

# NATURE-POSITIVE SOLUTIONS: KENYA



INITIATIVE ON  
Nature-Positive  
Solutions

CGIAR's Nature-Positive Solutions Initiative achieved wide-ranging and comprehensive results in Kenya. Building on CGIAR's community seed banks, NATURE+ established two aggregated farms for cooperative permaculture, and rallied another community to implement nature-positive solutions on their small farms. The Initiative rolled out an app that guides farmers on native-tree reforestation and provides economic incentives for successful tree establishment. All work areas established the conditions for continued research, collaboration, value-chain development for neglected and underutilized crops, landscape restoration, circular bioeconomic activity and policy engagement in CGIAR's Research Portfolio 2025-2030.

The artwork below captures NATURE+ afforestation activity in semi-arid Turkana County to mitigate climate change and desertification and restore land and biodiversity. Credit: Douglas Gayeton, The Lexicon. Non-commercial use allowed with attribution.



# Contents

|  |          |
|--|----------|
| <b>The NATURE+ vision .....</b>  | <b>2</b> |
| <b>Issues NATURE+ addresses.....</b>                                       | <b>2</b> |
| <b>Kenya: specific challenges.....</b>                                     | <b>3</b> |
| <b>Key work package highlights .....</b>                                   | <b>3</b> |
| <b>Scaling nature-based farming and circular economy innovations .....</b> | <b>4</b> |
| <b>Kenya set to expand its nature-positive action .....</b>                | <b>5</b> |
| <b>Publications, news, and further reading.....</b>                        | <b>5</b> |

# What is Nature-Positive Solutions' vision?

The CGIAR Nature-Positive Solutions Initiative (NATURE+) was established to reimagine and implement innovative, scalable, and locally relevant solutions that enhance biodiversity, regenerate landscapes, and ensure sustainable food production. Through five work packages – **CONSERVE, MANAGE, RESTORE, RECYCLE** and **ENGAGE**, uniquely designed to be simultaneously deployed at research sites – the Initiative aims to help shift agriculture from being a driver of environmental degradation to becoming a net-positive contributor to nature. Through cross-sectoral collaboration, research, and community-driven interventions, NATURE+ integrates conservation, restoration, circular bioeconomy practices and policy science to create resilient agri-food systems.

Across all five countries, the **NATURE+ Initiative is transforming food systems by promoting biodiversity, regenerative agriculture, and circular economy solutions**. Each country's activities are tailored to its **specific environmental, economic, and social challenges**, but together, they create a **global model for nature-positive agricultural transitions**. The initiative demonstrates that **agriculture does not have to come at the expense of nature**, but instead, can be a **force for ecosystem restoration, climate resilience, and sustainable livelihoods**.

At the heart of NATURE+ is a commitment to fostering equity and inclusivity by empowering local communities, Indigenous peoples, women, and youth to lead sustainable food system transformations. By leveraging both traditional knowledge and scientific advancements, NATURE+ is creating pathways for regenerative agriculture, soil health improvement, agrobiodiversity conservation, and sustainable livelihoods across diverse landscapes. NATURE+ had almost 300 partners and stellar collaboration between CGIAR centers – Alliance of Bioversity International and CIAT, International Water Management Institute, International Potato Center, International Center for Agricultural Research in the Dry Areas, and the International Food Policy Research Institute.

# What issues does NATURE+ address?

The global food system faces pressing challenges that threaten ecosystems, food security, and human well-being. NATURE+ worked to address the following key challenges:

- **Biodiversity Loss:** Agricultural expansion and monocultures have led to the loss of native species, reduced ecosystem resilience, and decreased agricultural productivity. The initiative promotes tree-based restoration and conservation of native crops to counteract this trend.
- **Land Degradation:** Unsustainable farming practices and climate change exacerbate soil erosion, loss of fertility, and desertification. NATURE+ focuses on soil health restoration and nature-positive farming methods to reverse degradation.
- **Food and Nutrition Insecurity:** While food production has increased, nutritional diversity has declined, leading to malnutrition and diet-related health issues. NATURE+ integrates neglected and underutilized species (NUS) into food systems to improve dietary diversity and resilience.
- **Climate Change:** Unpredictable weather patterns, prolonged droughts, and floods are affecting agricultural productivity. The initiative supports climate-resilient farming techniques, water management, and tree planting for carbon sequestration.



- **Circular Bioeconomy Gaps:** Agricultural waste is often underutilized, leading to environmental pollution. NATURE+ promotes bio-based solutions such as composting, biochar production, and biogas generation to close resource loops and enhance sustainability.
- **Lack of Inclusive Policy Support:** Many countries lack enabling policies for sustainable agriculture and nature-positive solutions. The initiative works with governments and stakeholders to integrate nature-positive strategies into national policies and action plans.

## Kenya: specific challenges

Kenya faces **rapid land degradation, food insecurity, and a shift away from traditional nutritious crops**. Kenya also faces **rural labor shortages** and **climate-change-induced** obstacles to productivity. **Inequalities between genders** persist and smallholder farmers are often indebted due to the high cost of industrial inputs. Accessing value chains is also a challenge. NATURE+ helped address these pressing issues with **agroecology, community-led land restoration, and nature-based circular bioeconomic models**. Special focus is placed on **aggregated farming models, native tree restoration, and women-led circular bioeconomy businesses**, addressing both environmental and social challenges.

