

DEEP REGENERATIVE AGRICULTURE

IN THE HIGH-ALTITUDE MOUNTAIN REGION OF NEPAL

OVERVIEW

The project, **“Deep Regenerative Agriculture in the High-Altitude Mountain Region of Nepal”** (RegAgri* in brief) aims to improve agroecological resilience in the high-altitude areas of Nepal by promoting Indigenous knowledge, protecting native species and locally adapted, domesticated animals or landraces, and reviving the spiritual and traditional agricultural practices of local farmers.

By documenting the spiritual and cultural significance of traditional foods and demonstrating the high nutritional values and climate resiliency of both plants and livestock found in the high-altitude region of Nepal, the project seeks to increase knowledge and

promote deep regenerative agriculture across Eastern Himalayan region. This three-year project will be completed in July 2026. The project is funded by The Rockefeller Foundation and implemented by WWF in collaboration with three key partners:

- Government and technical partner: National Agriculture Genetics Resources Center (NAGRC) of the Nepal Agricultural Research Council,
- Academic partner: Lumbini Buddhist University (LBU), and
- Non-Government Organization (NGO) partner: Worldwide Nature Conservation Nepal (WWN).

CONTEXT AND RATIONALE

Mountain communities in Nepal have a deep and spiritual connection to the land and its biodiversity that blends with their Indigenous and Buddhist beliefs. Traditionally, these communities have relied on buckwheat, wheat and barley as staple crops; yak and mountain goat for their high protein values; and traditional medicinal plants for their health benefits and livelihoods.

A study by the Government of Nepal has revealed that high-mountain regions of Nepal such as the Mustang and Manang districts are particularly vulnerable to climate change, with comparatively lower adaptive capacity.¹ Increasing temperatures in these regions are particularly concerning to the agriculture-dependent mountainous communities, as they could disrupt the seasonal cycles of planting and harvesting, threaten food and nutrition security, affect livelihoods, and cause serious health impacts.

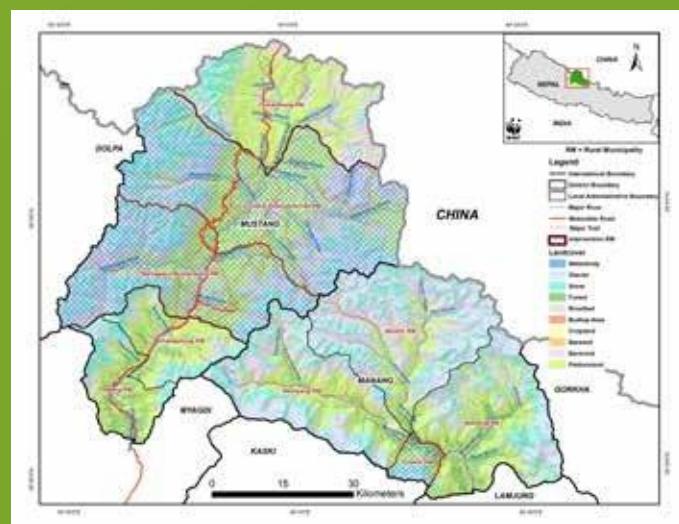
Indigenous knowledge and farming practices promote effective management of the natural environment and can play a crucial role in enabling effective adaptation to climate change by improving their agro-ecological resilience.² However, with increasing numbers of men migrating seasonally for work, the burden of preserving these knowledge and practices often falls on the women of these communities. Further, with the absence of male labor, women often resort to intensive agricultural techniques, so that Indigenous and traditional knowledge is at risk of disappearing. Such changes in practices also contribute to environmental degradation and loss of biodiversity, particularly agrobiodiversity. Thus, this project is based on the regenerative agriculture approach which offers various ecosystem benefits and supports climate resilience in the food system.

WHAT IS REGENERATIVE AGRICULTURE?

The Rockefeller Foundation defines regenerative agriculture as a holistic approach to production grounded in ecological wisdom that prioritizes soil health and well-being of people, animals and the environment. Crucial for climate resilience, it fosters biodiversity, improves water quality, reduces greenhouse gas emissions, and centers on the welfare of farmers and land stewards.

