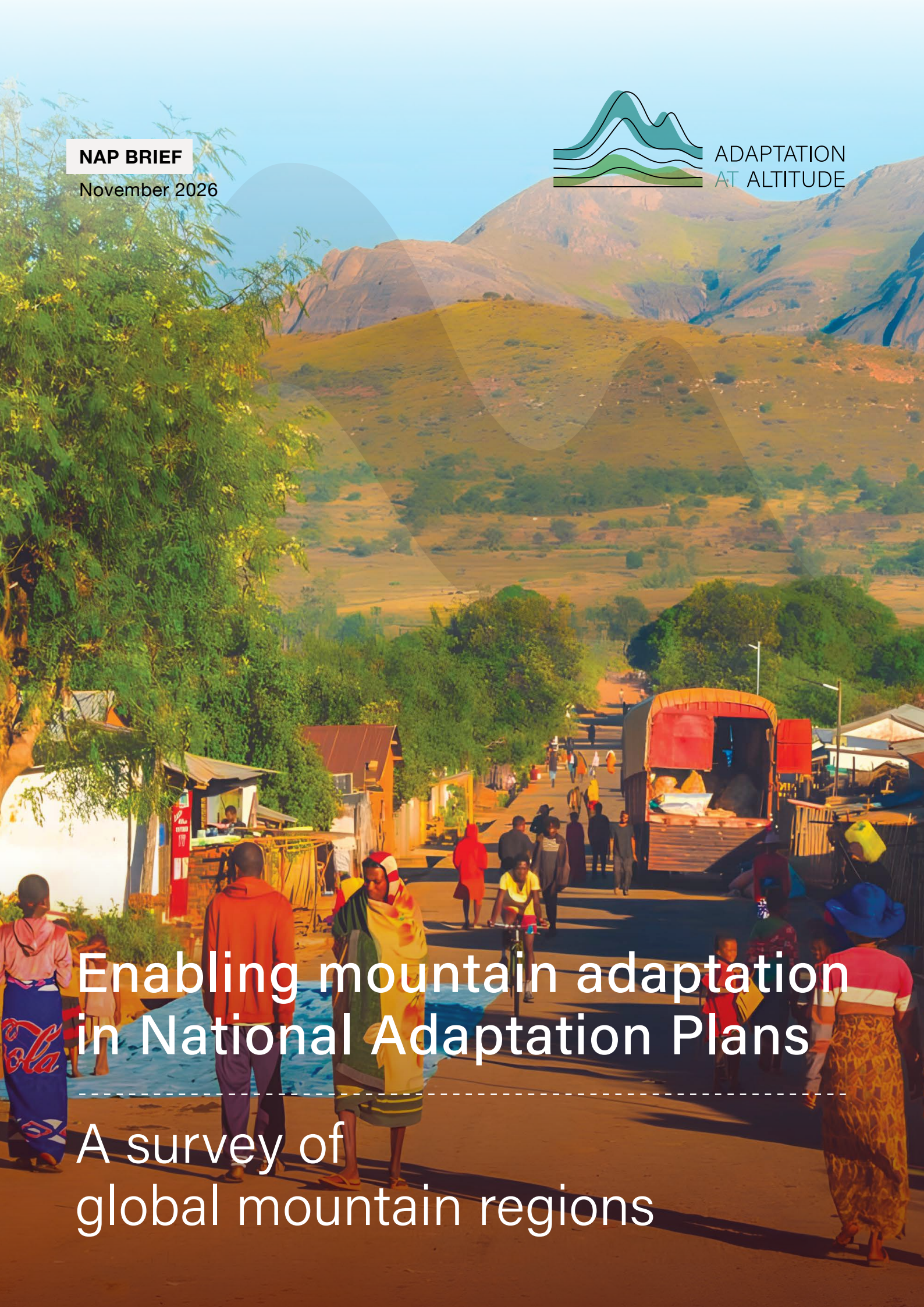
NAP BRIEF

November 2026

ADAPTATION AT ALTITUDE



Enabling mountain adaptation in National Adaptation Plans

A survey of global mountain regions

Mountains are among the environments most exposed to rapid climatic and environmental change. Rising temperatures, changing precipitation patterns, ecosystem degradation, and demographic changes are all putting growing pressures on mountain communities. As these changes intensify, disaster risks are also increasing, with hazards becoming more frequent, severe, or difficult to manage in many regions. These impacts do not stop at high elevations, but can also affect economies, ecosystems, and the well-being of people far downstream. Climate adaptation is therefore essential and increasingly urgent.

