



Jonglei Climate Shocks and Displacement Trend Analysis August 2019-December 2020

Akobo, Ayod, Duk, Twic East, and Bor South counties

Introduction

The October 2020 to July 2021 Integrated Food Security Phase Classification (IPC) analysis results showed that Akobo, Ayod, Duk, Twic East, and Bor South counties in Jonglei state faced Phase 4 Emergency levels of food insecurity as of October, with projections that all counties would continue to experience Phase 4 Emergency levels into July 2021.¹ All counties were endorsed by the South Sudan Humanitarian Country Team as priority counties with some of the most severe food insecurity among the counties classified as Phase 4 country-wide, while Akobo county in particular was assessed as containing pockets with Phase 5 Catastrophe levels of food insecurity between April to July.²

This crisis was in large part driven by high levels of flooding in both 2019 and 2020, which led to mass displacement in most of the above-listed counties. Taking advantage of REACH's monthly quantitative data collection in these five counties, this report examines REACH Area-of-Knowledge (AoK) data focused on flooding impacts on shelter and displacement, as well as other co-occurring displacement drivers, dating back to August 2019. Over-time analysis is used to better quantify shifting displacement trends and accumulation of shocks since the multi-year sequence of severe flooding began. This is supplemented by qualitative information from focus group discussions conducted in Jonglei in September and October 2020.

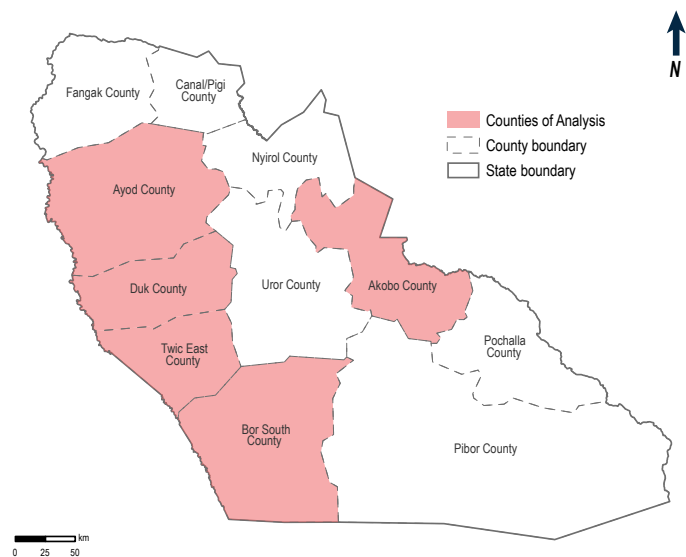
Broadly, from August 2019 to December 2020, the five counties of analysis showed a consistent pattern in which flooding-driven displacement had increased in 2020 compared to 2019, as the accumulated impacts of the 2019 flooding, restriction of livelihoods and insecurity in the 2020 lean season eroded the coping capacity in all counties, before exceptionally severe flooding exceeding that of 2019 arrived in the second half of the year and triggered mass displacement.³ Reportedly this displacement, which included long-distance movement from Greater Bor (Duk, Twic East, and Bor South counties in Jonglei) into Bor town, Mangalla (Central Equatoria), and Mingkaman (Lakes), has furthered the cycle of livelihood disruption and likely contributed to emergency levels of food insecurity assessed by the October 2020 IPC.

Key Findings

- In each county of analysis, **2020 flooding impacts on shelter surpassed those of 2019**. In 2019 the proportions of key informants (KIs) from assessed settlements reporting flooding forcing people to leave their residence and sleep elsewhere ranged from 0% to 61%, while in 2020 the proportion from the assessed settlements reporting this for each county during the peak flooding months of September-December ranged from 81% to 100%.⁴
- Similarly, while in 2019 flooding-driven displacement was reported by between 3% and 14% of KIs during peak flooding months (August-December) in 2020 the proportion of KIs reporting flooding-driven displacement fell between 50% and 79% during peak flooding months.
- Earlier in the 2020 flooding season, **Twic East county saw some of the most concerning flooding impacts**. Twic East county had the highest proportions of KIs reporting flooding-driven displacement of the five counties, with 79% of KIs reporting this trend in September. In the same month, Twic East county also had the highest proportion of KIs reporting that flooding caused people to sleep elsewhere (100%, tied with Akobo county). Both trends reportedly decreased since September, but still remained quite high in December.

- Akobo county saw the **highest proportion of KIs reporting displacement caused by any displacement driver or combination of drivers in a single month in December 2020**, when flooding combined with other compounding shocks surged and 93% of all KIs reported displacement from their settlement of knowledge. Among those KIs, displacement was reportedly largely due to flooding (56%), but also lack of food access (22%) and conflict (15%). Flooding that caused people to sleep elsewhere also spiked in Akobo county in December, tying with Twic East county for the highest proportion of KIs reporting this issue during the reporting period (100%)

Map 1: Counties of analysis in Jonglei State, August 2019- December 2020



Methodology Overview

To provide an indicative overview of the situation in hard-to-reach areas of Jonglei State, REACH conducts interviews with KIs who have recently arrived from, recently visited, or receive regular information from a settlement or "Area of Knowledge" (AoK). These interviews were conducted with KIs in the Bor Protection of Civilian (PoC) site, Bor Town, and Akobo Town throughout the reporting period (August 2019-December 2020). In-depth interviews on humanitarian needs were conducted on a monthly basis using a structured survey tool. After data collection was completed, all data was aggregated at settlement level, and settlements were assigned the modal or most credible response. When no consensus was found for a settlement, that settlement was not included in reporting. Only counties with interview coverage of at least 5% of all settlements in a given month were included in the analysis. Due to access and operational constraints, the specific settlements assessed within each county each month may vary.

