

Reshaping the terrain

Forest and landscape restoration in Burkina Faso

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Construction of half-moon anti-erosion micro basins 2, Djibo area, Burkina Faso

Introduction

Land degradation is a key issue in Burkina Faso's sustainable development equation. Recent analyses show that degradation occurs at a rate of about 470,000 ha per year, affecting 51,600 km², 19 percent, of the national territory (MEEVCC 2018). The annual price tag is estimated to be equal to 26 percent of the country's gross domestic product (Global Mechanism of the UNCCD 2018). Huge efforts have been undertaken by numerous stakeholders to tackle the problem. Currently, Burkina Faso is taking advantage of the Land Degradation Neutrality (LDN) program, with which it aligned in 2016, by setting its national voluntary goals and identifying measures to achieve them by 2030 (SPONG and CARI 2017; MEEVCC 2018; UNCCD 2018).

Reforestation efforts

An analysis of degradation trends conducted between 2002 and 2013 revealed that degradation hot-spots exist throughout the country's three eco-regions – the Sahelian, Sudano-Sahelian and Sudanese zones – with varying levels of severity (MEEVCC 2018). Most restoration efforts have focused on the most severely affected Sahelian and northern part of the Sudano-Sahelian eco-regions.

Examples of past projects include: i) Agro-Forestry Project (PAF) in Yatenga and Bam provinces in North region, implemented in the 1980s; ii) Projet Aménagement des Terroirs et Conservation des Ressources (PATECORE), implemented from 1988 to 2004 in the Central Plateau region; iii) Programme spécial Conservation des eaux et des sols - agroforesterie (PS CES/AGF) in the North, Center West, Central Plateau and Center North regions; iv) The Partnership Programme for Sustainable Land Management (CPP) Phase 1, implemented in the North and Boucle du Mouhoun regions.

Examples of on-going restoration-related projects include: Neer-Tamba project in North, Center North and East regions; ProSol project in Haut-Bassin region; EBA-FEM project in Boucle du Mouhoun and Sahel regions; Forest Investment Program (FIP) in Boucle du Mouhoun, Center West, South West and East regions; Great Green Wall for the Sahara and the Sahel Initiative (GGWSSI) in Sahel, Center North, Central Plateau, East, and North (in project) regions.

Non-state actors (such as SOS Sahel, AGED, Reach Italia, Association Tiipaalga, TREE AID, etc) are leading a great share of the restoration efforts all over the country.

No mechanism exists for now at national level to monitor restoration efforts from stakeholders. So only patchy data is available and they are scattered and difficult to source. Nevertheless it is estimated that less than 1/4 of the lands that are degraded annually, i.e. about 117,500 ha, are currently restored thanks to efforts from all stakeholders, both states actors and NGOs (personal communication from the National Coordinator of CPP, M Tankoano, 2018).



1. Approaches to Forest and Landscape Restoration

FLR approaches in Burkina Faso may be categorized according to the vocation of the lands to be restored although some are all-purpose.

Approaches in forest-oriented lands

The most common approach is tree planting. Current national reforestation campaigns have a survival of less than 25 percent or even 0 percent in some cases (MEEVCC, 2017b). Exposure to grazing, bush fires, termites, planting period and inappropriate sites are some of the causes of low seedling survival. Individual and family efforts have been the most successful. These private plantations have very diverse purposes: orchards, wood production; Non Timber Forest Products (NTFP) production (edible, medicine, fodder, multi-purpose trees, etc.). Both public and private tree plantings are dominated by exotic tree species. Together, the nursery businesses that supply reforestation campaigns, either public or private, have produced in average 9,525,000 seedlings per year from 2002 to 2016, but about 25 percent of that production was lost annually (MEEVCC 2017).

In recent years, reforestation stakeholders have developed innovative approaches to overcome recurrent inefficiencies associated with community reforestation projects. For example, SOS Sahel introduced “contract-based reforestation,” which is based on performance and makes payouts based on the number of trees that are viable two years after planting taking into account all costs. Through this approach, SOS Sahel achieved average survival rates of 80 percent through the participation of 1,280 producers who have planted and tended more than 166,000 seedlings in less than 10 years¹.

Tree Aid’s approach with its Village Tree Enterprises (VTE) program (Hill et al. 2007) was to use the “Market Analysis and Development” methodology (FAO 2011), which engaged village tree entrepreneurs into sustainable management of forests and woodlands as part of the implementation of the business plans of their non-timber forest product (NTFP)

-based enterprises. The program supported the establishment of nurseries, and plantation of local tree species providing NTFPs of interest for the entrepreneurs.

