



## CHAPTER 5 BRIEF

# SUSTAINING BIODIVERSITY AND ECOSYSTEM SERVICES IN THE HINDU KUSH HIMALAYA

The ecosystems of the Hindu Kush Himalaya (HKH) exhibit high levels of diversity and heterogeneity, partly in response to high climatic variability and topography. This chapter focuses on the key thematic areas of biodiversity and ecosystem services and illustrates the trends observed across the HKH.

This chapter contextualizes the state of the region's biodiversity and ecosystems, highlights the status and trends in biodiversity and ecosystem services, documents the current state of socio-ecological systems, highlights conservation and management practices, and identifies gaps and suggests strategic directions for mountain ecosystem sustainability.



## KEY FINDINGS

- The mountain ecosystems of the Hindu Kush Himalaya (HKH) have high species richness and endemism and provide varied ecosystem services to one fourth of humanity.
- Global and regional drivers of change are impacting ecosystems and leading to biodiversity loss in the HKH.
- The HKH has numerous examples of good practices in conservation and restoration of degraded habitats that go hand-in-hand with community development. These practices need to be scaled up and scaled out.

## POLICY MESSAGES

- The mountain ecosystems of the HKH need an integrated and transboundary conservation approach at the landscape scale for sustainable development.
- Regional efforts will enhance the resilience of HKH ecosystems to climate related extreme events while conserving biodiversity and promoting human wellbeing.
- Investments in mountain ecosystems should be made where they are most needed to conserve biodiversity, alleviate poverty, and provide sustainable livelihood opportunities.

### LINKS TO



# OBSERVATIONS AND TRENDS

## THE HKH IS THE YOUNGEST GLOBAL MOUNTAIN BIOME AND ONE OF THE MOST ECOLOGICALLY DIVERSE ECOSYSTEMS IN THE WORLD

HKH ecosystems provide crucial ecosystem services to over two billion people, more than any other mountain system. The unique high mountains, driven by plate tectonics, have created a diverse landscape, climate variability, ecological gradients, and physical habitats that set the stage for ecosystem differentiation and species evolution. The biodiversity in the region is under explored and much needs to be done to document their occurrence and status. Between 1998 and 2008, an average of 35 new species were discovered each year in the eastern Himalaya alone.

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## GLOBAL AND REGIONAL DRIVERS OF BIODIVERSITY LOSS ARE PREVALENT AND INCREASING IN THE HKH

It is estimated that 70–80% of the human population in the region lives in rural areas, while 60–85% subsists directly through ecosystem services.

The ecological diversity of the HKH is being subjected to developmental pressures that contribute to ecosystem degradation. Global and regional drivers of biodiversity loss — such as land use change and habitat loss, pollution, climate change, and invasive alien species — are prevalent and increasing in the HKH. Although more than 39% of all land in the HKH lies within the protected area network, ecosystems are under stress or subject to risks from various drivers of change, including climate change, at all levels. There are indications that we may experience substantial loss of biodiversity in the HKH by the end of this century.

Ecosystem services in the HKH are poised for major changes due to current threats like climate change; local, regional, and global market forces; and the socio-political environment in individual countries.

