



## Sustainable Development in the Indian Himalayan Region

This editorial is based on "[\*The Supreme Court of India spells the way in Himalaya's development\*](#)" which was published in *The Hindu* on 25/06/2024. The article examines the environmental issues in the Indian Himalayan Region (IHR) and suggests sustainable development methods in light of a recent Supreme Court order recognizing the right to be free from the adverse effects of climate change.

**For Prelims:** [Indian Himalayan Region \(IHR\)](#), [Kanchenjunga](#), [Valley of Flowers National Park](#), [Nanda Devi National Park](#), [Glacial Lake Outburst Floods \(GLOFs\)](#), [Gangotri Glacier](#), [Recognition of the Right against Climate Change](#), [Central Ground Water Board \(CGWB\)](#), [National Mission for Sustaining the Himalayan Ecosystem \(NMSHE\)](#), [Indian Himalayas Climate Adaptation Programme \(IHCAP\)](#), [SECURE Himalaya Project](#)

**For Mains:** Key Environmental Concerns in the Indian Himalayan Region, Recent Supreme Court Judgments Support Environmental Conservation Efforts,

The [Indian Himalayan Region \(IHR\)](#) is widely recognized as India's "water tower" and a vital provider of essential ecosystem goods and services. Despite this critical understanding, there remains a significant disconnect between the region's unique development needs and the development models currently being pursued.

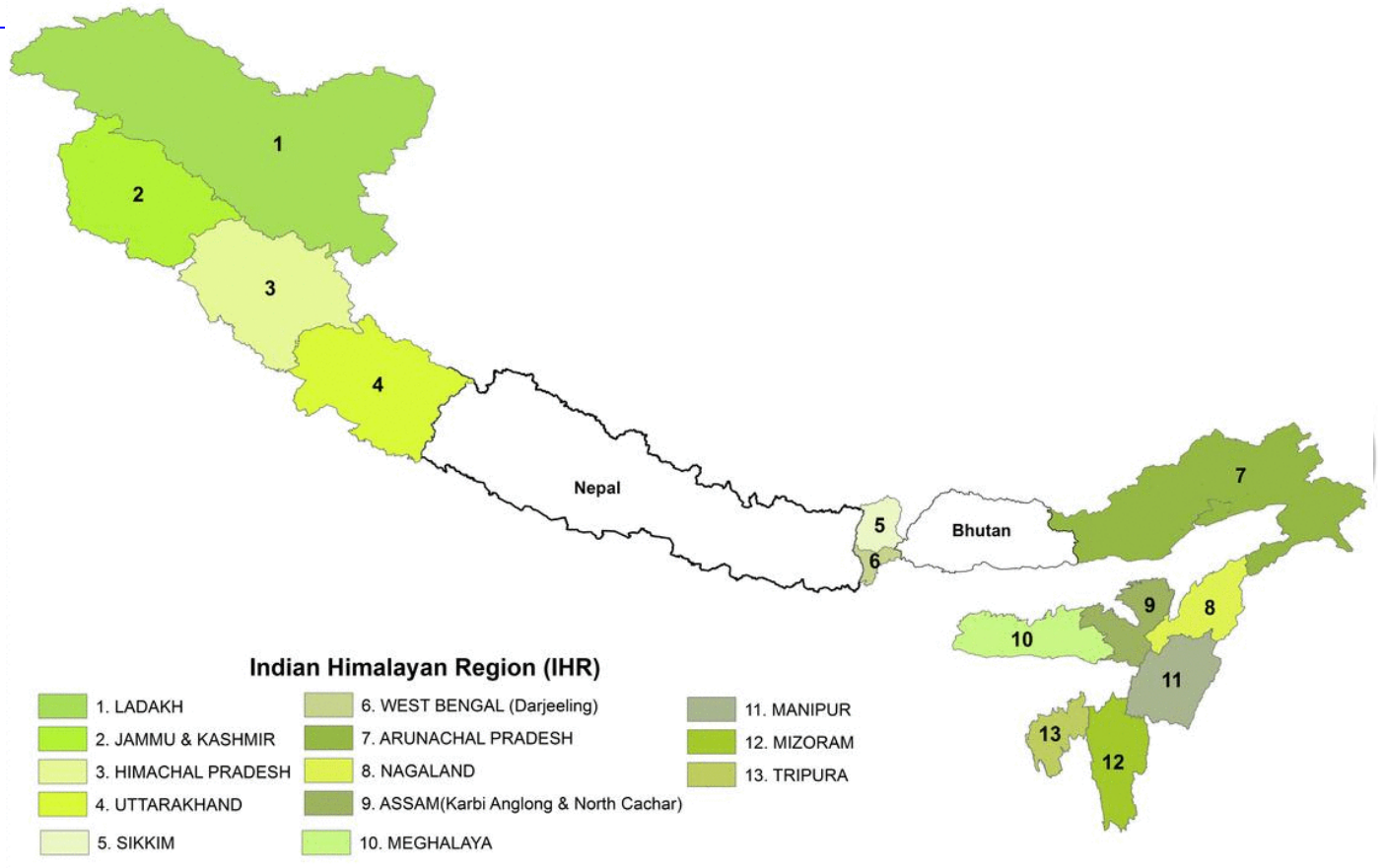
The IHR's economy is intrinsically linked to the health and well-being of its natural resources. Exploiting these resources under the guise of development poses a serious threat, potentially leading the IHR towards inevitable economic decline. Properly aligning development practices with the sustainable management of natural resources is crucial to avoid such a disastrous outcome.

