed the factors influencing homeowners' decision process for adopting risk mitigation measures. A questionnaire survey is designed and implemented in Zeytinburnu district of Istanbul. Accordingly, taking necessary measures seemed to be affected by house maintenance expenditure, house value and perceived responsibility of central government directly, whereas perceived losses and having children were likely to increase the reluctance of respondents. Based on the findings, linking house maintenance credits with adoption of risk mitigation measures, increasing house value with certification of buildings for adopting measures and providing special credits to homeowners with children can motivate homeowners for taking these measures. Moreover, community based risk mitigation programs that increase perceived responsibility of central government and district municipality can reduce the fatalistic behavior and unwillingness.

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1. Introduction

1.1. Turkish disaster reduction policies and homeowners' responsibilities

In Turkey, the housing stock has developed as vulnerable to earthquakes because of the deficiencies during the urbanization process that began with liberalization policies in 1950s, which attracted rural population into urban areas. In this process, although the housing stock has been constructed according to legal basis, insufficient housing supply has caused unauthorized settlements, i.e. shanty towns, particularly in greater cities.

In 1980s, both the unauthorized and authorized housing stock has been transformed into multi-storey apartment buildings with the influence of the concrete building technology. On one hand, the deficiencies in the supervision of development planning, implementation and construction of buildings have increased the vulnerability of authorized stock against earthquakes. On the other hand, most of the unauthorized housing stock has been

transformed into illegal apartment buildings and has been legitimized in terms of several amnesties but without inspection based on construction standards [1,2].

The greatest damage confronted in the 1999 Marmara Earthquakes, however, has led the policy makers to recognize the deficiencies of urbanization and vulnerability of urban areas. With this respect, new legislations that aimed safer building construction and risk reduction were launched to implement compulsory earthquake insurance (Decree Law no. 587; 27.12.1999) and building supervision (Law no.: 4708; 29/6/2001). Despite, these regulations could not be linked into urban land-use development plans [2,3], when risk reduction in the buildings was left into homeowners' individual and voluntary decisions. That is, the homeowners-whether they were aware or not-became responsible for adopting risk mitigation measures (RMMs) such as retrofitting foundation and strengthening walls of their buildings.

In fact, individual decision making can have aggregation affect for disaster risk reduction in housing areas. If households are engaged into land-use risk reduction plans and practices (i.e. changing building construction practices by property owners) pro-actively, collective risk reduction can be achieved [4–8]. However, considerable researchers suggested that households fail to take necessary risk reduction measures voluntarily [9,10]. Hence, effective public policy design that link households into risk

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