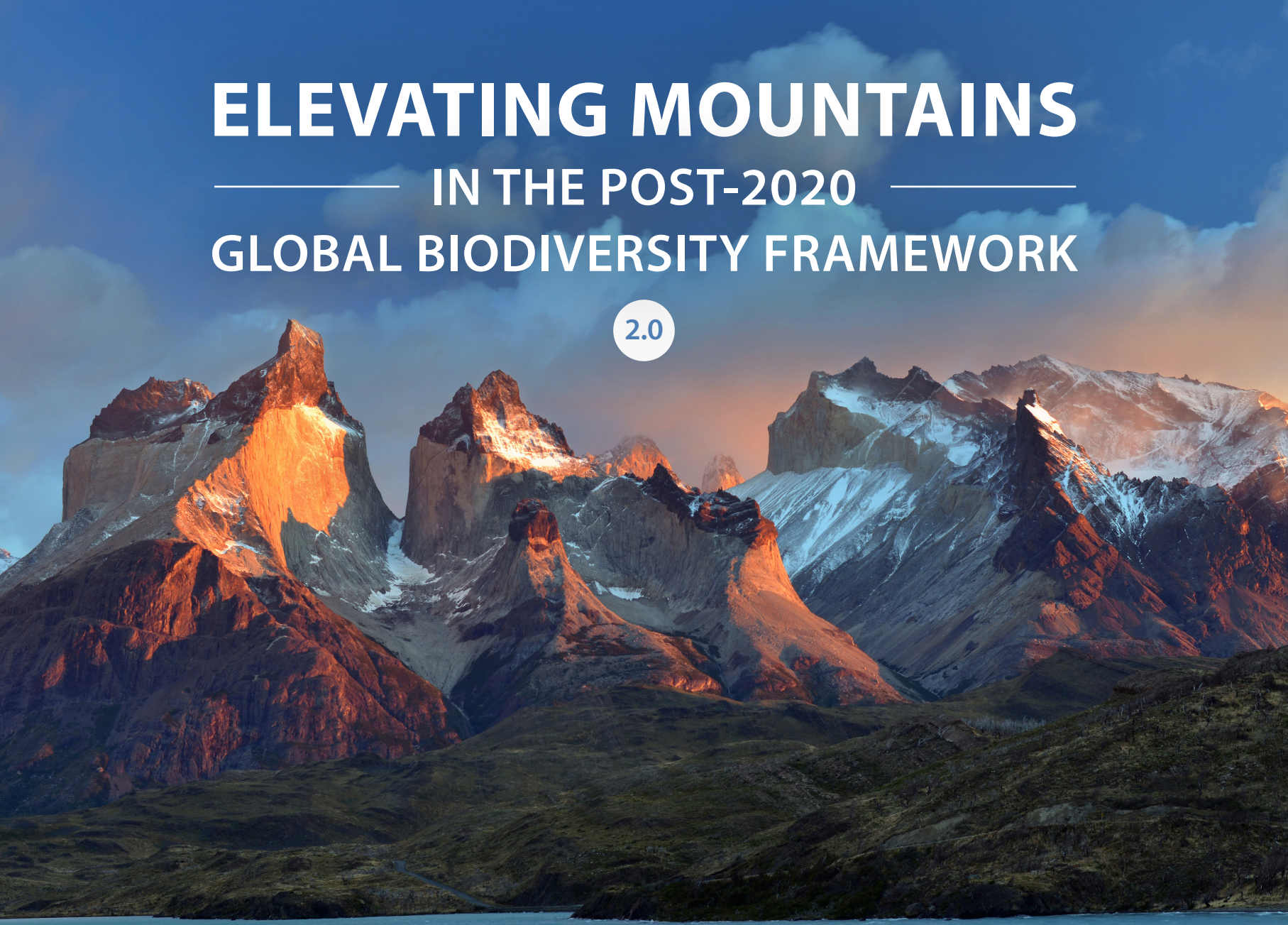
ELEVATING MOUNTAINS

IN THE POST-2020 GLOBAL BIODIVERSITY FRAMEWORK

2.0



UN environment programme

GRID ARENDAL

Introduction

Mountains, their biodiversity, and the vital ecosystem services they provide, are essential for the well-being of people worldwide. However, mountains are exposed to multiple stressors and processes of global change that can threaten and damage their ecosystems. Therefore, concerted efforts are needed to emphasize the key relevance of mountains and the need for their conservation in global agendas that are currently under negotiation, specifying explicit ambitions for mountains in the environmental and policy discourse.

