

Tehran, Iran

Disaster Risk Management Profile

Last Update, August 2005

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1 Introduction

Demographic, economic, social and cultural characteristics¹

Iran, or Persia, as it was known until 1935, is located in South West Asia. Turkmenistan and the Caspian Sea, Afghanistan, Pakistan, the Persian Gulf, the Gulf of Oman, Iraq and Turkey bound the 1,648,000 sq km large country.

Iran is one of the most arid regions of the world, and suffers frequent droughts, floods and landslides. In addition, due to its position in the Alpine-Himalayan mountain system, Iran is also subject to numerous and often severe earthquakes.

With a total population of 68,017,860 (July 2005 est.), Iran is one of the most populous country in the region. Persians make up over half of the population, while the Azerbaijani account for at least 25%. Other ethnic minorities include Kurds, Lors, Bakhtiari, Baluchis, Arabs, Armenians, Assyrians and Jews. In addition to the local population, Iran has over the past two decades, hosted one

¹ UNDP country office, Iran's facts

of the largest refugee populations in the world. The estimated number of these refugees, mostly from war-torn Afghanistan and Iraq, has varied between two and four million.

Islam is the official religion; about 90% of Iranians are Muslims of the Shiite sect. The remainder, mostly Kurds and Arabs, are Sunnis. The principal language of the country is Persian (Farsi), which is written in Arabic script. Other languages spoken include, Turkish, Kurdish, Armenian, and Arabic.

Only about 10% of the land in Iran is arable; agriculture contributes just over 20% to the gross national product and employs a third of the labor force. The main food-producing areas are in the Caspian region and in the valleys of the northwest. Of the variety of natural resources found in Iran, petroleum and natural gas are by far the most important. Iran is the second largest OPEC oil producer and has the second world's reservoirs of gas. Besides crude and refined petroleum, Iran's chief exports are Petrochemical products, textiles, fruits, nuts, hides, and iron and steel. Traditional handicrafts such as carpet weaving and the manufacture of ceramics, silk, and jewelry are also important to the economy.

Governance style

The present administrative structure of Iran is characterized by its strongly centralized system of control. There are 30 ostans or administrative provinces, further divided into 195 governorships, 5001 divisions, 496 cities and 1581 village-districts.

The constitution's basic feature is to ensure that the country follows an Islamic path under the direction of "Velayat-e Faghih" (literally, Supreme Jurisprudence) which consists of either a single leader or of 3 to 5 persons to be selected by an elected Council of Islamic Experts.

The duties of the "Velayat-e Faghih" include selection of the six religious jurists (the other six are constitutional experts appointed by the Majlis - Parliament) of the Guardian Council, which has the task of vetting the laws passed by the elected Majlis, the appointment of the Heads of the Judiciary and Armed Forces, the members of the Expediency Council, the Supreme Council or National Security, the High Council of Defense, and also endorses the

appointment of the President, elected by popular vote.

Velayat-e Faghih delineates the general policies of the country after consultation with the Expediency Council. He supervises the execution of the policies of the system with a view to ensuring their proper administration. Most importantly, the Velayat-e Faghih is the final arbiter for all disputes in legislation and has the power to control and revoke all State appointments, including that of the President of the country.

The Majlis has a membership of 290, each elected for a period of 4 years (the latest election was in February 2004). The Government consists of the President, and approximately 23 Ministers forming the Cabinet. The basic role of the President is to lead the Executive branch of Government. He also nominates the Ministers for endorsement by the Majlis. All laws passed by the Majlis have to be vetted by the Guardian Council. In cases where the Majlis and the Guardian Council cannot reach an agreement the issue will be referred to the Expediency Council for final decision.

At the provincial level, administration calls for close cooperation between the Governor, his district officials, the Imam Jome'h, the local clergy, and the provincial representatives of the Government ministries in various technical areas.

National hazardscape

During the last decade a number of natural disasters were reported including four major earthquakes, a number of devastating floods and the worst drought in the last thirty years.

