



# Greater Kapoeta Climate Impact & Displacement Profile

Eastern Equatoria State, South Sudan, March 2022

## Context & Methodology

Throughout 2021, satellite data captured irregular and less than typical rainfall in Kapoeta East and North, indicating climate shocks and likely negative effects on harvest and livestock.<sup>1</sup> Field reports and data from REACH's Area of Knowledge (AoK) data collection also indicated high levels of food insecurity in Kapoeta East and North, likely caused by the reported climate shocks.<sup>2</sup> In January 2022, media and field reports, highlighted a large movement of people from Kapoeta East County to Kapoeta North, due to lack of food and water.<sup>3,4</sup>

Responding to the information gap on conditions of food insecurity and distress migration across Greater Kapoeta, REACH conducted a qualitative assessment to better understand the impacts of recent climate shocks on affected populations, as well as coping strategies and barriers.

REACH visited eight locations within Kapoeta East, Kapoeta North and Kapoeta South counties in March 2022. Locations were selected from each county with purposive sampling of locations where recent displacement was reported either to or from the area. REACH conducted ten focus group discussions (FGDs) on climate impacts and nine FGDs on climate displacement, which included participatory mapping exercises. Two remote FGDs were also conducted in Kapoeta Town with participants visiting from Kauto Payam in Kapoeta East. FGDs were divided into male and female groups for each data collection location, and into displaced and non-displaced groups where relevant. Six key informant interviews (KIIs) were conducted with local leaders and NGO representatives with knowledge of Greater Kapoeta and humanitarian conditions of communities. Additionally, REACH conducted infrastructure mapping of water points in the assessed settlements. This assessment did not assess all potentially relevant locations and used a qualitative methodology, and as such, findings are indicative only.

See [Terms of Reference](#) for more information on methodology.

## Key Findings

- At the time of the assessment, Greater Kapoeta had been experiencing drought conditions since November 2021, particularly in Lopeat (Jie payam) and Lotimor. This was caused by insufficient rainfall in 2021, including notable dry spells.<sup>5</sup> Other reported shocks in recent years include flooding and heavy rainfall, locust infestations (Mogos, 2020), crop disease and prolific weed growth, which often contribute to crop failure. Such issues are likely linked with observed climatic changes.

- Water access is already limited across Greater Kapoeta, particularly in areas with a shortage of functioning water infrastructure and a high reliance on seasonal water storage. For example, Lopeat has only one hafir. Whilst rainfed, it usually provides year-round water access. Used by populations from around 10 settlements, some people are reportedly walking up to 6 hours to reach it. Due to limited rainfall in 2021, water levels were running low at the time of the assessment, and the water is unclean and being shared by both humans and livestock.

- Results indicate that community livelihood activities and food security are very sensitive to climate irregularity, requiring ample and consistent rainfall to yield sufficient harvests and pasture for cattle. Reliance on wild foods had reportedly increased due to poor harvests, particularly in Lopeat, although their abundance was reportedly lower this year and had decreased over time. Poor access to sufficient food and clean water leading to increased cases of

sickness was reported in some FGDs, whilst access to healthcare and other services remains limited, particularly in the Lopeat area.

- Large-scale population movement occurred in late 2021 and early 2022 from Jie payam, Kapoeta East to Karukomoges and Mogos payams in response to lack of water and protracted food insecurity caused by compounding climate shocks over the past several years. This population movement has reportedly taken on a circular nature in the past months, as people move from and to Jie in search of food and humanitarian assistance.

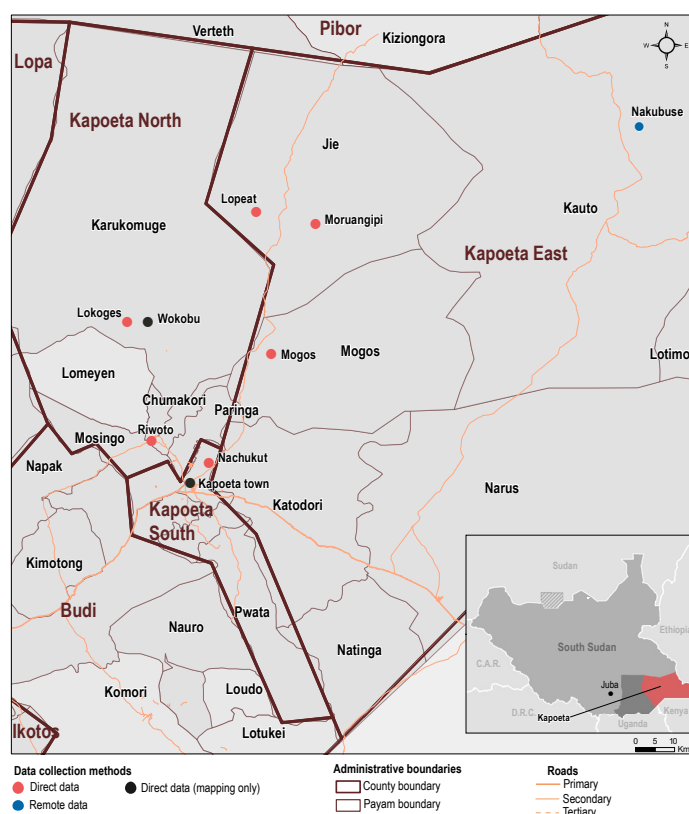
- Vulnerable household members (older persons and people with disabilities (PWD)) were frequently reported to have been left behind in Jie due to their inability to walk long distances. These populations reportedly experienced negative impacts on health, along with very limited access to food and water.

- While seasonal movement of people and cattle are typical in this region,<sup>6</sup> these movements reportedly started earlier than usual this year in Kapoeta North and East. In some cases, movements reached farther areas than in the past due to drier conditions.

- Participants described past climate shocks that impacted food security, but cited the availability of other coping strategies, such as livestock available to sell or slaughter and humanitarian food aid. These strategies reportedly prevented them from needing to move in the past, however, they are no longer available.

- Overall, repeated climate shocks in the region and changing weather patterns have led to decreased coping ability in many communities, which has resulted in increased movement during the 2021-22 drought. Reported needs, especially WASH and FSL, are high in Greater Kapoeta and unlikely to improve without humanitarian intervention.

Map 1: Assessed locations



### Traditional Livelihoods and Cultivation Calendar

A familiarity of the livelihoods and seasonal calendar is important to understand vulnerability of a population to shocks. As identified by the Famine Early Warning Systems Network (FEWSNET)<sup>7</sup>, all assessed settlements across **Greater Kapoeta fall into the South-Eastern Semi-Arid Pastoral livelihood zone**<sup>8</sup>. Therefore, the methodology and analysis were informed by the livelihood practices and seasonal calendar associated with this classification. This assumption was corroborated through FGDs and KIs, although there were some regional variations across assessed locations, which are outlined below.

Unlike other parts of South Sudan, the **climate in Greater Kapoeta is semi-arid**. Whilst grassland and shrubland are the predominant land cover, there is some woodland in Kapoeta North and northwestern Kapoeta East<sup>9</sup>. **Soils are suitable for crop farming, but climatic conditions severely limit yields.**

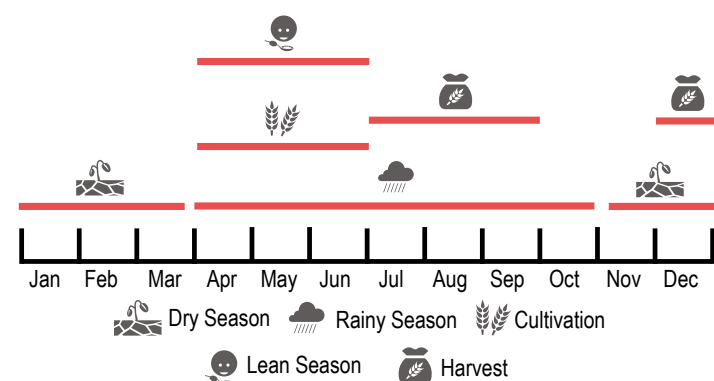
**Households typically follow pastoral/agro-pastoral livelihoods**<sup>10</sup>. Small-scale subsistence cultivation was reported as a livelihood activity in all FGDs, with sorghum reported as the main crop. Small quantities of maize, vegetables, peanuts and beans were also reportedly grown. FGD respondents reported keeping cattle and goats, whilst **wild food consumption was also prevalent across assessed locations**, particularly in Lopeat and Moruangipi, where wild game consumption was also reported.

**Agro-pastoralist practices are heavily influenced by fluctuations in climate.** In general, FGD respondents mentioned that the rainy season starts around April in assessed areas (Fig. 2). Satellite data indicated slight variations in seasonal rainfall trends across Greater Kapoeta. In the western part of the region, rainfall usually peaks in July, starting to drop in October, whilst in Lotimor and Kauto the rainfall peaks in April and remains relatively steady through to October / November<sup>11</sup>.

FGD and KI respondents noted **cattle migration occurs in the dry season, where cattle are moved to locations with better water and pasture access, including areas with permanent water sources such as the highlands in Lotimor and into Ethiopia**. As for cultivation, land clearing reportedly starts in March/April, with sowing generally starting with the rains in March/May. Some respondents from Lopeat reported to wait until June to sow, once the second rains had come, given the unpredictability of the first rains. The sorghum harvest period was reportedly between July and September, with a second harvest reported in some locations, including Lopeat, in December. The reported changes in weather patterns and harvests were likely to have had a notable impact on yields of critical food supplies.

According to FEWSNET, after the harvest period, households generally have enough sorghum to last for around two months, after which they rely on market purchase<sup>12</sup>. However, in some assessed locations such as Lopeat, Lokoges and Mogos, **market use was reportedly minimal given their remoteness (2-4**

**Figure 1: Seasonal Calendar, Greater Kapoeta**



<sup>2</sup> Note that part of Kapoeta South falls into the Highland Forest and Sorghum livelihood zone, although none of the assessed settlements fell within this zone.

**days walk to Kapoeta Town**). In addition, loss of cattle in Lopeat due to raiding several years ago has limited household ability to purchase items. Whilst better-off households have access to markets, poorer households rely on cultivated sorghum and wild foods, with consumption of livestock products, particularly milk and blood increasing during the wet season. Cattle were reportedly only slaughtered in periods of hunger, with respondents from Lokoges claiming this would be a last resort during the lean season, selling meat to exchange for sorghum in Kapoeta.

Conversely, **market purchase was reportedly high in Riwoto and Kapoeta South**. Therefore, whilst collection/sale of charcoal, reeds and firewood were reported in Riwoto and Nachukut, they were not reported in Mogos, Lopeat or Lokoges due to their remoteness from markets. In addition, some gold mining takes place in Kapoeta South, as mentioned by FGD respondents in Nachukut.

Assessment findings indicate there is generally an increase in casual labour, such as hotel work and farm labour, during the dry season, and this was particularly mentioned in Riwoto and Mogos. Additionally, **there is also some regular movement from Lopeat to Mogos and Karukomuge during the dry season** where people reportedly seek support from friends and relatives. As will be outlined later, **these movements were notably greater last year.**

### Climatic Shocks

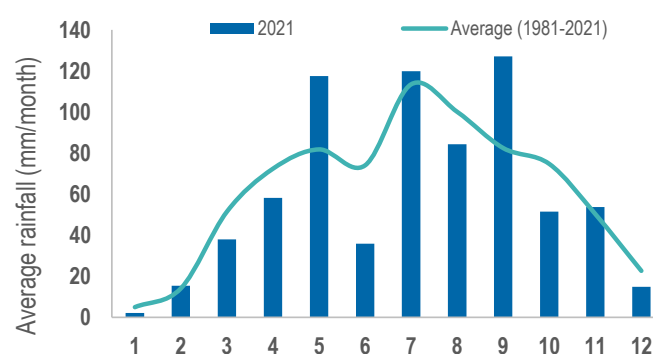
Climatic shocks can have substantial impacts on agro-pastoralist societies such as those in Greater Kapoeta, often leading to significant adverse effects on food security, livelihoods and water access. **This section will outline some of the major climatic shocks identified during KI and FGD interviews.**

#### Drought (2021- 2022 Dry Season)

At the time of the assessment, findings indicate **parts of Greater Kapoeta were experiencing exceptionally dry conditions, and rainfall was reportedly lower than average last year** (referred to as meteorological drought<sup>13</sup>). This led to reduced harvests (agricultural drought), less pasture for cattle, as well as reduced availability of wild foods and surface water, resulting in largescale movement of people as described later.

