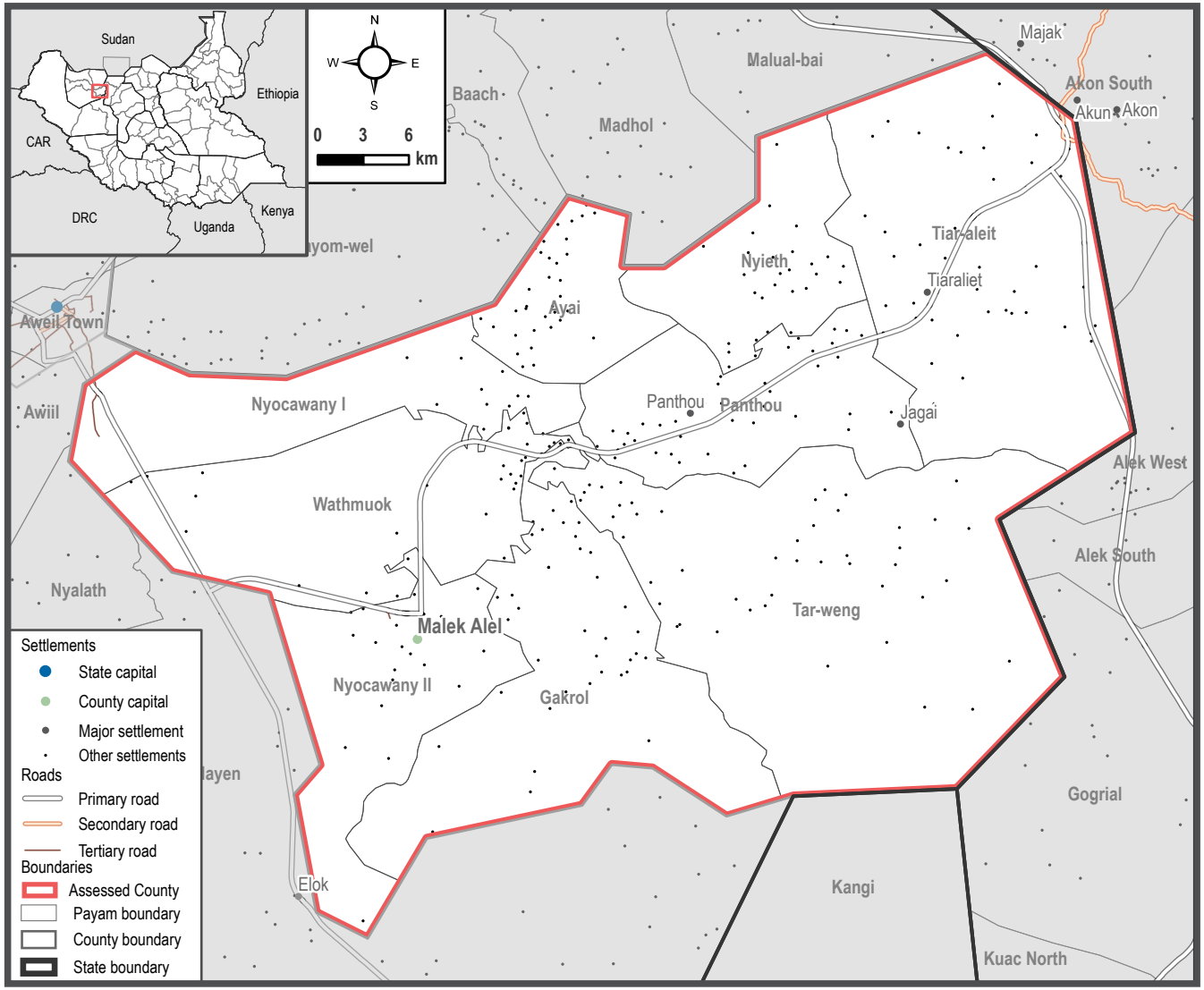
AWEIL SOUTH COUNTY - NORTHERN BAHR EL GHAZAL STATE

Map 0.1: Location of Aweil South county within South Sudan indicating payam boundaries and key settlements



AWEIL SOUTH - KEY FACTS

- **Estimated population:** 141,948[1] (2022 OCHA estimates); 239,810[2] (2023 NBS and UNFPA estimates)
  Note: Calculations using population figures in this county profile use the 2022 estimates
- **Area:** 1,977 km²
- **Population density:** 72 persons per km²
- **County capital:** Malek Alel
- **Payams:** Ayai, Gakrol, Nyieth, Nyocawany I, Nyocawany II, Panthou, Tar-weng, Tiar-aleit and Wathmuok

Aweil South county is situated in Northern Bahr el-Ghazal State, sharing its western boundary with Aweil Centre and its northern border with Aweil East. To the east, it shares a border with Gogrial West county in Warrap State, and to the south it borders Jur River county in Western Bahr el-Ghazal State. Aweil South comprises nine payams, hosting an approximate population of 141,948[3] people across an area of 1,977 square kilometers.[4]

Aweil South has been impacted by communal clashes. In 2013, the county played a role in the Gogrial Agreement involving four counties (Aweil South, Aweil East, Twic, and Gogrial West). The 13-point agreement aimed to address conflicts related to grazing land, water sources, and revenge attacks.[5]

The county, located in lowland terrain, is highly prone to annual and recurring flooding due to heavy rainfall and riverbank overflow.[6] In 2021, at least 23,000 people were affected by floods, while in 2022, at least 45,246 were affected.[7]

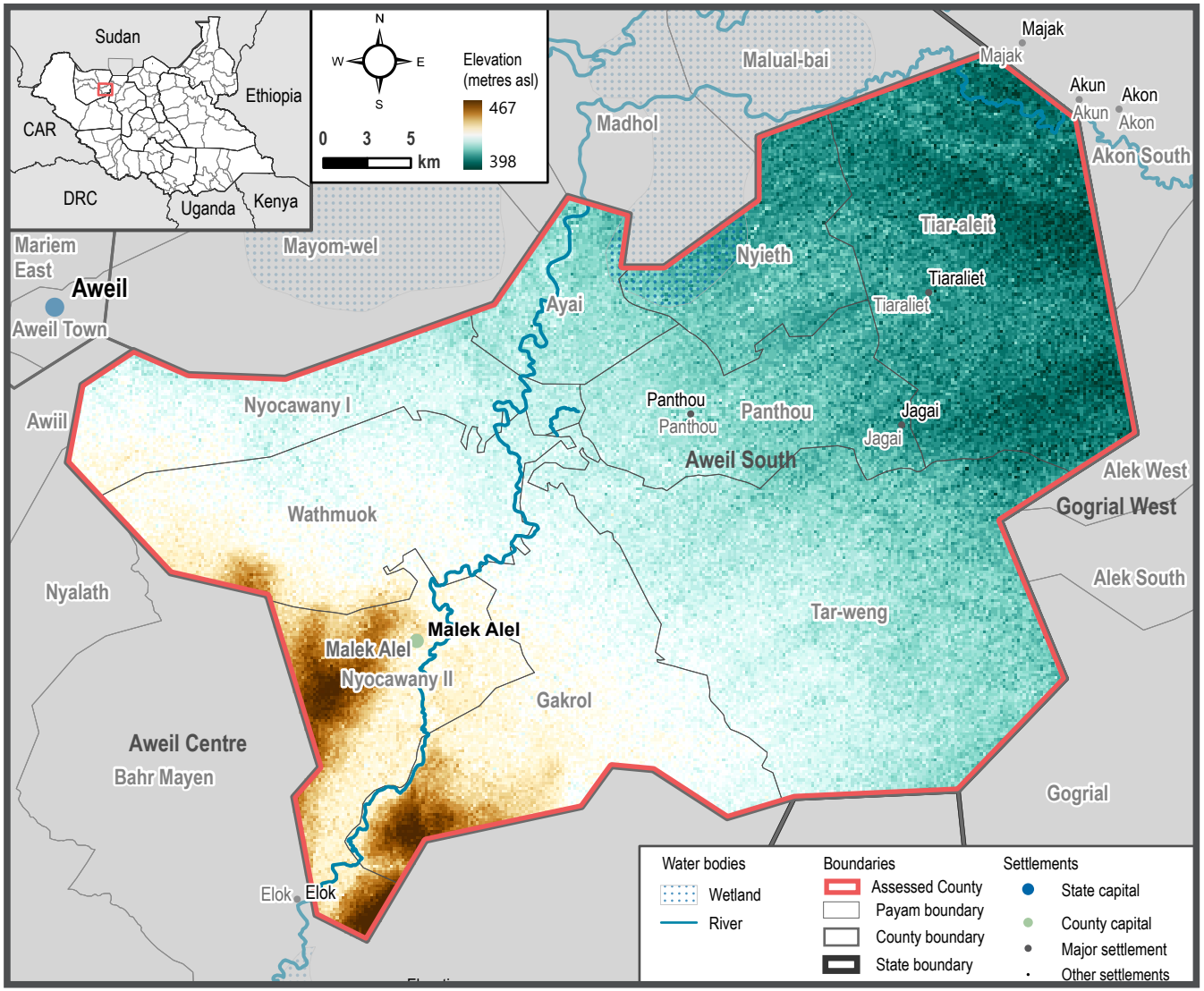
About REACH

REACH is a leading humanitarian initiative that collects primary data and produces in-depth analysis to help aid actors make evidence-based decisions in support of crisis-affected people. With this in mind, our flagship research programmes aim to inform the prioritisation of aid according to levels of need - both crisis-level planning and targeted rapid response - as well as decisions around appropriate modalities of aid. Through our team of assessment, data, geospatial, and thematic specialists, we promote the design of people-centred research and set standards for collecting and analysing rigorous, high quality data in complex environments.
Visit www.reach-initiative.org and follow us @REACH_info.

GFDRR Global Facility for Disaster Reduction and Recovery
This county profile has been made possible by the generous support of the Global Facility for Disaster Risk Reduction and Recovery (GFDRR)

1. CLIMATE AND ENVIRONMENT

Map 1.1. Elevation and natural features including wetland areas, rivers and water bodies in Aweil South county.

