

Briefing

Biodiversity; Food and agriculture

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Policy pointers

When agreeing and implementing the new post-2020 Global Biodiversity Framework, Parties to the Convention on Biodiversity (CBD) must take urgent action to protect biodiversity-rich mountain landscapes and the rights of Indigenous Peoples and local communities (IPLCs).

Mountain landscapes governed by IPLCs, such as Biocultural Heritage Territories, are critical for achieving several post-2020 biodiversity targets, including Target 3 on protected areas and other effective area-based conservation measures, while delivering on the 2030 Agenda and the Paris Agreement.

Biodiversity and climate decision makers must allocate more finance to support IPLC-governed mountain landscapes, given their critical role in biodiversity conservation, climate adaptation and mitigation, food security and poverty reduction.

Governments must ensure the full and effective participation of mountain IPLCs in the governance of mountain areas.

Traditional mountain landscapes: crucial for meeting biodiversity and climate targets

Traditional mountain landscapes governed by Indigenous Peoples and local communities (IPLCs) conserve unique wildlife and agrobiodiversity, and strongly support climate change adaptation and mitigation by protecting ecosystem services, including grasslands that store almost 50% more carbon than forests. But mountain biodiversity and the Indigenous and traditional peoples that sustain it are highly vulnerable to climate change and are increasingly threatened by rising temperatures, unsustainable development, poverty and food insecurity. In the 2022 International Year of Sustainable Mountain Development and in the run-up to the fifteenth Conference of the Parties to the Convention on Biological Diversity (CBD COP15), this briefing explores the importance of traditional mountain landscapes in achieving the CBD's post-2020 targets, the 2030 Agenda and the Paris Agreement. IPLC-governed area-based conservation measures in mountains — such as Biocultural Heritage Territories that use precolonial conservation concepts — have a critical role to play in delivering these global commitments.

For millennia, Indigenous and traditional peoples' mountain landscapes, cultural and spiritual values, and traditional knowledge have played a crucial role in conserving and enhancing biodiversity.¹ Mountains are regions of high biological and cultural diversity that provide vital goods and ecosystem services to mountain peoples and downstream populations, including 60–80% of the world's freshwater, nutritious foods and medicines.² From the Andes to the Himalayas, mountain peoples have designed mechanisms to govern their commons and preserve natural resources.³ They conserve biodiversity through strictly protected areas (such as sacred mountains, lakes, forests and rivers), customary sustainable use regimes and agroecological practices.¹ Cultural and spiritual

values and customary governance systems underpin the maintenance of traditional knowledge for biodiversity conservation.¹

Covering 27% of the world's surface, mountains host half of the world's biodiversity hotspots, 25% of terrestrial biodiversity and high numbers of endemic species.⁴ Most of the world's food crops and several livestock species were domesticated by Indigenous Peoples and local communities (IPLCs) in mountain areas, including major crops like maize, potatoes, barley, sorghum, tomatoes and apples, and sheep, goats, camelids and yaks.^{4,5} Mountain farming systems provide important ecosystem services (such as protecting fragile slopes) and are often highly biodiverse, conserving resilient crop varieties, animal breeds and wild relatives, as well as rich wildlife.⁴

Given the confluence of biodiversity loss, climate change, food insecurity and poverty in mountain areas, supporting Biocultural Heritage Territories will be critical for achieving the post-2020 targets

Mountain Indigenous and local knowledge systems strongly support integrated adaptation and mitigation strategies.² Traditional mountain peoples sustain vital reservoirs of evolving and co-evolving genetic resources adapted to climate extremes,³ as well as extensive forests and grasslands that provide vital carbon sinks.⁶ Mountain vegetation includes 41% forests, 29% grasslands and 6% croplands.⁴ The protection, improved management

and restoration of forests, grasslands, wetlands and savannas can deliver large-scale greenhouse gas emission reductions.⁶ Grassland soils store almost 50% more carbon than forests globally, so protecting grasslands is one of our most effective mitigation measures.⁶ Traditional mountain grazing systems enhance biodiversity and ecosystem functions and contribute to soil carbon storage,⁷ while shifting cultivation conserves agrobiodiversity without contributing to carbon emissions.⁸