Rainfall data<sup>14</sup> indicates **notable dry spells in June and August 2021 across Greater Kapoeta with lower than average rainfall** (Fig. 2). FGD respondents generally indicated a **late onset to the rainy season and heavier than usual rainfall towards the end of the season leading to destruction of crops in some areas**. Such trends can be observed in the rainfall record, with lower rainfall early in the season and higher than average rainfall in September, as well as in May. One KI suggested there were **signs of hydrological drought**, noting that the WASH Cluster has been receiving reports about some boreholes becoming more seasonal in recent years due to a lowering water table.

**Figure 2: Rainfall (mm) Greater Kapoeta (2021)**





### Drought Perceptions

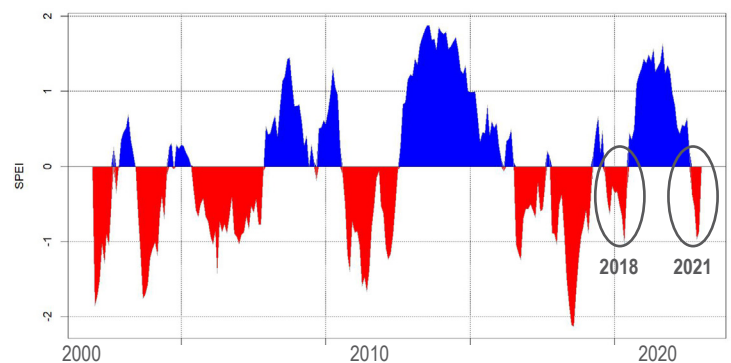
FGD respondents reported various perceptions of drought across assessed settlements. Often drought was defined as a period of hunger, usually related to poor crop harvests and low wild food abundance. In Riwo, FGD respondents used the term “nyeron” to refer to years of poor food access, including poor harvest, floods and disease, which had occurred for the past six years. Some respondents from Lopeat mentioned that drought was an annual occurrence, but that this year had been particularly bad. The different perceptions of drought suggests it is not always viewed as a result of insufficient rainfall, as respondents indicated other factors that led to hunger in some years including pests, locusts and crop diseases. These perceptions could be due to the fact **populations are accustomed to the harsh climate and the main gauge for a particularly bad year is the impacts on livelihoods and reduced food and water access.** Because of these differences, the intended definition of drought had to be outlined to ensure consistency of responses from FGDs.

### Drought Trends

To understand intensity and duration of droughts in Greater Kapoeta, the Standardised Precipitation Evapotranspiration Index (SPEI) has been utilized (Fig. 3). Based on the water balance concept, the index utilises climatic data from precipitation and potential evapotranspiration. Unlike many other drought indices, the SPEI therefore also accounts for temperature variability and extremes<sup>15</sup>. This is important because temperature rise can markedly affect drought severity. As outlined in the Climate Change section, precipitation is in fact increasing across the region, but as are temperatures, leading to more

**Figure 3: SPEI, Lopeat area (2001 - 2021)**

12-month SPEI for Lopeat area, indicating drier and wetter periods compared to long-term average (2001-2020). Calculated using SPEI package in R<sup>20</sup> based on GLDAS precipitation and near-surface air temperature data<sup>21</sup>.

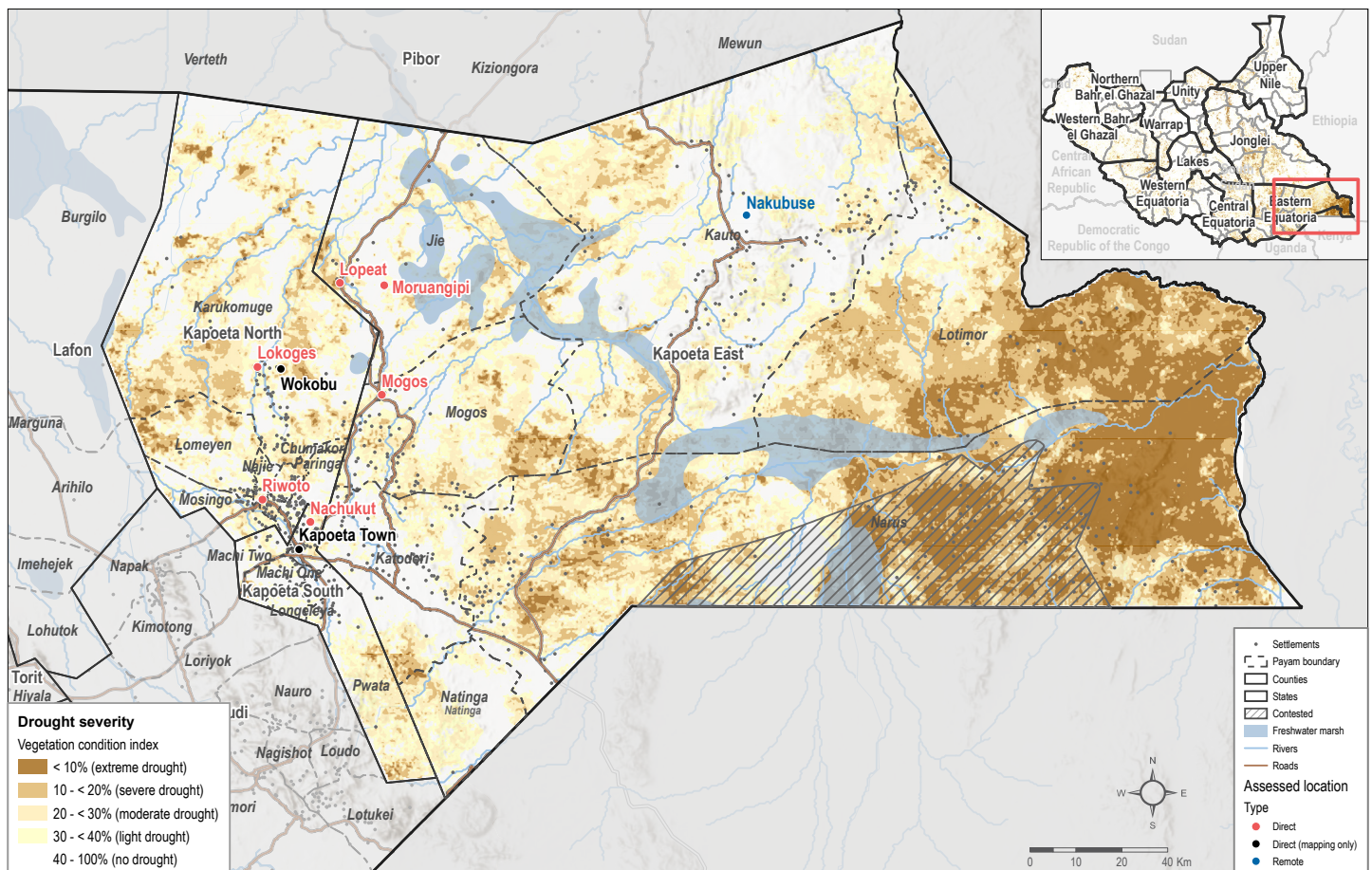


evapotranspiration and adjusting the overall water balance.<sup>16,17</sup> The SPEI can be calculated at different timescales between 1 and 48 months. **Fig. 3 clearly indicates the drier conditions reportedly experienced in 2021, as well as in 2018, plus the heavier rainfall identified between 2019 and 2020.** Droughts in East Africa also have a notable correlation with strong La Niña signals, as has been observed since late 2020<sup>18</sup>.

The Vegetation Condition Index (VCI) provides an indication of drought severity over a region, indicating the impact of rainfall patterns on vegetation health. Lower values are indicative of abnormally dry conditions, with values under

**Map 2: Drought severity, Greater Kapoeta (Feb 2022)**

Vegetation Condition Index (VCI) - Feb 2022. VCI is an indicator of drought severity representing vegetation health compared to long-term average (2001-2021). Assessed settlements also shown. Calculated in GEE based on MODIS EVI data<sup>22</sup>. Note that Nakubuse was assessed through remote FGDs in Kapoeta Town.



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40% generally representing drought<sup>19</sup>. In the most recent dry season, assessment findings indicated that Lopeat and Lotimor area were worst affected by drought conditions. Map 2 shows the VCI across the region in February 2022. Whilst the most severely affected areas are Lotimor and the eastern part of Narus payam, there are also some hotspots in Lopeat and Karukumoge area. Note that additional factors such as water access also contribute to the severity of drought impacts but will not be captured here.

### Flooding and Heavy Rainfall

FGD respondents reported that **fluvial flooding associated with overflow of seasonal rivers had occurred in Riwoto, Lokoges and Mogos in recent years**, whilst **heavy rains resulting in short-term flash flooding** was mentioned by respondents from Lopeat, Lokoges and Mogos (Map 3). This appears to be associated with **increased unpredictability of rainfall patterns** with some respondents reporting sudden bursts of heavy rain following prolonged dry spells leading to destruction of crops, impacting access to food and leading to micro-displacement in some areas (see Population Movement section). Several KIs also mentioned heavy rains in 2019 and 2020 in Kapoeta North.

The assessment found that the majority of rivers and streams in Greater Kapoeta are seasonal (flowing only during the rainy season) or intermittent (flowing occasionally). For example, the Lokale river in Mogos reportedly flows for just ~1 month a year. Other rivers such as those in Lokoges and Lopeat are more intermittent in nature, flowing only rarely. For example, the stream at Lokoges has reportedly been dry since October 2020. As most of these streams flow down from the highlands in Budi, Kapoeta South and across the border in Ethiopia, **heavy rainfall in these areas can heavily influence the chance of flooding downstream**. KIs reported that **deforestation in these areas has led to changes in rainfall patterns downstream in Kapoeta South and North**.

