



The economics of investing in sustainable land management practices in Senegal

Fact sheet

Assisted natural regeneration (ANR) is an agroforestry approach that aims to provoke or stimulate the natural regeneration of woody species. It consists of protecting naturally growing seedlings and promoting their development. Depending on the type of trees concerned, ANR can contribute to the provision of a wide variety of ecosystem services, supplying for instance food (fruit, nuts, and pods), fodder, and fuelwood, and increasing carbon sequestration. The practice is inexpensive and the considerable potential positive effects on the environment and local people's living conditions have been widely documented. ANR practices contribute to the maintenance and/or restoration of soil fertility, among other ways through the increased production of ligneous debris production, which adds organic matter to farmers' fields. This brief presents the key results of an ELD study on the costs and benefits of ANR, together with sustainable land management (SLM) practices, at various sites in Senegal.

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

Senegal's land is subject to various forms of degradation, like **salinisation, water and wind erosion, and declining fertility**. These processes have worsened since the 1970s, and **almost two thirds of arable land is affected by degradation today**, or over a third of the entire land area. Over the period 1990-2000, this has resulted in **economic losses around 4.5% of the country's GDP in 2000, and 8% in 2007**. For this reason, the Senegalese government has established a national plan of action to combat desertification, as well as approved a national investment framework for sustainable land management (SLM) with an integrated funding strategy. It further supports the implementation of SLM practices.

Senegal is one of the countries in which the Regreening Africa project is active. **The goal is to encourage 80,000 households to adopt ANR** and to spread ANR implementation in the Kaffrine, Kaolack, and other regions by 2022.

To support this goal, the ELD Initiative conducted studies to analyse the viability of the planned SLM measures.

Results

At all four sites (Pata, Kolda region; Kamb; Louga region; Mbar Diop, Thiès region; and Daga Birame, Kaffrine region), diverse ecosystem services were identified, such as *provisioning services* like vegetables and non-timber forest products, or *regulating services* like carbon sequestration.

However, it was likewise found that **all four study sites are affected by degradation, especially in the forms of soil degradation and the regression of vegetation cover**. The cost of land degradation in Kamb, for instance, is estimated at FCFA 4.7 bn over the period 2011-2018, or an average of FCFA 667 m (over €1 m) per year – 10 times the municipality's 2018 budget. The magnitude of economic losses due to degradation varies depending on the ecosystem, with the **greatest losses reported for the steppe, followed by gumtree plantations**. In Pata, the costs associated with forest cover losses are much higher than the farm income generated by farming on these degraded lands.

Cost-benefit analyses

Cost-benefit analyses at the study sites compared a status quo scenario with one where certain SLM practices were implemented. Findings include:

- **Kamb:** except for fallowing of rainfed cropland, which was found to only be financially rewarding in the medium- and long-term (≥ 4 years), all SLM options, like the use of organic fertiliser, agroforestry approaches, and ANR are viable in any time period.
- **Pata:** the ANR planned offers greater financial and economic benefits than millet monocultures (subsistence crop), groundnuts monocultures (cash crop), or millet/ groundnuts crop association.
- **Daga Birame:** the SLM options chosen in this location over an eight-year period were ANR, the domestication of fruit and forest trees (*Ziziphus mauritiana* and *Tamarindus indicus*) and enclosure under a local management agreement, which forbids woodcutting before a tree reaches 10 years, but allows for the exploitation of fodder. These options were all found to be viable and preferable to the status quo in economic terms.
- **Mbar Diop:** increased mining activity has led to the relocation of this village. Data suggest that farming becomes less financially viable as mining operations intensify and the mines get closer to cropland.

Recommendations

Based on the study's key findings, the following recommendations have been formulated:

- **Policy-makers:** (i) improve land ownership rights and ensure greater tenure security to incentivise the adoption of SLM measures, and (ii) increase funding for the implementation of said practices
- **International organisations/donors:** facilitate access to finance for SLM projects developed by local communities
- **Private enterprises:** drive the development of value chains by encouraging the integration of production chains geared towards the use of products resulting from SLM practices
- **Land users,** finally, are encouraged to (i) get involved in SLM both individually and collectively, (ii) play an active part in the design of community (SLM-)development projects, and (iii) engage in related entrepreneurial ventures

Conclusion

The case studies have shown that land degradation in Senegal comes at a high cost in terms of ecosystem services and social benefits. Business as usual would aggravate this state of affairs, while most of the SLM options assessed by ELD are financially desirable for local land users. An enabling environment should therefore be created for the implementation of these options.



Rows of peanut between tamarind trees introduced into this communal plot



ANR field at Diga Birame

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