



## CURRENT AFFAIRS



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# AVALANCHES: A THREAT IN SNOW-COVERED MOUNTAINS

### WHY IN THE NEWS?

A massive avalanche in Mana village, located in Uttarakhand's Chamoli district near the Indo-Tibetan border, trapped 57 workers engaged in a Border Roads Organisation (BRO) project. So far, 32 workers have been rescued, while efforts continue to save the remaining. Rescue operations have been hampered by a snowstorm in the region, making it difficult for teams, including the State Disaster Relief Force (SDRF), Garhwal 9 Brigade, and BRO, to carry out their work. Poor visibility has also prevented the use of helicopters. Authorities, including Chief Minister Pushkar Singh Dhami, have assured that all necessary resources, including medical support at ITBP Hospital, Srinagar Medical College, and AIIMS Rishikesh, are being mobilized. High-altitude rescue teams are on alert, and the government is in contact with Defence and Home Ministries for assistance.



### WHAT IS AN AVALANCHE DISASTER?

An avalanche is a rapid downward movement of material triggered when loose material on a slope breaks away. It can carry additional debris, increasing its impact. Avalanches come in various forms, including rock,

ice, and debris avalanches, but snow avalanches are the most common in mountainous regions. Snow avalanches range from small shifts (sluffing) to massive slab avalanches, which can reach speeds of 130 km/h, destroying forests and villages. They claim around 150 lives annually in North America and Europe, mostly affecting skiers, climbers, and snowmobilers. Fatalities have increased with the rise in winter sports.

### SEVERITY OF AVALANCHE DISASTER IN INDIA

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**1. High-Risk Zones:** The Western Himalayas, especially Uttarakhand, have avalanche-prone Red Zones, causing severe damage and casualties.

**2. Infrastructure Impact:** Avalanches block roads, railways, and highways, isolating communities and delaying rescues.

**3. Loss of Life:** Rapid burial under snow results in high mortality if rescues are not immediate.

**4. Economic Impact:** Avalanches disrupt winter tourism and damage infrastructure, leading to major economic losses.

**Example:** The 2021 Uttarakhand glacier collapse triggered an avalanche and flash flood, killing nearly 100 people.

### REASON OF AVALANCHE

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**1. High-Risk Zones:** The Western Himalayas, especially Uttarakhand, have Red Zones prone to avalanches, causing severe damage and casualties.

**2. Infrastructure Impact:** Avalanches block roads, railways, and highways, isolating communities and delaying rescue efforts.

**3. Loss of Life:** Rapid snow burial leads to high mortality if immediate rescue is not possible.

**4. Economic Impact:** Avalanches disrupt winter tourism and damage infrastructure, causing major economic losses.

**5. Impact on Defense Forces:** Frequent avalanches pose a significant threat to soldiers stationed in high-altitude border areas.

**6. Climate Change Factor:** Rising temperatures and erratic snowfall patterns due to climate change are increasing avalanche occurrences.

**7. Rescue Challenges:** Extreme weather conditions and difficult terrain make rescue operations complex and time-consuming.

### CONSEQUENCE OF AVALANCHE DISASTER

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#### 1. Environmental Consequences

**Ecosystem Damage:** Destruction of forests, plants, and wildlife.

**Landslides & Flash Floods:** Melting snow can trigger secondary disasters.

#### 2. Infrastructure Damage

**Road & Structural Damage:** Avalanches block roads, destroy bridges, and damage buildings.

**Construction Disruptions:** Unsafe conditions halt development projects.

#### 3. Economic Impact

**Tourism Losses:** Disrupts winter tourism and damages resorts.

**High Recovery Costs:** Repairs to infrastructure and services demand huge funds.

#### 4. Human Consequences

**Fatalities:** Suffocation, trauma, or hypothermia can lead to death.

**Displacement:** Avalanches force communities to relocate.

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## NDMA GUIDELINE PREVENT AVALANCHE

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- 1. Be Alert:** Stay updated with weather warnings and watch for signs like falling rocks, cracking trees, or moving debris.
- 2. Move to Safety:** If your home is near a debris-prone area, relocate to a safer place.
- 3. Be Prepared:** Keep emergency essentials like a battery-operated radio, drinking water, first aid kit, and medicines.
- 4. Call for Help:** Contact rescue teams if needed.
- 5. Report Damage:** Inform authorities about damaged roads, power lines, and communication networks.
- 6. Help Others:** Assist elderly people, children, and those in need during emergencies.

## MAJOR TO REDUCE AVALANCHE DISASTER

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### 1. Avalanche control structures

**Avalanche detention walls:** Stop, deflect, or retard avalanches

**Avalanche dams:** Protect roads, power lines, and other areas from avalanches

**Fences:** Hold snow in place

**Explosives:** Clear snow from avalanche-prone areas

### 2. Avalanche zoning

Create avalanche hazard maps to identify areas at risk

Restrict land use in high-risk areas

### 3. Forest protection

Preserve and protect forests in areas where avalanches are likely to start

### 4. Other avalanche mitigation methods

Use rakes or diversion structures

Forecast avalanches and evacuate people from endangered areas

Use avalanche victim detectors to identify avalanche-prone locations

## CONCLUSION

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Avalanches pose a severe threat to life, infrastructure, and the environment, especially in the Western Himalayas, where frequent disasters impact communities, defence forces, and the economy. The recent avalanche in Uttarakhand highlights the urgency of implementing effective mitigation strategies, including early warning systems, avalanche control structures, and proper zoning. Strengthening disaster preparedness and rescue capabilities is crucial to minimizing casualties and economic losses. With climate change contributing to increasing avalanche risks, a proactive approach, including sustainable development and environmental conservation, is essential to reducing future disasters and ensuring the safety of vulnerable regions.

## PRELIMS QUESTIONS:

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**Q. Which of the following statements is correct about Avalanches?**

1. Avalanches are caused only by natural factors such as snowfall and temperature variations.
2. Human activities like deforestation and infrastructure development can increase the risk of avalanches.
3. Avalanches can trigger secondary disasters like landslides and flash floods.

**Select the correct answer using the code given below:**

- A. 1 and 2 only
- B. 2 and 3 only
- C. 1 and 3 only
- D. 1, 2 and 3

Answer: B

**MAINS QUESTIONS:**

Q. Avalanches pose a significant threat to mountainous regions, impacting lives, infrastructure, and the economy. Discuss the causes, consequences, and mitigation strategies for avalanche disasters in India (250 words, 15 marks)

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