Additionally, responding to emerging flooding shocks in late 2020, REACH conducted a qualitative assessment in Greater Bor to better understand the food security situation as well



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as investigate reports of large-scale displacement. From 9th September to 17th October, REACH conducted 23 focus group discussions (FGDs) on general displacement, which included participatory mapping exercises, within Bor town (Bor South county), Panyagor (Twic East county), and Duk Padiet (Duk county). FGDs were conducted with Internally Displaced Persons (IDPs) displaced as result of flooding and conflict from all over the three counties. Where possible, FGDs were divided into male and female groups across the assessed areas. This assessment used a qualitative methodology that did not assess all potentially relevant locations affected by the flooding in Greater Bor.

This report focuses on long-term analysis of REACH's monthly quantitative AoK data, while also including a case study focused on Greater Bor participatory mapping FGD findings. **Quantitative AoK findings and qualitative FGD findings are indicative only.**

reporting shelters impacted by flooding late in 2020 is likely due to persistent rainfall since September 2020, which has resulted in the overflow of Akobo Lau and Ajwara rivers.⁶ Aligned with this late-2020 flooding spike, 56% of KIs from the assessed settlements reported that displacement caused by flooding (outside the settlement) started in September 2020, but the majority of flooding-driven displacement was reported in December.

In addition, while through November nearly all displacement reported by KIs in assessed settlements was moving within Akobo, in December KIs began reporting displacement destined for Nyirol and Ethiopia, a possible indication of deteriorating conditions. Contributing to this deterioration, the back-to-back years of repeated flooding in 2019 and 2020 overlapped with other shocks in Akobo county, such as insecurity-driven displacement that began to be reported in March 2020 (23% of KIs) and repeated at similar levels in May and June. This additional disruption to livelihoods earlier in the year, which was followed not long after by the aforementioned escalation of flooding impacts, may have exacerbated levels of food insecurity assessed during the October IPC Acute Food Insecurity analysis, in which Akobo county was found to be experiencing IPC Phase 4 Emergency levels of food insecurity with pockets of Phase 5 Catastrophe.⁷

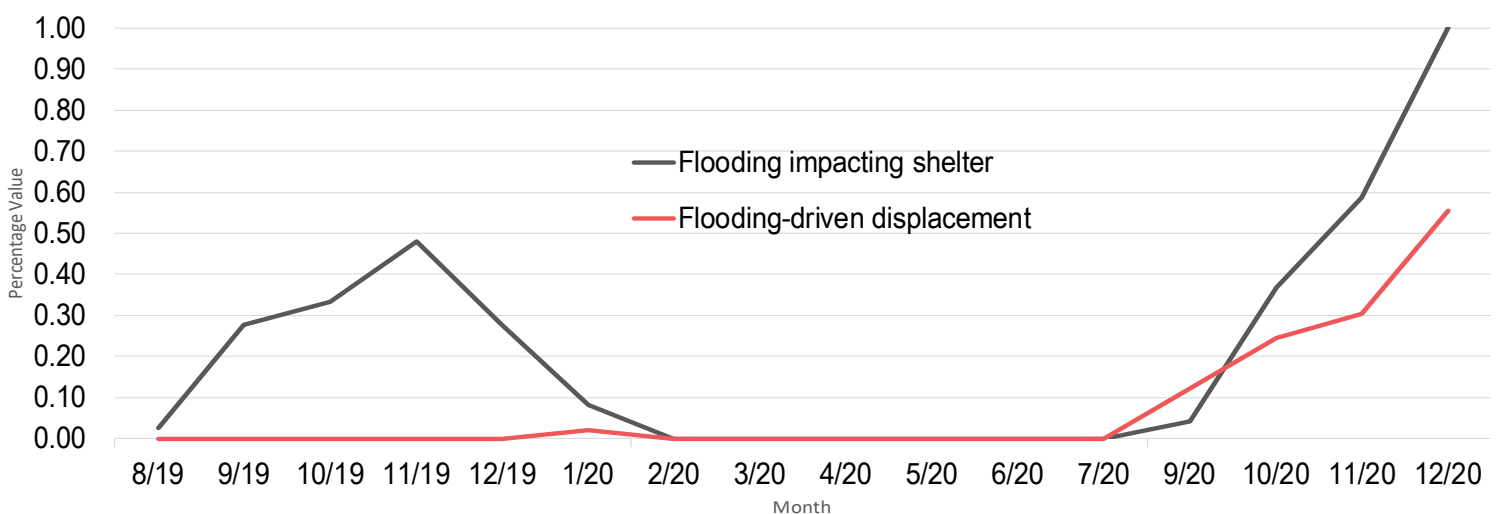
Following the IPC assessment, the increasing severity of flooding in Akobo in November and December, combined with already poor food security as a result of accumulated shocks from earlier in the year, was a likely secondary cause of displacement in search of food. In December, 22% of KIs from assessed settlements reported that lack of access to food was the cause of displacement from Akobo. When combined with reports of flooding-driven displacement (56%) and additional conflict-driven displacement (15%), this finding indicates that in December nearly all KIs from Akobo county (93%) reported some displacement out of their assessed settlements. This suggests that a late surge in flooding has fed into one of the more concerning situations of displacement across the counties of analysis.

