

THE MOUNTAIN INSTITUTE'S MEDICINAL AND AROMATIC PLANTS PROGRAM

Improving livelihoods in Nepal's rural mountain communities since 2001



Transplanting seedlings of medicinal plants in Upper Arun, Nepal.

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By training highland farmers in sustainable agriculture methods, our Medicinal and Aromatic Plants (MAPs) Program offers a profitable alternative to traditional wild harvesting. This way of farming is helping mountain communities develop better livelihoods and a way out of poverty while also restoring fragile ecosystems.

The Mountain Institute's MAPs Program focuses on cultivation and conservation. It currently encompasses 100 villages in mountainous districts of Eastern, Central and Western Nepal. Farmers are from Dhading, Rasuwa, and Gorkha north of Kathmandu and from Ilam, Sankhuwasabha, Taplejung, and Panchthar in Eastern Nepal, and from parts of the Karnali region in Far-Western Nepal.



HARVESTING MEDICINAL AND AROMATIC PLANTS (MAPs)

An Age-Old Practice in Nepal's Mountains

As key ingredients in Ayurvedic medicine and Traditional Chinese Medicine, these valuable plants have been transported and traded across boundaries for centuries. Chiraito (*Swertia chirayita*), for instance, has antibiotic properties and is used in remedies for over two dozen ailments. The cancer drug Taxol, is extracted from leaves of the Himalayan Yew (*Taxus wallichiana*), known in Nepal as Loth salla. This drug is used to treat ovarian, breast, lung, prostate, esophageal, and other cancers.

An Alternative to Wild Harvesting

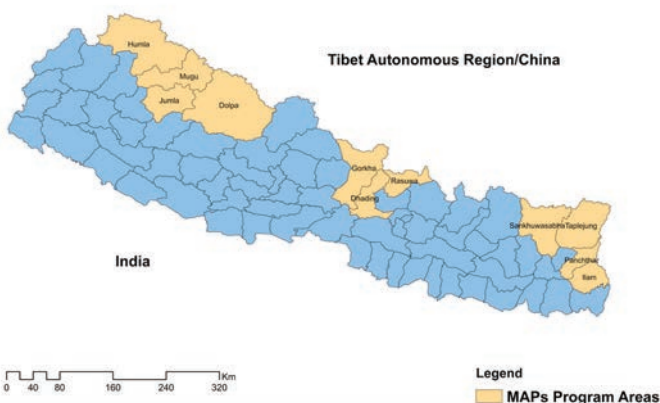
For centuries local people have used medicinal plants for healing ailments and have traded them for cash income to buy everyday necessities and to celebrate festivals. The MAPs trade has been a part of subsistence livelihoods in Nepal's mountain villages for a very long time. But in the last few decades, the intense pressure from wild harvesting increased, causing a threat to these plant species' survival.



Leading women farmers show how Chiraito can be planted on the risers in between terraces.

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Medicinal and Aromatic Plants (MAPs) Program Areas
The Mountain Institute



Working in partnership with remote mountain communities, our goal was to offer nature-based solutions that protected fragile mountain environments, improved local livelihoods and gave a specific alternative to unsustainable wild collecting. The Mountain Institute's MAPs Program has been successful in that effort and we aim to strengthen and expand this program in more mountain districts.

Training Farmers Since 2001

The Mountain Institute's (TMI) Himalayan Program has partnered with local groups since 2001, training highland farmers to grow medicinal and aromatic plants on their own plots and on degraded land. Mountain farmers have adapted fast, learning to cultivate on the edges of steep mountain terraces and inter-cropping medicinal plants side-by-side with other cash and food crops. MAPs farmers have also trained their neighbors and relatives which has greatly increased our reach and impact.

To promote fair trade and improve marketing, TMI has also helped establish MAPs Cooperatives to assist farmers in developing their businesses and maximizing income from harvests.