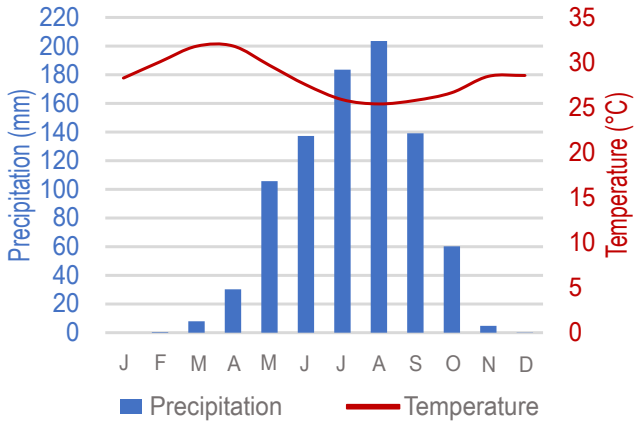


As depicted in map 1.1, Aweil South county features a predominantly flat topography, characterized by an average elevation of 433 meters above sea level. The highest elevations are located in the southwestern part of the county, gradually diminishing as one moves north eastward toward Tiar-aleit payam and the neighboring Gogrial West county.

The county falls under the "Northwestern flood plain sorghum and cattle" livelihoods zone,[8] which is defined by extensive floodplains situated in the lowlands of the Greater Bahr el Ghazal area. The natural landscape in this zone encompasses a variety of vegetation, including grasslands and swamps with papyrus reeds, as well as bush scrub and scattered pockets of forests.[9] This diverse ecological setting influences the livelihoods of the inhabitants, particularly in relation to sorghum cultivation and cattle rearing. In the northern section of the county, a distinct patch of wetlands is found within Nyieth payam. These wetlands are an extension of the wetlands situated to the south of Aweil East county.

The county receives a large amount of rainfall, averaging approximately 873 mm annually (graph 1.1). August stands out as the wettest month, while January tends to be the driest. The highest temperatures are typically recorded in March and April, contrasting with the lowest temperatures observed during the wet month of August. A comparative examination of rainfall data spanning from 2018 to 2022 reveals a consistent pattern over the years, as depicted in graph 3.1.

Graph 1.1. Average monthly precipitation and temperature, Aweil South county (1981 - 2022)



Highest point
467 m

Average elevation
433 m

Elevation range
467 m

Annual precipitation
873 mm/yr

Average temperature
29°C

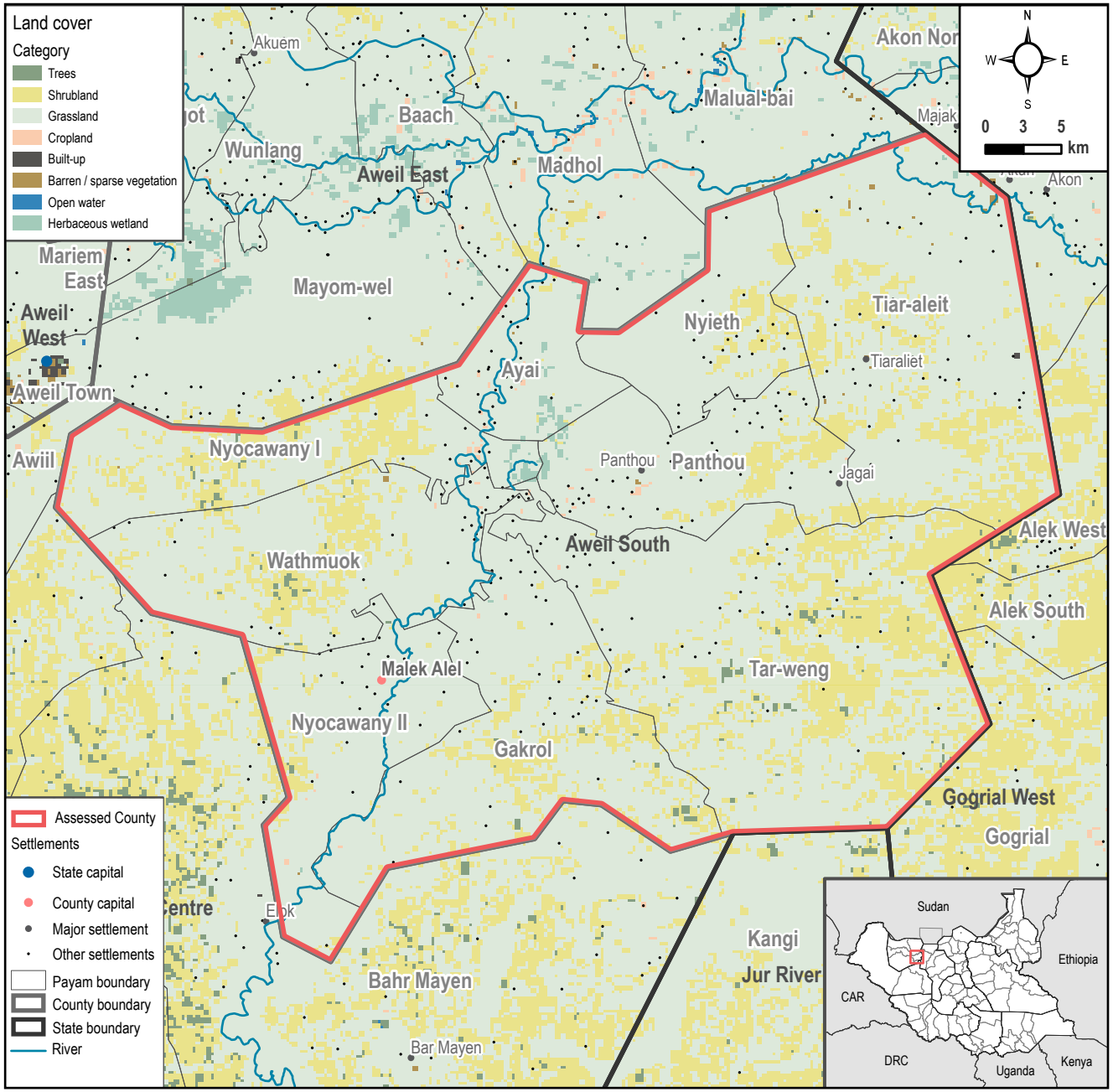
Wettest month
August

Driest month
January

This county profile has been made possible by the generous support of the Global Facility for Disaster Risk Reduction and Recovery (GFDRR)

2. LAND USE AND LAND COVER

Map 2.1. Land use and land cover map, Aweil South county



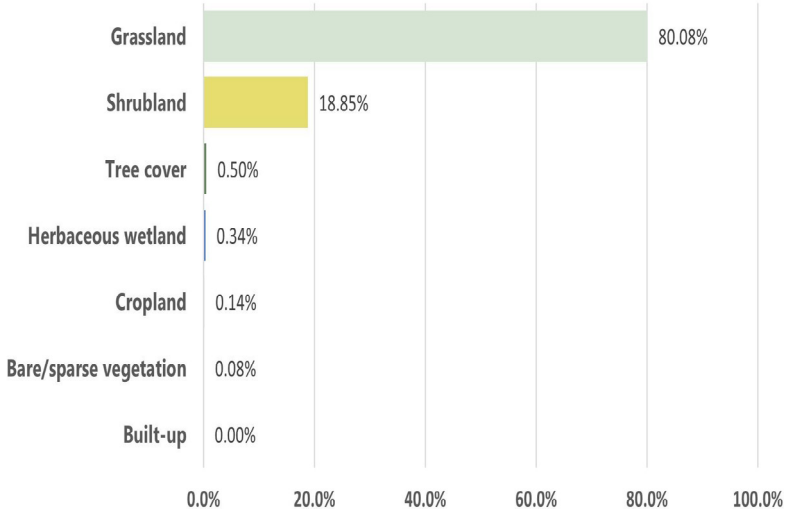
Aweil South's landscape is predominantly defined by expansive grasslands, encompassing a substantial 80% of the total land cover. This vast expanse of grassland contributes to the region's distinct ecological character. Complementing the prevalence of grasslands, shrubland occupies 19% of the land, adding an additional layer of diversity to the county's terrain.[10]

In this landscape, herbaceous wetlands, tree cover, and bare land collectively represent a modest fraction, accounting for less than 1% of the county's overall land cover. This scarcity of herbaceous wetlands, trees, and bare land underscores the overwhelming dominance of grassland and provides insight into the environmental composition that characterizes Aweil South.[11]

For a comprehensive understanding of the spatial distribution of these land cover features, refer to map 2.1, where the distinctive patterns of grasslands, shrublands, and other land cover elements are visually presented. Furthermore, chart 2.1 offers insights into the proportions of each land cover type. The combination of these visual aids provides a nuanced perspective on the features that contribute to the overall landscape of Aweil South.

63,523 identified buildings in Aweil South county[12]