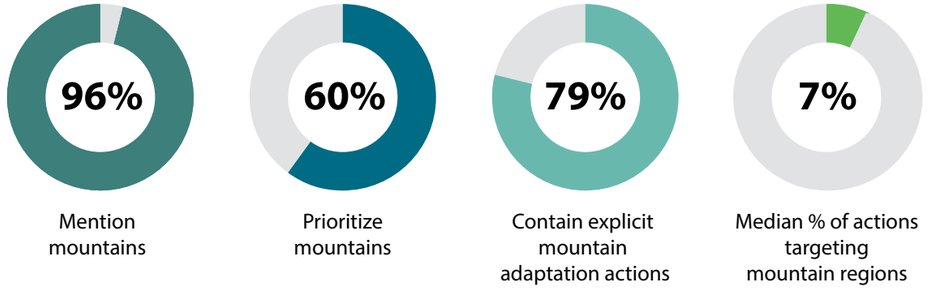
Successful adaptation depends on more than choosing the right measures. It also depends on creating the conditions that allow those measures to be implemented, sustained, and improved over time. These conditions include reliable and up-to-date information to guide decisions; adequate and sustained finance; meaningful participation by communities; institutions that work together; systems that track progress and adjust when conditions change; and mechanisms for incorporating lessons learned.

National Adaptation Plans (NAPs) are a key instrument through which countries identify adaptation priorities, coordinate actions, and guide implementation. This brief examines the extent to which enabling conditions for effective adaptation are recognised and supported in the NAPs[1] of 48 countries with significant mountain regions. The analysis combines information on mountain conditions and climate risk with detailed reviews of adaptation planning documents.[2]

Mountain adaptation in NAPs

In 29 of the 48 NAPs analysed, mountains are identified as a priority or a central context for adaptation (Figure 1). A further 17 countries refer to mountains more generally, while only two omit any meaningful reference to them. This recognition is also reflected in planned action: 38 countries include at least one adaptation measure specifically targeting mountain areas. Altogether, the NAPs in this review identified 548 mountain-related actions. While this number seems substantial, it represents only around 12 per cent of the 4,472 adaptation actions identified overall, suggesting that while mountains are widely recognised, they still account for a relatively small share of planned adaptation actions. The level of attention given to mountain regions varies widely across countries. The median share of adaptation actions specifically targeting mountain areas is about 7 per cent. This means that, across the countries analysed, the proportion of planned adaptation actions targeting mountains is 7 per cent at the midpoint of the distribution. However, countries such as Armenia, Bhutan, Nepal, and Eritrea devote a much larger proportion of their planned actions to mountains. Here, explicit prioritisation appears to make a clear difference: in countries where mountains are identified as a policy priority, the median share of mountain-specific actions rises to about 14 per cent, compared with just under 2 per cent where mountains are not explicitly prioritised.

Figure 1:
Inclusion of mountains in NAPs.



1 While the term NAP is used for the main documents analysed, 11 of the 48 countries had not published a NAP by August 2025, when data collection was completed. For these countries, other relevant policy documents, such as Nationally Determined Contributions (NDCs), were analysed instead.

2 Document analysis was supported by the use of AI tools.

Figure 2:
Key enabling factors for effective climate adaptation that can be supported by NAPs.



Governance, leadership, and institutions

Effective adaptation calls for clear responsibilities, supportive policies, and institutions capable of sustaining implementation over time. Across all analysed documents, this foundation appears relatively strong at the national level – 92 per cent of the countries identify lead or supporting actors for the implementation of actions and 88 per cent make an explicit commitment to updating or revising their adaptation plans. Moreover, all NAPs reviewed include commitments to periodic monitoring and evaluation to inform future adjustments.

