

**M**ountain forests are some of the most spectacularly beautiful landscapes on Earth, but they are under threat.

Throughout 2011, the world has been celebrating the International Year of Forests. Each month of the year has had a special theme. In December, the theme is mountain forests, so

it is fitting that on December 11<sup>th</sup>, International Mountain Day, we also highlight the importance of mountain forests. Mountain forests protect local communities against natural disasters and safeguard the natural resources and environmental services billions of people rely on for their well-being and livelihoods.



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**MOUNTAIN  
FORESTS**

**roots to our  
future**

## A diversity of mountain forests

Mountain forests cover over 9 million sq. km: 28 percent of the world's closed forest area. These forests are special places unlike any other ecosystem on Earth, and they are vanishing.

- Found in wet, cool climates where marine air collides with coastal mountains, temperate rain forests produce more living matter than any other ecosystem. Once found throughout the world, coastal temperate rain forests now cover only about 30 to 40 million ha, mostly in Chile and the Pacific Northwest of North America.

- Montane cloud forests, almost permanently shrouded in mist and clouds, provide food and shelter to thousands of people and untold numbers of unique plants and animals. As much as 90 percent of cloud forests in the northern Andes have disappeared.
- In the Andes, 98 percent of the area once covered by the quenual (*Polylepis* spp.), the highest-growing tree in the world, has been deforested.



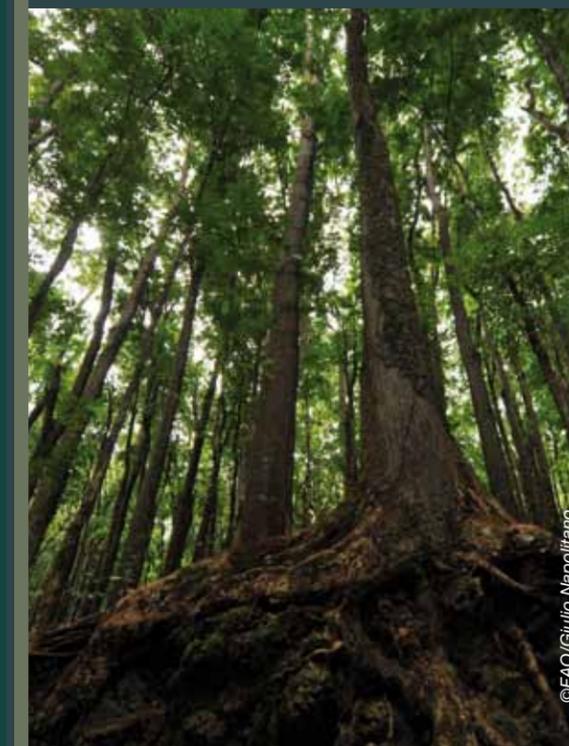
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## Protection on high

More than half of the world's population relies on freshwater stored in mountains for drinking, cooking and washing, irrigation, hydropower, industry and transportation. When forests are removed in mountains and the land is left unprotected, runoff and soil erosion increase. As a result, water quality deteriorates in streams and rivers for both upstream and downstream communities. Fish and other aquatic species are threatened. Irrigation systems that highland and lowland farmers depend on silt up, threatening food production and entailing costly maintenance.

Mountain forests help to ensure that people are protected against natural disasters. When forest cover is lost in mountain areas, villages and cities, tourist resorts, power plants, transmission lines and rail and road systems all become more vulnerable to landslides, avalanches and floods. As the climate changes, the protective shield provided by mountain forests will become even more important. Storms are expected to become more intense with higher precipitation, increasing the risk of natural disasters in mountains.

Aside from being vital to protecting our physical well-being and providing goods and ecological services essential to livelihoods, mountain forests are natural treasures whose presence safeguards our cultural heritage. The beauty of forested landscapes has shaped the worldviews and social traditions of mountain communities. Every year, millions travel to mountain areas for recreation, tourism and spiritual rejuvenation.



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## Healthy forests for healthy communities

For mountain forests to provide us with protection, they must be healthy. The health of a forest is determined by its density and the presence of a broad mixture of tree species of varying ages and heights. This mixture is crucial if the forest is to withstand natural hazards, pest infestations and diseases.

Many mountain forests continue to exhibit these healthy traits. In some cases, however, when mountain forests are managed by companies that are unconnected to the local community and focused on the production of a single commodity, usually timber, maintaining the overall health of the forest may not be the highest priority.