The Islamic Republic of Iran is located in the area of the mountain belt of Alp-Himalayas, which is the last and the youngest mountainous area in the world subjected to constant transformation. The spreading of the Red Sea resulting in the movement of the Arabian Plate towards Iran, the displacement of the Indian Ocean bed in the Oman region towards the northeast, and the movement of other lithosphere plates around Iran have caused disastrous earthquakes in the country, with huge human and economic losses caused by the destruction of cities like Ray (Tehran), Tabriz, Roodbar, Mangil, Bam and Tabas. In addition to the direct impact of the earthquakes, other induced effects such as liquefaction

and landslides also threaten the country. Droughts and flooding are additional hazards of concern for the country, they have affected important groups of the population as can be seen from the following summary table.

Top 10 Natural Disasters in Iran Islamic Rep
sorted by numbers of people killed and affected

Disaster	Date	Killed	Disaster	Date	Affected
Earthquake	1-Jun-1990	40,000	Drought	2000	37,000,000
Earthquake	26-Dec-2003	26,796	Drought	Jul-2001	25,000,000
Earthquake	16-Sep-1978	25,000	Flood	10-Aug-2001	1,200,200
Earthquake	Sep-1962	12,000	Flood	Jul-1980	950,000
Earthquake	31-Aug-1968	10,000	Earthquake	1-Jun-1990	710,000
Earthquake	10-Apr-1972	5,057	Drought	1964	625,000
Earthquake	23-Jan-1909	5,000	Flood	8-Feb-1993	484,728
Earthquake	1-May-1929	3,300	Earthquake	7-Apr-1977	400,000
Earthquake	13-Dec-1957	3,000	Earthquake	26-Dec-2003	267,628
Earthquake	6-May-1930	2,500	Flood	12-Aug-2002	200,000

Created on: May-4-2005. - Data version: v04.05

Source:"EM-DAT: The OFDA/CRED International Disaster Database,
www.em-dat.net - Université catholique de Louvain - Brussels - Belgium"

National disaster management structure and relevant legislation

Since the early 90s and specially after the Manjil Earthquake in 1990, considerable activities carried out by the Government of Iran toward establishment a suitable and adaptable disaster management system. Some of the main regulatory framework and relevant legislation for national disaster management in Iran could be found in the following documents:

- The 1979 constitution (revised in 1989): Governs the basic principles and establishes the responsibilities of the Government.
- Law of Foundation of National Committee for Mitigation of Natural Disaster Effects (NCNDR), 1991.

- The decision of April 2003 approving the Rescue & Relief Comprehensive Plan (Council of Minister's Decree)
- Decisions of the "Expediency Council" in 2004 and 2005 defining the basic policies for Disaster Mitigation and Prevention.
- Formulation of the "Integrated National disaster management Plan (INDPM)"
- Establishment of the Headquarter Council of Disaster Management headed by Vice President of Iran (2004)
- Decree of the Council of Ministers setting 9 specialized sub-committees, April 12, 2003
- Act on the compensation of damages resulting from floods
- Enactment of building code under standard No. 2800 as obligatory for construction companies and national institutions
- Earthquake resistant regulations for buildings
- Incorporation of technical and safety measures supervised by municipalities and other executive organizations

In National level, disaster risk management in Iran is under the overall supervision of the Ministry of the Interior (MOI), as explained in the Law of Foundation of National Committee for Mitigation of Natural Disaster Effects. The responsibilities and functions related to natural disasters and other man-made, were formally assigned to this Ministry by virtue of the Budget Act of the same year.

Two specialized bodies were created to provide support and operationalize the disaster management activities: The Bureau for Research and Coordination of Safety and Reconstruction Affairs (BRCRS), which has a rather broad mandate that includes research; formulation of preparedness and mitigation plans; collection, analysis and dissemination of related information; coordination of relief, reconstruction and rehabilitation and it is encouraged to look for national and international alliances to achieve its mandate.

In addition, the National Disaster Task Force (NDTF) was established as a inter-organizational coordinating body, particularly for emergency relief operations in the national territory. Emergency response across sectors is under the responsibility of the appropriate ministries also coordinated by NDTF. The manager of the NDTF is also the director of BRCRS.