At present, mountains are included in the Sustainable Development Goals (SDGs) and Aichi Biodiversity Targets (2011–2020) as outlined in Table 1. The United Nations General Assembly acknowledges the critical need to focus on the specific challenges, as well as opportunities provided in mountains to achieve the SDGs and targets relating to poverty, hunger, sustainable agriculture, climate change and gender equality.[1] However, there has been no continuity in terms of including mountains in the Convention on Biological Diversity (CBD) post-2020 process. As part of the global community's responsibility to secure a sustainable future for mountain people and humanity as a whole, goals, targets and indicators need be explicit and go beyond previous efforts.

With this brief, we offer relevant facts and recommendations to support a dialogue and negotiations on priorities, goals and targets for mountains in 2030 and beyond. Member states are encouraged to support this shared vision for a sustainable future for mountains and for humanity worldwide and to fulfil the post-2020 agenda. The policy recommendations in this brief address the CBD post-2020 global biodiversity framework (hereafter "post-2020 framework"). Recognising that mountains are rich environments, are exposed to threats, and offer unique opportunities, we outline possible entry points in the Zero Draft document[2] (under II. The Framework, D. 2030 Action targets), which are highlighted as follows: ● Reducing threats to biodiversity, ● Meeting people's needs through sustainable use and benefit-sharing, ● Tools and solutions for implementation and mainstreaming.

Table 1. Specific targets and indicators covering mountains within the Sustainable Development Goals and Aichi Biodiversity Targets (2011–2020)

Sustainable Development Goal	Targets and indicators
SDG 6. Ensure availability and sustainable management of water and sanitation for all	**6.6.** By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes
SDG 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	**15.1.** By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements
	15.4. By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development **15.4.1.** Coverage by protected areas of important sites for mountain biodiversity **15.4.2.** Mountain Green Cover Index
Aichi Biodiversity Target	**Indicators**
Target 14. By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable	• Coverage by protected areas of important sites for mountain biodiversity • Mountain Green Cover Index.

Mountains are rich

Mountain ecosystems are found on every continent and occupy a considerable part of the world's land surface. Although mountain regions vary in many ways, from their geology and physical characteristics to their climate and ecosystems, they share one feature: they contribute disproportionately to the terrestrial biodiversity on Earth,[3] hosting a diverse range of species, including many endemic, rare and threatened ones. Approximately 30 per cent of the total land area identified as terrestrial Key Biodiversity Areas (KBAs) is located entirely or partly within mountain areas[4] and about 16.9 per cent of the extent of the world's terrestrial protected areas network outside Antarctica is within mountains.[5] Given shifting species distributions, mountains – with their complex topographies along steep altitudinal gradients – represent potential refugia for species.

Mountain regions represent rich ethnic and cultural diversity, and provide numerous examples of human and biological adaptation to extreme environmental conditions.[6] Mountains also support or directly deliver numerous ecosystem services, including regulating climate and air quality, providing food and medicinal resources and reducing disaster risk, in addition to providing sociocultural benefits.[7] Importantly, as the "water towers" of the world, mountains provide water for about 22 per cent of the world's population,[8] highlighting that the reach of mountain ecosystem services extends far beyond local levels.[9]

Policy recommendations

Mountains in general and KBAs in particular need protection to remain strongholds of biodiversity and offer long-term refugia for species along their altitudinal gradients.