Why we need urgent action now

Mountain landscapes governed by IPLCs are critical for achieving the Convention on Biological Diversity (CBD) post-2020 targets and tackling the climate crisis. The CBD already recognises the vital importance of mountain biodiversity and ‘the value of traditional and sustainable land-use practices of Indigenous and local communities in preserving mountain biodiversity.’⁹ Several scientific studies have highlighted the importance of mountain peoples’ traditional knowledge in tackling the biodiversity and climate crises.^{2,4,10}

However, mountain regions are highly vulnerable to climate change, with temperatures rising above the global average and glaciers are melting. Observed climate impacts on mountain ecosystem services, agriculture and pastoralism are largely negative in most regions.² Rising altitudinal ranges are endangering unique highland biodiversity, such as the Bengal tiger, snow leopard, mountain gorilla and ancestral potato varieties in the Andes.⁴ Unsustainable development, environmental degradation, poverty, food insecurity and exposure to risk are also increasing.¹¹ Disaster risks such as floods and landslides are worsening for many mountain communities, who are among the world’s poorest, most marginalised and food insecure. And youth outmigration is increasing the work burden on women and elders and hampering the transmission of traditional knowledge vital for biodiversity conservation and climate change adaptation and mitigation.

Furthermore, on average, only 48% of land in Key Biodiversity Areas¹² in mountains is covered by protected areas.¹⁰ CBD Target 3 aims to ensure that 30% of all land is conserved using protected areas and other effective area-based conservation measures (OECMs). However, the dominant exclusionary protected area model promoted globally by colonial administrations — based on the US Yellowstone National Park model, which expelled and killed Indigenous Peoples — has led to the loss of land and resource rights, violence and racial injustice for many IPLCs. Several state-run protected areas have banned customary sustainable use such as grazing and harvesting but are losing biodiversity.¹⁰

Box 1. How a global Indigenous network is supporting Biocultural Heritage Territories

The International Network of Mountain Indigenous People (INMIP) is a global network of mountain communities in Asia, Latin America and Africa and their partner organisations.¹⁵ It aims to support its members to establish Biocultural Heritage Territories (BCHTs) for biodiversity conservation, climate change adaptation and sustainable mountain development.

Since 2014, INMIP has held community-to-community learning exchanges in Bhutan, Tajikistan, China, Peru and Kyrgyzstan, to scale out biocultural innovations among farming, forest and pastoralist communities. It currently has members in 13 countries, many of which are establishing BCHTs for in situ conservation of genetic resources and wildlife in centres of domestication and diversity, inspired by the successful Potato Park model. The following examples show how emerging BCHTs in global biodiversity hotspots are helping IPLCs tackle multiple challenges. Other examples include the Chalakuy (Barter) and Maize Park in Peru, and the Apple Park and Wheat Park in Tajikistan.^{13,16}

Four Village Naxi-Moso Biocultural Heritage Coalition, China: located in an area well known for its rich biological and ethnic diversity, the four communities conserve sacred mountains, forests and water sources and 180 traditional crop varieties. The coalition has significantly enhanced food security, nutrition and climate resilience by revitalising agrobiodiversity, agroecology, traditional knowledge and customary water use. This has proved crucial in helping them to better cope with and recover from the COVID-19 pandemic.¹⁷

Rice, Bean and Orchid Park, Kalimpong, Eastern Himalayas, India:

11 Lepcha and Limbu villages conserve sacred mountains, forests, lakes, rivers, endemic birds and red pandas, and about 200 orchid varieties in a landscape of about 2,000 hectares adjacent to Neora Valley National Park, a critical wildlife corridor with Bhutan and Sikkim. The villages also conserve about 30 bean landraces, and traditional rice, buckwheat and maize varieties. These communities have created niches of exceptional biodiversity as well as highly resilient and complex adaptive management and sustainable forest use regimes.¹⁸