For people living in or around mountain forests, the health of their community is directly linked to the health of these forest. The biodiversity found in healthy mountain forests provides local people with a range of products, such as timber, fuel, medicines, fodder and a wide variety of foods, that are indispensable for their livelihoods, food security and well-being. Because their survival and their culture depend on the health of the forests, mountain communities have acquired a profound knowledge of the local ecology and developed locally adapted sustainable systems for living off the land.



## Mountain forests under threat

Deforestation in mountains is driven in large part by population growth and the expansion of commercial agriculture. As competition for land in mountain areas has increased, smallholder farmers have been forced to clear marginal lands on steep slopes unsuited to agriculture. Pastoralists send animals to graze on mountain pastures and forested land, often destroying ground cover, compacting the soil, preventing natural regeneration and complicating reforestation. Commercial logging and mining have also contributed to a loss of forest cover in mountains.

In addition, national policies regarding natural resources management can increase the vulnerability of mountain forests. For instance, in mountain areas where land tenure is unclear and the distribution of land inequitable, farmers, pastoralists, foresters and others whose livelihoods depend on protecting mountain forests may have no say in how their forests will be managed. The sustainable stewardship of mountain forests is compromised when local communities are not accorded any responsibility or authority in the governance of forest resources.

## The way forward

Work must be undertaken at all levels of governance to ensure that mountain forests are protected so that they can, in turn, protect us and provide essential goods and environmental services.

At the community level, it is fundamental that mountain people, the people with the greatest stake in maintaining the health of mountain forests, have a say in how local forest resources are managed, have clear rights to access the land and water they need to carry out their stewardship responsibilities effectively and are properly recompensed for their work.



Forest managers have to apply best forest practices to ensure that mountain forests can carry out their essential protective functions.

At the national level, policy-makers need to be aware of the important protective and productive functions provided by mountain forests and to integrate this knowledge into policies that address broad national objectives, including national strategies for disaster risk reduction, water resource management and climate change adaptation and mitigation.

At the global level, delegates involved in international meetings related to disaster risk management, water quality and other environmental issues need to accord mountain forests a prominent place in their discussions. This is especially true in United Nations Framework Convention on Climate Change (UNFCCC) negotiations and the implementation of activities related to Reducing Emissions from Deforestation and Forest Degradation (REDD+).