The national structure of the Ministry of Interior is replicated at the provincial and local levels. The Governor General and his heads of department comprise the provincial DTF, which coordinate disaster response and relief within the province. Formal arrangements provide for neighbouring provinces to provide support if needed.

In 1991 the Islamic Consultative Assembly or Majlis constituted a National Committee for Natural Disaster Reduction (NCNDR), the execution of this law is further detailed by the 12 April 2003 Council of Ministers' Decree which has set up 9 specialized sub-committees presided by the deputy ministers, it counts on provincial committees presided by the General Governors and a coordination committee presided by the Minister of the Interior.

The sub-committee for confronting dangers caused by earthquakes and landslides, "Earthquake and landslide expert group", established in 1993 under the Ministry of Urban and Housing was formed as a branch of the NCNDR and it is one of the most actives in the country. Delegates from the Housing Foundation, the International Institute of Earthquake Engineering and Seismology IIEES, the Municipality and universities of Teheran, among others, integrate it.

More recently, in 1998, the government adopted the National Plan on Natural Disasters Prevention that contains policies, actions and programs with national, regional and local focus and includes financial, educational and research aspects in the field of disaster prevention. It has three main components:(1) monitoring and early warning, (2) risk assessment, (3) mitigation and response.

There is an annual budget for disaster risk reduction, which is generally the 2.5% of the total annual budget of the country, 1.5% of this sum is allocated for advocacy and damage reduction, a portion of this amount is also used for emergency management².

Tehran Disaster Management Organization

The Tehran Municipality is the only local Government entity in Iran that is

² ISDR-WCDR, Disaster Reduction IR – Iran National Report, 2005

though embedded in the national system, somewhat outside the main stream of the disaster management system. In Tehran the Mayor is the official Commander for disaster management and the City Council works as a regulatory body, as long as they do not bypass and/or contradict national level stipulations. All activities related to disaster mitigation and management in Tehran should be managed at “Tehran Disaster Mitigation and Management Centre (TDMMC)”. This centre has been established in 2003 by merging two existing centre CEST (Centre for Earthquake and Environmental Studies of Tehran) and CEMS (Centre for Emergency Management Secretariat).

The Tehran Master Plan on Emergency Management has been prepared during the years of 2002-2004 using the prepared reports and documents at local level and the results of JICA Study in Tehran. This is a planning and not a regulatory reference document that propose a lot of projects that should be carried out in Tehran to reduce the impacts of the earthquake.

The Headquarter of Disaster Management of Iran recently established an implementation Council to evaluate this master plan and organize the activities that should be carried out based on the proposed projects.

National land use management system and relevant legislation

Rapid population growth in Iran dramatically changed the composition of urban and rural populations and resulted in accelerated urbanization. Between 1976 and 1996 urban population more than doubled, from 15.85 millions to 36.8 millions, while the rural population rose at somewhat slower rate, from 17.85 million to 23.24. In the same period, the number of cities and towns jumped from 373 to 616³.

Significance of the city to the Nation

Tehran (also spelled Teheran) is situated at the foot of the towering Alborz range and has a population of 9 million (14,000,000 in the whole metropolitan area), is a large population center consisting of Tehran city itself and its adjacent zone of influence), and a land area of 254 square milles (658 Km²). It

³ UN, Human Development Report of the Islamic Republic of Iran, 1999

is the capital of Iran and one of the major world cities, it is also the center of the Tehran Province.

Following the national trends, the population of Tehran has had a boom in the last decades (1991 census reported 6.04 millions, while 1996 census 6.76 millions and by year 2000 estimates were close to seven million). As a result of which urban development has not been smooth. In the recent years the municipality of Tehran has taken great measures to increase the number of recreational facilities, including park, stadiums, theatres, etc.

According to 1996 statistics, the average population density in Tehran is about 125 persons/hectar and it could be roughly estimated that about 20% is currently living under poverty line, poor being defined as those that have an income lower than 250 USD per month.

