

Sahara and Sahel Observatory

# The Great Green Wall

A Development Programme  
for the Sahara and the Sahel

Projects monitoring and evaluation  
approach based on geospatial  
applications

April 2016

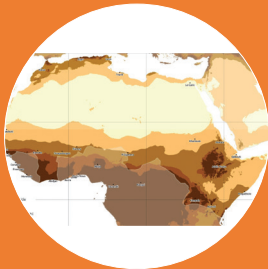


WORLD BANK GROUP

# The Great Green Wall Initiative

## Combatting the effects of desertification and climate change through sustainable natural resources management

### Main characteristics of the Sahel region



Semi-arid and hot climate, short rainy season, very long dry season, variable precipitations, average annual rate 250-500 mm



Zone characterized by drought and desertification



Economy highly depending upon natural resources: water, soil and vegetation cover

Africa displays a wide diversity of ecosystems that host various resources: soil, vegetation, water and species. These resources constitute the main natural wealth of the continent, hence should be preserved to ensure the survival of populations whose livelihoods depend heavily on ecosystems services and goods (food, water, wood, fiber, and industrial products) (Liniger, 2011).

Land provides livelihoods for 60% of the continent's population through agriculture, forestry and other natural resources (FAO, 2004).

However, these resources remain threatened by overexploitation caused by population growth leading to a considerable decrease in resources availability in certain regions, notably the countries of the Sahara and Sahel region involved the Great Green Wall Initiative.

The availability of natural resources is also jeopardized by other factors related to the combined effects of natural disasters and climate change.

## From “Green belt” approach to the integrated management of ecosystems

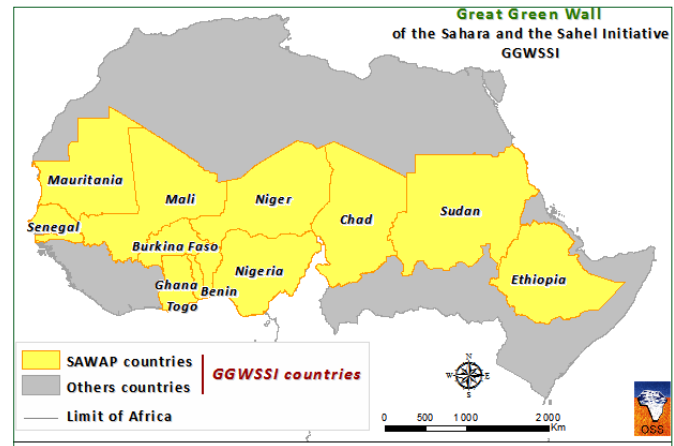
The **Great Green Wall Initiative (GGW)** was launched in Africa at the Summit of Heads of State and Government held in Burkina Faso in June 2005. Designed first to serve as a means to combat desertification and poverty, the initiative was initially limited to the establishment of a “green belt” of trees extending from Senegal to Djibouti.

The first vision soon evolved into an integrated ecosystems management approach in January 2007 which was officially adopted by the African Union following the “Decision on the Implementation of the Green Wall for the Sahara Initiative”.

In 2008, OSS was mandated to bring more clarification to the concept of the Great Green Wall as well as the necessary orientation for its implementation. In this respect, and with the support of several scientists from North and East Africa and Europe, a preliminary definition of what would be the concept of the Great Green Wall was provided.

### Harmonized regional Strategy

In order to share this common vision, a harmonized regional strategy for the implementation of the Great Green Wall for the Sahara and Sahel Initiative was adopted in September by the African Ministerial Conference on the Environment (AMCEN).



# Projects implemented to support the GGW Initiative

The Great Green wall is supported by a number of regional and international organization and based on the mechanisms and institutions of the 3 United Nations Conventions - UNCCD, UNFCCC and CBD<sup>1</sup>

## SAWAP<sup>2</sup> programme

A vision initiated by 12 Sahel countries for an integrated natural resources management:

- Diversity of national contexts: 12 projects elaborated individually with separate expected results and different indicators.
- Ambition: Contribution to the implementation of the Great Green Wall.
- Challenge: Demonstrate the contribution of each project to the regional objectives of the 12 Sahel and West African countries.

