# Ethiopia

**Restoration Opportunities Assessment Methodology**

**ROAM**
COUNTRY
BRIEF

> *Approximately 73%, or 82 million ha, of Ethiopia's total land mass could benefit from tree-based landscape restoration.*

## Why forest landscape restoration (FLR)

One of the key problems faced by Ethiopia is land degradation, which threatens the country's economic and social development. By the mid-1980s, almost 50% of the highland area where the vast majority of Ethiopians live (about 27 million ha), was significantly eroded.[1] Major pressures on Ethiopian forests and drivers of land degradation include expansion of agricultural lands, demand for fuelwood, and overgrazing and trampling by livestock. Pastoralists and agro-pastoralists play an important role in the country, as approximately 85% of the population lives in rural areas and rely on rainfed agriculture for subsistence.

As a response to the above challenges, Ethiopia has launched several restoration initiatives over the past decades, from large- to small-scale, with the aim of enhancing food security and emergency food relief  such as the Strategic Investment Framework for Sustainable Land Management. FLR provides opportunities to access a range of forest products for local people, including fuelwood and non-timber forest products, improved water quality and availability, biological diversity, and options to increase the resilience and adaptability of existing agricultural systems.

## How to restore the landscape

To assess the restoration opportunities in Ethiopia, the Restoration Opportunities Assessment Methodology (ROAM) was applied in two phases with the financial support from: the German Federal Ministry for the Environment, Nature Conservation and

[1] Yesuf, M., Mekonnen, A., Berresaw, M. and Pender, J. (2007). Cost of Land Degradation in Ethiopia: A Critical Review of Past Studies.

## QUICK FACTS

- **Ethiopia pledged to restore 15 million ha by 2020 to the Bonn Challenge.**
- **Total of 82 million ha was identified as having the potential for tree-based landscape restoration.**
- **A total of 54 million ha was prioritised for cross-sectoral implementation.**

Nuclear Safety; the German Federal Ministry for Economic Cooperation and Development; Department for International Development of the UK Government; the government of Norway; and the Global Environment Facility. The first phase (2014–2015) supported by World Resources Institute (WRI), Clinton Foundation and IUCN, developed the potential countrywide tree-based landscape restoration options and maps. The second phase (2017–2018), led by WRI with technical support from IUCN, focused on Sodo Woreda and Meket Woreda at sub-national level. A stakeholder-driven and collaborative process contributed to data collection and analysis that were validated in technical workshops.

Eight tree-based landscape restoration options were identified countrywide:
1. Restoring secondary forests (i.e. afforestation/ reforestation);
2. Restocking degraded natural forests;
3. Agri-silviculture and agro-silvo-pastoralism;
4. Silvo-pastoralism;
5. Woodlots and home gardens;
6. Commercial plantations for products other than industrial roundwood;
7. Buffer plantations around protected areas and national forest priority areas; and
8. Tree-based buffer zones along rivers, lakes, and reservoirs.

Results show that all of the interventions can directly reduce soil erosion, siltation and sedimentation of water bodies, habitat fragmentation, loss of biodiversity and landslides, as well as promote sustainable income generation and climate change mitigation in Ethiopia.

National Tree-Based Landscape Restoration Potential and Priority Maps aim to guide decision-making on where tree-based interventions could benefit degraded and deforested areas and where cross-sectoral implementation could be prioritised.

# Cost-benefit analysis of FLR interventions in Sodo Gurage and Meket Woreda

From the cost-benefit analysis, the following results stand out for each Woreda (administrative district):

**Sodo Gurage (SNNP)**
The following restoration transitions were identified for degraded agriculture land (cropland); degraded forest plantations; degraded woodlots and home gardens; degraded natural forest (including shrublands); degraded non-timber plantations (bamboo); agroforestry practices (agri-silviculture or crops + trees); well-managed forest plantations; commercial bamboo plantations; woodlots and home gardens; and natural forests (through closure and restocking).

- The highest estimated total Net Present Value (NPV) was from forest plantations (ETB 2.2 million) (average benefit of about ETB 44,197.26 per ha per year); and woodlots plantations (ETB 2.7 million) (average benefit of about ETB 52,971.86 per ha per year) in 50 years.

- Estimated total NPV with environmental benefits of transitions from degraded land use were positive for all FLR options, specifically, transitions degraded agriculture to improved woodlots plantation or to forest plantations (50 years).

**Meket Woreda (Amhara)**
For degraded crop land, degraded forest plantation areas, degraded incense plantation, degraded woodlot plantation and home garden, degraded open accessed shrubs and bush land areas, the following restoration transitions were identified: agroforestry with wheat and Teff; improved management of incense, forest and woodlots plantation, and home garden; and development of closure with and without plantations/water and soil conservations.

- The highest estimated total NPV was found for incense plantations (ETB 7.6 million) (average benefit of about ETB 255,869 per ha per year); and home gardens (coffee with *Cordia africana*; ETB 6.7 million) (average benefit of ETB 223,700 per ha per year).

- Home gardens can generate average SOC levels of 41.5 tonnes per ha per year.

- By transitioning from degraded cropland to agroforestry, about 58.4 tonnes per ha (each) of soil can be conserved from erosion.

The total potential benefits of all restoration options were higher than the implementation costs for both regions, showing high potential opportunities to attract investments and funding for FLR.

# Recommended next steps

In order to scale-up restoration in Ethiopia the following recommendations were presented:

- Refine the preliminary national maps for tree-based landscape restoration to enhance productivity and functionality of degraded and deforested landscape at national scale; at the local level, more detailed biophysical information needs to be considered.

- To accelerate cross-sectoral implementation and collaborative efforts, develop a tree-based landscape restoration implementation strategy with the goal of achieving the Climate Resilient Green Economy Strategy and the 15 million ha commitment to the Bonn Challenge and AFR100.

**For further information:**
National Potential and Priority Maps for Tree-based Landscape Restoration in Ethiopia

**Resources:**
InfoFLR.org
iucn.org/forests

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