### What is The Indian Himalayan Region (IHR)?

- **About:**
  - It refers to the mountainous area in India that encompasses the entire Himalayan range within the country.
  - The [Indian Himalayan Region](#) is spread across **13 Indian States/Union Territories** (namely Jammu and Kashmir, Ladakh, Uttarakhand, Himachal Pradesh, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura, Assam and West Bengal), stretching across **2500 km**.
- **Significance:**
  - The IHR encompasses some of the world's highest peaks, such as [Kanchenjunga](#).
  - Known as India's "water tower," the IHR is the source of many major rivers, including the Ganges, Yamuna, Brahmaputra, and their tributaries.
  - The region plays a crucial role in regulating the ecological balance and maintaining biodiversity.

- The region is home to a rich variety of flora and fauna, with many endemic and endangered species.
- It includes several national parks, wildlife sanctuaries, and biosphere reserves, such as the [Valley of Flowers National Park](#) and [Nanda Devi National Park](#).
- The IHR influences the climate and weather patterns of the Indian subcontinent, acting as a barrier to cold winds from Central Asia and affecting monsoon patterns.
- The region is inhabited by diverse ethnic communities with unique cultures, languages, and traditions.
- It includes important religious and pilgrimage sites for various faiths, such as [Amarnath](#), [Badrinath](#) etc..
- The IHR holds strategic importance due to its location along India's northern borders with China, Nepal, and Bhutan.

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## What are the Key Environmental Concerns in the Indian Himalayan Region?

### ▪ Climate Change and Glacial Melting:

- The Himalayan glaciers are melting rapidly due to global warming, affecting the availability of water resources downstream.
- Changes in temperature and precipitation patterns disrupt local climates, impacting agriculture and livelihoods.
- The IHR is increasingly experiencing natural disasters such as flash floods, [glacial lake outburst floods \(GLOFs\)](#), and extreme weather events.
  - The glaciers in the IHR are retreating at an average rate of 10 to 60 meters per year. The [Gangotri Glacier](#) has retreated by more than 1,500 meters in the last 70 years.
  - The [2013 Kedarnath disaster](#) was exacerbated by rapid glacial melting, leading to a catastrophic flood that caused massive destruction.