Chart 2.1. Land cover as proportion of Aweil South county area

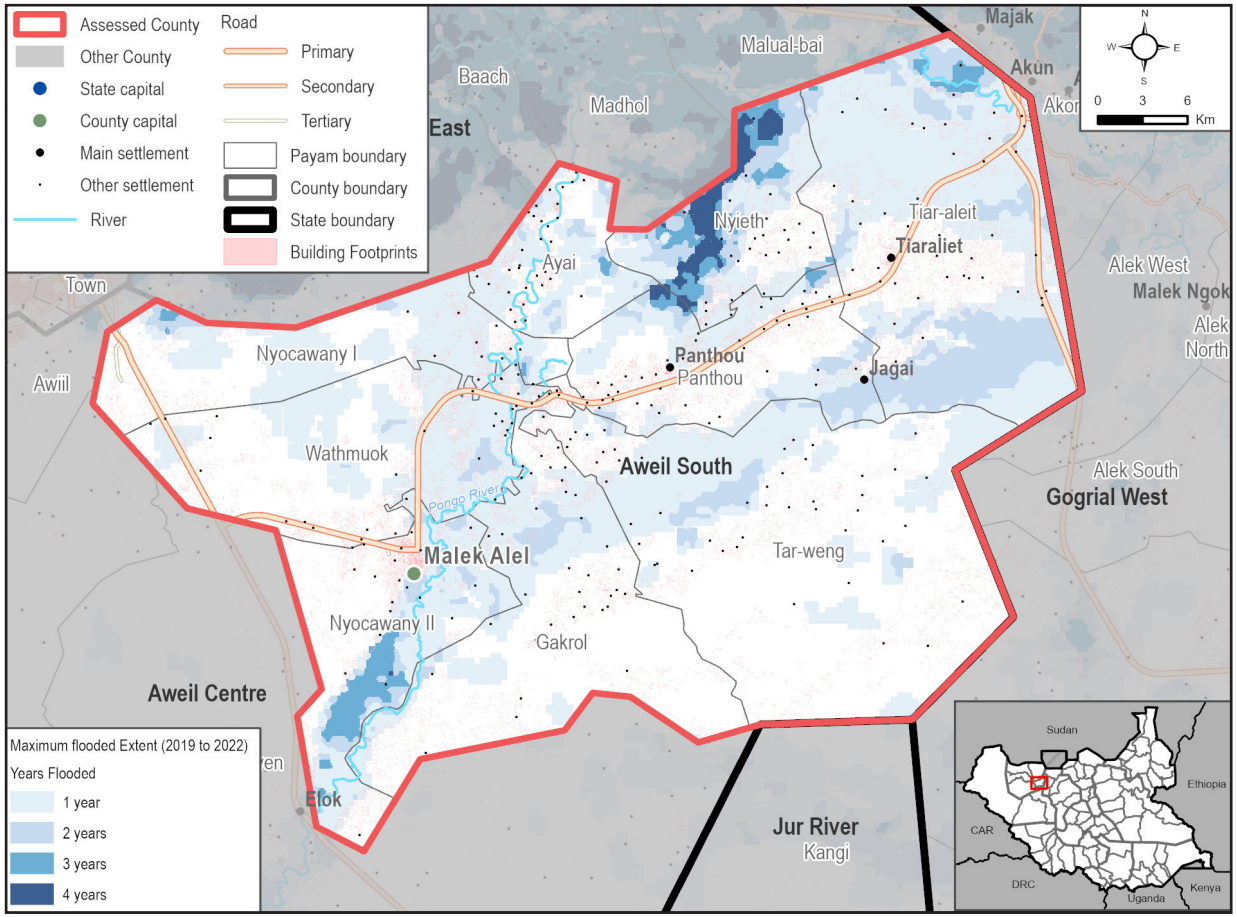


GFDRR Global Facility for Disaster Reduction and Recovery

This county profile has been made possible by the generous support of the Global Facility for Disaster Risk Reduction and Recovery (GFDRR)

REACH Informing more effective humanitarian action

Map 3.1. Estimated maximum annual flood extent (2019-2022), affected settlements and key infrastructure[i]



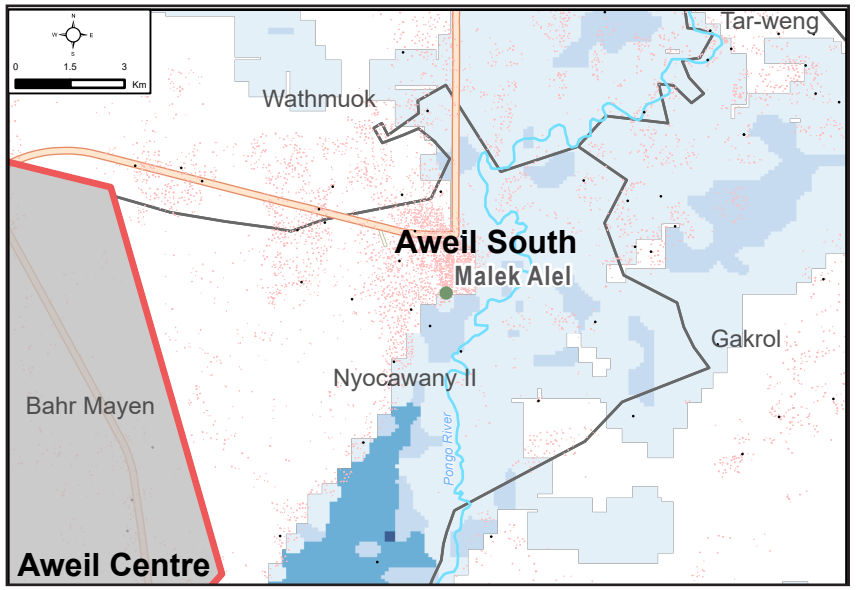
FLOODING

Aweil South county experiences recurring flooding on an annual basis, primarily due to river flooding and excessive rainfall. The relatively flat terrain of the county is a key contributing factor to the vulnerability of the area to flooding incidents. Annually, the county encounters river flooding typically occurring in the months of September and October. In 2021, the floods affected at least 23,000 people, and this number increased to at least 45,246 the following year.[13] In 2021, the onset of flooding in Aweil South county deviated from the typical pattern, commencing earlier in May due to sustained and heavy downpours that persisted from May through July.[14] This early onset had detrimental effects on crops, causing damage at their early stages of development. Unlike preceding years when flooding typically resulted from river overflow in October and November, the 2021 flooding was distinguished by its early initiation and prolonged, intense rainfall.

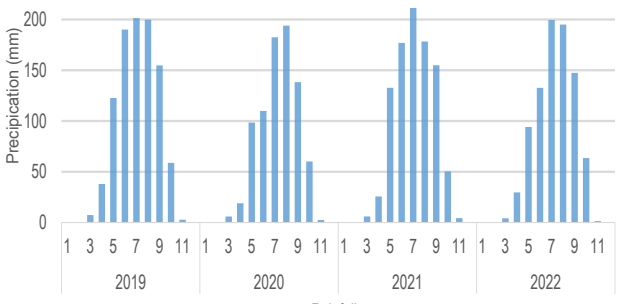
Map 3.2 focuses on Malek Alel, the county's capital, detailing flooding incidents over a four year period. Notably, the town tends to experience minimal impact, likely due to its elevated location, despite proximity to River Pongo. This elevated positioning serves as a mitigating factor, reducing the town's vulnerability and enhancing its overall resilience against floods.

Graph 3.1 depicts a consistent pattern of rainfall distribution since 2018, maintaining a stable range between 810 mm/year and 976 mm/year. A comparison between rainfall and flood extent reveals an increase in flooding in 2021 compared to previous years. In 2021, the county witnessed flooding for an extended period of 9 months, surpassing the durations observed in other years. The surge in rainfall from an average of 810 mm in 2020 to 940 mm in 2021 likely played a role in the heightened flooding.

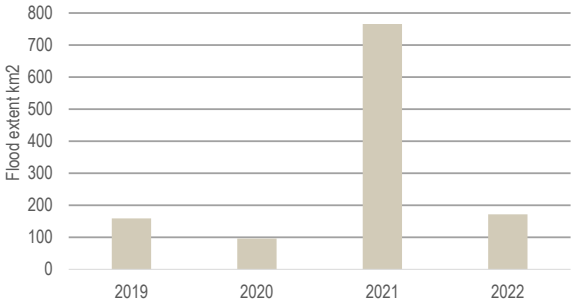
Map 3.2. Estimated maximum annual flood extent (2019-22), Malek Alel Town & its environs



Graph 3.1. Rainfall from 2019 to 2022



Graph 3.2. Maximum Flood extent from 2019 to 2022[i]



i Estimated flood extent calculated based on analysis of UNOSAT, NOAA-20/VIIRS. Data is indicative only and has not been validated in the field.

This county profile has been made possible by the generous support of the Global Facility for Disaster Risk Reduction and Recovery (GFDRR)

Map 3.3. Estimated maximum annual flood extent in 2022, affected settlements and key infrastructure

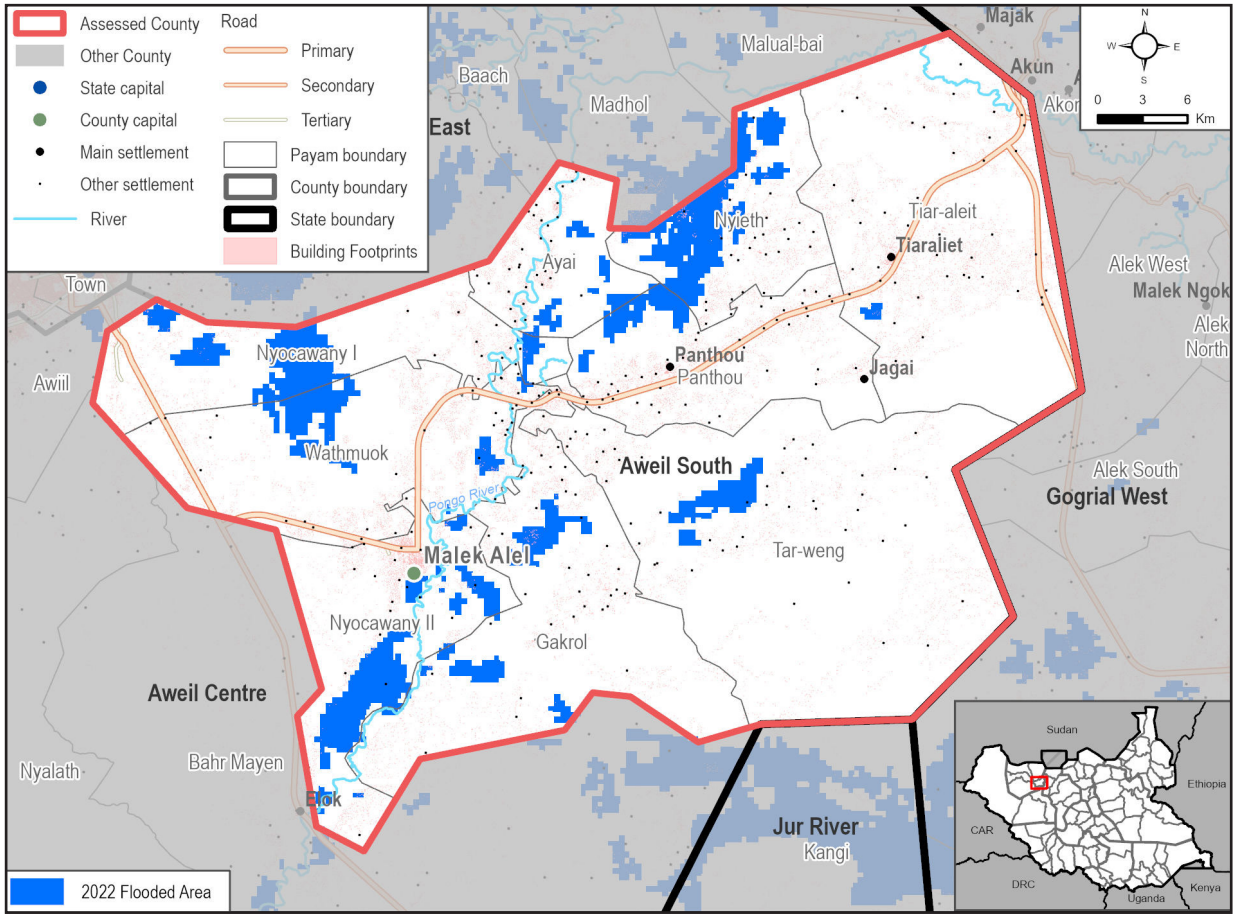


Figure 3.1. Satellite imagery snapshot. Increase in flooding intensity has led to destruction of shelter huts and farmlands

