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Armed conflict as a cause of hunger

Unpacking the relationships between conflict and rising food prices in Sudan

November 2023

Key Messages

- In well-integrated markets, commodities flow from surplus-producing areas to deficit areas – both locally and internationally – ensuring availability on markets. Various observers have noted that Sudan's has an extensive and well-connected market and internal supply chains. The seamless flow of commodities helps to stabilize prices over time, thereby ensuring economic access to food. Yet, when markets are highly integrated, shocks are also likely to be transmitted from one market to another – which is what has been recorded in Sudan since April 2023.

- A significant increase in cereal prices has been observed since the outbreak of the conflict. In markets located in the States most severely affected by clashes or conflict episodes, sorghum prices increased by as much as 122 percent (El-Fula market in West Kordofan). Similar patterns have been observed in markets within other States affected by conflict (e.g., El Fasher in Darfur and El Obeid in North Kordofan).

- Due to market integration, price spikes have also been transmitted to areas where active conflict has not been reported; however price increase observed here are of a lower magnitude. For instance, prices of sorghum and millet in Kassala market increased by 16 and 40 percent, respectively since the conflict started.

- In conflict-affected areas, the risks of looting and the security fees imposed by the different parties in conflict are impacting the movements of goods, which, in turn, result in shortages and contribute to the price spikes observed.

- Fuel shortages are increasing the price of transport vendors and wholesalers pay to deliver goods to the market. This is in turn is transferred to the price of the food items sold in the market, leading to a direct increase in food prices.

- Areas with the highest concentration of IDPs (namely, River Nile, South Darfur, East Darfur, Northern, Sennar and North Darfur) are of great concern as large population influxes seems to have led to a sudden surge in demand for food, which, in turn will resulted in higher market prices – at time when the supply chains have already been challenged by access constraints and shortages.

- Sudan's ability to import essential commodities such as wheat and fuel has been further compromised, resulting in a sharp increase in local prices that, in turn, has undermined household purchasing power.

- Conflict and its spill-over effects (e.g., destruction of infrastructures, lack of banking services, and rising cost of inputs) continue to undermine agricultural activities, leading to reduced planted areas and availability of locally produced food for the next marketing year. Should the current situation not improve, the food crisis will likely worsen

1. Background

The effects of the ongoing war in Sudan are multifaceted, with devastation reaching far beyond the geographical conflict hotspots within the country. Prior to the war, the country was already grappling with food insecurity with over 16.2 million people estimated to be food insecure during the first quarter of the year[1]. The worsening food security situation observed over the past two years has been a result of multiple shocks, including high inflation, depreciation of the local currency, political unrest, the ripple effects of the conflict in Ukraine and poor harvests.

The economic fallout of the ongoing conflict on the Sudanese economy is projected to negatively impact crop production as the conflict has hampered access to land and farm inputs have become more expensive. Since the onset of the conflict, food insecurity has worsened, with the number of food insecure projected at 20.3 million[2].

The conflict has significantly disrupted food supply chains in the conflict hotspots as well as in other parts of the country and across borders. Fuel shortages are increasing the price of transport vendors and wholesalers pay to deliver goods to the market, which is transferred to the price of commodties sold in the market.

As transportation routes are blocked, processing facilities closed, and local market operations and livelihoods disrupted, both access to food has become a challenge. Most people – particularly the urban population – heavily rely on markets to meet their daily food needs and any disruptions to market supply would therefore have negative implications on food access, exacerbating an already fragile food security situation.

1.1 The Approach

The Regional Bureau RAM team conducted an analysis that combines primary data (e.g. market prices collected by WFP Sudan) and a desk review of existing publications from various agencies, including FAO, OCHA, IOM and IFPRI.