Approaches in agricultural lands

Improved soil and water conservation (SWC) techniques constitute the main approach on agricultural land. They are many, from simple individual ones to more complex systems combining one or more techniques with management practices, including: contour bunds; contour stone bunds; contour line cultivation; vegetative strips; semicircular bunds; zai pits; Farmer-Managed Natural Regeneration (FMNR) (Bado et al. 2016). The most widely-used techniques in the central and northern parts of Burkina Faso are contour stone bunds (vegetalized or not) and/or zai pits associated with compost. These cost efficient techniques are easily adopted by farmers and usually combined to restore severely degraded lands. In the Sudanese eco-region, the following restoration approaches are commonly used by farmers: contour stone bunds (vegetalized or not), bunds in their different forms and hedgerows, technologies for the production and use of organic manure (composting, mulching, etc.), and agroforestry (Koudougou and Stiem 2017).

Approaches in pastoral lands

The [Vallerani system](#) is designed for large-scale restoration and largely used to restore highly degraded lands for afforestation and silvopastoral purposes (Conedera et al. 2010; FAO 2015; REACH Italia 2017).

It is intended for use with direct seeding of grass, shrubs and trees species. Land recovered using this system showed sustained production of herbaceous biomass (1,000 - 2,000 kg dry herbaceous biomass/ha/year) and improved tree cover (about 350 trees/ha), with trees capable of spontaneous growth even under pressure from traditional extensive grazing and years of water stress (Conedera 2010).

Social mobilization upstream and downstream is key for the success of land restoration using the Vallerani system (FAO 2015).

1 <https://www.iucn.org/fr/content/le-reboisement-par-contrat-une-alternative-pour-le-d%C3%A9veloppement-durable>



Mixed approaches

Household-managed fenced plots, promoted by Tiipaalga (Valette et al. 2018). These are fenced plots of 3 hectares managed by individual rural households according to an action plan defined in the terms of reference of their contracts with Tiipaalga that cover a total of 14 years (seven years, renewed once).

Since 2003, about 900 hectares of degraded lands have been recovered through the household-managed fenced plots approach. While this approach results in spectacular regeneration of tree-based ecosystems, it is costly (roughly \$3,600 of which \$2,530 for the equipment and the rest for the contribution of the beneficiary household), which limits potential for scaling-up.

The “Sahelian bocage” (or Wégoubri in local language Mooré)² (Girard 2009) was developed by the Association Terre Verte in the 1990s. The bocager perimeter is built around a group of land owners who agree to consolidate their individual farmlands to allow the application of several soil and water conservation techniques that promote recovery of soil fertility and an integrated and sustainable land management of farmlands alongside pastures and trees.

Although the Sahelian bocage model has proven to be effective in recovering and improving degraded lands, it is costly, requiring an initial investment of about 500 euros (\$580) per hectare to create the bocage perimeter. This is a real constraint to its scaling-up.



Digging of zai pits in Barouli village, Burkina Faso

2 <https://eauterreverdure.org/l-amenagement-bocager/>



2. Key FLR enablers and best methods to overcome constraints

Many constraints have been experienced in forest and landscape restoration (MEEVCC 2018):

- Uncoordinated planning of interventions and investments by different state actors
- Weak institutional capacity of the stakeholders and institutional organization along sectoral lines
- Inappropriate intervention approaches
- Weak mastery of SLM and degraded land restoration techniques
- Low levels of investments by stakeholders

Further constraints came out from interviews with key informants who mentioned the following:

- Many actors are involved in the restoration of

degraded and deforested lands on the ground, but they are unmapped and their interventions are not coordinated. There is no proper monitoring system that documents all restoration efforts by these actors. As a consequence, there are missed opportunities to build synergies and complementarities, hence pooling resources for more efficiency.

Because the same rules under the Forest Code apply regardless of whether the trees have been planted, regenerated through FMNR, or they have grown wild in the forest, there is a strong disincentive for farmers to engage in reforestation. Farmers involved in tree-planting- or FMNR-based restoration are exposed to a heavy administrative burden when they wish to harvest the trees they have planted or regenerated by their own.

3. Burkina Faso's international FLR commitments

Land Degradation Neutrality (LDN) baselines have been established based on land cover and land cover changes, land productivity and carbon stocks. Based on the LDN baseline analysis and identified land degradation hotspots, national voluntary LDN targets have been set as follows:

Main target: By 2030, 100 percent of degraded land compared to the reference period (2002-2013).

In other words, 5 million hectares representing 19 percent of the national territory, must be restored, while preventing degradation of non-degraded lands in order to achieve LDN.

Specific targets:

- Put an end to the conversion of forests to other land uses by 2030
- Improve the productivity which is declining in shrub, grassland and cropland, that is 2.5 million hectares

- Improve carbon stocks over 800,000 ha to reach a minimum of 1 percent organic matter (by bringing 5 tons of organic matter per hectare every 2 years)
- Recover 300,000 hectares of bare land out of a total of 600,000 hectares.