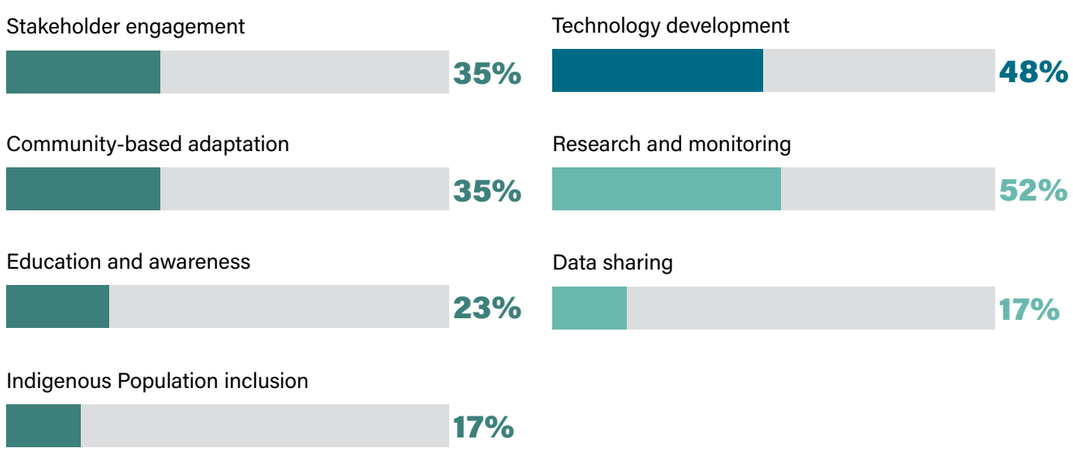
Such commitments are crucial, as climate risks, scientific knowledge, available technologies, and national priorities all change over time. For mountain regions, where climate impacts can evolve rapidly and vary greatly, periodic revisions help keep adaptation actions appropriate for the changing conditions.

Collaboration, engagement, and inclusive decision-making

The active involvement of all stakeholders in decision-making is essential for developing adaptation measures that reflect local needs, are contextually appropriate, and gain community acceptance. Ideally, this process brings together national, regional and local governments, researchers, NGOs, the private sector, and civil society, which includes Indigenous Peoples and other communities whose livelihoods depend closely on mountain ecosystems and who hold valuable local and traditional knowledge. When participation is reinforced by capacity building and knowledge exchange, communities can also take a more active role in leading and sustaining adaptation measures over time.

All screened NAPs included at least one action on stakeholder engagement, and 88 per cent support community-based adaptation. When the focus narrows to mountain regions, however, that commitment is much less visible (Figure 3). Stakeholder engagement and community-based adaptation appear in only a minority of mountain-focused measures, and education and awareness receive even less attention. Although 47 of the 48 countries include education or awareness actions somewhere in their NAPs, only 11 do so specifically for mountain regions. Indigenous Peoples and traditional knowledge show a similar gap, as they are often recognised in the frameworks, but much less frequently reflected in concrete mountain actions. Only 4 per cent of the total number of adaptation actions for implementation in mountain regions include Indigenous Peoples, suggesting that broad commitments to inclusive adaptation are not yet consistently translated into action in mountain regions.

Figure 3:
Share of countries incorporating specific elements into adaptation actions targeting mountain regions.



Finally, because mountain ecosystems, watersheds, and climate risks often extend across national borders, international cooperation can be crucial. Cooperation between countries can support the joint management of shared resources, exchange of knowledge and data, and coordinated responses to transboundary risks. In the countries assessed, 69 per cent of the NAPs explicitly refer to international cooperation efforts as part of their adaptation planning.

Data, knowledge, and information

One of the strongest enabling areas identified in the review is the development of data, information, and knowledge. All NAPs indicate being informed by prior knowledge of a vulnerability or by a risk assessment. Furthermore, they all include planned efforts to strengthen the evidence base for adaptation, including through climate modelling, the development of monitoring systems, data collection and analysis, dedicated research projects, improved weather stations, or the collection of vulnerability and risk information. For mountain regions specifically, more than half of the countries include at least one action in this area (Figure 3), but such actions account for only 13 per cent of all research- and development-related actions identified at the national level.

These findings suggest that national adaptation planning places considerable emphasis on generating the knowledge and information needed to support adaptation. Yet investment in research and development (R&D) remains relatively limited in many of the countries. Based on data from the Global Innovation Index 2024,[3,4] R&D expenditures across the 42 countries for which data were available averaged 0.55 per cent of GDP, compared to a global share of 1.92 per cent in 2023.[5] While these figures refer to overall national R&D expenditures rather than adaptation specifically, they point to the importance of ensuring that ambitious plans to strengthen climate knowledge and information are matched by adequate resources.

