



Food and Agriculture Organization
of the United Nations



Hand-in-Hand
Initiative

SOUTH SUDAN

Investment cases
World Investment Forum

Country area: 644,330 sq. km

Area under cultivation: 4% of land area

Population: 11,088,796

Agriculture contributes to 15% of GDP &
36% of non-oil GDP

Employment in agriculture:
78% of total population

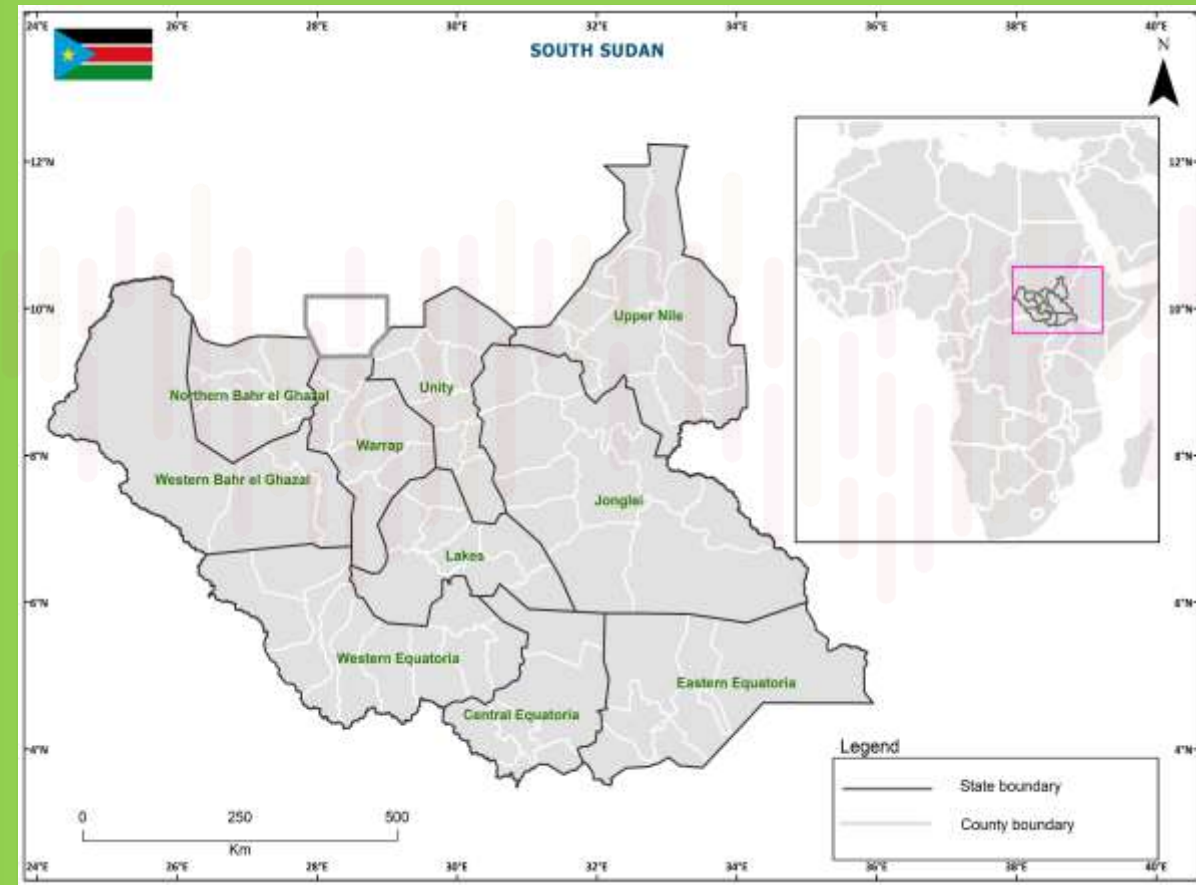
Livelihoods:
78% of rural population depend on
farm crops and 80% on animal husbandry

Poverty rate:
82% of the population is classified as poor
(World Bank, 2022)

South Sudan



at a glance



1

Untapped potential from growing young population living in rural areas

Population growth rate (1.5%) above world average (0.9%).
Youth: 74% of the population

Why invest in South Sudan ?

3

Government willingness to support private investments and improve the enabling environment

Government is primarily concerned with supporting peace and promoting nation building in a step towards economic reconstruction.

Comprehensive Agriculture Master Plan (CAMP) - investment framework for agriculture with a long-term horizon of 25 years (2015-2040), including economic growth and livelihood improvement and agriculture sector transformation among others

Country COMPACT from 2022 focused on sorghum, sesame, rice and fisheries value chains

2

Untapped potential from agriculture land and rich ecosystem services

Over 80% of the land is suitable for agriculture - 3.8% under cultivation

Agroecological conditions: High rainfall nine months per year, abundant water sources - high potential for irrigated agriculture.

Power generation from renewable resources has potential.



