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The African Great Green Wall project

What advice can scientists provide?

www.csf-desertification.org/great-green-wall



The pan-African Great Green Wall (GGW) is an initiative that was meant in 2007, the year of its launch, to involve the planting of a 15 km wide transcontinental forest belt running from Dakar to Djibouti. This major project was designed to combat desertification. The band of vegetation is to be as continuous as possible, but it may be rerouted if necessary to skirt around obstacles (streams, rocky areas, mountains) or to link inhabited areas (see www.grandemurailleverte.org).

Scientists have and are still being queried by people, NGOs and donors on the merits and feasibility of this project. In 2011, members of CSFD drew up a summary of scientific findings to help answer these questions. This review can be downloaded at: www.csf-desertification.org/great-green-wall

This fact sheet summarizes the key points.

Three misconceptions should be clarified before being able to shed light on the issue and provide useful advice.

Misconception n°1: The desert is a disease

The Sahara is sometimes considered as a kind of disease that spreads into surrounding areas. However, this desert is actually a healthy and precious ecosystem that, like other deserts worldwide, contributes to the Earth's diversity and wealth. It is not in any way the image of an unhealthy environment. Global warming has modified its extension pattern in the past, and current climatic changes could lead to a gradual shift in some of the desert boundaries.

Misconception n°2: The Sahel is being invaded by a sand sea

Some people think that a gradually advancing sea of Saharan sand dunes is relentlessly invading the Sahel, but this is not the pattern that scientists have noted. Sand has been shifting in some areas, but these are local manageable phenomena and, moreover, the sand does not always move in a southward direction. Hence, this is not a continent-wide movement trend that should be halted like an invader.

The Sahara is thus a stable desert ecosystem, whereas the Sahel is affected by desertification. Desertification is not induced by the invasion of sand from the desert, instead it is a unique form of land degradation that occurs in these dryland regions, where rain does fall, but irregularly and with low total volumes (100–600 mm of rain per year).

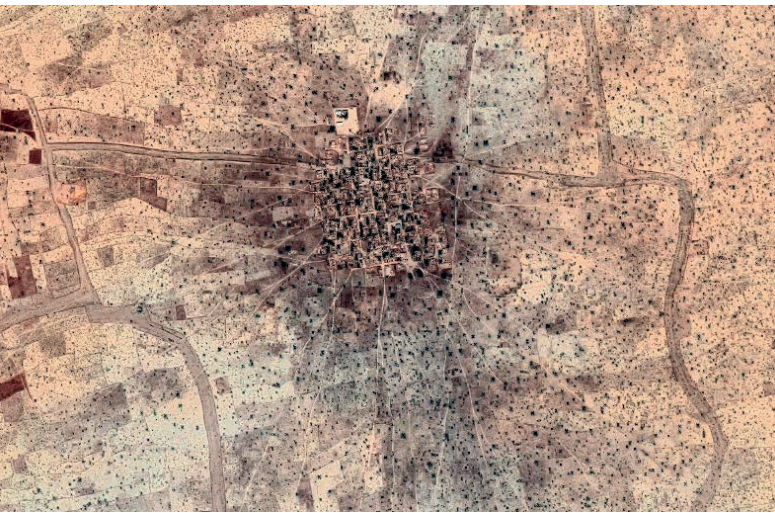
Population concentration and the development of often ill-adapted agrosilvopastoral activities are the main factors underlying the desertification process. Renewable natural resources are then overtapped, without leaving sufficient time for these resources to be regenerated, while land degradation is exacerbated by drought.

Misconception n°3: A great forest wall could be planted in uninhabited or sparsely inhabited regions

On the contrary, the proposed trajectory is to pass through inhabited regions where agriculture and livestock farming are already fully developed on lands allocated according to local traditions. Local inhabitants should thus be associated with any initiatives designed to combat desertification via tree planting.

In its current design, GGW is much more than its name or its trajectory suggest—recent projects state that the aim is to ensure the planting and integrated development of economically interesting drought-tolerant plant species, water retention ponds, agricultural production systems and other income-generating activities, as well as basic social infrastructures.

Planting trees in dryland regions to combat desertification is not a new idea. Some of the most famous large-scale



Satellite view of a village in Maradi region
(Google Maps 2019)



Sahelian landscape
(© Bibelstudienkolleg, 2015)

projects include the Algerian Green Dam project which, as indicated in published reports and findings, met with some success but also quite a few failures, resulting in major project changes. The Great Green Wall of China has not been designed as a dam but instead it is a gigantic integrated management project to combat desertification in an area of over 4000 km long and 1000 km wide. This involves a combination of forest and shrub plantations, grassy vegetation cover in farming systems.

Many local initiatives and reforestation and agroforestry experiments have been carried out in the Sahel. The multiple uses of different tree species and the benefits for the inhabitants of this region are widely acknowledged. However, the results of many projects have not been formally disseminated, despite the fact that access to this mine of information, including the errors that should hereon be avoided, should be made accessible so that field managers and stakeholders will know what initiatives could or not work.

Research is still supported by available knowledge and is progressing. Hence, a conference in Dakar (2010) highlighted the merits of research for enhancing the efficiency of atmospheric nitrogen fixation by trees that have developed a symbiotic relationship with bacteria or fungi on their roots, thus facilitating the colonization of low fertility soils.

There are also many interesting results on vegetative reproduction techniques and assisted natural regeneration, which are easy, even for resource-poor farmers, to carry out at large scale.

Beyond these important technical aspects, success considerably depends on the social setting in which these plant propagation and tree planting projects are conducted. The delegation of responsibilities, rights on planted trees, access to products from these trees, management and local arbitration conditions and their integration in prevailing agropastoral systems are crucial. Projects in which trees were planted without the participation of local inhabitants were almost always limited and nonsustainable. When farmers' rights and what they could hope to get back from their labour remain uncertain, technical efforts to select the best species, to enable them to develop properly in modern nurseries using advanced planting techniques, could generate some good results, but only in the short term.

An economic analysis has shown that assisted natural regeneration, which requires little investment, is the most cost-effective for resource-poor farmers. However, more intensive collective initiatives have also an impact when the timeframe is long.

Projects will therefore be more successful when designed for long-term application and within a more global sustainable land management framework. Tree planting, propagation and regeneration are actually part and parcel of other agrosilvopastoral family farming activities whereby trees are grown to generate fuel, fodder, resins and gum, building materials and medicinal products. ■

Recommendations for decisionmakers

The following recommendations are based on the analysis of agrosilvopastoral management results:

- 1 Adopt a flexible approach in order to make effective use of the best sustainable land management practices**, while taking the results of many completed green belt, plantation and agroforestry projects, and local know-how, into account.
- 2 Identify and boost farmers' awareness on the most effective regeneration techniques**, that are easy to manage (technically and financially) and cost-effective.
- 3 Rely on the decentralization process** by ensuring the participation of inhabitants in planting the GGW and highlighting the potential benefits for them (improved land fertility, yields and the diversification of income-generating activities):
 - promote very simple local structures such as rural markets, etc.
 - reinforce management training for members of local structures, including women
 - set up a suitable institutional framework for fiscal and land planning, while ensuring decentralization in order to strengthen local resource management, planning and development control capacities.
- 4 Foster ecological intensification of agriculture and livestock farming**, so as to reduce pressure on forest resources.

All of these recommendations are geared towards the integration of greening strategies in a regional sustainable management framework in order to deal with the geopolitical issues that this region faces.