FLOODING 2022

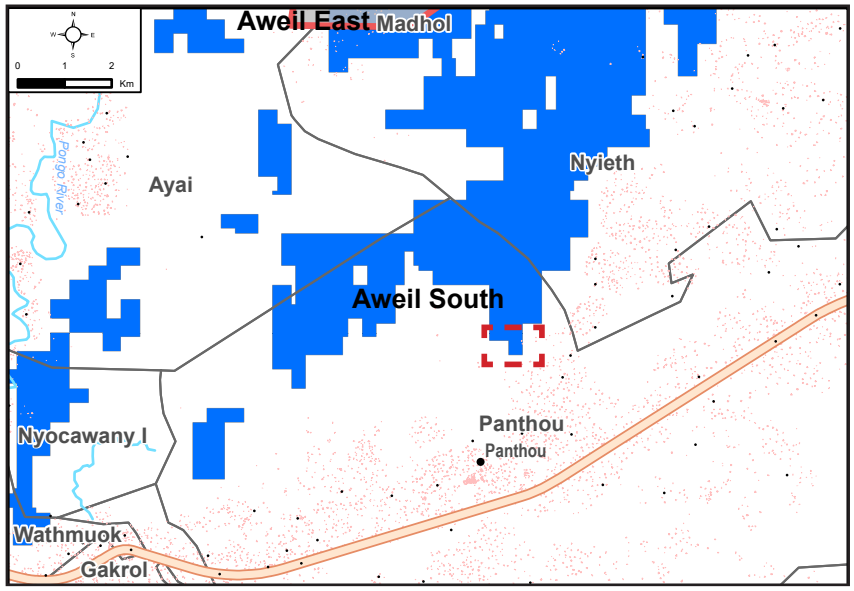
In 2022, 45,246 people were affected by flooding in Aweil South.[15] The county experienced heightened rainfall, particularly intensifying in July and extending into August, with a substantial downpour reaching up to 20 millimeters. This had a detrimental impact on crops and residential structures, leading to widespread displacement of communities. Displaced people sought refuge on elevated terrain and alongside roadways, forming emergency settlements in response.[16]

The 2022 floods disproportionately impacted certain regions, notably Nyieth payam, characterized by patches of wetlands and its proximity to River Pongo. The flooding in this specific year adhered to the established pattern observed in previous years, affecting areas near the river or situated in lowlands, as illustrated in map 3.3. In Malek Alel, most affected areas were close to the river.

The consequences of the floods were severe, leading to the destruction of shelters, farmlands, and the submersion of boreholes.[17] The floods caused extensive damage to crops cultivated in lowland and swampy areas, while those grown in elevated areas fared better. Grazing lands for livestock were submerged in water, limiting their availability. To cope with this challenge, some livestock were relocated to higher grounds, impacting the usual sources of milk and meat for households. This shift in grazing patterns and the displacement of livestock contributed to a reduction in the availability of essential dairy and meat products at the household level.[18]

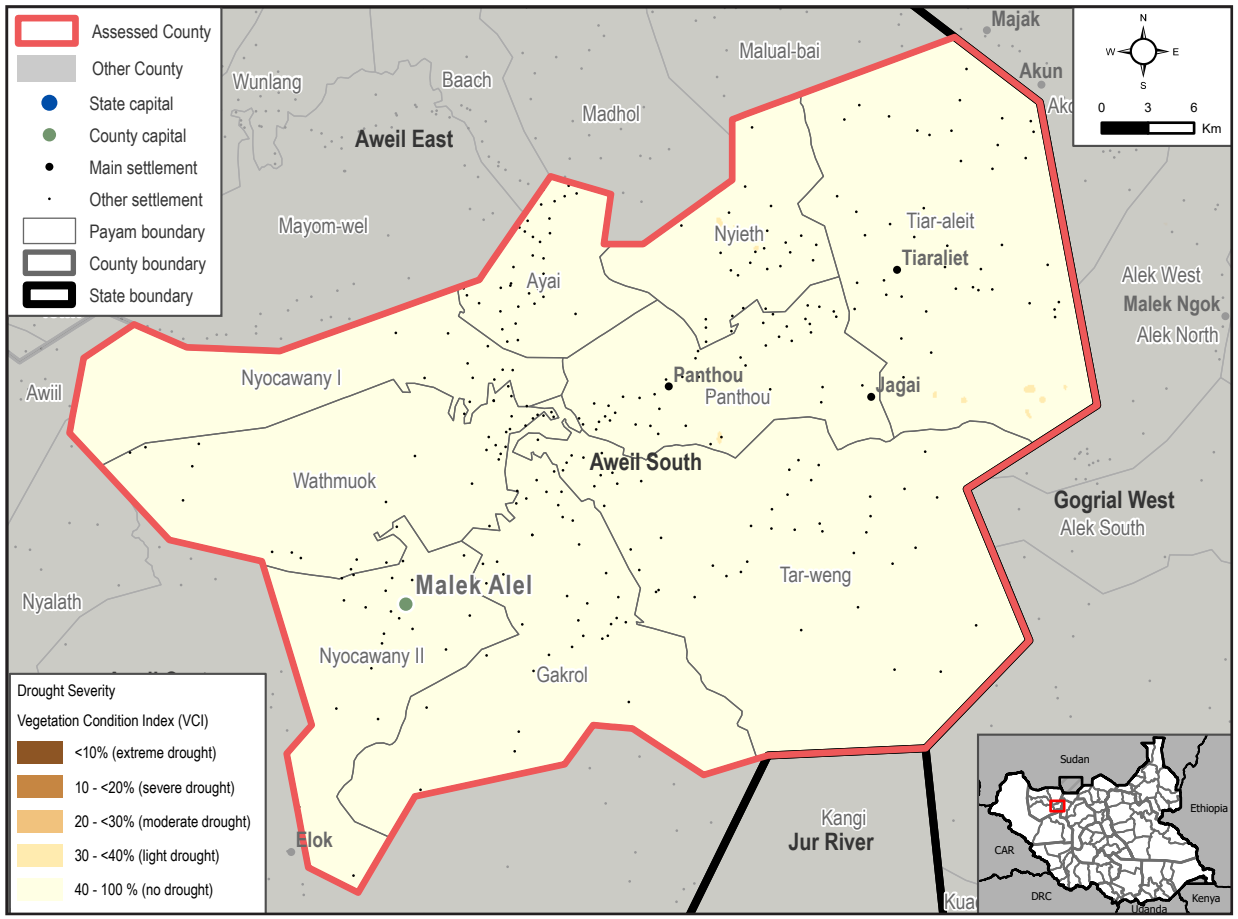
Flood Impact
23,000 individuals in 2021
45,246 individuals in 2022

Map 3.4. Estimated maximum flood extent in 2022, Panthou and Nyieth payams



This county profile has been made possible by the generous support of the Global Facility for Disaster Risk Reduction and Recovery (GFDRR)

Map 4.1. Vegetation condition index (VCI), indicator of drought severity, in July to September 2022, no drought[i]



DROUGHT

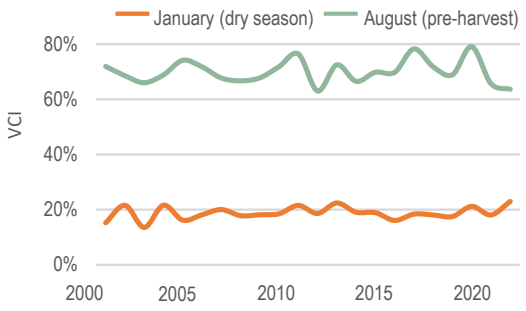
According to an IOM Village Assessment Survey in Aweil South,[19] the county falls within the dryland belt of South Sudan, which makes it susceptible to dry seasons and unpredictable rainfall. Recent dry seasons and floods have harmed crops and livestock, leading to food shortages and widespread hunger. This situation has led to forced displacement, as people are compelled to migrate in search of essential resources, like food and water.

In 2021, the IOM Village Assessment Survey indicated that dry seasons disrupted the livelihoods of individuals in 6 out of the 22 assessed bomas within the county. This further highlights the vulnerability of the area to climate-related events and the consequential impact on the well-being and sustenance of the local population.[20]

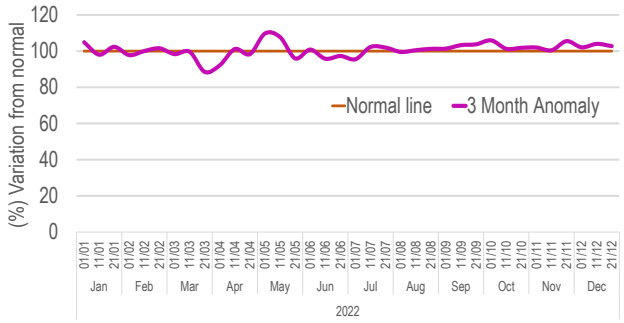
Contrasting wet and dry seasons using the Vegetation Condition Index (VCI) reveals January as having the lowest values and August the highest. Low VCI indicates poor vegetation health, while high VCI suggests robust health. Graph 4.1, spanning from 2000 onwards, consistently shows higher vegetation health during the wet season and lower during the dry season. In 2021 and 2022, the county experienced reduced VCI, especially in the wet season, linked to increased flooding. Map 4.1 shows isolated light drought pockets in Tiar-aleit, Nyieth, and Panthou payams, highlighting vegetation health complexity across the county.

Graph 4.2 depicts the 2022 rainfall anomaly, with April and May receiving above-average rainfall, a dip in March, and other months staying close to normal. Graph 4.3 reveals long-term climatic trends, indicating there has been a slight decrease in precipitation levels and a slight increase in temperatures between 2003 and 2022.