### 12 SAWAP Projects

<b>Benin</b>	Forests and Adjacent Lands Management Project
<b>Burkina Faso</b>	Third Community-Based Rural Development Project
<b>Chad</b>	Emergency Agriculture Production Support
<b>Ethiopia</b>	Sustainable Land Management
<b>Ghana</b>	Sustainable Land and Water Management Project
<b>Mali</b>	Natural Resources Management in a Changing Climate
<b>Mauritania</b>	Sustainable Land, Water and Forests management
<b>Niger</b>	Third Community Action Program Support Project
<b>Nigeria</b>	Erosion & Watershed Management Project (NEWMAP)
<b>Senegal</b>	Sustainable and Inclusive Agribusiness Project
<b>Sudan</b>	Sustainable Land and Water Management Project
<b>Togo</b>	Integrated Disaster and Land Management Project

<sup>1</sup> UNCCD : United Nations Convention to Combat Desertification; UNFCCC: United Nations Framework Convention on Climate Change ; CBD: Convention on Biological Diversity

<sup>2</sup> "Sahel and West Africa Program"



## BRICKS project, a « cement » to consolidate SAWAP achievements

The BRICKS regional project (Building Resilience through Innovations, Communication, and Knowledge Services) aims at a better management of natural resources (water, land, forests, etc.) and climate change impacts.

### Objectives

- Access to information on sustainable land and water management,
- Experience exchange on good practices;
- Monitoring of natural resources and improvement of populations livelihoods

It is implemented by three institutions:

**The Permanent Interstates Committee for Drought Control in the Sahel (CILSS)** ensures the regional coordination and the management and dissemination of good practices.

**The International Union for Conservation of Nature (IUCN)**, which is a leader in the fields of biodiversity and communication strategies.

**The Sahara and Sahel Observatory (OSS)** in charge of the SAWAP projects' monitoring and evaluation and geo-spatial applications.



# The Monitoring-Evaluation system of the SAWAP Portfolio

The diverse objectives of the 12 SAWAP investment projects requires the development of harmonized monitoring and evaluation tools to help each country in the collection of comparable data. To ensure this monitoring, a set of tools has been developed.

## The monitoring & evaluation tools developed

- **Methodological axis:** definition of concepts and indicators
- **Geo-spatial tools:** provision of geospatial data and introduction of GIS tools
- **Capacity building:** workshops in support to national projects

## Methodological Axis

### Adoption of a kit of 8 indicators:

- four indicators on the project's development objectives
- Four Intermediate Result Indicators (IRI)

### Adoption of a grid of harmonized indicators

The grid facilitates the identification of the performance indicators of the 12 national projects which will be extracted and transmitted to the regional level.

### Elaboration of a monitoring and evaluation guide

A monitoring and evaluation guide of indicators was elaborated by the « monitoring and evaluation » working group extended to four SAWAP countries (Benin, Burkina Faso, Niger and Togo) under the coordination of OSS.

It allowed to define the necessary tools and approaches to harmonize the organization and methodologies for the collection and circulation of data and information relative to the program progress status.



## Geo-spatial tools



### Construction of a spatial database

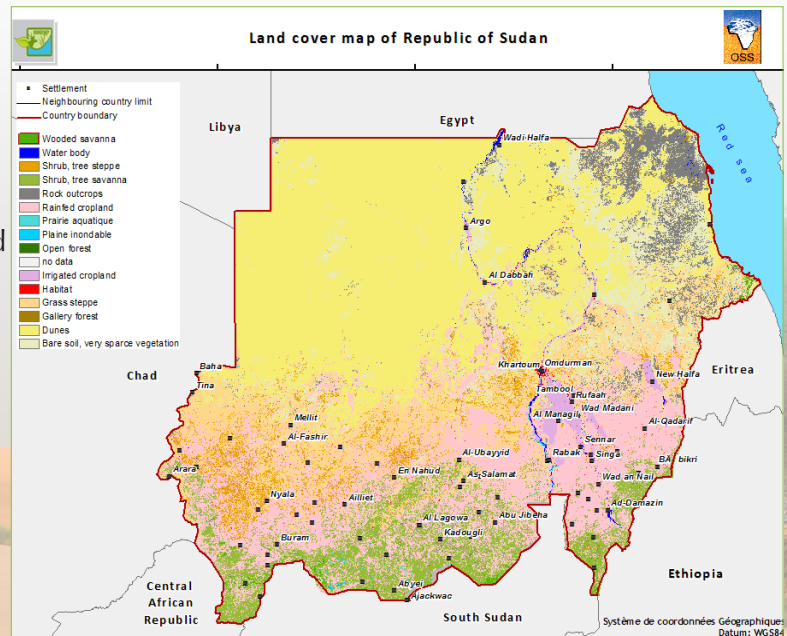
A number of activities related to the elaboration of baselines and the collection of existing spatial and mapping data at the regional level were conducted. These activities were prerequisite for the establishment of a geographic database at the level of BRICKS project and SAWAP countries to enable the monitoring of the sustainable land and water management related issues.

