Innovation Factsheet - ICRAF

Restoration of degraded land for food security and poverty reduction in East Africa and the Sahel: Taking successes in land restoration to scale

IFAD
Investing in rural people

CATEGORY 1


© IFAD/Nilza Utali

Research in development with farmers and ICT-based tools through interactive innovation co-creation and co-learning models for scaling NRM and CC adaptation and mitigation solutions, enhancing agricultural production and value chains and human and socio-economic capital

A | Innovations to take successes in land restoration to scale in East Africa and the Sahel – ICRAF

PROJECT TITLE

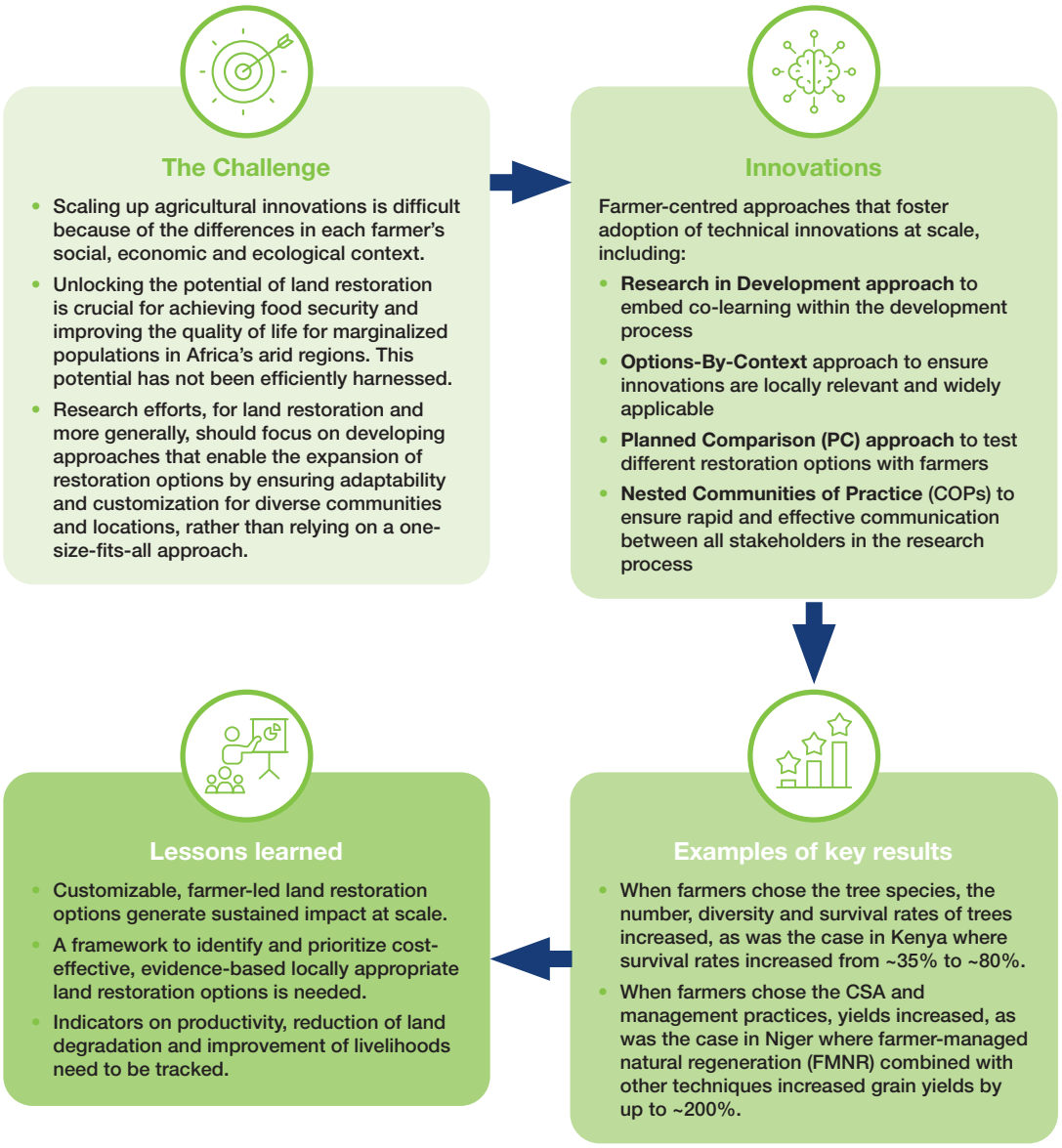
Restoration of degraded land for food security and poverty reduction in East Africa and the Sahel: taking successes in land restoration to scale