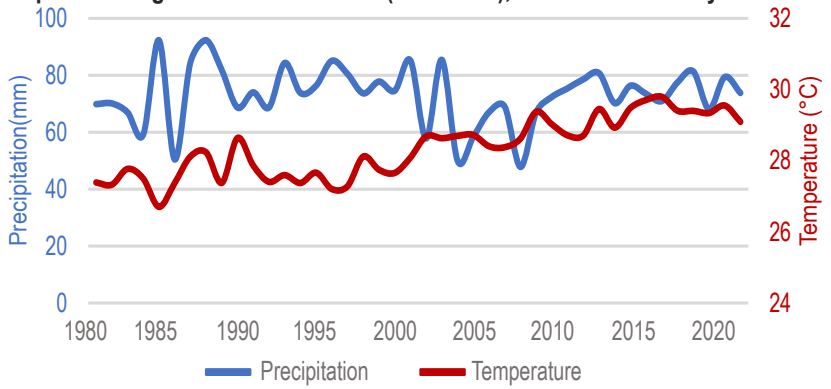
Graph 4.1. VCI (2000-2022) - drought index



Graph 4.2. Percentage rainfall anomaly in 2022[ii] [21]



Graph 4.3. Long-term climatic trends (1981-2022), Aweil South county



Projected climatic trends by 2060 based on SSP3-7.0 scenario,[ii] N. Bahr el Ghazal State

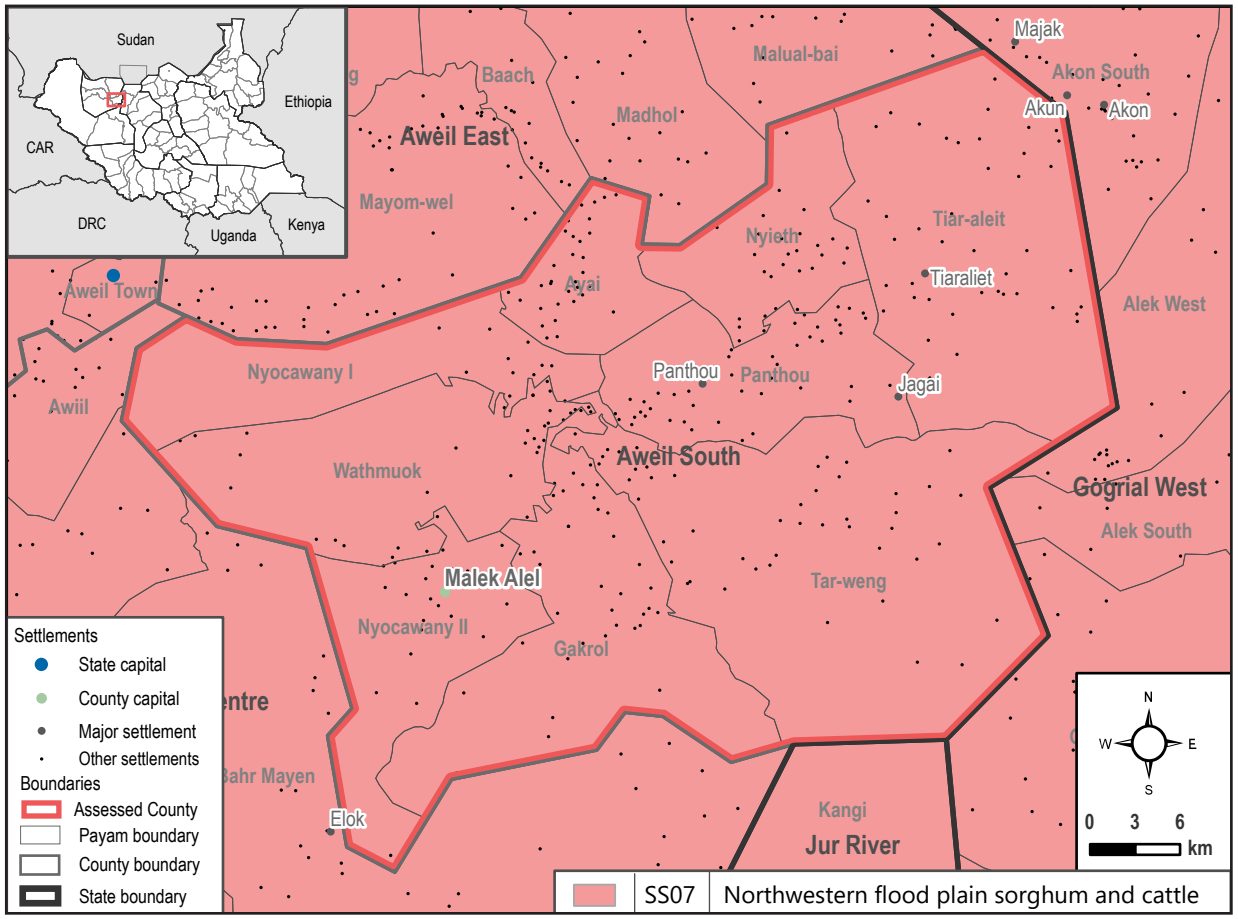
Projected change in precipitation in wettest month by 2060	Projected change in max temperature in warmest month by 2060
+5.2mm	+1.76°C

i. Vegetation condition index calculated in Google Earth Engine based on MODIS EVI data

ii. 100% is defined as the average value for the same month between 1981 and 2023

ii. 2060 projected climatic trends from 1995 - 2014 baseline with high green house gas emissions scenorio based on Share Socio-economic Pathways (SSP) 3-7.0

Map 5.1. Livelihood zones in Aweil South county



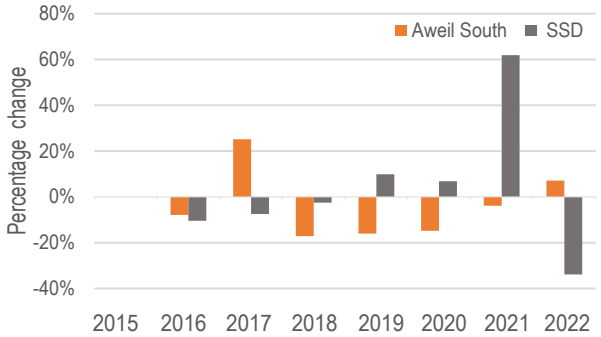
Aweil South is in the "Northwestern flood plain sorghum and cattle" livelihoods zone, characterized by a mixed agro-pastoral production system. In this zone, households engage in a combination of crop farming and pastoralism, for food and cash income requirements. Additionally, the agricultural pursuits are complemented by activities such as fishing, hunting, and the collection of uncultivated native fruits and plants.[22]

Cropping is rain-fed, and the most commonly cultivated crops include maize, sorghum and groundnuts.[23] In addition to sorghum, other crops such as pearl millet, legumes, and vegetables are cultivated. In 2022, 39,211 hectares were dedicated to cereal cultivation, involving an estimated 22,645 households in cereal production.[24] Livestock, comprising cattle, goats, sheep, and poultry, are indispensable assets. This diverse combination of agricultural practices, coupled with supplementary activities like fishing, highlights the multifaceted approach that households adopt to sustain their livelihoods in Aweil South.

Graph 5.1 illustrates the variations in net cereal production, revealing a positive year on year evolution in two out of the last seven years within the county. The peak change in net cereal production was observed in 2017, followed by a subsequent decline over the next four years. There was a slight positive change in production recorded in 2022. The graph visually emphasizes the fluctuations in net cereal production, underscoring the influence of environmental factors, notably flooding, on agricultural outcomes in the county.

Notably, the 2021 flooding had repercussions for food production in Aweil South, resulting in the destruction of 2,955 feddans cultivated by farmers.[25] This underscores the substantial negative impact of floods on agricultural activities and overall food production in the county. Furthermore, Aweil South has been recognized as one of the counties grappling with a considerable cereal deficit, projecting an estimated gap of 9,360 tonnes in 2023.[26] This emphasizes a challenge in meeting the local demand for cereals within the county.

Graph 5.1. Year on year change relative to previous year in net cereal production (CFSAM)



IPC Scores - 2023/24

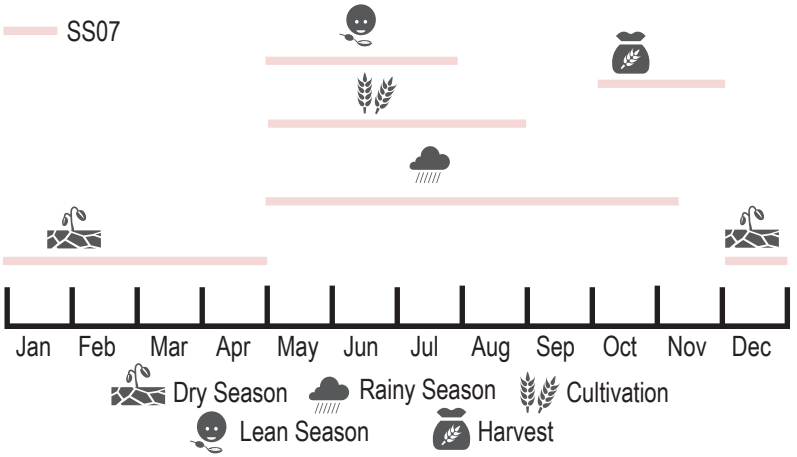
Acute malnutrition

Jul - Sept 2023	Oct 2023- Mar 2024 (Projected)
PHASE 4	PHASE 4

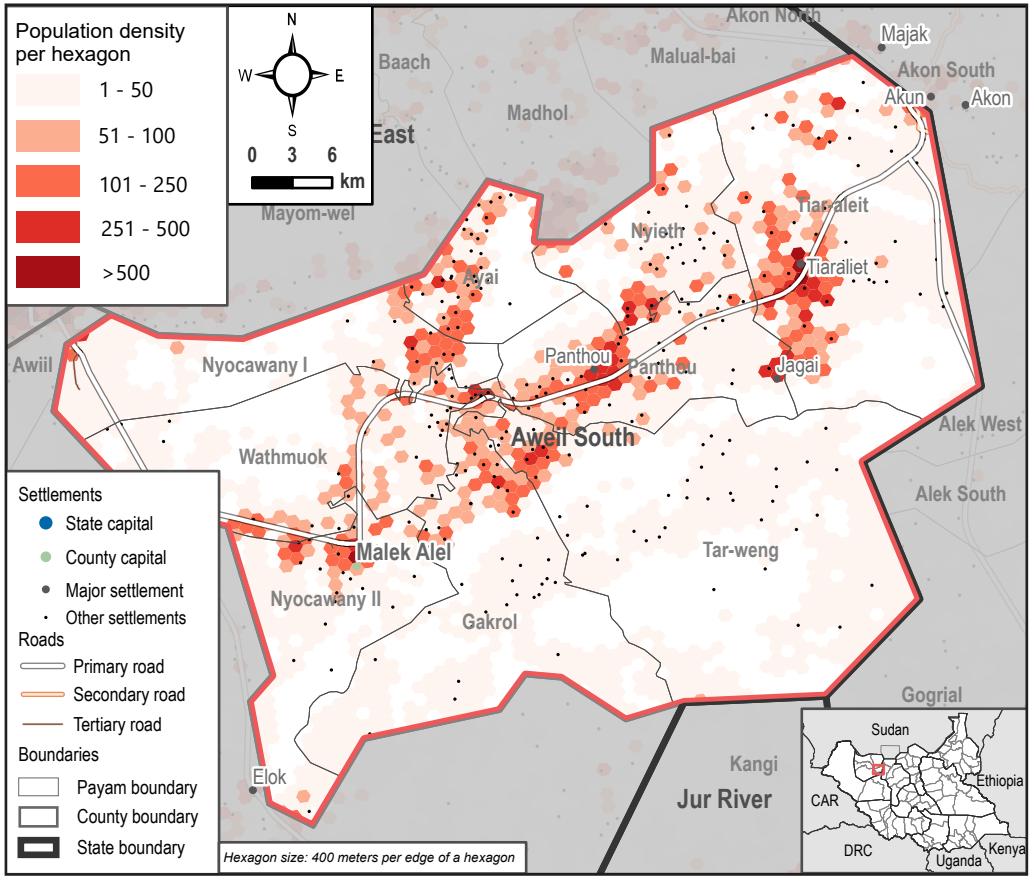
Acute food insecurity

Sept - Nov 2023	Dec 2023- Mar 2024 (Projected)
PHASE 4	PHASE 4

Figure 5.1. Cultivation calendar for livelihood zone SS07



Map 6.1. Population density across Aweil South county (2023)[30]