County-level Climate Shocks and Displacement Trend Analysis, August 2019 - December 2020

Akobo County

According to long-term trend analysis of AoK data, 2020's atypical flooding, in conjunction with accumulated shocks from 2019, during which flooding was also higher than usual, have reportedly driven higher levels of displacement in Akobo county.⁵ In 2019, the proportions of KIs from assessed settlements who reported that flooding in Akobo county had made people sleep elsewhere (though does not mean outside the settlement) varied from August to December but reached its highest in November at 48%. On the other hand, in 2020, 4% of KIs reported that floodwaters started moving people out of their shelters at an initially low rate in September. However, flooding escalated rapidly from October onward, with 100% of KIs reporting that flooding caused people to sleep elsewhere in December, which tied Akobo with Twic East county for highest reporting of flooding impact across the counties of analysis. This sharp increase in the proportion of KIs from assessed settlements

Figure 1: Proportions of KIs reported flooding impacts in Akobo county between August 2019-December 2020



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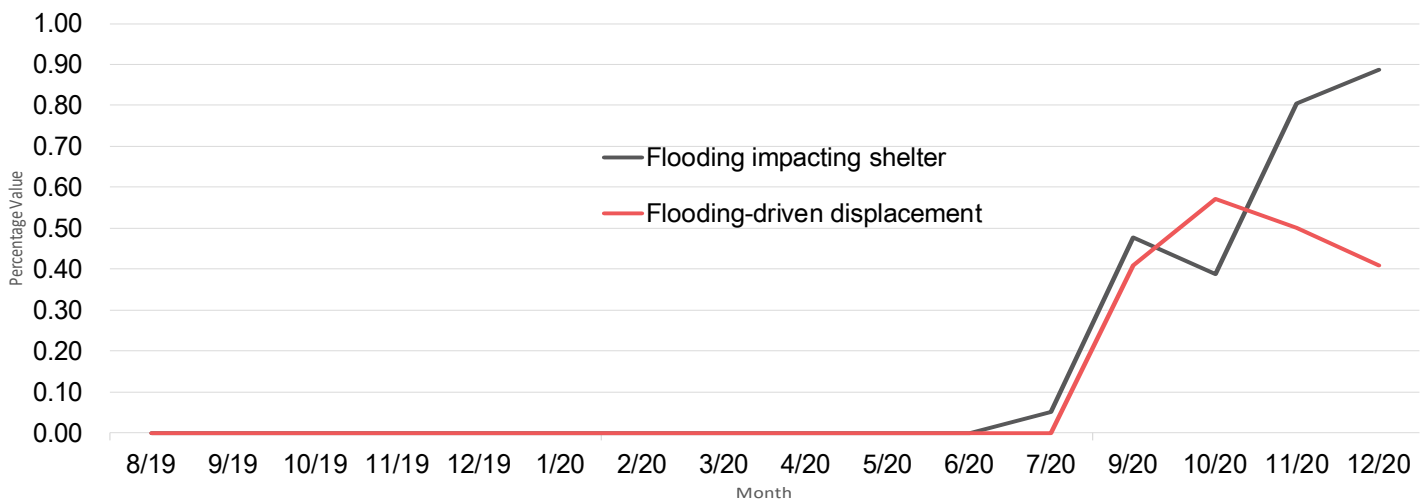
Ayod County

As in other counties, flooding-related displacement notably increased in Ayod county in comparison to 2019. In 2019, KIs in assessed settlements reported no flooding that made people leave their homes and sleep elsewhere, indicating that Ayod was not particularly affected during this period. However, in 2020, flooding that caused people to leave their homes and sleep elsewhere reportedly started as early as July and continued into December, during which the highest proportions of KIs from Ayod county reported such flooding (89%). This change in proportion may suggest an increase in flooding from one year to the next, as across all counties of analysis, Ayod county went from having the lowest proportion of KIs reporting flooding that made people sleep elsewhere in 2019 at 0%, to the third-highest in 2020 at 89%. As immediate flooding impacts on shelters increased, KIs from assessed settlements started reporting flooding displacement from September to December, with flooding-driven displacement reportedly highest in October in (57%). Throughout the September-December 2020 flooding period, KIs in the assessed settlements reported that the majority of people were displaced to other areas within Ayod county.

Flooding appeared to have additional impacts on livelihoods and food security in Ayod county throughout 2020. Disruptions stopping livelihood migration⁸ in 2020 were widely reported by KIs across the assessed settlements starting in June (62%) and continuing through December (29%), with reports peaking in July and October (100%).⁹

The disruption to livelihood migration throughout the flooding period was reported as being mainly due to climatic shocks, indicating that flooding might be responsible for these blockages to livelihood migration. Flooding's apparent constraint on livelihood activities appeared to take a toll on food security later in the year, since in December KIs from 5% of assessed settlements reported that people were displaced due to lack of access to food, on top of the 41% of KIs reporting displacement due to continued flooding. Although the proportion of KIs reporting that displacement due to food insecurity is lower than in some other counties of analysis and despite reported displacement occurring exclusively within the county, it is possible that households are facing worse food insecurity conditions than other counties of analysis while also having less ability to move. Indeed, KIs from 100% of assessed settlements in Ayod reported that most people did not have adequate access to food in December, and 93% reported that households were only eating one meal per day. Overall, low proportions of KIs reported flooding- or conflict-induced displacement in 2019 and 2020 respectively in Ayod county which suggests that the assessed settlements did not suffer to the same extent from accumulated shocks as other counties. However, the 2020 flooding has reportedly impacted shelter and livelihoods, with possible indirect effects on food access. Therefore, lower proportions of KIs reporting displacement in the county should not be assumed to correspond to a lack of needs.