Rabai Biocultural Heritage Territory, coastal Kenya: ten Mijikenda villages have joined forces to conserve and restore their sacred Kaya forest landscape of 20,000 hectares, including endangered endemic golden-rumped elephant shrews and trees, rare endemic butterflies, and resilient cowpeas, millets, sorghum, cassava and maize landraces, wild coffee and Indigenous vegetables. This BCHT in Rabai Hills is part of the wider Athi Basin watershed and seeks to restore water resources for climate resilience, while reducing poverty through biocultural products and ecotourism.¹⁹

Meeting global targets: the role of Biocultural Heritage Territories

Given the many pressures facing mountain biodiversity, strengthening and protecting landscapes governed by mountain IPLCs will be vital to delivering several of the post-2020 targets, including Target 3, while protecting human rights and delivering the 2030 Agenda and the Paris Agreement.

One proven approach is the establishment of Biocultural Heritage Territories (BCHTs), which are biodiversity-rich landscapes rooted in traditional territorial concepts — or 'territorialities' — that assert the land rights of traditional societies. Territoriality embodies the spiritual link between people and landscapes, including traditional concepts of land and wellbeing, relationships and exchanges with the natural world, and ritual forms of governance. BCHTs are collectively governed by IPLCs based on holistic precolonial concepts where biodiversity and culture (the 'sacred') are inextricably linked and integral to human wellbeing, rather than imposing western conservation concepts that separate people and nature.¹³ They also promote inclusive biocultural economies.

Success in action: the Potato Park in Peru

Since 2000, the Potato Park has conserved Andean wildlife and ecosystems effectively — and cost-effectively — across 9,200 hectares in the high Andes of Peru, by focusing on Andean cosmology, customary laws, agrobiodiversity, land rights and self-determination.¹³ Although more than half of all rural mountain peoples globally were considered food insecure in 2017,⁴ the Potato Park has successfully enhanced food security and nutrition by tripling native crop diversity.¹⁴

A founding member of the International Network of Mountain Indigenous People (INMIP, see Box 1), the Potato Park is a legally recognised Indigenous BCHT and Agrobiodiversity Zone, which protects Indigenous land rights. It conserves about 1,400 varieties of native potato and four potato wild relatives for climate resilience. The Potato Park has doubled incomes from a basket of biocultural products and services and women's economic collectives, such as ecotourism, gastronomy, herbal products and textiles.¹⁴ Its six Quechua communities monitor climate-vulnerable highland potato varieties to prevent extinction, observe wildlife indicators to guide farming, and protect sacred mountains and lakes.

Table 1. Mountain Biocultural Heritage Territories and the post-2020 targets

CBD post-2020 target	Contribution of mountain BCHTs
Target 1. Ensure all areas are under integrated spatial planning, retaining intact wilderness areas	BCHTs are collectively governed based on customary laws for spatial planning that protect sacred wilderness areas
Target 3. Ensure at least 30% of land and sea, especially areas important for biodiversity and livelihoods, are conserved through equitably governed systems of protected areas and OECMs	BCHTs are OECMs that effectively conserve large areas of land important for biodiversity and livelihoods and are equitably self-governed by IPLCs
Target 4. Ensure active management for recovery and conservation of species and genetic diversity (wild and domesticated) including through in situ conservation	BCHTs are actively managed by IPLCs to restore and conserve threatened species, plant and animal genetic diversity, and wild crop relatives through in situ conservation
Target 8. Minimise the impacts of climate change on biodiversity, and contribute to adaptation and mitigation through ecosystem-based approaches	BCHTs minimise impacts through monitoring and vertical adaptive management; revitalise agrobiodiversity and traditional knowledge for adaptation; and protect mountain forests, grasslands and wetlands for mitigation
Target 9. Ensure nutrition, food security, medicinal and livelihood benefits for the most vulnerable through sustainable management of wild species and customary sustainable use by IPLCs	Nutrition and food security benefits are ensured for the most vulnerable through customary sustainable use of medicinal plants and wild foods; livelihood benefits are ensured through biocultural products, ecotourism and revenue sharing
Target 11. Maintain and enhance nature's contribution to people, including ecosystem services and protection from natural hazards and extreme events	Mountain BCHTs protect watersheds, forests and trees to provide ecosystem services and protection from natural hazards, such as landslides, floods and drought
Target 20. Ensure that information and knowledge, including traditional knowledge, innovations and practices of IPLCs guide decision making	A core goal of BCHTs is to revitalise traditional knowledge, innovations and practices of IPLCs to guide decision making
Target 21. Ensure full and effective IPLC participation in decision making, including women and youth, while respecting their cultures and rights over lands, territories, resources and traditional knowledge	BCHTs establish collective local institutions that ensure full and effective IPLC participation in decision making, protect their cultures and rights over lands, territories, resources and traditional knowledge, and actively engage women and youth