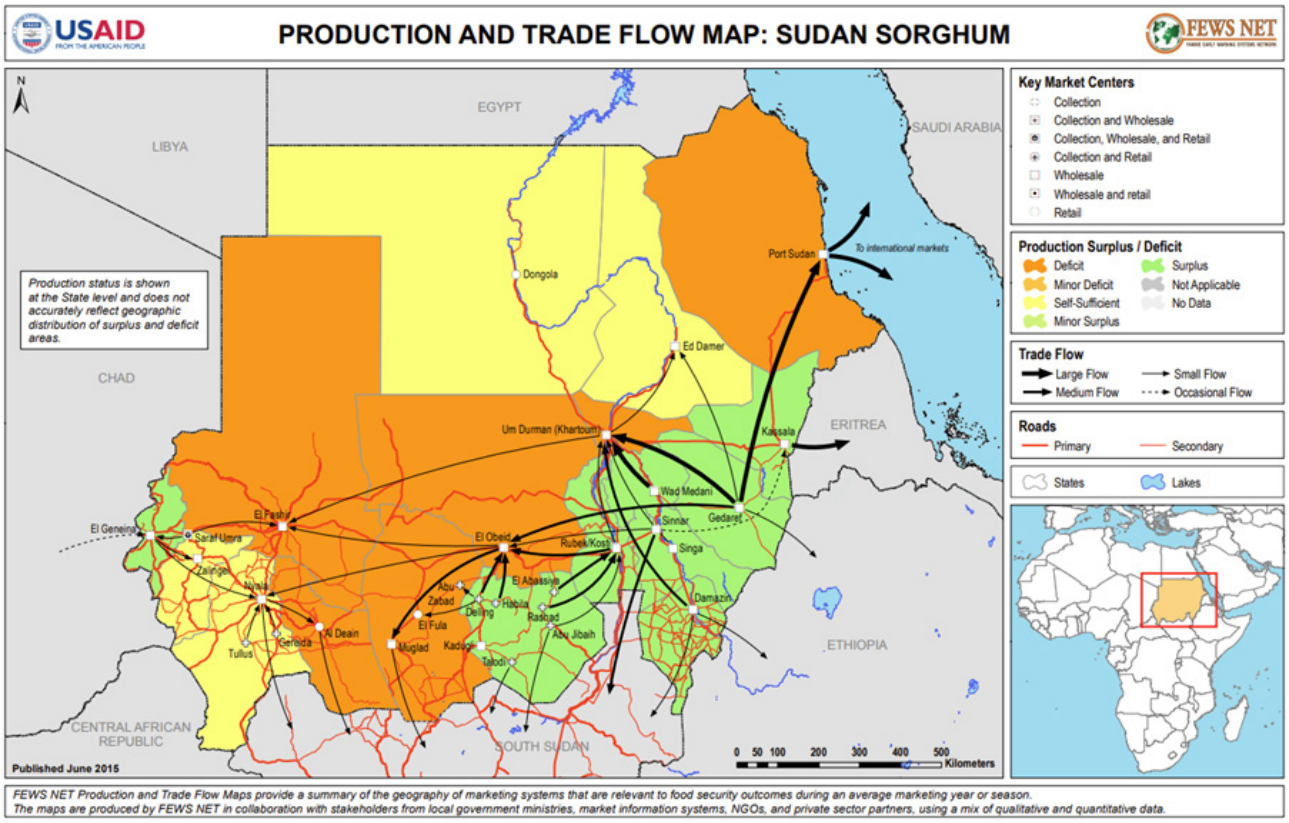
Existing data and information were re-analysed and cross-referenced with WFP's market prices (up to September 2023).
The results of the analysis were reviewed and corroborated by WFP Country Office in Sudan.