## Key work package highlights

**CONSERVE:** Supported community seedbanks; promoted uses of neglected and underutilized species (NUS) to improve conservation status; integrated tools to document and analyze real-time biodiversity data.

**MANAGE:** Implemented aggregated land models for nature-positive agriculture; helped guide improvements to seed banks including value-addition equipment; explored development of value chains for NUS.

**RESTORE:** Deployed the My Farm Trees app to guide and incentivize native tree restoration; added key data on the functional traits of native trees to the Diversity for Restoration tool. Both digital tools are proving key to increasing the success of restoration projects.

**RECYCLE:** Scaled circular bioeconomy innovations with women-led recycling businesses; piloted community-led BSF larvae farming on the aggregated farms and at a model farm; trained farmers on BSF larvae farming to support a nature-positive transition away from industrial fertilizers, which often damage soil, and to create a low-cost animal feed to also reduce smallholder costs and promote circularity.

**ENGAGE:** Conducted research on the hidden social and environmental costs of food; explored games-based research for aggregated farming; had recommendations included in county development plans. The work will support policy development and also sets new standards for community-facing research techniques.

Kenya was a key hub for pioneering nature-positive solutions across multiple sectors and deploying NATURE+ work package action simultaneously at research sites. Community needs and engagement were central to the Initiative's success. **CONSERVE** deployed tools allow

farmers, researchers, and citizen scientists to document and analyze real-time biodiversity data to inform conservation efforts. **MANAGE** implemented two aggregated farm projects, bringing together smallholder farmers to manage tiny parcels of neighboring land parcels, which were highly degraded. The pioneering work promotes cooperative implementation of nature-positive solutions and allows farmers access to economies of scale while promoting biodiversity conservation, and reversing land degradation. **RESTORE** deployed the My Farm Trees app, which provides digital guidance and economic incentives for farmers to restore land with native tree species. Additionally, researchers gathered critical data on native trees to better inform restoration activities based on the trees' functions and traits. **RECYCLE** worked with women-led recycling businesses to scale up circular bioeconomy innovations, including BSF larvae farming for sustainable compost and animal feed. This low-cost, high-return activity is expected to make significant contributions to land restoration, productivity and circular economic activity. **ENGAGE** examined the hidden social and environmental costs of food, revealing that externalities account for 35% of food output value, with labor-related issues being major contributors. It also developed games-based research to explore how farmers can collaborate on aggregated farms. The work package's research will contribute to ongoing policy work to support nature-positive activities in Kenya.

## Scaling nature-based farming and circular economy innovations

Kenya's NATURE+ activities hold particular significance for land restoration, food security, and economic empowerment. The Initiative is scaling up agroecological practices through the aggregation of smallholder farms, allowing farmers to restore degraded land while benefiting from economies of scale. The My Farm Trees (MFT) app is a digital innovation that incentivizes smallholders to restore land with native species, ensuring community-driven reforestation. Additionally, the focus on women-led circular economy businesses—including briquette-making and food waste recycling—provides new income streams while reducing environmental waste. Work with women also leads to social and economic empowerment. These interventions are critical in a country where continued land degradation, food insecurity, and climate vulnerability are pressing concerns. About **2,400 local participants** engaged in planting trees on **700 hectares** under MFT. At least **150 farmers participated** in either land aggregation or through a shared demonstration plot for nature-positive implementation and scaling. Community seed banks, and their improvements, **engaged with countless farmers, researchers, policymakers** and other stakeholders. Dozens of women were involved in the Initiative's circular bioeconomy activities at different sites.

### Key significance of results

- Strengthens **food security** by integrating **underutilized traditional crops into local food systems**.
- Enhances **land restoration efforts** through **community-led tree-planting initiatives**.
- Expands and empowers **women-led bioeconomy enterprises**, creating **new sustainable economic opportunities**.
- Reduces farmers' **dependency on industrial farm inputs**, helping them decrease expenses, increase profit margins and **simultaneously benefit the environment**.
- Builds **community collaboration** on highly fragmented and degraded land that may otherwise be abandoned or remain in cycles of declining productivity.

# Kenya set to expand its nature-positive action

The NATURE+ experience in Kenya strongly suggests the country will continue to support and implement nature-positive activities from farm to national policy levels. The Initiative expects Kenya to expand nature-positive farming models, improve community-driven conservation, and integrate true-cost food policies into decision-making. Circular bioeconomy programs will scale, and reforestation incentives will increase through digital tools. These efforts will enhance food security, economic sustainability, and climate resilience. Under the CGIAR Research Portfolio 2025-2030, NATURE+ predicts continuity and growth of its core activities in Kenya, underpinned by their level of success to date. In particular, researchers see considerable room for growth in the sustainable use of neglected and underutilized species (NUS), through increased capacities of community seed banks, wider-scale planting, and access to NUS-based value chains. The farm aggregation model already shows the extent to which communities can cooperate to implement nature-positive solutions and should serve as a model that can be adapted to more communities. The Initiative envisions continued collaboration with communities and other stakeholder – particularly on science-informed, incentive-driven restoration and on research priorities that will support Kenya’s restoration goals and address many of its pressing challenges.