Map 6.2. Significant population movements in Aweil South over a five year period (2018-22)

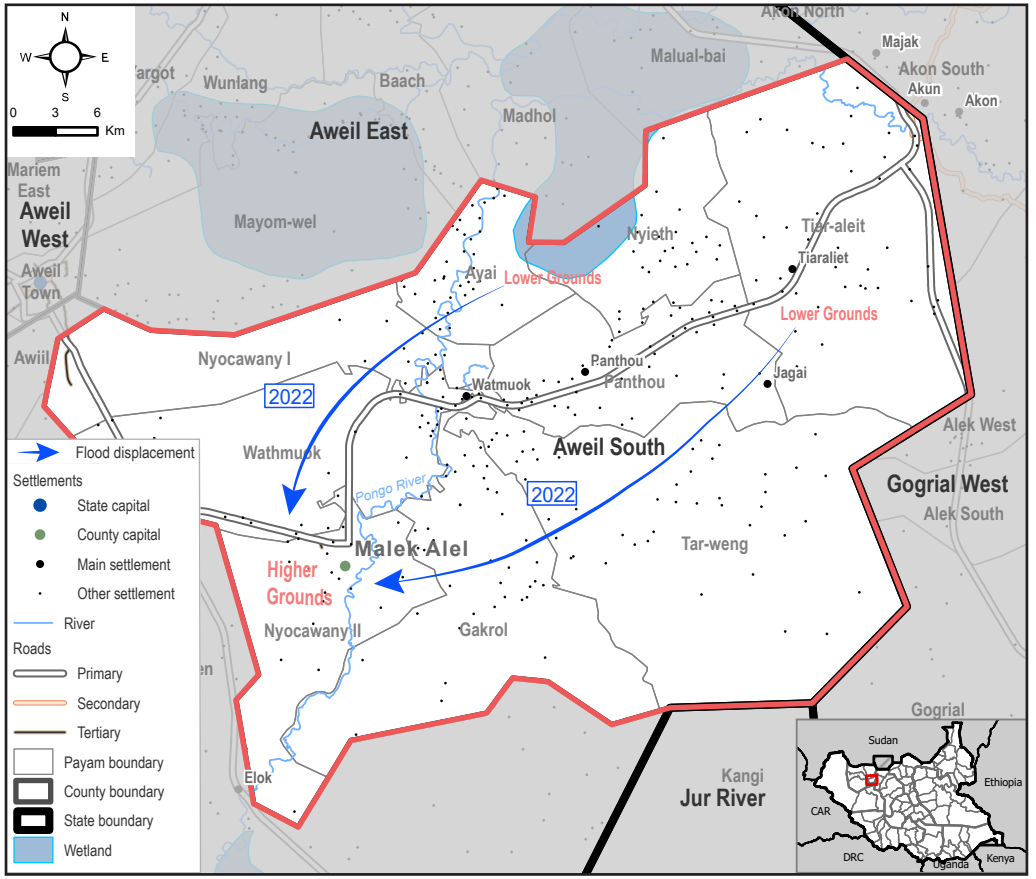


Table 6.1. Est. number of displaced persons by payam (2023)[29]

Payam	IDPs	Returnees	Relocated	Total
Ayai	740	1,280	132	2,152
Gakrol	270	1,662	425	2,357
Nyieth	495	930	100	1,525
Nyocawany I&II	795	3,277	610	4,682
Panthou	505	2,790	1,469	4,764
Tarweng	265	1,280	1,140	2,685
Tiaraliet	2,050	2,975	205	5,230
Watmuok	931	1,880	285	3,096
County total	**6,051**	**16,074**	**4,366**	**26,491**

The population distribution in the county exhibits a sparse pattern, with higher population density observed in areas surrounding towns, particularly Malek Alel, Panthou, and Tiaraliet, as illustrated in map 6.1. Notably, the main settlements are concentrated along the primary road and Pongo River.

As of September 2023, the county had registered a total of 6,051 internally displaced persons (IDPs), 16,074 returnees, and 4,366 individuals who had relocated, as outlined in Table 6.1. About a third of the population that relocated in the county were situated in Panthou payam, accounting for 34% of relocated persons. Among the IDPs, roughly one third (34%) of the population was situated in Tiaraliet payam, which is one of the most populated areas within the county. Floods are, among other factors, a driver of displacement.[27]

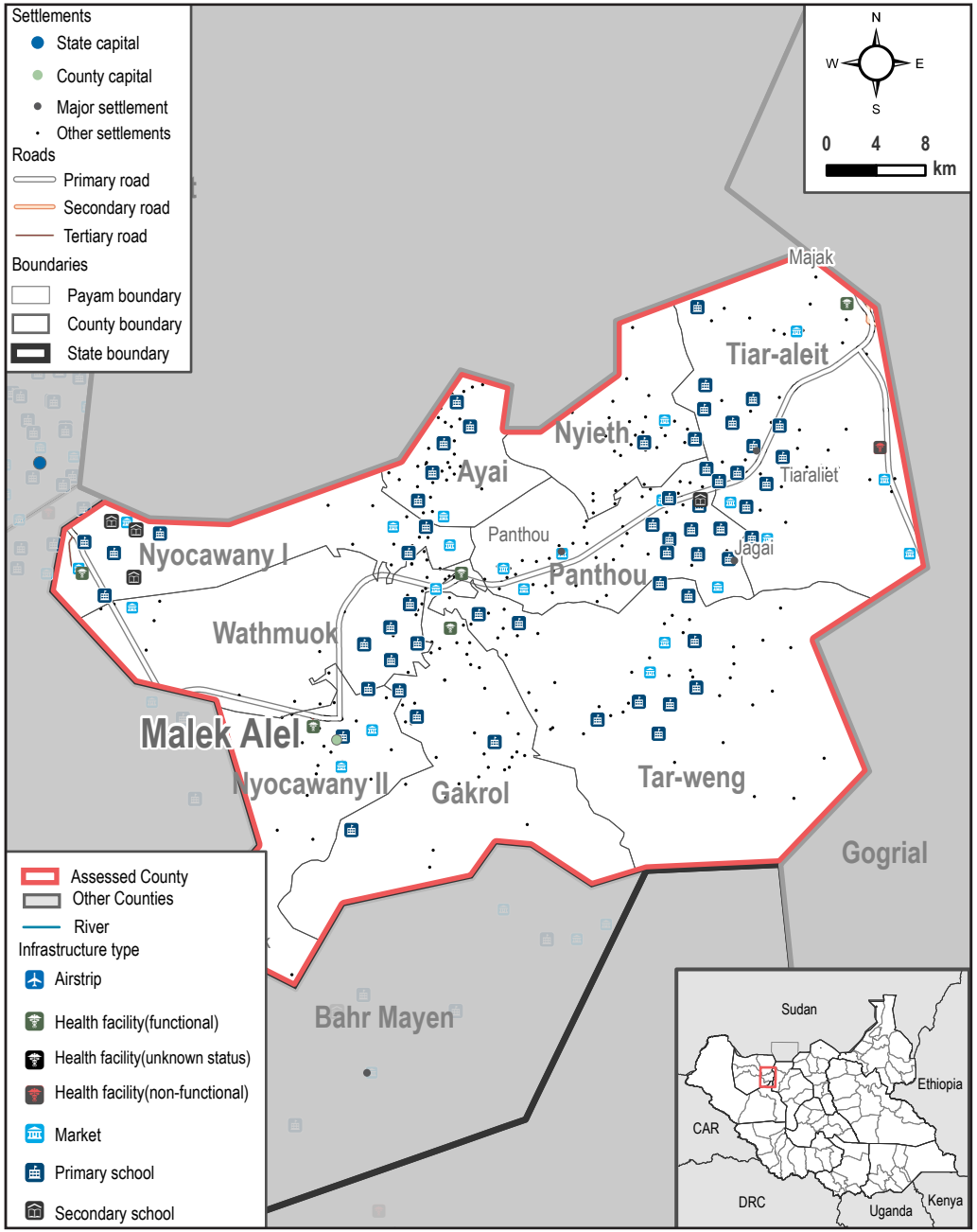
In contrast to the distribution of IDPs, returnees were more evenly spread across the payams, with the highest proportion (20%) residing in Nyocawany I and II payams. Nyocawany I is close to the state capital of Aweil town, while Nyocawany II hosts the county capital of Malek Alel. A Multi-Sectoral Initial Rapid Flood Assessment (MIRA)[28], assessment in 2021 indicated that despite the displaced population integrating with the community, overcrowding at waterpoints and within shelters became a major concern. The available Tukuls could not accommodate all affected populations, and the floodwaters prevented the erection of new Tukuls, exacerbating the challenges faced by the displaced populations.