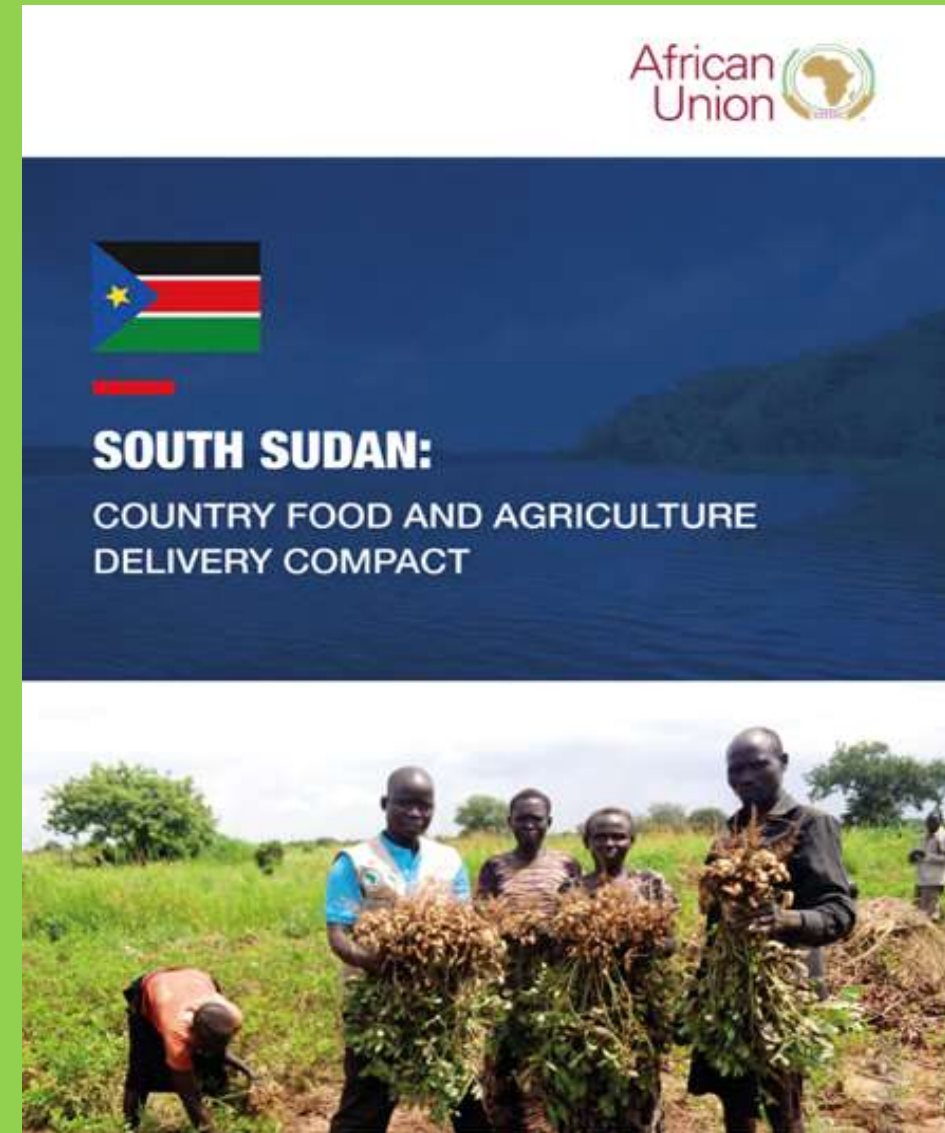
South Sudan: Country Food and Agriculture Delivery Compact - COMPACT

The vision of South Sudan 2040 prioritizes building a prosperous, productive and innovative nation; to be achieved through increasing agricultural productivity to enhance food and nutrition security.

In response to the vision of South Sudan 204, the Government of South Sudan developed the COMPACT.

The COMPACT is an Investment Plan aiming to transform agriculture and livestock into a thriving sector and a driving force for inclusive growth and economic diversification. It proposes US\$ 1.15 billion dollar investments, over a five year period, in four strategic value chains: Sorghum, Sesame, Fisheries and Rice.

To support the identification of strategic areas for investment within these four value chains, the proposal also builds on the Hand in Hand initiative stochastic frontier analysis for agriculture and livestock.



