

## A deep legacy of agricultural biodiversity

In agricultural terms, mountains are considered marginal land, unsuitable for modern commercial farming, which focuses on the cultivation of a single crop variety for large markets. Although a growing number of mountain farmers have adopted modern farming techniques, many indigenous men and women continue to cultivate using traditional practices and techniques such as sophisticated terrace systems (rain-fed or irrigated), water transportation and irrigation schemes, and a combination of pasture, forestry and farming.

In this way they farm a wide variety of crops that are adapted to a range of different elevations, slope conditions and microclimates. Therefore indigenous mountain people and other traditional mountain communities serve as custodians of traditional knowledge on how to farm in difficult mountainous conditions and of important reservoirs of agricultural biodiversity.

In the Andes, where the potato was first domesticated, native farmers continue to cultivate as many as 200 different varieties of indigenous potatoes. In the mountains of Nepal, traditional farmers cultivate around 2 000 varieties of rice. Since these are two of the world's staple crops, supporting indigenous farming practices that sustain this diversity is of global importance. However, many other 'minor' crops remain important to indigenous communities. Examples include ulluco, a native tuber, and quinoa, a type of grain, in the Andes; tef, a cereal grown in the Ethiopian highlands; and the different varieties of millets that are central to the diets of Himalayan communities.

It is important to recognize in indigenous mountain communities that men and women have different areas of knowledge, experience and responsibility that contribute to preserving biodiversity. Generally speaking, women tend to focus on crops grown in

household gardens for domestic use, while men concentrate on crops that generate income. For example a study done in 30 home gardens of the Marma tribe in Rangamati Hill District in Bangladesh, revealed that women were primarily responsible for maintaining home gardens that contributed to the conservation of a genetic pool of 19 perennial species of food and fruit crops, timber and ornamental plants.

## International support for Andean indigenous agricultural systems

In 2002 the Food and Agriculture Organization of the United Nations (FAO) started an initiative for the conservation and adaptive management of Globally Important Agricultural Heritage systems (GIAHS). One of the GIAHS project's pilot sites was located in the Andes of southern Peru in an area that includes the landscapes around Machu Picchu and Lake Titicaca.

The four indigenous communities selected as specific sites for the project's activities maintained many of their traditional agricultural practices despite the strong influence of modern agriculture. At above 4000 meters, the land is used mainly as rangeland but high altitude crops are also cultivated. An example of the agricultural heritage systems used in this area is in the high plateau, around Lake Titicaca, where farmers dig trenches around their fields. During the day these water-filled trenches are warmed by sunlight. When temperatures drop at night, the water gives off warm steam that provides frost protection for potato and other native crops, such as quinoa.

The GIAHS pilot project, in partnership with the Peruvian Consejo Nacional del Ambiente (CONAM) and the participation of local institutions, helped validate and promote these ingenious agricultural technologies. In coordination with the indigenous farmers and local institutions, the pilot project contributed to the production of high-quality seeds of native crops. Communal fairs were also held to facilitate local seed markets.