2. Price Dynamics and Integration in Sudan's Staple Food Commodities

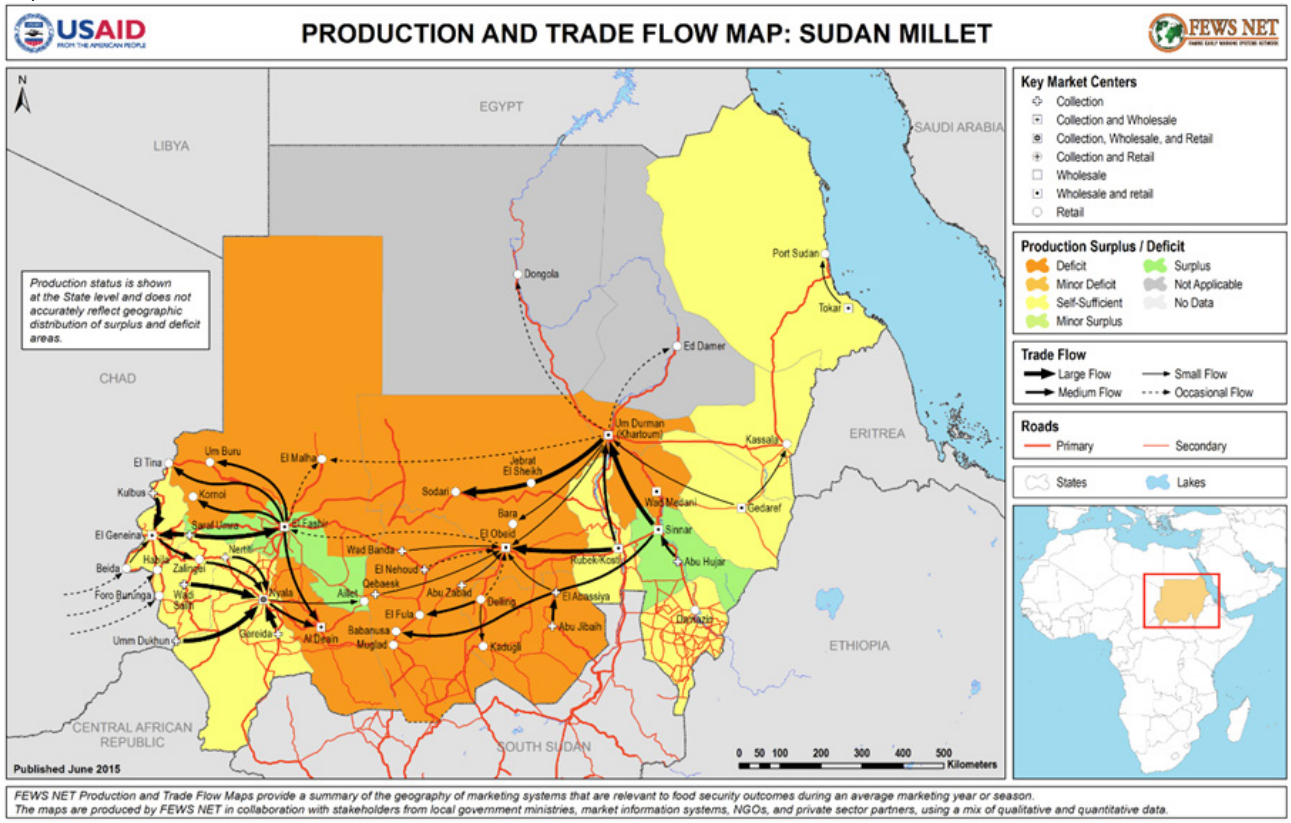
2.1 Overview of Cereals

In Sudan, sorghum is the most important staple food item, which is mainly produced using semi-mechanized and traditional rain-fed systems. Surplus-producing States include Gedarif, El Gazira, Blue Nile, Sennar, White Nile, North Kordofan and West Darfur. Gedarif and Khartoum markets play a key role in trade both locally and internationally (see map 1).
Wheat is the second-most consumed staple; however, most of the wheat consumed in Sudan is imported (see section 2.2 to understand the implications of the conflict on wheat consumption).
The third-most important cereal in Sudan is millet, which is mainly consumed in the Western parts of the country. Millet is mainly produced in the Darfur States through traditional rain-fed systems. Nyala in South Darfur, El-Fashir in North Darfur, and Geneina in West Darfur are the main markets (see map 2).

Map 1: Sorghum trade flow in Sudan (Source: FEWS NET)



Map 2: Millet trade flow in Sudan (source: FEWS NET)



2.2 Market Integration

In well-integrated markets, commodities flow from surplus-producing areas to deficit areas – both locally and internationally – ensuring availability on markets. The seamless flow of commodities helps to stabilize prices over time, thereby ensuring economic access to food. Yet, when markets are integrated, shocks are also likely to be transmitted from one market to the other, with similar magnitude and speed.

A detailed study by IFPRI published in 2022 assessed spatial market integration and price transmission in cereal markets across Sudan, focusing on the two widely consumed cereals (sorghum and wheat). The findings showed that less than half of the markets assessed for wheat and 10 of the 18 assessed for sorghum were spatially integrated. Strong evidence from the study also suggested there was less market integration across some regions, for instance pointing out that markets in the Darfur region were not integrated with markets in other parts of the country[3].

Trend analysis shows sorghum and millet prices have followed similar patterns (co-movement) across most markets in Sudan (see Figures 1 and 2), with minimal variation. The steady upward trend observed since 2020 mainly reflects the fragile macro-economic environment characterized by high inflation, currency devaluation and cessation of international economic support – which exerted upward pressure on local market prices across the whole country.

In the context of the ongoing conflict, price spikes recorded in urban areas of Khartoum, greater Kordofan, and greater Darfur States as well as along the major roadways[4] are indeed stretching far beyond markets within these war hot spots. Although price correlation can be driven by factors including seasonality, macroeconomic environment, and pricing control; the strong positive correlation among prices across spatially dispersed markets (see Tables 1 and 2) is indicative of spatial market integration.

Figure 1: Sorghum price trends in key markets in Sudan (source: WFP field monitor)

