



Farmer-managed natural regeneration (FMNR) in the Upper West Region of Ghana

Fact sheet

Farmer Managed Natural Regeneration (FMNR) is a low-cost land restoration technique used to combat land degradation amongst subsistence farmers. In FMNR systems, farmers use pruning to encourage the growth of trees and shrubs that occur naturally in their fields. It involves selecting and protecting the most vigorous stems and managing threats to remaining branches from livestock, fire and competing vegetation. Trees and crops grown together provide multiple benefits to farmers, crops, climate, and wildlife. To analyse the impact of FMNR on Ghanaian farmers' livelihoods, several research institutions came together in 2019 to conduct a study as part of the ELD Initiative (see green box) and within the framework of the *Regreening Africa* project.

The Value of Land

The Economics of Land Degradation (ELD) Initiative, established in 2011, aims at transforming the global understanding of the economic value of productive land and improving stakeholder awareness of socio-economic arguments to promote sustainable land management. It provides ground-truthed tools and assessments that allow stakeholders to undertake cost-benefit analyses of land and land uses through total economic valuation, and to include this information in decision-making.

Background

In Ghana, around 135,000 ha of forest are lost every year due to activities like bush burning, cattle grazing, and mining. Deforestation rates are particularly high in the impoverished **Upper West Region**, where an increasingly variable climate and extreme weather events further contribute to the vulnerability of local farmers, who are seeing **soil fertility and yields progressively decline**.

With the assistance of the local NGO CIKOD, **FMNR has been used by farmers since 2014 to regenerate degraded agricultural lands in the Lawra and Nandom districts** of the Upper West Region of Ghana. With the careful management and prevention of bush fires, FMNR counters traditional slash-and-burn practices, **whilst re-greening secondary forests, fallow lands, and farmlands**, and simultaneously **increasing crop yields and incomes of subsistence farmers**.

Results

The study's findings are highly encouraging. For example, data suggests that as tree density increases, so does the crop yield: through the use of FMNR and crop rotation, farmers can **increase the productivity of their cropland by over 80% within 5 years**. A typical FMNR farmer in the Lawra district has 33 trees/ha, compared to 13 for their non-FMNR counterparts, including 4 or more different tree species.

Furthermore, farmers undertaking FMNR are significantly better-off than conventional farmers – by replacing slash and burn practices with FMNR in association with crop rotations, farmers can earn **an additional 4 Ghanaian cedis (GHS) from enhanced forest and crop produce for every GHS invested**, or the equivalent of an additional €94 per year for an average, 2.3-acre farm.

FMNR communities are also considerably more **food secure and climate resilient** than those engaged in conventional farming, since they can harvest a **wide range of on-farm forest products** (fruits, nuts and pods) during the dry season when they would otherwise face food shortages. Farmers' incomes are diversified through additional goods like ebony fruits, shea nuts, dawadawa seeds, mango fruits, and fuelwood. Considering the high poverty incidence in this region, where more than 80% of the active workforce is employed in agriculture, investments into FMNR are promising strategies.

Recommendations to land users

- **Invest in Farmer-Managed Natural Regeneration (FMNR) for long-term returns:** The reduction of fires will help farmers regenerate indigenous high-value tree species that regenerate and retain soil fertility. By enhancing the productivity of maize, sorghum, groundnut, beans, and millet, this also contributes to improving nutrition and raising incomes.
- **Intercrop with legumes for higher agricultural productivity:** Maize is a popular crop in the study area, but it demands a constant supply of minerals as it grows. To keep soils healthy and nutrient-rich, it is recommendable for farmers to intercrop maize with legumes, like beans or groundnuts, which increase soil nitrogen.
- **Adopt additional SLM activities to build the long-term health of soils:** For example, Farmers using tied ridges, mounds and mulching earn at least GHS100 more per acre (€40/ha) of farmland managed than those who do not. Moreover, healthy soils are more resilient to weather shocks.

Recommendations to public decision-makers

- **Focus on FMNR to meet international commitments:** FMNR contributes significantly to nationally determined contributions under the UNFCCC. It further contributes to national land degradation neutrality targets, such as the rehabilitation and sustainable management of degraded shrubs, and reduction in bush and wildfires by 2030.

- **Integrate agriculture and evergreen farming into school curriculums:** Since 2017, the emphasis has been on environmental science but with very limited content on farming.
- **Use economic instruments to promote FMNR and develop more inclusive agricultural programmes:** Today, FMNR efforts are mostly led by NGOs, while government-led agricultural programmes focus on the promotion of conventional (i.e. input intensive) and mechanised farming. Instead, more subsidies should become available for machinery and equipment that is adapted to FMNR.
- **Improve land and tree tenure and farmers collateral:** The holders of allodial and freehold land titles under customary land ownership do not exercise ownership rights over naturally occurring trees in Ghana. There is a need for policy and legal frameworks that instead vest the ownership of such trees in the communities concerned.

Constraints

The adoption of FMNR involves additional labour, land preparation and equipment acquisition costs such as pruning tools and pick axes.

That said, **FMNR adoption remains a low-cost land regeneration technology, with an average payoff period of only 3.3 years to farmers.**



Left: Tied ridges in the village of Kalsasgri, Lawra district

Right: Fuelwood harvesting from tree pruning

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<https://www.eld-initiative.org/en/>

ReGreening Africa

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