# Reports on World's frozen regions

***Prelims:*** *Current events of national and international importance | Environment*

## Why in news?

*The two reports, Overshoot and the Cryosphere: Averting Global Meltdown and State of the Cryosphere 2026: The Cost of Overshoot, were released recently, about a week before COP31 UNFCCC begins in Antalya, Turkey.*

- **Released by** – Jointly by
  - International Cryosphere Climate Initiative (ICCI), a global network of cryosphere and climate policy experts, and
  - United Nations Environment Programme (UNEP).
- **Aim** – To highlight the growing risks posed by rapid warming in the Earth's frozen regions and to inform climate policy discussions ahead of COP31.

## Key findings of the report

- **Highly vulnerable frozen regions** – Glaciers, ice sheets and permafrost regions were particularly vulnerable to rising temperatures, with changes in these frozen landscapes potentially having consequences far beyond the polar and mountain regions.
- **Carbon stored in permafrost** – Around 15% of the Northern Hemisphere (about 14 million sq km) is covered by permafrost, which stores nearly 1,700 billion tonnes of carbon.
- Taken together, terrestrial and submarine permafrost on the continental shelves offshore of Siberia and North America are estimated to hold several times the amount of carbon currently stored in the atmosphere.
- **Temporary Overshoot, irreversible changes** – The report cautions that even a temporary rise above the Paris Agreement's 1.5°C target could trigger long-lasting and irreversible changes in glaciers, ice sheets, sea ice, permafrost, and polar oceans.
- **WMO findings** – Warned that global temperatures could remain above the 1.5°C threshold for much of the century.
  - The Arctic warmed up to 4 times faster than the global average over the past decade.
  - The Greenland and Antarctic ice sheets are losing ice at roughly 6 times the rate observed in the 1990s
  - Himalayan region heating – In the Hindu Kush Himalayan region, a global warming level of 1.5°C could translate into 1.8°C-2.2°C of regional warming.

## UN-led study on Glacial Lake Outburst Floods (GLOFs) – India

- **High GLOF deaths** – A separate UN-led study found that India recorded the highest number of deaths from glacial lake outburst floods among eight countries in the Hindu Kush Himalaya region between 1835 and 2025.
- **Glacial Lake Outburst Flood Risks, Response Strategies and Adaptation Gaps in the Hindu Kush Himalaya Region Study –** Examined floods across a region spanning 4.2 million sq km and covering Afghanistan, Pakistan, India, China, Nepal, Bhutan, Bangladesh and Myanmar.
- **Rise in the frequency** – GLOF after 1950, rising to approximately 34 events per decade — a fivefold increase compared to the pre-1950 period.
- China recorded 199 glacial lake outburst floods, followed by Pakistan with 152, India with 62 and Nepal with 58.
- **Death toll** – India ranked third in the number of recorded GLOF events, but it had the highest reported death toll of 6,119 deaths, compared with 1,991 in Pakistan and 625 in China.
- India had experienced the most severe displacement associated with such floods, followed by Nepal and Pakistan.
- About 70% of the floods occurred during the summer monsoon months, when both temperatures and precipitation were at their highest.
- **Causes** – GLOF events have increased rapidly in recent decades, mainly because of
    - Climate change,
    - Ice avalanches were the primary trigger in 50% of recorded events,
    - Intense rainfall accounted for 25%.
- It suggested a strong link between climatic conditions and the occurrence of glacial lake outburst floods.

**Reference**

Down to Earth | Two reports on World's frozen regions

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