- **The importance of mountain biodiversity and mountain ecosystems, including ecosystem services, needs to be explicitly acknowledged in global policy frameworks and specifically in the post-2020 framework. To that end, the adoption of 2050 goals and 2030 action targets in line with SDG 15.4 is encouraged.**

- **Sound data and information are needed to understand ongoing changes in mountain regions, to select and prioritize conservation actions, and to inform policy. Resources for the monitoring of mountain ecosystems and their biodiversity at relevant spatial and temporal scales are needed.**

Mountains are exposed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Mountains are exposed to the same factors that drive biodiversity loss, ecosystem degradation and major societal shifts in other biomes. Among these factors, climate change – in the form of rapid changes in temperature and in the amount and frequency of precipitation – is a leading driver behind the drastic changes observed at high elevations and above the treeline, including glaciers retreating, changes in snow cover, and permafrost thawing.[10] These changes are expected to affect water availability as well as many other ecosystem services within and far beyond mountains.[8,11] Below the treeline, large-scale land-use change[12] and other drivers such as the rapid spread of invasive species,[13] overexploitation of resources and deforestation[14] are causing cascading effects on mountains' social-ecological systems.

When these factors interact, they can irreversibly affect mountain ecosystems and their biodiversity, reducing the size and number of KBAs, causing species to go extinct,[15] compromising the capacity of mountains to sustain key ecosystem services[8] and exacerbating disaster risks.[14,16] Population growth, economic development and the gradual integration of individual mountain regions into globalized markets, insufficient environmental education and awareness, as well as the lack of sound management and environmental policies for mountain regions, all exacerbate ongoing changes.

Policy recommendations

Ensuring the long-term integrity of mountain ecosystems and their biodiversity as well as their capacity to support the lives of millions of people locally and in surrounding lowlands requires coordinated mitigation and conservation measures.

- **The post-2020 framework should distinguish between freshwater, marine and terrestrial ecosystems according to their particularities and develop 2050 goals and 2030 action targets that are fit-for-purpose and effectively reflect the risks and needs specific to individual ecosystems such as those encountered in mountains.**

- **The manifold human-induced pressures on mountain ecosystems need to be understood and mitigated to increase the resilience of mountain ecosystems and the communities that depend on them. The post-2020 framework should adopt 2030 action targets to reduce such pressures and facilitate the implementation of conservation measures that effectively safeguard biodiversity in mountains, especially in the face of climate and global land-use changes.**

Mountains offer opportunities

With their steep altitudinal gradients, mountains offer numerous opportunities for ecosystem-based adaptation and sustainable responses to climate change. Improved coverage of altitudinal gradients by protected areas or other effective area-based conservation measures, improved connectivity of protected areas, as well as the adoption of locally relevant conservation, restoration, and management measures all hold great potential, in particular for enabling species to migrate to higher elevations.[10,16] Regional governance instruments such as the Alpine and Carpathian Conventions, which reflect local realities and yet address needs and challenges at transboundary scales, can support such collective initiatives.