GFDRR Global Facility for Disaster Reduction and Recovery

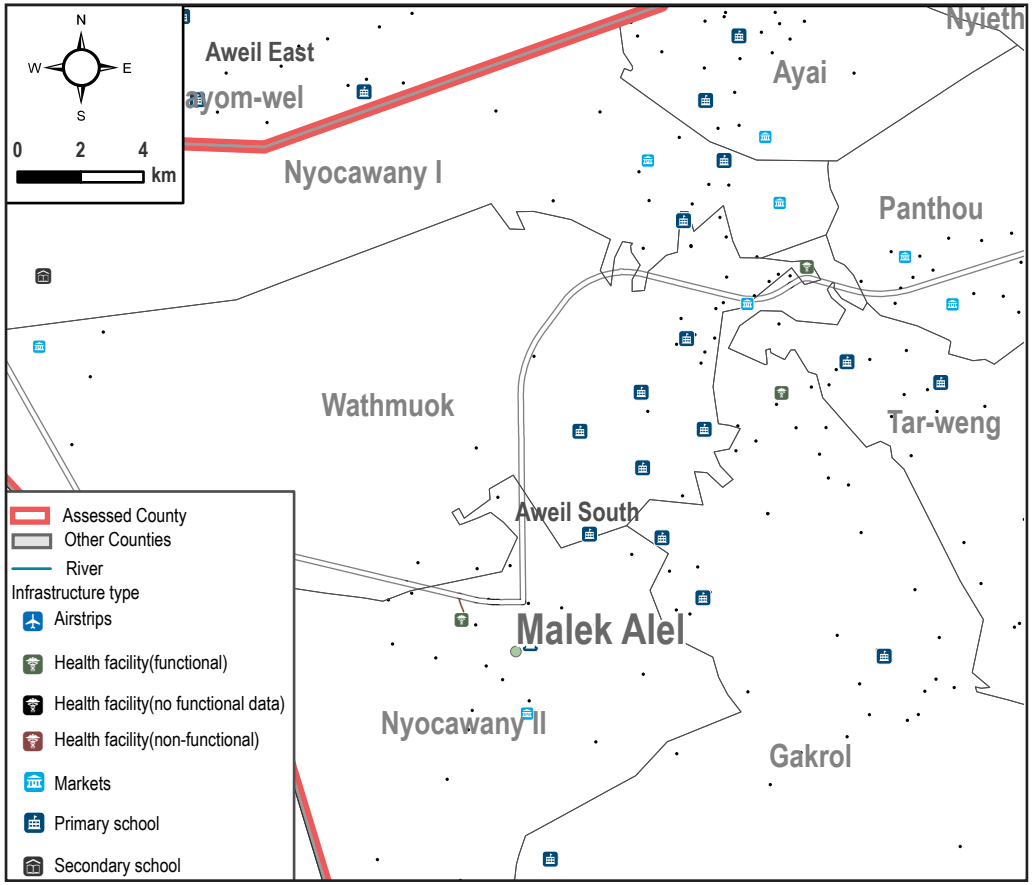
This county profile has been made possible by the generous support of the Global Facility for Disaster Risk Reduction and Recovery (GFDRR)

REACH Informing more effective humanitarian action

Map 7.1. Key infrastructure in Aweil South county[31] [32]



Map 7.2. Community infrastructure in Malek Alel Town and its environs



EDUCATION AND HEALTH INFRASTRUCTURE

The county has 83 primary schools, one secondary school and no early childhood development centers.[33] The MIRA found that 2,252 pupils at nine out of the ten schools visited during the assessment had been severely affected by the floods.[34] Enrollment in the 2022-2023 school year was very low, as almost half (43%) of school-aged children in the county were not enrolled in a formal school. This was due to various barriers, including lack of fees, lack of transport, schools being closed, or damaged due to floods or other natural disasters.[35]

In terms of healthcare infrastructure, the county had 19 health facilities, with only 15 being operational. Among the functional health facilities, 14 are Primary Health Care Units, and one is a Primary Health Care Center.[36] Regarding access to healthcare, 64% of households were unable to access health services in 2023, with long distance to the facilities and long waiting periods being major barriers.[37]

WASH indicators[38]

40% of households take <30 minutes to fetch drinking water

65% of households practice open defecation

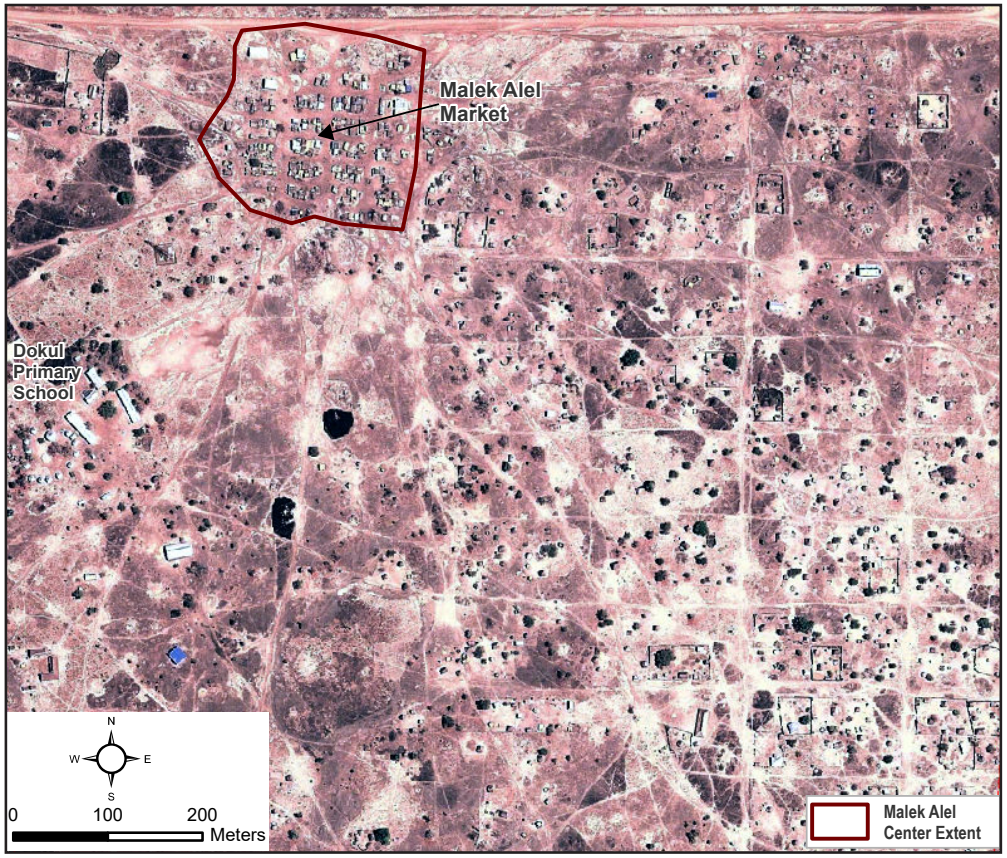
GFDRR Global Facility for Disaster Reduction and Recovery

This county profile has been made possible by the generous support of the Global Facility for Disaster Risk Reduction and Recovery (GFDRR)

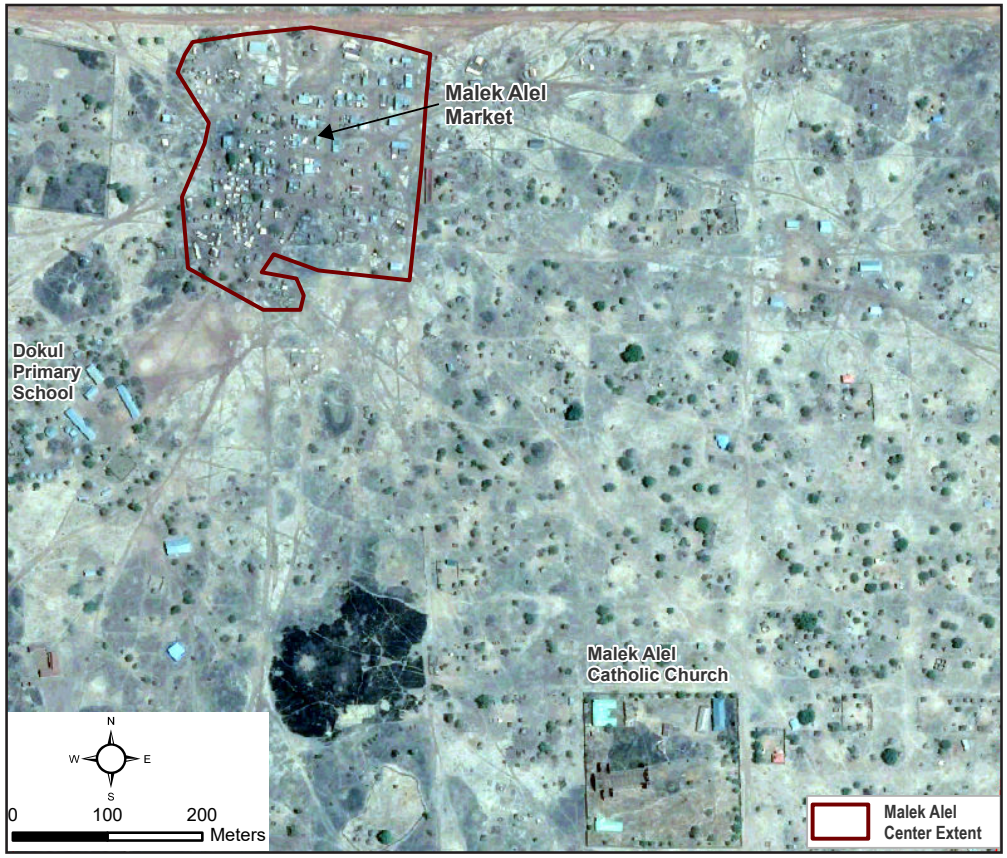
REACH Informing more effective humanitarian action

Figure 8.1. Satellite images showing change in built-up area in Malek Alel town and its environs between 2013 and 2021

Malek Alel, February 2013 (Google Earth Image)



Malek Alel, March 2021 (Google Earth Image)