The income from selling MAPs helps stem the tide of young people (mostly men) leaving remote mountain communities to find work. It enables families to make improvements to their homes and allows parents more money for their children's education. These earnings have brought some migrant workers back home and dissuaded others from leaving in the first place. Our MAPs program is helping keep families together— an important aspect of making mountain villages more resilient.

IMPRESSIVE RESULTS FROM HIGHLAND FARMERS

Investing in Mountain Farmers and Their Future

TMI invests in mountain people and provides step-by-step training for growing MAPs. This creates direct economic incentives for farmers. But the process of training, cultivating and selling also builds relationships, and relies on trust from the communities. Beyond direct training sessions, TMI sponsors site visits so that new farmers can learn from established MAPs farmers in other districts. During the past five years, over 60 farmers from Rasuwa, Dhading, Gorkha and Sankhuwasabha districts visited successful MAPs farms in Ilam in Eastern Nepal where TMI's MAPs Program was launched in 2001. This farmer-to-farmer approach has been a source of motivation and inspiration for newer farmers, giving them a chance to learn directly from their peers.

Farmers Cooperatives, Training and Certification

Our MAPs program established and strengthened four MAPs Farmers Cooperatives with nine sub-units. We also set up 14 mobile and temporary MAPs storage depots and collection centers. To enhance the value of harvested plants, TMI provided compressor machines to the Cooperatives. By compressing MAPs into compact bundles, farmers have less volume to transport and store, which lowers their overhead costs. Together with our local partners, TMI has offered specialized training for members that covered marketing, networking, quality control, value addition and processing, plus business development, planning and management.

TMI helped provide and distribute "MAPs Farmer Identity Cards" and "Product Origin Certificates" to over 460 farmers. These official certificates serve as proof that the farmers' MAPs products were

MAPs Program - By the Numbers

18,000 highland farmers are now trained in MAPs cultivation.

Farmers are growing MAPs in 11 mountain districts of Central, Eastern and Far-Western Nepal.

13 plant species are currently being cultivated.

35-40% of trained MAPs farmers are women.

2,500 hectares of private or degraded land are under cultivation.

The 2016 combined earnings from MAPs farmers from these districts totaled **US \$4,300,000.**

The income of individual farmers ranges **from \$300 to \$35,000 per year.**

2 farmers made over **\$35,000 each.**

1,024 MAPs farmers (**40%** women) participated in advanced level training in 2016 and 2017.

4 MAPs Farmers Co-operatives with **9** sub-units were established and strengthened.

14 mobile and temporary MAPs storage depots and collection centers established.

Over **460** farmers received official MAPs Farmer Identity Cards and Product Origin Certificates.

grown on private land and not harvested from the wild. Product Origin Certificates also help farmers get a break on government taxes when they sell and transport their products.

After the 2015 earthquakes, TMI provided key support for constructing strong, earthquake-resistant buildings for Cooperatives in Rasuwa and Dhading districts. These buildings house their offices, provide storage space for MAPs harvests and other crops, and have a multi-purpose room for community gatherings.

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MAPs farmers proudly show their Product Origin Certificates, Sankhuwasabha district.

BECOMING A MAPS FARMER, STEP BY STEP

Assess Potential

Our Institute's approach when considering a new area is to first conduct a reconnaissance and feasibility study to understand the climate, geography, ecology and socio-economic characteristics of the potential sites. We also assess current conditions—prices and value chain—for local medicinal and aromatic plants markets. Based on this study, and on the interests of area farmers, specific villages are chosen to implement TMI's MAPs program.

Village Meetings

Next, we conduct village-level meetings to build relationships and trust with local people. During these meetings, farmers are selected based on their interests, commitment, and suitability of the land to which they have access. We make special efforts to encourage women farmers to be engaged as well. "MAPs Farmers Groups" are



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Village level meetings and planning workshop in Dhading, Nepal.

then formed in each village. These groups take on the informal role of community-based monitoring. Forming such groups helps TMI conduct periodic reviews, and assists in identifying any problems. MAPs Farmers Groups also help develop solutions, as needed, in a collaborative manner.

