



Foreign, Commonwealth
& Development Office

Sudan Supply Chain Analysis

Sorghum Supply Chains in South Kordofan

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Executive Summary

This report presents qualitative findings from a comprehensive sorghum supply chain analysis in South Kordofan State, Sudan, conducted by IMPACT Initiatives in collaboration with DataQ. The assessment focused on two primary market hubs in South Kordofan, specifically in Kadugli and Rashad localities, which serve as the state's central economic hubs. Kadugli serves as the state capital and western hub, while Rashad stands as the principal market town of the eastern corridor. Across both systems, the analysis documented a sorghum supply chain under severe structural stress, with the two market systems being affected in markedly different ways. The analysis drew on 43 interviews with key informants including wholesalers, farmers, transporters, food vendors, households, and community stakeholders. The interviews explored production, transport, market dynamics, storage, food security, financing, conflict impacts, and consumer experiences across the two market hubs.

The findings revealed that the market systems has been continuously reorganising itself to adapt to a volatile security situation that directly impaired daily functionality. While agricultural production has not completely ceased in either locality, it has become marginalised, localised, and largely disconnected from broader commercial trade. Following the outbreak of the conflict, interviewed farmers reported cultivating only a small fraction of the land they utilised prior to the conflict. Consequently, households were restricted to subsistence-level production that was barely sufficient for survival. Compounding this vulnerability, farmers are often forced to sell portions of this limited yield during unfavorable seasons at depressed prices just to cover immediate debts, school fees, and threshing costs, rather than holding stock to benefit from seasonal price increases. Furthermore, sorghum transported from outside these two localities faced immense logistical hurdles, moving through heavily checkpointed corridors that drastically increased transport overheads, caused lengthy delays, and heightened the risk of total disruption.

Transport and route conditions emerged as one of the aggravating factors for both price rises and restricted market access, specifically in Rashad. In Rashad, virtually the entire commercial supply relied on a single linear corridor (Abu Jubayhah → Tajmala → Tandek → Rashad). This pathway passes through a sequence of fixed and informal checkpoints, as well as a single, highly volatile geographic chokepoint (the Al-Korra crossing) which frequently added several hours or forced overnight delays to an otherwise short journey and becomes entirely impassable during the rainy season. On the other hand, the Kadugli supply chain system was reported to be far more fragmented. The surrounding local production belt (including the area around Al-Bardab and adjacent villages) experienced a sharp contraction driven by insecurity and displacement. As a result, a crucial share of current sorghum consumption in Kadugli has to be purchased and transported from production zones outside South Kordofan.

Across both market hubs, traders faced a complex network of overlapping, uncoordinated checkpoints, local administrative fees, and Zakat Authority levies.¹ Interviewed wholesalers and transporters described this burden in identical terms, noting that they were frequently required to pay an in-kind levy of roughly one sack² for every ten sacks transported, on top of fixed cash fees per checkpoint. This could be presented as a de facto tax on total trade volume rather than a standardised, one-off administrative fee.

The intermediary layer of the supply chain, including brokers, assemblers, and the trust-based trading relationships that historically linked remote smallholder farmers to urban wholesale markets has been compromised by the conflict. Respondents reported that insecurity, proliferation of checkpoints and the decline in traders' capacity to travel to production areas have largely eliminated the direct procurement networks that previously connected assemblers to farmers. As a result, assemblers in Rashad reported relying primarily on larger and established wholesalers who have better capacity and networks to navigate security and transport situation, rather than purchasing directly from producers. This reduced role in aggregation substantially diminished trading volumes, with some assemblers estimating that they currently process only one-third of the volumes handled before the conflict. Multiple respondents further noted the total disappearance of itinerant traders who previously traveled directly to sorghum-growing villages. Furthermore, while financial services had not entirely collapsed, credit access became highly restrictive. Forward-sale arrangements (Salam or Mashal) remained the dominant source of agricultural financing, requiring vulnerable farmers to commit future harvests at below-market prices in exchange for immediate cash or input prior to cultivation which limits their ability to store their produces and sell later when prices are more favourable. On the other hand, wholesalers continued to access trust-based trade credit, allowing them to finance procurement, hold comparatively larger inventories and better respond to seasonal market opportunities. Market actors in both hubs use digital payment systems to avoid safety issues. However, these services are reported to be limited for larger transactions in Kadugli, indicating that these payment mechanisms remained largely inaccessible to primary producers.

Additionally, systemic storage inadequacies and post-harvest losses further undermined supply chain viability, with farmers routinely reporting losses of 5–10% due to pests, theft, and sub-standard storage facilities. Finally, millers reported substantial declines both in the number of households bringing grain for processing and in the actual quantities milled per visit. Overall, these findings pointed to a regional market system under profound strain, where reduced production, restricted financing, post-harvest losses, and declining household purchasing power continued to structurally weaken food security and market resilience across South Kordofan.

¹ Zakat Authority levy in Sudan refers to the compulsory collection of Zakat, an Islamic charitable obligation that is administered by the government through the Zakat Chamber (Diwan Al-Zakat).

² A sack is a common commercial packaging unit, but it is not a standardized measure, typically weighing 90 kg.

Key Findings at a Glance

- **Sorghum supply system:** South Kordofan's sorghum market is characterised by two distinct supply systems. Kadugli relies on a combination of limited local production and inflows from production areas outside the state, including Rui, Kus, El Obeid, and Kosti. Similarly, Rashad depends primarily on the Abu Jubayhah corridor, reflecting limited availability of marketable surplus within its immediate catchment area.
- **Checkpoint and transaction costs:** Traders across both localities reported facing multiple layers of formal and informal charges, including military checkpoint fees, local administrative charges, and Zakat Authority levies. Wholesalers described in-kind contributions equivalent to approximately one sack for every ten sacks transported, in addition to fixed cash payments, increasing transaction costs throughout the supply chain.
- **Intermediary networks:** The intermediary layer of the supply chain has contracted significantly. The findings indicated that fewer brokers and assemblers remained active than before the conflict, reducing the number of actors linking remote producers to urban markets. At the same time, wholesalers have assumed a more central role in coordinating procurement from farmers and distribution, increasing their influence over price negotiation and market transaction.
- **Financing:** Access to agricultural finance remains constrained. Farmers in both localities continue to rely heavily on Salam/Mashal arrangements, requiring future harvests to be committed prior to production in exchange for cash or inputs. While these mechanisms provided access to finance, they limited farmers' ability to benefit from seasonal price increases.
- **Milling activity and household demand:** Millers reported declines in both the number of households visiting their milling facilities and the quantities processed per customer. These trends may reflect reduced household purchasing power and increasing pressure on food access.
- **Storage and post-harvest losses:** Post-harvest losses remained a persistent challenge across both market systems. Farmers commonly reported losing between 5–10% of stored grain due to pests, theft, and inadequate storage conditions, reducing marketable surplus and weakening producer livelihoods.

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Acronyms and Abbreviations

JMMI – Joint Market Monitoring Initiative

KII – Key Informant Interview

MPCA – Multipurpose Cash Assistance

VPs – Vox Pops

1. Assessment Background and Methodology

1.1 Background

Sudan continues to face a complex humanitarian situation shaped by ongoing conflict, displacement, and economic disruption. As of 2025, an estimated 12.1 million people have been displaced, while humanitarian needs remain widespread across much of the country.² The scale and nature of these needs vary considerably between locations, reflecting differences in security conditions, population movements, access to services, and livelihood opportunities.

Alongside its humanitarian impacts, the conflict has affected market systems across many parts of Sudan. Disruptions to trade routes, population displacement, reduced access to finance, and rising transportation costs have affected the movement of goods and the operation of markets to varying degrees. These dynamics have implications for both commodity availability and household access to essential goods, particularly in areas where markets are highly dependent on external sources of supply.

South Kordofan presents a distinct market context shaped by agricultural production, livestock-based livelihoods, and regional trade networks. Market systems across the state are characterised by varying levels of connectivity, accessibility, and integration with external markets, resulting in different patterns of trade and commodity movement.³ While markets in key centres such as Kadugli and Rashad continue to function, the conditions under which market actors operate differ across locations, influencing supply chain structures, sourcing strategies, and market resilience. These variations have important implications for both commodity availability and the design of market-based humanitarian responses.

Understanding these dynamics is particularly important for informing market-based interventions, including Multi-Purpose Cash Assistance (MPCA). While existing initiatives such as the Joint Market Monitoring Initiative (JMMI) provide regular information on prices and market conditions in accessible areas, they offer limited insight into the broader functioning of supply chains, including sourcing patterns, actor capacities, transportation networks, and barriers affecting commodity movement.

To address this information gap, IMPACT Initiatives and DataQ conducted a Supply Chain Assessment (SCA) in South Kordofan. The assessment was designed to generate evidence on the structure and functionality of key commodity supply chains, with a particular focus on supply routes, market actors, operational constraints, and factors influencing market resilience. The findings are intended to support humanitarian actors in designing and implementing market-based responses that are informed by local market conditions and supply chain dynamics.

³ ACAPS, [Sub-region profile of South Kordofan, West Kordofan and Blue Nile](#) (2025).

1.2 Objectives of the Analysis

The overall objective of this assessment is to provide an analysis of the existing supply chains for sorghum and laundry soap in selected market hubs in South Kordofan, with a particular focus on Kadugli and Rashad. The analysis examines supply routes, market structures, and key operational constraints to support market-based interventions and inform the effective implementation of humanitarian responses. The primary stakeholders for this assessment include humanitarian organisations implementing Cash and Voucher Assistance (CVA) and other market-based programmes, inter-agency coordination platforms, relevant clusters, donors, and other actors seeking to understand supply chain functionality in South Kordofan.