These targets are consistent with previous international commitments, namely the Convention of Biodiversity Aichi Target 15, the U.N. Framework Convention on Climate Change REDD+ (Reducing Emissions from Deforestation and forest Degradation) goal, as well as the Ramsar Convention on Wetlands.

Burkina Faso has not formally committed to the African Forest Landscape Restoration Initiative (AFR100) although it has participated in AFR100 meetings from the outset. Its voluntary national LDN target will support any commitment it announces under the AFR100 (personal communication from the National Coordinator for the Great Green Wall for the Sahara and the Sahel Initiative – GGWSSI, A Doukomo, 2018).



4. Plans to achieve restoration commitments and initial steps being taken³

In order to achieve Burkina Faso's national voluntary LDN target, measures have been identified under each of the three U.N. Convention to Combat Desertification indicators (see table below). Proposed measures and quantitative objectives to achieve LDN by 2030

Proposed measures and quantitative objectives to achieve LDN by 2030

Indicators	Negative trend over the LDN baseline period (2002-2013)	Concerned surfaces (ha)	Measures
Land cover and land use change	Conversion from "forests" to "shrubs and grasslands" and "croplands"	2,269,000	Creation of 900,000 ha of gazetted conservation areas in 12 administrative regions
			Auditing and updating of current management plans of all gazetted or protected forests
			Production and dissemination of improved cook stoves
			Promotion of improved cook stoves designed for local breweries
			Reclamation and enclosure of river banks
			Providing households with biodigesters
			Reforestation
	Sustainable forest management		
	Conversion from "shrubs and grasslands" to "croplands"	221,500	Creation and sustainable management of five intensive livestock production areas
Promotion of mowing and fodder conservation			
Promotion income generating activities			
Conversion from "forests", "shrubs and grasslands" and "croplands" to "bare lands"	158,000	Degraded land restoration: mechanized and manual restoration (soils and water conservation)	
Land productivity	Forests with negative productivity trend	105,200	Implementation of farmer-managed natural regeneration (FMNR)
			Reforestation
	"shrubs and grasslands" with negative productivity trend	1,495,000	Implementation of farmer-managed natural regeneration (FMNR)
			Restoration of degraded lands for silvo-pastoral uses
			Sustainable management of grazing lands
	Croplands with negative productivity trend	855,100	Soils and water conservation installations: vegetalized contour stone bunds, zai pits, FMNR
			Agroforestry
			Creation of rainy season livestock park areas
			Mulching
Carbon stocks	Carbon loss due to land use change from "forests" to croplands	798,000	Soils and water conservation installations
			Integrated soil fertility management techniques
			Promotion of legume cropping
			Promotion of agro-silvo-pastoral systems

Adapted from MEEVCC (2017a)

³ See MEEVCC, 2018 for further details



The cost of implementing these measures is estimated at \$2.7 billion.

Additional cross-cutting preventive measures have been recommended by the LDN technical task force. Some of them are:

- Enforcement of regulations related to:
 - Management plans in forest management areas and pastoral areas;
 - River bank protection;
 - Land tenure security;
- Effective transfer of competences and resources over forest management to local authorities (districts and regions);
 - Effective accountability of these local authorities (together with grassroots communities) regarding the preservation of lands and forests;
 - Campaigns against excessive tree felling, livestock divagation, and bush fires;

Leveraging on opportunities resulting from LDN target setting process

Burkina Faso's LDN target setting process strengthened participation and interactions among diverse actors such as key policy-makers, relevant decision-makers and practitioners. It comprised the following processes:

- Development of a multidisciplinary and multi-institutional technical task force on LDN
- Establishing a supervision committee made up by general secretaries of different sectoral ministries, umbrella organizations of professional organizations, non-governmental organizations, and main technical and financial partners from the U.N. system
- Enlargement of the technical task force to align ministry planning specialists, to include LDN measures in their respective department business plans. This has permitted mapping of all ongoing Sustainable Land Management (SLM) programs to identify sources of financing and consensually work out federating programs in the form of transformative projects.

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Manure on field treated with contour stone lines in Wa, Burkina Faso



Crushing of stones to construct contour stone lines, Djibo area, Burkina Faso



Field treated with contour stone lines + zai pits 2, Djibo area, Burkina Faso



FMNR + zai pits in Koulweogo province, Burkina Faso



Contour stone lines + FMNR in Sondre village, Burkina Faso



Construction of half-moon anti erosion micro basins 4, Djibo area, Burkina Faso



Tree pruning in FMNR, Djibo area, Burkina Faso

All photos by Tiipaalga

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