### Development of GIS products dedicated to national projects

Geographic information databases related to the administration, hydrology, agriculture/agronomy, climate, ecology, pedology, land use/cover and socioeconomics were set up at the national level.

### Elaboration of National Land Use Maps

They were developed based on Landsat- 8 images (30m of resolution) dating to 2014 and 2015. These maps respond to the needs of the SAWAP countries for reliable and updated data/ information on land use and cover.

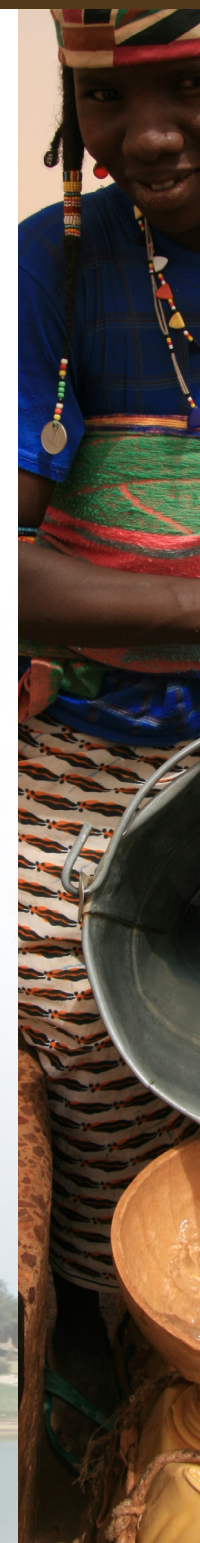


## The SAWAP/BRICKS Geoportal

The geoportal, a tool dedicated to the publication, storage and exchange of spatial data and resources was elaborated and put online in October 2015. Based on international standards, this geo-portal enables access to basic data on land cover, climate, agronomy/agriculture, soil and vegetation indices, hydrology, administration, etc. It serves as an infrastructure for the publication and dissemination of data on natural resources on the Web. The geo-portal is updated and fed with information by OSS and its partners on a regular basis.

The screenshot displays the SAWAP/BRICKS Geoportal interface. At the top, the header reads "Sahel and West Africa Program - SAWAP Building Resilience through Innovation Communication and Knowledge Services - BRICKS Géoportail". The interface includes a search bar, a layer tree on the left, and a main map area showing a land cover map of the Sahel region. The legend indicates various land cover types such as "Forestry - no", "Forestry - Pa", "Herbaceous", and "Occupation/utill. d". Below the map, there is a summary section for "OCCUPATION/UTILISATIONS DES TERRES DOMINANTES DANS LA ZONE BRICKS, 8-KILOMÈTRES (2009)", including a résumé, mots-clés, schéma, and emprise.

<http://sawap.net/>  
<http://www.oss-online.org/fr/bricks>





# Capacity Building

Several capacity building activities were organized by OSS at the regional and national levels

## Regional training and exchange workshops

- Monitoring-evaluation and geographic information system, 15-17 February 2015, Addis Ababa (Ethiopia)
- Utilization of EXACT tool for carbon balance estimation – 15-17 June 2015 in Tunis (Tunisia)
- Utilization and understanding of the GEF Tracking tools, 28 September-2 October 2015, Dakar (Senegal)

## National Training Workshop (GIS and Remote Sensing in support to monitoring and evaluation)

A number of workshops, aimed at technicians in charge of the national projects, focused on spatial data collection, processing and dissemination methods.

