



## Mains Practice Question

**Q.** With reference to the recent incidents of land subsidence and landslides in the Himalayan states, what role do developmental activities play in the occurrence of such events? (150 words)

10 Apr, 2023 GS Paper 1 Geography

### Approach

- Start your answer with a brief introduction about Landslide and Land subsidence.
- Discuss role of Developmental activities in the occurrence of landslides.
- Discuss other causes.
- Conclude suitably

### Introduction

- Landslide refers to movement of a mass of rock, debris down the slope. Whereas Land subsidence refers to sinking of earth's surface.
- According to '**Landslide Atlas of India**' published by **Indian space Research Organization (ISRO)**, Himalayan region contributes to 66% of landslides in India. Sinking of Joshimath in Uttarakhand has been major recent event of Land subsidence.

### Body

#### Role of Developmental activities in Landslides and land subsidence:

- **Urbanization:**
  - Rapid urbanization in the Himalayan region can contribute to land subsidence and landslides.
  - The **construction of high-rise buildings**, for example, can put pressure on the soil and cause it to sink, leading to land subsidence.
  - In **Joshimath land subsidence case**, rapid urbanization has been an important factor of crisis alongside other factors.
- **Climate Change:**
  - **Climate change induced by anthropogenic activities** is also a contributing factor to the occurrence of landslides and land subsidence in the Himalayan region.
  - **Melting glaciers, erratic rainfall patterns, and increasing temperatures can all destabilize the soil** and increase the risk of landslides and land subsidence.
- **Improper Land Use:**
  - Improper land use practices, such as unregulated construction, can also increase the risk of landslides and land subsidence.
  - For example, **unregulated construction and encroachment in the ecologically sensitive region** were identified as major factors that contributed to the **Kedarnath disaster**.
- **Mining:**
  - Mining activities can weaken the soil structure, leading to land subsidence and landslides.
- **Deforestation:**
  - Deforestation for developmental activities such as construction of dams, roads, and

buildings can **destabilize the soil and increase the risk of landslides.**

- For example, the construction of the Srinagar Hydroelectric Power Project in Uttarakhand involved extensive deforestation, which was one of the factors that contributed to the **2013 flash floods** in the state.

▪ **Other Causes:**

- Landslides may also be induced by **natural reasons like heavy rains, snowfall and volcanic eruption etc.**
- **Sites of old landslide debris** are prone to land subsidence. This has been one of the major reasons in the case of Joshimath land subsidence crisis.

## Conclusion

- It is essential to adopt **sustainable development practices** and ensure that developmental activities are carried out in an environmentally responsible manner to minimize the risk of natural disasters. This can include measures such as **afforestation, proper regulation of mining activities, and the promotion of eco-friendly urban planning and construction practices.**
- Additionally, **early warning systems, disaster preparedness plans, and community-based disaster management initiatives** should be implemented to mitigate the impact of natural disasters.

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