Local Partners

TMI has a long history of working with local community groups and local non-governmental organizations (NGOs) because these groups have deep roots in our working areas. They are experts in the local culture, language and customs. Working in partnership with these local NGOs helps us become a trusted resource to the community and gives us an opportunity to build technical and institutional skills within each village. By strengthening local partners and training their local staff as our primary implementers, we keep program staffing small and cost-effective while expanding our reach to many remote communities. This approach keeps the momentum going forward since these small, local NGOs tend to continue working in their communities long after our initial projects are completed.

Specialized Training

Workshops begin with basics. Each trainee is given seeds for specific MAPs species and taught practical cultivation skills. Next, trainees develop a plan for how to take MAPs cultivation ahead in the next few years. New farmers join a small Farmers Group for support. By working together, group members can plan and monitor progress, discuss problems and resolve issues faced during MAPs cultivation. Farmers Groups also promote sustainable harvesting techniques and help curb over-harvesting in the wild.



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MAPs cultivation training session in Borang village, Dhading district.



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Transporting cultivated Chiraito after harvesting and packaging.

Our workshops have helped farmers establish and manage MAPs nurseries and market their valuable harvests. TMI's MAPs Program keeps farmers up to date about the specific legal provisions that apply to their harvests, cultivation on private land, and sales. Sustainable harvesting practices as a part of nature-based solutions, and policies for non-timber forest products are also included in TMI classes. We stress the detrimental effects of over-harvesting wild MAPs and encourage farmers to cultivate these plants on their own land. We also brief farmers on the penalties for illegal wild MAPs harvest and trade.

Planting

Farmers typically plant on degraded land surrounding their villages, or on terrace risers. In the case of some species, they even plant MAPs alongside other crops such as maize, soy beans or potatoes. Farmers typically plant saplings that have been grown in nurseries or sow MAPs seeds directly.

Harvest

Cultivating and harvesting medicinal and aromatic plants takes time. Species such as Chiraito, Satuwa and Nirmasi take between two to three years for the first harvest, after which farmers can harvest annually.

Monitoring MAPs Species in the Wild

Growing MAPs on private land takes pressure off these plants in the wild and lessens wild harvesting. From 2001-2010, TMI found an 80% cumulative improvement in wild MAPs populations relative to the baseline situation. We have developed guidelines for community-based biodiversity monitoring. Using a "citizen scientist" approach, we continue to support Community Forest User Groups, traditional healers, and local NGOs through technical guidance in ethno-botanical inventory and monitoring techniques.

Common Uses for Medicinal and Aromatic Plants

Atish (*Delphinium himalayai*) - root used to treat intestinal worms, fluid retention, poor appetite, fever, liver problems and insomnia; sedative. Safety precautions and careful processing prior to any use.

Bikhuma (*Aconitum spp.*) - tuberous roots are commonly used for rheumatic fever, painful joints and some endocrine disorders and to treat fever, colds and headaches. Aconitum tubers are used in herbal medicines only after safety precautions and careful processing.

Chameli (*Cardinocrinum giganteum*) Giant Lily - bulb is diuretic and used as a tonic for cough, fever and injuries. A paste of fresh leaves is used as a cooling poultice and applied to alleviate the pains of wounds and bruises. Roots used to treat dislocated bones.

Chiraito (*Swertia chirayita*) - whole plant used to treat fever, constipation, upset stomach, loss of appetite, intestinal worms, skin diseases and many types of cancer. Part of the drug **Taxol**.

Lothsalla (*Taxus wallichiana*) - for treating common colds, cough, fever, and pain. Its leaves and bark are the prime source of **Taxol**, a potent anti-cancer drug.

Okhar (*Juglans regia*) - leaves are used to treat constipation, chronic coughs, asthma, diarrhea, dyspepsia and skin ailments. Seeds used to treat low back pain, frequent urination, limb weakness, asthma, and stones in urinary tract.