Beyond generating knowledge, ensuring that it is effectively shared and accessible to all relevant institutions, sectors and communities is equally important. While 90 per cent of NAPs include data-sharing efforts at the national level, only 17 per cent explicitly include specific climate data-sharing actions targeting mountain regions.

Technical and human capacity

Strong technical and human capacity is essential for turning adaptation plans into action. This effort entails identifying where skills and institutional gaps exist, and then strengthening the knowledge, expertise, and resources needed to design, implement and sustain the planned measures. For mountain regions, this is especially important given the often complex and highly localised nature of climate risks. Data from the Disaster Risk Management Knowledge Centre[6] show that important gaps remain across many of the countries assessed. On a scale from 0 to 10, the median score is 4.6 for lack of coping capacity and 5.2 for lack of institutional capacity. In one-quarter of the countries, the institutional capacity gap is above 6.1.

Institutional capacity needs are recognised across the NAPs, and all include actions such as training, establishing new units or roles in support of adaptation, strengthening existing institutions, or providing resources and equipment. Ninety-eight per cent of the documents also include actions related to technology development or deployment, including the piloting of new technologies, the promotion of tools such as remote sensing or early warning systems, and the use of resilient materials and renewable-energy technologies. Mountain regions receive less attention, but close to half of the countries still include at least one technology-related action targeting mountain areas. In terms of the total number of actions, these account for about 20 per cent of all technology-development actions identified.

3 World Intellectual Property Organization (WIPO) (2024). Global Innovation Index 2024: Unlocking the Promise of Social Entrepreneurship. Geneva: WIPO.
4 The GII uses the latest available observation for each country. The reference years may differ.
5 UNESCO UIS 2025 - https://databrowser.uis.unesco.org/
6 EC 2025 - https://drmkc.jrc.ec.europa.eu/

Finance and resource mobilisation

Financing is central to the NAP process, because it determines whether a plan leads to action or remains a statement of priorities (or simply a wish list). In the context of a NAP, "financial commitment" rarely means binding pledges of money, but rather indicates the expected costs and funding sources the country has used or hopes to use. Total financial needs are quantified for 24 out of 48 of the analysed NAPs, while commitments needed to fulfil mountain-specific actions are indicated in only 13 out of 48 of the NAPs. The largest financial commitments for mountain actions are in Nepal (USD 45 billion) and Bhutan (USD 14 billion).

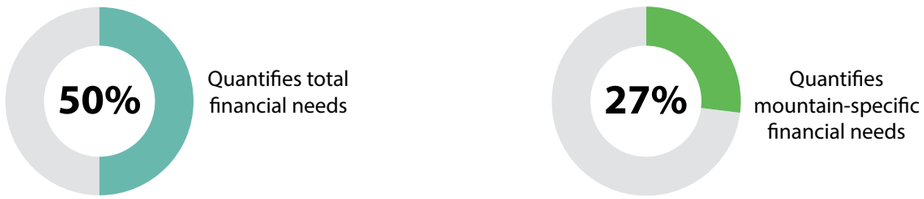
Domestic financial commitments should in principle be the most concrete, given they are under the government's direct control, yet only 6 of the 48 NAPs quantify a level of domestic financial commitment. Many developing countries therefore rely on external support to put adaptation measures in place, and adaptation finance typically falls well short of estimated needs.[7] Within the NAPs, identified external funding sources were primarily multilateral donors, bilateral donors, and the international private sector.

Of the 48 NAPs, 43 listed specific multilateral funding sources to support actions under the NAP. The Green Climate Fund (GCF) was cited in 38 NAPs and the Adaptation Fund (AF) in 23. Other sources included the Global Environment Facility, World Bank, the United Nations Development Programme and various regional development banks. In contrast, only 18 of the 48 NAPs list specific bilateral funding sources, of which Germany is the most frequently cited bilateral donor (11 NAPs), followed by the United States, Japan and the United Kingdom (Figures 5 and 6).

While the NAPs lack the specificity to break down the financial commitments into non-mountain versus mountain actions, previous analyses of actual expenditure on mountain adaptation revealed a similar pattern, with multilateral funding dominating over bilateral sources.[8] The dominance of the GCF should, however, be read with care, since it partly reflects the GCF role in funding NAP preparation through its Readiness Programme, not its role in paying for eventual adaptation actions. Counts of how often funders are mentioned are therefore best read as a picture of which funders countries consider relevant, and not as a concrete measure of funding flows or of how ready countries are to finance their plans.

