



## Landslide Atlas of India

**Prelims:** Landslide, Kedarnath disaster in 2013, Land Subsidence and Joshi math Case, Rainfall variability, Western Ghats, Himalayas.

**Mains:** Key Highlights of Landslide Atlas of India, India's Vulnerability to Landslides.

### Why in News?

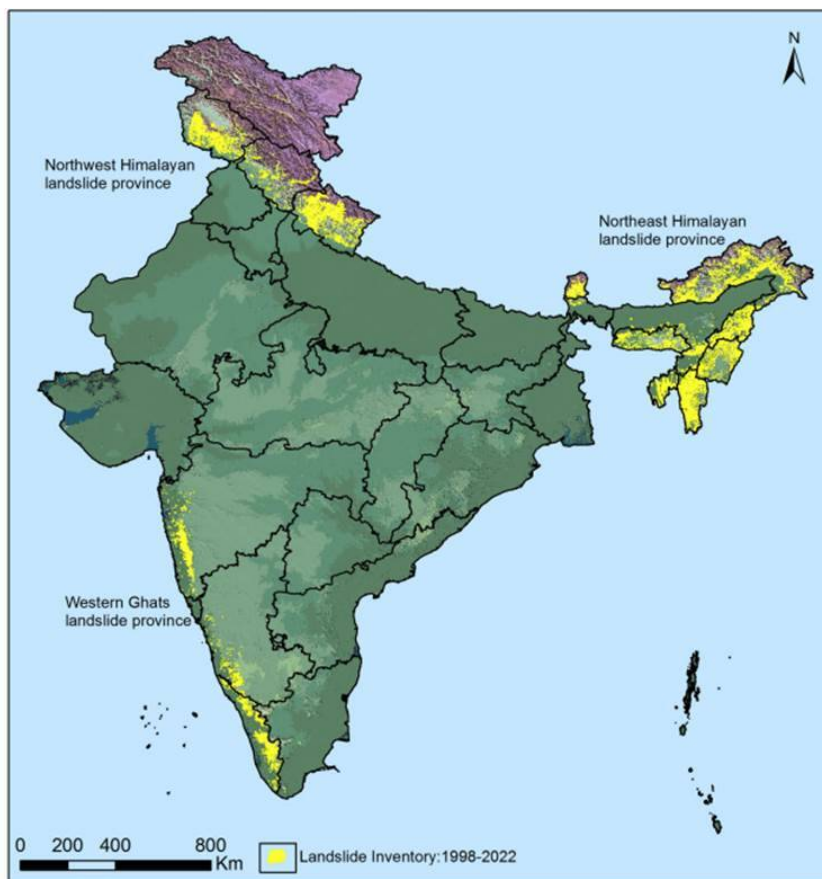
Recently, **National Remote Sensing Centre (NRSC)** under the [Indian Space Research Organisation \(ISRO\)](#) has released the **Landslide Atlas of India**, a detailed guide **identifying Landslide Hotspots in the country**.

- NRSC has the **mandate for** remote sensing satellite data acquisition, processing, archiving, and dissemination to various users.

### How was the Atlas Prepared?

- For the first time, scientists **did a risk assessment on the basis of 80,000 landslides** recorded between **1998 and 2022** in 147 districts in 17 states and two [Union Territories](#) to build a "Landslide Atlas" of the country.
- The atlas used satellite data of ISRO to map all seasonal and event-based landslides like the [Kedarnath disaster in 2013](#) and landslides triggered due to the Sikkim earthquake in 2011.
- The pan-India landslide database classifies landslides into - seasonal (2014, 2017 monsoon seasons), event-based and route-based (2000 - 2017).

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## What are the Key Highlights?

- Uttarakhand, Kerala, Jammu and Kashmir, Mizoram, Tripura, Nagaland and Arunachal Pradesh reported the highest number of landslides during 1998 – 2022.
- Mizoram topped the list, recording 12,385 landslide events in the past 25 years, of which 8,926 were recorded in 2017 alone.
- Mizoram is followed by Uttarakhand (11,219) and Kerala.
  - Uttarakhand's fragility was recently exposed during the [land subsidence](#) events reported from Joshimath.
- The number of **districts with the maximum landslide exposure** are in Arunachal Pradesh (16), Kerala (14), Uttarakhand and Jammu and Kashmir (13 each), Himachal Pradesh, Assam and Maharashtra (11 each), Mizoram (8) and Nagaland (7).
  - Rudraprayag and Tehri Garhwal districts of Uttarakhand have the **highest landslide density and landslide risk exposure** in the country.

## How Vulnerable India is to Landslides?

- India is considered **among the top five landslide-prone countries globally**, where at least **one death per 100 sq km is reported in a year** due to a landslide event.
  - **Rainfall variability** pattern is the **single biggest cause for landslides in the country**, with the [Himalayas](#) and the [Western Ghats](#) remaining highly vulnerable.
- Excluding snow covered areas, approximately 12.6 % of the country's geographical land area is prone to landslides. As many as 66.5 % of the landslides are reported from the **North-western Himalayas**, about 18.8 % from the North-eastern Himalayas, and about 14.7 % from the Western Ghats.
- In the Western Ghats, **despite fewer events**, landslides were found to be making **inhabitants significantly vulnerable** to fatalities, especially in Kerala.

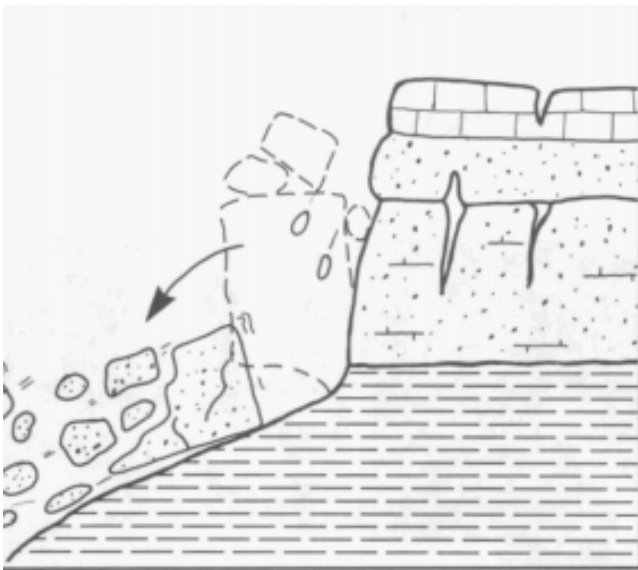
What causes landslides?

▪ **About:**

- Landslides are **natural disasters occurring mainly in mountainous terrains** where there are conducive conditions of soil, rock, geology and slope.
- A **sudden movement of rock, boulders, earth or debris down a slope** is termed a landslide.

▪ **Causes:**

- Natural causes that trigger it include **heavy rainfall, earthquakes, snow melting and undercutting of slopes** due to flooding.
- They can also be caused by **anthropogenic activities such as excavation, cutting of hills and trees**, excessive infrastructure development, and overgrazing by cattle.
- Some of the main factors that influence landslides are **lithology, geological structures like faults, hill slopes, drainage, geomorphology**, land use and land cover, soil texture and depth, and weathering of rocks.
- All these are factored in when a **landslide susceptibility zone is earmarked for planning and making predictions.**



[Source: IE](#)