## RICH BIODIVERSITY IN THE HINDU KUSH HIMALAYA IS UNDER THREAT



**+35**

**new species discovered**

each year in the eastern Himalaya between 1998 and 2008



**1/4**

**of endemic species**

in the Indian Himalaya could be wiped out by 2100



**70–80%**

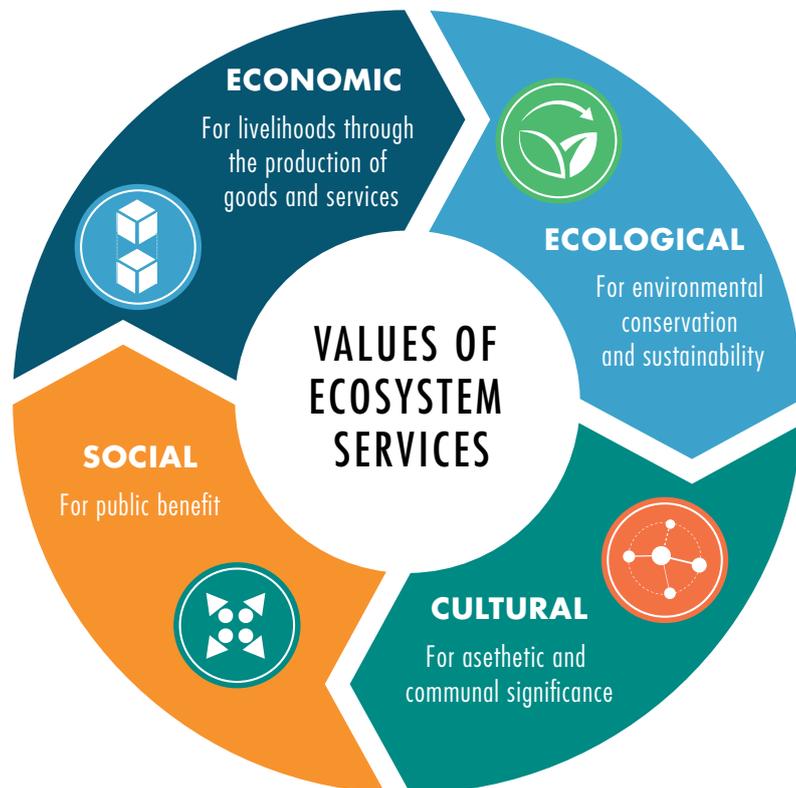
**of habitat lost**

in biodiversity hotspots in the HKH (relative to 1500 A.D.)

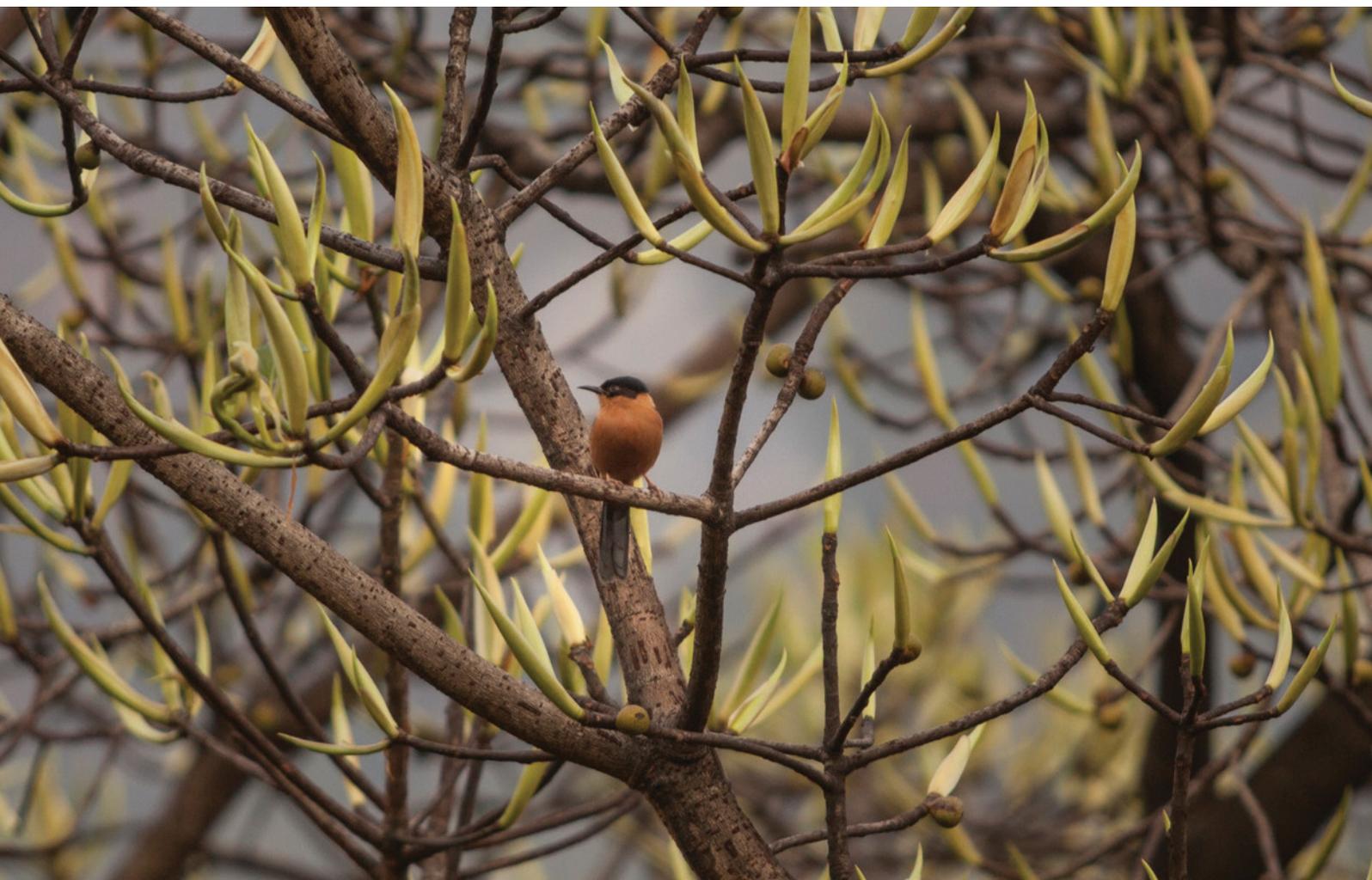
## BETTER MANAGEMENT OF HKH ECOSYSTEM SERVICES ENTAILS A BETTER UNDERSTANDING OF COUPLED SOCIO-ECOLOGICAL SYSTEMS

