# Delhi Earthquakes

## What is the issue?

- An earthquake of magnitude 2.1 was detected near Delhi on June 08, 2020.
- This is the eleventh minor earthquake that is being recorded in and around Delhi since May.

## What are the discussions?

- These recent earthquakes have triggered discussions on the possibility of increased seismicity around Delhi.
- They have also triggered fears of an impending big earthquake soon.
- None of these apprehensions has any scientific basis.

## Is it unusual for Delhi to experience so many earthquakes?

- **Nothing unusual** - Scientists assert that no unusual seismic activity is taking place around Delhi in the last few months.
- Delhi and its surrounding areas usually experience between two and three earthquakes of magnitude 2.5 and above every month.
- But there are monthly and annual variations as well.
- Geological and seismological processes are not very smooth.
- So nothing special has happened in Delhi in the last couple of months.
- **Detection** - Detection of earthquakes, especially those of smaller magnitude, being recorded in an area also depends on the number of seismic recorders installed in that area.
- The area around Delhi has the densest concentration of seismometers in the country, even more than the seismically active Himalayan region.
- Out of the 115 detectors installed in India, 16 are in or around Delhi.
- As a result, even the earthquakes of smaller magnitude are recorded, and this information is publicly accessible.

## Do these small earthquakes foretell a bigger one?

- **Scientifically** - Earthquakes of magnitude 4 or below hardly cause any damage anywhere and are mostly inconsequential for practical purposes.
- Thousands of such earthquakes are recorded around the world every year, and most of them are uneventful.
- They certainly do not signal any big upcoming event.

- **Foreshocks** -Foreshocks are post-event definitions, which is something that is largely applied in hindsight.
- When a big event happens, all the smaller earthquakes that have occurred in that region in the near past are classified as foreshocks.
- The description does not exist before any big earthquake has happened.
- So, the talk of these being foreshocks of a big earthquake in Delhi have no basis at all.
- **Reality** - A big earthquake might still occur, which no can rule out. But they cannot be predicted.
- So to say that these small earthquakes are precursors to the big one is totally unscientific.

## What is a signal to an upcoming earthquake?

- Scientists have been working for years to identify "precursors" to an earthquake, but have so far met with no success.
- Some special earthquakes, triggered by volcanic activity, can be predicted to some extent but nothing else.
- Predicting earthquakes in a region like Delhi is all the more difficult because the place does not lie on any fault lines.
- We know a little bit about the tectonics in the Himalayan region, where two tectonic plates are meeting each other.
- But Delhi is located on a single plate, and the seismic activity is generated by internal deformities.
- Therefore, predicting earthquakes in advance is out of the question.

## Is a big earthquake coming to the Himalayan region?

- Scientists say that the Himalayan region is due for a big earthquake, of **magnitude 8** or even higher.
- That is because they have been able to measure the **energy that is getting trapped under the surface** as a result of one tectonic plate trying to move beneath the other one.
- Even here, scientists have no idea when this big earthquake will occur.
- The prediction about the big one is based only on the estimate of the energy that is ready to be released.
- An earthquake of magnitude 6 is typically associated with the kind of energy that was released by the atom bomb in Hiroshima.
- An earthquake of magnitude 8 would be almost 1,000 times more powerful than a magnitude 6 event.
- Even the argument that the smaller quakes are helping release the energy bit by bit so that a big one would not be necessary does not hold.
- 1,000 earthquakes of magnitude 4 are needed to release the energy

equivalent of a magnitude 6 earthquake. These arguments have no basis.

## Is a big earthquake coming to Delhi?

- No one knows, but a more relevant question is what even if we knew.
- Prediction is not going to make us safe against earthquakes.
- It is important that we need to make our structures earthquake resistant, we need to follow prescribed drills when an event happens.
- These kinds of discussions are the meaningful ones.
- No one is ruling out a possibility of a big earthquake in Delhi.
- But they would occur when they have to.

**Source: The Indian Express**

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