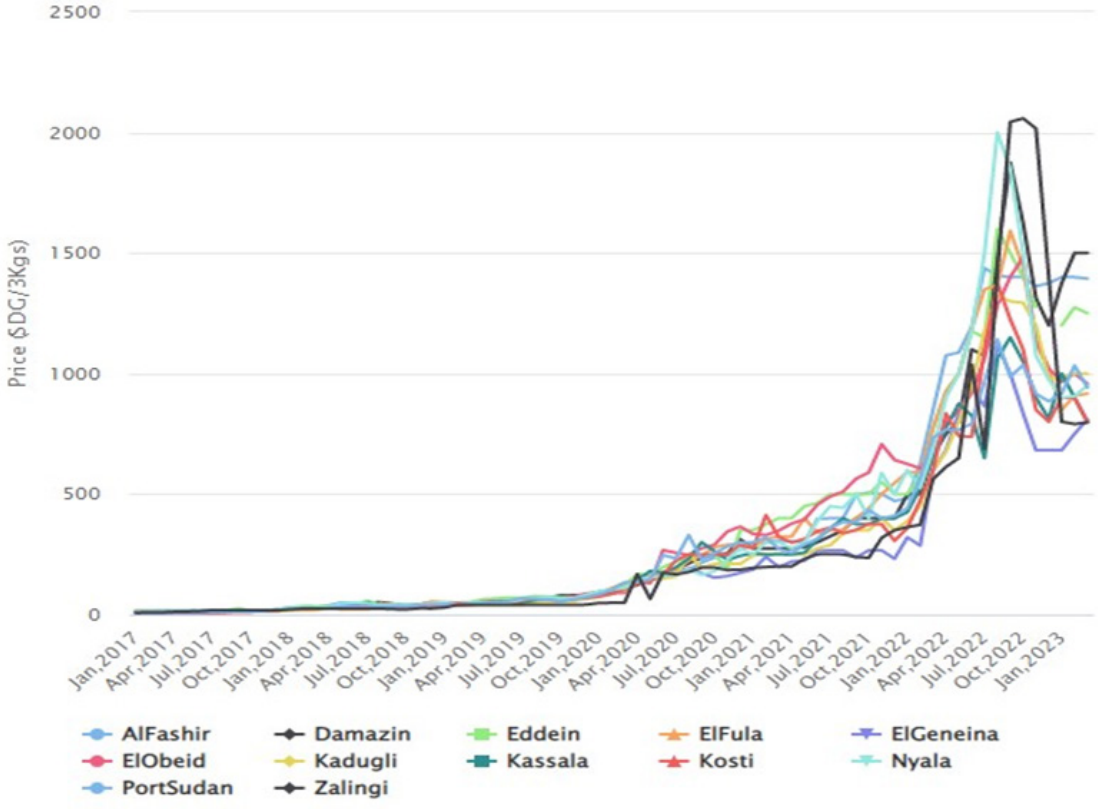


Figure 2: Sorghum price trends in key markets in Sudan (source: WFP field monitor)

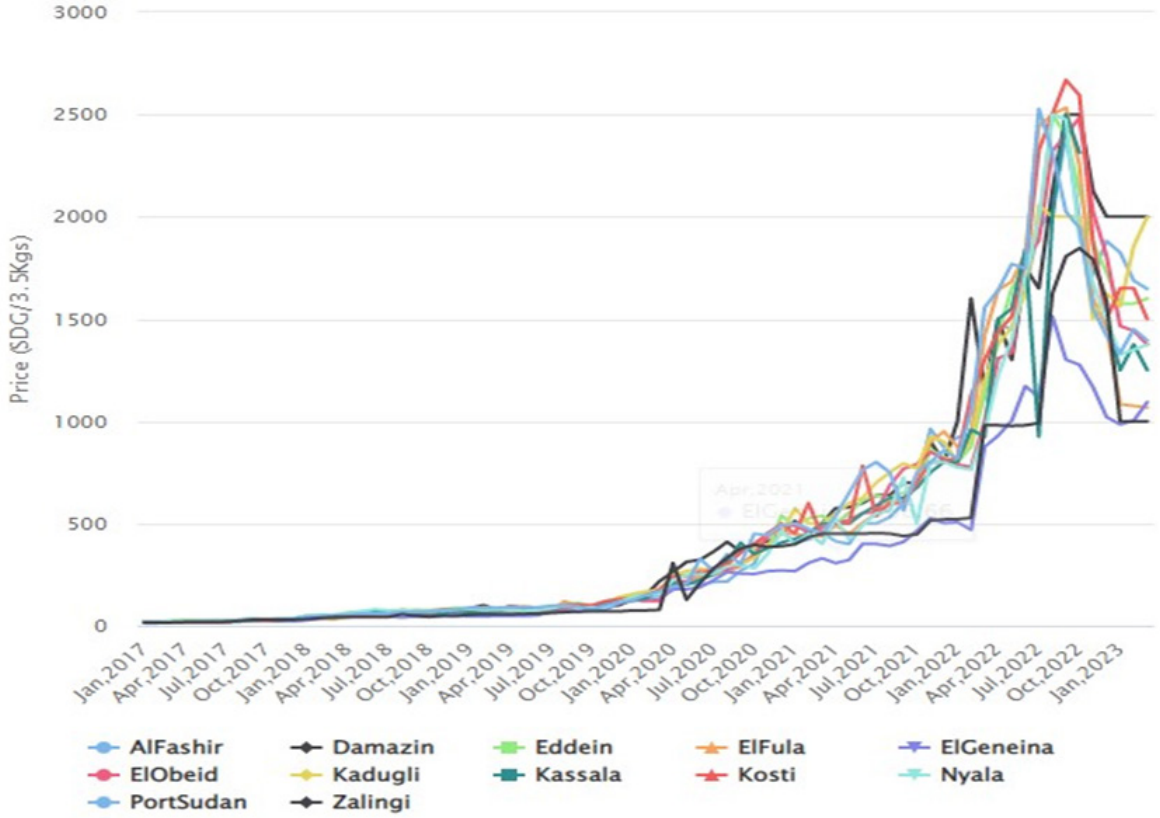


Table 1: Sorghum retail price correlation among key markets in Sudan (source: WFP field monitor)