Several of the major bilateral donors most frequently cited in NAPs, including the United States, have recently scaled back or restructured their development assistance, amid a wider contraction in official development assistance across OECD donors, suggesting that some of the bilateral support anticipated in these plans may not materialise and underscoring the importance of diversified and predictable adaptation finance. Here, the international private sector could prove important, with the United Nations Environment Programme estimating that private finance could contribute about USD 50 billion per year to adaptation in developing countries if supported by targeted policy and blended finance. Given that only 17 of 48 NAPs mention the international private sector as a partner or source of finance, this remains a largely untapped opportunity for mountain regions.

Figure 4:
Share of analysed NAPs that quantify total financial needs and mountain-specific financial needs.



7 United Nations Environment Programme (2025). Adaptation Gap Report 2025: Running on empty. The world is gearing up for climate resilience — without the money to get there [Neufeldt, H. et al.]. Nairobi. https://wedocs.unep.org/20.500.11822/48798.

8 Adaptation at Altitude (2023). Leave No Mountain Behind: The Synthesis Series - Is public funding of adaptation going to the mountain regions most in need?

Figure 5:
The top 10 most cited multilateral funding sources in assessed NAPs from mountain countries.
Number of NAPs specifying each source (n = 43).

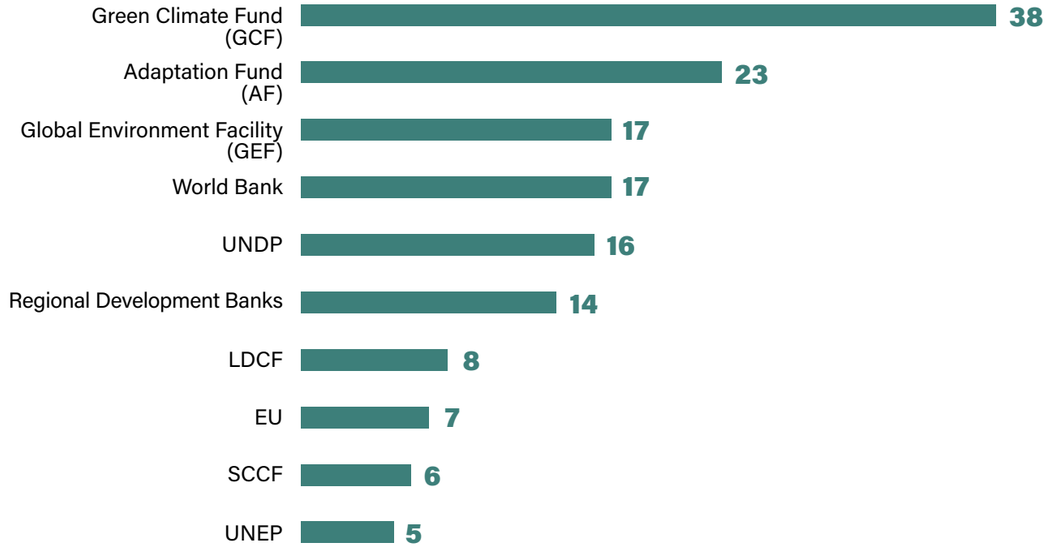
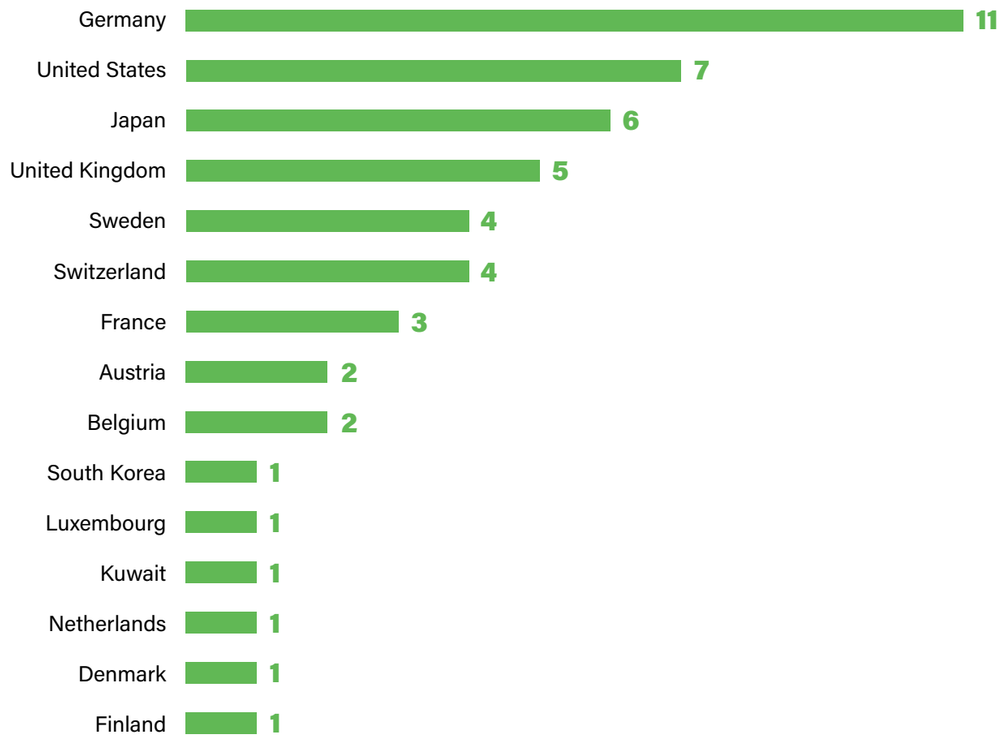


