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MOUNTAINS UNDER PRESSURE

Climate, hunger and migration

The implementation of the 2030 Agenda for Sustainable Development and the Paris Agreement requires a transformational shift, and mountains must be fully included in the process.

Almost 1 billion people live in mountain areas, and over half the human population depends on mountains for water, food and clean energy. Yet mountains are under pressure. Climate change, land degradation and natural disasters threaten the well-being of mountain communities and the ability of mountain environments to provide essential ecosystem goods and services, with potentially far-reaching and devastating consequences for the rest of the world. Meanwhile, rates of hunger, malnutrition and out-migration in mountain areas are on the rise.

The nexus between climate-related shocks, food insecurity and migration patterns in mountains poses significant challenges. Increasing investments, promoting sustainable resource management, sharing climate change adaptation approaches, and strengthening institutions and partnerships can help to build the resilience of mountain peoples and environments.

Hunger

One of every three mountain people in developing countries is vulnerable to food insecurity. When only rural areas are considered, this figure increases to one of every two mountain people.

Climate change, climate variability, and climate-induced disasters and extreme weather events, combined with political, economic and social marginalization, increase the vulnerability of mountain peoples to food shortages and extreme poverty.

Maintaining and promoting the high agrobiodiversity of crops and livestock in mountains offers significant potential for adaptation to climate change, contributes to food security and can improve livelihoods.



Colombia

In the Colombian Andes, in the area surrounding Paramillo National Park, the municipalities of Chigorodó and Mutatá in the Antioquia Department are home to communities of approximately 3 650 indigenous Embera people.



The Embera communities, the guardians of the area's biodiversity, protect their local natural resources. Historically, they lived dispersed from one another and practiced traditional agricultural techniques, growing plantain, cassava, maize, sugar cane and yam, rearing livestock and producing handicrafts. However, 40 years of armed conflict in Colombia led to the displacement of many indigenous families and the abandonment of crops, to the detriment of food security.

Although prohibited, many families turned to timber extraction as their only livelihood option. Ecosystems were degraded and biodiversity was lost, with occupying insurgents indiscriminately extracting natural resources and establishing illicit crops.

To slow and reverse these trends, several strategies have been promoted. In April 2017, to support the effective management of Paramillo National Park in its surrounding area, agreements were signed with the indigenous councils of Chigorodó and Mutatá within the framework of the project *Conexión Biocaribe* (Biocaribe Connections), implemented by the Food and Agriculture Organization of the United Nations (FAO). Through this project, alliances have been established with the Embera communities, FAO and local institutions to increase their food security through the implementation of agroforestry systems, forest enrichment and

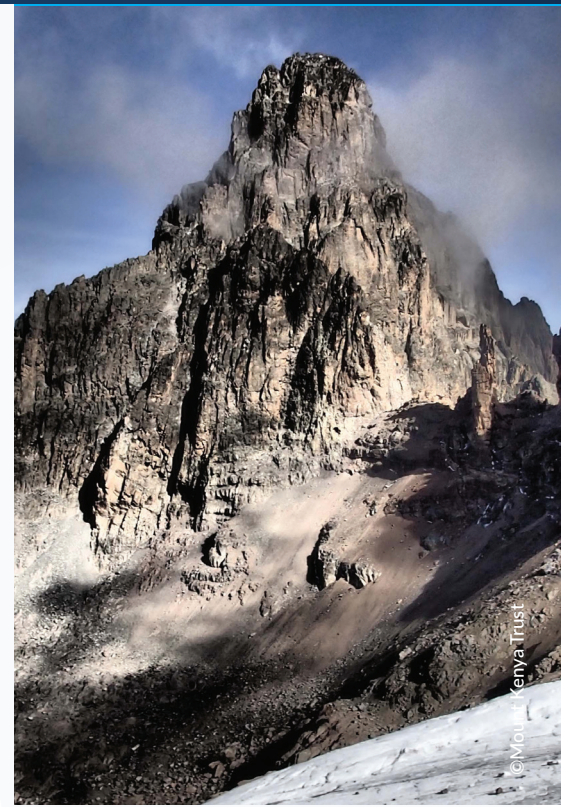
the restoration of riparian forests. Additionally, communication groups and women's organizations have been strengthened. This strategy provides the local communities the opportunity to manage projects and share their traditional knowledge on sustainably managing local ecosystems and adapting to climate change.

