



The economics of SLM practices in Niger

Fact sheet

Across the Sahel region, climatic changes such as rising temperatures and less predictable annual weather patterns, together with a growing population are leading to ever-increasing competition for land for various uses. These are also pressing challenges in the landlocked West African country Niger. Here as elsewhere in the region, the growing demand for food and other land-based goods like wood for fuel or pastures for livestock are leading to land degradation. Land degradation can be defined as a negative trend in the condition of land, caused by direct or indirect human-induced processes including anthropogenic climate change, and leading to the long-term reduction or loss of biological productivity, ecological integrity, and / or value to humans.

In response to this threat, a variety of sustainable land management (SLM) practices are being implemented in countries across the globe. These are aimed at improving the health and productive capacity of soils over the long term. This fact sheet will present key findings of an economic evaluation of 6 different SLM measures at four sites in Niger, undertaken by the ELD.

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.

The six SLM measures

Six SLM practices were examined in the study, each implemented in at least one of these regions: Maradi, Tillabéri, Tahoua, and Zinder.

- **Farmer-managed natural regeneration (FMNR):**

This is a low-cost land restoration technique used to combat land degradation amongst subsistence farmers, whereby farmers use pruning to encourage the growth of trees and shrubs that occur naturally in their fields. It also involves the systematic regeneration and management of trees and shrubs from tree stumps, roots and seeds. Trees and crops grown together provide multiple benefits to farmers, crops, climate, and wildlife.

- **Zaï (tassa):**

This technique involves digging pits (20-30 cm long and deep and 90 cm apart) with some added manure in the soil during the pre-season to catch water and concentrate compost, thus increasing soil fertility.

- **Half moons:**

Large half-moon shapes dug into the soil, oriented to catch the water according to the direction in which it flows when it rains. Some manure is added in the 15-30 cm deep wholes dug within these half moons, in which seeds are planted after rain.

- **Bunds for agricultural and forestry purposes:**

By building soil or stone bunds along the contour lines, water runoff is slowed down, which leads to increased water infiltration and enhanced soil moisture.

- **Stone walls:**

These are built on slopes. with a stabilising effect.

- **Dune fixation:**

The stabilization of dunes. In Niger, this is done by crossed or simple wickerwork based on the rachis of *Hyphaene* palms and/or branches of *Leptadenia pyrotechnica* as well as mulching based on those materials or animal manure. Such wickerwork is subsequently planted with woody plants or sown with herbaceous plants.

Results

In many cases, **the SLM measure is preferable to business as usual both on 4 and 8-year timeframes**, as suggested by NPVs (net present values over the time frame) above zero and IRRs (internal rates of return) above 10%. This is true for

- FMNR in Maradi
- Zaï when following technical requirements, on the right type of soil and over 4 consecutive years
- Agricultural half-moons in Tillabéri
- Half-moons for silvo-pastoral and reforestation purposes in Tillabéri and Tahoua, when using eucalyptus rather than gum trees
- Bunds and stone walls in Tahoua, and
- Dune fixation in Tillabéri and Zinder

However, **SLM measures must be adapted to the local context**: for example, the zaï method leads to both financial and economic/societal NPVs below zero if technical guidelines are not followed closely or if undertaken on inappropriate soils. Half-moons are further not suitable for sandy soils, while both half-moons and bonds lead to financial and economic losses in combination with gum trees, though there may be net gains in cases where target populations are compensated for carbon storage effects. Findings suggest that a **lack of technical fit leads to target populations being worse off financially and economically than if they had been left alone**.

Recommendations

The findings lead to the following recommendations for best SLM practices at the four sites studied.

- **Public decision-makers**: ensure land tenure security as a way to incentivise investments into SLM by land users themselves, to clarify the roles and responsibilities of different stakeholders, and to establish a framework to allow for the development of a more structured private sector
- **Local authorities**: establish financial mechanisms accessible to SLM stakeholders
- **Land users**: adopt simple and financially viable measures without waiting for funding where possible, and take charge of their own development through individual and collective initiatives
- **The private sector**: exploit options to scale up activities between producers and end consumers (purchases, storage, commercialisation, ...), so as to develop value chains, and, finally
- **Development partners** should (i) revise project selection and design by adding a technical diagnosis before any intervention, (ii) revise facilitation and funding provided so as to avoid perverse incentives, (iii) capitalise experiences, and (iv) work on social engineering and awareness raising.



Zaï pits on a field in Maradi

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Provisioning services (crops and fuelwood) of one locality in Tahoua



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Co-funded by the
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