Figure 6:
Bilateral funding sources in assessed NAPs from mountain countries.
Number of NAPs mentioning each donor (n = 18).



Recommendations

NAPs provide a solid national foundation for adaptation, but this foundation is not yet consistently translated into mountain-specific action. To close this gap, countries and their partners could pursue the following strategies.

Make mountains an explicit priority:
Where mountains are identified as a policy priority, the median share of mountain-specific actions is seven times higher. The NAP revisions that most countries have committed to are an opportunity to move mountains from a background context to an explicit priority.

Turn inclusive commitments into mountain action:
Stakeholder engagement, community-based adaptation, education and awareness, and the participation and knowledge of Indigenous Peoples should be built directly into mountain-specific measures, not only into overarching frameworks.

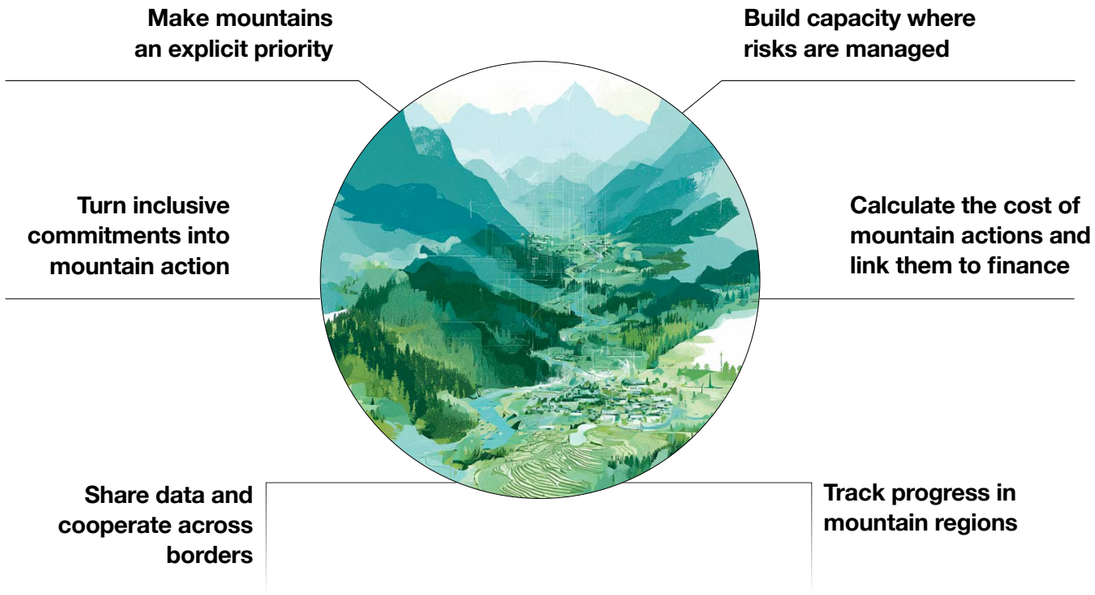
Share data and cooperate across borders:
Investment in monitoring and research should be matched by mechanisms that make climate and risk information accessible to mountain institutions and communities, with regional and transboundary cooperation for shared watersheds, ecosystems and hazards.

