

# Human Psychology and Aggravated Disaster Risk

- Dr. Piyoosh Rautela  
Executive Director, Disaster Mitigation and Management Centre,  
Govt of Uttarakhand

Despite geographical, religious, cultural and linguistic diversity humans think, act and react in an amazingly similar fashion, particularly during distress and life-threatening situations. This is attributed to evolution, as behavioural traits providing relative advantage and maximizing chances of survival get engrained in our behaviour and psychology. Though evolved through the struggle for survival and aimed at saving us, these traits also make us vulnerable and expose us to risks of various kinds.

## Fading affect bias

You might wonder why people living in a region that is subject to repeated disasters do not learn lessons from the past, and devise ways and means of warding off the threat. This might often make you fall prey to blame the victim syndrome wherein you tend to attribute the disaster to the ignorance and inaction of the disaster victims.

You however fail to appreciate that we all, including the disaster victims, are hardwired to quickly forget the memories associated with negative emotions than those associated with positive emotions. Memories of distress, misery and disaster therefore routinely get erased quickly, and people tend to behave as if these do not pose any threat to them. So, there is nothing seriously wrong with disaster victims not resorting to proactive steps to reduce their vulnerability.

Maybe, you don't believe this. But then, what childhood memories you can recollect instantly? Like all of us, you might have also come across some not-so-pleasant and traumatising instances during your childhood, but could you recollect those instantly?

If not, the assertion is right, and humans do tend to forget not-so-pleasant instances.

Psychologists call this fading affect bias and it helps humans move forward in life despite having faced harsh and bitter instances. Alternatively, this ensures that humans are not clung to their traumatic past, and move forward with routine livelihood chores. Faded memories of previous disaster instances, however, instil a false sense of security and safety as the community tends to forget its vulnerabilities as well as the risks to which it is exposed. There thus remains no incentive for making efforts for risk reduction.

**Forgotten flood vulnerability:** It is, therefore, no wonder that people living along the banks of Bhagirathi in Uttarkashi district of Uttarakhand are resorting to similar practices that they indulged in before the floods of 2010, 2012 and 2013.

Similar is the case with people living along the banks of Mandakini in Rudraprayag district and for that matter those living alongside Alaknanda or Dhauliganga rivers in Chamoli district. Hamlets and habitations were devastated just a couple of years back bustle with life and people have settled at the same places that were devastated by floodwaters.

There could well be varied socio-economic reasons for people to do so.

**The forgotten earthquake:** But then, fading affect bias adds to our vulnerability. Leaving apart devastation, we tend to forget even the incident. For that matter, many of us are aware that the Garhwal Earthquake of 1 September 1803 caused major devastation in the region and the trail of losses extended to Delhi, Agra and Aligarh in the Gangetic plains.

**Long recurrence period:** Moreover, a long recurrence period particularly so for earthquakes and major flood incidences makes people believe that the previous disaster was an exception and the worst is over.

This leads them to believe that their habitations are to remain safe in future.

Before 2013 Alaknanda Valley had witnessed major flooding in 1970 but the people of Mandakini valley had had no reminiscence of floods of this magnitude. For that matter Rishiganga – Dhauliganga valleys were also considered safe from devastating floods until February 2021. Likewise for more than two decades after the Uttarkashi and Chamoli earthquakes of 1991 and 1999, Uttarakhand has not witnessed any major seismic tremor. With even the state making no serious effort to highlight seismic risk and actively promoting earthquake safety measures, fading effect bias leaves no incentive for the masses to invest in seismic safety.

### **Optimism bias**

Thinking positively is an evolutionary hallmark as it facilitates envisioning what is possible and can be done, allowing people to be courageous and innovative. But what the psychologists call optimism bias could well result in lowered guard, particularly about disaster-related preparedness as it instils a mistaken belief amongst people that their chances of experiencing negative events are lower while the chances of experiencing positive events are higher than those of their peers.

So those living in Dehradun tend to feel that earthquakes do not affect them and if at all the earth shakes it would affect those living in remote hill districts, particularly Uttarkashi and Chamoli. They tend to ignore the harsh reality that Dehradun is located dangerously close to the Himalayan Frontal Fault and Main Boundary Thrust and energy released through these could devastate the city.

Likewise, those in the Kumaun division live with a false perception that only the Garhwal division is vulnerable to earthquakes. They tend to forget that located near of Himalayan Frontal Fault the areas around Kathgodam–Haldwani and Ramnagar have witnessed major earthquakes in the past.

Seismogenic losses are however a function of concentration of infrastructure and population. Moreover, one tends to forget that major losses on the 26 January 2001 Bhuj Earthquake were experienced around Ahmedabad which is more than 200 km from the epicentre and no place in Uttarakhand is that distant from any possible epicentre in the region and the devastation in case of a major Himalayan earthquake could well extend till the National Capital Region.