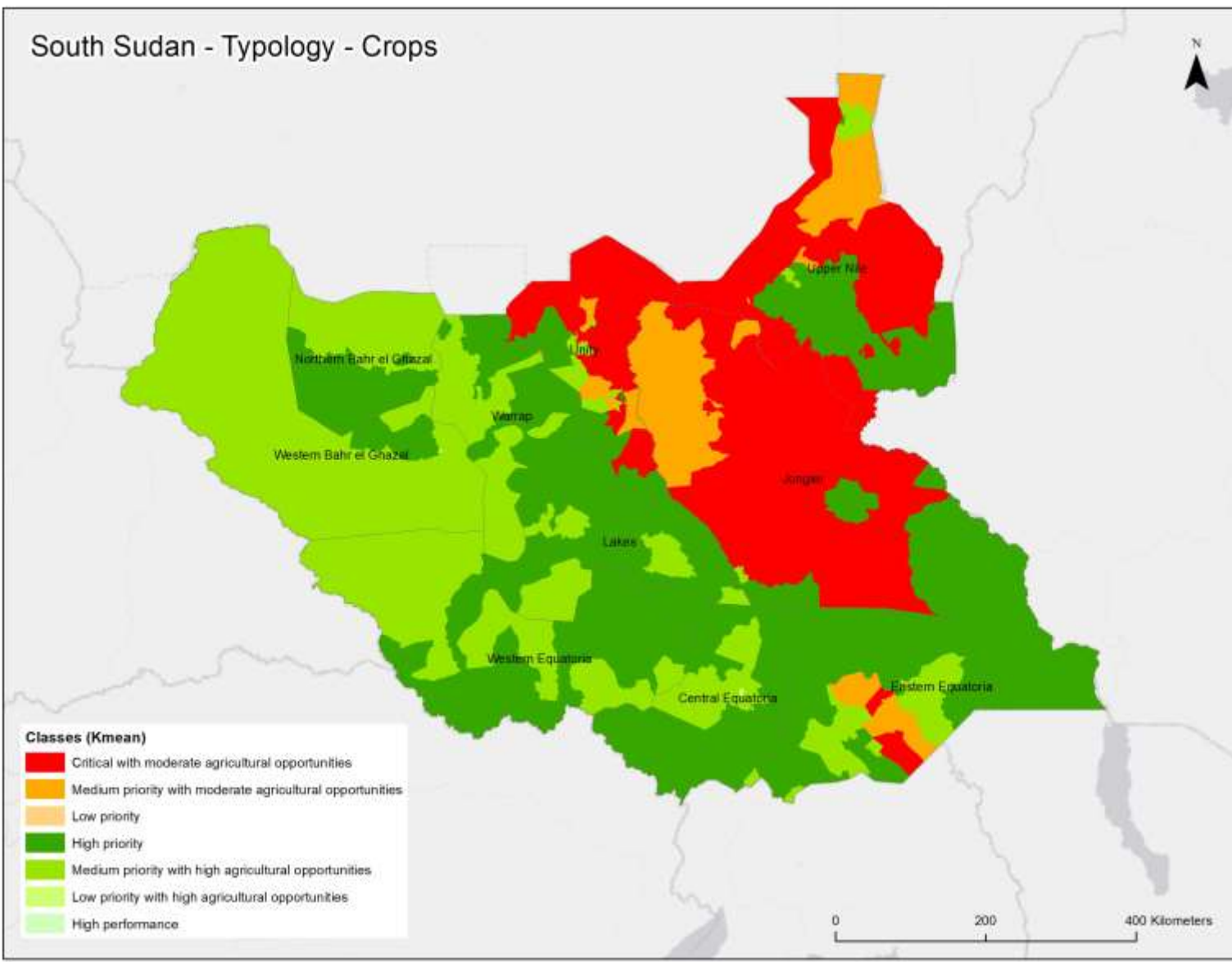
Government Policies and Plans

The Revised National Development Strategy (R-NDS): Under the overarching theme of “Consolidate Peace, Stabilize the Economy,” the Revised National Development Strategy (R-NDS) 2021- 2024 expresses national aspirations to transition from dependence on humanitarian aid to a development path using the humanitarian, development and peace nexus approach and has adopted a comprehensive implementation framework anchored on collaboration with development partners.

Comprehensive Agriculture Master Plan (CAMP): The comprehensive agriculture plan for 110 investment projects to be implemented over a 25 years timeframe. The CAMP is developed on 5 major pillars aligned with R-NDS.



South Sudan - Typology - Crops



Classes (Kmean)

- Critical with moderate agricultural opportunities
- Medium priority with moderate agricultural opportunities
- Low priority
- High priority
- Medium priority with high agricultural opportunities
- Low priority with high agricultural opportunities
- High performance

	Poverty	Potential	Efficiency
Critical with moderate agricultural opportunities	High	Moderate	Any
Medium priority with moderate agricultural opportunities	Medium	Moderate	Any
Low priority	Moderate	Moderate	Any
High priority	High	Medium / High	Medium / Moderate
Medium priority with high agricultural opportunities	Medium	Medium / High	Medium / Moderate
Low priority with high agricultural opportunities	Moderate	Medium / High	Medium / Moderate
High performance	Moderate	Medium / High	High

FAO-Hand in Hand task force (2023) Stochastic frontier analysis:

Typologies of territories based on poverty, agricultural potential, and efficiency to target investments and interventions in the framework of the Hand-in-Hand Initiative

Common Challenges and Opportunities

1. The targeted products (Fish, Sorghum, Rice, and Sesame) share some common challenges associated with low production and productivity. The low yield per unit area calls for more research and innovation, better access to fertilisers, equipment and financial services, and technology adoption to reduce food insecurity.
1. High post-harvest losses can be reduced with better storage and processing facilities, improving access to energy and upgrading road infrastructure.
2. The institutional and human capacity for administration and financial management could be more robust, particularly at the state and local levels.
3. Production costs compared to neighbouring countries, particularly labour costs and input prices, are more significant due to higher commodity prices brought about by currency devaluation from oil exports.
4. Transportation, irrigation, storage, and processing infrastructure must be developed, and electricity services are yet to reach rural areas.
5. The investment environment needs improvement to attract private sector activities and investment.
6. Cross-cutting challenges include the impacts of climate change and localised conflicts that disrupt crop cultivation and displace farmers, causing severe food insecurity in many areas.

National Sorghum production contributes to 76% of the national food supply.

About 80% of HH grow sorghum (all States) with own seeds of local varieties.

In 2022, national production reached 741,339 MT in a production area of 759,469 hectares - Yield is 0.98 MT/ha.

Post harvest losses are high – ranging from 40 to 50 percent).