More than half of the country's industry is based there. Industries include the manufacturing of cars, electronics and electrical equipment, weaponry, textiles, sugar, cement and chemical products. It is also a leading center for the sale of carpets and furniture and incorporates an oil refinery nearby. Only three per cent of the city's economy accounts for the primary sector (agriculture etc), 31% relates to the secondary sector (manufacturing) and finally the 66% accounts for the tertiary sector (services and utilities).

Tehran has an immense network of highways unparalleled in western Asia. It is also the hub of the country's railway network. The city has numerous large museums, art centers, palace complexes and cultural centers, showing that it is the most important political, economical and social centre of the country. Besides Persians there are Azeri, Armenian, Jewish and Afghani communities in Tehran. Persian-speakers constitute 98.3 percent of Tehran's residents.

Geographical setting of the City

The province of Tehran has over 12,000,000 inhabitants and is Iran's most densely populated region. Approximately 84.15% reside in urban areas and 15.85% in rural areas of the province. The highest point of the province is Damavand peak at an attitude of 5,678 m, and the lowest point of the province being the plains of Varamin, 790 m above sea level. The largest rivers of this province are Karaj and Jajrud. The climate of Tehran province in the southern

areas is warm and dry, but in the mountain vicinity is cold and semi-humid, and in the higher regions is cold with long winters.

Covering an area of 1500 Km², Tehran is situated in the north-central part of Iran, on the slope of the Alborz Mountain, it is about 1200 meters above sea level and enjoys a rather mild climate with moderate winters and hot summers. Average annual rainfall is approximately 400 mm, the maximum being during the winter season.

2 Inter-City Linkages

Internal division of the City

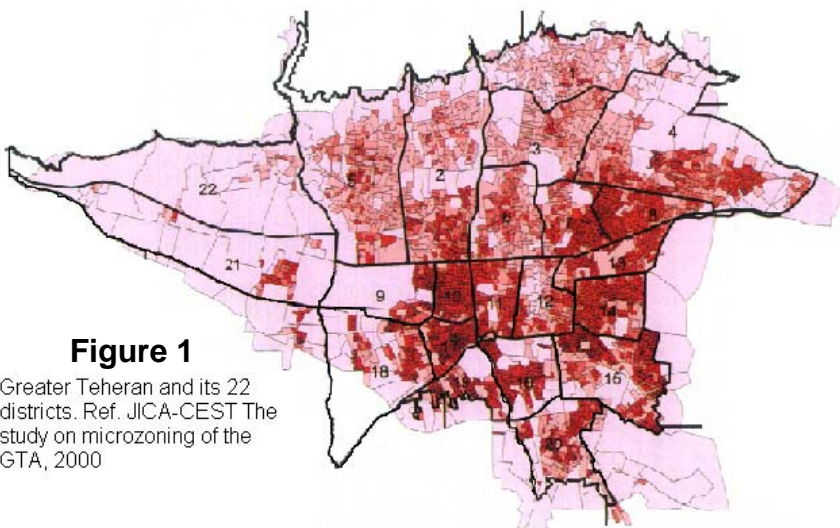


Figure 1

Greater Teheran and its 22 districts. Ref. JICA-CEST The study on microzoning of the GTA, 2000

Teheran is divided into 22 metropolitan districts; the population is concentrated in the southern part of the city, as shown in this graph in darker red that represents 600-800 inhabitants per hectare.

The organization chart of all 22 metropolitan districts are the same and similar to Tehran Municipality. Each of them has a district Mayor and relevant deputies.

Governance/management style

Tehran Municipality that has the main role in management of the city provides the basic urban services in Tehran. In addition the Municipality governs all the construction and urban development inside the city. Of course the security and traffic control are out of the responsibility of the municipality, but there are some kind of co-ordinations between these organizations. The same situation is for the responsible companies that provide the public services such as water, gas, electricity, telephone, etc.

Formal arrangements

Tehran City Council selects Tehran mayor. The head of Tehran Disaster Mitigation and Management Center (TDMMC) fall directly under the supervision and responsibility of the Mayor of Tehran. TDMMC have 22 offices in Tehran districts that are responsible to disaster management in their territories. All emergency situation and activities in these districts should be reported to TDMMC to be considered more deeply if necessary.

