

## Joshimath Crisis

### Why in news?

*Almost a week after cracks appeared in many roads and hundreds of houses of Joshimath, Uttarakhand, authorities declared it a landslide and subsidence-hit zone.*

### What is land subsidence?

- According to the US-based National Oceanic and Atmospheric Administration (NOAA), land subsidence is the **sinking of the ground** because of underground material movement.
- This phenomenon can happen over very large areas like whole states or provinces, or very small areas like the corner of house yard.
- **Reasons** - This phenomenon can happen for a host of reasons, man-made or natural, such as the removal of water, oil, or natural resources, along with mining activities.
- Earthquakes, soil erosion, and soil compaction are also some of the well-known causes of subsidence.

### What can be the reasons behind Joshimath's subsidence?

- The exact reason behind Joshimath land subsidence is still unknown.
- But experts suggest that the incident might have occurred due to a massive infrastructural project called the **Char Dham road project** that is being implemented in the Uttarakhand Himalaya.
- The residents have also blamed NTPC's **Tapovan Vishnugad Hydro Power Project** for the incident.
- They allege that the tunnel had water seepage "from a punctured aquifer, leading to the drying of water sources in Joshimath."
- But NTPC denied the allegations saying that the tunnel built by NTPC does not pass under Joshimath town.
- Other reasons may be
  1. Unplanned construction,
  2. Over-population, and
  3. Obstruction of the natural flow of water and hydel power activities.
- Not only this, the area is a seismic zone, which makes it prone to frequent earthquakes.
- The possibility of a land subsidence incident happening in the region was first highlighted around 50 years by the MC Mishra committee report was published.
- This report also cautioned against "unplanned development in this area, and identified the natural vulnerabilities."
- **Lack of a proper drainage system** - result of unplanned construction - might have also contributed to the sinking of the area.

- Reports have pointed out that subsidence in Joshimath might have been triggered by the **reactivation of a geographic fault** where the Indian Plate has pushed under the Eurasian Plate along the Himalayas.

*A geographic fault is defined as a fracture or zone of fractures between two blocks of rock.*

### **Why Joshimath city is extremely vulnerable?**

- Joshimath city has been **built on an ancient landslide material** - meaning it rests on a deposit of sand and stone, not rock, which doesn't have high load-bearing capacity.
- This makes the area extremely vulnerable to ever-burgeoning infrastructure and population.

### **What are the future plans of the government?**

- In the next decade, the Government proposes to build 66 tunnels in the Uttarakhand Himalaya and 18 tunnels are already in operation.
- Building these subsurface structures could result in gross damage to the environment, including
  1. concentration of pollutants from traffic exhaust compounded by a microenvironment with no sunlight and
  2. limited dispersion in such long-distance tunnels.
- The constant vibrations during the train movements will keep the mountain slope eternally unstable and thus, make it vulnerable to slide at the slightest trigger.

*The construction of highways and railway tracks has become a prime cause for landslides and its occurrences have doubled over the years.*

### **What could be done?**

- A development strategy for the Himalayas should be primarily based on the region's natural resources such as biodiversity, ecotourism, etc
- Rather than building massive dams, focus should be on small projects that would be helpful in providing local energy supply.
- Most of the farmers have now abandoned their traditional practices and only less than 20% of the agricultural land in the Himalayan districts of Uttarakhand is now being farmed and the rest has become fallow land.
- An appropriate strategy for human well-being should use traditional knowledge, agricultural practices, construction practices and local cultural aspects.
- Going by the past experiences of forming expert committees and having their recommendations ignored, it is not clear what benefit would accrue by creating another one by the government.
- The Joshimath episode is a warning that the Himalayan environment may not be able to withstand another push generated by intrusive anthropogenic activities.

## Reference

1. [The Hindu | A mountain reeling under human aggression](#)
2. [Indian Express | Joshimath crisis: What is land subsidence and why does it happen?](#)
3. [Down To Earth | After Joshimath, it could be Karnaprayag, Nainital and other Uttarakhand towns next, say experts](#)