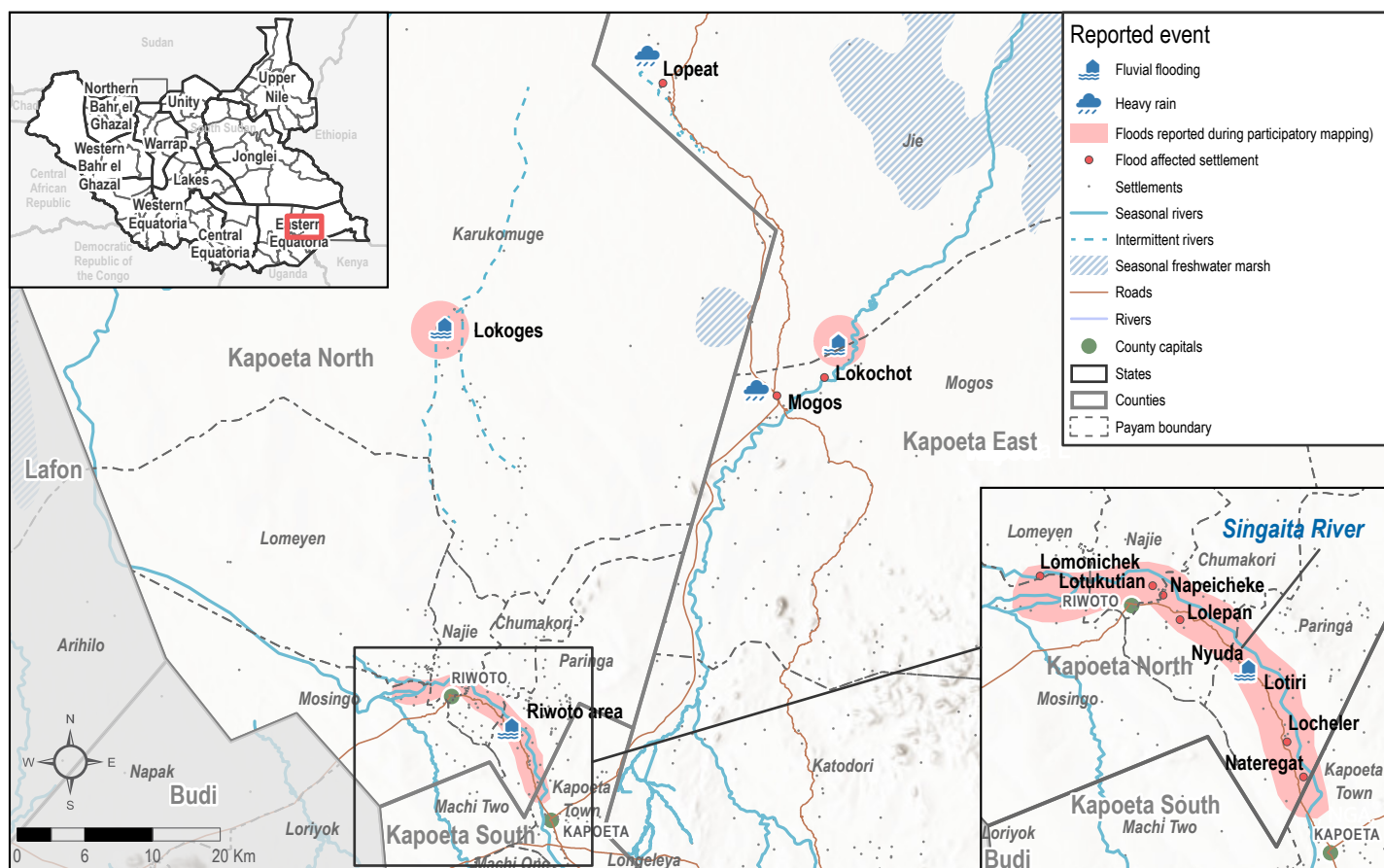
## Climate and Environmental Change

This section investigates some of the longer-term environmental and climatic trends across the region, which are important in understanding likely future conditions and shocks. Whilst climate data indicates that **precipitation has in fact increased across Greater Kapoeta<sup>23</sup>, temperatures are also rising<sup>24</sup>** (Fig. 4a), potentially leading to higher evapotranspiration and reduced moisture retention. As Fig. 4b shows, root zone **soil moisture has dropped significantly in the last 20 years**. Given the importance of soil moisture in crop development, this will impact crop yields over time, **leading to reduced harvests and poorer food security**. Natural vegetation growth is also likely to be affected, and reductions in soil moisture over time will lead to reduced biomass and lower surface water availability, creating a less abundant environment for both humans and animals.

**Rainfall patterns appear to be becoming more inconsistent**, with the majority of FGD respondents reporting worsening of climatic conditions in recent years. This includes delays to the start of the rainy season, dry spells, sudden bursts of heavy rains and more. FGD respondents also reported **reductions in harvests over time, as well as lowering surface water availability and wild food abundance**. Additionally, the reduction of wildlife reported in Lopeat in recent years spilling over from the nearby Boma National Park is a key indicator of reduced surface water and vegetation availability over time.

FGD Respondents from Mogos and Nachukut (Kapoeta South) indicated the **presence of a weed known locally as “longolekou” that has led to worsening soil quality and crop failures in the past 3-4 years**. The weed, also known as “Parthenium”, is a dominant weed found on road sides, grazing lands and crop lands, and has become an issue of great concern for farmers and pastoralists<sup>25</sup>. **Weed growth across the country has been observed to increase over time**

Map 3: Locations of flooding and heavy rain in assessed areas, as reported during FGDs and KIs





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and particularly in years with above normal rainfall, aligning with observed long-term increases in rainfall, particularly in 2019 and 2020<sup>26</sup>.

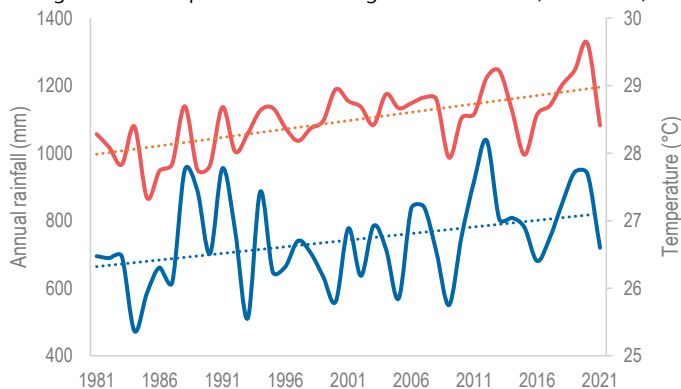
FGD respondents frequently reported **crop diseases and pests** such as **birds, termites and locusts** as a further pressure on crop production. Locusts were reported to have affected crops in Mogos recently, destroying many of them prior to harvest. Reportedly, this was the first time locusts were observed in Mogos. Reports indicate this occurred in 2020 and could be linked to climate change. This year was wetter than usual in Greater Kapoeta, whilst temperatures continue to increase (Fig. 4b), creating ideal conditions for locust reproduction<sup>27</sup>.

As mentioned previously, KIs reported deforestation has occurred in Budi County. Forest change data<sup>28</sup> from Global Forest Watch supports this. **Changes to the environment here will likely affect the water balance across the wider area by reducing rainfall and runoff in seasonal rivers downstream.**

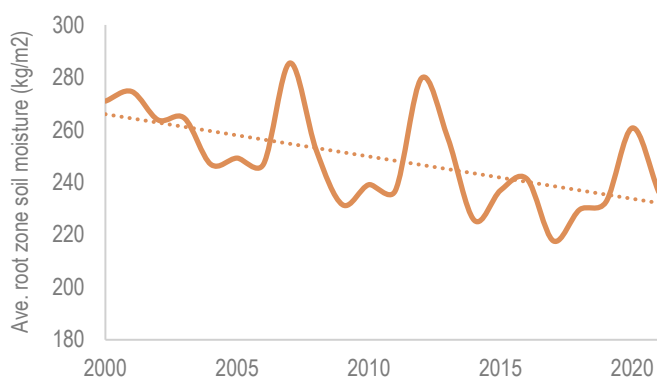
In Kapoeta North and East, a recent study<sup>29</sup> found that apart from direct deforestation required to construct hafirs, **increased woodland encroachment was observed, as well as overgrazing of pastures naturally vulnerable to erosion due to poor soils and low rainfall.** The cycle of cut and burn, which was reported and observed during the assessment, has been accelerated with the high density of livestock around the hafirs. This is purposely done to encourage re-sprouting of pasture, but if practiced poorly can lead to the **destruction of trees and shrubs and loss of nutrients and soil organic matter in the long term**<sup>30</sup>. In summary, climate change is likely to lead to further more severe drought and flood shocks in the future, whilst continued environmental degradation will likely only exacerbate the impacts of these.

**Figure 4: Climatic and environmental trends, Greater Kapoeta**

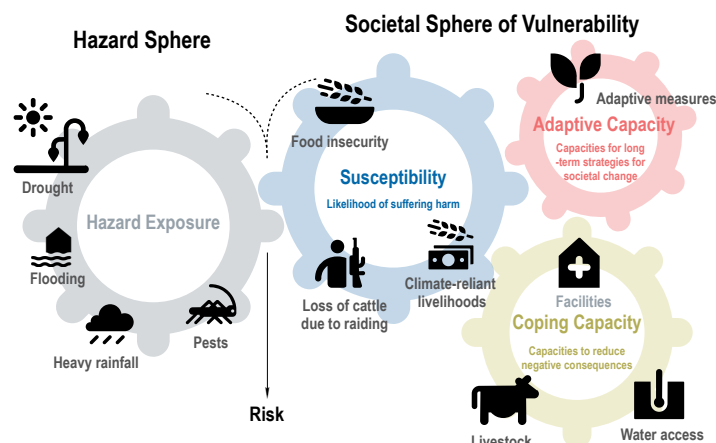
a) Average annual temperature and average annual rainfall (1981-2021)<sup>32, 33</sup>



b) Average annual root zone soil moisture (2000-2021)<sup>34</sup>



**Figure 5: Climate-induced risk concept, Greater Kapoeta: both hazard exposure and vulnerability together create disaster risk**



## Pre-existing Vulnerabilities

To understand the extent of the impacts of climatic shocks on societies, it is important to understand the pre-existing vulnerabilities of these populations. As shown in Fig. 5, risk faced by populations to a hazard depends on their vulnerability. As outlined by the World Risk Index, there are three major components to vulnerability<sup>31</sup>: the susceptibility of a population to suffer harm, the coping capacity to reduce negative consequences, and the adaptive capacity to adapt to shocks and changing levels of risk due to climate and environmental change. **Due to the impact of compounding shocks and protracted conflict, populations across Greater Kapoeta likely remain more vulnerable to subsequent shocks.**

KIs and FGD respondents indicated that **food security has been poor in many of the assessed areas for the past 4-6 years.** These compounding shocks appear to be leading to increased susceptibility of populations to suffer harm, and some FGD respondents from Lopeat mentioned that women were unable to work in the fields because of food consumption gaps. In addition, **a major cattle raid took place against the Jie people several years ago.** As reported by FGDs from Lopeat and Moruangipi, the **susceptibility of the population to climate-related hazards increased considerably following this event given the economic importance of cattle.** Given that consumption of livestock products is a common coping strategy in the lean season, coping capacity may also have been reduced. There are no health centres or schools in Lopeat and Moruangipi, further reducing coping capacity of the local population there. Overall, **these factors result in high drought risk, particularly in Lopeat and Moruangipi.**

Populations across the region are **highly sensitive to climate regularity, given the reliance on consistent rainfall in sustaining livelihoods.** The area also has existing poor access to surface water, whilst groundwater is limited. These surface water sources, which include community ponds and hafirs, are completely reliant on regular rainfall and runoff, and assessed communities have limited adaptive capacity to climatic changes. Much of the **existing water infrastructure on the other hand, including boreholes are broken or seasonal,** further reducing coping capacity, as detailed below. Whilst adaptive capacity is currently limited, **measures such as improving dry season water storage can help reduce overall vulnerability through building resilience to climate change and climate extremes.**

## Water Access and WASH

One of the key impacts of climatic shocks and climate change on populations is the effects they have on water access and WASH. This section will outline some of the key implications of recent events, as well as

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due to long-term climate change, before looking at some of the reported coping strategies and barriers.

### Implications of Climatic Shocks and Climate Change

Water access is very limited across Greater Kapoeta, and in the majority of FGDs, respondents noted a lack of water points or water point congestion as a major concern. Table 1 on page 7 shows the types of water points available by functionality and seasonality across assessed locations. Whilst assessed areas of Kapoeta South and Riwoto have many functioning manmade water points including boreholes, tap stands and water tanks, some more remote areas lack functioning water points. For instance, two thirds of assessed water points in Mogos were non-functional at the time of assessment, whilst many others are in disrepair (see Map 4).