### ▪ **Soil Erosion and Landslides:**

- Deforestation, unplanned construction, and overgrazing contribute to soil erosion.
- The region is highly prone to landslides, especially during the monsoon season, causing damage to property, infrastructure, and loss of life.
  - In 2021, the **Chamoli district in Uttarakhand** witnessed a massive landslide triggered by glacial outburst floods, resulting in unprecedented damage to life and infrastructure.

### ▪ **Water Scarcity and Pollution:**

- Many areas within the IHR face water scarcity due to the drying up of springs and streams.
- Pollution from agricultural runoff, untreated sewage, and industrial effluents contaminates water sources, impacting human health and ecosystems.
  - A study by the [Central Ground Water Board \(CGWB\)](#) indicates that more than 50% of the springs in the Indian Himalayas are drying up, affecting water availability for millions

### ▪ **Developmental Projects:**

- The construction of numerous hydroelectric power stations disrupts river ecosystems, affects fish populations, and displaces local communities.
- Infrastructure projects often ignore environmental norms, leading to ecological damage and heightened disaster risks.
  - The [National Disaster Management Authority's](#) post-disaster assessment of the 2023 floods in Himachal Pradesh attributed the disaster to widespread illegal construction on river beds, flood plains.

### ▪ **Air Pollution:**

- Increased vehicular emissions, industrial activities, and biomass burning contribute to deteriorating air quality.
- The mountainous terrain can trap pollutants, leading to health issues for residents and reduced visibility.
  - The town of Leh in Ladakh has seen rising air pollution levels due to increased vehicular traffic and construction activities, impacting the health of residents and tourists alike.

### ▪ **Deforestation and Habitat Loss:**

- The IHR is home to over 10,000 plant species, 300 mammal species, and 1,000 bird species, with many listed as endangered.
- Large-scale deforestation for agriculture, urban development, and infrastructure projects leads to habitat destruction and loss of biodiversity.
  - A decline of 902 square kilometers in forest cover was recorded in hill districts of the country as compared to 2019, found the [State of Forest Report, 2021](#). The loss is much more pronounced in the Himalayan states that reported an overall loss of 1,072 sq km of forest cover.

## **How do recent Supreme Court Judgments Support Environmental Conservation Efforts in the IHR?**

### ▪ **Recognition of the Right against Climate Change:**

- The Supreme Court in **M K Ranjitsinh & Ors. v. Union of India** & ruled that people have a [right to be free from the adverse climate change](#) which should be recognised by **Article 14** and **Art 21** the Constitution.
- The Supreme Court's recognition of the right to be protected from climate change is a crucial step towards safeguarding environmental and human rights, creating an obligation for the government to implement effective measures.

### ▪ **To Adopt an Ecocentric View of the Environment :**

- In **State of Telangana and Others vs Mohd. Abdul Qasim case**, the Supreme Court had said that the need of the hour is **to adopt an ecocentric view of the environment**, where nature is at the core.
- The Court said, "Man being an enlightened species, is expected to act as a trustee of the Earth...The time has come for mankind to live sustainably and respect the rights of rivers, lakes, beaches, estuaries, ridges, trees, mountains, seas and air.... Man is bound by

nature's law."

- **Directions on the Carrying Capacity of the Himalayan States :**
  - In a matter of [public interest litigation \(PIL\)](#) titled **Ashok Kumar Raghav vs Union of India and Ors.**, the Supreme Court asked the central government and the petitioner to suggest a way forward so as to enable the Court to pass directions on the carrying capacity of the Himalayan States and towns.