THE PROJECT AREA

The project is focused on the high-altitude mountain region of Nepal, with demonstration sites in the Mustang and Manang districts of Gandaki province. These districts are selected based



*In Nepali, “गग्री” (gagri) refers to a traditional pot or vessel, typically made of brass, copper, or aluminum. It is commonly used in rural households for fetching and storing water. Gagri here is symbolized as a vessel that holds Indigenous knowledge, cultural and spiritual practices.

¹ MoFE. (2021). Vulnerability and risk assessment and identifying adaptation options in the agricultural and food security. Ministry of Forests and Environment, Government of Nepal. Kathmandu, Nepal.

² Sherpa, T. O. (2023). Indigenous people's perception of indigenous agricultural knowledge for climate change adaptation in Khumbu, Nepal. *Frontiers in Climate*, 4, 1067620 ; Stadlmayr, Barbara & Roschinsky, Romana & Choudhury, Pranab & Simon, Sunil & Baroi, Augustin & Costa, Sukleash & Rahaman, S.M.Zillur & Manandhar, Chintan & Basnet, Tej & Paudel, Rama & Chand, Pradiptha. (2016). Approaching Resilience. Practices and innovations supporting smallholder climate change adaptation.

on their high climate vulnerability and endangered agricultural genetic resources. These districts are the sites of some remaining communities with rich Indigenous knowledge, practices and beliefs passed down through generations by ethnic groups such as the Gurung, Thakali and Lopa, who predominantly practice Buddhism.

Mustang is bordered by the Tibetan Plateau and is sheltered by some of the world's tallest peaks. With a total area of 3,574 sq km, it is one of Nepal's most remote and sparsely populated districts. The majority of the population in Mustang is dependent on agriculture and animal husbandry as their major source of livelihoods, along with tourism. Manang lies adjacent to Mustang, with a total area of 2,246 sq km. It receives the lowest amount of rainfall in Nepal as it lies north of the Himalayas, which block the monsoon winds. The people of Manang are mainly dependent on animal husbandry for their livelihoods, while some are also engaged in agriculture and tourism.

PROJECT ACTIVITIES

1 Documenting Nepal's food biodiversity and climate change impacts in the high-altitude mountainous areas: The project will document nine crop species, three livestock species and three medicinal plant species endemic to Manang and Mustang districts. This in-depth study will include analyzing each species' chemical composition and documenting their cultural, spiritual and climate resilient characteristics. An inventory will be developed, and

PROPOSED AGRICULTURAL SPECIES FOR IN-DEPTH STUDY

Crops: Barley, Naked Barley, Tartary Buckwheat, Common Buckwheat, Bean, Wheat, Amaranth, Foxtail Millet, Proso Millet, Finger Millet, Rapeseed

Livestock: Yak, Cow (Lulu), Mountain Goat

Medicinal Plants: Himalayan Orchid, Sea Buckthorn, Mtshe Idum

genetic resources will be prioritized in close consultation with the local communities including profiling the species for attributes such as nutrient value, cultural and local uses, and so on. The project will also contribute data on the nutrition value of these species to the Periodic Table of Food Initiative (PTFI).

2 Establishing seed gene banks for prioritized species: The project will strengthen the existing Gene Bank of NARC to ensure the preservation of prioritized species. It will conduct a feasibility study for establishing a gene bank at the community level as an onsite safety backup as well as for conservation in the Manang and Mustang districts, which are in remote areas far from the capital.

3 Creating demonstration sites and pilot sites to grow prioritized species in ways that are climate responsive: The project will collaborate with local farmers and communities to set up two demonstration sites and additional pilot sites based on detailed protocols with site specific guidelines. By mobilizing and incentivizing farmers as citizen scientists, and by implementing participatory genetic improvement, the project will analyze and document the agro-morphological, phenological, and seed characteristics of each of the prioritized species and will assess their diversity and relevance in relation to climate change.

