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Costs, drivers and action against land degradation
in Senegal

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MAIN FINDINGS

1. Senegal is among sub-Saharan African countries that have seen fast economic development due to political stability and good pro-poor policies and strategies. The country is among 13 countries that have surpassed the target of the Maputo Declaration (African Union, 2003) of allocating 10% of the national government budget to agriculture.
2. Despite this and other achievements, Senegal has experienced land degradation. About 13% of the land area – home to 22% of the national population – experienced land degradation, the annual cost of which was about 944 million USD annually or 8% of its 2007 GDP. The largest driver of land degradation is land use and land cover change involving replacement of high value biomes with low value ones.
3. There is strong justification and reason for restoration of degraded lands. Land users get back five USD for each USD they spend on restoration of degraded lands.
4. Underscoring constraints to improved and profitable land management, the adoption rate of soil fertility management practices is low and inversely correlated to profitability. The government has not invested significantly to address land degradation either.
5. The major drivers for adoption of sustainable land management practices include access to market and extension services, and secure land tenure. A case study of the forest of Dankou also showed that communities' awareness and knowledge of ecosystem services enhances prevention of land degradation.
6. The country has great potential to address land degradation. For example, it has a high number of agricultural extension agents from public and private providers. The political stability and democracy in the country also offer a conducive environment to address land degradation.

Introduction

Senegal has enjoyed peace and political stability which has created a conducive environment for economic development. The country's human development index (HDI) increased by 51% from 0.32 in 1980 to 0.49 in 2013. The equivalent growth of HDI during the same period in sub-Saharan Africa was only 37%. Senegal is also one of ten countries in the world with the largest improvement of environment for doing business (World Bank 2014).² Senegal is among 13 countries that have surpassed the target of the Maputo Declaration of allocating 10% of the government budget to agriculture – a sector that accounts for

49.4% of land and employs 81% of the rural population (Benin and Yu 2013; DPS 2004).^{3,4} Senegal has also improved rural services significantly. With a total of 731 agricultural extension service providers – of which 68% were private or affiliated with NGOs – each agricultural extension worker served 794 rural households compared to over 1,000 in sub-Saharan Africa, resulting in more services provided to rural households (Davis et al. 2010).⁵ Additionally, 58% of rural households take a maximum of 15 minutes to reach a public transportation service – putting Senegal second only to South Africa on the African Continent.



Despite this impressive development, Senegal is still facing the challenge of overcoming poverty as about 47% of the population live below the poverty line (UNDP 2014).⁶ Senegal also faces land degradation – long-term loss of ecosystem services. The country’s recent achievement in human development provides an opportunity to address land degradation and to subsequently achieve sustainable development. This policy brief provides empirical evidence that will help Senegal to take action against land degradation.

Land degradation is widespread and costly

About 13% of the country’s land (home to 22.2% of Senegal’s population of 13 million) experienced land degradation – in particular about 20% of the grasslands, which cover 72% of the total land area. The sub-humid agro-ecological zone accounts for two thirds of the cost of land degradation and the arid and semi-arid lands account for about a third (Figure 1).

Only 2.5% of households use integrated soil fertility management – though it is the most profitable practice. Over 70% of farmers do not use any inputs – an aspect that leads to severe land degradation. About 7% of cropland is affected by

salinity, whereas rice plots are affected most.

The total cost of land degradation is about one billion USD or 8% of the country’s GDP and the sub-humid agro-ecological zone accounts for more than half of the cost of land degradation. Land use and land cover change contributes the largest loss followed by soil fertility mining on cropland. Though grassland occupies the largest land area in Senegal, cost of grazing land degradation is only 0.1% of Senegal’s GDP.

The major reason behind such a small cost is the low productivity of livestock. This underscores the need to invest in pasture improvement, breeding programs, and other livestock development programs, since the sector plays a key role in ensuring food security, providing draft power, manure, store of wealth, and other socio-cultural services.

Drivers of land degradation

Physical capital endowment increases the propensity to adopt all types of sustainable land management practices. Similarly, female-owned plots are less likely to adopt such practices. This suggests that poor farmers could face challenges taking up sustainable land management practices and therefore the need to target them in interventions. On-farm activities, access to market, and agricultural extension services increase adoption of sustainable land management practices. This result further illustrates the importance of promoting non-farm activities and enhancing access to markets. As expected, land tenure security also increases propensity to use sustainable land management practices. The results underscore the major strategies for restoration of degraded lands.

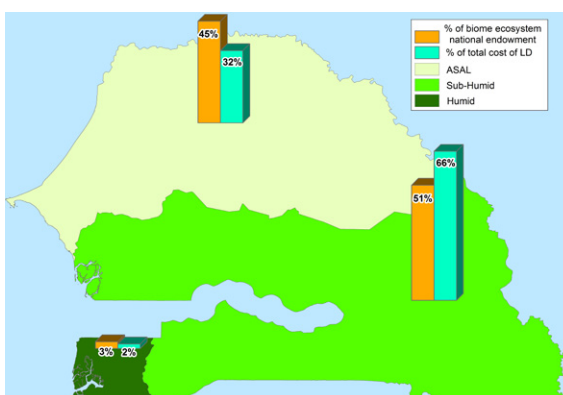


Figure 1: Distribution of endowment of ecosystems and cost of land degradation across agroecological zones

Note: ASAL = Arid and semi-arid lands. LD = Land degradation



Table 1:
Summary of
the annual
cost of land
degradation in
Senegal

Type of land degradation	Annual cost (USD million)	% of GDP
LUCC	733	6.5
LUCC –local tangible benefits	412	3.7
Soil fertility mining – maize and rice	103	0.9
Salinity – irrigated rice	22	0.2
Continuous cropping - millet	77	0.7
Degradation of grazing biomass	9	0.1
Gross Total	944	8.4
Total – local ecosystem service loss only	623	5.5

Taking action against land degradation

There is strong economic justification for investing in restoration of degraded lands since land users get about five USD for each USD invested in restoration such lands. The low investment in sustainable land management practices suggests the need to enhance investment in access to markets, agricultural extension services, and tenure security. The results also suggest the need to design innovative methods for enhancing adoption of sustainable land management among poor farmers and women. Creating awareness of the importance of ecosystem services and enabling communities to sustainably harvest them enhances protection of forests and other high value biomes. For example, the government invested in rehabilitating the forests of Dankou by using a large share of the budget to create awareness of the ecosystem services of forests and how communities could benefit from them. The program has been very successful even after government support ended.

Conclusions and policy implications

Senegal has seen rapid economic and human development due to its political stability and investment in rural services. However, the country still faces challenges since about 50% of its population is living below the national poverty and the annual cost of land degradation is about one billion USD or 8% of its GDP. This study shows that larger investment in market access and agricultural

extension services will enhance land users' investment in restoration of degraded lands and prevent land degradation. It is particularly important to provide land users with the necessary knowledge of ecosystem services and ensure that they sustainably harvest biomes. Facilitation of non-farm activities will also lead to faster and greater impacts on adopting of sustainable land management practices and increasing resilience in production.

References

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