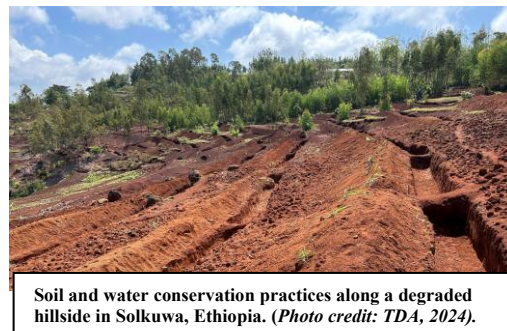


Introduction

Agriculture in Southern and Eastern Africa is increasingly threatened by climate change, with recurrent droughts, erratic rainfall, land degradation, biodiversity loss, and declining soil fertility undermining food security and rural livelihoods. Smallholder farmers, particularly women and youth, are disproportionately affected because of their dependence on rain-fed agriculture and limited access to resources that support adaptation. These challenges have intensified the need for integrated approaches that simultaneously enhance agricultural productivity, strengthen ecosystem services, and improve community resilience.



Soil and water conservation practices along a degraded hillside in Solkuwa, Ethiopia. (Photo credit: TDA, 2024).

The Nature Positive Food Systems for Climate Change Adaptation (Nature+) Program is a four-year program being implemented by the Canadian Foodgrains Bank and its nine-member organization across 10 partners in East and southern Africa with funding by the government of Canada. For the Nature+ program, NbS included practices such as conservation agriculture, soil and water conservation, assisted natural regeneration, and rangeland management. In three years, the program demonstrates how NbS can be combined with climate-resilient livelihood interventions to strengthen adaptation across diverse landscapes. Implemented across Ethiopia, Kenya, Mozambique, and Zimbabwe, the program adopts a landscape approach that integrates ecosystem restoration, livelihood diversification, community governance, and gender-responsive programming. By the end of 2025, the program had directly reached nearly 78,000 participants across ten landscapes, with women accounting for 56% of beneficiaries.

Monitoring, Evaluation and Learning (MEL) created a shared framework and common language while recognizing local realities and priorities. Learning was embedded throughout the MEL system, including learning how to measure complex changes, draw on existing practices while adapting them to program needs, and promoting learning exchanges among actors. The system combined established international development MEL practices with academia and connected previous experience with current measurement and learning priorities. This paper presents key MEL findings from the Nature+ program and discusses their implications for adapting agriculture to a changing climate in Southern and Eastern Africa.

Materials and Methods

The Nature+ program employs landscape-based implementation and MEL framework across ten project sites. While practices follow common principles, they are adapted to different local realities; not every partner measured everything in the same way. In Ethiopia, interventions placed a strong emphasis on watersheds. In Kenya, water was the entry point, with interventions focused on four contiguous landscapes along the Athi River basin. In Chimanimani, where Zimbabwe and Mozambique share a transboundary landscape around Chimanimani National Park, partners emphasized rangeland restoration with biodiversity-based livelihood opportunities, including non-timber forest products.

The program combines three interrelated components: Nature-based Solutions for ecosystem restoration, climate-resilient livelihood, and community governance for sustainable natural resource management. The MEL system uses both quantitative and qualitative approaches to assess program performance. Quantitative monitoring includes adoption rates, land area under NbS management,

trees grown, climate-resilient enterprises developed, and income generated by livelihood activities. Gender and age disaggregation is applied across all indicators to assess equity and inclusion outcomes.

Ecological monitoring combines biophysical measurements with participatory assessment approaches. Soil health was evaluated using a composite index incorporating microbial activity, soil aggregate stability, soil structure, and water infiltration characteristics. Biodiversity assessments measured plant and insect diversity within intervention and comparison sites. Landscape resilience monitoring applies a selective and adapted version of the Social-Ecological Production Landscapes and Seascapes (SEPLS) framework developed by the International Partnership for the Satoyama Initiative (IPSI), combining structured community assessments with qualitative narratives of environmental and social change.

Livelihood monitoring tracked climate-resilient enterprises including beekeeping, tree nurseries, poultry production, clean energy technologies, fodder production, shoat fattening, vermicomposting, and agroforestry enterprises. Economic performance was measured through participant numbers and average annual income generation. Learning and adaptive management were facilitated through farmer demonstration plots, peer-to-peer extension systems, village savings and loan associations, self-help groups, community governance structures, and partnerships with local governments and technical institutions. Data generated through MEL activities informed ongoing program adjustments and the scaling of successful practices across landscapes.

Results and Discussion

The Nature+ program demonstrates that integrating Nature-based Solutions with climate-resilient livelihoods can strengthen agricultural adaptation while generating environmental and socioeconomic benefits.