South Sudan is the 6th largest importer of sorghum in the world.

The country imported 132,551MT - \$26.3M from Ethiopia (\$9.42M), Kenya (\$9.33M), United States (\$5.42M), and Tanzania (\$2.13M). Sorghum is the 4th most imported product in South Sudan.

Value chain

SORGHUM



Challenges

Low production and productivity. Due to **limited access to quality inputs** (mainly extension, seeds, fertilizers, equipment and financial services), most households dedicate below two acres of land to sorghum production, mostly in rain fed mixed cropping system. High post-harvest losses driven by limited **storage and processing facilities** and **poor road infrastructure and access to energy**.

Opportunities

Growing demand. Consumption of the crop takes many forms, the most widespread being sorghum flour to prepare flat bread (kisra), porridge (asseeda) and other meals.

Highly resilient crop. Community-based groups are already engaged in seed multiplication of locally adapted and well performing varieties.

Potential to **increase efficiency and production scale to become competitive and substitute imports** with key investments in: improved access to quality inputs and services for sustainable production intensification; storage and processing facility with adequate governance and management approaches; and ancillary infrastructure to ensure logistics and commercialization.

Challenges and Opportunities



Sorghum

Investment Proposal

Objective

Increase sorghum production, processing and commercialization through improved access to value chain inputs and services for sorghum out-growers linked to storage and processing facilities.

Key activities

Investments to complement IFIs action in regions with potential for storage and processing, based on two lines of action:

- 1) Access to TA, agri-inputs, mechanization and application of climate-smart agriculture technologies (CSA, i.e. flat beds), larger-scale storage and processing (five sorghum milling facilities, each with 5,000MT capacity);
- 2) Sorghum Seed certification and propagation (linked to agri-inputs access in Component 1).

Priority locations

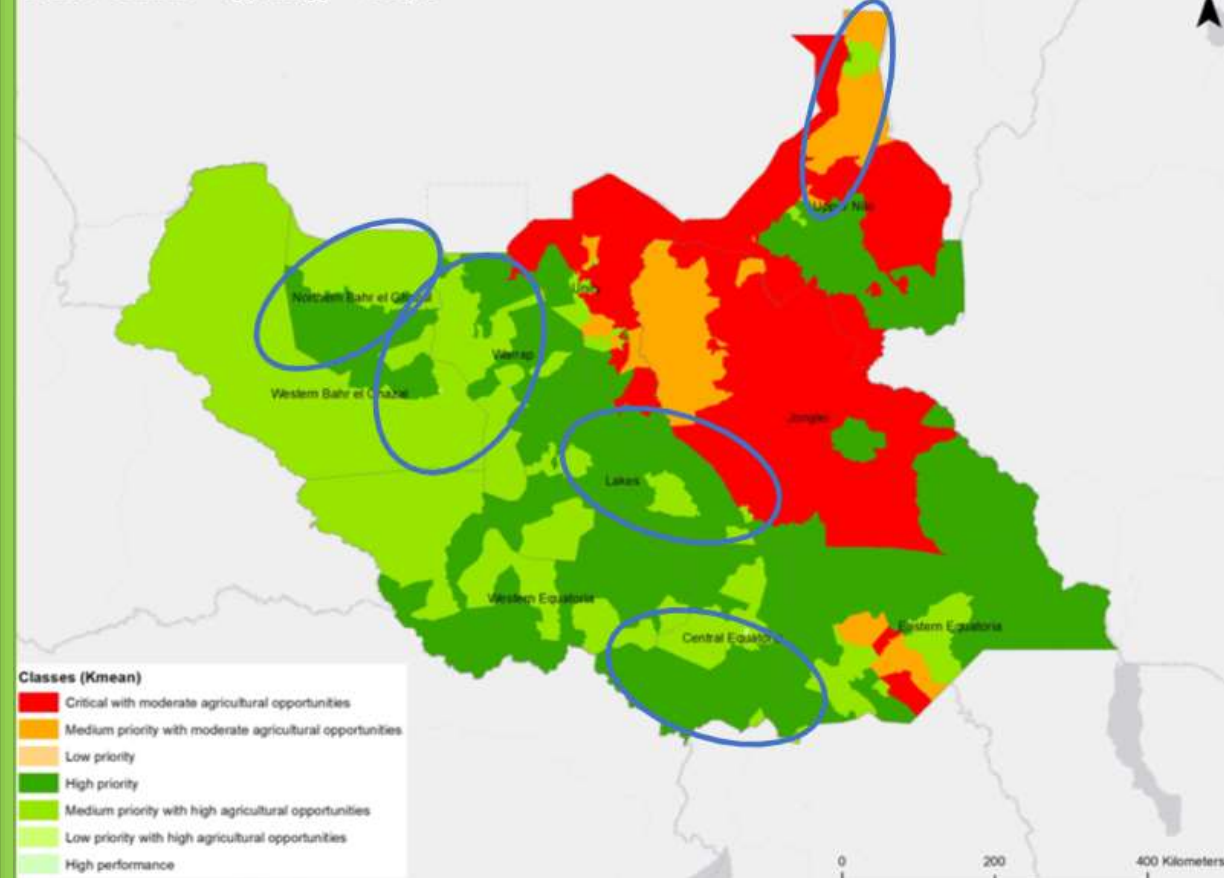
Five regions including Components 1 and 2:

- Increased productivity in Western Bahr el Ghazal and Warrap States – Storage and Processing in Wau county.
- Increased productivity in Northern Bahr el Ghazal State – Storage and Processing in Aweil county.
- Increased productivity in Western and Central Equatoria – Storage and processing in Yei county;
- Increased productivity in Lakes and Jonglei States – Storage and Processing in Bor.
- Increased productivity in Upper-Nile State – Storage and processing in Renk.