1. The specific objectives of this analysis include: To identify and map the primary sources and key transit routes associated with sorghum and laundry soap across the identified hubs.
2. To understand the current capacity, functionality and roles of key supply chain actors for sorghum and laundry soap across the target hubs.
3. To assess key supply chain barriers affecting operations and their influence on the movement of goods within the identified hubs.

1.3 Assessment Scope

The Sorghum Supply Chain Analysis employed qualitative methods to capture perspectives from market actors across the sorghum market system in South Kordofan, with a primary focus on the two main market hubs of Kadugli and Rashad. These hubs were selected due to their importance within the state's commercial landscape. Kadugli serves as the administrative capital and principal market hub of the western corridor, while Rashad functions as the main trading hub for the eastern corridor. Therefore, this analysis provides insights into the distinct market environments, production systems, trade networks, and commodity flows that shape sorghum availability across South Kordofan.

The selection of sorghum as the focus of this analysis was based on its central role in both household consumption and local livelihoods. Sorghum is the state's primary staple crop and an important source of income for a wide range of market actors, including farmers, traders, transporters, and millers. Given its significance to both food security and market activity, analysing the sorghum supply chain provides a useful entry point for understanding broader market functionality within the state.

The assessment examined the structure and functioning of the supply chain, including sources of supply, commodity flows, market actors, financing arrangements, and operational constraints affecting the movement of sorghum from production areas to end markets. Particular attention was given to factors influencing market access, trade patterns, and the capacity of supply chain actors to maintain commodity flows under current conditions. The findings are intended to support humanitarian actors in designing market-based interventions by providing information on local market conditions and supply chain dynamics.

1.4 Sampling and Data Collection

During the scoping phase, key informant interviews were conducted with market experts and traders to identify the main actors in the sorghum supply chain and define the respondent groups for the assessment. The selected key informant categories for this assessment included: farmers, transporters, wholesalers, retailers, with particular attention to millers, and two end-consumer groups: small traditional restaurants and households.

This assessment utilised a purposive sampling methodology designed to ensure the inclusion of respondents with direct knowledge of the supply chain situation and market dynamics. Sampling was conducted in iterative waves. Following the initial interviews with each respondent category, interim reviews were undertaken to identify information gaps, emerging themes, and areas requiring further exploration. This process allowed subsequent sampling efforts to be directed toward the most relevant actors and issues identified during the analysis.

Data was collected using two qualitative methods: semi-structured Key Informant Interviews (KIIs) and vox pops (VPs). The semi-structured KIIs were used to generate in-depth information on supply chain structures, market functionality, and operational constraints, while VPs consisted of short, structured interviews designed to triangulate findings and capture additional perspectives from market actors and end users. For each data collection method, location-specific, modular tools were developed to capture the perspectives of all respondent categories and enable data collection across different nodes of the supply chain. All interviews were recorded, transcribed, and translated into English prior to the analysis.

In total, the assessment collected 43 interviews, comprising 17 KIIs and 26 VPs across Kadugli and Rashad, representing the western and eastern market systems of South Kordofan, respectively. Following data collection, interviews were coded and analysed using a thematic analysis based on a pre-established coding framework. This approach supported the systematic identification of patterns, bottlenecks, and variations across the two market systems.

Table 1: Number of sample respondents across the two market hubs

Actor Type	Kadugli KII	Kadugli VOP	Rashad KII	Rashad VOP	Total
Farmer	2	3	1	2	8
Transporter	1	3	2	4	10
Wholesaler	1	0	4	0	5
Miller	2	0	2	0	4
Assembler / Broker	0	0	1	0	1
Food Vendor	0	3	0	3	6

Household Consumer	0	3	0	4	7
Other / unattributed	0	0	0	2	2
Total	6	12	10	15	43

1.5 Data Analysis

Analysis followed a phased and iterative approach, with the research team initiating coding immediately after the completion of each data collection window to allow emerging insights that could inform subsequent analytical steps. Given the qualitative nature of the study, analysis was conducted using Atlas.ti software. An initial codebook was developed based on the early interviews and the thematic analysis framework developed before data collection. This codebook was treated as a living document, with codes refined, merged, and expanded as analysis progressed through the first round of coding. Two rounds of coding were conducted to ensure the systematic identification and validation of key findings. The first round focused on coding and theme development, while the second served as a validation and consolidation phase to strengthen analytical consistency, address gaps, and reduce the risk of overlooked insights. Following coding, findings were synthesised by analytical component to facilitate cross-component comparison and triangulation.

1.6 Challenges and Limitations

Challenges

- Prevailing security concerns and accessibility constraints in parts of South Kordofan contributed to delays during data collection and affected access to some respondent groups.
- Obtaining the necessary approvals and administrative clearances required additional time, which affected the pace of data collection in certain locations.
- Given the operational context, data collection was conducted remotely to ensure continuity of field activities and facilitate engagement with respondents across the assessed localities.
- Accessing some key market actors, particularly wholesalers, proved challenging and required additional engagement and coordination to facilitate participation in the assessment.
- The assessment was conducted within a constrained timeframe with limited contingency for operational delays, reducing opportunities for additional follow-up interviews and data collection.

Limitations

- The findings represent a time-bound picture of the sorghum supply chain. Given the evolving nature of market conditions and broader contextual dynamics in Sudan, the relevance of specific observations may change over time.

- The analysis does not capture all seasonal variations affecting the sorghum market. Availability, prices, and market access can vary considerably between harvest and lean seasons, and findings should therefore be interpreted within the context of the assessment period.
- While the assessment provides qualitative depth on supply chain functionality, estimating overall supply chain capacity was outside the scope of the methodology and would require a stronger quantitative component.
- Due to limited availability of recent secondary literature on supply chain dynamics in South Kordofan, the analysis relies primarily on the perspectives and experiences of interviewed market actors and key informants.
- The assessment employed a purposive, non-representative sampling approach aimed at capturing specialised knowledge from supply chain actors. As a result, findings should be interpreted as indicative of the assessed market systems rather than statistically representative of all market actors within South Kordofan.

An aerial photograph of a river delta, likely the Niger River delta, showing a complex network of distributaries and a dense grid of small, rectangular agricultural plots. A large, light-colored, irregularly shaped area, possibly a floodplain or a large field, is visible in the upper right. A white rectangular box is positioned in the lower left, containing the word "Findings". A dark blue hexagon is located on the right side of the white box, partially overlapping the aerial image.

Findings

2 Context Overview

2.1 Diverging Market Systems in Western and Eastern South Kordofan

South Kordofan is characterised by a complex market environment shaped by a combination of conflict, displacement, and changing patterns of trade and mobility. These dynamics have influenced agricultural production, market access, and the movement of commodities across the state. Since April 2023, market actors have faced a range of operational challenges, including disruptions to trade routes, evolving access issues, and rising transportation costs, all of which have affected supply chain functionality.⁴

Within this context, the conflict has reinforced a long-standing west–east distinction in how South Kordofan's markets functioning. Kadugli, the state capital, anchors the western market axis together with Dilling and Habila, while Rashad anchors the eastern axis together with Abu Jubayhah and El Abbassiya. Although both market systems continue to operate under challenging conditions, they have experienced different patterns of connectivity and market access since the onset of the conflict in April 2023. Kadugli has faced periodic disruptions to surrounding trade routes and production linkages, while the eastern corridor linking Abu Jubayhah and Rashad has generally remained more connected, despite continued insecurity, checkpoint-related costs, and seasonal transport constraints.

These differing access conditions have shaped the structure of sorghum supply chain in both market hubs. Kadugli's market relies on a combination of local production from nearby farming areas, including Al-Bardab and surrounding villages, and supplies transported from outside South Kordofan where trade routes found to be operational. On the other hand, Rashad's market is more closely linked to the Abu Jubayhah corridor. Respondents indicated that much of the sorghum produced by farming households in the surrounding areas is retained for household consumption, limiting the volume available for commercial trade. As a result, market supply in Rashad is heavily dependent on inflows from established trading corridors. These differences in market integration, accessibility, and local production form an important backdrop to the distinct supply chain dynamics reported in the two market hubs.

2.2 Conflict and Security Dynamics

Conflict and insecurity continue to shape the operating environment for the sorghum supply chain in South Kordofan. Since early 2026, South Kordofan has emerged as one of Sudan's principal conflict frontlines, with intensified fighting around Kadugli, Dilling, and key transport corridors repeatedly disrupting agricultural production, commercial trade, and humanitarian access.⁵ Although the breaking of the sieges of Kadugli and Dilling in early 2026 temporarily improved the movement of commercial goods and humanitarian

⁴ OCHA, [Sudan Humanitarian Access Situation Report](#) (April – May 2023).

⁵ OCHA, [The risk of Famine \(IPC Phase 5\) persists in South Kordofan and North Darfur](#) (2026).

assistance, insecurity remains highly volatile, with renewed clashes, drone attacks, and road closures continuing to threaten market access and food security.⁶

These broader dynamics are reflected consistently across the findings of this assessment. Farmers described being unable to cultivate parts of their land because of insecurity and the presence of armed actors, while transporters identified routes through Alfayed, Um Baramita, and Khor Aldreeb as largely inaccessible due to the risk of looting and violence. Wholesalers in both Kadugli and Rashad similarly described checkpoint payments, both cash and in-kind. These security constraints have reportedly increased transport costs, reduced trader competition, and concentrated commercial movements along a small number of relatively secure corridors.