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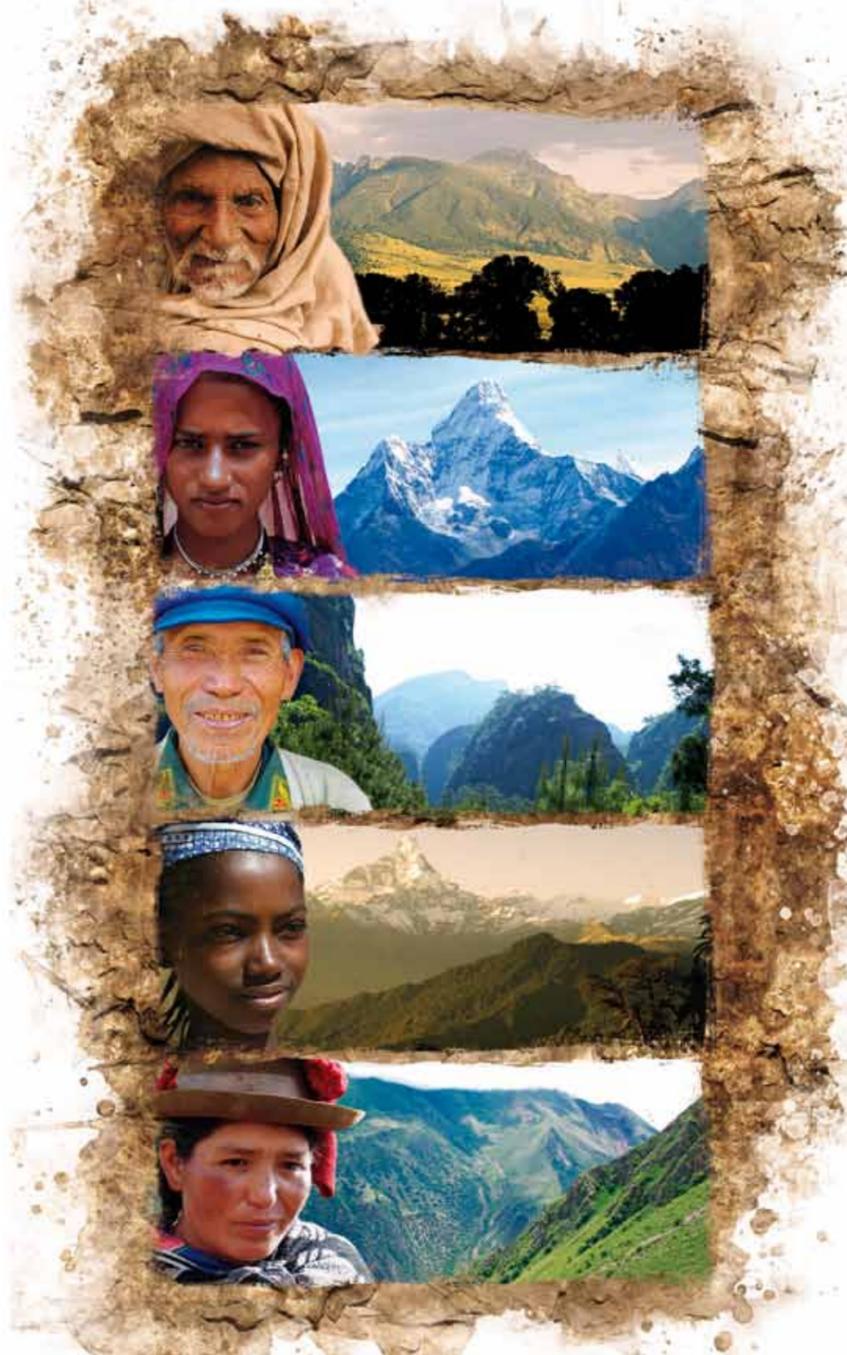
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# MOUNTAIN MINORITIES AND INDIGENOUS PEOPLES

*Mountain voices for a sustainable future*



## A celebration of indigenous mountain peoples

In September 2007, the UN General Assembly adopted the UN Declaration on the Rights of Indigenous Peoples, marking an important step in international efforts to preserve the identity of indigenous peoples and address the discrimination and hardships they face. A majority of the world's indigenous people live in mountain regions, and many live on the margins of society and face poverty and chronic food insecurity.

This year the International Mountain Day theme focuses on indigenous peoples and other minorities living in mountains. The purpose is to highlight the threats faced by these communities but also to acknowledge the invaluable contribution they can make towards overcoming the global challenges of hunger and malnutrition, biodiversity loss and climate change.

## A heritage connected to the land

The culture of indigenous and traditional mountain communities is predominantly agrarian, shaped by harsh climates and rough terrain as well as the seasonal rhythms of planting, harvesting and transhumance. For these peoples, land, water and forests are not simply natural resources to be exploited for profit on distant markets. As their ancestors before them, these communities understand that their well-being, their sense of identity and their childrens' future depend on the careful stewardship of the environment.

Consequently, indigenous mountain communities are connected to the land in ways that can often be expressed only in spiritual terms. Respecting this worldview, and preserving the languages, music, artwork, folk tales and myths that express it, is critical for the survival of indigenous communities in mountain areas. This 'intangible heritage' also enriches the global community, providing inspiration and insights for realizing a more sustainable relationship between humankind and the environment.



## Preserving the heritage of mountain minorities

The Walser, the original settlers of Switzerland's Haut-Valais region, migrated centuries ago into several high alpine valleys in Austria, France, Liechtenstein and Italy. However, in many communities, the Walser-German dialect is no longer spoken and many young people do not see a future for themselves in their mountain homes.

The project, 'Walser Alps', financed from the European Regional Development Fund, sought to build transnational cooperation and solidarity among Walser communities. Conceived as an opportunity to prevent Walser customs from being relegated to books and museums, the project sought to valorize the Walser heritage as a way of promoting sustainable tourism in Walser communities. The preservation of Walser traditions was also seen as a means of safeguarding knowledge about the sustainable management of mountain environments.

The project was divided into several work packages that covered various activities, including:

- the digitalization of documents and images pertaining to Walser cultural heritage as a way of connecting children to their elders;
- the production of a Walser dictionary and teaching materials;
- the development of a common instrument for sustainable municipal land use planning; and
- creating public awareness materials on Walser communities to promote sustainable tourism.