Target population

11,883 smallholder farmers

South Sudan - Typology - Crops



Financial performance of the investment proposal for the five priority regions

Cost estimates (USD)

Initial investment on assets (first three years), USD	20,900,000
Working capital (first two years), USD	29,334,500
Total investment required (first three years), USD	50,234,500

Financial analysis based on a ten-year period and applying a 12% discount rate

Financial performance indicators	
IRR	27%
NPV (USD, 12%, 10 years)	14,671,729
Switching value for benefits	-19%
Switching value for costs	16%
B/C ratio	1.19
Investment payback period (years)	3.85



Projected costs and benefits of Sorghum value chain investments in the five priority regions

Economic and environmental spillovers

Performance indicators	
Direct beneficiaries (farmer HH)	10,717
Incremental net revenue per beneficiary (average, USD)	981
Direct employment	11,717
Indirect employment	35,150
GHG Balance (tCO ₂ eq in 10 years)	

The crop is mainly grown by small-holder farmers, while there are some commercial farmers in Upper-Nile.

South Sudan ranks **5th** in the world for **area harvested** to sesame seeds, but it ranks **64th** in the world for **yield** due to difficulties along the value chain.

In 2021, the total sesame production in South Sudan was **26,000 MT** and the yield was 0.3 ton/ha.

In 2021, South Sudan **exported \$253k** in Sesame oil or fractions not chemically modified, making it the **44th largest exporter in the world**. It is the 16th most exported product in South Sudan.

The main destination of exports are United Arab Emirates (\$242k) and France (\$11.1k). (Import is negligible).

Value chain

SESAME



Challenges

Low productivity given **limited access** to production enhancing inputs, including improved sesame varieties and quality seeds due to a poorly developed input supply system.

Underdeveloped processing and storage facilities, as well as **phytosanitary and food safety issues**, leading to post-harvest losses and limiting marketing options. Sesame output is generally sold to Sudanese traders, not only due to the high prices they offer but also due to the **poor state of the road network** linking Upper Nile State with the capital, Juba.

Opportunities

Growing domestic market. Local demand is growing for processed sesame seeds and byproducts, most of which are currently imported from neighboring countries.

Global demand for sesame oil is on the rise. High value commodity with low production costs and high climate resilience.

Potential to sustainably increase production and productivity.

Comparative advantages (agroecological, labor, etc) and other positive conditions (existence of incipient value chain links) can be developed to improve production and productivity for sesame seeds and by-products to serve the local market first and eventually contribute to exports.

Challenges And Opportunities



Sesame

Investment Proposal

Objective

Increase sesame **production**, **processing** and **commercialization** through facilitated access to value chain inputs services for sesame outgrowers linked to **storage** and **processing facilities**.

Key activities

Investments to complement IFIs action in regions with potential for storage and processing, based on two lines of action:

- 1) Access to TA, agri-inputs, mechanization, application of CSA technologies and **larger-scale storage and processing** facilities (sesame de-hulling facilities in five locations, each one with 5,000MT capacity);
- 2) Sesame **Seed certification and propagation** (linked to agri-inputs access in Component 1).