	AlFashir	Damazin	Eddein	ElFula	ElGeneina	ElObeid	Kadugli	Kassala	Kosti	Nyala	PortSudan	Zalingi
AlFashir	1											
Damazin	0.9764	1										
Eddein	0.8676	0.8400	1									
ElFula	0.9715	0.9593	0.8304	1								
ElGeneina	0.9746	0.9584	0.8236	0.979	1							
ElObeid	0.9678	0.9609	0.8372	0.9813	0.9527	1						
Kadugli	0.9879	0.9839	0.8478	0.9847	0.9780	0.9766	1					
Kassala	0.9780	0.9701	0.8370	0.9727	0.9712	0.9795	0.976	1				
Kosti	0.9736	0.9637	0.8260	0.9814	0.9780	0.9749	0.9837	0.9754	1			
Nyala	0.9491	0.9488	0.8047	0.9837	0.9730	0.9641	0.9746	0.9522	0.98	1		
PortSudan	0.9875	0.9668	0.8463	0.9737	0.9734	0.9798	0.9823	0.9852	0.9837	0.9524	1	
Zalingi	0.8909	0.9289	0.8195	0.9182	0.8799	0.912	0.9316	0.9031	0.8920	0.9061	0.8783	1

Table 2: Millet retail price correlation among key markets in Sudan (source: WFP field monitor)

	AlFashir	Damazin	Eddein	ElFula	ElGeneina	ElObeid	Kadugli	Kassala	Kosti	Nyala	PortSudan	Zalingi
AlFashir	1											
Damazin	0.9848	1										
Eddein	0.9913	0.9775	1									
ElFula	0.9642	0.9847	0.9777	1								
ElGeneina	0.9864	0.9746	0.9947	0.9688	1							
ElObeid	0.9847	0.9761	0.9925	0.9745	0.9852	1						
Kadugli	0.9870	0.9770	0.9849	0.9544	0.9863	0.9744	1					
Kassala	0.9393	0.9515	0.9523	0.9206	0.9486	0.9621	0.9165	1				
Kosti	0.9842	0.9740	0.9917	0.9823	0.9835	0.9892	0.9772	0.9414	1			
Nyala	0.9829	0.9632	0.9944	0.9829	0.9847	0.989	0.9732	0.9414	0.9892	1		
PortSudan	0.9692	0.9454	0.9798	0.9846	0.9790	0.9659	0.9763	0.9063	0.9802	0.9741	1	
Zalingi	0.9596	0.9640	0.9709	0.9405	0.9659	0.9793	0.9429	0.9706	0.9627	0.9584	0.9315	1