SETTLEMENT STRUCTURE

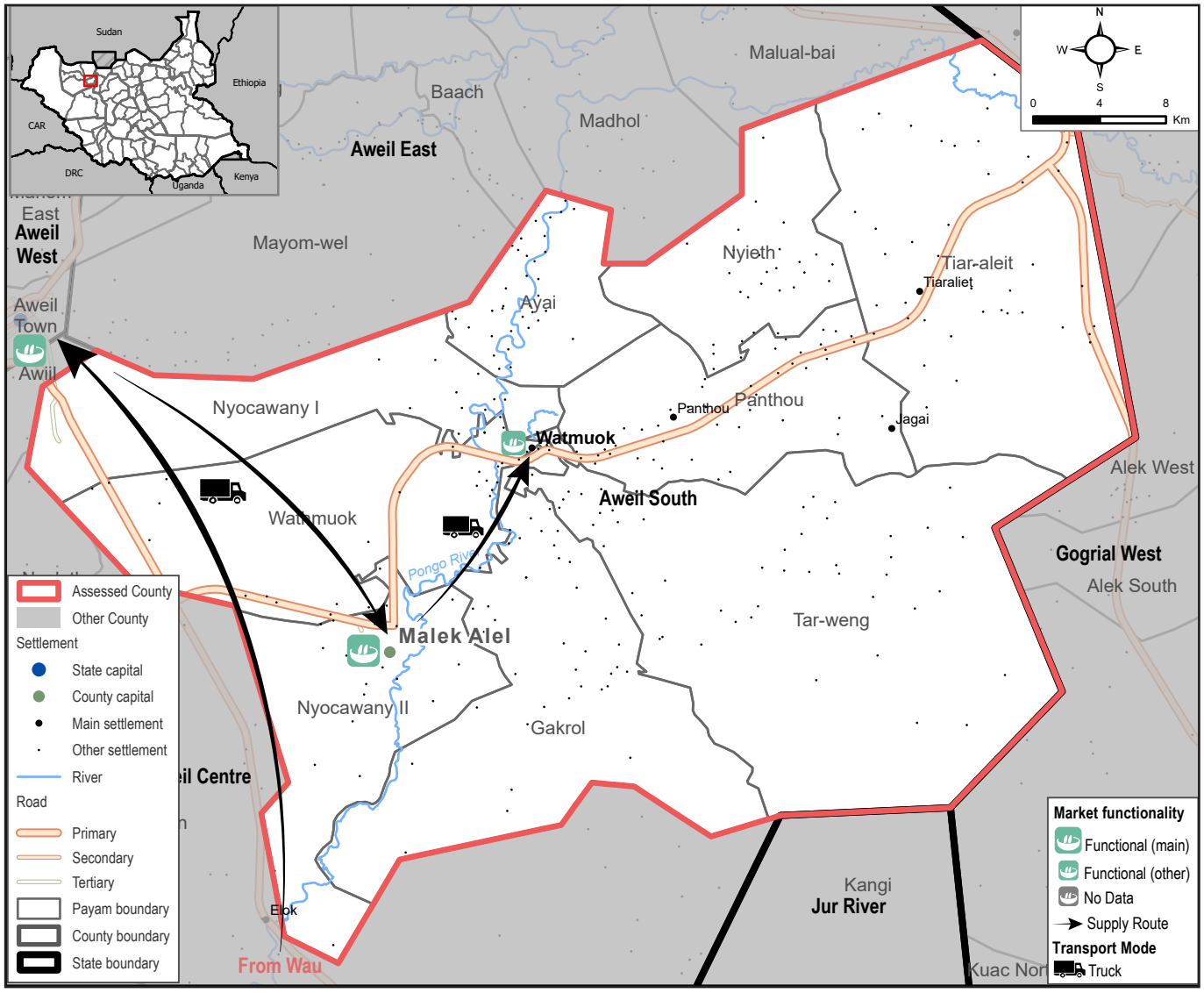
The administrative center of Aweil South county is situated in Malek Alel Town within Nyocawany II payam. This town not only functions as the county capital but also serves as the primary market in the county. Additionally, its proximity to the border with Aweil Center, Aweil West, Aweil East and Jur River counties enhances its strategic location within the region.

According to 2023 ISNA data,[39] tukuls and rakoobas are the predominant types of shelters in the county, with 64% and 28% of the population relying on them, respectively. Additionally, communal shelters, shared by households, and improvised shelters (constructed using materials such as plastic sheets) were utilized by 4% of the population each. Regarding structural integrity, 43% of shelters were reported as partially damaged, indicating some structural risk but still considered habitable. Furthermore, 25% of shelters were reported as completely damaged.[40] The primary causes of damage to these shelters were diverse, with 45% attributed to floods and rain, 13% to storms/lightning and 5% to conflicts.[41] This data provides a comprehensive understanding of the housing landscape and underscores the challenges faced by the population in maintaining habitable shelter structures in the county.

SETTLEMENT CHANGE

With reference to figure 8.1, satellite imagery from 2013 and 2021 show that Malek Alel town has increased marginally in a span of 8 years, with most of the development occurring in the southern part of the town. In recent years, flooding has caused the county inhabitants to move to higher grounds, which include the eastern part of Malek Alel town (Section 6 and map 6.2)

Map 9.1 Markets in Aweil South county, indicating supply routes



MARKETS

The key markets in the county are Malek Alel and Watmuok, which are typically fully functional, whereas other secondary markets often operate at reduced functionality.[42] According to Joint Market Monitoring Initiative (JMMI) data, as of October 2023, both Malek Alel and Watmuok markets were reported to be fully operational, suggesting that these markets were accessible, had basic items available, and that infrastructure was functional.[43] Notably, it contrasts with a period after the outbreak of conflict in Sudan in April 2023, when the main market of Malek Alel experienced reduced functionality. This downturn indicates that the closure of the Sudan border likely had a negative impact on the markets, affecting overall operations and availability of items.[44]

According to JMMI data, as of October 2023, the cost of 1 kilogram of sorghum in the county was 10% higher than the national median. In contrast, the Multi-Sectoral Survival Minimum Expenditure Basket (MSSMEB) was 10% lower than the national median during the same period. Indeed, during that specific timeframe, although sorghum prices were higher than the national average, other components of the MSSMEB had favorable prices within the county.[45] Generally, sorghum prices in the county tend to be more volatile compared to the national level, as depicted in graph 9.1. The period from September to November is regarded as the harvest season in the county, and as shown in graph 9.1, prices during this period typically dip below the national average.

TRANSPORT

Aweil South features a primary road, complemented by a network of numerous tertiary roads, forming a comprehensive road infrastructure. The primary road runs from the North East of the county, passes through the capital Malek Alel, and connects to the Aweil town to Wau road. This road also links to Nyamlel and Gok Machar in Aweil North through Wanyjok in Aweil East. During the 2019 rainy seasons, the road had an impassability warning, indicating poor conditions. However, the road was reported to be open during the dry season, emphasizing the seasonal variations in road conditions.

Graph 9.1. Market price trends for sorghum and Multi-Sector Survival Minimum Expenditure Food Basket (MSSMEB)

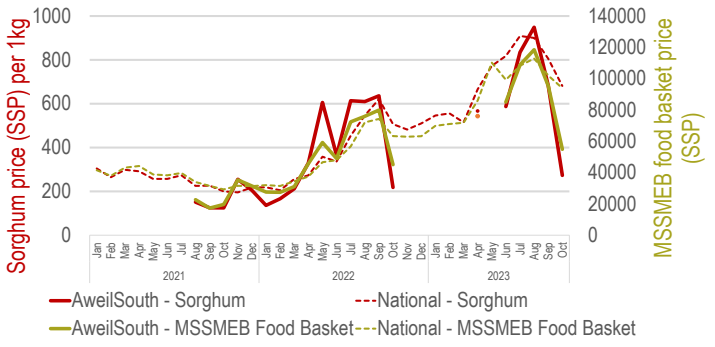


Table 9.1. Key market supply routes, Aweil South county (2023)

Market Name	Primary Supply route
Malek Alel	From Aweil Town (by Road)
Watmuok	From Malek Alel (by Road)

Sorghum price per Kg (Oct. 2023)
10% higher than South Sudan median

MSSMEB price (Oct. 2023)
10% lower than South Sudan median

1 HDX/UN OCHA. 2022 South Sudan admin level 2 population figure estimates based on the 2008 census and annual natural growth and attrition rates with displacement adjusted estimates. 2022.

2 HDX/UN OCHA. 2023 South Sudan Population Estimation Survey: admin level 2 population figure estimates by the National Bureau of Statistics (NBS) and UNFPA. 2023.

3 HDX/UN OCHA. 2022 South Sudan admin level 2 population figure estimates based on the 2008 census and annual natural growth and attrition rates with displacement adjusted estimates. 2022.

4 HDX/UN OCHA. South Sudan administrative level 0-2 gazetteer. 2023.

5 Peace Agreements Database. Gogrial Agreement (between Twic, Aweil East, Aweil South and Gogrial West Counties). 2013.

6 Multi-sectoral Initial Rapid Assessment. 2021.

7 UN OCHA. Flood data in South Sudan. 2021/2022.

8 Famine Early Warning Systems Network (FEWSNET). Livelihood Zone Map and Descriptions for the Republic of South Sudan. Issued August 2018.

9 Ibid

10 Google Earth Engine. ESA WorldCover v100. 2020

11 Ibid

12 Digitize Africa. Building footprints. 2017

13 UN OCHA. Flood data in South Sudan. 2021/2022.

14 Multi-sectoral Initial Rapid Assessment. 2021.

15 UN OCHA. Flood data. 2021/ UN OCHA. Flood data. 2022.

16 IRNA Report on floods: Aweil South county, Northern Bhar el Ghazal State, South Sudan. 2022

17 Ibid

18 Multi-sectoral Initial Rapid Assessment. 2021.

19 IOM. Aweil South County Village Assessment Survey. Publication date: 6 April 2023.

20 Ibid.

21 WFP VAM.Climate Explorer. 2022.

22 IOM. Aweil South County Village Assessment Survey. Publication date: 6 April 2023.

23 IOM. Aweil South County Village Assessment Survey. Publication date: 6 April 2023.

24 FAO/WFP. Crop and Food Security Assessment Mission (CFSAM) to South Sudan. 2023.

25 Multi-Sectoral Initial Rapid Flood Assessment Report- Aweil South. 2021.

26 FAO/WFP. Crop and Food Security Assessment Mission (CFSAM) to South Sudan. 2023.

27 UN OCHA. Flood data. 2021 and 2022

28 Multi-Sectoral Initial Rapid Flood Assessment Report- Aweil South. 2021

29 IOM. DTM Baseline dataset. 2023.

30 HDX.South Sudan: Population Density for 400m H3 Hexagons. October 2023

31 IOM. Education facilities in South Sudan. 2021.

32 WHO. Health facilities. 2021.

33 CSRF. Aweil South County profile. 2023.

34 Multi-Sectoral Initial Rapid Flood Assessment Report- Aweil South. 2021.

35 IOM. Inter-Sector Needs Assessment (ISNA). 2023.

36 CSRF. Aweil South County profile. 2023.

37 IOM. Inter-Sector Needs Assessment (ISNA). 2023.

38 Ibid

39 Ibid

40 Ibid

41 Ibid

42 REACH. Joint Market Monitoring Initiative (JMMI).

43 Ibid

44 Ibid

45 Ibid