International Journal of Disaster Risk Reduction 8 (2014) 114–124

Contents lists available at ScienceDirect

International Journal of Disaster Risk Reduction

journal homepage: www.elsevier.com/locate/ijdrr

Main challenges on community-based approaches in earthquake risk reduction: Case study of Tehran, Iran

Kambod Amini Hosseini [a,*], Maziar Hosseini [b], Yasamin O. Izadkhah [a], Babak Mansouri [a], Tomoko Shaw [c]

[a] Risk Management Research Center, International Institute of Earthquake Engineering and Seismology, No. 21, Arghavan Street, North Dibajee, Lavassani Avenue, 1953714453 Tehran, Iran
[b] Tehran Municipality and Islamic Azad University, South Branch, Tehran, Iran
[c] JICA Expert Team, Tehran Disaster Mitigation and Management Organization, Tehran, Iran

ARTICLE INFO

Article history:
Received 27 November 2013
Received in revised form
10 March 2014
Accepted 12 March 2014
Available online 22 March 2014

Keywords:
Tehran
Community
Earthquake
Risk
Vulnerable urban fabrics

ABSTRACT

During the recent years and especially after the destructive Bam Earthquake in December 2003, the importance of public awareness and community-based activities for disaster risk mitigation and management have been revealed more clearly to Iran's authorities. In this regard, several national policies have been prepared and some activities were carried out by governmental and non-governmental organizations for improving the public awareness and participation in earthquake risk reduction programs from local to national levels. In this paper, these activities have been partly addressed. In addition, the results of a pilot study carried out in three districts of Tehran are presented and discussed in order to evaluate the current situation of public awareness as well as the willingness of Tehran residents to participate in risk mitigation activities. After providing the necessary training and preparing disaster maps, the results of this study showed that communities found novel ways to improve their capabilities for reducing the impacts of potential earthquakes and responding to their effects. Understanding the physical and technical shortages of community-based organizations in Tehran in the field of disaster preparedness and management was another outcome of this research.

1. Introduction

Involving local communities in risk reduction or disaster management activities cannot be implemented easily in most countries with top-down structures [1–3], including Iran. The country is located in the active seismic part of Alpine-Himalayan orogenic belt, and has been continuously affected by many destructive earthquakes, some of which are presented in Table 1.

Tehran, the capital city of Iran, has also been affected by strong earthquakes throughout its history, the last one of which occurred in 1830. The location of some important earthquakes and the main and subsidiary faults around Tehran are shown in Fig. 1.

Despite the high seismicity, Tehran has been significantly expanded during the last 50 years, especially in 1960th and 1970th. The city is now known as one of the most vulnerable urban areas in the world to potential earthquakes. This is partly due to the inadequate supervision of construction based on seismic codes and improper growth of urban fabrics towards hazard zones. Heavy traffic, insufficient emergency response facilities, low public awareness and preparedness, etc. are other problems

* Corresponding author. Tel.: +98 21 22287388.
E-mail address: kamini@iiees.ac.ir (K. Amini Hosseini).

http://dx.doi.org/10.1016/j.ijdrr.2014.03.001
2212-4209/

Table 1
Some destructive earthquakes in Iran with magnitudes greater than 7 [4–6].

Year	Location	Magnitude	Year	Location	Magnitude	Year	Location	Magnitude
743	Ray	7.2	1336	Khaf	7.6	1981	Golbaf	7.1
763	Khorasan	7.6	1389	Neishabor	7.6	1890	Shahrood	7.2
815	Sistan	7.0	1405	Neishabor	7.6	1909	Silakhor	7.4
855	Ray	7.1	1440	Gir-Karzin	7.1	1929	KopehDagh	7.3
856	Ghomes	7.9	1483	Makran	7.7	1930	Salmas	7.2
943	Atrak	7.6	1493	Momen Abad	7.0	1945	Makran	8.0
958	Ray	7.7	1608	Taleghan	7.6	1962	Bouin Zahra	7.2
1008	Dinvar	7.0	1696	Chaldoran	7.0	1968	Dasht Bayaz	7.4
1042	Tabriz	7.6	1721	Tabriz	7.7	1978	Tabas	7.3
1177	Bouin Zahra	7.2	1780	Tabriz	7.7	1990	Manjil	7.7
1209	Neyshaboor	7.6	1830	Damavand	7.1	1997	Ardekool	7.3
1270	Neyshaboor	7.1	1871	Ghochan	7.2			

