



Science Reporter

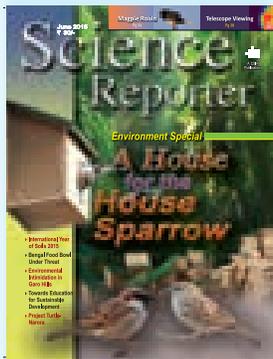
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GREAT HIMALAYAN QUAKE – ARE WE READY?

The 7.9 scale earthquake that roared and rumbled through Nepal on 25th April 2015, 83 km north-west of Kathmandu, brought about massive destruction. Apart from the heavy loss to infrastructure and property, the body count could well be in the range of 8,000 according to some estimates.

Scientists C.P. Rajendran of the Jawaharlal Nehru Centre for Advanced Scientific Research, Bengaluru, Biju John of the National Institute of Rock Mechanics, Kolar Gold Fields, and Kusala Rajendran of the Indian Institute of Science, Bengaluru believe that a “great Himalayan quake” is yet to strike and that the 7.9 scale earthquake in Nepal could just be a precursor.

Since ages, the Indo-Australian plate has been moving in a north-north-east direction and colliding with the Eurasian plate, pushing up the Himalayas in the process. The collision has resulted in the formation of many fault lines along the region, making the entire region highly susceptible to earthquakes. This puts more than 50 million people in the region at risk. And the greatest risk is from collapsing buildings. The risk will be further magnified as the population increases.

For instance, in the 1819 Kutch quake around 2,000 people died whereas in the 2001 Bhuj quake there are unconfirmed reports of 30,000 fatalities. One can imagine the fatalities should a great earthquake occur in the vicinity of a megacity in this region. The risks are further exacerbated manifold due to the degradation of the environment.

The point of concern, therefore, is the quality of building construction happening in our cities. With continued exodus from villages towards the cities in search for livelihoods and better quality of life, the demand for dwelling units will only increase further. The innumerable unauthorised colonies sprouting up in our cities does not bode well for the health of the cities in general, and especially should a great earthquake strike any time in the future.

Putting up structures that can take the rocking and the shaking in their stride can lessen the risk to human life in case of an earthquake of large magnitude. After all, in Japan, a country that has been through several earthquakes, the misery and devastation is not large because buildings there are built with respect to seismic codes. Similarly, strict enforcement of building codes helped the city of Athens to face the September 1999 earthquake (6.1 on the Richter scale), with much less misery than did Turkey where shoddy construction led to almost total destruction at many places during the August 1999 quake.

Several well-established procedures exist that can ensure quake-resistant buildings. For instance, selection of proper foundation systems based on soil parameters – deep pile foundations with a framed structure and raft foundations offer better protection in areas which are located on a river bank or situated on soft soil. Quake-resistant buildings are also designed with support walls called shear walls, made of reinforced concrete. These walls help strengthen the building and resist rocking forces. Devices that act like shock-absorbers between the building and its foundation are also used in seismically active areas. Retrofitting existing buildings to make them stand up to the seismic vibrations is also necessary.

Many cities in the country lie in highly seismic zones. The need therefore is to enforce building guidelines strictly at such places. The need is far greater to make the public aware of the dangers that lurk in the buildings they inhabit.

Hasan Jawaid Khan



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