4 Organizing a convening at Lumbini Buddhist University with experts from the Eastern Himalayas: The project will bring together experts from Eastern Himalayan countries such as Bhutan, Nepal and India to exchange knowledge on deep regenerative agriculture as a climate change adaptation intervention, and to learn and share the project's progress, successes and lessons learned. The gathering will explore the possibilities of creating a regional gene bank for long-term resilience and conservation of the genetic resources in the region.



EXPECTED RESULTS

- The agricultural diversity of crops, livestock and medicinal plants found in the high-mountain regions of Nepal will be conserved, analyzed and documented for food, nutrition and health security, with a focus on their spiritual and sociocultural values, both within Nepal and globally through participation in the Periodic Table of Food Initiative (PTFI).
- Prioritized species will be conserved for future use both in Nepal and across the Eastern Himalayan region, to preserve them from climate change impacts and natural disasters through the establishment of community gene banks.
- The diversity of Indigenous food sources will contribute to the biodiversity of pollinators and other species that will benefit at the landscape conservation level.
- Improved understanding of local plants and livestock species will increase their market value for local communities and can be linked with value chains and markets more broadly.
- Understanding and documenting the cultural values associated with specific foods and preparation methods will contribute to maintaining the socio-cultural integrity of Nepal and of the region.
- Documenting the customary spiritual and cultural values of foods and medicinal plants will contribute to preserving Indigenous and spiritual traditions, since specific varieties of foods are intertwined with the spiritual values of caring for nature.

INFORMATION ON THE ORGANIZATIONS IN THE CONSORTIUM



National Agriculture Genetics Resources Center (NAGRC), commonly called Genebank was established in 2010 under the Nepal Agricultural Research Council (NARC) for the conservation and utilization of all agricultural genetic resources (AGRs), including the six components of agrobiodiversity (crop, forage, livestock, aquatic, insect and microorganism) and four subcomponents (domesticated, semi domesticated, wild related species and wild edible species). AGRs are managed through four strategies (ex-situ, on-farm, in-situ and breeding) and by deploying the 101 Good Documentation Practices across the country. AGR repositories Include seed banks, tissue banks, DNA banks, field genebanks, community genebanks, livestock farm genebanks, aqua pond genebanks, agro gene sanctuaries, and so on. All AGRs are managed scientifically and made available for research, study and production.

Find more information about the organization in <https://genebank.nare.gov.np/>



Lumbini Buddhist University (LBU) is an autonomous public institution of higher learning established in 2004 with the mission to educate the people of Nepal and enrich the global learning community through the application of core Buddhist values and to promote World Peace. LBU is committed to fostering research-oriented studies of Buddha's teachings and education from a multi-dimensional perspective, with a focus on practical applications of Buddhist education. LBU provides a supportive space for individuals to explore their spiritual dimensions while pursuing academic excellence.

Find more information about the organization in <https://lbu.edu.np/>



Worldwide Nature Conservation Nepal (WWN) is an NGO established in 2015, dedicated to preserving Nepal's natural heritage and promote sustainable development focusing on key themes such as climate adaptation, water management and eco-friendly enterprise development. WWN aims to foster ecological integrity and support local communities for a sustainable future by building capacities of local institutions and civil society organizations and by promoting Indigenous knowledge and practices through research and collaboration.

Find more information about the organization in <https://wwnnepal.org/>



WWF is the world's leading independent conservation organization, established in 1961 and currently operating in more than 100 countries. WWF initiated work in Nepal with a rhino conservation program in 1967, with an office formally operational since 1993. Currently, WWF Nepal works in five thematic areas – Wildlife, Freshwater, Forests, Climate and Energy, and Governance. WWF Nepal's focus has progressed from its localized efforts in conservation of a single species to a new horizon of landscape-level conservation encompassing national, regional and global scales of complexity. WWF Nepal identifies climate change as an active driver of emerging issues in freshwater, forests and wildlife, and it is working with all tiers of government, partners and local communities to address this critical issue through innovative and synergistic actions.

Find more information about the organization in <https://www.worldwildlife.org/> (WWF US), <https://www.wwfnepal.org/> (WWF Nepal)