Relevant legislation/regulations

There two principal sources for understanding the Tehran specific regulatory framework and related organizational set-up for disaster management including:

1- Tehran Comprehensive emergency Management Plan (TCEMP) that is an emergency response plan (ERP), organizes 24 organizations under the umbrella of 22 committees to address an emergency situation that may arise within the Tehran Municipality.

2- Tehran Mayor's Decrees of May 2003 that establishes in formal terms the Tehran Disaster Mitigation and management Centre (TDMMC). This is a fundamental document, since it establishes TDMMC as the entity responsible for disaster management, including emergency response, in the Tehran Municipality and it defines the mandate and individual functions to be carried out by TDMMC. It defines 21 individual articles and one explanatory footnote. Based on this document, TDMMC functions can be grouped into three distinctly different categories as:

- Coordination function, including supervisory authority and power over other entities of the Municipality and or national level line ministries.
- Direct formulation and preparation functions
- Direct executive function, such as the case for the preparation, conduct and evaluation of drill exercises and coordination among the 24 committees that are involved in the preparation of the individual emergency response plans.

3 Land Use Management

Relevant legislation

The city's first master plan was adopted in 1970 but never implemented⁴. According to Fereshteh Bekhrad a New York architect and designer who participated in the project, the primary objective of the plan was to relieve problems in the city, which had no zoning regulations to control land use or density. This plan would have decentralized the city by creating 10 new regional centers, each serving 500,000 people. Separated by landscaped open spaces, each community center would have had its own commercial, employment and industrial complexes. The plan that was adopted later created 22 different city sections.

The most important Master Plan for Tehran was prepared by ATEK Consulting Engineers in 1991. This master Plan was the main reference for development in Tehran for several years. In this plan there was no considerable aspects for disaster management.

Recently the Tehran Municipality is preparing new Master and comprehensive plans for Tehran. One of the main parts of these plans is related to the natural disasters including Earthquake and Flood.

The consultant for the earthquake study is International Institute of Earthquake Engineering and Seismology (IIEES). In this study all available information and reports related to earthquake vulnerability of Tehran have been collected and analyzed and the current situation in disaster management for a potential earthquake has been explained in details.

Although currently there is no serious regulations that incorporates hazards into land use and planning processes, but the municipality would consider the results of IIEES project to prepare some regulations to cope with issues related to land use and urban planning and development.

⁴ Urschell Donna, The Style of Tehran: Architectural History Mirrors Life in the Iranian Capital , August 2004

Responsible agents and their relationship

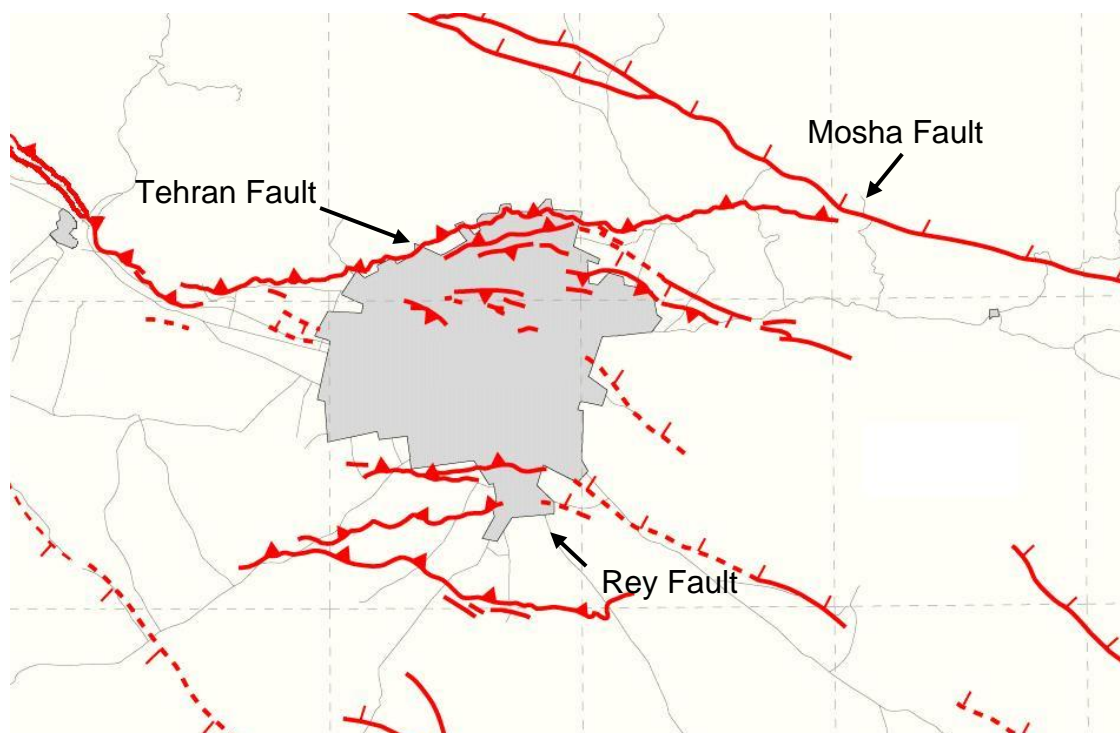
Land use regulations and development are a function of both, the national government and the city municipality. There are basic regulations prepared by the national government that should be applied in the entire country, but most laws and regulations are provided at the local level, which are applicable only in Tehran.