Ok Alu (*Lilium nepalense*) - bulb is used as a tonic.

Pakhanved (*Bergenia purpurascens*) - root used to treat chronic bronchitis, dizziness, general physical feebleness, urinary and menstrual problems. The plant is a source of the drug **Bergenin**.

Satuwa (*Paris polyphylla*) - rhizome is used to treat fever and food poisoning. Root paste used for snake and poisonous insect bites.

Sugandhawal (*Valeriana jatamansi*) - roots used as a remedy for hysteria, hypochondriasis, nervous unrest, insomnia and emotional stress. Also for eye diseases, blood and liver ailments.

SUCCESS STORIES

We believe the best way to reduce poverty and encourage gender equity in mountain regions is through a sustainable development approach that integrates livelihoods with environmental and cultural concerns. Done right, mountain lives are improved, communities remain vibrant, and people downhill and downstream also benefit.

MAPs Income for Daughters' Education

Mrs. Mikma Chensi Bhote, of Chepuwa village in Sankhuwasabha district, attended our MAPs cultivation training in 2011. She then had an opportunity to visit a farm in Ilam where TMI piloted the MAPs Program in Eastern Nepal. She met the farmers in Ilam and felt inspired by their success. Since then, Mrs. Bhote earned an income of US\$ 200 from her first MAPs harvest of Chiraito (about 20 kilos) in 2013, followed by US\$ 700 in 2014 (200 kilos), and US\$ 2,000 in 2015, selling 400 kilos of Chiraito.

She uses the income from MAPs sales to pay for two of her daughters' education fees. One girl is studying in the district headquarters school and the other is in Kathmandu. Mrs. Bhote has also paid off a loan and purchased land where she lives with her husband, four daughters, and two sons.

She was the first woman to start MAPs cultivation in her village and has been a model for other village women in promoting MAPs farming. Mrs. Bhote serves as Chairperson of the "Chyathanga Mother's

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Mrs. Mikma Chensi Bhote of Chepuwa village.

Group," which is active in social work such as village cleaning and trail maintenance.

Farmer Turned Entrepreneur

The village of Kimathanka, near the Tibet border in Sankhuwasabha district, is a difficult, four-day walk from the nearest road head. Mrs. Phinsum Sherpa, 49 years old, is one of the leading MAPs farmers in this village. She produced 79 kilograms of Chiraito plants and generated US\$ 800 in income in 2015. With these earnings, she purchased a flour-grinding machine and has been running a grinding mill for millet, corn, barley, wheat and buckwheat flour. With the earnings from MAPs and her new enterprise, Mrs. Sherpa has been able to send her son to Kathmandu for Buddhism studies and one of her daughters to the district headquarters for higher education.

Mrs. Phinsum Sherpa of Kimathanka village.



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Mr. Jayaram Tamang, founding member of the SUJAMA Herbal Cooperative of Ilam.

From Wild Harvesting to a Better Livelihood

Mr. Jayaram Tamang of Ilam is a successful MAPs farmer and a founding member of the SUJAMA Herbal Cooperative, supported by TMI and leading MAPs farmers. Since receiving training from TMI in 2004, he has been cultivating 14 different plant species, intercropping with other food crops. He farms approximately two hectares of land, utilizing all of his own land plus the fallow lands of his brothers who have migrated abroad. In 2016, he produced 180 kilos of Chiraito and 7 kilos of Chiraito seeds. Mr. Tamang earned US\$ 700 from Chiraito plants and seeds in 2016. He also sold Cardamom directly to local traders, earning an additional US\$ 475.

Mr. Tamang now has a better livelihood from cultivating Chiraito for the herb and seeds. His income covers food for the whole year, other household expenses, and his children's education. This income has enabled him to send his children to a better school.

