AGA KHAN FOUNDATION

CLIMATE RESILIENCE SNAPSHOT

Regenerative Farming

Producing sufficient, affordable, and nutritious food in a changing climate remains one of the world's greatest challenges. Higher temperatures, unpredictable rainfalls, more prevalent pests and diseases greatly affect global agricultural productivity and the livelihoods of countless communities around the world. Regenerative farming helps communities to adapt to climate change.

By contributing to climate change adaptation and mitigation, **regenerative farming has the potential to enhance socioeconomic and climate resilience.** Global food production and land management have a substantial carbon and environmental footprint. The Agriculture, Forestry, and Other Land-Use (AFOLU) sector contributes around 20% of global greenhouse gas (GHG) emissions.[1] Conventional farming tends to rely on ploughing, synthetic pesticides, and chemical fertilisers, which degrades soils, contaminates water resources, and threaten biodiversity. Regenerative farming aims at reversing these harmful effects, making it a powerful tool in both climate adaptation and mitigation.

1 - https://www.ipcc.ch/report/ar6/wg3/chapter/chapter-7/#:~:text=The%20AFOLU%20(managed%20land)%20sector,Table%207.1;%20IPCC%20AR6%20WGI%7D

What is regenerative farming?

The Aga Khan Foundation (AKF) views regenerative farming as the systemic combination of operations, techniques, and practices in agriculture, livestock, aquaculture, and forestry that restore soil, water, air, and biodiversity resources, and foster their ecosystem services.

A globally agreed definition of regenerative farming does not exist. It is identified by the Intergovernmental Panel on Climate Change (IPCC) as a sustainable practice that "can be effective in building resilience of agro-ecosystems".[2] It is scientifically proven that regenerative farming improves soils and water availability, restores biodiversity and ecosystem health, and supports carbon sequestration.

Regenerative farming calls for a paradigm shift where farmers move beyond being caretakers of crops and livestock to becoming stewards of their soil, water, and the natural eco-system. It is a holistic approach that ultimately builds the resilience of farmers against climatic, environmental, and economic changes.

The AKF's approach on regenerative farming is human centric and has 3 fundamental objectives:

1. to increase yields and income,
2. to reduce cost and labor,
3. to strengthen socioeconomic and climate resilience.

2 - https://www.ipcc.ch/srccl/#:~:text=Executive%20Summary,-Land%20degradation%20affects&text=Land%20degradation%20adversely%20affects%20people's,developing%20countries%20(medium%20confidence).

AKF's approach to regenerative farming

The adoption of regenerative farming at AKF builds on decades of experience working with farmers. AKF's approach to regenerative farming varies across contexts and has three main characteristics. It is:

1

Locally rooted in that it actively adapts to agroecological conditons and identified needs.

2

Gradual and flexible in that it works with farmers gradually, over a period of several years. Farmers have the freedom to select practices that suit their needs from a range of options known as Small Integrated, Innovative, and Impactful Modules (SIIIMs).

3

A combination of indigenous knowledge with cutting-edge agronomic science.

AKF's regenerative farming transition is aimed at supporting farmers to increase productivity and income, decrease costs and labour, and build climate and economic resilience.

Progress is measured along a continuum, based on livelihood, biodiversity, and resilience outcomes.

Key regenerative farming principles

AKF helps farmers to transition to regenerative farming by supporting them to adopt seven key principles (the first three are considered non-negotiable).

100% use of local and natural inputs: Use of naturally derived, locally available, organic material, such as bio-pesticides and bio-fertilisers as well as native seeds and crop varieties, all non-GMO, to help control pests and diseases, improve the productivity and soil fertility. Bio-pesticides and bio-fertilisers are cost effective, safer for human health, biodegradable, and are less harmful to other plants and animals on the farm including beneficial microorganisms in the soil. In India, many small farmers in dry areas that do not have livestock or biomass for bio-inputs, access local bio-input resource centres that were set up by farmer entrepreneurs or women's groups.

Tree integration: The integration of trees and shrubs within farmland helps improve soil quality, prevent erosion, provide shade and additional souces of food, timber, and medicine, while also increasing biodiversity and sequestering carbon. It also includes intentional planting or thinning of trees and shrubs to allow for grazing of livestock i.e. agro-silvo-pastoral systems.

