



POLICY BRIEF

KEEPING OUR MOUNTAINS PLASTIC WASTE-FREE

1. Mountains of plastic waste

Mountain ecosystems – essential and vulnerable

Mountain areas host both sprawling cities and rural settlements, providing a home for about 15 per cent of the global population. Linked to global supply chains and as a consequence of **population growth, overconsumption and tourism**, the generation of waste – especially **plastic waste** – is surging across mountains. This endangers **freshwater resources and biodiversity and in turn poses serious risks for downstream regions**.



The scale of the problem

1,750 mountaineers from 74 countries participated in a [2021 global survey](#) led by GRID-Arendal on the extent and nature of waste pollution in the mountains. Key findings include the following:

- ▶ Almost **all respondents have seen litter and waste** during a typical mountain trip.
- ▶ Hard and soft **plastics were the most-seen** types of waste across all mountain areas.
- ▶ Waste was seen most frequently **on/beside trails**, followed by car parks and resting areas.
- ▶ Around 95 per cent confirmed that waste in the mountains was an issue **needing immediate attention**.
- ▶ Almost two-thirds felt that waste had **increased in recent years**.

Plastic waste often contains hazardous substances, including persistent organic pollutants (POPs). For example, perfluoroalkyl and polyfluoroalkyl substances (PFAS), which are used in water-resistant clothing and ski wax, have been found to contaminate snow, soil and groundwater.

Despite advances in identifying the scale of plastic pollution in the mountains and its impacts on mountain ecosystems, data and information remain limited. Further research and monitoring, such as identifying solutions, is needed.

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Open burning of plastic waste, which leads to emissions of hazardous substances ©Istock

2. What makes waste management in the mountains so challenging?

Drivers

Key drivers for the increasing generation of plastic waste in the mountains include the following:

- **Increasing tourism including overtourism:** Mountain visitors and related infrastructure (such as hotels and restaurants) are a key source of plastic waste in mountains. As tourist numbers in mountains increase, so does the use of plastics, in particular packaging and single-use items.



Developing countries in particular face significant challenges in addressing plastic waste.

► **Increasing consumption:**

Economic growth tends to result in increasing and changing patterns of consumption. This includes an increase in the use of plastic products and thus an increase in plastic waste. A study in the Carpathians found that annual per capita plastic consumption rose from 1 kg in 2012 to 20 kg in 2015 in a community where tourism heavily increased.

► **Microplastics and atmospheric**

transport: Microplastics can be a result of the fragmentation of larger plastics and can travel long distances. They have been detected in mountain regions across the world, for instance at 8,400 metres above sea level on Mount Everest, in snow, soils, freshwater lakes and glaciers in the Alps and Pyrenees and in rain in the Rocky Mountains.

Barriers

Developing countries in particular face significant challenges in addressing plastic waste. These **challenges are often compounded in the mountains.**

- Remoteness, harsh natural and climate conditions, no economies of scale, limited financial and human resources, high transport costs and lack of infrastructure...

- ...lead to an increase in waste management costs coupled with a decrease in financial, legal and institutional capacity as well as insufficient or fragmented systems for data gathering and monitoring, which result in reduced capacity to ensure the environmentally sound management (ESM) of plastic waste as well as lost awareness and incentives for behaviour change.

Impacts

The increasing generation of plastic waste in the mountains and the lack of its environmentally sound management leads to various adverse effects:

- When plastic waste is not collected, this often results **in open burning and uncontrolled dumping.**
- **POPs and other hazardous substances are released,** endangering human health and the environment.
- Popular mountain tourist destinations become **plastic pollution hotspots.**



3. What can we do to keep our mountains free of plastic waste?

Areas of intervention and success stories

There are many actions that can be taken to keep our mountains plastic waste-free. These can be placed into four categories: policy, financing, infrastructure and outreach. They are outlined below alongside relevant [success stories from mountain regions across the globe](#).

Policy

Policies are needed to limit the amount of plastic brought in and consumed in mountains as well as to promote the environmentally sound management of plastic waste. Policies should optimally be adapted to local circumstances, understandable, practical, well-communicated and enforceable.

- ▶ In the Khumbu region of Nepal – home to Mount Everest, which receives around 40,000 visitors each year – a **garbage declaration and clearance system** has been established. Expeditions must declare their equipment and food and submit a deposit of up to US\$ 4,000. Upon return, the garbage must be handed over to receive a clearance certificate.
- ▶ The Kilimanjaro National Park in Tanzania introduced a **“trash in, trash out”** system where rangers regularly weigh the rubbish of trekking groups. Evidence of dumping can result in the guides' licences being revoked and/or a fine. The system has helped to raise the collection rate from 64 per cent and 94 per cent within four years.
- ▶ The government of Himachal Pradesh, a mountain region in India, **banned the use of certain single-use items**, such as plastic carry bags and cutlery.

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Financing

Plastic waste management is costly, but a number of tools are available to cover or reduce waste management costs. These include extended producer responsibility, deposit-return schemes, fees, taxes, fiscal incentives and fines.

- ▶ In the Piemonte region of the Italian Alps, households are incentivized to **separate their waste via tax benefits**. Separate collection levels increased from 18 per cent to 49 per cent within 10 years.

- ▶ In the Langtang region of Nepal, individuals are financially encouraged to bring back plastic bottles. Each **plastic bottle can be exchanged** for 1 Nepalese rupee.