"Insecurity is the biggest change — you can get looted at any time. Before the conflict you could move anytime and it was safe."

— Sorghum Transporter KII, Rashad

Wholesalers also highlighted important differences across the state. The siege of Kadugli was consistently identified as the period when sorghum availability declined most sharply in the western market system since April 2023. While respondents acknowledged that conditions have improved since the reopening of access routes, they stressed that production, trade, and household food access remain well below pre-conflict levels. On the other hand, the Rashad market has continued to function through the Abu Jubayhah corridor despite existence of checkpoints, seasonal road deterioration, and persistent security risks, illustrating how contrasting conflict dynamics have produced two structurally different market systems within South Kordofan.

2.2.1 Institutional and Transactional Constraints

According to farmers, the most crucial institutional change affecting the sorghum supply chain is the reduced availability of formal agricultural financing. Most farmers and traders reported that support from the Agricultural Bank has become increasingly limited, with available assistance often restricted to diesel or in-kind Murabaha arrangements rather than comprehensive seasonal financing. This has altered financing practices across the supply chain, increasing reliance on self-financing, personal networks, and informal credit mechanisms. Respondents indicated that these shifts influence the timing of sales, storage decisions, and the bargaining position of different market actors.

At the same time, market actors operate within a complex regulatory and transaction-cost environment. Wholesalers and transporters described paying multiple charges associated with checkpoints, local authorities, and the Zakat Authority, through a combination of fixed cash fees and in-kind contributions.

⁶ Reuters, [Fatal drone strikes on civilians persist in Sudan's Kordofan](#), UN says (2026).

While the scale and application of these charges vary across locations and transport routes, respondents consistently identified them as an important component of trading costs.

Combined with frequent road closures, insecurity, and other administrative constraints, these costs affect the movement of commodities and increase the overall cost of market participation. Respondents indicated that the resulting costs are generally transmitted through the supply chain, contributing to higher marketing costs and affecting the efficiency of sorghum trade across South Kordofan.⁷

2.3 Supply Chain System Overview

Table 2: Overview of sorghum supply chain in Kadugli and Rashad market hubs

Supply system characteristics	Kadugli System	Rashad System
Primary local supply sources	Production belt (Al-Bardab and similar villages, approximately 1.5 hours from Kadugli) supplemented inflows from outside the state (Rui, Kus, areas near El Obeid/Kosti)	Limited local commercial production; Most local harvest is retained by households for own consumption; commercial supply is sourced via Abu Jubayhah
Main supply routes	Multiple historically used feeder routes, several of which are affected by seasonal environmental conditions: Al-Bardab – Kadugli Adara – Burno – Kuwaik – Kadugli Abu Al-Lakr – Kadugli	Single supply corridor: Abu Jubayhah – Tajmala – Tandek – Rashad
Market access constraint	Disruptions to access into Kadugli associated with siege-time road closures, fuel and spare-parts shortage, and seasonal factors	Dependence on the Al-Korra crossing, with no alternative route available; seasonal factors and difficult terrain
Role of brokers/assemblers' presence	Not captured in the KII sample	Trading volumes at approximately one-third of pre-conflict levels
Financial services	Traders primarily rely on personal capital; Millers provide credit services to a very limited number of households; use digital payments for larger transactions	Traders primarily rely on personal capital; Millers provide credit services to a very limited number of households; most transactions are increasingly conducted through Bankak given low physical cash liquidity

⁷ FEWS NET, [the risk of Famine \(IPC Phase 5\) persists in South Kordofan and North Darfur](#) (2026).

The South Kordofan supply system is reportedly characterised by two distinct market structures centred on Kadugli and Rashad. Kadugli benefits from a more diversified sourcing structure, drawing on both nearby production areas and markets located outside the state. This multi-source structure provides a degree of supply diversification, although transporters reported that market functionality continues to be affected by access constraints, periodic route disruptions, and shortages of fuel and spare parts. Several feeder routes continue to connect surrounding production areas with Kadugli, but their functionality varies according to road conditions and broader operating conditions.

The Rashad supply system relies almost entirely on external commercial inflows. Respondents indicated that much of the sorghum produced by farming households in the surrounding areas is retained for household consumption, limiting the volume available for commercial purpose. As a result, the sorghum supply depends on a single commercial corridor linking Abu Jubayhah, Tajmala, Tandek, and Rashad. The absence of alternative routes makes the functioning of this corridor critical to market supply. Within this system, the Al-Korra crossing serves as a key bottleneck, with transporters identifying it as one of the principal constraints affecting the movement of goods, particularly during the rainy season.

Financing arrangements across these two systems exhibit common characteristics. In both Kadugli and Rashad, both farmers and traders reported limited access to formal credit and a growing reliance on personal capital and informal financing mechanisms. This is consistent with the findings of the FAO Crop and Food Supply Assessment Mission (CFSAM), which reported that limited formal financing activities had taken place across South Kordofan since the conflict began.⁸ Regarding the payment mechanisms, in Kadugli, wholesalers continue to utilise bank transfers for larger transactions, while the respondents across the interviewed market actor groups in Rashad reported increasing use of digital payment platforms such as Bankak, partly reflecting broader liquidity constraints within local markets.

In general, these findings highlight important differences in sourcing patterns, market integration, and operational constraints across the two market systems. While Kadugli benefits from a broader supply base and multiple feeder routes, it remains sensitive to disruptions affecting access and transport costs. Rashad, meanwhile, depends on a single commercial supply corridor, making market functionality highly sensitive to disruptions affecting that route and its associated transit points. Respondents also reported reduced activity among intermediary actors within the Rashad corridor, with assemblers indicating that traded volumes remain below pre-conflict levels.

⁸ FAO, [Crop and Food Supply Assessment Mission \(CFSAM\)](#) (2025).

2.4 Supply Chain Actors and Roles

The sorghum supply chain in both market hubs reportedly follows a broadly similar structure, though the relative weight of each actor differs by locality. The table below summarises the role and reported status of each actor captured during interviews.

Table 3: The role of sorghum supply chain actors

Actor	Core Role	Current Status in the Target Hubs
Farmers	Cultivate sorghum; manage post-harvest storage; Channel harvested produce to markets through wholesalers, assemblers, or other intermediaries or directly to retailers	Active but at sharply reduced area in both hubs; production increasingly oriented towards household subsistence; release stock in phases driven mainly
Releasing stock Brokers / Assemblers	Aggregate grain from farmers or villages and link them to wholesale traders, extending the trading radius	Reportedly collapsed; sourcing primarily relies on wholesalers rather than farmers
Transporters	Move sorghum and inputs between production areas, markets and localities; absorb route, fuel and checkpoint risk	Active in both hubs; operating margins squeezed by fuel costs and multi-layered checkpoint fees
Wholesalers	Hold stock, finance bulk purchases, set resale timing, and supply downstream millers/retailers/households	Key price-setting actors in both localities
Millers	Process sorghum into flour and sell the flour to households and traders to a lesser extent	Active in both localities; describe themselves as a social as well as economic node — an informal indicator of household food stress
Food Vendors/restaurants	Purchase sorghum (often Tabet/Wad Ahmed varieties) for resale as prepared food	Active; raise meal prices in response to grain price rises, with mixed customer acceptance
Households	Final consumers; adapt purchase quantity, frequency, and variety to price and income	Highly price-sensitive in both localities; widespread meal-reduction and substitution coping strategies

The assessment identified that all major actors within the sorghum supply chain remain operational across both market hubs, although their roles and operating conditions have changed considerably. Farmers continue to form the foundation of the supply chain, but they reported a shift toward more subsistence-oriented production strategies. Following the outbreak of the conflict, constrained production led many farming households to prioritise meeting their own food needs over commercial sales, releasing grain to the

market mainly when cash requirements arise. This appears to have reduced the volume of marketable surplus available to traders and contributed to tighter local supply conditions.⁹

Changes were particularly identified among intermediary actors. Brokers and assemblers, who traditionally facilitated the movement of grain from dispersed production areas to wholesale markets, are currently only minimally represented in the supply chain. Respondents stated that these functions had declined compared to before the conflict, reducing market integration and limiting direct linkages between producers and larger trading networks. This situation has allowed wholesalers to assume a more central role in coordinating grain procurement, storage, and distribution. Transporters remain critical to maintaining commodity flows, although they continue to operate under conditions characterised by high fuel costs, checkpoint-related charges, and varying access constraints along key routes. Transporters are independent service providers that facilitate the movement of sorghum between actors at different stages of the supply chain, particularly between farmers and wholesalers.

Downstream actors provide additional insight into how these pressures are transmitted through the market system. Millers in both localities reported reductions in the quantities of grain brought for processing, while some also noted a decline in the number of regular customers. Food vendors described adjusting meal prices and portion sizes in response to rising commodity costs and changing consumer demand. At the household level, respondents reported adapting purchasing behaviour by reducing quantities purchased, changing purchase frequency, and substituting commodities where possible. Together, these findings suggest that constraints affecting production, trade, and transport continue to influence market functionality and shape household access to sorghum across South Kordofan.

