Peer Reviewed Online Journal in English

www.ijdus.org

INTERDISCIPLINARY JOURNAL
OF
DIGITAL HUMANITIES
AND
UBIQUITOUS SCHOLARSHIP

IJDUS

Volume II Issue II July- December 2023

ISSN: 3048-9113 (Online)

CHAPTER 7

ANTHROPOGENIC IMPACTS ON HIMALAYAN BIODIVERSITY

Shweta Dhiman

Research Scholar

Abstract

The paper focuses on the anthropogenic impacts on the biodiversity of the Himalayan region. The study highlights the diverse ecosystems and rich biodiversity of the Himalayas, emphasizing its global significance. Despite being one of the youngest mountain ranges, the Himalayas are home to unique flora and fauna, and serve as the origin for major rivers like the Ganga and Brahmaputra. However, human activities such as deforestation, poorly managed tourism, and large-scale hydropower projects have severely impacted the region's biodiversity. The paper discusses how deforestation has led to habitat loss and fragmentation, threatening various endemic species. It also addresses the adverse effects of hydroelectric projects, which disrupt natural water flow, submerge forests, and pose risks of landslides and floods. The author suggests that sustainable development practices and stringent environmental assessments are crucial to mitigate these impacts and preserve the Himalayan ecosystem. The study calls for a balanced approach that considers the needs of local communities while ensuring the conservation of this fragile yet vital region.

Keywords*: Biodiversity, Himalayas, Anthropogenic Impacts, Deforestation, Sustainable Development*

ANTHROPOGENIC IMPACTS ON HIMALAYAN BIODIVERSITY

THE MIGHTY HIMALAYAS

The Himalayas are one of the youngest mountain ranges, yet they are home to the highest mountain in the world. They are one of the few wonders on earth that can be seen from space. It is 200 km – 400 km wide (South to North) and covers a total area of 5,95,000 km². Equivalent to Madagascar (587,041 km²), the second-largest island country in the world. The Himalayan ranges can be grouped into four unique zones designated as the Outer Himalayas, the Lesser Himalayas, The Great Himalayas and The Tethys and the Trans-Himalayas. The Indian Himalayan Range (IHR)

Peer Reviewed Online Journal in English

www.ijdus.org

INTERDISCIPLINARY JOURNAL
OF
DIGITAL HUMANITIES
AND
UBIQUITOUS SCHOLARSHIP

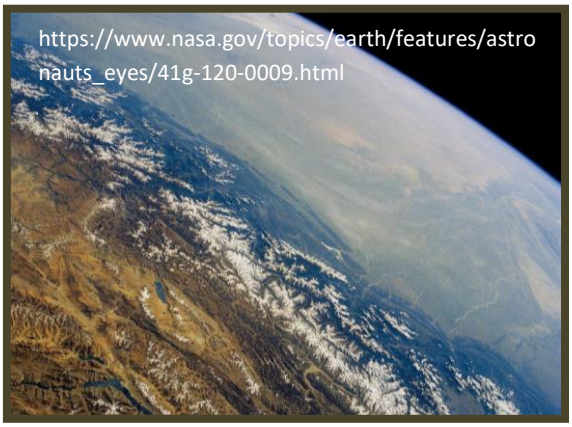
IJDUS

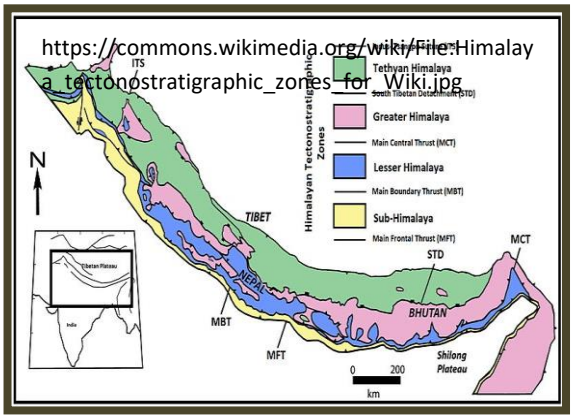
Volume II Issue II July- December 2023

covers around 16% of the total geographical area of the country. It is the origin of some of the perennial rivers like the Ganga and Brahmaputra, which are the sources of fresh water for millions of people residing in the northern region of India.

DIVERSITY OF THE ECOSYSTEMS

The Himalayan landscape varies within every couple of hundred kilometres as it rises from 500 m to 8,000 m. The diversity of ecosystems ranges from alluvial grasslands (among the tallest in the world) and subtropical broadleaf forests along the foothills to temperate broadleaf forests in the mid-hills, mixed conifer and conifer forests in the higher hills, and alpine meadows above the tree line. It has diverse eco-regions with rich flora and fauna, making it one of the biodiversity hotspots in the world. The Indian Himalayan Region consists of 30 National Parks, 95 Wildlife Sanctuaries and 42 Conservation Reserves.