2.3 The Impact of Population Movements on Market Prices

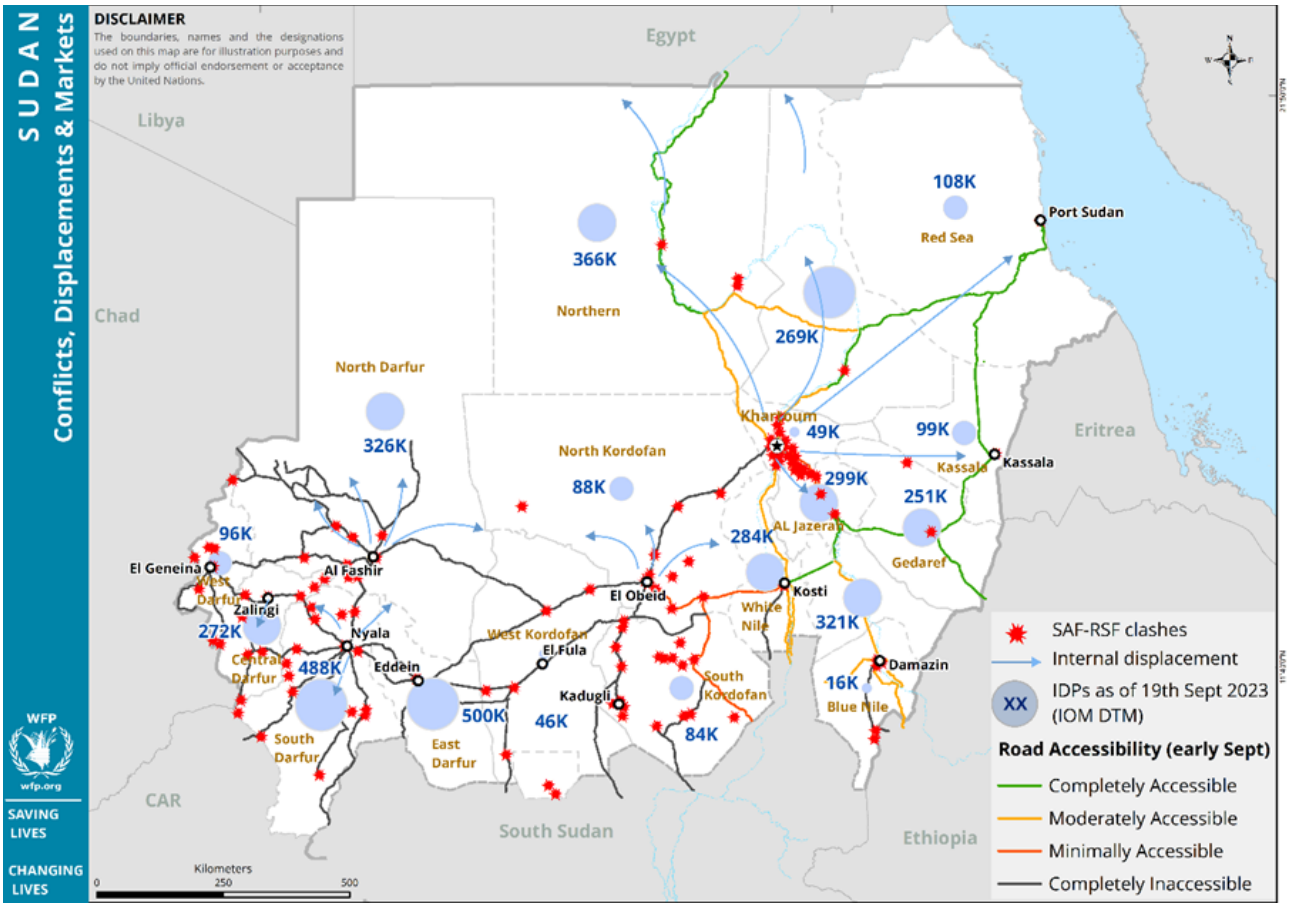
The latest data by IOM indicates an estimated 4,232,840 individuals have been internally displaced since the onset of the conflict, with the majority of them originally displaced from Khartoum State (67.9 percent)[5].

A sudden population influx at such a large scale might put further pressure on local markets by affecting the supply and demand elasticity. Markets in States with the highest IDP caseloads namely, River Nile, South Darfur, East Darfur, Northern, Sennar and North Darfur are of key interest as sudden surges in demand can create shortages and price spikes as demand outpaces supply. Besides supply constrain, malpractices such as price speculation would also pose risks to food access for both IDPs and host communities. The greater Darfur, West Kordofan, North Kordofan, South Kordofan and Khartoum host more than a million IDPs. In September 2023, major roads in these States have been completely inaccessible, which, suggests food supply in local markets has been undermined (see Map 3). Although roads in the Northern and Eastern parts of the country remain accessible, unseasonal price spikes have also been transmitted to areas not affected by roadblocks or insecurity.

In conflict-affected areas, the risks of looting and the security fees imposed by the different parties in conflict are impacting the movements of goods, which, in turn, result in shortages and contribute to the price spikes observed.

The magnitude and duration of these distortions would depend on how local markets adjust to conflict-induced shocks as well; however, higher-than-normal food prices are expected to persist in coming months should the conflict persist.

Map 3: Conflict, Displacement and Markets (sources: WFP, IOM DTM)



3. How the Conflict has Affected Prices

Thanks to the good 2022/2023 harvest, cereal prices in early 2023 remained below year-earlier levels in most markets across the country. However, a significant increase in cereal prices has been observed since the outbreak of the conflict. The highest increase in sorghum and millet prices was recorded in El-Fula, West Kordofan (see Table 3) – one of the States most severely affected by the conflict episodes. Almost similar patterns have been observed in other markets located in States where clashes have been reported.

Conversely, sorghum prices declined in the Damazin market in Blue Nile State (down 18 percent between March and September 2023) while millet prices remained stable. The inability to sell the surplus of millet and sorghum locally produced in the Blue Nile following road blockages could be associated with the decrease in the observed prices.

