

Land Subsidence

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Land Subsidence Latest News

Uttarakhand, already battered by natural calamities including cloudbursts, flash floods, and landslides across its mountainous regions, is now facing a new and terrifying phenomenon: widespread land subsidence in Chamoli's Nanda Nagar.

About Land Subsidence

- Land subsidence is a **gradual settling or sudden sinking of the Earth's surface**.
- This geotechnical phenomenon occurs when the **ground loses its ability to support the weight above it, leading to a downward shift**.
- It can occur as a result of **natural factors** (e.g., **volcanic** or **seismic activity, collapse of subsurface cavities**, compaction of loose fine-grained deposits) or **anthropogenic activities** (e.g., **excessive groundwater (GW) abstraction, mining**, subsurface energy extraction).
- Although it is a **gradual process, taking years to decades to develop**, land subsidence presents serious socioeconomic, environmental, and security challenges globally.

- **Impacts:**

- Land subsidence can **cause damage to infrastructure** and lead to **increased flood risks** and **permanent reduction in aquifers' storage capacity**.
- It can also cause **disturbance to water management** and possible repercussions such as **increased saltwater intrusion as a result of reduction in land elevation** and **changes in the gradient of streams and drains**.
- **High maintenance costs for roads, railways, pipelines, and buildings** are only a few examples of stresses brought upon by land subsidence.
- Although land subsidence has been **historically observed in low deltaic areas or coastal regions**, it is being **increasingly observed in large inland areas near densely urban, agricultural, and industrial areas with high groundwater demand**.
- **Excess groundwater extraction** is believed to be one of the **main causes of large-scale** and **high-magnitude land subsidence**.
 - Groundwater overexploitation **compacts the underground reservoirs because water** is the element partly responsible for **holding up the ground**.
 - The **excess water withdrawal** leads to **compaction of the underlying depleted porous formation**, thus inducing land subsidence.
- The total global extent of land surface susceptible to subsidence has been estimated to be 12 million sq.km.
- Land subsidence has been **observed all around the world**, with **major sites in the USA, China, Iran, Indonesia**, Taiwan, Vietnam, Egypt, Japan, Mexico, and Italy.

Source: NIE

Source: <https://vajiramandravi.com/current-affairs/land-subsidence/>

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