Effectiveness of current arrangements

The Ministry of the Interior designates the Governor of Tehran, but the Mayor is elected by the City Council. Nearly all of the affairs related to Tehran will be planned and achieved by the Mayor and its council, the role of the Governor is to control that these laws do not conflict with the national rules and regulations.

4 Vulnerability Issues

Figure 2. Faulting systems near Tehran



Hazards

Tehran is located at the southern foot of the Alborz Mountains, which extend to the Alps-Himalaya orogenic zone. A large fault is located in this mountain range and there are several fault lines in the plains south of the city of Tehran. This city, virtually surrounded by faults, has suffered large earthquake disasters in cycles of approximately every 150 years. Since there have not been any large earthquakes in Tehran in the past 170 years, local seismologists are considering the possibility of a large earthquake in Tehran in the near future⁵.

At the same time, Tehran has experienced the highest urbanization process of any city in Iran in the recent years. Large influx of people into Teheran took place after the Iranian Revolution in 1979.

The North Tehran and Mosha faults situated towards the northern side of Greater Teheran and the Ray Fault on the southern limits of the city have the potential to generate MW = 7.2 and 6.7 respectively, which according to the earthquake scenarios developed under the JICA-CEST project "Study on the Seismic Microzoning of the Greater Tehran Area", 1999-2000, could produce a death toll of 120.000 to 380.000 if any of the two faults were to move, basically due to the vulnerability of existing structures to seismic loads.

At-risk groups

The population living in the southern part of the city shows in general lower levels of instruction, younger and poorer population, higher population densities and more vulnerable structures, when compared to those social groups living in the central and northern portions of the city. The central districts have a richest cultural heritage, a number of cultural buildings are located in this part of the city and also day-time population can be significantly increased due to the concentration of public buildings. Higher income groups, higher literary rates and newer structures, characterize the northern districts.

Having this perspective in mind, southern and central districts seem to be the most vulnerable at least to earthquakes. Interestingly, a recent study carried

⁵ JICA, FRONTIER, March 2001

out by TDMMC-JICA in relationship with the Earthquake Disaster Management Plan show that those social groups living in the south are more likely to promote community based activities and show stronger willingness to provide each other assistance and support in case of a sever emergency or disaster.

At-risk locations

Local and international research groups have extensively recognized Tehran's vulnerability to earthquakes. Who agree on the fact that there is a need for the city to put in place an overall architectural policy that takes into account the environmental conditions and the fact that Tehran is located on a major fault line.