## What are the Government Initiatives to Protect IHR?

- [National Mission for Sustaining the Himalayan Ecosystem \(NMSHE\)](#)
- [Indian Himalayas Climate Adaptation Programme \(IHCAP\)](#)
- [SECURE Himalaya Project](#)
- [Integrated Himalayan Development Program \(IHDP\)](#)
- [National Action Plan on Climate Change \(NAPCC\)](#)

## What Measures can be taken to Promote Sustainable Development in the IHR?

- **Climate-Resilient Infrastructure:**
  - Adopt building codes and construction practices that are resilient to earthquakes, landslides, and floods.
  - Invest in green infrastructure such as permeable pavements, green roofs, and bioswales to manage stormwater and reduce urban heat islands.
    - Complete ban on construction activities in disaster-prone areas as suggested by [Mishra Committee, 1976](#).
- **Integrated Land Use Planning:**
  - Develop land use plans that clearly demarcate zones for conservation, agriculture, residential, and industrial activities.
  - Use GIS and remote sensing for effective land use planning and monitoring environmental changes.
    - For instance, [Western Ghats Ecology Expert Panel \(WGEEP\)](#), also known as the Gadgil Committee, recommended a zoning system for the Western Ghats to balance conservation and development needs.
- **Water Resource Management:**
  - Promote the installation of rainwater harvesting systems in both urban and rural areas.
  - Restore and manage springsheds to ensure the sustainability of water sources for local communities.
    - [National Ganga River Basin Authority \(NGRBA\)](#) recommended a comprehensive approach to clean and rejuvenate the Ganga River, addressing pollution sources and promoting sustainable practices.
- **Forest and Biodiversity Conservation:**
  - Initiate large-scale reforestation projects to restore degraded lands and enhance biodiversity.
  - Empower local communities to manage and protect forest resources through joint forest management programs.
    - [Chipko Movement](#) was a grassroot forest conservation effort where local women hugged trees to prevent their felling, demonstrating the power of community action.
  - Develop and implement programs for the conservation of endangered species and their habitats.
    - [National Mission for Sustaining the Himalayan Ecosystem \(NMSHE\)](#) focuses

on addressing climate change impacts, promoting sustainable livelihoods, and conserving biodiversity in the Indian Himalayan Region.

▪ **Sustainable Agriculture:**

- Encourage organic farming practices to reduce chemical inputs and maintain soil health.
- Develop micro-hydropower projects that have minimal environmental impact compared to large dams
- Integrate trees and shrubs into agricultural systems to enhance biodiversity, reduce erosion, and improve crop yields.
  - **Sikkim** became the [first fully organic state in India](#), reducing chemical pesticide and fertilizer use, thereby promoting sustainable agriculture.

▪ **Eco-Friendly Tourism:**

- Conduct carrying capacity assessments to regulate the number of tourists and minimize environmental impact.
- Develop eco-tourism initiatives that promote sustainable practices and provide economic benefits to local communities.
- Promote the use of biodegradable materials and reduce plastic waste.
  - 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.

▪ **Monitoring and Research:**

- Establish robust environmental monitoring systems to track changes and assess the impact of development activities.
- Support research initiatives focused on sustainable development practices, climate change adaptation, and biodiversity conservation.
  - **Report of the High-Level Expert Group (HLEG) on Himalayan Glaciology** emphasized the need for monitoring Himalayan glaciers, assessing their health, and understanding their role in regional water resources.

▪ **Education and Awareness:**

- 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.
- 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.

## Conclusion:

In light of recent Supreme Court rulings and the recognition of the fundamental right to be protected from the adverse effects of climate change, it is imperative that people, especially those in the Indian Himalayan Region (IHR), are entitled to a sustainable development model that aligns with the region's ecological carrying capacity.

The path forward should not only safeguard the environment but also ensure the long-term prosperity and well-being of communities in the IHR, emphasizing a balance between development and environmental sustainability.

### **Drishti Mains Question:**

Discuss the primary environmental challenges in the Indian Himalayan Region (IHR). Propose measures to advance an ecocentric approach to development in the region.

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

### **Prelims:**

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

	Peak	Mountains
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)**

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**Mains:**

**Q1.** Differentiate the causes of landslides in the Himalayan region and Western Ghats. **(2021)**

**Q2.** How will the melting of Himalayan glaciers have a far-reaching impact on the water resources of India? **(2020)**

**Q3.** "The Himalayas are highly prone to landslides." Discuss the causes and suggest suitable measures of mitigation. **(2016)**

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