

GLACIERS DECLINE: GEOGRAPHY

NEWS: Study: Only 24% present-day glaciers will remain if world gets warmer by 2.7°C

WHAT'S IN THE NEWS?

A new study warns that with 2.7°C warming, only 24% of present-day glaciers will survive, severely impacting global water security, sea levels, and ecosystems. The Hindu Kush Himalaya, which supports major rivers in South Asia, is particularly vulnerable, calling for urgent global climate action and glacier conservation.

Context

- A new study in the journal *Science* has revealed alarming projections on glacier loss under current climate policies.
- If the planet warms by 2.7°C, **only 24%** of today's glaciers will remain, raising global concerns about **water security, sea-level rise, and ecosystem disruption**.

What are Glaciers?

- **Definition:**
 - Glaciers are **large, thick masses of ice** formed from accumulated snow over centuries, resting on land.
- **Freshwater Source:**
 - Glaciers store **70% of the Earth's freshwater**.
- **Geographical Coverage:**
 - They cover around **10% of Earth's land surface** today.

Key Findings of the Study

- **Massive Glacier Loss Unavoidable:**
 - Even if **global warming stops today**, glaciers will still lose **39% of their mass** (vs. 2020 levels).
 - This loss would contribute to a **sea level rise of approximately 113 mm**.
- **Regional Vulnerability:**
 - Glaciers in **Scandinavia, the Canadian Rockies, the US, and the European Alps** are highly sensitive.
 - The **Blatten glacier collapse in Switzerland**, which buried a village, illustrates this vulnerability.
- **Incremental Warming Effects:**

- For every **0.1°C temperature rise between 1.5°C and 3°C**, there will be a **2% global glacier loss**.
- Impact is **more severe regionally**, depending on topography and latitude.
- **Hindu Kush Himalayan (HKH) Region Under Severe Threat:**
 - At 2°C warming, **only 25% of ice will remain** in HKH glaciers.
 - HKH glaciers feed **major rivers like the Ganga, Indus, and Brahmaputra**, crucial for South Asia's water needs.

Hindu Kush Himalaya (HKH) Region – Strategic Importance

- **Geographic Spread:**
 - Extends about **3,500 km across eight countries**: Afghanistan, Bangladesh, Bhutan, China, India, Nepal, Myanmar, and Pakistan.
- **Also Known As:**
 - The **“Water Towers of Asia”** – source of 10 major rivers:
 - Amu Darya, Indus, Ganga, Brahmaputra, Irrawaddy, Salween, Mekong, Yangtze, Yellow, and Tarim.
- **Vital Statistics:**
 - HKH river basins **serve nearly 1/4th of the global population**.
 - Direct **freshwater source for 240 million people** living in the region.

Impacts of Glacier Loss

- **Water Security Threats:**
 - Depletion of Himalayan glaciers threatens **India's major rivers**, impacting:
 - **Agriculture, drinking water, and hydroelectric generation**, especially in the dry season.
- **Sea-Level Rise and Coastal Risks:**
 - Glacier melt significantly contributes to **global sea level rise**.
 - Poses a major risk to **low-lying nations** like the **Maldives**, and **coastal Indian cities**.
- **Ecosystem Disruption:**
 - Loss of glaciers affects **alpine biodiversity** and triggers **Glacial Lake Outburst Floods (GLOFs)**.
 - Alters water availability for **downstream ecosystems**.

- **Socioeconomic Consequences:**
 - Reduced water availability may cause **climate-induced migration**, resource conflicts, and **deepening poverty** in vulnerable regions.

Global Initiatives for Glacier and Cryosphere Conservation

- **Paris Agreement (2015):**
 - International treaty aiming to **limit global warming** to well below 2°C, preferably 1.5°C.
- **High Mountain Summit (WMO):**
 - Recognizes mountains/glaciers as **climate sentinels**.
 - Focus on **early warning systems**, climate adaptation, and **data-sharing frameworks**.
- **International Cryosphere Climate Initiative (ICCI):**
 - Launched post **COP-15 (2009)**.
 - Network of scientists and policy leaders focusing on preserving the **Earth's cryosphere**, including glaciers.
- **National Mission for Sustaining the Himalayan Ecosystem (NMSHE):**
 - India's initiative under NAPCC (National Action Plan on Climate Change).
 - Focuses on **glacial retreat**, **biodiversity conservation**, and **disaster preparedness** in the Himalayas.
- **The Arctic Council:**
 - A forum for Arctic countries to **collaborate on sustainable development**, environmental protection, and climate mitigation.
- **Global Monitoring Systems:**
 - **Global Cryosphere Watch (WMO)** – Satellite monitoring of ice and snow.
 - **CryoSat (ESA)** – Uses satellite-based **remote sensing** to track **ice sheet thickness and changes**.

Concluding Remarks

- **Urgency of Action:**
 - The world is witnessing **accelerated glacier loss**, which is nearly **irreversible in the near term**.
 - It underlines the need for **urgent, ambitious climate action**, not just planning.

- **Role of Global Cooperation:**

- Frameworks like the **Paris Agreement**, **ICCI**, and **NMSHE** must move beyond commitment to **execution and accountability**.
- Delay in action increases the risk of **ecological collapse and human vulnerability**, especially in fragile mountain ecosystems.

Source: <https://indianexpress.com/article/india/study-only-24-present-day-glaciers-will-remain-if-world-gets-warmer-by-2-7c-10037465/>