Livestock integration: The combination of crop cultivation with on-farm livestock rearing to create an efficient system where the outputs of one system benefit the other. This can include planting of feed and fodder crops alongside other crops, re-using manure as natural fertiliser, and grazing of livestock on crop fields in between planting cycles. Integrated crop and livestock systems increase biodiversity and improve soil health. They also enable farmers to use their land more efficiently and diversify their income sources.

Optimised water and energy use: This includes practices that help to conserve and use water and energy more efficiently including through the incorporation of solar energy, biogas, rainwater harvesting, and precise irrigation. Such practices help farmers reduce their costs and adapt to climate impacts such as reduced rainfall and increased temperatures, while restoring natural resources and enhancing ecosystem services. Incorporating clean forms of energy also helps to mitigate against climate change.

Maximised biodiversity through multiple crop associations and rotations: Practices that help to increase the diversity of plants and microorganisms on farmland. Crop rotation involves alternating the types of crops grown in a particular field. Crop associations means planting different types of crops together in ways that benefit each other through their interactions. One example of crop association is having complex mix-cropping systems where up to dozens of crop species are grown simultaneously. Crop associations and rotations help to maintain permanent soil cover, preserve nutrients in the soil, break pest and disease cycles, increase soil fertility, increase the diversity of beneficial microorganisms, and improve overall soil health. They also increase productivity, diversify income, and strengthen farm resilience.

Minimised greenhouse gas emissions: Practices that help to minimise the amount of greenhouse gases emitted on farms and that sequester carbon. These can include maintaining permanent soil cover, direct seeding, planting perennial crops (those that produce for more than one growing season without replanting), and the use of biochar. Biochar is a powdery charcoal obtained through the pyrolysis of organic matter that is later infused with nutrients and microorganisms. It acts as an artificial humus that maintains soil life even under extreme climate conditions.

Minimised soil disturbance: Practices to reduce the extent to which soil is inverted or deconstructed. These range from using light cultivation methods that avoid turning the soil to zero tillage and direct seeding, where the soil is not disturbed. These practices help farmers to grow healthier crops and improve yields. They enhance soil health and cover by preserving soil structure, reducing erosion, promoting microbial activity, and retaining organic matter.

Benefits of regenerative farming

AKF's approach to regenerative farming brings about a multitude of benefits to both communities and the environment and includes the following:

Improved soil health: Regenerative farming practices increase soil organic matter and nutrient cycling. They prevent soil degradation, improving overall overall soil quality, while also retaining moisture and reducing the need for irrigation.

Enhanced biodiversity: The use of diverse and complex crop associations, the use of natural inputs, and animals that are natural pest predators increase biodiversity within farms.

Higher and more consistent yields: In the long term, regenerative farming practices lead to higher yields as they improve soil health. Sustainable use of the land allows wild habitats to regenerate and reduces the pressure on natural resources.

Crop harvests can grow by 7% to 300% in the first year, depending on the type of crop.

Reduce cost and labor: The use of natural and locally available inputs, on-farm recycling, and water and energy use efficiencies, significantly reduce costs for farmers. Cost savings can be invested in other livelihood activities.

Farmers that use natural, organic, and local fertilisers and pesticides are saving up to 95% of their input costs.

Strengthened climate and socioeconomic: Regenerative farming practices help farmers spread their risks and reduce their vulnerability to socioeconomic shocks and to climate extremes. One example of this can be the use of heirloom genetic material that tends to be more drought tolerant than most improved commercial varieties.

Quality of life: Regenerative farming practices improve long-term quality of life for farmers through increased yields and incomes, improved food security, and reduced costs and labor.

All farmers who fully switched to natural methods said they felt healthier afterward.