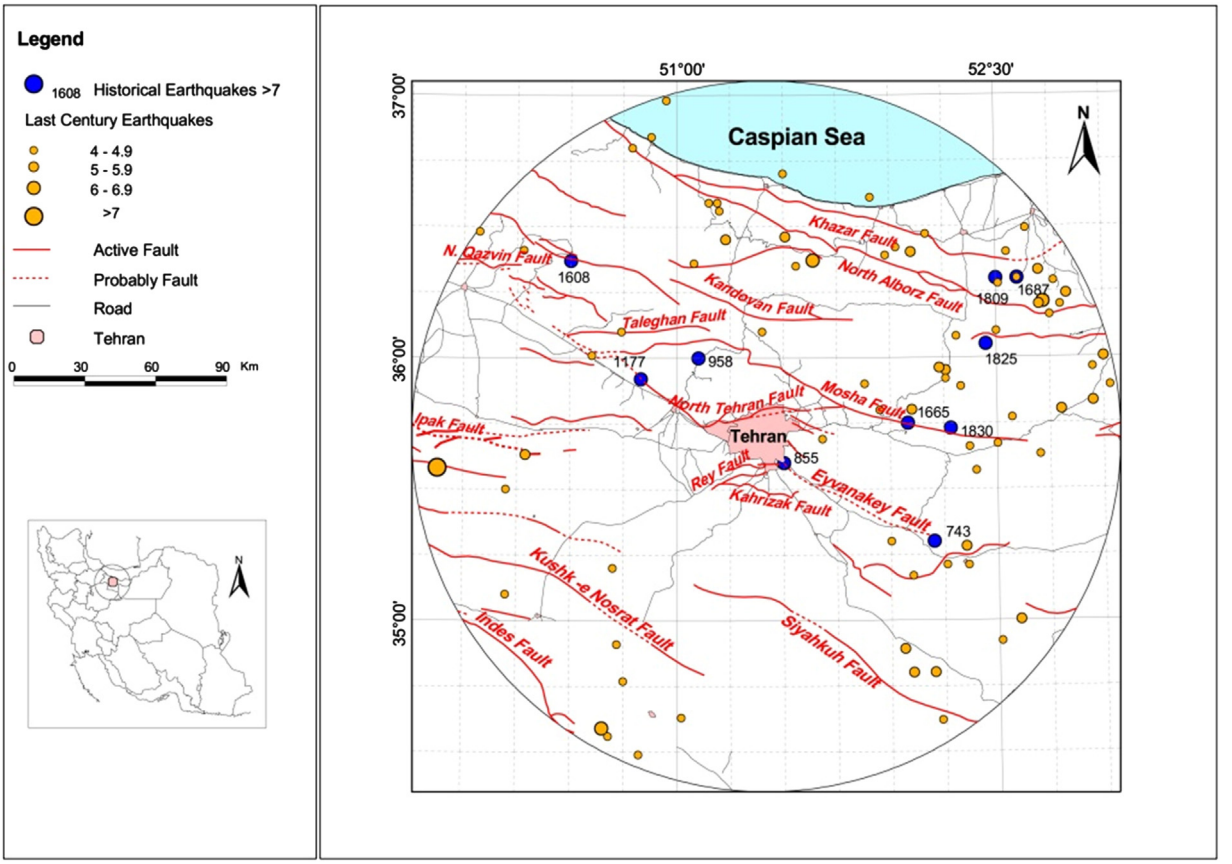

Fig. 1. Active faults and epicenters of some historical earthquakes around Tehran [7].

that can possibly increase the potential destructive impacts of earthquakes in Tehran.

Under such conditions, implementing earthquake risk reduction activities at local level by mobilizing communities and local residents was considered as a necessity in the last few years [8]. These local groups that have similar socio-cultural and sometime economic characteristics, living together in adjacent neighborhoods may play important roles in reducing seismic risks or improving the emergency response capacities, as they are the first who are affected by disasters [9]. In fact, applying building codes and standards, strengthening vulnerable buildings and renovating urban fabrics cannot be applied successfully without cooperation and participation of the local residents [10,11].

Furthermore, the emergency response in major disasters cannot be implemented by governments without mobilizing the local people. For instance, after the Kobe earthquake (1995) in Japan, about 20,0000 people were brought out alive among the debris, of whom, 15,0000 were rescued by local people and neighbors, and only 5000 by relief forces [12]. Similarly, in the 2003 Bam Earthquake in Iran, the victims were mostly survived by their neighbors and relatives. However in the Bam case,