3. Production and Inputs

3.1 Cultivated Area and the Shift Toward Subsistence Farming

Across both market hubs, farmers described sharp reductions in cultivated areas since the conflict began, consistently framed not as a strategic choice but as a forced retreat driven by insecurity and the cost of inputs. A Kadugli farmer who had previously expanded from one or two fields to as many as ten or twelve currently farms approximately two fields (about 20 feddans), explicitly stating that the family has shifted from commercial production toward primarily producing for household consumption. On the other hand, a farmer in Rashad reported that production had begun to recover as security conditions improved, with his seasonal production increasing to around thirty sacks as the improved security allowed him to access farmland that he had previously been unable to reach. Combined, these contrasting accounts illustrate that the relationship between security and agricultural production is dynamic: deteriorating security reduces the

⁹ FAO, [Special report – 2024 FAO crop and food supply assessment mission \(CFSAM\) to the republic of the Sudan \(2025\)](#).

area cultivated and market participation, while improvements in security can encourage farmers to expand production and gradually re-enter the market.

A long-time farmer from Al-Bardab village in Kadugli, with more than 35 years of farming experience, reported cultivating approximately five feddans under cowpea, sesame and sorghum before the conflict. However, cultivation has since been reduced to barely one feddan, which the respondent attributed to "the country's conditions." Under normal circumstances, the farmer estimated yields of 50–75 sacks per feddan, but in the most recent season harvested only around 40 sacks in total from the reduced cultivated area. Production was further constrained by an infestation of a pest locally known as buda¹⁰, which affected crops during the later stages of production.

"We farm around 5 feddans — part of it is cowpea, part is sesame, and part is sorghum for household consumption... We reduced significantly, based on the country's conditions. We farmed approximately one plot — just one plot, meaning barely a single unit."

— Sorghum Farmer KII, Al-Bardab village, Kadugli

This evidence suggests that reductions in cultivated area are likely to be associated with broader production constraints, including pest infestations, input shortages, labour challenges, and insecurity-related disruptions. These factors not only affect household production but may also influence the volume of sorghum entering local markets, with potential implications for supply availability and market functioning across the assessed market hubs.

3.2 Varieties and Seed Sourcing

Local landrace varieties reportedly dominated over improved or certified seed in both hubs. In Kadugli, farmers identified Karmaka as the preferred variety for cultivation, with a sub-variety known locally as Mugbash singled out by one farmer for its high yield and clean threshing properties, noting that "three-quarters of the grain turns out to be pure, clean grain". Farmers overwhelmingly replant from their own harvest, selecting the best ears at harvest and saving them for the following season, rather than purchasing seed, a pattern consistent with the broader retreat to subsistence-oriented, low-input cultivation. This reliance on farmer-saved seeds also reflects the limited availability and accessibility of improved seeds, despite ongoing efforts by humanitarian actors to strengthen seed systems. For instance, in June 2025, FAO launched a large-scale seed distribution campaign targeting 1.5 million farming households across 17 of Sudan's 18 states. With support from CERF, Switzerland, Qatar Fund for Development, and the European Union, FAO has distributed nearly 1,000 metric tonnes of sorghum, millet and okra seeds across several

¹⁰ Buda is a local name used in Sudan for a sorghum pest affecting mature grain.

states, and was procuring more than 3,000 metric tonnes of crop seeds to support nearly 330,000 households.¹¹

On the other hand, respondents reported availability and consumption consistently for Tabet, Wad Ahmed, and the red-grained Kulum varieties, which are consumed across both market hubs. Kulum/Feterita-type varieties are associated more with lower cost and feed/lower-income consumption, while Tabet and Wad Ahmed are associated with preferred household consumption and diabetic-friendly milling outputs. Recent research on sorghum value chains in Eastern Sudan confirmed that "light-grain colour structures commercial trade," with functional differentiation emerging across market segments: pasting quality is particularly important for sorghum used as a household staple, while fermentation strength is a key consideration in beverage markets. The same study highlighted that seed availability and storage-related traits reflect systemic delivery constraints that farmers are facing.¹²

3.3 Input Access

Fertiliser use is reported as essentially absent from rain-fed sorghum cultivation in both market hubs. One Kadugli farmer stated plainly that 'fertiliser is largely unknown here' outside of vegetable gardens using compost irrigation, and that mechanised land preparation has reverted to manpower because mechanisation are now prohibitively expensive (a tractor may cost billions of SDG). According to the 2025 Sudan Crop and Food Security Assessment Mission (CFSAM), agricultural inputs including fertilisers, pesticides, and herbicides were unavailable or insufficient across most states, with prices having increased dramatically compared to the previous year.¹³ The conflict pushed farming systems into disarray: in large parts of the country, fields lie empty, and the cost of basic inputs significantly soared.¹⁴

Pesticide access is similarly constrained, a farmer described losing a meaningful share of the harvest to the buda pest specifically because no pesticide was available at the critical moment. To mitigate these issues, different initiatives have taken place including the Sustain Sudan project which initially focuses on fertilisers but plans to expand to seeds and crop protection products in 2026.¹⁵ Despite these efforts:

- Seeds: Almost entirely retained/local rather than purchased or certified.
- Fertiliser: Effectively unavailable for rain-fed sorghum in both localities; used only on irrigated vegetable plots.
- Pesticides: Unavailable or unaffordable at the moments they are most needed (pre-harvest pest outbreaks; post-harvest storage protection).

¹¹ FAO, [Sudan: FAO scales up emergency response with seed distribution campaign targeting 7.5 million people](#) (2026).

¹² Frontier, [Market-segmented target product profiles for realigning sorghum breeding, seed systems, and value chains in Eastern Sudan](#) (2026).

¹³ FAO, [Special report – 2024 FAO crop and food supply assessment mission \(CFSAM\) to the republic of the Sudan](#) (2025).

¹⁴ CIMMYT, [Building Resilience in Sudan: Sustain Sudan Project Launches with Strong Partner Commitments](#) (2025).

¹⁵ CIMMYT, [Building Resilience in Sudan: Sustain Sudan Project Launches with Strong Partner Commitments](#) (2025).

- Mechanisation: Reverted to manual hand-hoe cultivation in Kadugli given tractor cost; not separately documented for Rashad in this round.

3.4 Harvest Allocation and Support Needs

Where farmers described how they allocated their harvest, the dominant pattern was that most production was retained for household consumption, with only limited quantities sold to meet immediate cash needs or repay debts. However, one Kadugli farmer reported allocating roughly three-quarters of production to sale specifically to fund his children's expenses while in displacement, with only a small residual retained for household consumption and seed.

Asked directly what support would help, farmers across both hubs converged on a similar: seeds and cash to cover labour cost. One respondent stressed that support "should come early not in August or September", i.e. before the planting window rather than after, reflecting a recurring frustration that assistance, where it exists at all, tends to arrive too late in the season to influence planting decisions.

"The most important support would be, for example, providing seeds and giving some cash so that you can hire workers. That is the kind of support that could actually help. And it should come early — not in August or September."

— Sorghum Farmer, Al-Bardab village, Kadugli (KII)

A 2026 Food Security Cluster Advocacy Note stated that "conflict-affected communities consistently prioritise agricultural support alongside food aid, viewing self-sufficiency as essential to their dignity and long-term recovery". Given that seeds, tools, and livestock serve as lifelines for millions, the provision and restoration of access to these inputs "is vital to saving lives and stabilising supply chains". In 2025, a USD 17 million investment in seeds successfully contributed to 22.2% of national sorghum production, yet significant funding shortfalls for 2026 threaten to further deteriorate local production.¹⁶

4. Transport, Logistics, and Market Access

4.1 Transport Routes

The impact of transport disruption on sorghum supply chain is direct and immediate. Wholesalers reported that sending supplies into distant areas is expensive and risky, with small-scale subsistence farmers particularly affected. The control of the key logistical routes by armed groups directly prevents movements and access to remote farmers and traders. The control of key logistical routes by armed groups directly restricts movement and access to remote farmers and traders, creating fundamental choke points. The situation is particularly acute in conflict-affected areas such as South Kordofan, where insecurity and

¹⁶ FSC, [Advocacy Note on Emergency Agricultural Support in Sudan \(2026-2028\)](#) (2026).

interference at checkpoints have a direct impact on trade safety and the movement of goods, including agricultural produce and essential inputs.¹⁷ In October 2025, for instance, supply chain problems were reported to have increased due to security concerns, high transport costs, exchange rate pressures, and limited cash access.¹⁸

Beyond conflict-related constraints, seasonal factors are critical compounding issues. Heavy rains during the June-September season¹⁹ severely hinder inter-market activities by deteriorating already limited road infrastructure. According to transporters interviewed, flooding frequently damages roads and reduces transport reliability, increasing travel times and transport costs while constraining the movement of goods, particularly sorghum. Respondents across both market hubs consistently identified rainy-season road conditions as a major logistical challenge that reduces the availability and accessibility of sorghum.

4.1.1 The Rashad Corridor: Dependence on a Single Transport Route

All interviewed logistics operators in Rashad consistently described the Abu Jubayhah route as the only viable route to markets outside Rashad: Abu Jubayhah → Kanjara/Tajmala → Tandek → Truba → Rashad, a corridor of roughly 56 km. There is no real alternative, as one transporter described it; “there is no way, it's just one road”. This makes the condition of this single corridor disproportionately important to the entire eastern South Kordofan supply system. As noted by the interviewed transporters, this dependence on a single, fragile route may cause further vulnerability, as any disruption along this corridor directly threatens the flow of sorghum from production zones in South Kordofan to processing and consumption markets in Rashad and beyond.