- GIS and Remote Sensing applied to monitoring-evaluation, September 2015 – Addis-Abeba, Ethiopia
- GIS and Remote Sensing applied to monitoring-evaluation, October 2015 – Madani, Sudan



*Training workshop on GIS and Remote Sensing applied to monitoring-evaluation, September 2015, Addis-Ababa, Ethiopia*

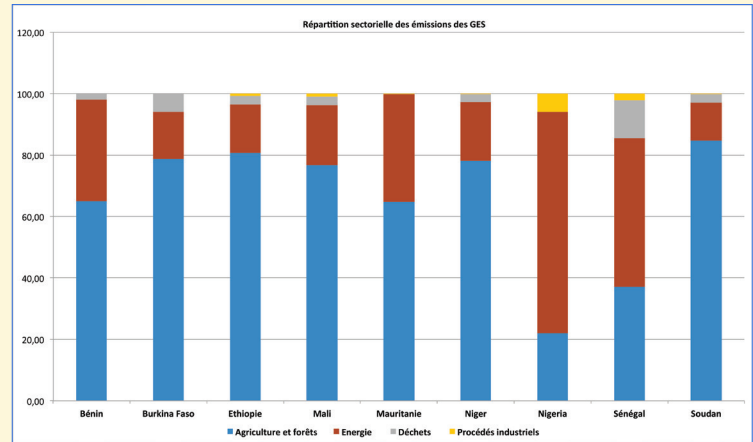


# Sustainable Land and water Management for climate change adaptation and mitigation

## Greenhouse Gas Emissions in Africa

Africa's contribution to global warming is insignificant, with only about 3.8% of total GHG emissions (World Bank Study, June 2013), and on average 1.1 TEQ CO<sub>2</sub>/capita, however, the continent is the first to be affected by its adverse effects. The most vulnerable sectors include agriculture, food and water.

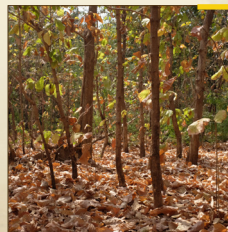
The analysis of GHG emission inventories reveals the importance of the agriculture/forestry sector, which represents the sector emitting most of GHG, accounting for 70% to 80% of total emissions.



*Hence, mitigation actions in these countries should focus on the agriculture and forestry sector.*



Land Use and Land Use Change (LULUCF) constitute the main source of GHG emission in Africa.



Soil and plants conserve three times the volume of carbon present in the atmosphere of the planet.



The clearing and degradation of such important carbon sinks turns them into the major sources for GHG emission. The particularity of the agriculture sector is that it represents at the same time the source (emission or “destocking”) and a sink (absorption or storage) of GHG.

## The SAWAP projects contribute to carbon sequestration

Combating climate change negative effects and adapting communities to its impacts represents an opportunity for new and more sustainable investments and management choices that can also contribute to improved livelihoods and among dryland communities and increasing carbon sequestration in soil. Africa comprises considerable stocks of carbon and almost 60 per cent of the carbon contained in soil is found in deserts and drylands (UNCCD, 2009).

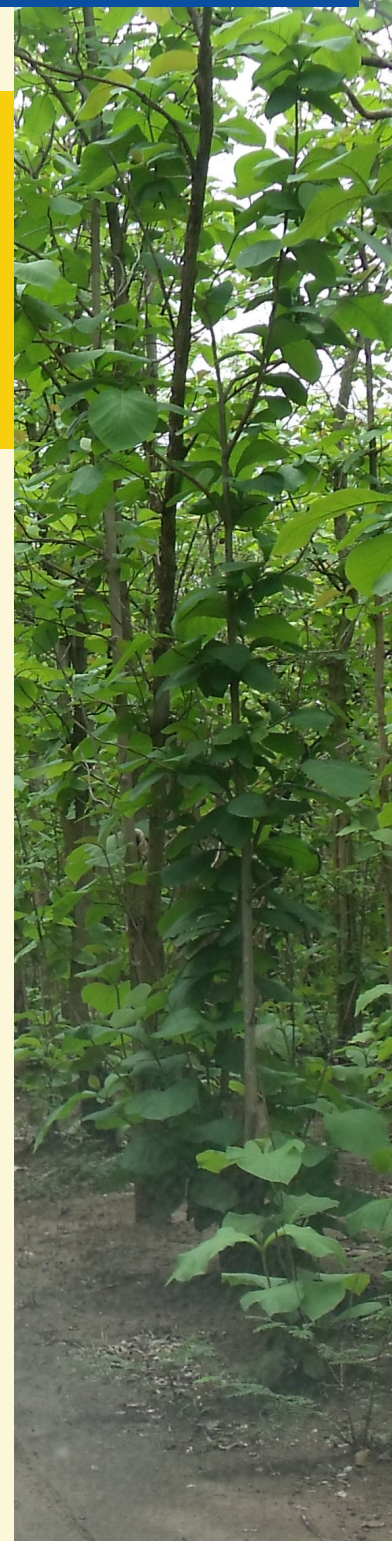
### Results of the Training on the EXACT tool