Besides being a successful entrepreneur, Mr. Tamang has been a role model for his children and other communities motivating and teaching them

to cultivate MAPs. In fact, he has taught about 4,000 farmers in neighboring villages and in far Western Nepal (Humla and Jumla). Many of these farmers still communicate with Mr. Tamang to learn about the different aspects of cultivating medicinal plants. His three sons and two daughters have also become MAPs farmers.

"Before, I would harvest Chiraito from the forest to earn about \$20 per year. After MAPs training, I started farming and MAPs have turned out to be a good source of income. Now, everyone in this village cultivates medicinal herbs. We had to wait two and a half years for the plants to grow to harvest our first crop. Now, I earn between US\$ 600 - \$800 per year depending on the rainfall and the size of the plants. My cultivated crop is nearby so we can watch closely and decide to sell when the quality and weight are best," says Mr. Tamang.

He adds, "Now, we have a product origin certificate from the government and get more money for each load of 40 kilos. We have just registered our organization, SUJAMA Herbal Cooperative, so that we can get a good price outside the village. We hear about the price from traders, the local FM radio, and our friends from the local NGO."

Twin Brothers Grow MAPs Instead of Migrating

Pem Gyalje Sherpa and Pem Cheeti Sherpa, aged 45, are twin brothers from Mabu village of Ilam district in Eastern Nepal. The twins had a very hard life in their early youth. They used to work as seasonal labourers in Sikkim, India for their livelihood. In 2004, when they returned to their home village during the off-season, they participated in MAPs cultivation training from The Mountain Institute. They decided to try MAPs farming with the Chiraito seeds they received during the training. After the successful first harvest and the income made from it, they were inspired and decided to continue. The twins have been cultivating MAPs since then on over 2.5 hectares of land.

As they continued farming, their life started to change slowly and significantly. With the income from MAPs, they bought land and built a new house in Sulubung, a more developed area compared to their previous village, Mabu. The brothers then got married to twin sisters, and the marriage expenses were also covered by their MAPs income. In recent years, they bought over 1.5 hectares of additional land in Maimajhuwa and Sulubung villages to expand their MAPs cultivation.

In the last year, they produced and sold over 2,400 kilos of Chiraito plants through SUJAMA MAPs



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Pem Gyalje Sherpa with his wife.

cooperative, making a total income of US\$ 10,800. This year, they produced 800 kilos of Chiraito and sold it to a local trader for a total of US\$ 4,530. At present, they have been cultivating Chiraito, Loth salla, Bikhuma and Satuwa.

The Sherpa brothers are seen as successful, model farmers in their area and are known as “Jaule Jadibuti” (Twins Herbs). Their success stories have been showcased in a number of local and national newspapers and they routinely share their knowledge with others interested in MAPs. The brothers have been a source of motivation to MAPs farmers from different parts of Nepal, who come to the twins’ farms during formal and informal site visits.



Pem Gheeti Sherpa of Sulubung, Ilam district.

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BENEFITS FOR ALL

When farmers can successfully grow, harvest, and sell medicinal plants for cash, they no longer need to rely on wild harvesting. This gives wild areas a chance to regenerate and saves wild plants from being depleted. The activities often associated with wild harvesting—grazing livestock in the forest while collecting plants and hunting—can have a devastating effect on fragile mountain environments. Conserving wild medicinal plants will help to keep the entire forest and pastureland ecosystem intact. Wildlife and humans both benefit from a healthier ecosystem.

Renewed Mountain Forests

By growing on private and degraded land, MAPs farmers have renewed over 2,500 hectares with 13 different plant species. Over 500 hectares of community forests, roadsides, religious sites, and alpine meadows have been planted with over a million seedlings of native tree and fodder species that were grown in locally managed nurseries and then planted out. Currently, we support Community Forest User Groups in planting native and other high-value tree species on approximately 50 hectares in remote mountain areas of Dhading, Gorkha and Sankhuwasabha districts.

