Greening the Sahel

How WFP's integrated resilience programme generates climate solutions at scale

THE CLIMATE CRISIS AND ITS CONSEQUENCES IN THE SAHEL

The G5 Sahel countries (Burkina Faso, Chad, Mali, Mauritania and Niger) are facing **multiple, interlinked challenges**: high levels of food insecurity and malnutrition, unequal access to basic services, poorly integrated markets, rising insecurity, an environment threatened by land degradation, recurrent droughts and erratic rainfall.

Climate change is considered a major aggravating factor, compounding these simultaneously occurring shocks and stressors. For instance, the increasingly scarce availability of livelihood resources coupled with demographic pressure has the potential to disrupt the delicate balance between farmers and herders sharing water and grazing lands.

The potentially **devastating consequences** highlight the sense of urgency to address the root causes of climate change and **help communities to adapt**.

OUR VISION

Healthy ecosystems are the very foundation for people's wellbeing and livelihoods in the Sahel. The multifaceted challenge exacerbated by climate change demands **unprecedented investments in land rehabilitation,** but also in **education**, **health and nutrition**, **green jobs** for all, enabling **social cohesion** and **better governance.**

It is with this vision that the **WFP**, in collaboration with governments and partners, has scaled up an **integrated resilience programme** in the Sahel: the approach is based on participatory watershed planning, triggering a variety of land rehabilitation activities and linking them to school meals, nutrition programmes, and support to smallholder farmers. In practice, this means **bringing degraded land back to life**, enabling **access to food and healthy diets**, getting **children back to school**, and developing **value chains** to boost **incomes** and **green jobs**.

WFP
World Food Programme

SAVING LIVES
CHANGING LIVES

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ADAPTATION THROUGH INTEGRATED RESILIENCE

Adaptation means to support vulnerable people and ecosystems to **become more resilient** to the cascading effects of climate change coinciding with multiple vulnerabilities. Therefore, **sustainable land and natural resource management** is at the center of the WFP integrated resilience approach, working to **counteract land degradation, restore ecosystems** and **enable sustainable access to water** – the very foundation of life.

In only four years, WFP and communities have together **rehabilitated nearly 158,000 hectares of degraded land** in the G5 Sahel countries. In the past year, the programme has reached more than **2.5 million people** with the package of integrated activities across the five countries, reducing vulnerabilities and building resilience to the shocks that are bound to come as well as to long-term stressors. **Restoring landscapes and engaging the wider community goes far beyond food and nutrition security**: it has the potential to ease conflicts and underlying vulnerabilities.

WHAT HAS BEEN ACHIEVED SO FAR?	5 COUNTRIES	158,000 HECTARES	2.5 MILLION PEOPLE
	COVERED BY THE INTEGRATED RESILIENCE PROGRAMME	OF LAND REHABILITATED	REACHED IN THE PAST YEAR ALONE

In the Sahel, many communities have **abundant knowledge of their environment and the natural resources** they rely on – tapping into this knowledge while introducing selected innovations can be a **powerful tool to protect biodiversity and ecosystem services.**

For instance, farmers in arid lands of the Sahel use techniques such as **zai pits and half-moons**, structures that are dug into the ground to capture rainfall, enabling crop production and groundwater recharge at the same time. They allow to improve soil moisture and fertility, allowing for crops and trees to grow even with little or erratic rainfall.

Integrated resilience interventions serve as a **buffer to instability** by strengthening social cohesion, creating social safety nets, keeping lands productive and offering economic opportunities. This is the **true meaning and real impact of greening** – it is a foundation for healthy and prosperous societies, a green future for the people of today and the children of tomorrow.

***Before & After**: In Bourgerba/Mauritania the soil was degraded and completely barren. Rehabilitation through dikes, half-moons and soil bunds has changed the landscape, rendering **51 ha of the land productive and fertile**. Photos: En haut! for GRDR (left), WFP/Bechir Maloum (right)*

BEFORE

AFTER

As part of a peer-to-peer training, the communities of the resilience sites in the Mauritanian region of Assaba meet for a day in the village of Goureijma to share good practices. Participants learn how to build half-moons, a traditional agricultural technique used to reduce water runoff and retain scarce rainfall. Photo: WFP/Bechir Maloum

EVIDENCE FROM THE GROUND

Survey data from beneficiary households after two years of implementation shows improvements on several aspects: **diets** are overall becoming more regular, more frequent and more diversified, despite the various shocks and stressors affecting the region. The use of **negative coping strategies** such as selling productive assets, livestock or land due to a lack of food or resources to buy food, has decreased.

70% **of households indicated improvements in their natural environment thanks to the improvement of soil fertility**

Diets are overall becoming more regular, more frequent and more diversified, despite shocks

Between 75-80 percent of household found that the assets created or rehabilitated contribute to the protection of their household, their belongings, and their production capacities against the impacts of floods and/or droughts.

