



## Ecological Challenges in Himalayas

This editorial is based on [“Himalayan blunders that are ravaging the Himalayas”](#) which was published in The Hindu on 28/08/2023. It talks about the significance of the Himalayas, the ecological challenges they have been recently facing and the impact of rampant urbanisation on the region.

**For Prelims:** [Rapid melting of glaciers](#), [Black Carbon](#), SECURE Himalaya Project, [Chardham Mahamarg Vikas Pariyojna](#), [National Mission on Sustaining Himalayan Ecosystem](#), [Glacial Lake Outburst Floods](#),

**For Mains:** Significance of Himalayas, Ecological Challenges to Himalayan region due to rampant urbanisation

**In the heart of Asia, the Himalayan mountain range, often referred to as the "Roof of the World",** has captivated human imagination for centuries with its breathtaking beauty and allure.

However, behind the serene facade lies a tale of **escalating environmental challenges**. In recent times, the Himalayas have borne witness to a series of unprecedented and alarming challenges that threaten their very existence.

From the impacts of climate change leading to **glacial melt and altered weather patterns**, to **rampant urbanisation and unsustainable development practices**, the Himalayas are facing a wave of devastation that demands immediate attention.

Understanding the delicate balance that sustains the Himalayas has become a matter of concern for not just the region, but a global imperative. The **plight of the Himalayas requires urgent attention and collaborative efforts** on a global scale.

### Why are the Himalayas Significant?

- **Cultural and Spiritual Significance:** The Himalayas are regarded as a sacred and spiritual centre by numerous cultures and religions, including **Hinduism, Buddhism, and Jainism**.
  - They are home to several revered pilgrimage sites, monasteries, and temples and are often associated with meditation, enlightenment, self-discovery etc.
- **Biodiversity Hotspot:** The Himalayan region is recognized as one of the **world's biodiversity hotspots** and contributes to **global ecological balance**.
  - Its diverse ecosystems, ranging from lush forests to alpine meadows, harbour a rich variety of plant and animal species, some of which are unique to the region.
- **Water Source:** The Himalayan glaciers and snowfields serve as the **source for major rivers like the Ganges, Indus, Brahmaputra, and Yangtze**, which sustain the lives and livelihoods of millions of people across South Asia.

- The water from these rivers supports agriculture, hydropower generation, and urban centres downstream.
- **Climate Regulation:** The Himalayas play a crucial role in regulating the climate of the surrounding regions and beyond. They **influence the monsoon patterns** that bring vital rainfall to countries like India, Nepal, and Bangladesh.
  - The Himalayan glaciers are also **sensitive indicators of [global climate change](#)**.
- **Geological Importance:** The Himalayas are the result of the ongoing collision between the Indian Plate and the Eurasian Plate. This geological process has shaped the landscape and continues to influence seismic activity in the region.
  - **Studying the Himalayas provides insights into the Earth's tectonic forces** and helps scientists understand the **dynamics of mountain building**.

## How is Rampant Urbanisation Affecting Himalayas?

- **Flawed Development:** Blocked roads after a **landslide at [Chamoli](#), [sinking of Joshimath](#)** in Uttarakhand, road caving in Chamba in Himachal epitomise a flawed developmental paradigm institutionalised in the Himalayan region.
  - Studies by the National Remote Sensing Center (of ISRO) have revealed that **Rudraprayag and Tehri districts are the most landslide-affected districts** in the country.
  - The **[Chardham Mahamarg Vikas Pariyojna](#)**, a massive infrastructure project, claimed lakhs of trees, acres of forest land and the fertile topsoil of the fragile Himalayas.
- **Unregulated Tourism:** While tourism can bring economic benefits, unchecked tourism can strain local resources and ecosystems. Mountainous areas are being **burdened beyond their capacity** by tourism and rural-to-urban migration.
  - In 2022 alone, **100 million tourists, including pilgrims**, visited Uttarakhand, and experts continue to caution that unregulated tourism that exceeds the region's carrying capacity can have disastrous impacts.
- **Rising Temperatures:** The **Himalayas are warming faster than other mountain ranges**, and the **increased use of reinforced concrete** in building construction, replacing the traditional wood and stone masonry there, is likely to create a **[heat-island effect](#)** and thus add to regional warming.
- **Cultural Erosion:** Traditional Himalayan communities have distinct cultural practices and ways of life closely tied to their natural surroundings. Unsustainable urbanisation has been leading to the erosion of traditional knowledge, customs, and cultural identity.

## What Ecological Challenges the Himalayas have been Facing?

- **Climate Change and Glacial Melting:** The Himalayas are highly vulnerable to the impacts of climate change. Rising temperatures have led to the **[rapid melting of glaciers](#), affecting water availability for rivers downstream**.
  - This poses significant risks to communities that depend on glacial meltwater for agriculture, drinking water, and hydropower.
- **Accumulation of Black Carbon:** **One of the biggest factors causing glaciers to melt is the emission of [black carbon aerosols](#) into the atmosphere**.
  - Black carbon absorbs more light and emits infra-red radiation that increases the temperature, therefore, an **[increase in black carbon in the Himalayas](#)** contributes to the faster melting of glaciers.
  - Black carbon deposits are rising on the Gangotri glacier, escalating its melting. **Gangotri is also the fastest receding glacier**.
- **Natural Disasters:** The Himalayas are young, fold mountains which means they are **still rising and are prone to [tectonic activities](#)**. This makes the region prone to natural disasters such as landslides, avalanches, and earthquakes.
  - Climate change can exacerbate the frequency and severity of these events, leading to loss of lives, property damage, and disruptions to infrastructure.
- **Soil Erosion and Landslides:** **Deforestation, construction activities, and improper land use practices** increase soil erosion and the risk of landslides.
  - The loss of vegetative cover **destabilises Himalayan slopes**, making them **susceptible to erosion during heavy rainfall or seismic events**.