COUNTRIES

Ethiopia, Kenya, Mali, Niger (2015-2020)

IMPLEMENTING INSTITUTION

World Agroforestry



Overview

A key constraint to scaling up agricultural innovations is the fact that the ecological, economic, sociological and institutional context varies from household to household. While the reasons for poor adoption are many, there is no silver bullet. **Locally relevant restoration options that will work for different people in different places are urgently needed.** Therefore, this project used and promoted innovative farmer-centred approaches to scale up land restoration techniques and practices that constitute innovations to the target populations (as described below and in the resources provided for more information), to achieve its goal of reducing food insecurity and improving the livelihoods of people living in African drylands by restoring degraded land and returning it to effective and sustainable tree, crop and livestock production systems, thereby increasing land profitability and landscape and livelihood resilience.

The innovations

The project developed innovative ways to achieve scaling of land restoration techniques and practices through a co-learning approach that accelerates the development impact by embedding research in, for example, methods to document and monitor the experiences of farmers and then adapt the technologies to local contexts. The research developed a model that operates through engagement with key development partners, including IFAD country programmes, NGOs, EU country programmes, governments, universities and the private sector. By monitoring interactions among research and development partners, the innovation tracked the way research results and tools were used by stakeholders. Such dialogues, which take place through nested communities of practice, help development actors and researchers understand each other's needs and expectations and facilitate the generation of timely research outputs that can be incorporated into the development cycles.

The farmer-centred approaches – **Research in Development, Options-By-Context, Planned Comparisons (PCs) and nested communities of practices (COPs)** – foster adoption at scale of the technical innovations that work best for each group of target farmers in specific contexts. The **land restoration techniques and practices** promoted included agroforestry and tree planting, farmer-managed natural regeneration, community-based rangeland management, pasture management/exclosure productivity improvement, communal *kallo* improvement (augmented bush-thinning), pest control, planting basins, soil-water conservation measures, short duration and re-seedling, micro-dosing of inorganic fertilizers and manure, and planting basins with manure. The farmer-centred approach and land restoration techniques promoted in the project's implementation sites form **specific bundles or packages of innovations** that enhance the outcomes (**figure 1**).

Benefits to rural communities

In Kenya, agroforestry and tree planting PCs that considered smallholder farmers' preferences based on their needs, constraints and specific contexts resulted in **increased tree cover and species diversity** (13 species compared with 7 initially), a **significant increase in tree survival for the seedlings planted** (from around 35 per cent to around 80 per cent in 2019); **successful planting and growing of over 50,000 trees**, which constitutes a **three-fold increase in tree cover** (from 1-3 to ~9) and tree diversity at farm level, and a significant contribution to Kenya's 2019 "National strategy for achieving and maintaining over 10 per cent tree cover by 2022". The project increased household (HH) income through the sale of tree products and provided HHs with access to improved nutrition from the high-value fruit trees. In addition, maize and legume yields were two to five times higher in planting basins than they were for control farms. Cowpea yields increased from two to over four times higher than controls. Farmers reported increased food security and income due to the higher yields.

Initial results from the participatory gender assessment suggest changes are occurring in HH decision-making and labour patterns. Women have become increasingly involved in farm management decisions, and they participate in development projects and agricultural training.

In Niger, evaluation of a farmer-managed natural regeneration scheme, coupled with micro-dosing of organic and inorganic fertilizer within legume intercropping, led to an increase in grain yields of between 30 and 48 per cent. Scaling up bio-reclamation of degraded lands in Niger aimed to convert degraded crusted soils into productive lands to improve food production and reclaimed 175 hectares of degraded land.