Regenerative Farming in Practice

The *Maendeleo* regenerative farming initiative in Africa

Maendeleo
African Regenerative Farming

Maendeleo, meaning ‘progress, development, or improvement’ in Swahili, is AKF’s flagship regenerative farming initiative in Africa. Initiated in Kenya in 2022 jointly with Industrial Promotion Services (IPS), part of the economic development arm of the Aga Khan Development Network (AKDN), Maendeleo is supporting farmers to gradually transition to regenerative farming to increase their profitability and improve their climate resilience. **Maendeleo provides regenerative farming extension services to farmers in an innovative way - through Green Champions. These are young people who have been trained and have the skills to provide step-by-step, hands-on, technical support to farmers.**

In Kenya, Green Champions are recruited from Kenya’s National Youth Service (NYS), which supports youth skilling. AKF trains the Green Champions on its Regenerative Farming Curriculum over a one-week intensive bootcamp and coaches them over a period of two years. In turn, the Green Champions use the Farmer Field School (FFS) approach to engage groups of smallholder farmers on regenerative farming. AKF’s Regenerative Farming Curriculum comprises of 30 Small Integrated, Innovative, and Impactful Modules (SIIIMs) and continues to grow. AKF builds farmer capacity on a variety of SIIIMs by ensuring farmers are empowered to choose which ones best answer their needs and adapt them to their specific context.

The initiative has now successfully expanded to other countries:
Egypt, Madagascar, Mozambique, Tanzania, and Uganda.

The Maendeleo Regenerative Farming Initiative places emphasis on reaching and empowering women – skilling young women and building the resilience of women farmers.

Despite women being the primary users of natural resources and being more vulnerable to climate and environmental change, extension services often do not adequately reach rural women. Maendeleo works with women farmers to identify the best learning environments that work for them, such as women-only groups.

In addition, the majority of Green Champions are women. This not only up-skills young women to be technical experts on regenerative farming but also increases the engagement of women farmers in the community.

After two years, Green Champions are gradually replaced by more permanent Anchor Farmers – successful practitioners who have been selected by their community peers for this role. The majority of Anchor Farmers are women.

Regenerative Farming in Practice

Supporting increased access to regenerative farming inputs

Obtaining natural inputs locally can be challenging and can hinder the transition to regenerative farming. Farmers may not be able to easily source natural and native varieties of seeds and bio-inputs.

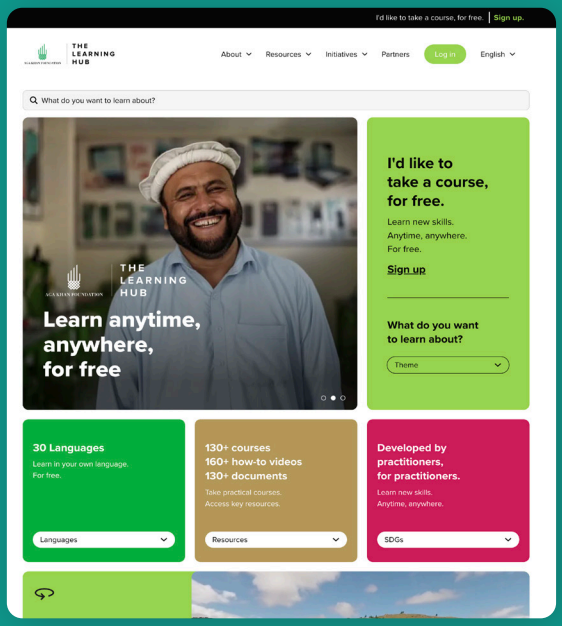
Although AKF works together with farmers to develop and produce simple, locally adaptable recipes for natural pesticides, fertilisers, and fungicides, not all farmers are able to produce these inputs by themselves.

It is for these reasons that in **India**, the Aga Khan Foundation's Rural Support Programme in India (AKRSPI) and the Aga Khan Foundation India (AKFI) are supporting women's groups to set up enterprises that manufacture bio-inputs, with 90% produced by women.

These bio-input enterprises address increasing demand, reduce farmer costs, and provide profitable income-generating activities for women in rural communities.

AKF is replicating a similar model in both the **Kyrgyz Republic** and **Pakistan** where it piloted farmer-produced bio-inputs with farmer groups run mostly by women. The farmers in the pilots reported positive results including reduced costs and improved health and quality of produce.

In **Madagascar**, AKF provided support to farmers within Community-Based Savings Groups to support the transition to regenerative farming such as cultivating rice and establishing dairy farms.



Resources

Learn more about regenerative farming on the AKF Learning Hub!

- Bana Grass
- Biofoliar
- Biospray
- Building climate resilience through regenerative farming
- Domestic ash and grey water
- Cocoa micro processing
- The Zanatany System