- **Growth of Invasive Species:** As temperatures rise, new habitats become available for invasive species that can **outcompete native the flora and fauna** of the Himalayan region.
  - **Invasive species** disrupt the delicate balance of ecosystems and threaten the survival of native species.

## What Government Initiatives are Related to Protecting the Himalayan Region?

- **National Mission on Sustaining Himalayan Ecosystem:**
  - It was launched in 2010 and covers 11 states (Himachal Pradesh, Uttarakhand, Sikkim, all northeast states and West Bengal) and 2 UTs (J&K and Ladakh).
  - It is one of the eight missions under the **National Action Plan on Climate Change (NAPCC)**.
- **SECURE Himalaya Project:**
  - It is a part of “Global Partnership on Wildlife Conservation and Crime Prevention for Sustainable Development” (**Global Wildlife Program**) funded by the **Global Environment Facility (GEF)**.
  - It promotes sustainable management of alpine pastures and forests in the high range Himalayan ecosystems.
- **Mishra Committee Report 1976:**
  - Named after **MC Mishra** (then Garhwal commissioner in erstwhile UP), the committee gave its **findings about land subsidence in Joshimath**.
  - The committee **recommended placing restrictions on heavy construction work**, blasting or digging to remove boulders for road repairs and other construction, and felling of trees in the region.

## What Other Measures can be Taken to Protect the Himalayan Ecosystem?

- **NDMA Guidelines for GLOFs:** To control the problem of unregulated tourism, the **National Disaster Management Authority (NDMA)** recommended a series of regulations that would create a buffer zone and restrict tourism in **Glacial Lake Outburst Floods (GLOFs)**-prone areas and nearby regions in order to reduce the scale of pollution in those areas.
- **Trans-Boundary Collaboration: Himalayan countries need to build an international network** that will monitor risks such as those from glacial lakes, and give early warning of hazards — similar to the tsunami warning systems installed around the Indian Ocean over the past decade.
  - The countries should share and disseminate knowledge about the mountains and preservation of the ecology there.
- **Education and Awareness:** If the people of the Himalayas were **more aware of the geological vulnerability and ecological fragility** of their mountain home, they would surely force more compliance of laws and regulations to protect it.
  - India and other affected countries should **include in their school curricula basic knowledge of the geology and ecology of the Himalayas**. If students are taught about their environment, they will feel more connected to the land and be more aware of its pulse.
- **Role of Local Governments:** The municipalities in the Himalayan states need to play a **more proactive role while granting approval to buildings; building bye laws need to be updated** to overcome the emerging challenges of climate change.
  - Disaster management departments need to reorient their approach and focus on flood prevention & preparedness.
- **Other Important Steps:**
  - Having **early warning and better weather forecast systems** in order to forecast the disaster and alert the local population and tourists.
  - Reviewing the **area’s latest status** and **drawing up a sustainable plan** that respects the specific requirements of the fragile region and climate impacts.
  - Initiating a dialogue on adverse impacts of commercial tourism and **promoting ecotourism**.
  - Issuing **Detailed Project Reports (DPR)**, **EIAs** and Social Impact Assessment (**SIA**) before implementing any project.

- **Upgrading existing dams** to improve their structural stability and **prioritising regular monitoring** after flooding events.

**Drishti Mains Question:**

Discuss the major challenges that the Himalayan region has been facing in recent times with reference to rampant and flawed urbanisation.

**UPSC Civil Services Examination, Previous Year Questions (PYQs)**

**Prelims:**

**Q. Consider the following pairs: (2020)**

<b>Peak</b>	<b>Mountains</b>
1. Namcha Barwa	Garhwal Himalaya
2. Nanda Devi	Kumaon Himalaya
3. Nokrek	Sikkim Himalaya

**Which of the pairs given above is/are correctly matched?**

- (a) 1 and 2
- (b) 2 only
- (c) 1 and 3
- (d) 3 only

**Ans: (b)**

**Q. If you travel through the Himalayas, you are likely to see which of the following plants naturally growing there? (2014)**

1. Oak
2. Rhododendron
3. Sandalwood

**Select the correct answer using the code given below:**

- (a) 1 and 2 only
- (b) 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

**Ans: (a)**

**Q. When you travel in Himalayas, you will see the following: (2012)**

1. Deep gorges
2. U-turn river courses
3. Parallel mountain ranges
4. Steep gradients causing landsliding

**Which of the above can be said to be the evidence for Himalayas being young fold mountains?**

- (a)** 1 and 2 only
- (b)** 1, 2 and 4 only
- (c)** 3 and 4 only
- (d)** 1, 2, 3 and 4

**Ans: (d)**

**Mains:**

**Q.** Differentiate the causes of landslides in the Himalayan region and Western Ghats. **(2021)**

**Q.** How will the melting of Himalayan glaciers have a far-reaching impact on the water resources of India? **(2020)**

**Q.** "The Himalayas are highly prone to landslides." Discuss the causes and suggest suitable measures of mitigation. **(2016)**

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