The corridor's strategic importance extends beyond its current role as a transport route, as the surrounding areas were previously important sorghum producing zones before April 2023. served as major sorghum producing area before April 2023. Following the outbreak of the conflict, however, respondents reported a decline in cultivated area and production, with much of the remaining harvest increasingly retained for household consumption and only limited volumes available for commercial sale. This has reduced the corridor's role as a source of commercial supply and contributed to a more localised market system, with fewer linkages to wider inter-state trade networks.

¹⁷ Al Jazeera, [Control, choke points: The battle lines in southern Sudan](#) (2025).

¹⁸ IFPRI, [Essential Commodities Prices, Availability, and Market Actors' Perceptions](#) (2025).

¹⁹ Ministry of Irrigation and Water Resources, [Seasonal Rainfall and Temperature Forecasts](#) (2025).

Table 4: Characteristics of the Rashad sorghum supply chain corridor

Route	Road Type	Travel Time by Car	Checkpoints	Seasonal Closure
Abu Jubayhah → Tajmala	Mostly dirt, some graded sections	1–1.25 hrs (dry) / 3–4 hrs (rainy)	3 main and 1–2 informal	No full closure; very slow at the Al-Qura/Al-Korra muddy crossing
Tajmala → Tandek	Mixed graded/dirt; an improvised stream crossing (described as a slide rather than a built bridge)	Approximately 1.5 hrs (dry); longer during the rainy season	A total of 4 main checkpoints between Tajmala and Rashad	The rainy season causes transportation delays, increasing travel time by 2–3 hours, and in some cases to more than one day.
Tandek → Rashad	Mixed graded/dirt	~2 hrs	A total of 4 main checkpoints between Tajmala and Rashad	Road continues but degrades sharply when wet
Entire route: Abu Jubayhah → Rashad	Mostly mixed graded/dirt	2–3 hrs (dry) / 3–6 hrs (rainy)	6–7 total (3–4 fixed and informal)	The rainy season significantly increases travel time and causes delays

"This road was part of a Ring Road project that wasn't finished — the first layers were made but it was abandoned, and people just started using it as it is. It's very difficult to drive on, especially when it rains; a trip that should take an hour can take up to 6 hours to ensure the safety of the vehicle and the cargo."

— Sorghum Transporter, Rashad (VOP)

The Al-Korra crossing, a stream crossing described locally as a slide rather than a built bridge, is the corridor's most critical vulnerability. During the rainy season, this crossing becomes extremely difficult or impassable, with muddy conditions and flooding forcing transporters to delay trips, reduce loads, or stop entirely. This bottleneck is particularly crucial because the first rain in June typically signals the start of the planting season, a period when farmers need seed and other agricultural inputs.

In response to this predictable seasonal constraint, transporters have adopted an anticipatory logistics strategy by front-loading deliveries before the rainy season. During the harvest period, they increase the number of trips to move sorghum from farms to storage facilities and markets while simultaneously

transporting seed and other agricultural inputs to production areas before access deteriorates. This prepositioning of supplies represents an important coping mechanism within the supply chain, allowing actors to partially mitigate the effects of unreliable transport infrastructure and seasonal access constraints. However, it also concentrates transport demand within a narrow time window, creating logistical bottlenecks and increasing pressure on transport capacity. If this pre-rain window is missed or shortened, farmers may experience delays in accessing agricultural inputs, potentially affecting planting decisions for the entire season.

Despite this adaptation, the corridor remains highly vulnerable during the rainy season. Respondents reported that some transporters suspend operations altogether when the Al-Korra crossing becomes impassable. As a result, production areas become isolated from markets, while consumption areas face reduced access to agricultural commodities. Delays of several hours or, in some cases, more than a day at this single bottleneck can disrupt delivery schedules, increase operational costs, and contribute to higher transport and input costs. The absence of an all-weather crossing leaves the regional agricultural supply chain highly exposed to seasonal weather conditions, a vulnerability that may be exacerbated by increasingly erratic and intense rainfall patterns associated with climate change across the Sahel.

Checkpoints add another layer of friction. Transporters reported a total of 6–7 total checkpoints along the full route (3–4 fixed plus 1–2 informal), with total fees amounting to approximately 50,000–60,000 Sudanese pounds per trip. These fees are not fixed or regulated; they are negotiated or imposed on the spot, creating uncertainty and eroding already thin profit margins. In a context where armed actors and informal groups control key transport nodes, checkpoint fees represent a direct tax on agricultural trade, with informal payments increasing the overall cost of moving sorghum from farm to market. These informal payments increase the effective cost of moving sorghum from farm to market, raising overall marketing costs.

Respondents reported that the resulting increase in transport costs and uncertainty has reduced the participation of some traders, particularly those operating with limited capital. With fewer traders competing to purchase grain, farmers may have fewer marketing options and weaker bargaining power, potentially allowing the remaining wholesalers and traders to negotiate lower farmgate prices while passing part of the increased costs on to consumers through higher retail prices.

Capacity and frequency of trips vary by vehicle and respondent but follow a consistent seasonal pattern. Transport volumes peak ahead of the rainy season, as transporters front-load deliveries in anticipation of the Al-Korra crossing becoming difficult, before declining sharply during the rainy season.

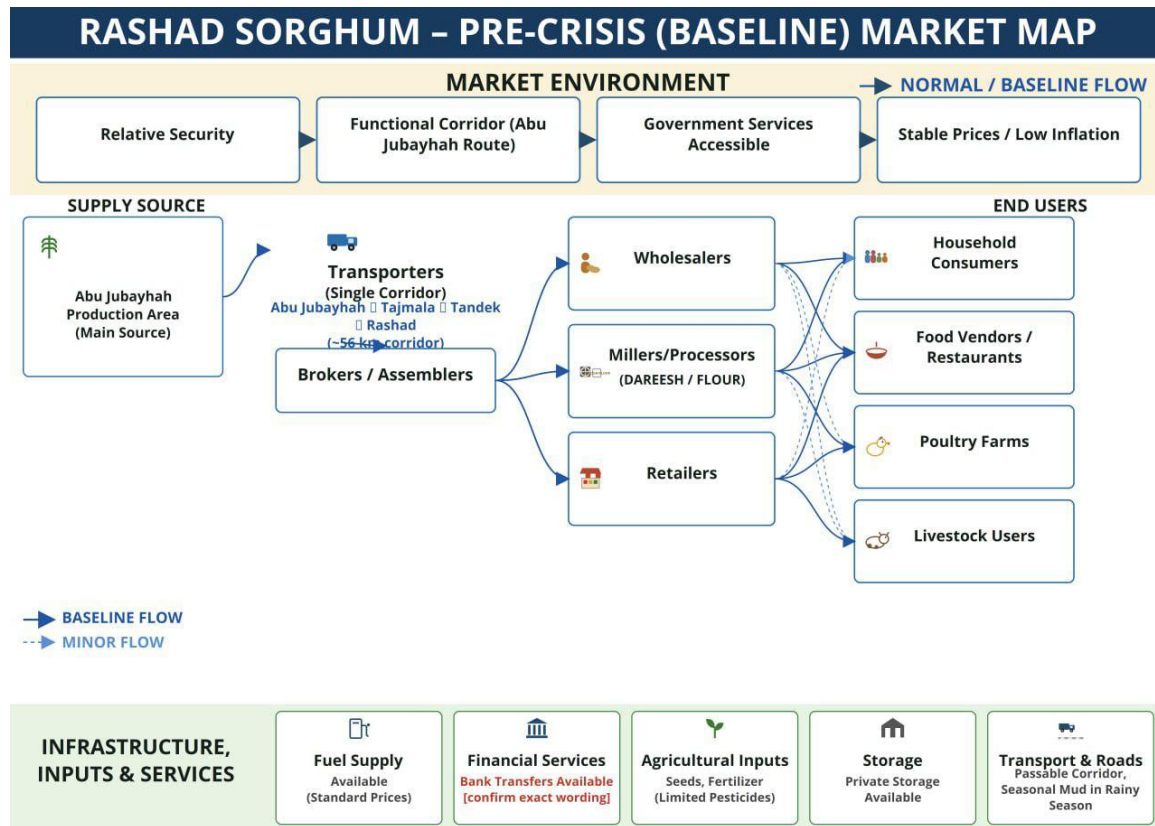
Table 5: Seasonal trend of the Rashad sorghum supply chain corridor

Period	Trips per Month (range across respondents)	Approx. Volume per Trip	Main Constraint Cited
Harvest peak / pre-rains	7–16 trips	Approximately 80–88 sacks depending on vehicle size	High demand from traders and farmers; transporters front-load before the rains
Lean season	3–4 trips	11–12 tons, or 40–44 sacks	Lower demand; more dependent on wholesale trader orders
Rainy season	0–2 trips	Sharply reduced; some respondents report stopping entirely	Al-Korra crossing becomes very difficult or impassable; mud, potholes, stream flooding

The single road's poor condition and frequent impassability may leave production areas periodically cut off from markets. In Rashad, during the harvest season, when transport activity increases to move available supplies before seasonal access constraints intensify, limited road reliability can increase transaction costs and reduce market access for farmers. This may affect farmgate prices where traders face higher operational costs or limited access to the production areas. During the lean season, transportation constraints, combined with reduced availability of sorghum, could contribute to higher consumer prices through reduced reliability of supply flows. Road conditions and access constraints can significantly affect market supply and price formation, particularly in isolated areas. In effect, the Rashad corridor's fragility locks farmers into a cycle of low returns and high risk, undermining the viability of sorghum production as a livelihood strategy.