Peer Reviewed Online Journal in English

www.ijdus.org

INTERDISCIPLINARY JOURNAL
OF
DIGITAL HUMANITIES
AND
UBIQUITOUS SCHOLARSHIP

IJDUS

Volume II Issue II July- December 2023

ALLUVIAL GRASSLANDS

SUBTROPICAL BROADLEAF

SUB-TROPICAL

CONIFER

ALPINE MEADOWS

TRANS HIMALAYAS

HIMALAYAN WILDLIFE

The Himalayan biodiversity hotspot is home to about 10,000 species of plants, 300 species of mammals, 977 species of birds and more than 100 species of reptiles as well as amphibians. Some of the endemic species of the Himalayan Ecosystem are Snow leopard, Himalayan Tahr, Musk deer, Red Panda, Great One-horned Rhino, Golden Langur, Western Tragopan and Pygmy hog.

Peer Reviewed Online Journal in English

www.ijdus.org

INTERDISCIPLINARY JOURNAL
OF
DIGITAL HUMANITIES
AND
UBIQUITOUS SCHOLARSHIP

IJDUS

Volume II Issue II July- December 2023

Peer Reviewed Online Journal in English

www.ijdus.org

INTERDISCIPLINARY JOURNAL
OF
DIGITAL HUMANITIES
AND
UBIQUITOUS SCHOLARSHIP

IJDUS

Volume II Issue II July- December 2023

ANTHROPOGENIC IMPACTS

Anthropogenic impacts are caused by humans or their activities. Despite their apparent remoteness and inaccessibility, the Himalayas have not been spared human-induced biodiversity loss. Anthropogenic impacts can be direct or indirect. Direct impacts occur through the direct interaction of an activity with an environmental, social, or economic component. For example, Deforestation, over-exploitation of resources, development projects like Hydroelectric power plants and construction of roads, as well as poaching. Indirect impacts are those which are not the direct result of any activity but often produced away from or as a result of a complex impact pathway. The indirect impacts are also known as secondary or even third level impacts. For example, Global warming and Climate Change.

Peer Reviewed Online Journal in English

www.ijdus.org

INTERDISCIPLINARY JOURNAL
OF
DIGITAL HUMANITIES
AND
UBIQUITOUS SCHOLARSHIP

IJDUS

Volume II Issue II July- December 2023

DEFORESTATION

Deforestation counts as one of the major direct threats impacting the Himalayan ecosystem. As per the National Forest Policy of India, 66% of the geographical region in the hills should be maintained under forests. But only the total area of 31.05% of the Indian Himalayan states is under forest cover which is not even half of the aim targeted for. The present Himalayan habitat is patchy. The steadily increasing population in the hotspot has led to the extensive clearing of forests and grasslands for cultivation and widespread logging. Both legal and illegal logging often occurs on extremely steep slopes, resulting in severe erosion. Due to deforestation, there has been a loss of dense forest by 40%.

The land is also often cleared for livestock or agricultural purposes, where the use of fire to clear land poses an additional threat to forest land, as fires sometimes spread out of control. The conversion of forests and grasslands for agriculture and settlements has led to large-scale deforestation and habitat fragmentation in the states of Sikkim and Assam. This results in degradation of the ecosystem leading to habitat loss for the flora and fauna. When a habitat is lost, the species are often unable to survive in the small fragments of forested land left behind. They become more accessible to hunters and poachers, their numbers begin to decrease and some eventually go extinct. Even localized deforestation can result in extinctions, as many unique species are endemic to small isolated geographic locations in the world.

https://nepalandbhutanblog.wordpress.com/

https://www.worldwildlife.org/threats/deforestation-and-forest-degradation

https://www.worldwildlife.org/threats/deforestation-and-forest-degradation

Peer Reviewed Online Journal in English

www.ijdus.org

INTERDISCIPLINARY JOURNAL
OF
DIGITAL HUMANITIES
AND
UBIQUITOUS SCHOLARSHIP

IJDUS

Volume II Issue II July- December 2023

MEGA HYDROELECTRIC POWER PROJECTS

Hydroelectric power is the electricity generated with the help of moving water. The energy of the flowing water from rivers is used to move a hydraulic turbine and later the mechanical energy is converted into electrical energy with the help of a hydroelectric generator. This is why Hydroelectric power is also considered a clean source of energy. However, the process includes the diversion of the flow of rivers from their natural course, submerging of the land and the forest, leading to habitat loss and loss of biodiversity. This leads to a major impact on the ecosystem of the region.