Infrastructure

Infrastructure is critical for the environmentally sound management of plastic waste. Smarter systems of collection and transport, including small intermediate stations, can help address limited economies of scale in mountain regions.

Success stories suggest that a combination of penalties, fees and taxes on the one hand and positive incentives such as upcycling, tax reductions, partnerships, and inclusive campaigns on the other hand are effective.

- ▶ In response to its increasing amount of plastic waste, the mountainous Ile-Alatau became the first Kazakh national park to gain a full-cycle infrastructure for waste management. Two hundred and twenty-five containers were installed across 30 different sites, and trucks regularly transport the waste to Almaty.
- ▶ In the Andean highlands of Peru, supermarkets support a campaign by which 1 million plastic bottles were recycled into 13,000 *ponchilas* (a backback with a built-in poncho) for children.
- ▶ Since 2013, the International Climbing and Mountaineering Federation (UIAA) Mountain Protection Award, in partnership with and support from the Bally Peak Outlook Foundation, have promoted and created prize incentives to showcase over 140 projects and solutions implemented by the mountaineering community in mountain areas around the world, many of which focused on waste minimization and management.
- ▶ The organizers of the Ultratrail Mont Blanc event decided to forgo the use of disposable cutlery, cups and bowls at refreshment points, leading to at least 4,000 plastic bottles not being used.

Outreach

- ▶ In Switzerland, the Summit Foundation installed 1,200 boards with messages about plastic waste in more than 50 ski resorts. The Swiss Alpine Club initiated a campaign that included placements of posters in huts to encourage mountaineers to bring less waste and return it to the valley.
- ▶ Since 2014, volunteers, guides, local tourism authorities and operators have supported the “Keep Snow Clear” campaign to remove litter from Ibn Sina Peak in the Pamir Mountains.

The success stories suggest that a combination of penalties, fees and taxes on the one hand and positive incentives such as upcycling, tax reductions, partnerships, and inclusive campaigns on the other hand are an effective way to keep our mountains plastic waste-free. Multi-stakeholder approaches involving stakeholders from governments, the private sector, civil society and the research community often deliver the best results.

Levels of intervention

To keep our mountains plastic waste-free, action can be taken at all levels:

- ▶ **Individual:** by mountain guides, visitors and the local population to leave no trace on the slopes and summits. Resources such as the IOC and UNEP [“10 Steps to be a Mountain Hero”](#) and the UIAA’s [“7 Ways to Respect the Mountains”](#) provide guidelines and tips to empower individuals.
- ▶ **Local:** by municipalities, retailers, the tourism sector, nature park administrations, guide and tourism associations and other local stakeholders.
- ▶ **National:** by policymakers through legal and institutional frameworks, financial mechanisms, incentives and other policies.
- ▶ **Regional:** through cross-border cooperation, data and information exchange, and regional instruments (e.g. the Alpine and Carpathian Conventions).
- ▶ **Global:** through international initiatives, partnerships, agreements, conventions etc., such as the Basel Convention, including its plastic waste amendments and the Plastic Waste Partnership, the Stockholm Convention on POPs, and the ongoing negotiations for a legally binding international instrument on plastic pollution.



Nepalese mountaineer Nirmal Purja advocating for the 2021–2030 UN Decade on Ecosystem Restoration and pollution action on top of Mount Everest ©Elite Exped/ Nimsdai



RECOMMENDATIONS:

Relevant stakeholders are invited to consider the following:

- ▶ Undertaking further research and monitoring on the specific challenges and solutions to address plastic waste in mountains, including further assessment of the scale of plastic pollution in mountains, use of citizen science and disseminating relevant data and information.
- ▶ Making pollution and waste management issues a priority action for the members of the Mountain Partnership and mountain communities, recognizing that mountains are particularly at risk from the triple planetary crisis of biodiversity, climate change and pollution.
- ▶ Promoting actions towards plastic waste-free mountains that also align with and respond to the Mountain Partnership's 2022 Aspen Declaration and the Mountain Partnership Strategy 2022-2025.
- ▶ Financing further work on pollution and waste management in mountain regions, including support for the implementation of pilot projects, sharing of best practices and dissemination of lessons learned.
- ▶ Promoting the engagement of and a collaborative approach among mountain communities at all levels in the development and implementation of waste-free initiatives, e.g. municipalities, (sub)national governments, donors, civil society, national park administrations and UIAA member federations.
- ▶ Encouraging development and use of methodologies, tools and guidance on prevention and management of plastic waste, including those developed under the Basel Convention.
- ▶ Supporting mountainous countries' engagement at the global level including in the negotiations for an international legally binding instrument on plastic pollution, taking into account specific socioeconomic and geographic circumstances of mountain areas.



Further resources:

- ▶ Story Map – Plastic Waste on the Peak: <https://bit.ly/3ASrKyc>
- ▶ Plastics on the Peak: The 2021 Global Mountain Waste Survey: <https://www.grida.no/publications/815>
- ▶ BRS Secretariat project on plastic waste in remote and mountainous areas: <http://www.basel.int/Implementation/Plasticwaste/Technicalassistance/Projects/RemoteandMountainousAreas/>
- ▶ UNEP Resource page on plastic pollution: <https://bit.ly/3B0XTUh>
- ▶ 10 Steps to be a Mountain Hero: <https://bit.ly/3RA9PmM>
- ▶ GRID-Arendal: <https://www.grida.no/>
- ▶ UIAA: <https://theuiaa.org/>
- ▶ Mountain Research Initiative (MRI): <http://www.mountainresearchinitiative.org>

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