Table 3: Staple price change in key markets in Sudan (source: WFP field monitor)

State	Market	Commodity	Sep-23	% change from y-o-y	% change from March
North Darfur	Al Fashir	Sorghum	1,988	42%	43%
		Millet	2,200	-8%	34%
Blue Nile	Damazin	Sorghum	1,225	-35%	-18%
		Millet	2,125	-15%	6%
West Kordofan	El Fula	Sorghum	1,467	-8%	60%
		Millet	2,367	-7%	122%
North Kordofan	El Obeid	Sorghum	1,267	-10%	32%
		Millet	2,000	-17%	45%
South Kordofan	Kadugli	Sorghum	1,817	40%	82%
		Millet	2,200	10%	10%
Kassala	Kassala	Sorghum	925	-20%	16%
		Millet	1,750	-30%	40%
White Nile	Kosti	Sorghum	1,000	-18%	25%
		Millet	1,850	-31%	23%
Red Sea	Port Sudan	Sorghum	840	-15%	-11%
		Millet	1,380	-32%	-1%

4. How the Conflict is Impacting Crop Production

4.1 Sorghum and millet

National production of key staples (such as sorghum and millet) in the 2022/23 cropping year is estimated to be approximately 56 percent above production levels recorded in the previous cropping year[6]. Despite the good rains experienced at the beginning of the current cropping season, agricultural activities have been hampered by conflict and insecurity, which is likely to offset the gains recorded in the past agricultural season. In addition, the collapse of banking systems has limited access to financial services; this combined with the high cost of farm inputs is likely to negatively impact crop production, raising concerns over a worsening of the current food crisis.

The greater Darfur, the Kordofans and Khartoum States account for approximately 40 and over 80 percent of the total national production of

of sorghum and millet, respectively. Agricultural activities in these States have been hampered by episodes of active conflict, leading to reduced planting which is likely to result in reduced harvests[7]. The fallout of the conflict has been observed in other neighbouring States where sorghum is produced, which may contribute to deficits in cereal crop production both regionally and nationally. Shortages in local markets and price spikes in the near-to-medium term are likely to occur, leading to a further erosion of the already compromised household purchasing power.

4.2 Wheat

Wheat is widely consumed in Sudan, with nearly 80 percent of local consumption needing to be met through imports[8]. Domestic wheat production is mainly concentrated in Northern, Gezira and River Nile; a negligible proportion of wheat is produced in the States worst affected by the ongoing conflict (Greater Darfur, Kordofan and Khartoum, see table 4). Considering the low reliance on domestic production to meet the demand, the availability of wheat on local availability will be mainly affected by international trade dynamics and by the country's ability to import wheat from abroad.

Table 4: National Production Trends vs Conflict Hotspot Regions ('000 MT, source: FAO CFSAM)[9]

Year	***Sorghum***		***Millet***		***Wheat***	
	National	*Conflict hotspots*	*National*	*Conflict hotspots*	*National*	*Conflict hotspots*
2018/19	4,416	2,269 (51%)	2,647	2,537 (96%)	700	4 (1%)
2019/20	3,702	1,779 (48%)	2,687	2,537 (94%)	727	4 (1%)
2020/21	5,153	1,822 (35%)	1,918	1623 (85%)	695	2 (0%)
2021/22	3,529.18	1,066.2 (30%)	900.75	774.9 (86%)	676.38	0.15 (0%)
2022/23	5,247.803	2,120.701 (40%)	1,673.92	1,451.42 (87%)	476.27	0.49 (0%)