Through the above-mentioned studies, the city counts on district-wise earthquake vulnerability assessment, based on three main criteria: building damage index, that takes into account the structural condition of the structures; a secondary damage index to incorporate expected damage to hazardous facilities such the gas pipeline and the electric power system; finally an evacuation resource index that allows focusing on open spaces and other evacuation alternatives in the city.

They have concurred that a strong earthquake could severely affect Tehran. Although many buildings could withstand the violent tremors, low-cost residential buildings constructed three to five stories high during the 1970s could collapse; special consideration was given to the large number of masonry buildings given their low seismic resistant capacity. The narrow streets of many neighborhoods would compound the catastrophe; there are hardly any parks that could be utilized as shelter places, especially in the southeastern part of the city. Emergency crews would not be able to reach certain areas in time to save victims.

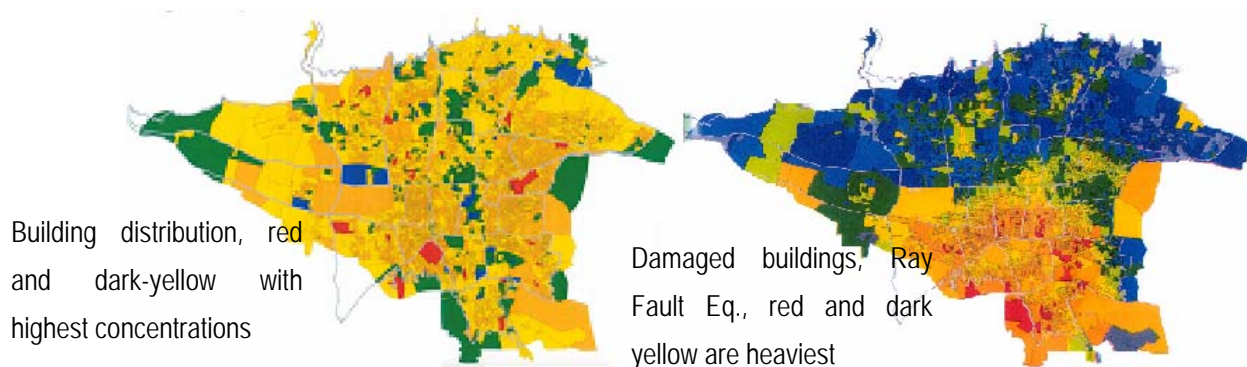
The following graphs, taken from the Tehran Microzonation Study⁶, show the highest concentration of buildings in Greater Tehran; according to municipal

⁶ CEST-JICA, The study on seismic microzoning of the Greater Tehran area in the IRI, September 2000

statistics, 66% of the building stock correspond to weak or unreinforced masonry (aprox. 620,00 units of a total of 950,000), which is considered one of the poorest construction systems to withstand lateral forces i.e. earthquake induced forces, 27% is steel construction and 4% reinforced concrete. Approximately 90% of all buildings are residential. The expected damages in those buildings due to a postulated earthquake of Magnitude of 6.8 with epicenter on the Ray Fault in also shown on figure 3. As expected, most severe damages appear to be located on the southern part of the city.

Inappropriate appraisal system and lack of strict enforcement mechanisms of the seismic standards and codes, greatly contribute to the continued increase of the physical vulnerability of the city. The municipality issues construction permits and construction completion certificates; compliance is revised only from the architectural perspective and the city planning regulations observance.

Figure 3. Locations at risk due to building vulnerability



City policies on vulnerability alleviation

With an estimated population of close to eight million, it is estimated that 380,000 will lose their lives in a future major earthquake. Earthquake engineering research has been conducted in Iran on a very high level and with extremely high quality. However, the reality is that concrete measures for earthquake-resistant structures and the disaster prevention administration for damage deterrence have not been efficient.

The city is considering a massive retrofitting and/or strengthen program for some public and private buildings through appropriate programs and also setting some procedures to assure building code compliance for new constructions in Tehran.

5 Disaster Risk Management Arrangements

Functional arrangements⁷

The municipality of Tehran established in 2003 the “Teheran Disaster Mitigation and Management Center” (TDMMC) by reorganizing existing bodies created after two major disasters impacted the city. TDMMC falls under the direct control and guidance of the city’s mayor. Its mandate includes mitigation, preparedness, emergency response, and reconstruction and rehabilitation activities.