There are some perennial streams in Lotimor and Kauto, whilst towards the western side, streams are seasonal, and communities hand dig wells in river beds during the dry season to access water. **Hand-dug community ponds are also common throughout Greater Kapoeta, particularly in areas of Kapoeta North and Jie payam where there are no seasonal rivers** (only intermittent streams) and limited water infrastructure. These ponds, owned by groups of families, provide a seasonal water source, storing rainwater during the rainy season and usually running dry by January, at which point water access becomes much more challenging. Some FGD respondents reported the recent build-up of sediment in the ponds (Fig. 6). **Large amounts of sediment build-up / siltation, likely due to runoff and wind,**

Figure 6: Siltation in community pond near Moruwangipi

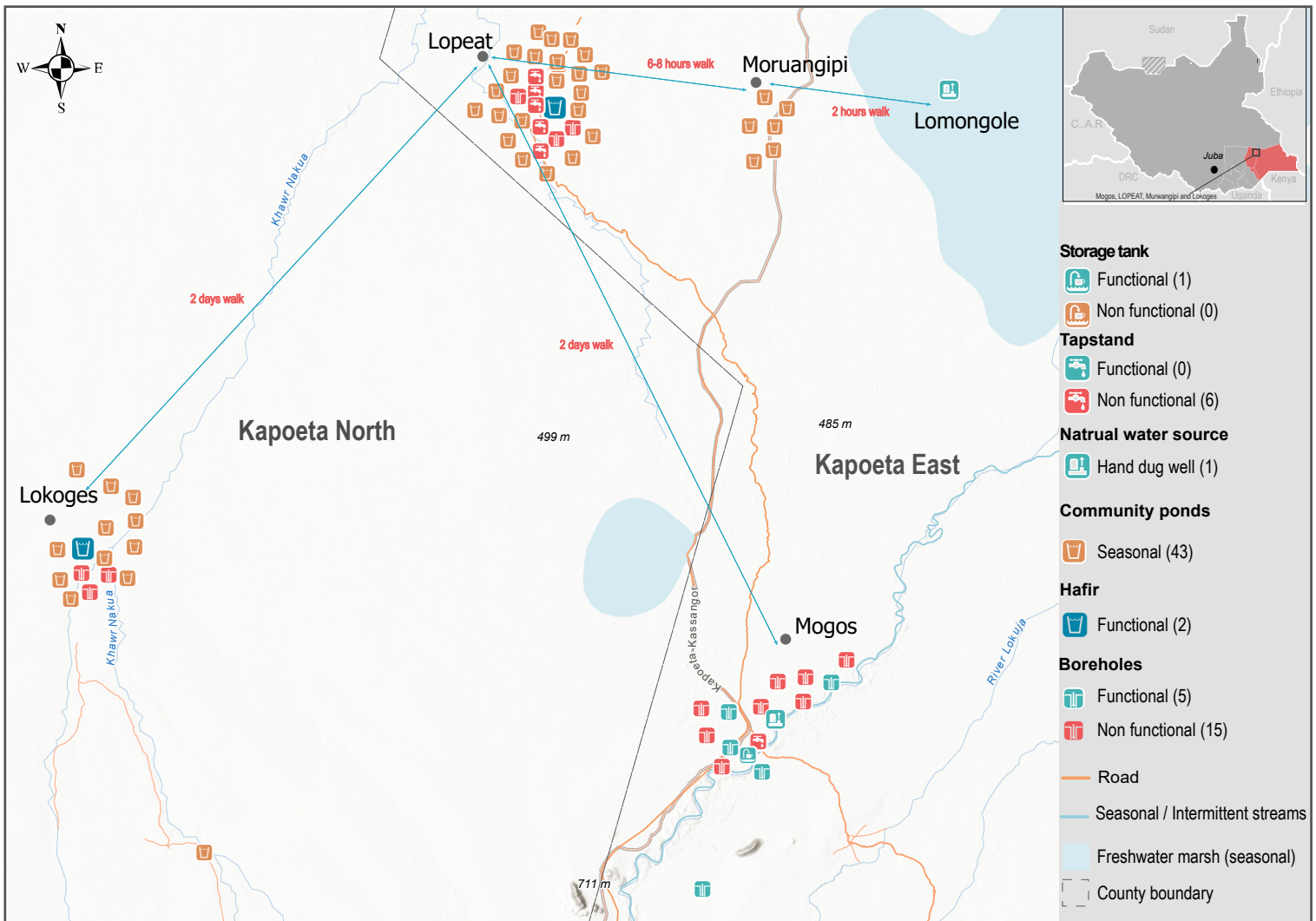


were also observed directly and labour-intensive work to clear them out is required before the start of each rainy season.

### Lopeat Area

The Lopeat area has the most limited water access of all assessed areas, with a single hafir serving as the only water source for at least 10 settlements. Attempts to drill boreholes have failed due to groundwater depth reportedly exceeding 200m. Nine of 10 settlements are located >500m away from the water point (Table 2), a key indicator for inadequate water access under the SPHERE Standards<sup>35</sup>. In Moruwangipi, people are reportedly travelling up to 6 hours each way to reach the hafir, often daily.

Map 4: Waterpoint functionality and accessibility - Lopeat, Moruwangipi, Mogos and Lokoges





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**Table 1: Assessed water points by functionality / seasonality**

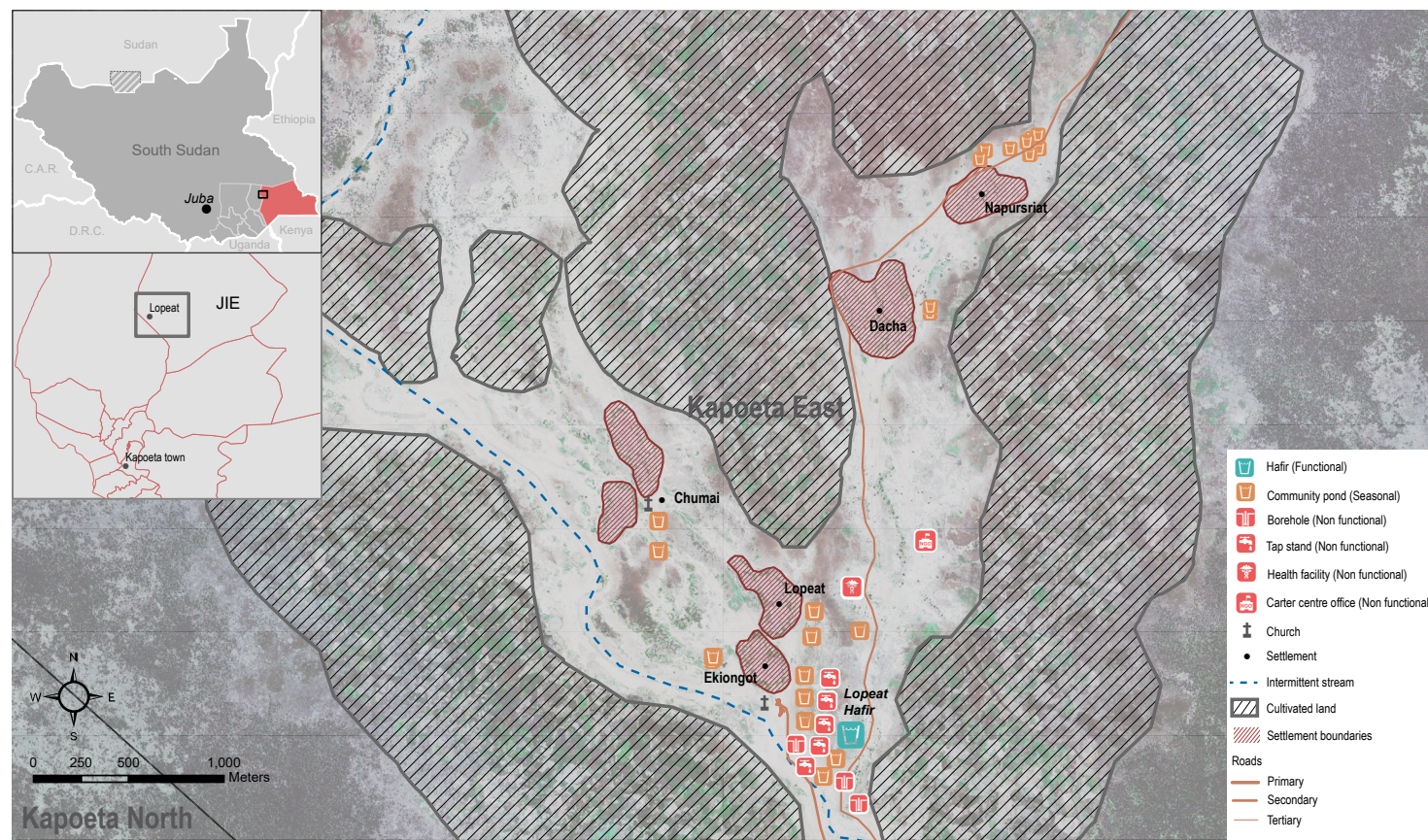
Assessed area	Functional	Non-funct. / seasonal
Kapoeta Town	58	21
Nachukut	3	1
Lokoges / Wokubu	1*	15
Riwoto	12	2
Lopeat	1	32
Mogos	5	10
Moruangipi	0	6

\*2 additional boreholes were under construction in Lokoges at time of assessment.  
Note some waterpoints may not have been assessed due to accessibility issues.

Whilst there is no seasonal river in these locations, the community in Moruangipi do also access water from hand-dug wells around 1.5 hours away in a swamp known as Lomongole. However, water is very limited there so many reportedly prefer to use the hafir. **Daily trips to reach water points are often undertaken by women and girls, with recent assessments indicating exposure to protection issues<sup>36</sup>.**

Prior to construction of the Lopeat hafir by Pact in 2012, communities relied entirely on seasonal community ponds and would migrate during the dry season to access water, often leading to tension and violent conflicts with nearby communities<sup>37</sup>. In improving dry season water access for people in Jie, the project aimed to help bring peace to the area<sup>38</sup>. However, in recent years, one of the frequently reported concerns was **rapid depletion of water given their reliance on regular rainfall patterns, which data from this assessment indicates have changed in recent years.**

**Map 5: Infrastructure functionality / seasonality, Lopeat, Jie Payam**



In general, 50-65% of water in hafirs is lost due to evaporation, sedimentation and misuse<sup>39</sup>. With rising temperatures due to climate change, evaporation rates will further increase, whilst in drier years rainfall recharge may be insufficient to last the entire dry season. This is having a number of knock-on effects including **rapidly depleting surface water sources, increased dry season movement to access water, and increased cattle migration further afield to reach water and pasture** (as outlined later). On this note, FGD and KI respondents mentioned the Lopeat hafir ran dry in 2018, leading to largescale displacement to Karukomuge and Mogos, on a similar scale to 2021.

The hafir also reportedly lacks an organised management/maintenance system and is used by both humans and animals. Originally, pumps (powered by generators) would carry water up to troughs for livestock. However, these reportedly broke around one year after the hafir was constructed. Additionally, fuel availability for the pumps was mentioned as a challenge given the long distances and poor road access from Kapoeta Town, whilst lack of spare parts and capacity to repair small issues presented further issues<sup>40</sup>.