Climate

Mountains provide between 60 and 80 percent of freshwater resources, but climate change threatens their ability to provide freshwater and other ecosystem goods and services for millions of people, upstream and downstream.

Glaciers in mountain ranges around the world are retreating and disappearing due to atmospheric temperature increases. At least 600 glaciers have disappeared completely over the past decades, affecting water storage and increasing risks of glacial lake outburst floods.

Mountain communities have a wealth of knowledge and strategies accumulated over generations on how to adapt to climate variability. Their practices can contribute to effective management strategies in mountains in the face of rapid climatic change.



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Kenya

Ranging from 600 to 2 208 metres above sea level, the Taita Hills in Kenya are home to communities of smallholder farmers, the majority of whom live in poverty, mainly grow maize and beans, and depend on rainfall to irrigate their crops. Climate-induced changes in rainfall patterns have left the farmers vulnerable to water shortages and food insecurity, unable to grow enough vegetables to feed their families during the dry season, let alone sell their produce on the market.



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To overcome these challenges, the Adaptation for Food Security and Ecosystem Resilience in Africa project, coordinated by the International Centre of Insect Physiology and Ecology, a Mountain Partnership member, and funded by Finland's Ministry for Foreign Affairs, promoted the use of roof rainwater harvesting and water-use efficient drip irrigation systems. Eight workshops were held with farmers to develop community-based climate change adaptation action plans and, consequently, three roof rainwater-harvesting kits and 20 small-scale drip irrigation systems were set up at demonstration sites.

To date, 3 300 farmers, 50 percent of whom are women, have directly benefited from the project's capacity building, awareness-raising and technology transfer activities on climate change adaptation. Now, the smallholder farmers in the Taita Hills who have water storage and drip irrigation kits can grow vegetables for domestic consumption and sale, even during the dry season.

They sell their locally produced vegetables at the marketplace or in roadside stalls usually run by female vendors.

Migration

As mountain populations' vulnerability increases, migration increases, with migrants moving towards urban centres that often already face high population pressure.

Many mountain migrants are men, who leave behind women, children and the elderly. Mountain women who are left to manage farms and households often do not have land tenure rights, access to credit and education.

Mountain-specific investments and policies can alleviate the harsh living conditions of mountain communities, increase mountain communities' well-being and slow out-migration trends from mountain areas.



Tajikistan

Tajikistan's landscape is rich in tall mountains and glaciers, but in the last ten years, almost 30 percent of those glaciers have melted.

Agriculture, one of the country's main economic sectors, is vulnerable to climate change due to its reliance on glacial water. Most Tajik farms are small and community based, and farm families often cannot live solely off their land. As a result, both seasonal and long-term labour migration are common, with labour migrants constituting up to 10–12 percent of the total population of Tajikistan, and about 20–25 percent of the male population aged 18–40 years.

According to an analysis conducted by the Regional Environmental Centre for Central Asia, a Mountain Partnership member, in cooperation with the Ministry of Labour, Migration and Employment of Population of Tajikistan, most Tajiki who go abroad for employment regularly send back remittances, making Tajikistan one of the world's most remittance-reliant countries.

Although these often alleviate poverty and improve daily household consumption, long-term plans concerning the use of remittances need to be adopted. Currently, only 11 percent of cash flow through remittances is saved for over six months, hindering long-term community development and negatively impacting the population's resilience, but initiatives to change this are being implemented. For example, the Climate Resilience Financing Facility (CLIMADAPT), launched by the European Bank for Reconstruction and Development and the Climate Investment Fund, makes loans to entrepreneurs, farmers and households to promote climate change adaptation and mitigation measures.