Over 75 percent of households state that **assets created have reduced day-to-day hardships**, saved time for their family members, helped them to increase or diversify their production and the agricultural potential through improved water management capacities and soil fertility.

70 percent of households indicated **improvements in their natural environment** thanks to the improvement of soil fertility and its effects and 77 percent indicated that they had an were better able to **access markets and basic services** (water, sanitation, health, education, etc).

EVIDENCE FROM THE SPACE

In Niger, **WFP partnered with the U.S. Agency for International Development (USAID) and the NASA Marshall Space Flight Center** to assess vegetation changes induced through WFP's asset creation interventions with the help of high-resolution **satellite imagery** and remote sensing techniques.

Satellite datasets have a significant potential to quantify the impacts of asset creation activities. One of the unique **advantages of satellite** observations is the ability to analyse the landscape before intervention.

Preliminary findings show some very encouraging results, with the analysis indicating a significant positive effect on vegetation indicators that can be attributed to WFP's programmes: on 18 sites in southern Niger that were treated with half-moons or zai, satellite-derived **vegetation indices post-intervention were nearly 50 percent higher** as compared to previous years and 25 percent higher than in nearby non-intervened areas.

MITIGATION THROUGH INTEGRATED RESILIENCE

Some of the integrated resilience activities in the Sahel are making major contributions to the climate mitigation agenda by **restoring soil functions and services** of previously degraded land.

Ecosystems services have vital impacts on life on earth: supporting services (such as soil formation and biodiversity) enable **provisioning services** (incl. food and water), **regulating services** (incl. macro- and micro-climates) and **cultural services** (incl. education and recreation). Soil biodiversity is literally the foundation of ecosystem functions, determining among other things carbon, nitrogen, and water cycles.

When protected and managed sustainably, soils and lands serve as carbon sinks: together with the Aghrymet Regional Center, a specialized institute of CILSS, WFP in Niger has measured the **carbon sequestration potential** of land rehabilitation activities implemented as part of the integrated resilience approach.

CARBON SEQUESTRATION POTENTIAL

STUDY FROM NIGER			
	48	39,609	4.8
	SITES	HECTARES	MILLION TONS

The study assessed 48 sites, comprising over 39,609 hectares. It showed that a **combination of soil and water conservation techniques, afforestation and reforestation, and sustainable land management practices** have a **carbon sequestration potential of 4.8 million tons by 2030**. This is around 238,000 tons per year and 6 tons per hectare/year.

IMPRESSIONS FROM THE FIELD — SPOTLIGHT RAFA

In the commune of Gazoua, Maradi, southern Niger, **land degradation and recurrent droughts have adversely affected people's livelihoods,** putting households' food and nutrition security at risk. In the site of Rafa, an **integrated package of activities centred around the school now plays a catalytic role for the resilience** of the community – reinforcing food production, nutritional practices, and education. To meet the needs identified during the Community-based Participatory Planning, WFP and its partners supported the set-up of a **0.25-ha school garden, equipped with a borehole and a solar-powered pump**, near the primary school of Rafa in 2019. Garden produce – fruit and vegetable during the dry season and rainfed crops, such as corn, beans, sorrel, and okra, during the rainy season – complement the **daily school meals provided to 187 students** with fresh and nutritious food, while contributing to **income for the school**.

The garden also has an **educative objective**: each student, from elementary to middle school, is in charge of a plant in the garden and brings in organic manure from home to amend the soil. Practical sessions on gardening techniques, such as compost-making, cutting, grafting or the setting-up of plant nurseries, are conducted by teachers and by the Ministries of Agriculture and Environment's technical agents.

To sustainably increase the asset base, Food Assistance for Assets (FFA) participants have worked to **recuperate degraded land and significantly increase production through a combination of half-moons and zai**—small pits dug along approximate contour lines amended with organic manure. Through these techniques, more than **2,252 ha of agro-pastoral land have been rehabilitated**. Agricultural productivity increased by a factor of 2-3, with the community reporting an average yield of sorghum or millet of 1-1.5 mt/ha on rehabilitated land as compared to 0.5 mt/ha on untreated fields.

The production of the school garden and FFA activities also benefit women from the community-based learning and rehabilitation centre, where 25 **"Mamans Lumieres" promote good hygiene and nutritional practices** as well as the use of locally available foods. The produce from the garden is used for culinary demonstrations and the treatment of moderate cases of malnutrition. The engagement of all community members further supports the sustainability of interventions as well as contributes to cohesion within the community.

The site of Rafa is **one of 850 sites** across the Sahel, where WFP contributes to restoring ecosystems, helping communities to adapt, and setting the foundation for climate-sensitive food systems.

More to read:
Integrated Resilience in the Sahel on wfp.org
Scaling-up Resilience: A Story of People, Partnerships and Practice

More to watch:
Restoring Soil to fight hunger in the Sahel
Climate Change in the Sahel "Water is the most precious thing we have."

More to ask:
Resilience & Livelihood Unit / Dakar

Cover photo: En Haut! for GRDR