Build capacity where risks are managed:
Training, technology and institutional support should reach sub-national and local institutions in mountain regions, where climate risks are highly localised and capacity gaps are often greatest.

Calculate the cost of mountain actions and link them to finance:
Countries should estimate the costs of mountain-specific actions, strengthen domestic budget allocations, and develop pipelines of investable projects that can draw on a wider range of sources, including the private sector, blended finance and innovative instruments. Development partners can support this through predictable, long-term and accessible finance, including readiness support, at a time when official development assistance is contracting.

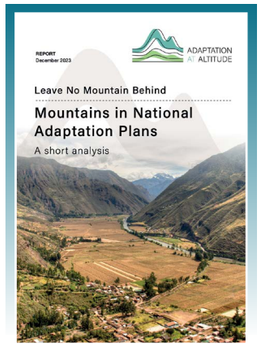
Track progress in mountain regions:
Including mountain-specific indicators in NAP monitoring and evaluation systems would allow countries to see whether planned actions are reaching mountain areas, and to adjust course as risks and priorities change.

Figure 7:
Key recommendations for enabling effective climate adaptation in mountain regions.

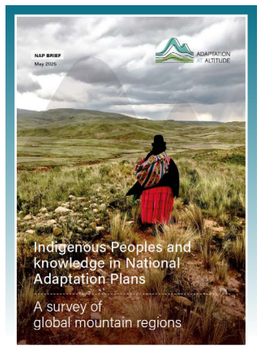


Additional resources on this topic from Adaptation at Altitude

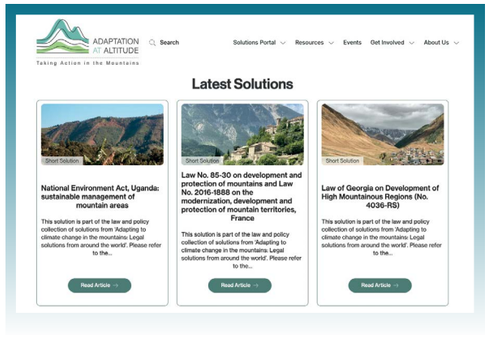
Mountains in National Adaptation Plans:
A short analysis



Indigenous Peoples and Knowledge in Climate Adaptation Planning for Mountain Regions:
A survey of global mountain regions



Adaptation at Altitude Solutions Portal



About Adaptation at Altitude

Adaptation at Altitude, a collaborative programme launched and co-supported by the Swiss Agency for Development and Cooperation, is dedicated to increasing the resilience of mountain communities and ecosystems to climate change. It aims to improve the availability and use of data and knowledge, strengthen science-policy platforms and dialogues, and build capacity and resource mobilisation for the evidence-informed formulation and implementation of effective climate change adaptation policies and institutional measures at the national, regional, and global levels. Reducing climate-induced risks and adapting to climate change in mountainous regions is a global concern. All countries of the world are in one way or another affected by climate impacts in the mountains. Temperatures in mountainous areas are rising faster than the global average, water resources are increasingly affected by variable climate patterns, and disasters related to natural hazards – including the downstream consequences – are becoming more frequent and severe, placing some of the world's most vulnerable areas at greater risk.

Authors

Julia Josselyn Aguilera-Rodríguez, Nathanaël Dominici, Simon Allen (University of Geneva)

Mountain population data

James Matthew Thornton

Graphic design

Zoï Environment Network

Cover photo

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Study countries

Afghanistan, Albania, Argentina, Armenia, Austria, Azerbaijan, Bangladesh, Bhutan, Bolivia, Bosnia and Herzegovina, Brazil, Burundi, Cabo Verde, Chile, China, Colombia, Costa Rica, Djibouti, Ecuador, Eritrea, Ethiopia, Fiji, Georgia, Grenada, Guatemala, Haiti, Kenya, Madagascar, Mongolia, Nepal, New Zealand, Pakistan, Palestine, Papua New Guinea, Peru, Philippines, Rwanda, Saint Lucia, Saint Vincent and the Grenadines, Serbia, Somalia, Spain, Tajikistan, Tanzania, Thailand, Timor-Leste, United States, Venezuela.

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