Figure 2: Proportions of KIs reported flooding impacts in Ayod county between August 2019-December 2020



Duk County

Similarly to in other counties, flooding-driven displacement increased in 2020 compared to 2019 in Duk county, although Duk county was distinguished by longer-distance displacement than other counties of analysis. Flooding appeared to have fairly high impacts in both years, but impacts were reportedly greater in 2020 than in 2019; in 2019 the highest proportion of KIs in assessed settlements reporting that flooding had caused people to leave their homes and sleep elsewhere was 47% in October and 44% in November, whereas in 2020 reports of flooding peaked at 81% in October, followed by 58% in November. The difference in flooding-driven displacement in the 2019 flooding season, in which the proportion of KIs reporting flooding-driven displacement was 14% in August, and the 2020 flooding season, which saw 50% of

KIs report flooding-driven displacement, may be attributable to an increased proportion of KIs reporting flooding impacts on shelter in the second year. However, a sequence of shocks affecting Duk county from mid-2019 to late 2020, including two years of flooding and the disruptive impacts of conflict and displacement itself on livelihoods, also may have lowered households' coping abilities and made them more prone to displacement by the time the flooding spike in October 2020 arrived.

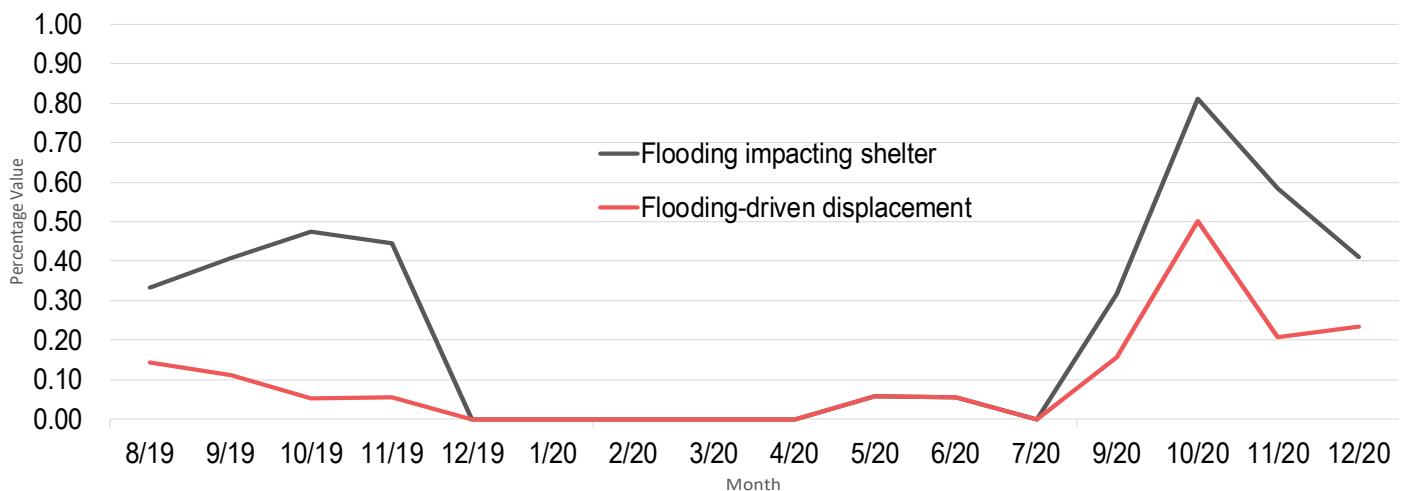
During the lean season from May to July,¹⁰ between 29% and 33% of KIs reported conflict as the main push factor for displacement each month (and the second-highest proportion of conflict-driven displacement across counties of analysis), with conflict and

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displacement likely disrupting the planting season and exacerbating any loss of harvest caused by the 2019 flooding. Food insecurity also drove displacement in June, with 28% of KIs reporting lack of food as the cause of displacement—the highest proportion of KIs reporting lack of food displacement across the counties of analysis in any month from August 2019-December 2020. While in September conflict reportedly was still the main driver of displacement in Duk county, (21% of KIs from assessed settlements), in October, flooding was the sole displacement driver reported, as 50% of KIs from all assessed settlements reported displacement caused by flooding, (with the remaining 50% having reported no displacement). At the same time, flooding impact on shelter rose to 81% of KIs from assessed settlements. In addition, September and October saw a shift from intra-county displacement to cross-county displacement, as KIs began reporting Bor South county as the main destination for those being displaced.¹¹ The high levels of displacement

across the lengthy distance from Duk county to Bor South county and beyond suggest that October flooding was the breaking point at which many households could no longer cope locally after nearly a year of accumulated shocks. In the following months, displacement due to flooding (and displacement in general) continued to take place but reportedly decreased, dropping to 21% of KIs in November and 24% of KIs in December. Although the drop in flooding-driven displacement and the lack of hunger-driven displacement seen in some other counties seem to imply an improving situation, long-distance displacement into Bor South as well as Awerial and Terekeka counties was still occurring in November and December, according to AoK data. In addition, flooding was still reported by KIs in 41% of assessed settlements to have forced people to sleep elsewhere in December, suggesting a possible impediment to movement for those still in Duk county who may still have inadequate food access.