Due to mixed use between humans and livestock, there were signs of contamination and algae was identified<sup>41</sup>. When the water level runs low, such as at the time of the present assessment, the hafir becomes muddy due to siltation and needs to be cleared out, which does not appear to be undertaken. In addition, **there is no functioning water treatment infrastructure, and humans and livestock**

**Table 2: Distance from settlements whose primary waterpoint is Lopeat hafir**

Settlement name	Distance (km)
Moruangipi	11.2
Unknown name	5.5
Chumameri	4.8
Napusriat	3.0
Dacha	2.2
Chumai	1.6
Chumameri	0.8
Harwakuruk	0.7
Ekiongnot	0.6
Natomonbeyo	0.3



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**Figure 7: The hafir at Lopeat (March 2022) - the only year-round water source for 10+ settlements, shared both by humans and animals**

collecting and drinking water directly from the hafir. This poses a disease risk including diarrhea, Guinea worm, bilharzia, typhoid, and zoonotic diseases from livestock and wildlife<sup>42</sup>. These issues were also identified by KIs. Whilst the situation is better at Lokoges hafir, this hafir suffers from similar issues and water appears to also be running low, especially given that it is currently being used at overcapacity due to being shared with the Jie community as well.

### WASH Coping Strategies and Barriers

Communities across Greater Kapoeta reportedly employ a range of coping mechanisms to deal with lack of water access during the drier months. For example, **community-owned hand-dug ponds were common in assessed settlements, although they require improvement to retain enough water to last the entire dry season**. Communities with better groundwater access, such as in Mogos, reportedly **dig shallow wells in the dry river beds**, especially when manmade infrastructure breaks or is congested. In Kauto on the other hand, FGD respondents mentioned movement up the plateau was common when boreholes break due to the availability of permanent surface water. Meanwhile in Lotimor, KIs indicated that communities moved further up the mountain this year, and earlier than usual, for better water access. In Moruangipi, FGD respondents reported accessing water using hand dug wells in swampy areas.

As an agro-pastoral society, communities in Greater Kapoeta are well adapted to movement in search of food and water. Whilst the development of hafirs has helped limit the amount of movement required, KIs reported that movements have increased again in recent years due to erratic rainfall patterns. Due to the lack of water available during these movements; for example, **there are no water points between Lopeat and Lokoges or Mogos, and respondents from one FGD reported occurrences of deaths due to thirst and hunger occurring en-route in the recent season**.

FGD respondents in Lokoges and Lopeat reported managing water usage in hafirs through restricting children from playing in the water. Additionally, **some animals were reportedly only allowed to drink on alternate days in Lokoges**, whilst older people reportedly prevent people from collecting more than 2 jerry cans of water per day. It is unclear to what extent these rules are enforced as other FGD respondents from Lopeat mentioned that rules had been eased since the Jie's cattle were raided in 2018. Respondents from Lopeat also mentioned limiting personal water consumption to just 1 litre per day as a coping mechanism.

In an assessment of water harvesting structures in South Sudan, one of the common problems with nearly all assessed hafirs was the lack

of maintenance services and spare parts for the mechanical components of these facilities; this was the case in Lopeat as mentioned previously<sup>43</sup>. In addition, the water sector offices in almost all the local governments have limited capacity to provide support<sup>44</sup>. This means that small faults can easily render facilities unusable. In addition, because of lack of phone network in many parts of Greater Kapoeta, FGD respondents in Moruangipi for example reported if they had boreholes, they would need to walk four days to Kapoeta Town to get help to fix any faults.

To improve water access in Lopeat, **some KIs have suggested piping water from Mogos, enhancing rainwater harvesting facilities, and improvement of community ponds as potential solutions**. Ensuring that water sources in remote areas can be managed effectively by communities will be paramount to ensure continuity in water access. Also, findings from this assessment indicate that **further groundwater surveys may be required to assess groundwater levels at locations near Lopeat**; although past surveys indicated the water table was too deep in Lopeat itself, FGD respondents in Moruangipi mentioned accessing water from shallow wells 1.5 hours from the village, whilst a recent survey reportedly undertaken in Moruangipi indicated that it would be possible to build a borehole here. These findings indicate the water table may be closer to the surface in these areas.

### Food Security & Livelihoods (FSL)

This section explores some of the implications of recent climatic shocks and longer term climatic changes on FSL across Greater Kapoeta, before looking at some of the reported coping strategies and barriers reported by assessed populations.

### Implications of Climatic Shocks and Climate Change

Crop production was reportedly poor across the majority of assessed settlements in 2021. As mentioned, this was reportedly driven by climatic shocks including dry spells and heavy rainfall, along with prolific weed growth, pests and disease. Whilst the lean season generally lasts between March and July in the region<sup>45</sup>, **assessed populations appeared to have run out of food stocks at the time of assessment (March) in Lopeat**, whilst stocks were reportedly very low in Lokoges due to the community sharing food with the displaced Jie community. Findings



**Figure 8: Community members from Moruangipi loading jerry cans of water at Lopeat hafir after a 6 hour journey.**





**Figure 9: Dry river bed at Mogos, Kapoeta East. The region has a semi-arid environment and most rivers are seasonal.**

indicate that Lopeat area had the most limited food availability at the time of the assessment, with poor to no harvests reported.

Whilst milk and meat are ordinarily consumed in the wet season, respondents from Lokoges reported that they had **started slaughtering cattle and consuming meat already, and they suggested that this was a last resort due to the extreme lack of food.** They predicted they would have to continue this practice if the rains were poor this year. **Loss of cattle would likely lead to more severe impacts on food security and livelihoods in the long term,** given their importance in agro-pastoralist communities. In Lokoges, respondents indicated they would also sell meat and exchange it for sorghum. Meanwhile, respondents from Lopeat reported only using blood from cattle. Some respondents, particularly from Lopeat, indicated **many livestock died in the last year due to lack of water, pasture, and increases in disease,** whilst some were reportedly not producing milk.

Consumption of wild foods was reported in most assessed settlements. Whilst this is a normal part of the diet for many during the lean season, **reliance on wild foods was reportedly higher this year.** Consumption of game meat was also reported in Lopeat and Moruangipi. However, it is more common for communities to consume game meat during the rainy season as wild animals typically migrate in the dry season in search of water and food.

FGD respondents with **market access in Riwoto, Kauto and Mogos reported steep increases in market prices for sorghum as well as other commodities such as salt and cooking oil.** REACH JMMI data<sup>46</sup> correlates with these findings, with prices for many goods increasing from June 2020, reaching a peak around April 2021, and since decreasing but remaining high. For example, the price of 1kg of sorghum rose from 100 SSP for 1kg in April 2020 to 700 SSP in April 2021. Some respondents in Riwoto attributed the price increases to COVID-19. Respondents from Kauto reported receiving less cash for their cattle in the last 3 years, whilst in Ethiopia prices for goods are lower, so people get more for their cattle. However, people mostly just go here when visiting cattle camps close to the border reportedly, usually selling cattle in Kapoeta.

Due to lack of food, many KI and FGD respondents reported **increases in illnesses and worsening of health conditions.** In all FGDs conducted with people from **Lopeat and Moruangipi, deaths were reported to have occurred in some vulnerable groups left behind, including children and older people.** Many of those affected were suffering from poor access to sufficient and nutritious food, and had an over-reliance

on wild foods, including ones leading to sickness. FGD respondents also reported deaths had occurred when moving between Lopeat and Mogos due to the long distances involved with no water access.

### FSL Coping Strategies and Barriers

In the majority of the assessed settlements, FGD respondents reported to have **some limited access to food assistance, although this was generally only available to the most vulnerable groups.** Respondents in Lopeat expressed mixed reports, indicating **some confusion over what assistance was available, as well as where and when it was being provided.** For example, IDPs (from Lopeat) in Lokoges said in March that it was still not clear whether assistance had been provided in Lopeat, mentioning they would remain in Lokoges if they were unable to get assistance there. On the other hand, returnees in Lopeat indicated they had returned to Lopeat in February after spending five months in Lokoges, as they heard of food assistance being provided in Lopeat. However, this was only provided to the most vulnerable groups and they further mentioned the food stocks only lasted for three days, after which populations returned to reliance on wild foods. **In Moruangipi, respondents indicated that no food assistance reached the village, with the nearest food distributions generally being in Lopeat (6+ hours walk).** Additionally, in Lokoges, one of the main barriers to accessing food assistance was reportedly the long distance required to reach Riwoto where it is distributed (2 day journey each way).

**Female respondents from Lopeat who had just returned from Lokoges reported selling productive assets** such as farming tools provided by FAO, as well as beads and kitchen items to buy sorghum last year. Whilst wild food consumption is a normal part of the diet across Greater Kapoeta, particularly in the dry season, most FGDs reported that reliance on wild foods had increased this year due to crop failure and lack of other available food sources. **In Lopeat for example, respondents indicated that those left behind were surviving exclusively on wild foods.** Some respondents from Kauto indicated storing wild foods from last year, whilst in Mogos, they reported just eating them directly due to lack of food availability. As mentioned earlier, **wild food abundance appears to have decreased and be particularly low this year, probably related to climatic conditions.**

Due to lack of other options, a large number of FGD respondents reported **eating wild foods that made people sick,** including with diarrhea, with children and older people particularly affected. In Moruangipi and Nachukut, respondents indicated that women would go to the bush to search for wild foods, sometimes travelling for several hours to collect wild foods, returning the next day. This also potentially exposes them to protection issues. In Lokoges, respondents also mentioned eating dead animals making people sick.

**Sharing food was reported across many of the assessed settlements and respondents indicated that they would often share food with those more in need.** Respondents from the host community in Lokoges and Mogos mentioned they shared food with IDPs from Jie in recent months. In Lokoges, respondents also indicated that stocks were now running low. Begging was also mentioned by the Jie community, as well as from friends and relatives in Nachukut and Mogos. For example, one FGD group had come yesterday from Lopeat to beg for food, mentioning they will return when they receive some. Other commonly mentioned coping strategies included eating one meal a day and skipping meals to allow their children to eat. In addition to further severe outcomes, **some of these strategies are likely to lead to an increase in vulnerability and further difficulties in coping with a future drought** (see Figure 5).

### Climate displacement in Greater Kapoeta in historical context

It is useful to understand the historical context of climate shocks and displacement in Greater Kapoeta in order to contextualize the recent shocks and movements in the region. This understanding may also help to anticipate upcoming movements and needs, as across most FGDs and KIIs, it was reported that since 2018, the Greater Kapoeta region has been receiving irregular rainfall and climate conditions have worsened.

**Four major climate shocks associated with displacement were reported in the last five years**, as illustrated in the timeline below: droughts in 2017 and 2018, heavy rains causing flooding in 2019 while drought simultaneously affected the Jie area, and the 2021 drought (Fig. 10). The effect of these cumulative climate shocks was reported to have negative impacts on food security at the time of data collection, due to the depletion of coping strategies over the past years of climate shocks.

In addition to FSL coping strategies already described above, **movement has historically been used as a coping strategy during times of water or food shortage**. However, the repeated use of movement as a coping strategy has caused some communities to lose access to this strategy. For instance, participants reported that historically in Kauto, people would move with their livestock to Wawa, Ethiopia in the event of climate shocks. However, due to conflict dynamics that developed between the two communities in the aftermath of displacement during the 2017 drought, this movement is no longer possible. Participants explained that during the subsequent drought, people instead north moved towards Kuron to access water and wild foods.