Figure 1: The co-learning process of implementing planned comparisons on the ground

Source: Adapted from ICRAF. 2020. Planned Comparison. https://regreeningafrica.org/wp-content/uploads/2020/01/Planned-Comparisons-2020_Land-Restoration-Full-Brief_compressed.pdf

In Mali, production of grafted fruits is contributing to HH nutrition and increased income from fruit sales in local markets. The use of fertilizer micro-dosing and earth banks has doubled crop yields and increased HH incomes by 40 per cent. These households are now able to meet their cereal food requirements throughout the year.

In Niger, intercropping millet with legumes increased millet grain yields between 30 and 48% compared with the pure millet stand at Zinder and Tillaberi. **However, the application of manure and micro-dosing of fertilizer increased yield ~200%** and biomass ~150%**. In 2018, the planned comparisons were modified to meet farmers' needs and scaled to 1,200 households and included FMNR. Compared to farmers' practice, the application of FMNR increased millet grain yields by 140%. The combined application of FMNR and micro-dosing mineral fertilizer associated with manure produced the highest yields across all five regions. Given the lack of mineral fertilizer, which is a real constraint for small farmers, the application of FMNR with micro-dosing of small quantities of manure in millet/cowpea intercropping systems could be an alternative.**

Lessons learned

Nested COPs capitalize on the multiple learning opportunities across stakeholder groups and thus increase uptake of information and interventions. Key elements of the communities are structured facilitation and documentation, which allow for effective sharing, sustainability and the scaling up of options, while also providing valuable insights that can be adapted for project management.

On-farm workshops with farmers provide a more congenial co-learning environment than traditional workshop facilities at hotels. The importance of closing the learning loop to keep information and evidence flowing across the project is another key lesson from the intervention. This keeps motivation high and ensures sustainability of impact. Another key lesson learned is the importance of research in the development approach to encourage co-learning with evidence.

Scaling up and sustainability

A key consideration for scaling up is the strong engagement of multiple stakeholders, from solution prioritization to evidence generation and interpretation, all of which contribute to the durability of impact. Successful scaling up requires the creation of a framework to identify cost-effective, evidence-based and locally appropriate land restoration options that are visible, measurable and scalable. Such a framework should be able to measure impacts on key indicators, including agricultural productivity, reduction of land degradation and improvement of livelihoods. The evidencing and communication of such impacts is expected to create the necessary political commitment, investment and social momentum to both sustain and further promote the project's customized land restoration options, thereby generating sustained impact at scale.

An uptake survey conducted by the project demonstrated that farmers not engaged in the PC were learning about the basins from farmers engaged. In 2019, some 737 new farming HHs were implementing the planting basins, and reported increased yields. Over 75 per cent of farmers engaged in the planting basin in Kenya expressed excitement to continue to expand the number of basins on their farm. Farmers are reporting increased food security and income from increased yields, and most notably, decreased reliance on food aid.

RESOURCES

ICRAF. 2016. *Guidelines for identifying and designing planned comparisons*. ICRAF Nairobi, Kenya. https://apps.worldagroforestry.org/sites/default/files/outputs/Planned%20comparison%20guidance%20note_VIP4FS_Final_4.pdf

ICRAF. 2020. *Restoration of degraded land for food security and poverty reduction in East Africa and the Sahel.* Brief. https://regreeningafrica.org/wp-content/uploads/2020/01/Planned-Comparisons-2020_Land-Restoration-Full-Brief_compressed.pdf

IFAD. 2019. *Catalogue of Innovations*. *Enhancing Smallholder Agriculture and Food System Resilience*: East and Southern Africa, 41-44. https://www.ifad.org/en/web/knowledge/-/publication/innovation-catalogue

Sinclair, F. and Coe, R. 2019. The options by context approach: a paradigm shift in agronomy. Experimental Agriculture, 55(S1): 1-13. doi:10.1017/S0014479719000139

Winowiecki, L.A. and Sinclair, F.L. 2020. *Nested Communities of Practice (CoP): Co-learning and sharing lessons learned to scale farmer centered restoration options in East Africa and the Sahel.* Nairobi, Kenya: World Agroforestry. https://www.worldagroforestry.org/file-download/download/public/20440

Contact details

IFAD: Paxina Chileshe, p.chileshe@ifad.org; ICRAF: Leigh Winowiecki, l.a.winowiecki@cgiar.org; Fergus Sinclair, f.sinclair@cgiar.orgsharma@irri.org