Environmental Benefits - Upstream and Down

In the steep terrain of the Himalayan highlands, healthy forests are essential to limiting erosion. Standing plants and trees capture and store water, helping to sustain freshwater flow during the dry season while reducing flood risks in the rainy season. Downstream, millions of people in the northern Indian plains, one of the largest and most populous areas of irrigated agriculture in the world, depend in large part on water from Himalayan highlands. When the Himalayas supply too little water – or too much – many suffer, upstream and down.

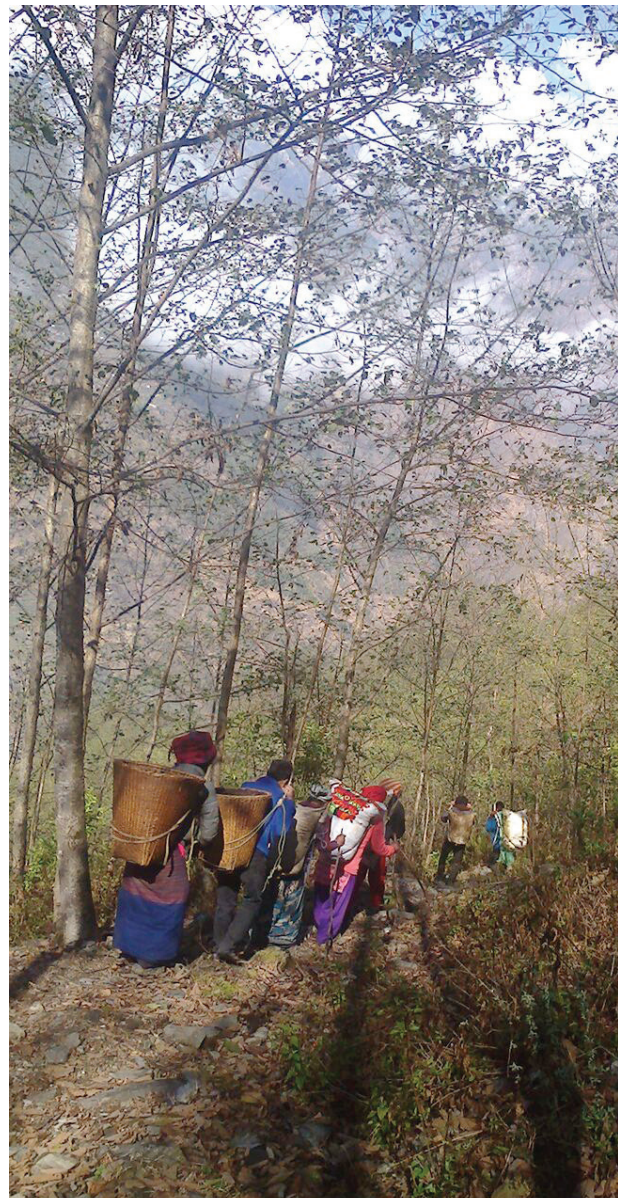
Scaling Up and the Path Ahead

Demand for medicinal plants from the Indian and Chinese markets far exceeds current supply and includes more than 100 species. We see a clear path to scaling up to 50,000 farmers in Nepal alone. What we have learned in Nepal can be deployed in other remote mountain regions. In fact, we have already started similar MAPs work in the Peruvian Andes.

Technical Assistance and Regional Support

We have developed considerable expertise in MAPs cultivation, harvesting, and marketing over the years. Beyond direct support provided to local partners, we have given indirect technical assistance to organizations and projects in seven other districts – Rukum, Rolpa, Dolakha, Okhaldhunga, Bhojpur, Ramechhap, and Sindhupalchok. Our advice and assistance has ranged from cultivation, seeds and species selection to marketing products. TMI's main MAPs expert, Karma Bhutia, has served as an advisor to the Himalayan Amchi Association, taught 200 farmers in Sikkim, and has been invited to provide technical advice in Mustang district and in Bhutan.