FGD participants in Lopeat reported that during the 2018 drought, the community hafir had dried up in the same way that occurred at the time of data collection. However, **in 2018, many community members still owned cattle, which meant they had access to coping mechanisms that are no longer available**. Many people were reportedly able to move with their cattle to cattle camps near Kassangor during the 2018 drought. Additionally, participants reported that in 2018, they still had access to

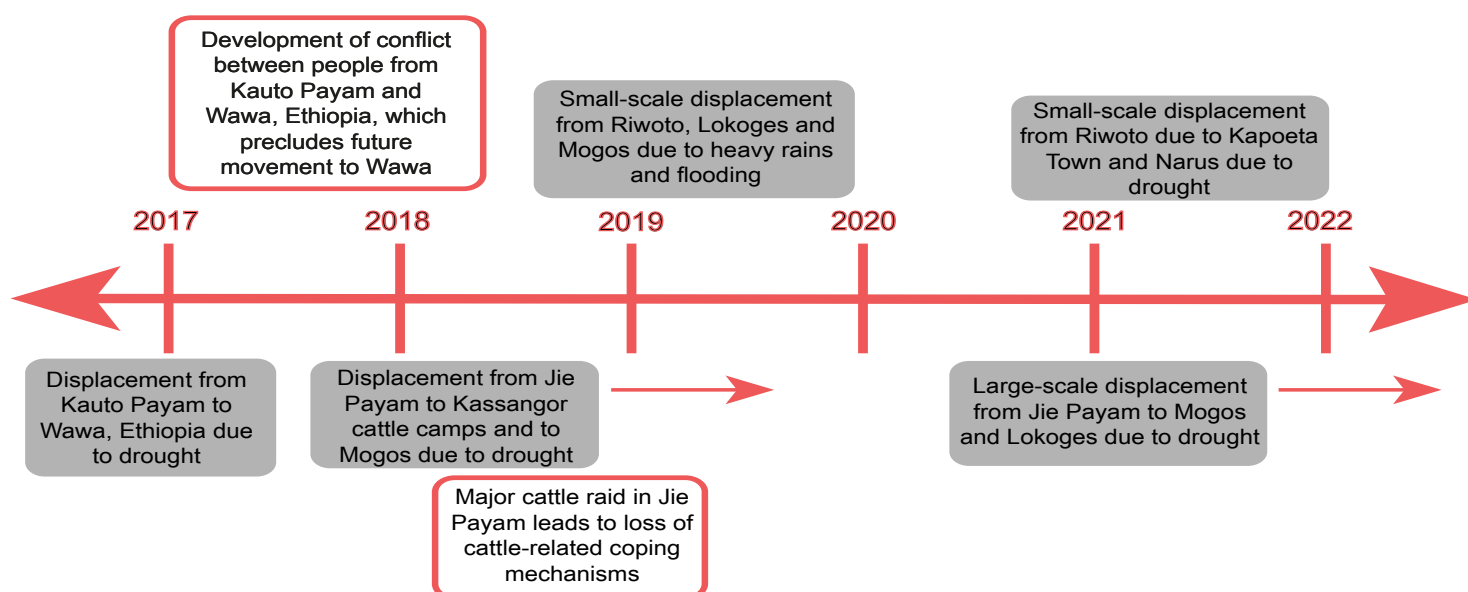
some food stocks, more wild foods and animal products. As a result, entire households reportedly did not all need to move. Instead, some household members would be sent to bring water from Kassangor, Mogos, or Karukomoges, a journey of up to two days.

Erratic rainfall in 2019 reportedly caused multiple displacements in Kapoeta North and East. Participants in Lokoges reported that during a flooding event in 2019, people were displaced to Mogos and Peimong in search of water and wild food. In 2019, thousands of people from Lopeat and Kassangor were also reported to have been displaced to Mogos due to a chronic lack of water.<sup>47</sup> Concurrently, FGD participants in Mogos reported flooding in the low land areas in 2019 which destroyed crops and caused low level displacement to higher grounds. These historical events illustrate the **perception of Mogos as a regional source of reliable food and water**, even at a time when climate shocks were also affecting the Mogos area.

In Riwoto, Kapoeta North County, flooding reportedly displaced people on a small scale in 2019. The affected households were displaced towards the border of Kapoeta South county in Napuda, Paringa, Napechuke, Napatit, Lolepan and Locheler, and some of these households reportedly had not returned by the time of data collection. Together with the small-scale displacement that reportedly occurred in Riwoto in the 2021-22 dry season, this may indicate that **vulnerable households use movement as a coping strategy for climate shocks, and short-term displacements may turn into longer-term relocations**.

Overall, participants in most FGDs described past climate shocks that impacted food security, but reported that the availability of other coping strategies, such as livestock available to sell or slaughter and access to cattle camps, mitigated the need for large-scale movement during these past shocks. As the effects of multiple years of climate shocks compound, these coping strategies decline, and distress migration becomes more likely. For communities in the Jie area, the loss of their livestock over the past several years notably impacted people's ability to use movement to cattle camps as a coping mechanism this year, as most families reported having no remaining cattle at all.

Figure 10: Timeline of historical climate displacements in Greater Kapoeta





# Greater Kapoeta Climate Impact & Displacement Profile

## Climate Displacement Analysis

### Climate-Induced Displacement

Across most FGDs and KIIs, participants reported that population movement occurred more than usual during the 2021-2022 dry season (November through March) in Greater Kapoeta due to reduced rainfall in 2021 which exacerbated food insecurity and reduced access to water in the area. This reported increased movement can be understood as three main types: 1) Large-scale movement of people out of Jie Payam due to drought, 2) Small-scale displacements from other locations in Greater Kapoeta due to drought conditions or flash-flooding events, 3) Atypical or earlier than usual movements of cattle and people due to drier conditions, which is described below in the *Drought Impacts on Cattle Migration* section. Map 6 (below) illustrates these displacements.

### Distress Migration from Lopeat Area

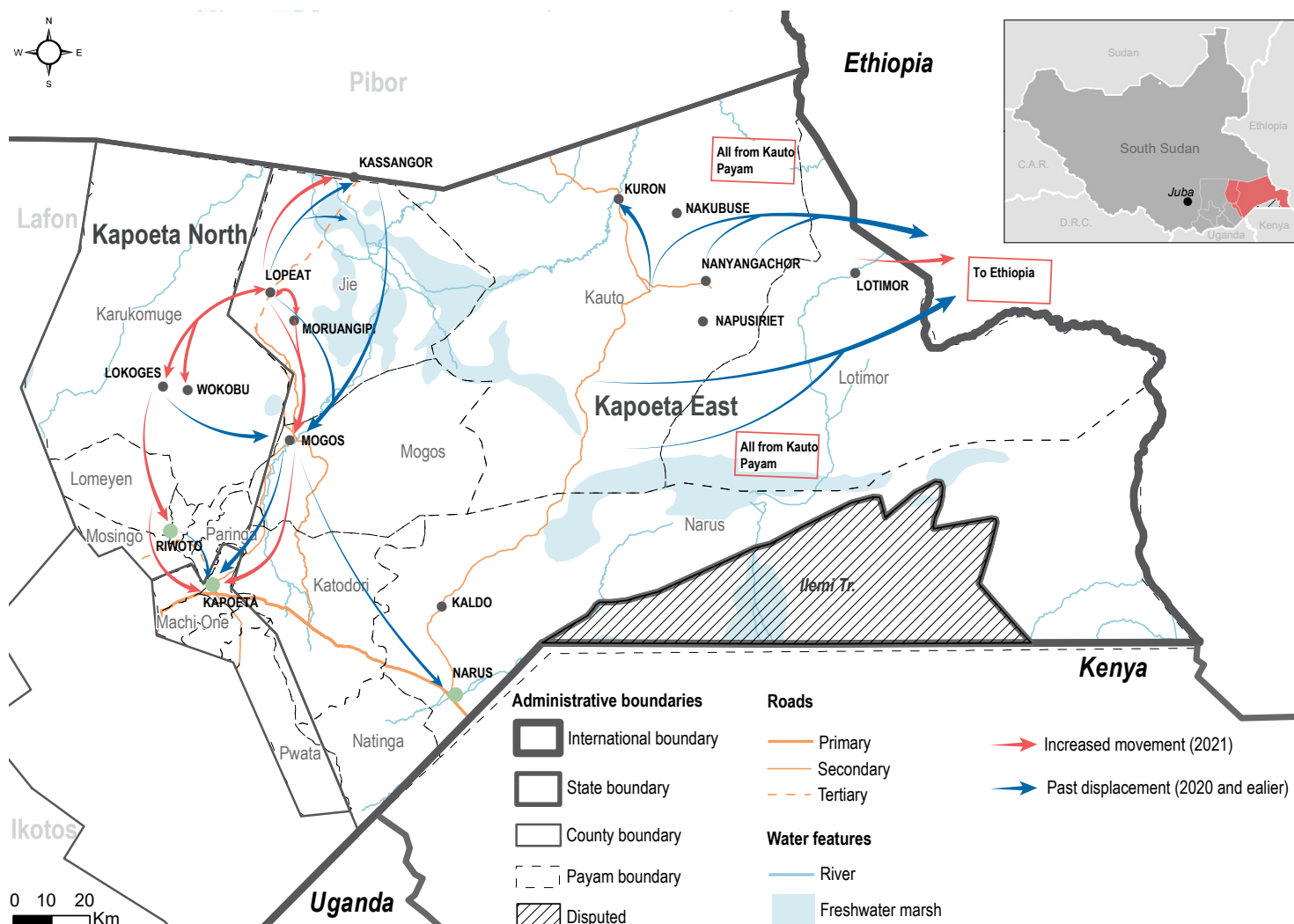
FGD participants and KIIs reported that large-scale movement occurred from Lopeat and Moruangipi, Jie Payam in late 2021 as people searched for better access to food and water. The majority of the population in Lopeat reportedly moved from Jie Payam to Lokoges and Wokobu in Karukomoges Payam, Kapoeta North County or to Mogos Payam in Kapoeta East County. From Moruangipi, participants reported that people moved to Lopeat, and upon not finding improved access to food, some moved onward to the same locations that people moved to from Lopeat. Other movements from Jie were also reported, including

small groups of the population which had moved north to Kassangor or the surrounding area.

FGD participants reported that there was frequent circular movement of people between Jie and Karukomoges and between Jie and Mogos in the months preceding data collection. Many of those who were initially displaced to Lokoges or Mogos had reportedly returned to Lopeat but had displaced again to Mogos or Lokoges at the time of data collection. This circular movement was reportedly motivated by the search for food and humanitarian assistance, and the need to bring resources back to family members who were unable to displace. Participants reported returning to Lopeat to collect humanitarian assistance, but then leaving again for Mogos and Karukomoges because the food assistance received had lasted only a short time. The distance between Lopeat and Mogos or Lokoges requires approximately a two-day walk, and a reported lack of adequate food or water for the journey and reported pockets of insecurity in the area indicates this is a high-risk journey. Some FGD participants reported that people had died while walking between these locations.

For those who remained behind in the Jie area, participants reported that despite the many people who left, the available food was still not enough for the population. Those IDPs who had moved to Mogos or Lokoges reported that they had better access to food and water than they did in their communities of origin, partially because host communities shared their resources with the IDPs.

Map 6: Displacement Patterns in Greater Kapoeta



# Greater Kapoeta Climate Impact & Displacement Profile

## Climate Displacement Analysis

In FGDs and KIIs with host communities in Mogos and Lokoges, participants reported that the arrival of IDPs had a negative impact on food security because the **host communities shared their limited crop harvests with the IDPs, which had been exhausted earlier than usual**, before the time of data collection (March). Participants additionally reported impending exhaustion of traditional coping strategies such as livestock, wild life and wild foods. Host communities reported sometimes slaughtering their own livestock in order to feed the IDPs, especially children and older persons, when wild food consumption became hard to sustain.