Adoption of Nature based solutions

During the baseline, 30% of participants self-reported at least one NBS practice. Although approximately 11,000 participants reported a certain level of familiarity at baseline, qualitative findings suggest that this familiarity was not consistently reflected in practice. During the 2nd year



Figure 1. Community-led terrace construction for soil and water conservation in the Fadhili Trust landscape, Kenya. Terraces reduce soil erosion, improve water infiltration, and enhance agricultural productivity while strengthening resilience to drought and erratic rainfall. The Nature+ MEL system documented widespread adoption of soil and water conservation measures as key Nature-based Solutions for climate adaptation.

of program reporting, field data confirmed 25,043 farmers had adopted one or two practices, more than double the baseline. By the end of Year Three, the number grew to 52,038 farmers exceeding the original program's target by 41%. Women represented 58% of adopters, reflecting deliberate efforts to

strengthen inclusive participation. Program interventions restored and sustainably managed 30,871 hectares of land, surpassing planned targets, while more than 17.9 million trees were planted. Soil and water conservation structures, including check dams, terraces, bunds, and water harvesting systems, contributed to improved water retention and reduced erosion across project landscapes.

Biodiversity

Biophysical monitoring provides encouraging evidence of ecosystem recovery. Conservation Agriculture intervention sites achieved a composite soil health score of 3.4 compared with 2.8 under conventional practices, while Farmer Managed Natural Regeneration sites scored 2.6 compared with 1.9 in non-intervention areas.



Figure 2. Half-moon restoration structures established in the UDO landscape, Kenya, to capture runoff, increase water infiltration, promote vegetation regeneration, and restore degraded rangelands. Such interventions demonstrate how ecosystem restoration contributes to climate-resilient landscapes and sustainable land management.

Source: Nature+ Annual Report Year 3 (Photo credit: UDO).

Biodiversity monitoring similarly demonstrated improvements in plant and insect diversity, suggesting that NbS contribute to healthier and more resilient agricultural ecosystems. These findings highlight the value of integrating ecological indicators into agricultural Landscape restoration interventions, including terraces, bunds, water

harvesting structures, and half-moon systems, improved water retention and reduced soil erosion across project sites. These community-led Nature-based Solutions strengthened ecosystem resilience while supporting agricultural productivity.

Climate resilient Livelihoods



Climate-resilient livelihood interventions have complemented ecological restoration by reducing household vulnerability to climate shocks. Forty climate-resilient economic initiatives were established across program landscapes, engaging over 29,000 participants, two-thirds of whom were women. Women were mostly involved in livelihood interventions as they provided immediate relief to household food needs, and the practices

mostly required less land, labour and majority were within the households easily accessible by women and other marginalized groups. Many of these enterprises provide adaptation co-benefits by promoting sustainable resource use, reducing pressure on natural ecosystems, and supporting diversified income sources.

Gender and social inclusion

Gender and social inclusion emerged as significant drivers of adaptation success. Women accounted for most participants in livelihood enterprises, NbS implementation, and savings groups. Youth participation substantially exceeded program targets, demonstrating that adaptation investments can create meaningful opportunities for younger generations. Village Savings and Loan Associations and Self-Help Groups strengthened access to finance, enabling households to invest in adaptation measures while reinforcing community cohesion and collective action.

Extension approach

The MEL findings also highlight important implementation lessons. Farmer demonstration plots and peer learning accelerated adoption by allowing communities to observe tangible benefits before investing in new practices. Integrated intervention packages combining NbS, livelihoods, financial inclusion, and governance proved more effective than isolated activities. Local adaptation of interventions to specific ecological and social contexts increased relevance and ownership, while strong partnerships with government extension services supported sustainability and scaling.

Challenges

Climate variability, labour requirements, insecure land tenure, competing demands for crop residues, and pressures from grazing and fuelwood collection continue to constrain implementation. The ecological gains achieved through restoration require sustained management and institutional support to prevent reversal. Long-term financing mechanisms, including carbon markets and payments for ecosystem services, may provide opportunities for maintaining restoration efforts beyond project lifecycles. Overall, the Nature+ experience demonstrates that adaptation to climate change should be viewed as a socio-ecological process requiring simultaneous investments in natural capital, human capital, and institutional capacity.

Conclusions and Outlook

The Nature+ program provides compelling MEL evidence that Nature-based Solutions can strengthen climate adaptation in agricultural landscape systems while improving rural livelihoods and promoting social inclusion. By integrating ecosystem restoration with diversified livelihood opportunities, community governance, and gender-responsive approaches, the program has demonstrated measurable improvements in ecological health, household resilience, and community adaptive capacity.

The findings suggest that successful climate adaptation requires more than technical agricultural innovations. Effective adaptation depends on landscape approaches that address ecological, economic, and social dimensions simultaneously. Investments in women and youth, peer learning systems, local institutions, and community finance mechanisms significantly enhance adoption and sustainability.

The program also illustrates the importance of robust MEL systems for climate adaptation. Combining ecological monitoring with livelihood and governance indicators enables practitioners to understand complex interactions within socio-ecological systems and to adapt interventions based on evidence.

Looking forward, sustaining and scaling these gains will require continued investment in long-term ecosystem management, strengthened policy support, improved market linkages for climate-resilient enterprises, and innovative financing mechanisms such as carbon markets and payments for ecosystem services. Future research should continue to monitor long-term landscape resilience outcomes and explore how integrated NbS approaches can contribute to national and regional climate adaptation strategies.

The Nature+ experience demonstrates that Nature-based Solutions are not simply conservation interventions but practical agricultural adaptation strategies capable of restoring landscapes, strengthening livelihoods, and building resilient food systems for Southern and Eastern Africa under a changing climate.

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