Disaster Management · GS - III

With reference to National Disaster Management Authority (NDMA) guidelines, discuss the measures to be adopted to mitigate the impact of recent incidents of cloudbursts in many places of Uttarakhand.

EXAM YEAR	PAPER	SUBJECT
2016	GS - III	Disaster Management

MARKS	WORD LIMIT
12.5	~200 words

Answer Hint

Cloudbursts; NDMA guidelines; extreme rainfall; landslides; flash floods; early warning; hazard mapping; resilient infrastructure; community preparedness

Model Answer

Introduction

Cloudbursts are extremely intense rainfall events over a small area and short duration. In Uttarakhand's steep Himalayan terrain, they can trigger flash floods, landslides, debris flows and severe damage to settlements and infrastructure.

Measures for Mitigation

1. Risk Mapping and Land-Use Planning

- Identify vulnerable valleys, unstable slopes and flood-prone settlements.
- Restrict construction in high-risk zones and regulate development near streams and drainage channels.
- Integrate hazard assessment into road, hydropower and tourism projects.

2. Monitoring and Early Warning

- Strengthen rainfall monitoring through weather stations and radar coverage.
- Improve forecasting, local warning dissemination and communication between meteorological agencies and district authorities.
- Establish community-level alerts and evacuation protocols.

3. Infrastructure Resilience

- Design roads, bridges and drainage systems for local hydrological and geological conditions.
- Maintain culverts and natural drainage channels.
- Stabilise vulnerable slopes using appropriate engineering and ecological methods.
- Regulate debris disposal and construction in river corridors.

4. Preparedness and Response

- Prepare district disaster-management plans and identify evacuation routes and safe shelters.
- Train local communities, police, medical teams and rescue personnel.
- Maintain emergency supplies, communications and access to medical assistance.
- Conduct regular mock drills in vulnerable settlements.

5. Ecosystem-Based Measures

Protect forests, restore degraded slopes and maintain wetlands and river corridors where appropriate. Avoid interventions that obstruct natural drainage or increase erosion.

6. Recovery and Coordination

Use damage assessments to guide rehabilitation and rebuild infrastructure according to risk-sensitive standards. Coordinate local administrations, the State Disaster Management Authority, NDMA and scientific agencies.

Conclusion

Cloudburst impacts cannot be entirely prevented, but deaths and damage can be reduced through reliable warning systems, risk-sensitive planning, resilient infrastructure and strong community preparedness, consistent with disaster-management principles.

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