### Other Reported Displacement in Greater Kapoeta

In addition to the reported large-scale population movement from the Jie area, small-scale displacement from other regions in Greater Kapoeta was also reported due to the drier conditions and food insecurity. **FGD participants in Riwoto mentioned displacement of small numbers of people from their community due to food insecurity from drier than usual conditions.** People displaced from Riwoto reportedly moved to Kapoeta Town or Narus, where they had familial ties or the opportunity to perform casual work. Additionally, flash flooding was reported as a driver of small-scale displacement from low-lying areas near Riwoto and Mogos earlier this year. People displaced by these events reportedly did not move far, but relocated to higher ground within the same settlement area.

Additionally, KIs reported that there has been **more movement than usual during the 2021-22 dry season in the eastern part of Kapoeta East, around Lotimor and Kauto payams, due to the drought.** Though REACH was unable to visit these areas, KIs reported that food insecurity was worse than usual in these areas at the time of data collection for that time of year, and that people had been moving to Ethiopia with their cattle in order to access water and food.

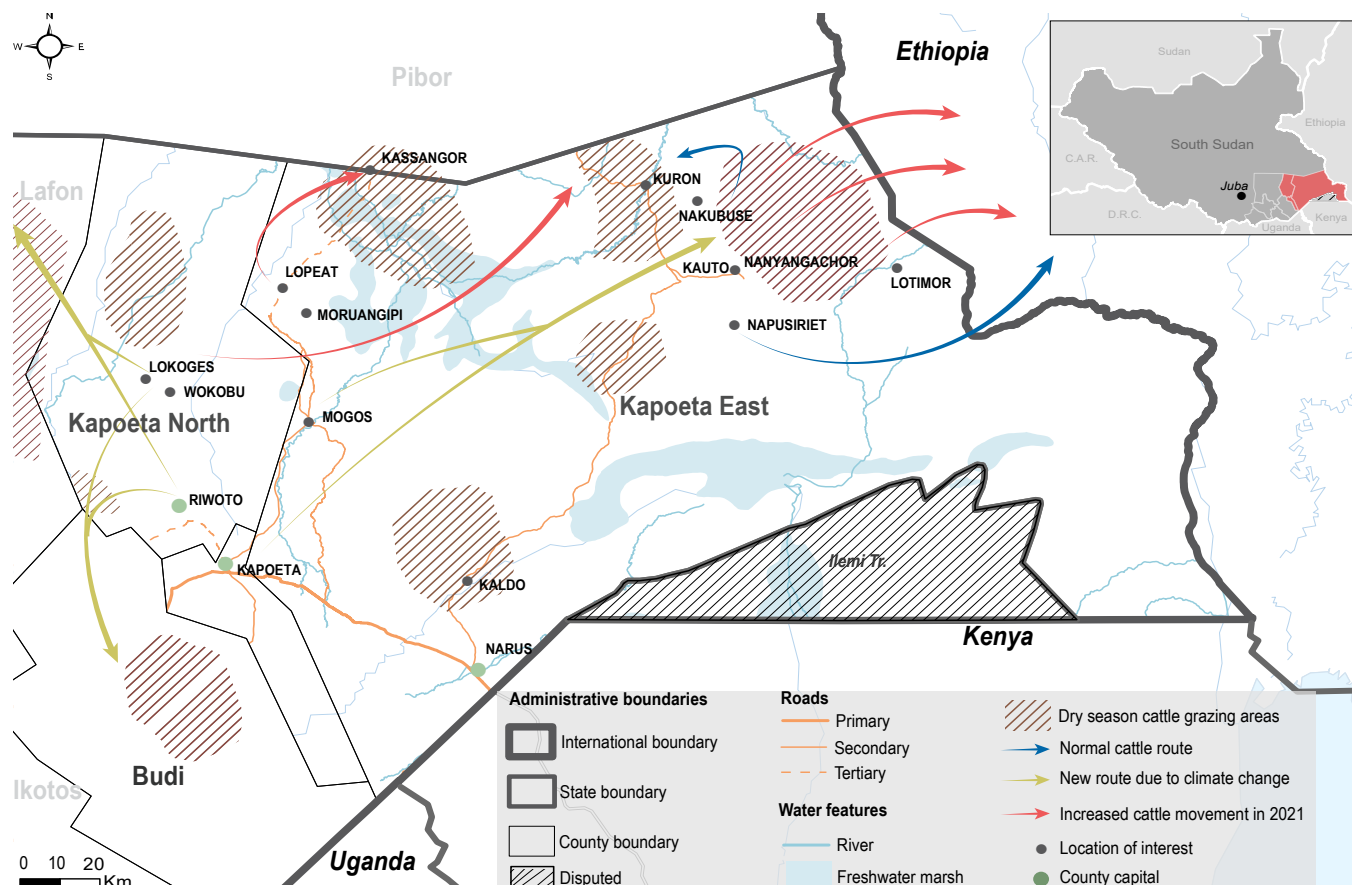
### Reported Mobility Restrictions

Mobility restrictions were reported by participants across the assessed areas in Greater Kapoeta. According to FGD participants and key informants, the **main factor that prevented people in Greater Kapoeta from accessing food, water or livelihoods was fear of insecurity.** This insecurity reportedly was often rooted in conflict with neighboring groups over resources, such as water or grazing land. According to FGD participants and key informants, these reported mobility restrictions impacted people's ability to access enough food, either by restricting the lands that could be accessed for agriculture or by making people fearful of collecting wild foods during times of food scarcity. Additionally, these perceived mobility restrictions also limited potential displacement routes, as people did not feel safe moving in all directions from their settlements. Finally, FGD participants from the Jie area in Kapoeta East reported that some people were unable to displace to preferred locations to access food due to the lack of water along the displacement routes, which had reportedly led to the deaths of some people as they attempted to displace from Jie.

### Drought Impacts on Typical Cattle Movement

Climate shocks, including the drought in 2021-22, have reportedly impacted the usual movements of cattle in Greater Kapoeta, which play an integral part in the food security and livelihoods of communities in the area. People in Greater Kapoeta reside in a semi-arid pastoralist livelihood zone, and KIs described the communities in the area as agro-pastoralist.<sup>48</sup> **Access to cattle camps was reportedly an important coping strategy during historic times of climate shocks and hunger** in Greater Kapoeta, as people could move there when food and water became scarce in their home settlements. In cattle camps, people were able to access animal products such as milk, blood and meat, in

Map 7: Changing Cattle Migration Routes in Greater Kapoeta







**Figure 11: A cow in Lopeat. Cattle movements have been impacted by recent drought conditions in Greater Kapoeta.**

addition to wild foods that were reportedly more plentiful in these areas. However, **this historic coping strategy is no longer available to some communities** in Greater Kapoeta, and changing climate has also impacted the grazing areas that are available, thus causing changes to traditional cattle movement routes and timelines.

In the assessed areas of Greater Kapoeta, participants in FGDs and KIIs reported that young men typically move to cattle camps during the dry season, where there is ampler grazing land. Once the rainy season commences, the cattle are moved back to grazing areas nearer to their settlements, and those people who had left during the dry season return to the settlement. During times of hunger, additional family members can reportedly be sent to the cattle camps to relieve pressure on resources in the home community.

This strategy was reportedly used this year in Kapoeta North and Kapoeta East in response to the drought (Map 7). Participants in FGDs in Riwoto, Lokoges, and Mogos mentioned that some people moved to the cattle camps in response to the drought, either to bring back food or to stay there until conditions improved at home. However, the **movement of cattle to grazing lands far from home communities also puts people at risk of conflict with neighboring groups**, according to KIIs and FGD participants. This risk is increased if people need to move further than usual because of a lack of suitable grazing areas in the usual locations, as reportedly occurred this year.

**New movements of cattle were reported** from Kapoeta North into Budi County and from Kapoeta North into Lafon County, as well as from Kapoeta South to the Kauto region of Kapoeta East. Past research by REACH shows that the **Karukomoges region of Kapoeta North previously hosted a large concentration of cattle in the dry season**, but this year it was reported that cattle from this region were taken either to Lafon, Budi, or Kapoeta East County.<sup>49</sup> This reportedly occurred due to climatic changes which resulted in the usual grazing areas not having sufficient resources to sustain the cattle, which influenced pastoralists to move their livestock further away from their home settlements than usual.

Additionally, KIIs and FGD participants stated that **typical timelines of cattle movement had been disrupted in the recent past due to irregular rain patterns**. KIIs reported that people from Lotimor had moved to Ethiopia with their cattle early in the dry season due to the presence of pastures for their livestock and market availability. This route is not new, but people reportedly moved earlier than usual and with more family members than usual. Additionally, FGD participants from Kauto noted that the cattle from their settlement had not returned at all during the last rainy season as not enough grass had grown to feed them. The absence of cattle from home settlements can have additional impacts on food security, as animal products are expected to be available during the rainy season according to the traditional seasonal calendar.<sup>50</sup>

Finally, **for community members in Jie, movement to cattle camps was reportedly not possible this year, as most community members reported having no cattle remaining**. This eliminated several historic coping strategies for times of food insecurity, as livestock were not available to be sold or slaughtered, and without cattle, no community members could relocate to cattle camps to alleviate pressure on water and food resources at home. This likely contributed to the distress migration of communities from Jie to Karukomoges and Mogos payams, as other coping mechanisms historically used to prevent mass movement were not available.

### Movement Decision-Making

The decision-making process for households experiencing climate shocks reportedly took into account push and pull factors, as well as characteristics of the household and coping strategies available to them, in deciding whether to move and where to move. In the assessed areas where displacement was reported, FGD participants and KIIs consistently reported that the **push factors which caused them to leave their home settlements were lack of food and water**. These two push factors were reportedly linked, as the lack of rain also contributed to the lack of food in assessed areas, while severe food insecurity was typically the reason that people cited finally deciding to move.

**Pull factors that determined where people moved were reportedly the perceived availability of food and water.** Perceived food availability included remaining agricultural harvest and/or wild foods, while availability of water was generally cited as the existence of wells or dams. However, FGD participants and key informants also cited some other factors that influenced decision-making, such as cultural or linguistic similarity to host communities, family ties in other settlements, and the perceived availability of humanitarian assistance.

**Cattle-owning households reportedly also had the option to move some household members with their cattle to the cattle camps** in order to have access to milk and other livestock products, as described above. For communities in the Jie area, the loss of their livestock over the past several years impacted people's ability to use movement to cattle camps as a coping mechanism this year, as most families reported having no remaining cattle at all.

**Compounding climate shocks from irregular rain patterns in the past 3-4 years in Kapoeta North and Kapoeta East, and especially in the Jie area, have reportedly led to decreased household resilience and fewer available coping strategies other than displacement**, which was viewed as a last resort. Participants in several FGDs described past climate shocks that impacted food security, but cited the availability of other coping strategies, such as livestock available to sell or slaughter and humanitarian food aid, which reportedly prevented them from needing to move.

**Table 3: Vulnerability level by household composition and movement type**

<i>Vulnerability level</i>	<i>Household composition and movement type</i>
Not vulnerable	Households are <b>not moving</b> because they have wealth/assets to mitigate food insecurity
Low vulnerability	<b>Partial households moving to cattle camps</b> to access animal products and wild foods
High vulnerability	<b>Entire households</b> have already liquidated their assets and are <b>moving to seek food</b>
Extreme vulnerability	Partial households that are <b>not moving</b> despite lack of assets because they <b>cannot move long distances</b> (including older persons and people with disabilities)

### Movement and Vulnerability

Findings indicate that movement in Greater Kapoeta away from areas of food insecurity and drought was impacted by differing layers of vulnerability, which impacted which types of households moved and to where. Table 3 (above) illustrates the different levels of vulnerability identified through this analysis and the movement type associated with each level of vulnerability, ranging from households that were not vulnerable and did not have to move to those who were the most vulnerable and were not able to move.