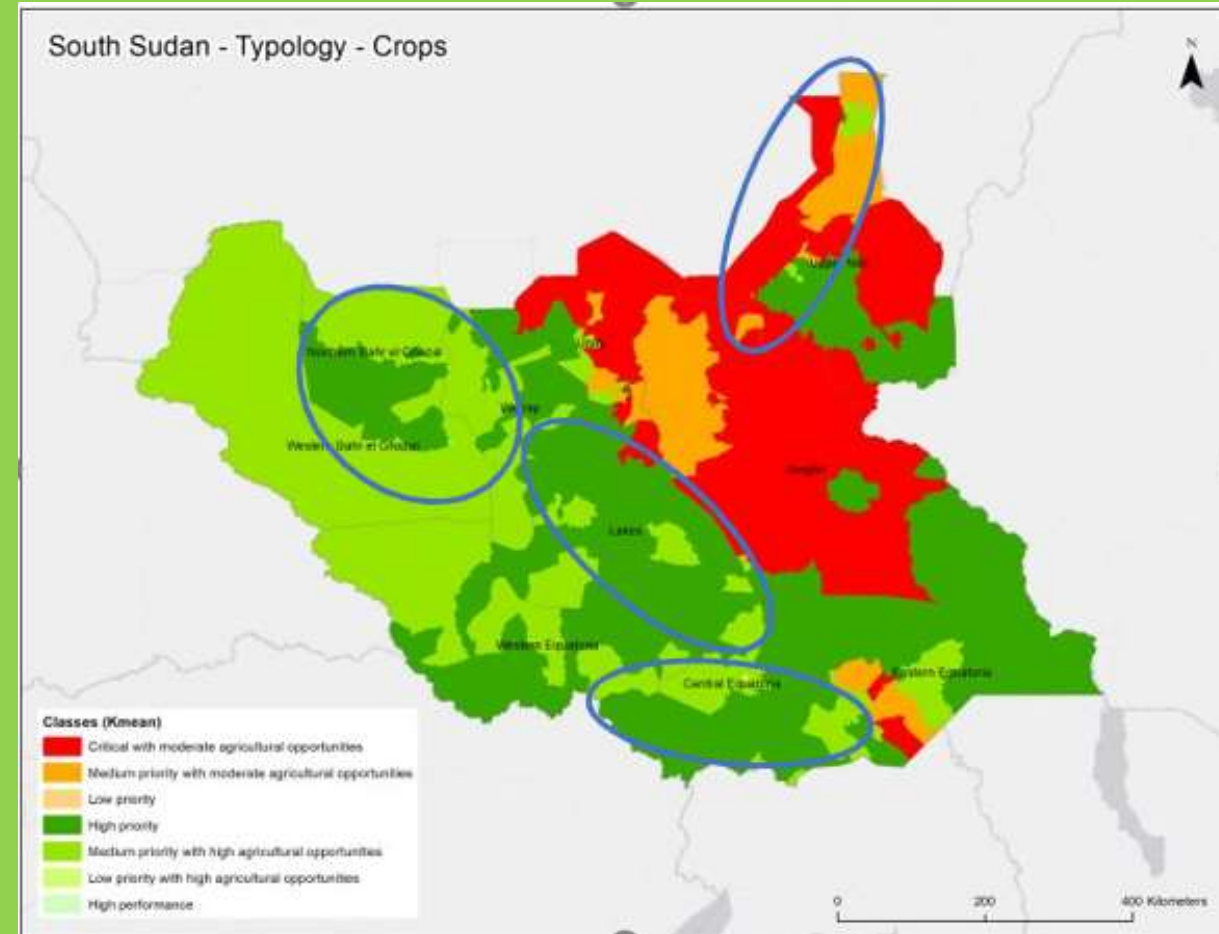
Priority locations

Four regions including Components 1 and 2:

- Increased productivity in Central Equatoria and Eastern Equatoria States - Storage and processing in Juba county;
- Increased productivity in Western Bahr el Ghazal, Northern Bahr el Ghazal and Warrap States – Storage and processing in Wau / Aweil;
- Increased productivity in Upper-Nile State - Storage and processing in Malakal;
- Increased productivity in Lakes and Jonglei States – Storage and processing in Bor.

Target population

40,978 smallholder farmer households



Financial performance of the investment proposal for the four priority regions

Cost estimates (USD)

Initial investment on assets (first three years), USD	14,159,212
Working capital (first two years), USD	16,504,490
Total investment required (first three years), USD	30,663,702

Financial analysis based on a ten-year period and applying a 12% discount rate

Financial performance indicators	
IRR	37%
NPV (USD, 12%, 10 years)	17,248,581
Switching value for benefits	-27%
Switching value for costs	21%
B/C ratio	1.27
Investment payback period (years)	2.35



Projected costs and benefits
Sesame value chain investments
in four priority regions

Economic and environmental spillovers

Performance indicators	
Direct beneficiaries	40,978
Incremental net revenue per farmer (average, USD)	399
Direct employment	41,594
Indirect employment	124,783
GHG Balance (tCO ₂ eq in 10 years)	

Sesame
Investment Project Case

South Sudan has abundant fisheries resources. The fishery sector in South Sudan produces about **140,000 tonnes / year**. Approximately 1.7 million people depend directly on fisheries for their livelihoods

There are reports of fish "dying of old age" in S. Sudan.

The potential sustainable yield from wild fisheries is estimated in the order of **200,000 tonnes/year**, worth about **USD 800 million per year**. States with abundant fishery resource including Upper Nile, Jonglei, Unity, Northern Bahr el Ghazal, Warrap, and Lakes.

About **56% of the fish catch is processed** in fishing camps and villages by **smoking or drying**. The rest is sold fresh whole.

Post-harvest losses overpass 50 % of the total fish catch due to improper handling, storage, processing and transport.

Linking production sites to urban markets is a major constraint which is exacerbated by **lack of road infrastructure and cold chain** facilities.

Before the crisis in 2013, South Sudan exported up to 20,000 MT of fish per year to Sudan. Exports have reduced due to insecurity and trade route barriers. However, **export of dried fish to DRC has increased over the years**.



Value chain
FISHERIES



Challenges

Limited access to fishing gear, inputs, TA, finance and other value chain services.

Rain seasonality having a strong influence on fish catch and transport.

Poor Sanitary standards and traceability along the value chain. Lack of sufficient post-harvest infrastructure and management capacity leads to approximately 65% of losses.

High transportation costs due to poor infrastructure.

Opportunities

Fisheries are accessible to women and youth and can provide livelihood and employment.

Perceived as a more 'secure' and reliable activity.

Cold-storage and transportation premium price.

High demand in Juba. High export potential in neighboring countries.

Challenges and Opportunities



Objective

Increase the capacity and value of capture fisheries to cover growing demand from **domestic and export markets**.