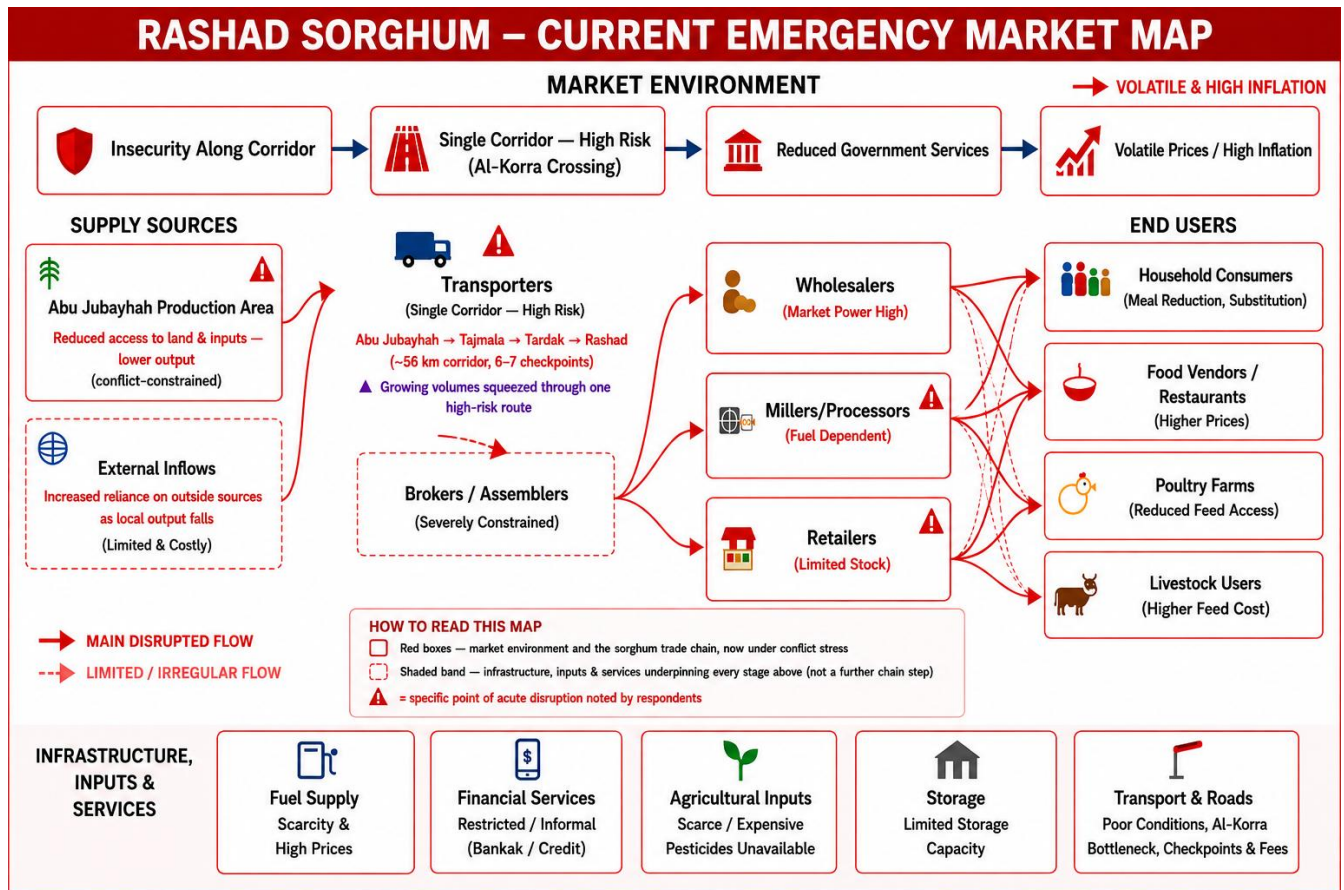
i. Rashad Sorghum Pre-Crisis Market System

The following map presents the baseline structure of the Rashad sorghum market before the conflict. Unlike Kadugli, Rashad relied primarily on commercial inflows from Abu Jubayhah, transported through a single main corridor before reaching brokers, wholesalers, millers and retailers. Local production existed but most harvested sorghum was retained for household consumption rather than marketed. Financial transactions relied on personal capital, bank transfers and informal credit arrangements, while agricultural inputs and transport services functioned typically. Although the market depended heavily on one transport corridor, regular road access and stable security conditions supported the relatively efficient movement of grain to household consumers, food vendors, poultry producers and livestock owners.



ii. Rashad Sorghum Emergency Market System

This map illustrates the highly disrupted sorghum market system in Rashad under the current conflict conditions. The entire commercial grain supply is dependt on the Abu Jubayhah–Tajmala–Tandek–Rashad corridor, with the Al-Korra crossing representing the principal physical bottleneck. Insecurity, checkpoint taxation, route closures and deteriorating roads have significantly increased transport costs and reduced market integration. Brokers and assemblers have experienced a sharp decline in trading activity, reportedly due to reduced working capital and lower direct procurement from farmers. Wholesalers have gained greater market influence as competition has declined, while millers continue operating under severe fuel shortages and irregular grain supplies. Retailers reported that they hold smaller inventories, food prices have increased sharply, and households described reduced affordability, meal reduction and food substitution. Because the market depends almost entirely on a single transport corridor, disruptions rapidly affect all actors simultaneously, making Rashad substantially more vulnerable to supply shocks than Kadugli.



4.1.2 The Kadugli Access Picture: More Routes, Equally Fragile

Kadugli draws on a more varied set of feeder routes than Rashad, but each carries its own seasonal or security-related vulnerability. The Al-Bardab → Kadugli route (the production-belt corridor used by the long-time farmer respondent quoted in Section 3) covers roughly 4 km of clay road before joining a paved gravel road, with a typical travel time of approximately 1.5 hours under normal conditions. However, the route becomes intermittently impassable during periods of heavy rainfall, when streams overflow and the clay road becomes difficult to traverse until conditions improve. The Adara → Burno → Kuwaik → Kadugli corridor and the Abu Al-Lakr → Kadugli corridor (used to bring grain from further west) both feature similar gravel/dirt mixes, multiple checkpoints, and a roughly May–October closure window on the most exposed segments.

Table 6: Characteristics of Kadugli sorghum supply chain corridor

Route	Travel Time by Car	Seasonal Closure and Road Characteristics
Al-Bardab → Kadugli	Approximately 1.5 hours (3 checkpoints: Balandiya, Tabaldiya, Al-Shaeer)	Seasonal closure during heavy rains; crops may be eaten by animals if transport is delayed
Adara → Kadugli (via Burno, Kuwaik)	Approximately 3.5 hours	Open year-round but heavily affected by mud; multiple checkpoints
Abu Al-Lakr → Kadugli (full route)	Approximately 6 hours	Seasonal closure roughly May–October; mostly dirt with mud, sand, rough terrain
Om Adara / Abo Likri → Kadugli	Approximately 2.5–6 hours depending on segment	Gravel/sandy mix; one segment has a defined seasonal closure

More consequential than any single feeder route, however, is the city-level disruption associated with the siege of Kadugli. Following the outbreak of the conflict in April 2023, recurrent road closures and insecurity periodically have periodically isolated the city from surrounding production areas and external markets, disrupting the movement of people and commodities for extended periods. Respondents distinguished these conflict-related disruptions from the routine seasonal road deterioration that has historically characterised the area and has generally been considered manageable. As one miller explained, during periods when the city was effectively cut off, ‘the roads are not safe and there are not roads that bring it [sorghum]’, in one miller's words.

Respondents also described a shift in the geographical sourcing of sorghum supplied to Kadugli markets. Before the conflict, the city was primarily supplied by nearby production areas, including Al-Kwiek, Barnu, Dami, Al-Taba, Umm Fadada, and rural areas further south and east. However, these areas are currently described as conflict-affected and as producing substantially lower marketable surpluses. As a result, traders increasingly source sorghum from more distant sources including areas outside South Kordofan State entirely such as Rui and Kus.

