Earthquake

Technology of GIS and Remote Sensing can be applied to preparing seismic hazards maps in order to assess the exact nature of the risks.

Landslides

Landslide zontion map comprise a map demarcating the stretches or area of varying degree of anticipated slope stability or instability. The map has an inbuilt element of forecasting and is hence of probabilistic nature. Depending upon the methodology adopted and the comprehensiveness of the input data used, a land hazard, zonation map able to provide help concerning location, -extent of the slop area likely to be affected, and rate of mass movement of the slope mass.

Seismological observations

Seismological observations in the country are made through national network of 36 seismic stations operated by the IMD, which is the nodal agency. These stations have collected data over long periods of time.

Building Damage:

The constriction between the pattern and numbers of completely and partially collapsed buildings under poor quality building conditions and future better quality buildings dements rates the importance of improving overall building conditions.

To the extent that the city can pursue the retio fitting or replacement of existing poor quality buildings before such an earthquake happens, the overall risk can be significantly reduced. The substantial reduction of collapsed buildings in a magnitude 7.0 earthquake would mean many lives saved, much property kept intact, and many businesses in a position to recover quickly, to achieve such improvements, strict adherence to the national building code will be needed for new structures built. Moreover, it is important to note that owners of existing structures needing strengthening will need carry retrofitting responsibilities, perhaps with some incentives and support frome local government which can not handle the entire need.

Earthquakes of Iran show that basically Iranian earthquakes can be categorized as shallow depth and earthquakes occurring in the upper mantle. Iranian territory can be divided into different seismotectonic zones coast and adjacent to Iranian hoarder were severely destructed the coastal areas. But fortunately there was no considerable damage due to low level of population in the sparsely located habituated preset areas in these region.

It is got to be mentioned that similar situation in densely populated northern. Caspian coast areas may result in sever and considerable damages.

Landslides

Landslides and sacrificial land-mass movements can be also categorized as a geological hazard of having fourth priority after earthquake, floods and desertification.

In this manuscripts the term landslide and sacrificial land movement includes a broad concept covering simple and rote local slides, rock falls etc.

The parameters involved and controlling these phenomena includes; slope lit logy, rainfall and moisture mechanical characteristics of soil, gravitational forces and finally dynamic forces such as seismic vibration.

Although the hazard resulting from landslide are normally present in most regions as the country but it can be counted as of rain source of hazards occurring in the Alborz heights (Gilan & Mazandaran provinces), Azarbaijan (northwest) and Zagros Ranges.

Since the areas of having the static stability coefficient of >3 are getting active during the earthquakes, it is concluded that dynamic forces

resulting from the earthquake can be counted as the main factor affecting on soil mass movements.

Most of large landslides occurred during Rudbar's June 21, 1990 earthquake are supposed to be the result of the above mentioned interaction. Studies made on some of the large extent landslide of the country shows that this phenomenon is of 10000 years old and is associated with an old destructive earthquake (i.e. Saimareh Landslides) unfortunately due to the role of faults on present morphology of the country and presence of springs in the down slope of the piedmont which resulted in concentration of population around these suitable water resources, a series of devastating landslides accompanied by financial and fatal damages are reported during rainy season (beginning of spring).

Since dynamic forces resulted from ground vibration normally observed after the earthquakes are known to be the main cause of landslide development in Iran, it is suggested that all the attempts going to be made for overall landslide zoning of the country got to be based on seismic dynamism principles.

FOREST FIRE

More than 2472 forest fires were reported from a 25 years period in the northern forested areas on the Alborz Range. These fires are normally resulted from special type of wind which is called fone.

DESERTIFICATION

According to the present studies, 50 millions of hectares of Iranian territory is covered by cavers (desert area) and still there are more areas which have desertification potential. Desertification and sand dune movement are counted as a potential devastating factor effecting

on villages, agricultural land, and communication network, industrial and economic centers.

The existing lands in such areas as eastern part of Gorgan, Turkeman-Sahra, Semirom, Esfahan and Jiroft are those having more desertification potentials.

Locust invasion

Desert locusts, which are invading the southeastern and southern parts of the country, are normally coming from air and sea paths from Pakistan, Saudi Arabia and Oman Sea. Such devastating invasions are reported in 1942, 1948, 1978, and 1987, from southern provinces of Iran. There are also some reports of locust invasion to the central and very rarely as far as northern parts of the country.

Drought

Drought resulted from low precipitation rates can be counted as one of the most important natural disasters defecting on the environment of the country. Low production rates of non-irrigated agricultural land and low productivity of Iranian range resources resulted from droughts are reported from different time intervals in the history of I. R. Iran.

These fact coupled with desertification factor and arid to semi arid climates of the country are all intensifying the needs of requiring attention to this phenomenon and is subsequent effects on the country's resource.

Vulnerability evaluation.

a) Population: according to official statistics present. More than 100000 people were killed during the natural hazards occurred in Iran of which 91094 people are died during the earthquakes and the rest are died during flooding and other natural hazards. A similar figure is lasso present for those being homeless and injured.

b) Social and cultural: Role of vulnerability is different in various parts of the country. 10 percent of damages occurring during the floods is an effecting on social and cultural sectors. This figure goes as high as 13 during the earthquakes.

c) Infrastructure and facilities: According to the surveys made 23% and 28% of damages occurring during floods are related to infrastructure and facilities sectors. The average damages resulted from earthquake to these sectors can be counted approximately 58% and 19% respectively.

d) Economic: While 33% of the total damages during the floods is affected on economical sector, the average damages during of the earthquakes can be estimated around 9 of total damages.