## **Earthquake: Major challenge**

After the 2013 floods that claimed more than 4,000 human lives and severely devastated 05 of the 13 districts of Uttarakhand, the state has emphasised putting in place mechanisms for effective early warning generation and dissemination, particularly for hydro-meteorological hazards. Small and big disasters after 2013 in Dhauliganga, Kumaun, Arakot, Sarkhet and other places only reinstated this resolve.

An array of hydro-meteorological instruments has accordingly been put in place across the state, and efforts are underway to further strengthen it, and reinforce warning dissemination infrastructure. The state has no doubt been overwhelmed by hydro-meteorological disasters and is making every possible effort to tackle these effectively. Together with this, long seismic quiescence seems to have pushed seismic safety to the back seat, and like the masses state seems to have fallen victim to fading affect bias.

**Turkiye - Seismic vulnerability:** The scenes of death and destruction unleashed by the 7.8 magnitude Turkiye - Syria Earthquake of 6 February 2023 and a swarm of aftershocks including those of 6.7 and 7.5 magnitude however call for a serious review of the seismic vulnerability of Uttarakhand region and put in place a robust and holistic earthquake safety regime.

It is worth noting that located in the complex zone of collision between the Eurasian Plate and both the African and Arabian Plates, Turkiye has been prone to earthquakes and has a well-documented history of seismogenic devastation dating back to Magnitude 7.5 Antioch Earthquake of 13 December 115.

The 6 February 2023 earthquake happened due to the sudden movement of the Arabian Plate along the East Anatolian Fault that was unusually quiet for almost a century and most earthquakes in the region were associated with the North Anatolian Fault.

Activity along this fault caused the Magnitude 7.6 Izmit Earthquake of 17 August 1999 and Magnitude 7.2 Duzce Earthquake of 12 November 1999 that devastated Turkey and killed 17127 and 894 persons respectively.

There has not been seismic quiescence thereafter and apart from low-magnitude earthquakes with lesser casualties Turkiye has been rattled repeatedly. The magnitude 6.5 Afyon Earthquake of 3 February 2002 killed 44 persons, Magnitude 6.4 Bingöl Earthquake of 1 May 2003 killed 177 persons, Magnitude 7.2 Van Earthquake of 23 October 2011 killed 604 persons, Magnitude 5.6 Van Earthquake of 9 November 2011 killed 40 persons, Magnitude 6.7 Elazığ Earthquake of 24 January 2020 killed 41 persons, and Magnitude 7.0 Aegean Sea earthquake of 30 October 2020 killed 117 persons.

Not that no lessons were learnt from the frequent seismogenic devastation. After the Izmit and Duzce earthquakes of 1999, new building codes were introduced together with a compulsory earthquake insurance regime. The authorities however failed to do anything for a large proportion of the buildings that were built before 2000. The earthquake has at the same time brought forth shortcomings in both building codes and compliance as evident from the prevalence of soft-storey and large projections in the collapsed buildings.

**Uttarakhand - Seismic vulnerability:** Back home Uttarakhand is no less vulnerable, and the state of the built environment is no better or different. A cocktail of unplanned growth, weak compliance with building bylaws, and enforcement being limited to major urban areas, is continuously enhancing the seismic vulnerability of the built environment of the region and any major earthquake in the region could have catastrophic implications.

Moreover, one needs to remember that Uttarakhand has not witnessed a major earthquake since M~7.5 Garhwal Earthquake of 1 September 1803 and lies in the seismic gap of M~7.8 Kangra Earthquake of 4 April 1905 and M~8.0 Bihar–Nepal Earthquake of 15 January 1934. It is all the more pertinent to note that Dehradun was a secondary epicentre of the Kangra Earthquake.

So the seismic risk in Uttarakhand is real and particularly high. The state is no doubt operating an earthquake early warning system but one needs to appreciate that earthquake early warning is no substitute for earthquake-safe infrastructure. Moreover, this system is to provide no warning for a large area in the epicentral region, and therefore serious efforts are required to upgrade the seismic performance of the building stock; both existing and upcoming.

### **Way forward**

To ensure seismic safety building bye-laws have to be modified and upgraded, a stricter compliance regime with no compromise policy has to be put in place, and seismic safety has to be made a precondition for operating any business or public utility – school, hospital, shop, mall, theatre and multiplex.

Moreover, any major earthquake is sure to derail the pace of growth and development and make recovery difficult and long-drawn, particularly for marginal and small businesses and those working in unorganised sectors.

It is therefore urgently required that a robust and binding disaster insurance regime be put in place and premiums to the same be linked to electricity or other utility bills paid by individuals regularly. Policing alone would however be of little help unless people understand the importance of adopting earthquake safety measures and voluntarily comply with the laid down norms. For this, an aggressive and continuing mass awareness drive, revolving around risk communication and reduction and involving a brand ambassador, has to be designed and implemented to overcome fading affect bias.