Key activities and priority locations

There is high potential in three areas of the Nile-Sobat corridor:

- *Fisheries development along the Sobat River, including: fishers from Akobo, Ulang and Nasir (all in Upper Nile State); landing sites in Malakal (Upper Nile State), Nasir and Bor (Jonglei); and **enhanced market access** in the region and to Juba (CES).

- *Fisheries development along the White Nile from Terekeka (CES) to Nimule (Eastern Equatoria), including: fishers support and landing sites in Terkeka and Nimule and **enhanced market access** in the regions and to Juba (CES).

- *Fisheries development in the upper Nile-Sobat basin, including: fishers support and landing sites in Tonga (Upper Nile), New Fangak (Unity State) and Rubkena (Unity State); and **enhanced market access** in the region, mainly through Bentiu (Unity State) and Malakal.

Target population: **1,170** fishers households.

Fisheries

Investment proposal



Financial performance of the investment proposal for the three priority areas of Nile-Sobat corridor

Cost estimates (USD) for the Program (three Projects in priority zones)

Initial investment on assets (first three years), USD	7,784,250
Working capital (first two years), USD	9,310,000
Total investment required (first three years), USD	17,094,250

Financial analysis based on a ten-year period and applying a 12% discount rate

Financial performance indicators	
IRR	20%
NPV (12%, 10 years)	2,835,327
Switching value for benefits	-67%
Switching value for costs	40%
B/C ratio	1.67
Investment payback period (years)	5.14



Projected costs and benefits Fisheries value chain investments in three priority areas of the Nile-Sobat corridor

Economic and environmental spillovers

Performance indicators	
Number of direct beneficiaries	1,170
Incremental net revenue per farmer (average, USD)	1,773
Direct employment generated	1,359
Indirect employment	4,077
GHG Balance (tCo2eq in 10 years)	

Fisheries
 Investment Opportunities

Rice in South Sudan is ranked among the first four major staple cereals and is produced in **two types of rice production systems** (upland and lowland/paddy rice).

In 2021, the country produced about **26,000 tonnes** of rice. **Yields vary** from 0.4 to 1.6 MT / ha.

In 2021, South Sudan imported \$3.93M in rice. Rice was the **62nd most imported product** in the country. The main countries of origin for imported rice are China (\$3.36M), India (\$356k), United Arab Emirates (\$113k), Rwanda (\$80.8k), and Kenya (\$16.5k).

Value chain
RICE



Challenges

Damaged rice farms and infrastructure such as irrigation canals, small dams, etc., which need to be rehabilitated.

Unreliable rainfall, poor access to credit facilities, poor soil and water management practices, poor rice storage facilities, inadequate and poor processing machines

Lack of knowledge and practices in climate smart rice production techniques such as Alternate wetting and drying (AWD).

Opportunities

Growing domestic and regional demand. Rice consumption in sub-Saharan Africa is growing by an estimated 6 percent a year. Yet most African countries are not self-sufficient producers. Potential to increase efficiency and production scale to become competitive and substitute imports with key investments in: rehabilitation and development of irrigation schemes, access to high quality inputs, support to apply adequate technologies and practices, as well as improved infrastructure and management capacities for storage, processing and commercialization.

Challenges and Opportunities



Objective and location

Increase rice production, productivity and commercialization from **Aweil Rice Scheme (ARS)**.

Activities

Rehabilitation of 12000 has under the ARS.

Rehabilitation of **road access / dykes**, irrigation canals

Development of improved **rice seed and stock**

Procurement of machinery such as **tractors and related equipment**

Procurement of **small scale post – harvest processing and value addition equipment** for farmers groups

Technical support for the research centre linking with capacity building of farmers, extension workers and the private sector.