Jharlang villagers (Dhading) head into the community forest to collect soil for growing tree seedlings.



© HEED Nepal



Hatiya Village in Upper Arun Valley of Sankhuwasabha.

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AWARDS

The **“2008 Mountain Development Award”** from the Ministry of Forests and Soil Conservation was awarded for our “unparalleled contribution in the sustainable development of Nepal’s high mountains.”

A **“2005 Certificate of Recognition”** from the Department of National Parks and Wildlife Conservation, Ministry of Forest and Soil Conservation cites our “unflinching support extended in the field of biodiversity conservation and socio-economic development of buffer zone communities in and around Nepal’s protected areas.”

HOW TO SUPPORT OUR MAPs PROGRAM

We rely on support from foundations, companies and individuals to keep training mountain farmers. Please lend a hand by donating to our MAPs Program! Donations can be made via a secure link on our website: <http://www.mountain.org/how-to-help/>. Or feel free to contact our Himalayan Program directly. Our Kathmandu office info is detailed on the next page.

Online donations are processed via our secure Network for Good page.

Our MAPs Program also contributes towards the United Nations Sustainable Development Goals: Ending Poverty, Gender Equality, Actions for Climate Change Adaptation and Sustainable Ecosystems.



OVER 30 YEARS IN THE HEART OF THE HIMALAYAS

The Mountain Institute's programs in Asia started in the mid-1980's with the "Heart of the Himalayas" initiative. During this pioneering project, we established our signature, collaborative approach to community-based project design.

TMI helped establish two protected areas: the Makalu-Barun National Park in Nepal and the Qomolangma (Mt. Everest) Nature Preserve in the Tibet Autonomous Region of China. This was achieved by working hand-in-hand with local, mountain communities and fostering trusting, productive relationships between these communities and park managers. Our community-based approach has since become the cornerstone of all of our Institute's regional programs.

Over the course of three decades, we have helped conserve fragile ecosystems, preserve ancient cultures and have fostered sustainable livelihoods in remote mountain communities. Highlights include producing the first Sherpa language dictionary, restoring Pangboche Monastery, and hosting international exchanges on climate change adaptation between Nepali and Peruvian scientists, communities and policy makers. In partnership with the United Nations World Food Programme, we distributed more than 15,000 metric tons of food to food-scarce areas of western Nepal. TMI also helped establish more than 140 reforestation nurseries in Nepal, India and the Tibet Autonomous Region of China along with more than 400 Community Forest User Groups in Nepal.

Since the 2015 earthquakes in Nepal, TMI has worked with local partners to provide immediate relief and longterm rebuilding of both structures and livelihoods in three of the highest, most remote and worst affected districts. At present,

our Himalayan Program's signature initiative is the Medicinal and Aromatic Plants (MAPs) Program which has helped lift thousands of mountain farmers and their families out of poverty. We will also continue to support community and ecosystem resilience through our Mountain Ecosystem-based Adaptation Project.

ABOUT US

The Mountain Institute partners with mountain people to transform their livelihoods, protect their cultures and thus conserve vital natural resources for the planet. TMI is the only international non-profit focused solely on mountains worldwide, and actively dedicated to mountain communities and their unique environments.

LEARN MORE!

- 🏠 Please visit our website: WWW.MOUNTAIN.ORG. and check out our [Himalayan Program](#) web page with links to our [MAPs Program](#).
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Links to all are on our home page—just click the ❤️

PLEASE STAY IN TOUCH!