Figure 3: Proportions of KIs reported flooding impacts i Duk county between August 2019-December 2020



Case Study: Greater Bor Displacement in September and October 2020

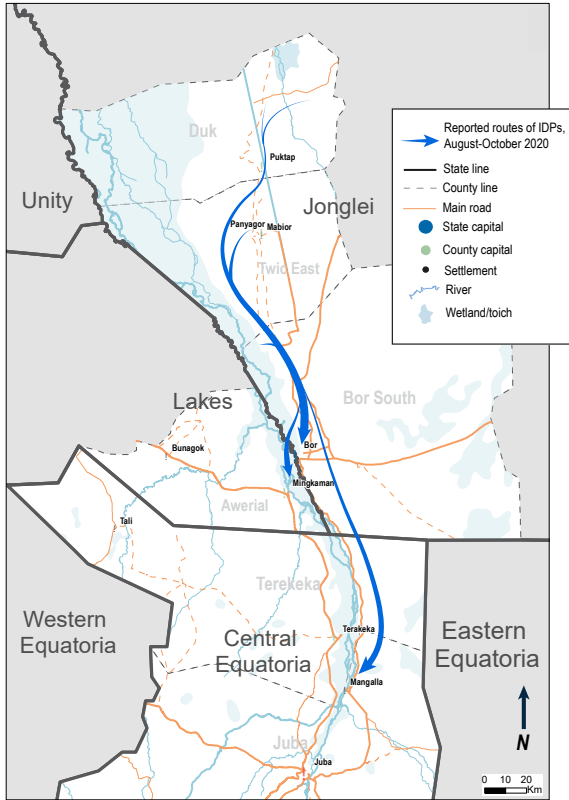
According to FGD participants, between October 2019 and October 2020, compounding shocks restricted both mobility and livelihood options in Duk and Twic East counties and in Jalle and Baidit payams of Bor South county, leading to eventual mass displacement from these areas in late 2020.¹² Across Greater Bor, although flooding in 2019 did not prompt significant movement as water levels were reportedly lower, it did deplete livestock populations, ruin harvests, and restrict some movement-based livelihood strategies, setting the stage for reduced coping capacity in 2020. Following the 2019 flooding, FGD participants reported that livelihood strategies continued to be disrupted by sub-national violence, which was perceived to be more severe and widespread than in previous years. Sub-national violence began in Greater Bor in early 2020 and reached its peak in June and July as a series of attacks on cattle camps and villages killed dozens of people. During this time, mobility was greatly impeded due to perceived insecurity, inhibiting gathering of wild foods or wood to sell, movement to rural cultivation plots for planting season, and movement to markets. At the same time, insecurity began to drive displacement along the southern route to Bor town, Mangalla, and Mingkaman, as well as relocation of cattle to Bor South and Central Equatoria, depriving those remaining at homesteads of milk as a dietary supplement.¹³

Shortly after perceived insecurity declined, rains in 2020 began earlier than expected, reportedly impeding the planned August harvest for some, while washing away crops for those who had been able to cultivate. In August and September, water levels that had previously been manageable overwhelmed dykes in Twic East and Duk, driving mass displacement from Duk and Twic East counties and Jalle and Baidit payams in Bor South along the Bor town/Mingkaman/Mangalla route, while also driving displacement to population centres with high ground and humanitarian food assistance (HFA) access or to areas of Jonglei Canal in Duk and Twic East counties. Some participants reported that as much as 60-70% of the population in Duk and Twic East counties,¹⁴ and almost all of the population in Jalle and Baidit payams (Bor South county),¹⁵ displaced to Bor town, Mangalla displacement site, or Mingkaman town by the end of October 2020. Meanwhile, many of those who did not move to the south were reportedly vulnerable households that did not have plastic sheeting to carry food or goods for the journey, or who had household members with specific needs and reduced mobility, such as children and elderly members.

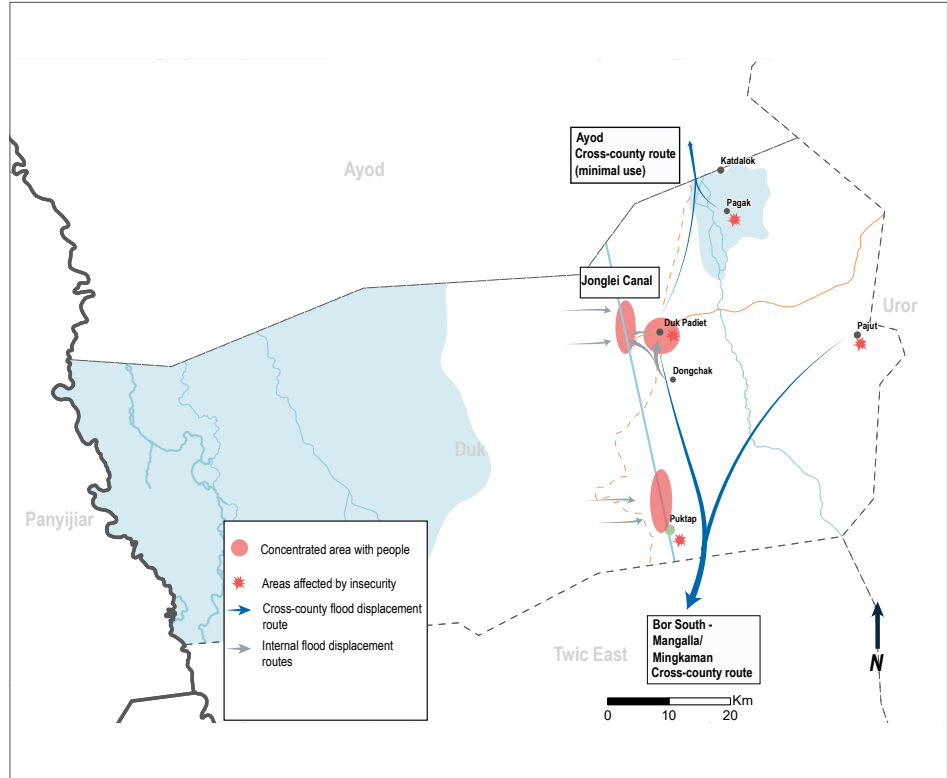
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Maps 2-5: Greater Bor displacement routes, September-October 2020