The risk of building dams in the Himalayan region is manifold. The Himalayas have a fragile ecosystem. The potential threat of landslide, cloudburst, subsidence, flash floods has increased over the past few years. The use of heavy machinery, quarrying and blasting, stopping the flow of a river in a fragile ecosystem can lead to disastrous results. Despite all these dangers, many new megaprojects are upcoming the Himalayan states.

- MoUs have been signed for 5 megaprojects in Lahaul, Himachal, which is home to over 100 glaciers.

- Nearly, 16 mega-hydel projects are proposed for Chenab Basin, which has a highly sensitive and fragile ecosystem.

- The Proposed Etalin Hydroelectric Project in the Dibang valley of Arunachal Pradesh, requires diversion of 1155.1 hectares of biodiversity-rich community forestland and the felling of 2,78,038 trees, putting at risk up to 555 species of birds, 60 species of mammals, 48 species of amphibians, and 381 species of butterflies, among several others in this rich biodiversity hotspot. Dibang Valley is a global mega-biodiversity hotspot and the home to the indigenous '*Idu Mishmi'* community.

More than 550 hydroelectric projects are under construction or being planned throughout the Himalayas in China, India, Pakistan, Nepal and Bhutan. Without discounting the potential benefits of small-scale hydropower projects, national and international agencies active in the region should put in place ecological and social protection measures to ensure these projects do not cause more harm than good.

Peer Reviewed Online Journal in English

www.ijdus.org

INTERDISCIPLINARY JOURNAL
OF
DIGITAL HUMANITIES
AND
UBIQUITOUS SCHOLARSHIP

IJDUS

Volume II Issue II July- December 2023

Before approval of such projects, it is important to estimate how sustainable they will be and it is strongly recommended that a detailed study of the impacts of hydropower projects should be carried out in terms of deforestation, tunnelling, blasting, reservoir formation of the hydrogeology of the area. Development is essential to improve the lives of people, but it should not come at the cost of the lives of people.

OTHER ANTHROPOGENIC IMPACTS

- Over-exploitation of Resources – The flora of fragile alpine meadows has been overexploited for traditional medicine (because medicinal plant collectors invariably uproot the entire plant, regrowth is retarded. Fuelwood collection and non-timber forest product extraction, both for domestic consumption and export, has inflicted severe damage to some forest ecosystems.
- Poorly managed tourism – Unplanned and poorly managed tourism has led to environmental deterioration in the region.
- Mining/ Quarrying, poaching of wild animals and use of agrochemicals are some of the other anthropogenic impacts on the Himalayan ecosystem.

Peer Reviewed Online Journal in English

www.ijdus.org

INTERDISCIPLINARY JOURNAL
OF
DIGITAL HUMANITIES
AND
UBIQUITOUS SCHOLARSHIP

IJDUS

Volume II Issue II July- December 2023

APPROACH TOWARDS THE SOLUTIONS/ INTERVENTIONS

The points mentioned below can be some of the solutions/ interventions that can be implemented to encourage sustainable development and curb the harm to the Himalayan ecosystem:

- The authorities should recognize the special vulnerabilities of the fragile region, as much it is rich in its natural resources in terms of biodiversity, forests, water resources and even tourism.
- Town- planning and adoption of architectural norms should be followed
- Development projects must be sanctioned only after a proper Environmental Impact Assessment.
- Proper solid waste management should be implemented
- Sustainable tourism should be practiced.
- Not seeing forests for only the trees but as an ecosystem
- The needs of local communities should be considered
- Demand the regional government to take measures for biodiversity conservation, sustainable development, the integrity of ecosystems, and improving livelihoods.

REFERENCES

1. Forest of the Himalayas

https://www.slideshare.net/indiawaterportal/forests-of-the-himalaya-imi-smds3thadani

2. Down To Earth

https://www.downtoearth.org.in/news/environment/cancel-environmental-clearance-to-ambuja-coal-washery-ngt-panel-to-environment-ministry-77666

3. India’s collapsing hill stations

https://www.newindianexpress.com/magazine/2019/jun/16/indias-collapsing-hill-stations-1990056.html

4. Forest Cover in Indian Himalayan States – An Overview

https://www.researchgate.net/publication/316104549_Forest_Cover_in_Indian_Himalayan_States_-_An_Overview

5. Biodiversity Hotspots in India

http://bsienvis.nic.in/files/Biodiversity%20Hotspots%20in%20India.pdf

6. Geographic Regions of the Himalayas

https://www.repository.cam.ac.uk/bitstream/id/637777/bot_03_02_01.pdf/;jsessionid=D5024B32916F7F958E14CFDB72327C56

7. Why Hydel Projects in Himalayas are Worrying

https://timesofindia.indiatimes.com/india/why-hydel-projects-in-the-himalayas-are-worrying/articleshow/80761439.cms

8. Himalayas Facts

https://www.pbs.org/wnet/nature/the-himalayas-himalayas-facts/6341/