Glacier Disappearance

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Why in news: A new study published in Nature Climate Change projects that global glacier disappearance will peak around mid-century, with up to 4,000 glaciers vanishing annually under high-warming scenarios.

What is Glacier Disappearance?

Glacier disappearance refers to the **complete extinction of an individual glacier** when:

oIts **area falls below 0.01 sq km**, or

oIts **remaining ice volume drops below 1%** of original levels.

It occurs due to **sustained warming**, where **ice melt exceeds snow accumulation** over time.

Key Global Trends

1. Mid-Century Peak

- Global glacier extinction is projected to **peak between 2041–2055**, depending on the level of global warming.

2. Scale of Loss

- Under **+1.5°C warming** ? **~2,000 glaciers lost per year**.
- Under **+4.0°C warming** ? **~4,000 glaciers lost per year**.

3. Regional Variations

- **Small-glacier regions** (European Alps, Caucasus):
- Early and rapid losses, with peaks **before 2040**.
- **Large-glacier regions** (Greenland periphery, Arctic Canada):
- Slower response, but **prolonged and sustained loss** over longer periods.
- **High-Mountain Asia**:
- Hosts **over one-third of the world's glaciers**.
- Plays a decisive role in shaping the **global mid-century extinction peak**.

Key Reasons for Glacier Disappearance

- **Rising global temperatures** accelerating melt rates.
- **High proportion of small glaciers**, which respond rapidly to warming.
- **Delayed dynamic response of large glaciers**, locking in long-term ice loss.
- **Insufficient climate mitigation**, causing irreversible losses even if emissions stabilise later.