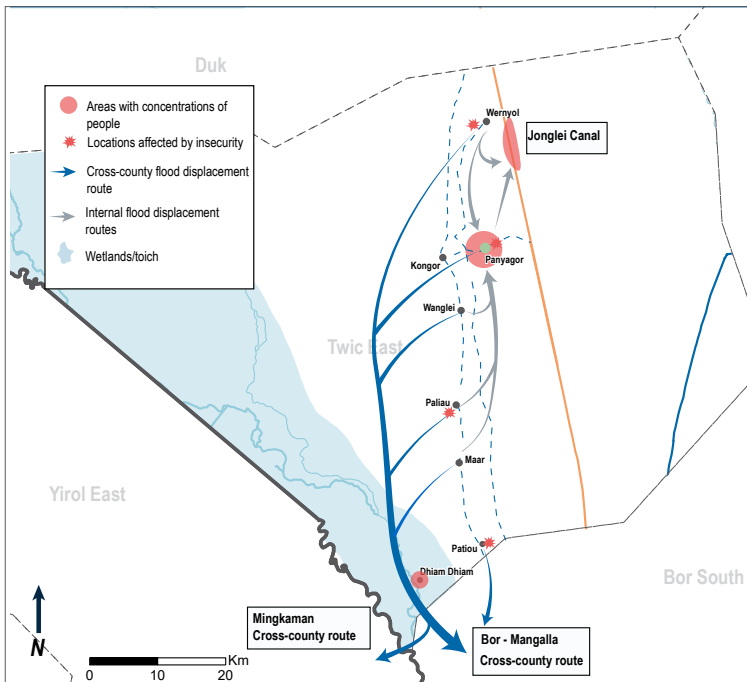
Map 2: Greater Bor displacement overview



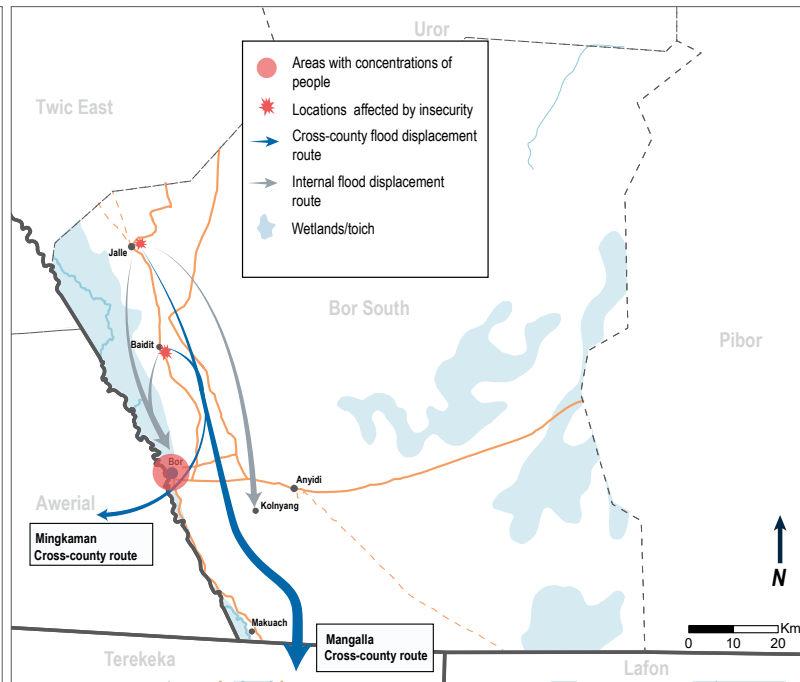
Map 3: Duk county displacement routes, September-October 2020



Map 4: Twic East county displacement routes, September-October 2020



Map 5: Bor South county displacement routes, September-October 2020



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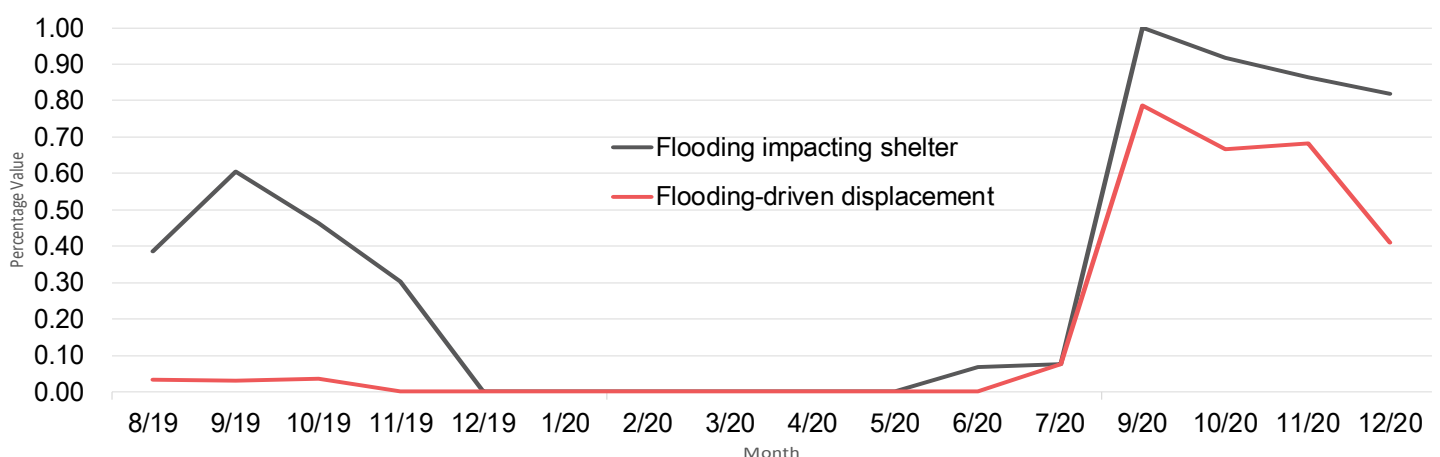
Twic East County

Although Twic East County suffered a similar sequence of accumulating shocks in 2019 and 2020 to Akobo, Ayod, and other Greater Bor counties, it was reportedly the most impacted by flooding in the latter half of 2020, with the highest proportions of KIs across the counties of analysis both reporting that flooding forced people to sleep elsewhere (100% in September), and that flooding had driven displacement out of the area (79% in September).

