



DATE: 16 SEPTEMBER 2026

1 Yamuna River System (Source: The Indian Express)

- **Origin:** It originates from the Yamunotri Glacier on the southwestern slopes or Bandarpooch Peak in the Mussoorie range of the lower Himalayas.
- **Passing States:** Flows through the states of Uttarakhand, Himachal Pradesh, and Haryana. It then enters Delhi and merges with the Ganga near Prayagraj.
- **Fact:** It is the largest tributary of the Ganga in the northern plains.
- **Geographic Significance:** It creates the highly fertile alluvial Yamuna-Ganges Doab region between itself and the Ganges in the Indo-Gangetic plain.
- **Cities:** The cities of Bhagpat, Delhi, Noida, Mathura, Agra, Firozabad, Etawah, Hamirpur, and Allahabad lie on its banks.
- **Major Tributaries:** Tons, Chambal, Banas, Kali Singh, Ken, Betwa and Sindh rivers.

Tons River

- **Origin:** It originates from the lofty Bandarpooch massif (elevation approx. 6,315 meters) in Uttarakhand.
- **Major Tributaries:** Its primary feeder stream is the Pabbar River.
- **Passing States:** Uttarakhand, Himachal Pradesh
- **Fact:** The Tons River is the largest tributary of the Yamuna River.
- **Key Project:** Kishau Multipurpose Project
 - **Location:** It is an inter-state river valley project between Uttarakhand and Himachal Pradesh.
 - **Type of Dam:** It is a gravity dam.
 - **States Agreement:** Himachal Pradesh, Uttarakhand, Delhi, Uttar Pradesh, Haryana, and Rajasthan agreed to sign a Memorandum of Understanding (MoU) for implementation of the project.



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2 Reasons for Trade Deficit (Source: The Hindu)

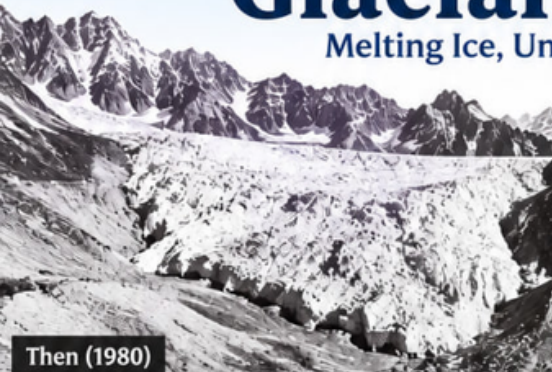
- **High Import Dependence:** Heavy dependence on imports such as crude oil, natural gas, electronics, machinery, semiconductors and gold can increase the import bill.
- **Rise in Global Commodity Prices:** Higher international prices of crude oil, gas, metals and other commodities raise the value of imports even if import volumes remain similar.
- **Strong Domestic Demand:** Rising incomes, industrialisation and consumption increase demand for imported consumer goods, raw materials and capital goods.
- **Weak Export Growth:** Slow global demand, recession in major markets or loss of export competitiveness can reduce export earnings.
- **Currency Depreciation:** Depreciation makes imports more expensive. Although it can make exports cheaper internationally, the immediate effect may be a higher import bill, especially for essential imports.
- **Low Manufacturing Competitiveness:** High logistics costs, infrastructure gaps, technological dependence and lower productivity can make domestic products less competitive in global markets.
- **Import of Capital Goods:** Developing economies often import machinery and advanced technology for infrastructure and industrial expansion, temporarily widening the trade deficit.
- **Trade Barriers Abroad:** Tariffs, non-tariff barriers, protectionist measures and stricter standards in foreign markets can restrict a country's exports.

3 Glacial Retreat (Source: The Hindu)

Glacial Retreat

Melting Ice, Uncertain Futures

Glaciers are retreating faster than ever.




Then (1980)

Now (2026)



What is Glacial Retreat?

Glacial retreat refers to the long-term reduction in the size, area and volume of glaciers due to a persistent negative mass balance (more melting than accumulation).

A key indicator of climate change.



Major Causes

- Rising Global Temperatures**
Increase in average temperature due to greenhouse gas emissions.
- Black Carbon Deposition**
Deposition of soot on snow and ice reduces albedo, increasing melting.
- Changes in Snowfall Patterns**
Reduced snowfall and altered monsoon patterns affect glacier mass.
- Land Use Changes**
Deforestation and surface changes can influence local climate and glacial melt.

Impacts

- Water Security**
Initially higher river flow, later reduced flows affecting agriculture, hydropower and drinking water.
- Increased Natural Disasters**
Higher risk of glacial lake outburst floods (GLOFs), landslides and flash floods.
- Loss of Biodiversity**
Threat to cold-adapted species and fragile mountain ecosystems.
- Impact on Livelihoods**
Affects agriculture, tourism, pastoralism and the life of mountain communities.

Regions Most Affected

- Himalaya-Karakoram-Hindu Kush (HKH)**
Often called the "Third Pole", it is highly vulnerable.
- Arctic and Greenland**
Rapid warming leading to significant ice loss.
- Antarctica**
Accelerating ice-sheet retreat, contributing to global sea level rise.
- Other Mountain Regions**
Andes, Alps, Rockies, East African mountains (e.g., Kilimanjaro).

Consequences

- Sea Level Rise**
Contributes to global sea level rise, threatening low-lying coastal areas and island nations.
- Climate Feedback**
Loss of ice reduces Earth's albedo, accelerating warming (positive feedback).
- Long-term Water Scarcity**
Glaciers act as natural reservoirs; their loss leads to reduced dry-season flows.

India and Glacial Retreat

- Himalayan glaciers are retreating at an accelerated rate due to rising temperatures and black carbon.
- Affects major rivers – Indus, Ganga, Brahmaputra.
- Increases risk of GLOFs in states like Uttarakhand, Sikkim, Himachal Pradesh and Arunachal Pradesh.
- Threatens water, food and energy security.
- India is strengthening monitoring systems (e.g., National Glacial Monitoring Programme).

Way Forward

- Mitigation**
Reduce greenhouse gas emissions and black carbon.
- Adaptation**
Strengthen early warning systems, climate-resilient infrastructure.
- Monitoring**
Use satellite remote sensing, field studies and glacier inventories.
- Community Preparedness**
Build resilience of vulnerable mountain communities.
- Ecosystem Conservation**
Protect fragile mountain ecosystems.