Participants in Riwoto, Kapoeta North reported the displacement of some people from their settlement this year due to lack of food which occurred due to the drier than usual conditions. According to the participants, those who moved were generally the most vulnerable, and **those who remained in the community were not vulnerable because they had access to more coping mechanisms to mitigate food insecurity**. For instance, families that did not move had livestock or other assets that they could sell in order to compensate for low harvests due to the dry conditions.

**Cattle ownership was often cited as a mitigating factor in the need for households with low vulnerability to displace**, as those who owned cattle could trade or slaughter them to provide food in times of food insecurity. Additionally, cattle-owning households facing food insecurity were able to use movement to cattle camps as a strategy to avoid displacement of the entire family unit. FGD participants and KIs reported that some households responded to recent food insecurity by sending more people than usual to cattle camps, or sending people to cattle camps to bring back livestock for slaughter for those who were left at home.

**Highly vulnerable households were generally described as those who were not able to use the coping strategies described above and thus whole households needed to move during times of food insecurity**. In Riwoto, the vulnerable households who moved this year were reportedly those who had already sold their livestock in previous years and had few remaining coping strategies. In the Jie area, participants stated that all

households in the area were vulnerable, as the whole community had lost their cattle in a series of raids 2 to 3 years ago. This lack of cattle ownership led to limited coping strategies that could be employed when the region faced multiple consecutive climate shocks, as most community members were unable to move to cattle camps, there were no livestock to sell or slaughter, and no animal products available for consumption.

At the **highest level of vulnerability were partial households comprised of family members who were unable to move and their caregivers**. In FGDs held with IDPs and non-displaced people in Jie, vulnerable household members were frequently reported to have been left behind when households moved from Jie, due to their inability to walk long distances. These vulnerable household members included older adults and people with disabilities. Additional family members were reportedly designated to remain behind with vulnerable people in order to search for food and carry water, which increased the number of household members who were unable to displace. Those who stayed behind were reportedly negatively impacted by their inability to move. Participants in two FGDs reported that vulnerable community members who had been left behind had subsequently died.

### Anticipated short and long-term movement

Given the recent climate shocks that communities in Greater Kapoeta have experienced, and population movements that have accompanied these, the potential for future movement was also probed and analyzed during this assessment. An understanding of the impacts that future climate shocks may have on population movement in this region may help with planning and prepositioning of humanitarian aid.

Findings of this assessment indicate that coping **strategies available to communities to mitigate climatic shocks may be declining or becoming exhausted across Greater Kapoeta**. Reported small-scale displacements in the past few years indicate that vulnerable households have been forced to move in response to climate shocks, while less vulnerable households deployed coping strategies to mitigate the effects of these climate shocks. This may also be an early sign that larger-scale displacements could follow, especially if rainfall remains irregular in the coming rainy season and available resources decline.

Additionally, the implications of the reported changes to cattle migration and access to cattle camps as a coping strategy are also of note. As described above, the **largescale loss of cattle in Jie communities influenced this year's large movement from the area, and it is unlikely that this community will regain access to cattle camps and livestock as coping strategies for use in the future**. Relatedly, as livestock are sold or slaughtered to help mitigate the impacts of compounding climate shocks in other communities across Greater Kapoeta, the number available for future coping strategies will decrease. Thus, the use of movement to cattle camps will become unavailable to additional communities, possibly triggering additional large-scale movement in the future.

Participants across all discussions reported that they perceived that **weather patterns were becoming increasingly irregular in recent years, and most indicated that their communities would consider moving if difficult climatic conditions persisted**. Generally, participants preferred the delivery of humanitarian aid to their home location as preferable to the short or long-term movement of the community, in the event of continued climate shocks. Short-term relocation was generally reported as preferable, but some FGD participants and KIs voiced the possibility of relocating long-term if climate conditions did not improve. Some participants additionally



stated that movement would not be possible as they were aware that the same food insecurity issues facing their communities also existed in the neighboring communities.

### Reported Needs

Community members in the assessed areas of Greater Kapoeta communicated multiple needs, especially in the areas of WASH and FSL, to the assessment team during the course of data collection, and these are detailed here.

**Access to water was mentioned as a key need in FGDs across all assessed settlements, whilst food and health facilities were mentioned in 7 of 10 groups.** Boreholes were mentioned to be needed in Riwoto, Nakubuse and Nanyangachor (Kauto), and Mogos, whilst hafirs were mentioned in Lopeat and Moruangipi. One of the reasons for this was reportedly the lack of phone network in Moruangipi and the need for a continuous water supply. Respondents from Lopeat mentioned the need for multiple hafirs to provide a contingency in case the single hafir runs out of water in a bad year.

Improved access to food was mentioned as a high concern in the majority of assessed settlements, followed by health facilities and schools which were lacking throughout the area. In Lopeat, the health centre has been non-functional for several years and the next nearest facility is in Mogos, a two-day journey. Livestock medicine was also mentioned as a key need in groups from Nachukut and Kauto, given recent increases in sickness.

**Overall, the region has high needs, particular in WASH and FSL, with Lopeat and Moruangipi having the highest needs of all assessed settlements.** Access to health services also appears to be a key need in these areas. According to KIs, **improved water access is also a key need in Kauto and Lotimor.**

### Conclusion

At the time of assessment, Greater Kapoeta was experiencing drought conditions, with Lopeat (Jie payam) and Lotimor being among the worst affected areas. The region already suffers from poor water access, with water infrastructure remaining limited and often in need of maintenance. Insufficient and inconsistent rainfall in 2021 had only increased water access issues. Additionally, crop harvests had been reportedly poor in many of the assessed areas in recent years, whilst reliance on wild foods had reportedly increased this year. Similar drought shocks were reported to have occurred in recent years, as well as cases of heavy rain, localised flooding, and pest and weed infestations, often leading to the destruction of crops. Climatic shocks are likely to become more frequent as climate change appears to be resulting in more extreme and erratic weather patterns.

Findings of this assessment indicate that coping strategies available to communities to mitigate climatic shocks may be declining or becoming exhausted across Greater Kapoeta. Reported small-scale displacements in the past few years indicate that vulnerable households have been forced to move in response to climate shocks. This may also be an early sign that larger-scale displacements could follow. The large-scale displacement from the Lopeat area in late 2021 and early 2022 illustrates the severe impact that climate shocks may have on communities who have exhausted their coping strategies, and on the host communities that receive IDPs from climate shocks. Reported changes to cattle migration routes due to changing climate indicate that cattle herders are moving earlier in the season and geographically further, which impacts community coping mechanisms and also risks putting herders into conflict with communities near the grazing lands. These changing patterns may indicate future displacements in Greater Kapoeta, especially if rainfall remains irregular in the coming rainy season and available resources decline.

# Greater Kapoeta Climate Impact & Displacement Profile

## Climate Displacement Analysis - Endnotes

### Endnotes

- 1 Google Earth Engine. [CHIRPS Daily Rainfall Data](#). 2021.
- 2 REACH. [Situation Overview: Eastern Equatoria, April – August 2021](#). January 2022.
- 3 Radio Tamazuj. [Over 3000 starving Jie in need of humanitarian aid in Kapoeta North County](#). January 2022.
- 4 IRNA Report: Karukomuge Payam, Eastern Equatoria State, 26 January 2022.
- 5 Google Earth Engine. [CHIRPS Daily Rainfall Data](#). 2021.
- 6 REACH. [Seasonal Cattle Grazing Areas and Migration](#). December 2020.
- 7 Famine Early Warning Systems Network (FEWSNET). [Livelihood Zone Map and Descriptions for the Republic of South Sudan](#). Issued August 2018.
- 8 *ibid.*
- 9 FAO. [Land Cover Atlas of the Republic of South Sudan](#). Issued 2011.
- 10 *ibid.*
- 11 Google Earth Engine. [CHIRPS Daily Rainfall Data](#). 2021.
- 12 Famine Early Warning Systems Network (FEWSNET). [Livelihood Zone Map and Descriptions for the Republic of South Sudan](#). Issued August 2018.
- 13 National Drought Mitigation Center. [Types of Drought](#). 2022.
- 14 Google Earth Engine. [CHIRPS Daily Rainfall Data](#). 2021.
- 15 El Consejo Superior de Investigaciones Científicas (CSIC). [About the SPEI](#).
- 16 Google Earth Engine. [CHIRPS Daily Rainfall Data](#). 1981 - 2021.
- 17 Google Earth Engine. [ERA5-Land Monthly Average Dataset](#). February 2022.
- 18 ClimateLinks. [La Niña and Climate Change Cause Exceptional Drought in East Africa](#). February 2022.
- 19 UN-SPIDER Knowledge Portal. [Recommended Practice: Drought monitoring using the Vegetation Condition Index \(VCI\)](#).
- 20 R. [Web Packages - SPEI](#).
- 21 Giovanni. [GLDAS](#).
- 22 Google Earth Engine. [MOD13A1 V6 Terra Vegetation Indices 16-Day Global 500m](#). April 2022.
- 23 Google Earth Engine. [CHIRPS Daily Rainfall Data](#). 1981 - 2021.
- 24 Google Earth Engine. [ERA5-Land Monthly Average Dataset](#). February 2022.
- 25 FAO/WFP. [Crop and Food Security Assessment Mission \(CFSAM\) to the Republic of South Sudan](#). May 2020.
- 26 FAO/WFP. [Crop and Food Security Assessment Mission to South Sudan](#). March 2018.
- 27 World Meteorological Organization. [Desert Locust Threat Continues](#). July 2020.
- 29 FAO. [Water Harvesting for Peacebuilding in South Sudan](#). 2015.
- 30 *ibid.*
- 31 Bündnis Entwicklung Hilft. [2021 World Risk Report](#). 2021.
- 32 Google Earth Engine. [ERA5-Land Monthly Average Dataset](#). February 2022.
- 33 Google Earth Engine. [CHIRPS Daily Rainfall Data](#). 1981 - 2021.
- 34 Google Earth Engine. GLDAS-2.1: [Global Land Data Assimilation System](#) (root zone soil moisture). 2000 – 2022.
- 35 Sphere. [The Sphere handbook](#). 2018.
- 36 HOD South Sudan. Multi-Sectoral Need Assessment Report. Protection Cluster. February 2022.
- 37 UNDP. [Jie haffir brings peace to the Toposa communities](#). 2012.
- 38 FAO. [Water Harvesting for Peacebuilding in South Sudan](#). 2015.
- 39 UNICEF. [Technical Guidelines for the Construction and Management of Improved Hafirs](#). April 2009.
- 40 FAO. [Water Harvesting for Peacebuilding in South Sudan](#). 2015.
- 41 HOD South Sudan. Multi-Sectoral Need Assessment Report. WASH Cluster. February 2022.
- 42 FAO. [Gender Mainstreaming in Water Harvesting in South Sudan](#). 2015.
- 43 FAO. [Water Harvesting for Peacebuilding in South Sudan](#). 2015.
- 44 *ibid.*
- 45 Famine Early Warning Systems Network (FEWSNET). [Livelihood Zone Map and Descriptions for the Republic of South Sudan](#). Issued August 2018.
- 46 REACH. [Joint Market Monitoring Initiative](#) (JMMI).
- 47 OCHA. [South Sudan Situation Report Lack of water displaces thousands of people to Mogos, Kapoeta East, Eastern Equatoria](#). 28 June 2019.
- 48 Famine Early Warning Systems Network (FEWSNET). [Livelihood Zone Map and Descriptions for the Republic of South Sudan](#). Issued August 2018.
- 49 REACH. [Greater Kapoeta Cattle Migration and Cholera Transmission Brief](#). March 2018.
- 50 Integrated Food Security Phase Classification. [South Sudan Key Messages](#). April 2022.