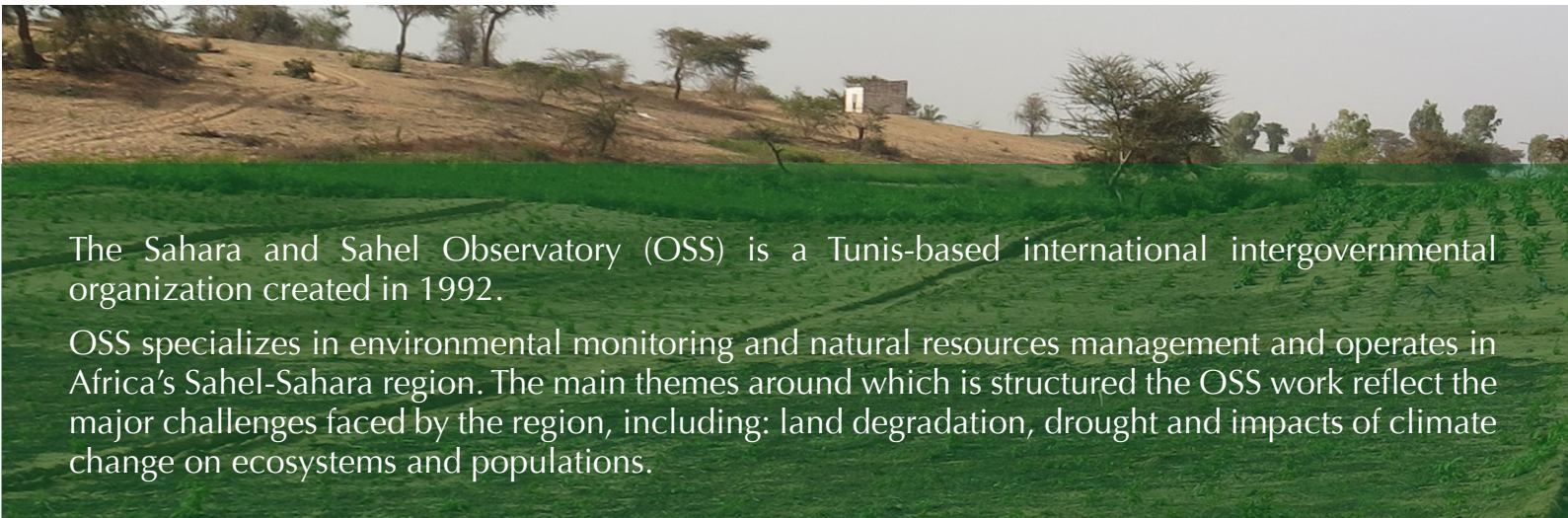
OSS organized a training workshop on the Ex-ante estimation of the SAWAP projects impacts using the EXACT tool<sup>1</sup>.

The results obtained from forms filled out by the national projects (see the table below) show that the carbon balance is negative, which asserts that the SLM activities of the projects contribute to increasing carbon sequestration.

Country	Project Title	Zone covered (ha)	Carbon Balance (million Tco2)
Ethiopia	Sustainable Land Management Programme (SLMP 2)	1 100 000	-64.7
Ghana	Sustainable Land and Water Management Programme (SLWMP)	177 607	-17.9
Mali	Natural Resources Management and CC Programme (PGRNCC)	742 515	-13.2
Niger	Plantation of Acacia in Senegal (Biocarbon)	8 480	-1.4
Sudan	Sudan Sustainable Natural Resources Management Program (SSNRMP)	104 000	-10.1
Togo	Integrated Climate Management Programme in Togo (PGICT)	115 300	-5.4
<b>TOTAL</b>		<b>2 247 902</b>	<b>-112,7</b>

<sup>1</sup> Ex-ACT (ex-Ante Carbon Balance Tool) is a tool developed jointly by three FAO divisions (Policy and Programme Development Support Division (TCS); Investment Centre Division (TCI); and Agricultural Development Economics Division (ESA))





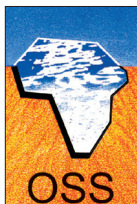
The Sahara and Sahel Observatory (OSS) is a Tunis-based international intergovernmental organization created in 1992.

OSS specializes in environmental monitoring and natural resources management and operates in Africa's Sahel-Sahara region. The main themes around which is structured the OSS work reflect the major challenges faced by the region, including: land degradation, drought and impacts of climate change on ecosystems and populations.



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