Broadly, ecosystem services have four kinds of values. In the HKH, social and cultural values are less recognized compared to ecological and economic values. All four kinds of values, however, have received little attention — either qualitative or quantitative — compared to widely researched topics in the region such as carbon, water, and hydropower. Many of these studies focus on a small area and lack the holistic view needed to inform and guide policy decisions.

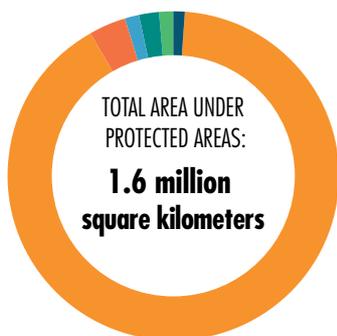
Better management of HKH ecosystem services entails learning more about the state and trends of coupled socio-ecological systems. The diverse landscapes of the region provide multiple services with complex, dynamic interrelations. Common drivers, affecting multiple ecosystem processes and interactions among ecosystem services, can create both synergies and trade-offs between ecosystem health and the flow of services. Trade-off analysis is thus critical for integrating ecosystem services into landscape planning, management, and decision making — especially in looking at alternative paths to sustainable land use and resilience in the face of climate change.



**THE VALUES OF ECOSYSTEM SERVICES IN THE HINDU KUSH HIMALAYA HAVE RECEIVED LITTLE ATTENTION**



**39%** OF THE HINDU KUSH HIMALAYA IS UNDER **PROTECTED AREAS**



*Note: Afghanistan and Bangladesh each represent less than 1% of the total area within the HKH under protected areas*



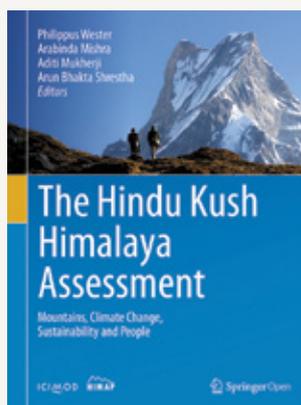
## PARTICIPATORY AND COMMUNITY-BASED APPROACHES IN BIODIVERSITY CONSERVATION SHOW LARGE ECOLOGICAL, ECONOMIC, AND SOCIAL POSITIVE IMPACTS

Recent decades have seen considerable development and shifts in concepts of biodiversity conservation — from perspectives that focused on species while excluding people, to new approaches centred on people and communities. Traditional ecological knowledge, cultural beliefs, and social values have contributed substantially towards meeting conservation goals.

Participatory and community-based approaches have had significant and positive ecological, economic, and social impacts. Substantial areas of degraded forest are regenerating, as decentralized practices reverse deforestation trends. Local communities have gained institutional space to decide for themselves on issues related to forests, income, inclusion, and social justice. Because of this, rural residents have been able to avail of more local economic opportunities. Progressive policies have driven this paradigm shift.

## DESPITE SUCCESSES, CONSERVING THE GLOBAL ASSETS OF THE HKH REMAINS A CHALLENGE

Despite successes in community-based conservation and development, conserving the global assets of the HKH remains a challenge. Biodiversity in the HKH needs to be sustained to ensure the continued flow of services. The solution lies in managing the HKH as a mosaic of integrated socio-ecological systems across political and sectoral boundaries, linking upstream and downstream conservation action with local climate adaptation strategies.



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For further information:

Nakul Chettri | [nakul.chettri@icimod.org](mailto:nakul.chettri@icimod.org)

[www.himap.org](http://www.himap.org)

International Centre for Integrated Mountain Development  
GPO Box 3226, Kathmandu, Nepal  
Tel +977-1-5275223  
Fax +977-1-5275238  
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