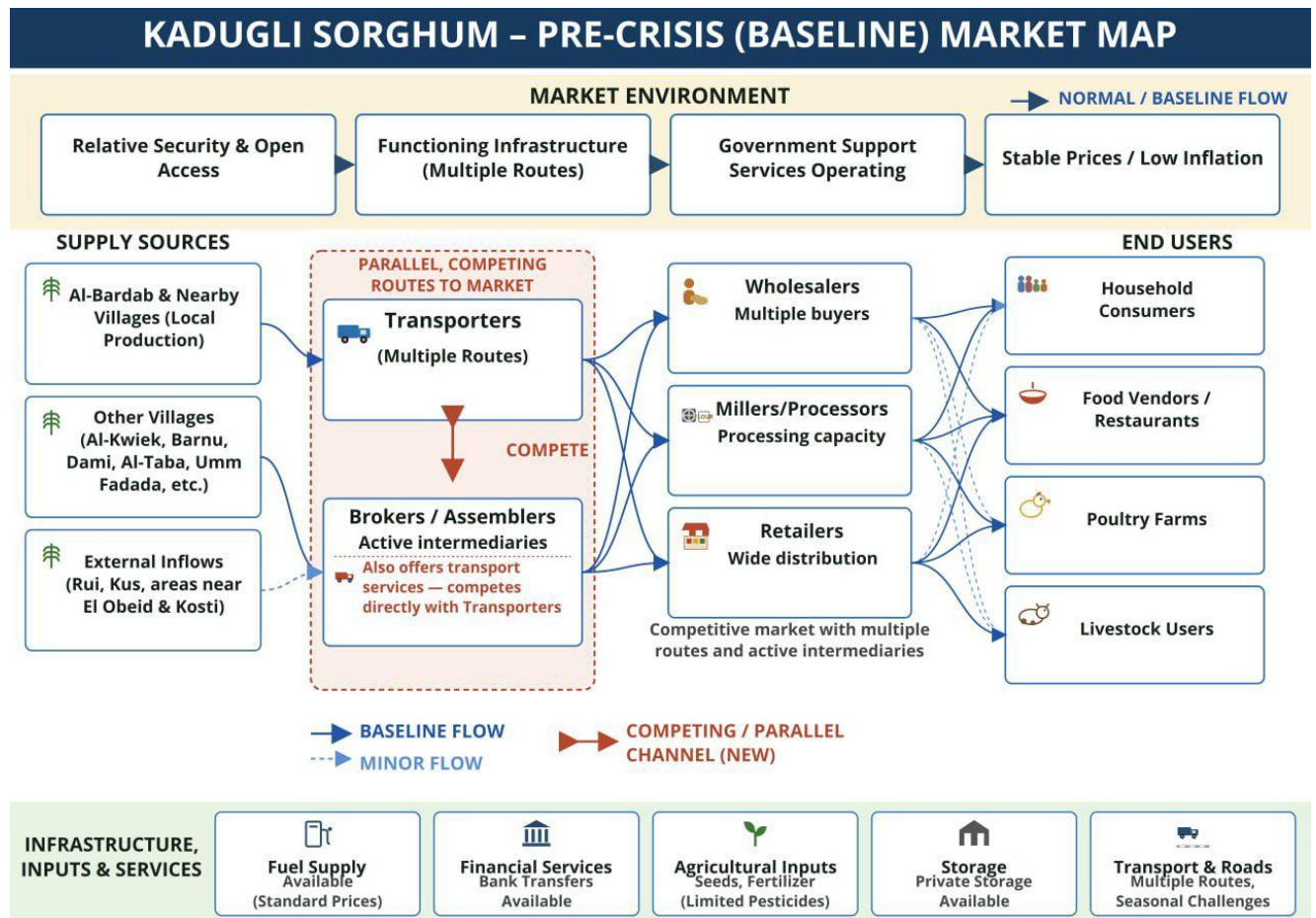
“Almost all the sorghum we eat now comes from outside areas. Before the war, it came from the outskirts of the city... Agricultural production here has become almost zero. The sorghum we eat in Kadugli now comes from elsewhere, including Rui and Kus, outside the state.”

— Sorghum Farmer, Kadugli (KII)

i. Kadugli Sorghum Pre-Crisis Market System

The following map illustrates the typical functioning of the sorghum market system in Kadugli before the conflict. The market was supplied through a combination of local production from surrounding villages and

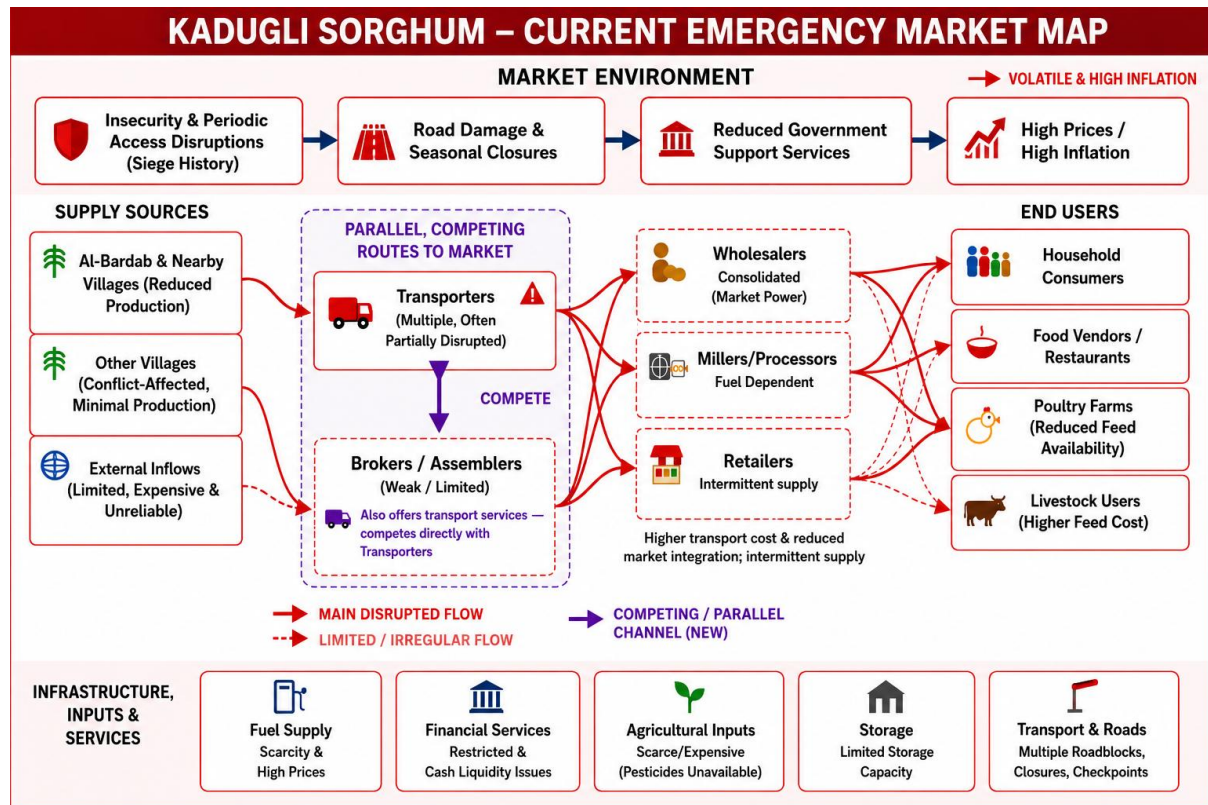
inflows from neighbouring production areas outside South Kordofan. Farmers sold grain either directly or through brokers and assemblers to wholesalers, millers and retailers. Multiple feeder roads created alternative supply routes, providing resilience against localised disruptions. Transport services, banking facilities and agricultural support services were largely operational, while wholesalers maintained relatively competitive market relationships. Household consumers, livestock owners, food vendors and poultry producers accessed sorghum through retailers, millers and wholesalers under relatively stable prices and predictable seasonal supply conditions.



ii. Kadugli Sorghum Post-Crisis Market System

This map shows how conflict has transformed the Kadugli sorghum market system. Local production has declined significantly due to insecurity, displacement and reduced cultivation, while external inflows have become increasingly unreliable and expensive. Transport remains possible through multiple routes, but road deterioration, seasonal closures, checkpoint taxation and fuel shortages have substantially increased transport costs. The number of brokers and assemblers has declined, reducing the number of intermediary actors involved in aggregating grain from dispersed production areas and weakening linkages between producers and larger markets. As a result, remaining supply chain actors, particularly wholesalers with greater access to capital, storage capacity, and external supply networks, have assumed a more central role

in coordinating grain procurement and distribution. Milling operations continue but face high operating costs because of fuel scarcity and reduced access to spare parts. Households have faced reduced purchasing power, higher food prices and increasing dependence on imported grain.



4.1.3 Transport Costs and the Checkpoint Burden

Transport cost figures are volatile and vary by respondent, route segment, and timing, but the structural pattern is consistent across both localities: fuel is consistently identified as the single largest cost component, checkpoint fees are a significant and recurring secondary cost, and both have risen sharply relative to a year earlier. These cost increases are not merely anecdotal; they reflect broader macroeconomic issues and conflict-induced disruptions that have fundamentally altered the economics of agricultural transport in Sudan.

Table 7: Transport costs along the two sorghum supply chain corridors

Cost Item	Rashad — Illustrative Figures	Kadugli — Illustrative Figures
Cost per sack	Transporting one sack costs approximately 7,000–10,000 SDG, while the total cost of a trip is approximately 1.2–1.3 million SDG	45,000–50,000 SDG per sack on the Kortala–Kadugli route, vs. 10,000–15,000 SDG a year earlier
Fuel cost	Cited explicitly as the most expensive single input; fuel for a single trip costs approximately 220,000–230,000 SDG	Described as ‘the most expensive [item] and so expensive compared to the trip’
Checkpoint fees	Negotiable, not fixed by clear criteria; one respondent cites 7 checkpoints at ~10,000–11,000 SDG each; another cites ~50,000–60,000 SDG total across the full Abu Jubayhah–Rashad route	Fees described as changing constantly and not fixed; negotiable in practice
Total trip cost (full route)	Approximately 250,000 SDG–3.5 million SDG, depending on vehicle size and route length	~700,000 SDG–2 million SDG, depending on vehicle size and route length

As for trip costs, unlike per-sack costs, total trip cost does not vary systematically by market hub, reportedly due to strong influence of journey-specific characteristics, particularly vehicle capacity and route length, which varied considerably both within and across the assessed market hubs. For example, the Rashad findings alone included both a small shipment on a brief feeder leg and an 85-sack capacity truck executing a long-haul journey. Consequently, these figures represent the realistic operational spectrum reported by active transporters rather than a fixed regional contrast.