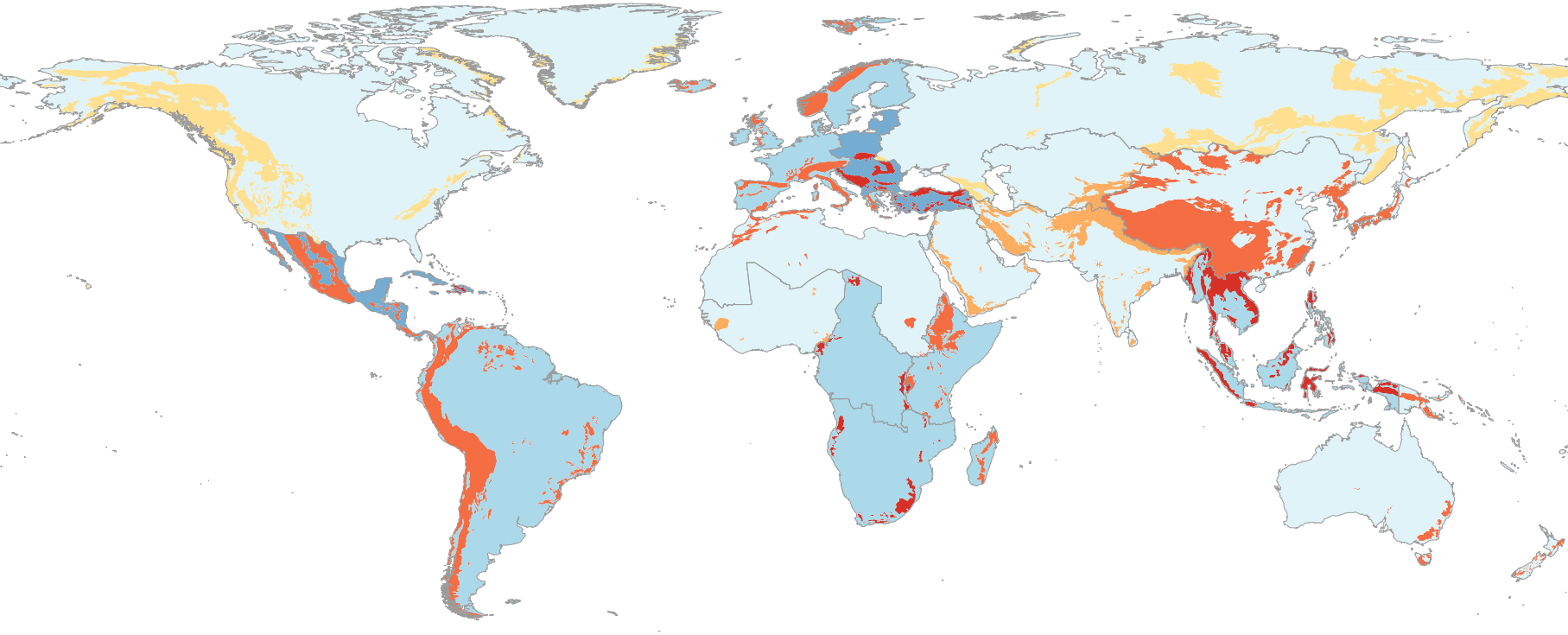
Mountain communities and traditional knowledge hold an intrinsic value and are particularly important for sustainable development in mountain social-ecological systems,[17] for example through ecosystem-based adaptation,[18] as coping mechanisms in mountain regions have historically been rooted in traditional knowledge and practices. For example, indigenous people typically hold unique knowledge about Neglected and Underutilized Species (NUS) that can play an important role in mountain agroecosystems by improving food security.[19] Furthermore, traditional ecological knowledge plays a central role in the development of sustainable and socially acceptable governance approaches and adaptation pathways.[20] However, ensuring the effectiveness of ecosystem-based adaptation also requires policy coherence and complementarity with efforts to reduce greenhouse gas emissions and limit warming.[10]

Policy recommendations

Achieving the sustainable use and long-term conservation of mountain ecosystems requires coordination and collaboration across relevant actors, from mountain communities and civil societies to local and regional authorities.

- **Protected area coverage and other effective area-based conservation measures for important sites for mountain biodiversity, including mountain altitudinal gradients, need to be addressed with ambitious 2030 action targets that place a special focus on KBAs.**
- **Nature (ecosystem)-based solutions are key approaches to address the effects of global change, including climate change. Therefore, explicit 2030 action targets towards the adoption of ecosystem-based approaches to conservation are needed, which are consistent with efforts to reduce greenhouse gas emissions, thereby ensuring their effectiveness and widespread potential for implementation.**
- **Mountains should be recognized as reservoirs of genetic resources and ambitious objectives set towards the protection of local breeds of comestible species and their wild relatives. Explicit 2030 action targets for the cultivation and breeding of traditional and diverse species are essential to protect these sources of novel genetic diversity and address food security.**
- **Regional networks and coordination mechanisms should be promoted and supported by the 2030 action targets as they are crucial tools for imple–menting global goals and targets across scale.**

Percentage of land area covered by terrestrial KBAs



Lowlands

- 0 - 7 %
- 7 - 14 %
- 14 - 21 %
- 21 - 28 %

Mountains

This map shows the percentage of land area covered by terrestrial KBAs in mountainous (orange-red colours) and non-mountainous regions (blue colours). For non-mountainous regions, the percentage coverage is calculated for the 16 IPBES subregions (IPBES 2015). For mountainous regions, percentage coverage is calculated for each mountain range included in the latest release of the GMBA mountain inventory* of Körner et al. (2017).

Map by Mark Snethlage and Jonas Geschke, GMBA (2020).

Sources:

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Citation: UNEP, GRID-Arendal, GMBA and MRI (2020). *Elevating Mountains in the post-2020 Global Biodiversity Framework 2.0.*

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The production of this brief has been supported by

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