5. The Conflict in Sudan Adding to an Already Fragile Economy

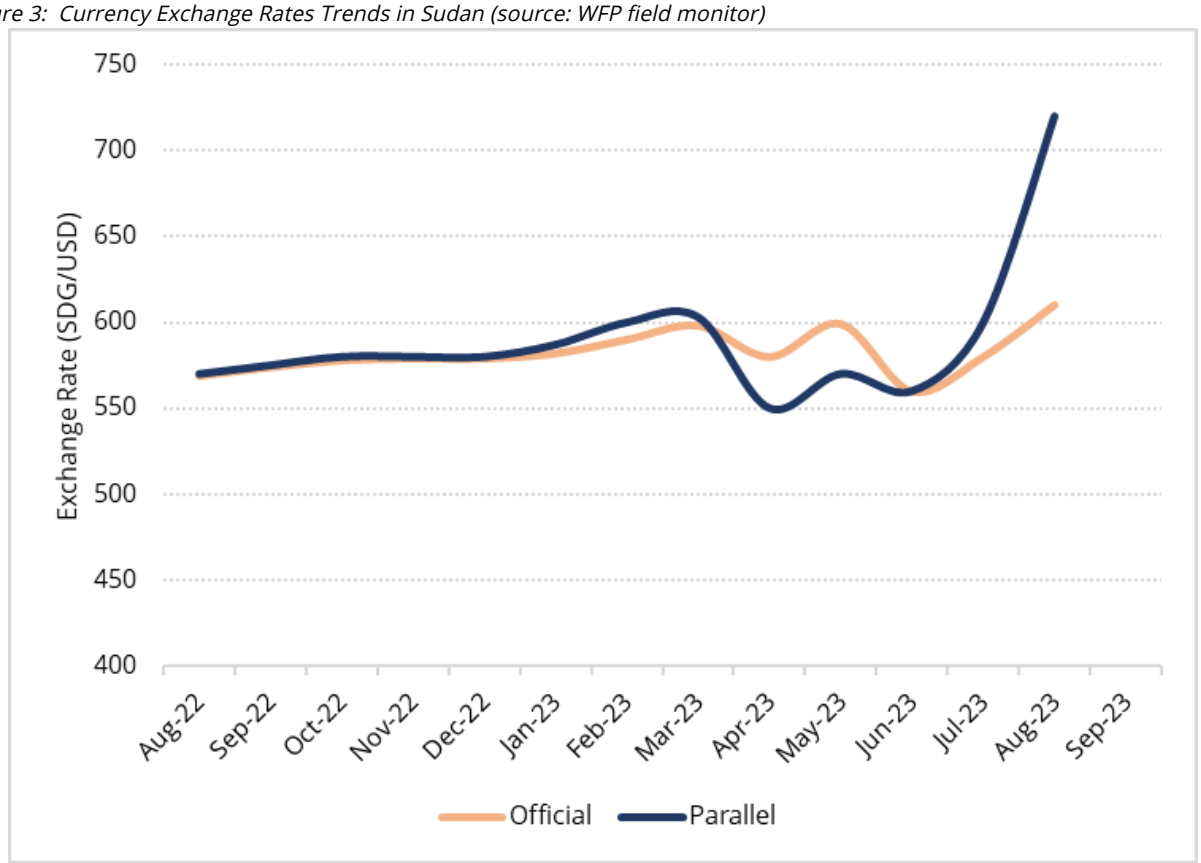
Following the economic restructuring reforms recommended by the International Monetary Fund (IMF) in 2018, Sudan has faced severe economic challenges[10]. Some of the reforms included cuts on wheat subsidies and the removal of fuel subsidies. In addition, recurrent currency devaluations led to a severe economic downturn characterized by an increase in general prices.
In July 2021, hyperinflation in Sudan hit a record high at 422.8 percent.
Rising inflation combined with currency devaluation has weakened the country's ability to import essential commodities (such as wheat and fuel), leading to sharp increases in local market prices, which, in turn, have eroded household purchasing power.
Since July 2021, the annual inflation rate has been on a declining trend and reached 63.3 percent in February 2023[11]. Despite no inflation rates have been officially released since the outbreak of the conflict, annual inflation is expected to hit 250 percent by the end of the year[12] amidst soaring food prices.
The Sudanese Pound (SDG) continued to depreciate against the U.S. Dollar (USD) until March 2023, with the parallel exchange rate slightly higher than the official one. The onset of the current conflict slowed down economic activity, leading to low demand for foreign currency to import goods from the international

markets between April and June. This led to temporary gains against the USD[13]. As importation activities resumed in the subsequent months, demand for foreign currency led to further deterioration of the SDG.

6. Conclusions

The ongoing conflict compounds pre-existing fragilities, including a precarious macroeconomic situation characterized by political instability, high inflation, weak currency, and widespread poverty. A severe deterioration of households' purchasing power is likely to happen, which, in turn, might further hamper economic access to food.
In addition, the positive gains in agricultural production recorded in the past season are likely to be offset by the conflict, with severe repercussions on food availability in markets. An expansion of market monitoring activities (such as reduced MFI and regular price monitoring) is recommended to understand if markets can meet food demand. Owing to access-related and security constraints, areas recording the highest price spikes (e.g., Khartoum) or States with high concentrations of IDPs should be prioritized.

Figure 3: Currency Exchange Rates Trends in Sudan (source: WFP field monitor)



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[8]FAO Cereal Supply and Demand Balances for Sub-Saharan African Countries, June 2023. https://www.fao.org/3/cc7114en/cc7114en.pdf

[9]Conflict hotspots (cumulative for greater Darfur, Kordofans and Khartoum)

[10]ACAPS Briefing Note: Sudan - Economic Crisis, February 2019. https://reliefweb.int/report/sudan/acaps-briefing-note-sudan-economic-crisis-13-february-2019?gclid=Cj0KCQjwmICoBhDxARIsABXkXlJgnUAh4xigkNW2qf32VPwrBEN9HpaqLXLzWtsCckGlWUzhYSqF2xEaAuLEEALw_wcB

[11]Note: Inflation rates have not been issued since February 2023

[12 13]WFP Sudan Market Monitor, July 2023 https://docs.wfp.org/api/documents/WFP-0000151889/download/

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