Meeting the post-2020 biodiversity targets

A major scientific assessment in 2019 found that biodiversity is best conserved on IPLCs' lands and territories.¹⁰ Given the confluence of biodiversity loss, climate change, food insecurity and poverty in mountain areas, supporting traditional territories and BCHTs will be critical for achieving the post-2020 targets. Table 1 provides some examples.

Meeting the 2030 Agenda targets

In addition to meeting the post-2020 biodiversity targets, collectively governed BCHTs are also key to meeting the Sustainable Development Goals (SDGs) set out in the 2030 Agenda, including:

- SDG Target 15.4 on mountains, which aims to ensure the conservation of mountain ecosystems and biodiversity
- SDG Targets 1.1 (eradicate extreme poverty), 1.4 (ensure the equal rights of men and women to ownership and control over land and natural resources) and 1.5 (build the resilience of the poor and vulnerable and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters), and
- SDG 2, which seeks to end hunger and malnutrition, and double agricultural productivity and incomes of small-scale producers 'in particular women, Indigenous Peoples, family farmers, pastoralists and fishers, including through secure and equal access to land'.

Mountain BCHTs are proven to conserve genetic diversity through in situ conservation (SDG Target 2.5), while protecting and restoring water-related ecosystems (SDG Targets 6.6 and 15.1) and

reducing conflicts. This will become increasingly important as conflicts over water increase due to climate change impacts.

Recommendations for decision makers

Mountains contain unique but threatened biodiversity. And they also sustain rich cultural heritage that is vital for its protection. Safeguarding mountain biodiversity and the Indigenous and traditional cultures, landscapes and adaptive management systems that nurture it is crucial for the success of the post-2020 Global Biodiversity Framework, the Paris Agreement and the 2030 Agenda to 'leave no one behind'.

But to achieve these global goals, investing in traditional mountain landscapes and BCHTs will be key. Support for mountain ecosystems and traditional territories should be integrated across the post-2020 targets and their implementation. In particular, CBD decision makers should ensure that:

- Implementation of Target 3 includes direct finance for IPLC-governed organisations, traditional territories and BCHTs in mountains and other regions
- Legislation is introduced to protect traditional territories and BCHTs, and the land and resource rights of IPLCs; and to ensure that mountain IPLCs participate fully and effectively in the governance of mountain areas.