## Publications and further reading

The following is a brief list of key published highlights from NATURE+. For comprehensive lists, please view the work package reports [CONSERVE](#), [MANAGE](#), [RESTORE](#), [RECYCLE](#) and [ENGAGE](#).

Additionally, readers can review the majority of NATURE+’s 370 outputs, outcomes and other advances between 2022-2024 on the [CGIAR Results Dashboard](#).

Also, the [NATURE+ repository on CGSpace](#) contains more than 300 items.

### Publications

The true costs of food production in Kenya and Viet Nam - [Read here](#)

Nature-Positive Post-Harvest Seed Practices for Sustainable Community Seed Bank Development in Kenya - [Read here](#)

Investment climate assessment for circular bioeconomy - review of national policies and strategies in Kenya - [Read here](#)

Circular bioeconomy business models - recovering food products to reduce agricultural waste: cases from Burkina Faso, India, Kenya and Vietnam - [Read here](#)

Nature+ in Kenya: Soil baseline report for Kenya - [Read here](#)

Seeding African Forest and Landscape Restoration: Evaluating Native Tree Seed Systems in Four African Countries - [Read here](#)

Fostering gender equity in Nature-Positive Solutions - Strategies for inclusive and sustainable transformation - [Read here](#)

How policies influence smallholder farmers' access to and use of genetic resources in three East African countries - [Read here](#)

Ecosystem services may provide large economic values in Kenya and Vietnam: A value transfer application based on results from a systematic literature review - [Read here](#)

Promising strategies to enhance the sustainability of community seed banks - [Read here](#)

Small-scale farming, gender relations and resource allocation: Barriers to adoption of nature-positive solutions in Western Kenya - [Read here](#)

Photography exhibit (with The Lexicon of Sustainability): Nature-Positive Solutions and CGIAR: A pop up exhibit - [See here](#)

## **News and videos**

News summary: NATURE+ media strategy in Kenya delivers widespread news coverage, influences narrative on nature-positive agriculture, and increases Initiative visibility - [Read here](#)

Video: Women in Kisumu turn waste to wealth - [Watch here](#)

News (KTN News Kenya): Kisumu farmers discover affordable livestock feed solution through farming of black soldier fly - [Watch here](#)

News: Aggregated Farms set for Permaculture - [Read here](#)

News: IUCN and Alliance of Bioversity International & CIAT showcase new tools and supports for restoration at CBD COP16 - [Read here](#)

Video: The high, hidden social and environmental costs of food in Kenya - [Watch here](#)

Webinar: How much does food really cost? NATURE+ seminar delves into the question - [Watch here](#)

## **Blogs**

Telling the NATURE+ stories, hundreds of photographs at a time - [Read here](#)

How women are leading the agroecology revolution in Kenya - [Read here](#)

Gendered perspectives on nature-positive solutions: insights from small-scale farmers in Kenya - [Read here](#)

Underutilized yet important wild edible plants threatened in Kenya - [Read here](#)

Why are these Kenyan farmers embracing nature and biodiversity? - [Read here](#)

Initiative's first nature-positive farms are a community effort in Kenya - [Read here](#)

Understanding Soil Biodiversity - [Read here](#)

NATURE+, partners, highlight need for soil sampling on farms in Kenya - [Read here](#)

Turkana, Kenya: Reaping Immense Benefits of Vegetables Production - [Read here](#)

Promoting permaculture for sustainable food systems and environment conservation - [Read here](#)

Pitching for impact: The journey of agri-tech innovators in Kenya - IWMI - [Read here](#)

From informal to formal: Empowering women in circular bioeconomy business in Kenya - [Read here](#)

What is the real cost of food? NATURE+, IFPRI aim to add up a reality-based food bill - [Read here](#)

The high social and environmental costs of food in Kenya detailed in new research - [Read here](#)

Global leaders in true cost accounting for food share research at COP16 event hosted by CGIAR's NATURE+ - [Read here](#)

Ecosystem services may provide large economic values in forests in Kenya and Vietnam - [Read here](#)



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CGIAR is a global research partnership for a food-secure future. CGIAR science is dedicated to transforming food, land, and water systems in a climate crisis. Its research is carried out by 13 CGIAR Centers/Alliances in close collaboration with hundreds of partners, including national and regional research institutes, civil society organizations, academia, development organizations and the private sector. [www.cgiar.org](http://www.cgiar.org)

We would like to thank all funders who support this research through their contributions to the CGIAR Trust Fund: [www.cgiar.org/funders](http://www.cgiar.org/funders).

To learn more about this Initiative, please visit [this webpage](#).

To learn more about this and other Initiatives in the CGIAR Research Portfolio, please visit [www.cgiar.org/cgiar-portfolio](http://www.cgiar.org/cgiar-portfolio)

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