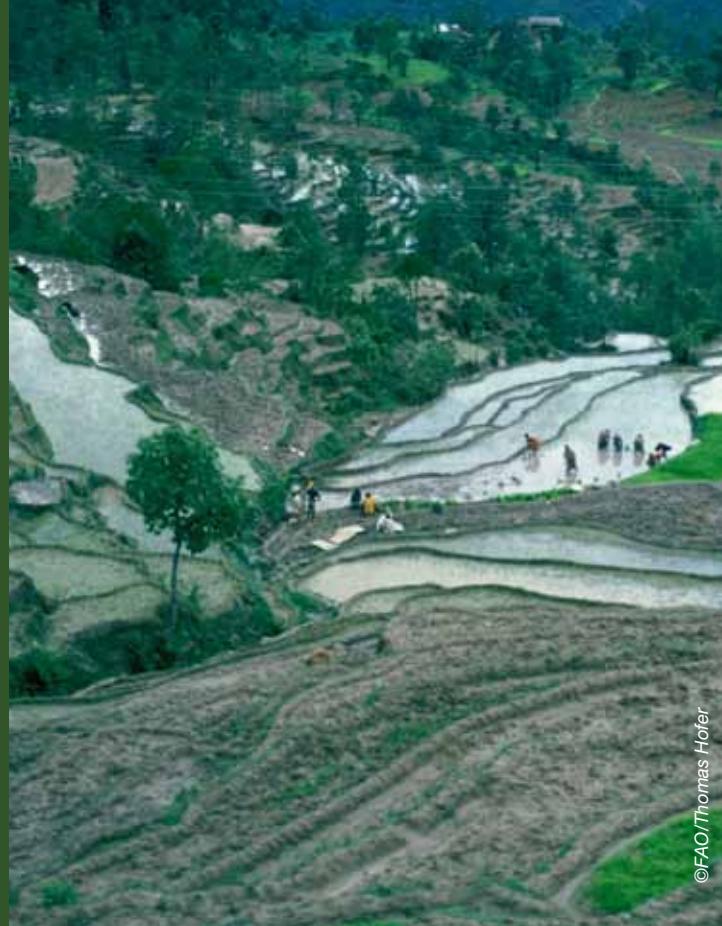
## Combating climate change in Nepal

In 2009, the International Centre for Integrated Mountain Development (ICIMOD), collaborating with the Federation of Community Forest Users, Nepal (FECOFUN) and the Asia Network for Sustainable Agriculture and Bioresources (ANSAB), initiated the Forest Carbon Trust Fund (FCTF). The FCTF is a pilot project for establishing a governance mechanism for Reducing Emissions from Deforestation and Forest Degradation (REDD+) at the community level. It received seed money from the Norwegian Agency for Development Cooperation's (Norad) Climate and Forest Initiative.

The pilot project has designed and set up a payment system for sequestering carbon in Nepal's community-managed forests. Carried out in three watershed districts of Nepal, the project covered an area of over 10 000 ha, involved 105 community-managed forests and provided benefits to 18 000 households. The three participating districts were chosen in part because of their conservation work and in part for the inclusion of women, victims of caste-based discrimination, indigenous communities and other disadvantaged groups in community forestry user groups (CFUGs).

To protect local mountain forests and increase forest carbon stocks, the project has:

- introduced alternative energy technologies, such as biogas and improved cooking stoves;



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- supported the plantation of tree seedlings in the community and on private forest lands; and
- established improved grazing and forest fire management systems.

Calculations made by the CFUGs on changes in forest carbon stocks over two years indicated that a total of nearly eight million tonnes of carbon had been sequestered. The FCTF distributed US\$ 100 000 among the participating communities on the basis of their performance.

## Protecting the soil in the Plurinational State of Bolivia

In the municipality of Arampampa in the Bolivian Andes, a reforestation project, carried out by TUKUY, a local indigene organization, with supervision of the General Directorate of Forest Management and Development (DGGyDF) and the financial support from the Food and Agriculture Organization of the United Nations (FAO), has worked with local communities to confront the problem of soil degradation and erosion caused by loss of forest cover.



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In 2009 and 2010, the project team distributed over 60 000 tree seedlings of a variety of species to community groups in 20 communities. The reforestation activities covered nearly 40 hectares. Although it will be crucial to continue monitoring the plantations, initial surveys indicated that the survival rate was high, at 80 percent.

To help ensure the project would have a long-term impact, capacity-building was a critical component. Training workshops involving members of the local Forestation Support Committees and local community members were organized, along with a series of 12 workshops in primary and secondary schools. More than 700 students participated in the school workshops, which covered such topics as how to grow tree seedlings in a greenhouse, how to transplant the seedlings and how to protect natural resources and care for the environment. In addition to the seedlings planted by the local communities, nearly 4 000 seedlings were distributed to the schools to establish their own forest plots.

## Safeguarding the water supply in Sierra Leone

About 20 percent of Sierra Leone's population depend on the water resources stored in the mountainous terrain of the country's Western Area Peninsula Forest Reserve (WAPFoR). But the forest is threatened by charcoal and timber production, as well as agricultural and urban expansion. As these activities compromise the water retention and storage capacities of the tropical rain forest ecosystem, there is an increase in soil erosion, which, in turn, leads to sedimentation in dams, drastically reducing the amount of water that can be stored during the rainy season. Dams are the main sources of drinking water for the population of Freetown and surrounding communities.



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To help safeguard the country's water supply, the non-governmental organization, Welthungerhilfe, in association with the Forestry Department of the Ministry of Agriculture, Forestry and Food Security of Sierra Leone (MAAFS) and the Environmental Forum for Action (ENFORAC), has undertaken a project to help ensure that the WAPFR watershed is sustainably managed using participatory decision-making processes. Supported by co-financing from the European Union, the project began in 2009 and will continue through 2014.

The project's first priority was to draw up a new forest boundary for WAPFoR. The area within the boundary is categorized as national forest and is a no-go area for any sort of extraction of natural resources. Buffer zones, used for water supply, fuelwood collection and agroforestry, are demarcated as community forests. These forests are managed by community-based organizations under contract with the Forestry Department and Ministry of Lands, Country Planning and Environment.



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