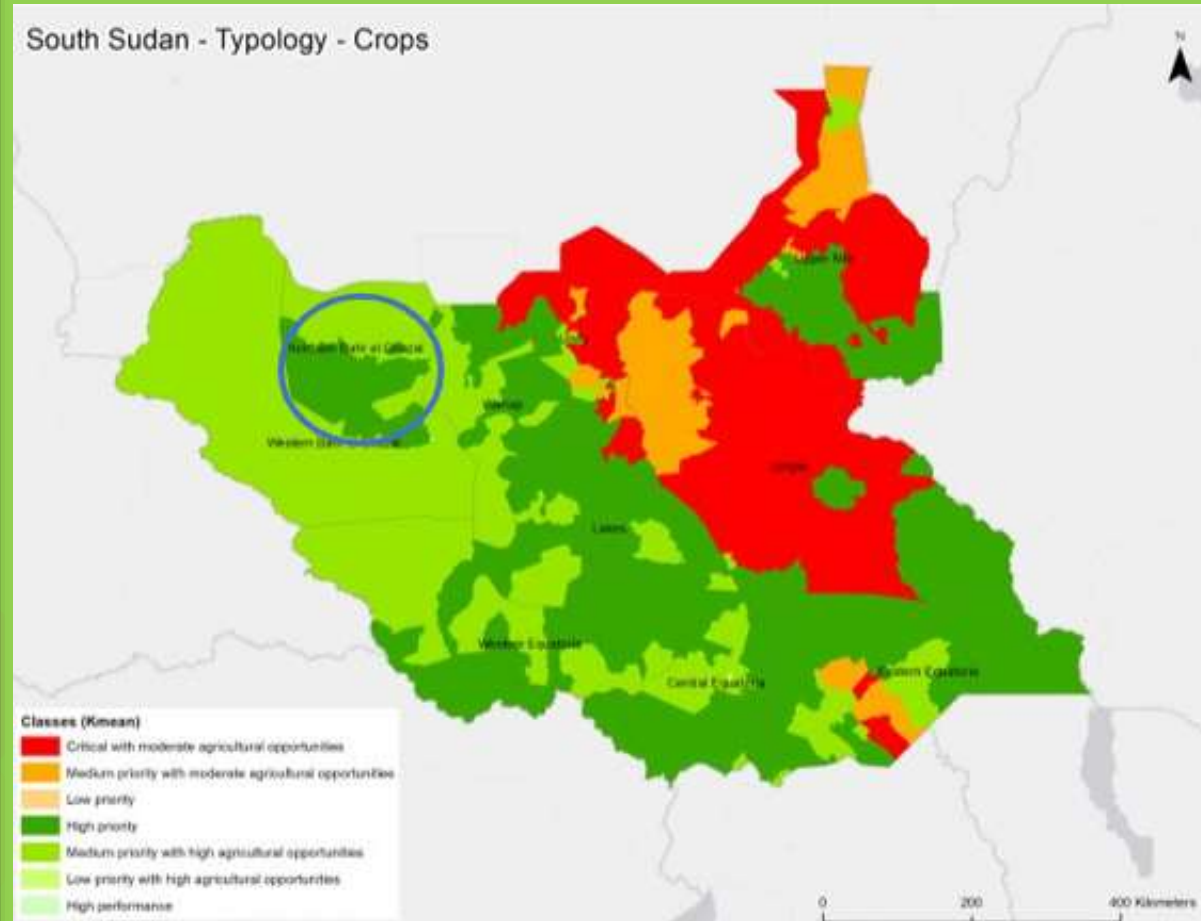
Establishment of additional **multi – purpose solar boreholes** for use (horticulture etc) during the dry season as well as access to potable water.

Facilitate access to inputs (fertilizers, rice seeds etc).

Target population

4,440 smallholder farmer households

Investment Project Case Aweil Rice Scheme



Rice
Investment Opportunities



Financial performance of the investment proposal for the Aweil Rice Scheme

Cost estimates (USD) for the Program (three Projects in priority zones)

Initial investment on assets (first three years), USD	19,884,684
Working capital (first two years), USD	7,801,851
Total investment required (first three years), USD	27,686,535

Financial analysis based on a ten-year period and applying a 12% discount rate

Financial performance indicators	
IRR	15%
NPV (12%, 10 years)	2,146,249
Switching value for benefits	-16%
Switching value for costs	14%
B/C ratio	1.16
Investment payback period (years)	5.08



Projected costs and benefits Rice value chain investments in the Aweil Rice Scheme

Economic and environmental spillovers

Performance indicators	
Number of direct beneficiaries	4,600
Incremental net revenue per farmer (average, USD)	467
Direct employment generated	4,630
Indirect employment	13,890
GHG Balance (tCo2eq in 10 years)	

Rice
 Investment Opportunities



Summary Investment Proposals

USD 125M
Investment for
selected VCs

15-37%
Range of IRR

~1.5M
People
benefited

~USD 832
Income Increase
Per Farmer HH

~5M tCO₂eq
Emission
Reduction

Sorghum

Increase sorghum production, processing and commercialization (25,000 MT of sorghum flour per year)

Investment cost

Total investment USD 50.23 M
Estimate of government support USD 10.45M

Financial performance

IRR (%): 27%
VPN: USD 14.67 M
Pay-back period: 3.85 years

Economic spillovers

Direct Beneficiaries – smallholder farmer households: 10,717
Income increase per farm/HH: USD 981/yr
Employment (direct and indirect): 46,867
Emission reduction: ~2 M tCO₂eq

Sesame

Increase sesame production, processing and commercialization (20,000 MT of dehulled sesame per year)

Investment cost

Total investment USD 30.66 M
Estimate of government support USD 7.08M

Financial performance

IRR (%): 37%
VPN: USD 17.25 M
Pay-back period: 2.35 years

Economic spillovers

Direct Beneficiaries – smallholder farmer households: 40,978
Income increase per farm/HH: USD 421/yr
Employment: 166,377
Emission reduction: ~1 M tCO₂eq

Fisheries

Increase fish production, processing and marketing (1,463 MT per year)

Investment cost

Total investment USD 17.09 M
Estimate of government support USD 6.23M

Financial performance

IRR (%): 20%
VPN: USD 2.84 M
Pay-back period: 5.14 years

Economic spillovers

Direct Beneficiaries – fisher households: 1,170
Income increase per HH: USD 1,773/yr
Employment: 5,436
Emission reduction: ~1 M tCO₂eqT

Rice

Increase rice production, processing and marketing (6,182 MT per year)

Investment cost

Total investment USD 27.69 M
Estimate of government support USD 15.91 M

Financial performance

IRR (%): 15%
VPN: USD 2.15 M
Pay-back period: 5.08 years

Economic spillovers

Direct Beneficiaries – smallholder farm households: 4,600
Income increase per farm/HH: USD 175/yr
Employment: 18,520
Emission reduction: ~1 M tCO₂eqT