The comparative severity of flooding impacts in Twic East county in 2020 are likely partially attributable to accumulated shocks that were also worse in Twic East than in other counties, including earlier 2019 flooding and conflict further disrupting livelihoods during the lean season, according to AoK data. In 2019, during the August-December flooding period, a higher proportion of KIs from assessed settlements in Twic East than in other counties reported that flooding had forced people to sleep elsewhere, with reports of this trend peaking at 61% in September. In between the 2019 and 2020 flooding periods, destruction of crops due to the substantial flooding in 2019 likely worsened food security in Twic East, as lack of food was reported as a driver of displacement by 17% of KIs in May. At the same time, Twic East county was also greatly affected by conflict, with KIs reporting it as the main cause of displacement all throughout the lean season (52% in May, 52% in June, and 38% in July), suggesting fairly high levels of livelihood disruption during a key period that most likely prevented many households' recovery from the effects of flooding on food security in 2019. The combined effects of successive waves of flooding and conflict were then seemingly further exacerbated by an even more

severe round of flooding from September to December 2020, with between 82% and 100% of KIs reporting flooding causing people to sleep elsewhere for each month. The scale and severity of flooding in 2020, likely compounded by this sequence of shocks eroding household resilience over time, reportedly drove displacement at much higher proportions in 2020 compared to 2019. KI reports of flooding-driven displacement reached 79% in September and remained above 60% all through November, compared to a peak of 4% in November of 2019. While this effect was seen in numerous counties across Jonglei, Twic East was one of two counties that saw not only high proportions of KIs reporting displacement but also considerable movement out of the county. During the latter half of 2020, reports of displacement destinations for those who left shifted from other settlements within Twic East county to settlements in Bor South county (between 67% and 78% of KIs throughout September to December), as well as Awerial (25% to 29% in November and December) and Terekeka (peaking at 13% in October). With higher proportions of KIs reporting displacement compared to other counties of analysis, and much of that and away from homesteads, Twic East county seems to have experienced greater disruption to daily life and livelihoods during the 2020 flooding season, in comparison to other counties. Given that the majority of IDPs in Mangalla, which is disproportionately populated by Twic East IDPs,¹⁶ did not intend to return home for at least 3 months as of December 2020, the effects of 2019-2020 shocks may continue into 2021.¹⁷

Figure 4: Proportions of KIs reported flooding impacts in Twic East county between August 2019-December 2020



Bor South County

Although Bor South county was affected by flooding in both 2019 and 2020, 2020 saw both more severe flooding and greater flooding-driven displacement. In comparison to the 2019 flooding season in which reports of flooding impacting shelter hovered between 11% and 44% (KIs), in 2020 flooding impacts on shelter remained consistently higher, between 56% and 84% (KIs). Correspondingly, in comparison to negligible proportions of KIs reporting flooding-driven displacement in 2019, displacement prompted by flooding reportedly started in June,

beginning at the same time as flooding impacts on shelter. Then KI reports of flooding-driven displacement continued throughout the harvest season into December, peaking in November at 53% of KIs from all assessed settlements. Notably, the onset of flooding and flooding-driven displacement was earlier for Bor South county than for any other county of analysis.

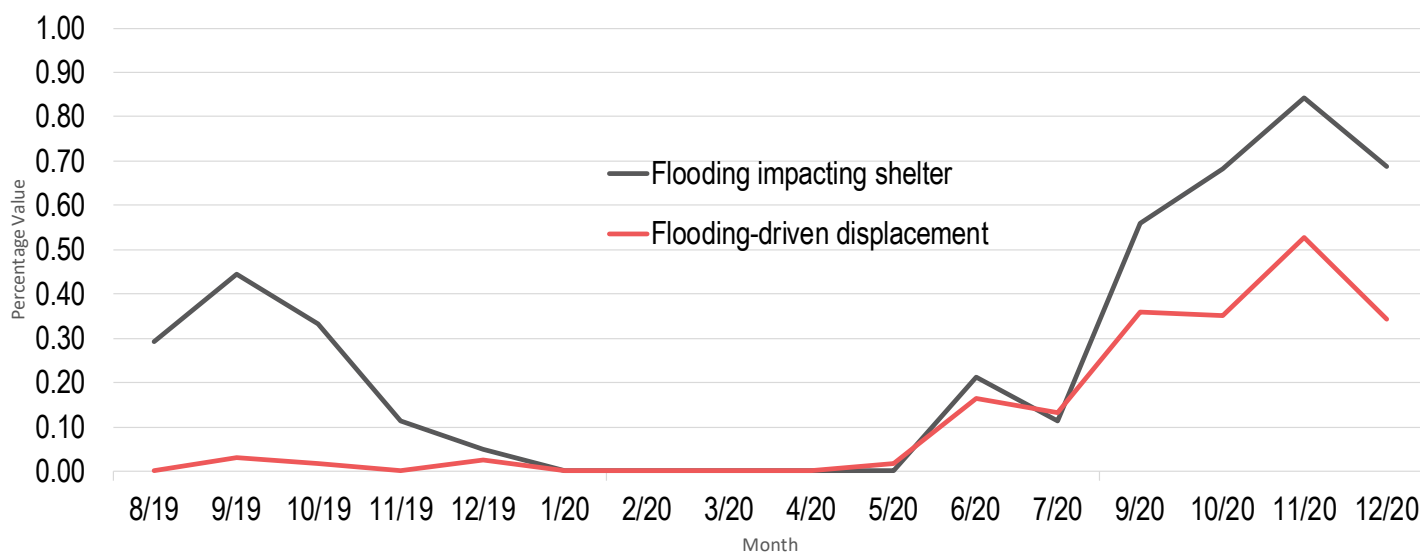
The early lead-up to higher levels of flooding later in 2020 may have contributed to movement that pushed beyond county boundaries into

