Environment & Ecology · GS - III

Discuss the implications of accelerating mountain glacier loss for freshwater security, disaster risk and global sea levels. Suggest measures to minimise these impacts.

EXAM YEAR	PAPER	SUBJECT
DAILY PRACTICE 02/11/2026	GS - III	Environment & Ecology

MARKS	WORD LIMIT
10	~150 words

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Answer Hint

Cryosphere degradation; freshwater availability; glacial lake outburst floods; sea-level rise; climate adaptation; emission reduction; mountain ecosystem resilience

Model Answer

Introduction

Glaciers are critical components of the cryosphere and regulate freshwater availability, river flows and regional climate. Rising temperatures are accelerating glacier retreat across many mountain regions.

Major Implications

1. Freshwater Security: Glacier melt supports rivers and communities during dry seasons. Long-term glacier decline can reduce this buffer, affecting drinking water, irrigation and hydropower.

2. Disaster Risks: Glacier retreat may create unstable glacial lakes and increase the risk of glacial lake outburst floods. Landslides and slope instability can threaten settlements, roads and tourism infrastructure.

3. Sea-Level Rise: Melting land-based glaciers adds water to the oceans, increasing coastal flooding and erosion risks.

Measures to Minimise Impacts

- Accelerate greenhouse-gas emission reductions and transition towards low-carbon energy.

- Monitor glaciers and glacial lakes using satellites, field surveys and early-warning systems.
- Strengthen hazard mapping, evacuation plans and resilient mountain infrastructure.
- Improve water storage, watershed management and efficient irrigation.
- Expand international climate cooperation and support vulnerable communities through adaptation finance.

Conclusion

Even ambitious warming limits cannot immediately eliminate glacier loss. Combining mitigation with scientific monitoring, disaster preparedness and sustainable water management is essential to reduce long-term risks.