## Reviving the Nawa system in Nepal

Centuries ago, when farmers and pastoralists began growing crops and herding animals in Nepal, the local communities created a system called the 'Dee System' to regulate land use. Under this system, a village leader, with the title Nawa, was designated annually to oversee laws primarily dealing with the protection of crops from cattle. Anyone who demonstrated leadership qualities could be the Nawa of a village, regardless of their gender. Over time, the Nawa assumed greater social responsibilities for decisions concerning land use.

With the establishment of Sagarmatha National Park in Nepal and the onslaught of tourism, forest resources became drastically degraded. Villagers rapidly cleared the forest for firewood and timber, as they thought that the forest that they inherited from generations had now been taken from them by the government. Increased tourism consumed vast amounts of firewood, which put even more pressure on forest resources. At the same time, the position of Nawa became much less authoritative, reduced almost to a mere formality, and is now in danger of disappearing completely.

The majority of the local population now realise the importance of traditional systems for natural resource management. They strongly favour reinstating the Nawa system to the status it had before the establishment of the Sagarmatha National Park. WWF-Nepal, which has been working in the Sagarmatha National Park and Buffer Zone with local institutions and park authorities on species conservation, forest and rangeland restoration and capacity building, is now collaborating with user's groups and a local committee to revive the Nawa system.



## Reclaiming traditional sources of nutrition

Although food insecurity is prevalent in many indigenous mountain communities, local foods cultivated in fields and home gardens make important contributions to household nutrition. The nutritional value of these foods is not determined simply by the different types of local crops, but by the way herbs and spices, the oils, meat, vegetables and condiments are combined and cooked (almost exclusively by women). This traditional cuisine, along with the knowledge and skills required to prepare it, represents another vital aspect of the intangible cultural heritage of mountain peoples.

Although we know little about the nutritional value of indigenous mountain food systems, we do know that they are at risk. Internationally marketed, relatively cheap, processed foods are becoming more accessible to mountain communities. Indigenous foods, stigmatized as 'foods of the poor', are often abandoned in favour of modern foods that are more convenient to cook but often contain high levels of sugar and fat and have relatively low nutritional value. This phenomenon compounds the problem of the relatively high rates of iodine and vitamin A micronutrient deficiencies found in impoverished mountain communities.

## Indigenous knowledge to confront climate change

Indigenous and traditional mountain farmers have explicitly designed their agricultural systems to protect the soil from erosion, conserve water resources and reduce the risks of disasters triggered by natural hazards. With climate change scenarios strongly suggesting that extreme weather events are likely to become more common and more intense in mountain areas, these agricultural systems can play a central role in climate change adaptation strategies.

Furthermore, reliable long-term records of mountain climates exist only for very few areas, such as the Alps. Local environmental knowledge on hydrological events and the capacity to forecast avalanches can for example reduce the risks in mountains, while the memory of past events and the stories passed through generations can help researchers understand historical variations in the weather patterns in areas where scientific data is lacking.

## The way forward

The involvement of indigenous and traditional mountain communities is a prerequisite for sustainable mountain development. Therefore, as governments work toward addressing mountain development priorities, it is critical that they live up to their commitments outlined in the UN Declaration on the Rights of Indigenous Peoples. Foremost among these is outlined in Article 2 of the Declaration, which states that "Indigenous peoples and individuals are free and equal to all other peoples and individuals and have the right to be free from any kind of discrimination..."

Key points and activities that should be prioritized include:

- supporting the right of indigenous people to self-determination, and in particular their right to determine and develop priorities and strategies for the development or use of their lands or territories and other natural resources;
- including the voice of indigenous peoples in policy making, government and national plans;
- increasing awareness on the importance of mountain agricultural biodiversity for the indigenous and the global community. Expanding the focus of agricultural biodiversity so to include gender-sensitive studies on traditional mountain crops, farm animals, local agricultural practices and food systems;
- directing international efforts to placing indigenous mountain farming sys-

- tems and diets on the United Nations Educational, Scientific and Cultural Organization (UNESCO) list of intangible cultural heritage, just as Italy, Greece, Spain and Morocco are working together to promote and protect the Mediterranean diet. This would be a way of improving nutrition levels and safeguarding indigenous and traditional food cultures in mountain regions;
- welcoming indigenous and traditional mountain communities to participate actively in national and international efforts to understand and adapt to climate change in mountains. Their expertise in natural resource management and their historical perspectives on climate variability need to be integrated into climate change adaptation strategies;
- linking traditional indigenous and scientific knowledge in agrobiodiversity programmes.