The Mountain Institute - Himalayan Program

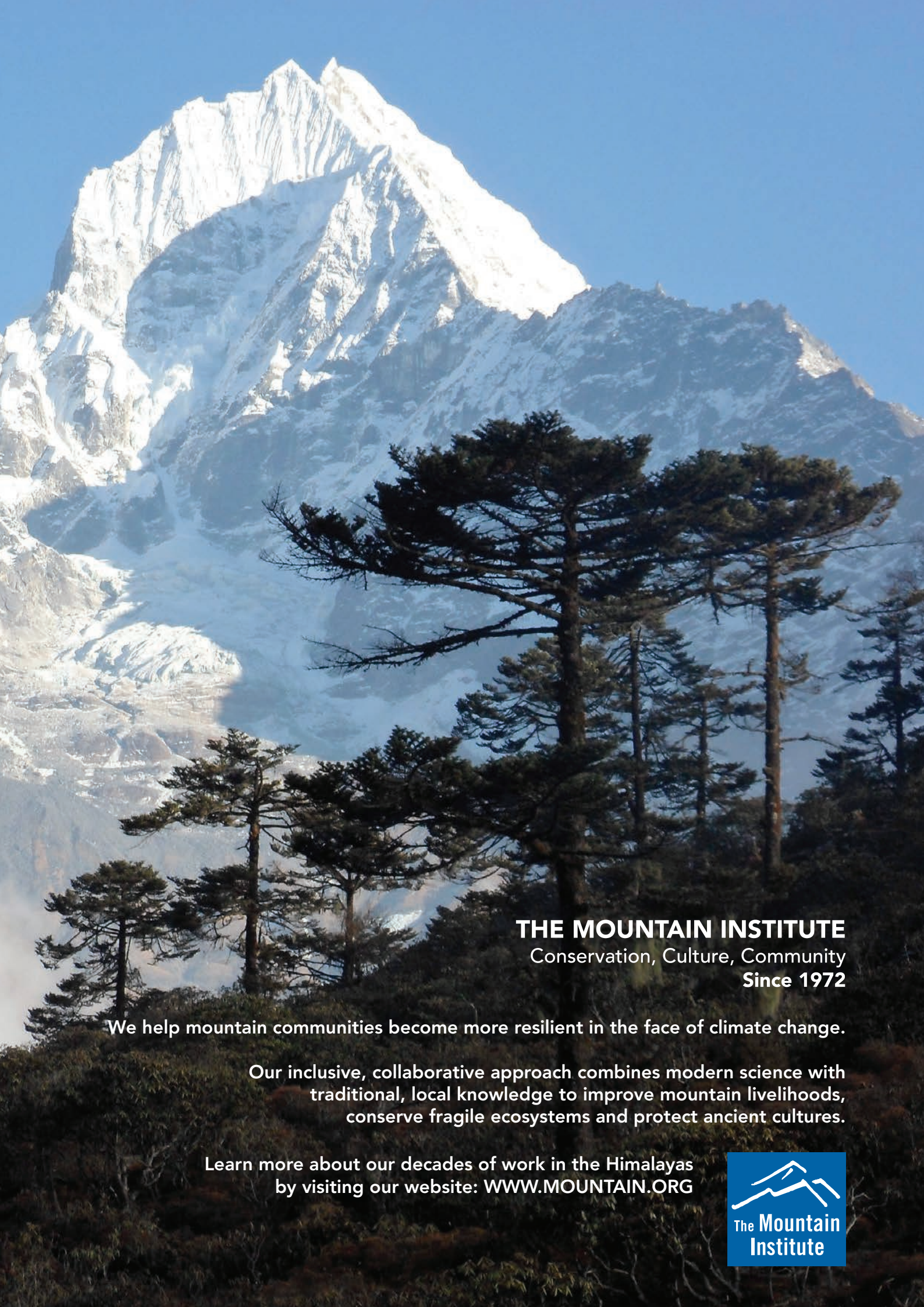
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THE MOUNTAIN INSTITUTE

Conservation, Culture, Community
Since 1972

We help mountain communities become more resilient in the face of climate change.

Our inclusive, collaborative approach combines modern science with traditional, local knowledge to improve mountain livelihoods, conserve fragile ecosystems and protect ancient cultures.

Learn more about our decades of work in the Himalayas
by visiting our website: WWW.MOUNTAIN.ORG