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Notes

¹ Swiderska, K, Argumedo, A, Song, Y, Rastogi, A, Gurung, N, Wekesa, C and Li, G (2021) Indigenous knowledge and values: key for nature conservation. IIED, London. [iied.org/20351iied](https://www.iied.org/20351iied) / ² Adler, C, Wester, P, Bhatt, I, Huggel, C, Insarov, GE, Morecroft, MD, Muccione, V and Prakash, A (2022) Cross-chapter paper 5: Mountains. In: *Climate Change 2022: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press. <https://bit.ly/3SktXc7> / ³ Mountain Partnership Secretariat (2021) Highlighting sustainable food systems in mountains for the UN Food Systems Summit 2021. <https://bit.ly/3U5JZ74> / ⁴ UNGA (2019) Sustainable mountain development: report of the Secretary-General. <https://bit.ly/3SWiEr9> / ⁵ Clark VR, Kunkel, K, O'Connor, T, Jewitt D, Sekhele N and Kirkman, KP (2021) Montane Rangelands in a Changing World. *African Journal of Range and Forage Science* 38(1) DOI:10.2989/10220119.2021.1886434 / ⁶ IPCC (2022) Climate change 2022: mitigation of climate change. <https://bit.ly/3gVkJGp> / ⁷ Ingty, T (2021) Pastoralism in the highest peaks: role of the traditional grazing systems in maintaining biodiversity and ecosystem function in the alpine Himalaya. *PLoS ONE* 16(1) e0245221. <https://bit.ly/3MO9NGB> / ⁸ Swiderska, K, Argumedo, A, Wekesa, C, Ndalo, L, Song, Y, Rastogi, A and Ryan, P (2022) Indigenous Peoples' food systems and biocultural heritage: addressing indigenous priorities using decolonial and interdisciplinary research approaches. *Sustainability* 14(18) 11311. www.mdpi.com/2071-1050/14/18/11311 / ⁹ Convention on Biological Diversity (2004) Decision adopted by the Conference of the Parties to the Convention on Biological Diversity at its seventh meeting — Mountain Biological Diversity. UNEP/CBD/COP/DEC/VII/27. <https://bit.ly/3gpTG50> / ¹⁰ IPBES (2019) Global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. <https://ipbes.net/global-assessment> / ¹¹ UNGA (2021) Resolution on the International Year of Sustainable Mountain Development. <https://bit.ly/3DLSLqVe> / ¹² 'Among the most diverse places on Earth, Key Biodiversity Areas (KBAs) contribute significantly to the planet's biodiversity and overall health.' See: IUCN, Key biodiversity areas. <https://bit.ly/3Faeadh> / ¹³ Swiderska, K, Argumedo, A and Pimbert, M (2020) Biocultural heritage territories: key to halting biodiversity loss. IIED, London. [iied.org/17760iied](https://www.iied.org/17760iied) / ¹⁴ Asociación ANDES (2016) Resilient Farming Systems in Times of Uncertainty. Biocultural Innovations in the Potato Park, Peru. IIED, London. [iied.org/14663iied](https://www.iied.org/14663iied) / ¹⁵ See www.inmip.net / ¹⁶ Swiderska, K, Otambekov, A and Argumedo, A (2019) The Apple Park and Wheat Park, Tajikistan. Case study guidance on biocultural heritage territories. INMIP. www.iied.org/g04437 / ¹⁷ Song, Y, Li, G, Zhang, Y, Song, X and Swiderska, K (2021) Indigenous Naxi-Moso cultural values and worldviews for sustainable development: Four Village Biocultural Heritage Coalition, Yunnan, China. IIED, London. [iied.org/20376g](https://www.iied.org/20376g) / ¹⁸ Lepcha, ET, Gurung, N, Rastogi, A and Swiderska, K (2021) Safeguarding Lepcha and Limbu cultural values and worldviews for conservation and sustainable development in the Eastern Himalayas, India. IIED, London. [iied.org/20361g](https://www.iied.org/20361g) / ¹⁹ Ndalo, L, Swiderska, K and Wekesa, C (2022) Establishing a Biocultural Heritage Territory to protect Kenya's Kaya forests — project launch workshop report. IIED, London. [iied.org/21126iied](https://www.iied.org/21126iied)



Knowledge Products

The International Institute for Environment and Development (IIED) promotes sustainable development, linking local priorities to global challenges.

The Mountain Partnership is a UN voluntary alliance of governments and organizations dedicated to improving the lives and livelihoods of mountain peoples and protecting mountain environments.

INMIP is an international network of indigenous mountain communities, which aims to revitalise biocultural heritage for climate adaptation and sustainable mountain development.

The Association for Nature and Sustainable Development (ANDES), is an international NGO involved in poverty alleviation, biodiversity management and strengthening traditional resource rights.

FSN is a pioneering organisation in applying participatory research methods on agrobiodiversity and natural resource management in China.

KEFRI is a centre of excellence in forestry whose mission is to conduct research and provide information and technologies for sustainable development in Kenya.

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