Currently, DRM vision is still very focused on the response side, Tehran city counts on a Comprehensive Emergency Management Plan -TCEMP- that organizes 24 central, local government and NGOs under 22 committees with three main functions: relief and rescue management, settlement management and logistics management. Major concerns in this plan are the strengthening of TDMMC and the Municipal’s Fire Brigade, the improvement of the emergency communications system, setting an emergency operation center and a disaster management information system on the line of post event activities.

Tehran as the capital city, has gained a special condition that allows the Mayor to act as the commander in chief of the Tehran disaster management system and the City Council as a regulatory body as long as their decisions do not contradict national regulations.

Recently, the preparation of a Master Plan for Urban Seismic Disaster Prevention and Management in Tehran has just been completed (August 2004) by the TDMMC with the support of the Government of Japan through the Japan International Coordination Agency (JICA). Based on a previous study that reproduces three different damage earthquake scenarios, the plan provides concrete mitigation options to significantly reduce the number of casualties and damaged buildings from the most severe case, an earthquake on the Ray Fault. It also incorporates a disaster mitigation policy section that includes education,

⁷ TDMMC-JICA, The comprehensive master plan study on urban seismic disaster prevention and management for the Greater Tehran are in the Islamic Republic of Iran, August, 2004

coordination capabilities and institutional strengthening; community based activities for disaster preparedness, the reformulation of an emergency response plan for the city and suggested implementation procedures for the master plan to be completed by year 2015.

Risk Assessment

Tehran, the capital of Iran is located in one of the world's high potential earthquake zones. Several studies are available about risk assessment in Tehran such as Geotechnical Microzonation carried out by IIEES, or JICA microzoning maps. In addition some activities carried out to formulate disaster prevention and management in Tehran that one of them is the Master Plan that is prepared by JICA-TDMMC in 2005.

Based on this study, it is expected that ample earthquake disaster measures will be implemented, to enhance disaster prevention capabilities, and to minimize and control disasters throughout the Greater Tehran Area including the city's 22 districts and its surrounding areas.

Risk Communication

Despite the occurrence of several earthquakes in the Tehran region, the community at large does not show in the overall very high levels of awareness. Most important sources for public information are the newspapers, radio, TV, opinion programs and Public and Private sectors participation.

The week of disaster mitigation awareness was adopted in the month of October, as an alternative to keep the community informed, it also motivates their participation on risk reduction activities.

Formal education on DRM is promoted through specialized programs at the university and research institutes such as the International Institute of Earthquake Engineering and Seismology (IIEES) and sustained efforts to introduce these aspects in the school curricula are taken.

6 *Disaster Risk Management Vision*

The new and integral disaster management master plan, which is on its initial phase of implementation explicitly, spells its vision: “To establish a safe and secure urban environment against a potential earthquake in the city”.

7 *Issues*

Rapid urbanization and the industrialization associated with it have become the leading threats to the environment in Iran. This development has harmed the environment in a number of ways, particularly in large cities, such as the capital Tehran. These adverse effects have affected the quality of living of the population particularly in areas related to air and water quality, increase of informal human settlements, noise levels, energy consumption, traffic and transportation problems, among others⁸.

Natural disasters remain a major threat and a constant hazard to development and environmental sustainability, as witnessed by the catastrophic earthquake in Bam in December 2003. In this context, the need to further strengthen national capacities in disaster risk prevention and management, to raise awareness among decision-makers in key development sectors of disaster risk management issues, and to adopt multi-disciplinary approaches to assessing and managing disaster risk has become urgent

⁸ UNDP, Human Development Report of the Islamic Republic of Iran, 1999

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Primary data source:

Results of the questionnaire survey of disaster risk management practices conducted by the 3cd Program between, kindly prepared by Prof. Mohsen Ghafori Ashtiani and Kambod Amini Hosseini from the International Institute of Earthquake Engineering and Seismology, IIEES, from Tehran-Iran.

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