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neighboring areas. Although KIs from the assessed settlements reported that floodwaters mainly displaced people to other locations within Bor South county at the onset, in September KIs in assessed settlements started reporting cross-county displacement to Awerial county (56%) and in October to Juba county (5%), most likely representing displacement to Mingkaman and Mangalla settlements respectively. Another possible factor driving atypical movements into other counties in late 2020 may have been households' decreased ability to cope after conflict intersected with food insecurity earlier in the year. In May, 11% of KIs reported displacement caused by lack of food access, with conflict reportedly beginning to drive displacement during the same month

and continuing into July, likely disrupting people's ability to pursue livelihood activities alongside early flooding. Finally, according to FGD participants, Bor South county has been receiving IDPs from Duk and Twic East counties dealing with similar compounded shocks since September, likely straining local resource capacity. As such, although KI reports of flooding impacts in Bor South county are not the highest among the counties of analysis according to AoK long-term data, months of dealing with accumulating shocks in addition to absorbing displacement from other counties makes Bor South important to monitor.

Figure 5: Proportions of KIs reported flooding impacts in Bor South county between August 2019-December 2020



Conclusion

Long-term trend analysis across Akobo, Ayod, Duk, Twic East, and Bor South counties demonstrates flooding and conflict impacts stretching back to 2019 and repeatedly disrupting livelihoods before reaching a tipping point and prompting a wave of displacement in late 2020. The mass displacement reported in much of Jonglei state during this period should not be viewed as a standalone event from which communities are likely to recover quickly, but as a sign of the deteriorating situation in each of the five counties, following a multi-year series of sequential and sometimes overlapping shocks. In addition, wetter-than-usual conditions are projected for March through May 2021 in eastern South Sudan, along with early onset of the rainy season country-wide. As such, it is likely that for those remaining in the five counties analysed in this report, livelihoods will once again be disrupted by unseasonal climate shocks, counteracting any potential for recouping the losses from the past two years.¹⁸ Meanwhile, IDPs from Duk and Twic East counties who have moved to Bor South county or on to neighboring counties in Lakes and Central Equatoria states are likely to face difficulty returning, or may struggle to engage in livelihoods while simultaneously overwhelming support systems in their areas of origin

if they do. Overall, the effects of compounded shocks in 2019 and 2020 on displacement and food security are likely to carry over into 2021, necessitating clear humanitarian understanding of households' severely depleted resilience moving forward.

Endnotes

1. Integrated Food Security Phase Classification, South Sudan: [Acute Food Insecurity Situation for October - November 2020 and Projections for December 2020 - March 2021 and April - July 2021](#).
2. World Food Programme South Sudan Country [Brief, January 2021](#).
3. UN News: [Flooding leaves South Sudan facing threat of 'catastrophic' hunger levels, 29 September 2020](#).
4. Standard AoK data, including data for the indicators being analysed, was not collected in August, and is therefore not analysed or represented in trend graphs.
5. International Organization for Migration (IOM) - Displacement Tracking Matrix (DTM), [Akobo County Jonglei State Event Tracking, 8 October 2020](#).
6. Ibid.

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7. Integrated Food Security Phase Classification, South Sudan: [Acute Food Insecurity Situation for October - November 2020 and Projections for December 2020 - March 2021 and April - July 2021.](#)
8. Livelihood Migration is understood in data collection as a seasonal or typical movement of people from their area of habitual residence to other settlements in pursuit of livelihood activities.
9. REACH started collecting data on livelihood migration in May 2020.
10. REACH, focus group discussions in Bor town, Bor South county, with IDPs from Duk county, September-October 2020.
11. European Civil Protection and Humanitarian Aid Operations (ECHO) Daily Flash, "[South Sudan: Violence, floods, displacement in Jonglei.](#)" 11 August 2020.
12. REACH, focus group discussions in Duk, Twic East, and Bor town, with IDPs from Duk, Twic East, and Jalle and Baidit payams of Bor South county, September-October 2020
13. REACH, focus group discussions in Bor town, with IDPs from Jalle and Baidit payams of Bor South county, September-October 2020
14. Although August data is not represented as standard AoK data collection did not take place that month, [the lean season often extends into August.](#)
15. ECHO Daily Flash, "[South Sudan: Violence, floods, displacement in Jonglei.](#)" 11 August 2020.
16. World Food Programme, Rapid Food Security Assessment in Mangalla, presented at Needs Analysis Working Group on 2 March 2021.
17. IOM-DTM, [Mangala Rapid Flow Monitoring.](#) 30 December 2020.
18. Intergovernmental Authority on Development (IGAD) Climate Predictions and Applications Centre, Probabilistic Rainfall Forecast for South Sudan, March-May 2021.