



Benefits of dune fixation in Niger Factsheet

In some parts of the Sahel region, increasing drought combined with human pressure have caused sand dunes that were once fixed by natural vegetation, to start moving. This process can be addressed through the implementation of sand dune fixation techniques. A study carried out in the Gouré department, Niger, by ELD (green box) identified two dune fixation techniques: 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. The costs of these operations vary on average from 125,000 to 216,000 FCFA / ha. This factsheet presents the key findings from the study.

The Value of Land

Established in 2011, the Economics of Land Degradation (ELD) Initiative aims at transforming the global understanding of the economic value of land, and thus the cost of its degradation. The goal is to improve stakeholder awareness of socio-economic arguments to promote sustainable land management. ELD provides tools and assessments that allow stakeholders to undertake cost-benefit analyses of land and land uses through a total economic valuation and include the results into decision-making.

Background

The **recurrent droughts of the past two decades** have deeply disrupted the environmental balance in Niger: the so-called wet period (1950-1967) was followed by the so-called drought period (1968-1985), which brought to light the overall **decrease in rainfall**, translated in the shift from the rainfed farming Sahel to the pastoral Sahel. **Kilakina** in the far eastern Gouré department, is experiencing strong climatic deterioration combined with anthropogenic pressure on natural resources, including the vegetation. This has caused the **sand dunes that were once stabilised by natural vegetation to start moving again**.

The main economic activities in this area are farming and livestock raising. The population of Kilakina perceives the landscape change through reduced grazing areas, and advancing dunes. Therefore, local people are increasingly dependent on low land basins for their food production and income.

Results

Research has shown that **it is possible to restore the ecological potential of the dunes after a year of fixation and deferred grazing**. In addition to slowing down the progress of the dune frontlines, the measures put in place protect socio-economic infrastructures such as roads, water points, basins, rangelands and crop fields against silting. **The introduction of anti-erosive wickerworks allows a gradual return of small wildlife**. The production of fodder biomass and plant diversity have also improved.

At the economic level, cost-benefit analyses of dune fixation showed a **high profitability of the investment**. The three options currently in place in the field (fixation without protection, fixation with a two-year protection and fixation with a three-year protection) are financially and economically profitable. The net present value (NPV) of dune fixation is positive compared to the business as usual scenario and the internal rate of return (IRR) is much higher than the capital opportunity rate (supposedly equal to 10% in this case).

It may be noted that **the financial and economic NPV is much higher than the cost of donor's investment**. Given the limited resources of the Niger's government, dune fixation could be facilitated by the State or relevant NGOs and the population could be asked to reimburse.

The way forward

The continued production of tree and herbaceous fodder on the one hand, and the sequestration of carbon on the other hand are assets for the sustainability of livestock raising systems, climate

change and maintaining biodiversity. Unfortunately, **in reality, we see that the communities do not self-finance these types of measures** for mechanical and organic dune fixation, because of the community-based type of ownership of the lands that need to be rehabilitated. In addition, **people often do not have the technical skills to implement dune fixation measures**, at least not entirely, and are therefore dependent on the support of partners with more expertise in this field. Some recommendations for future action have therefore been formulated for the various stakeholders.

For land users

- To keep requesting the implementation of dune fixation measures in light of the benefits they generate for the population.
- In light of the collective benefits, **organize themselves collectively** to fix the dunes every year - put in place a dune fixation spatial schedule.
- Take ownership of some activities related to the organic fixation, such as ensuring an effective surveillance.

Private sector

- **Develop supply chains of material for tree nurseries** (small traders) and palisades crafting materials for mechanical fixation.

- Create an on-going **training center** for rural communities to strengthen their capacities in dune fixation techniques.
- Establish a partnership with technical and financial partners to provide assistance through technicians, talent pools, etc. for dune fixation activities.

Public decision-makers

- **Raising awareness** on direct purchase and organise them to fix the dunes
- Establish a dune fixation national calendar by mobilizing the populations concerned and asking them to come up with the contribution they are willing to provide.
- At the national level, review the form of support provided to the populations for land restoration (techniques and equipment, collective organization, compensation negotiated with the populations once the lands are reclaimed, etc.)
- **Review the land rights and responsibilities** to allow the people to take ownership of the activities.
- **Support all the dune fixation activities through training and awareness-raising activities on SLM.**



The Kilakina oasis basin view from within
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Regrown grass cover on a stabilized dune in Kilakina

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