Fuel costs have risen across Sudan, driven by the combined effects of conflict, currency devaluation, and the removal of fuel subsidies since April 2023. The Sudanese pound has lost more than 500% of its value since the outbreak of war in April 2023²⁰, and fuel prices have increased correspondingly. In some areas, diesel prices have tripled or quadrupled during the same period. Fuel is the most expensive single input for transporters, consuming a significant portion of total trip revenue. In areas far from fuel distribution points, the price per litre is even higher, as transporters must factor in the cost of bringing fuel to remote locations. The escalation of conflict activity and related disruptions in the Middle East since March 2026, alongside the resulting global fuel market pressures, has further strained fuel market in Sudan, impacting availability and contributing to price increases. For instance, official market prices increased by 15 percent for gasoline and 55 percent for diesel month-on-month on the official market in April 2026, while year-on-year hikes ranged

²⁰ The Print, [Sudan pound suffers as de facto UAE flight ban hits gold exports](#) (2026).

from 83-144 percent across the two fuel types.²¹ The implications for agricultural supply chains are profound. Higher fuel costs might have caused the increases in transport expenses, which could be reflected in higher per-sack transport rates and wider price spreads between production areas and consumer markets. However, the extent to which these additional costs are absorbed by farmers, traders, or consumers depends on market dynamics, including bargaining power, competition among buyers, and farmers' ability to access alternative markets. In areas where farmers face limited market access and reduced competition among traders, higher transport costs may place downward pressure on farmgate prices as traders seek to maintain margins, while consumers face higher retail prices for sorghum. These dynamics can disproportionately affect low-income households, who often spend a larger share of their income on food.

Checkpoint fees are explicitly described as negotiable rather than fixed by tariff, which may introduce unpredictability into trip costing. Transporters report that fees vary based on the type of cargo, the perceived ability of the transporter to pay, the number of checkpoints encountered, and even the mood or demands of the armed actors manning the checkpoint. This lack of transparency and predictability makes trip costing a matter of estimation rather than calculation, adding a significant risk premium to transport rates. The number of checkpoints varies substantially between routes. Along the Rashad corridor, transporters reported up to 7 total checkpoints, with fees ranging from 10,000 to 11,000 SDG per checkpoint, or approximately 50,000–60,000 SDG total for the full route. In Kadugli, the situation is even more opaque: fees are described as changing constantly and remaining unfixed, with transporters forced to negotiate on the spot.

In some cases, transporters noted that the allocation of transport costs between wholesalers and transporters is a point of friction. Fuel and checkpoint costs are initially borne by the transporter and passed through into the per-sack transport rate. However, because these arrangements are rarely governed by formal contracts, the allocation of unforeseen costs, including unexpected checkpoint fees and road disruptions, is negotiated on a case-by-case basis. As a result, transporters may absorb additional costs or seek to recover them through higher transport charges, while wholesalers bear the consequences of delays, reduced supply, or increased transport prices. This ad hoc allocation of costs and risks increases transaction costs and undermines trust between actors.

²¹ FEWS NET, [Sudan Key Message Update: Emergency and risk of Famine persist in North Darfur and South Kordofan, May - September 2026](#) (2026).

4.1.4 Capacity, Frequency, and Cargo Loss

Vehicle capacity varies considerably across the two supply chains, reflecting differences in road conditions and transport routes. On the Kadugli feeder routes, smaller trucks typically carry approximately 75 sacks, while transporters operating on the Rashad corridor more commonly use larger jumbo trucks capable of carrying 118–140 sacks. Across both localities, however, vehicle utilisation is primarily constrained by transport demand rather than carrying capacity. Transporters frequently reported operating below full capacity when transport demand is weak and often returning with empty or only partially loaded vehicles because backhaul cargo opportunities are limited. This limited transport demand appears to reflect the constrained purchasing capacity of traders as well as the limited availability of marketable sorghum, since most farmers interviewed produce mainly for subsistence rather than generating substantial market surpluses. Seasonal conditions and safety issues could be associated with maintaining large inventories may further reduce the volume of sorghum traded and the demand for transport services.

Cargo loss and damage during transit are generally reported to be uncommon within South Kordofan itself. However, respondents consistently distinguished between movement within the state and longer-distance transport from external production areas, where the financial consequences of cargo loss or confiscation are considered substantially greater and are typically borne entirely by transporters. Rather than accidental losses, transport-related risks are more commonly associated with checkpoint enforcement and administrative requirements. One transporter in Rashad described having 25 of 40 sacks confiscated at a checkpoint in Abu Jubayhah because they lacked the required documentation, resulting in an investigation and significant delays. This illustrates how documentation requirements can become an additional and unpredictable source of delay and financial risk along key supply corridors.

"Yes it got confiscated before in Abu Jubayhah — I had 40 sacks and 25 of them didn't have the paperwork. I was taken in for investigation and the trip got delayed."

— Sorghum Transporter KII, Rashad

5. Market Dynamics and Prices

5.1 Farmgate Price Formation

Farmers in both Kadugli and Rashad consistently described a marketing environment in which they occupy the weakest position in the supply chain. Due to seasonally increased availability, post-harvest prices were reportedly at their lowest, when farmers faced urgent cash needs to repay debts, cover threshing and labour costs, and meet household expenses. Although sorghum prices generally increase as stocks decline throughout the marketing season, most farmers reported that they were unable to benefit from these seasonal gains because financial pressures compelled them to sell shortly after harvest.

The timing disadvantage is reinforced by weak bargaining power. Farmers reported having little influence over prices, while the disappearance of intermediary buyers following the conflict has further reduced competition. Combined with less favourable pre-harvest financing arrangements, these factors have created a structurally unequal marketing environment in which farmers are unlikely to benefit fully from seasonal price increases, as farmers stated.

"Compared to before the war, were there traders or middlemen between the large traders and the farmers who used to buy sorghum, but are no longer present today? Yes, there were traders, they were called capitalist traders... And today they have disappeared, not even a trace remains."

— Sorghum Farmer KII, Kadugli

5.2 Wholesale and Retail Price Levels

Reported prices vary widely across respondents and market hubs, consistent with a market experiencing genuine price volatility rather than a single stable price level. In Kadugli, price pressures under siege conditions are particularly acute. One wholesaler cited a recent government-announced reference price of approximately 170,000 SDG per sack. However, the WFP Market Monitor for November 2025 noted that Kadugli's market data had to be excluded from national averages due to severe disruptions and sharp price spikes, with sorghum prices having surged by 212% compared to June 2025 and 140% year-on-year.²² Household-level malwa (a local measure of approximately 3 kilograms) prices also showed considerable volatility: as of August 2025, the price at government-run centers was approximately 12,000 SDG per malwa, while black market prices reached 30,000 SDG.²³

In Rashad, wholesale sack prices are cited in the 85,000–120,000 SDG range at the time of interview, against roughly 50,000–60,000 SDG six months earlier and 100,000–120,000 SDG a year earlier when availability was tighter, illustrating that price levels in this market appear to be driven as much by intermittent scarcity as by a steady inflationary trend. Nationally, the WFP reported that as of June 2025, the average sorghum price was SDG 1,640 per kilogram, a 12% monthly increase and 63% year-on-year surge. By November 2025, the national average had fallen to SDG 1,431 per kilogram due to seasonal harvest effects, but prices in conflict-affected states like South Kordofan remained severely elevated. The WFP's April 2026 Market Monitor further confirmed that South Darfur recorded the highest sorghum price, while the overall market basket cost in Abassiya, South Kordofan, reached a staggering 362,467 SDG.²⁴

One Rashad wholesaler reported a specific source-to-market margin: sorghum costing approximately 65,000 SDG per sack at the source reported to reach approximately 85,000 SDG once it reached at the

²² WFP, [Market and Food Security Overview](#) (April 2026).

²³ Atar, [July's Promise, July's Curse](#) (2025).

²⁴ WFP, [WFP Sudan Market Monitor](#) (November 2025).

wholesalers' facility in Rashad, a margin of about 20,000 SDG per sack that covers transport, checkpoint fees.

Table 8: Price formation in Kadugli and Rashad market hubs

Indicator	Kadugli	Rashad
Government/reference price/sack	Approximately 170,000 SDG (reported by one wholesaler citing a recent government announcement)	Not reported separately
Current wholesale price/sack	Wide range reported (from approximately 85,000 SDG)	Approximately 85,000–120,000 SDG
Six months prior to data collection (December 2025)	Not reported separately	Approximately 50,000–60,000 SDG
One year prior to data collection (May 2025)	Not reported separately	Approximately 100,000–120,000 SDG (during period of scarcity)
Household retail price/malwa	Approximately 7,000 SDG (sorghum); 10,000 SDG (millet)	Approximately 4,000–5,000 SDG

5.3 Price Transmission and Seasonal Demand

Cost increases at the transport level are reported to be transmitted through the supply chain, although the extent to which individual actors absorb these costs varies. Transporters reported adjusting per-sack transport charges in response to rising fuel prices ("if the sack cost 70,000 SDG you must say 80,000 SDG, to increase your manifesto rate," as one Kadugli transporter explained). Similarly, millers indicated that milling fees have increased in response to higher fuel costs, although one respondent noted that government oversight temporarily limited fee increases following a public consultation. Food vendors also reported increasing meal prices in response to rising grain costs, although respondents indicated that consumers complained about these price increases.

Seasonal demand and price patterns closely follow the agricultural calendar in both market hubs. Respondents consistently identified the lean season (approximately August–September), immediately preceding the main harvest, as the period of greatest demand pressure and highest prices. During this period, household food stocks are largely depleted, increasing reliance on market purchases, while the rainy season simultaneously constrains commodity movements through reduced road accessibility and transport reliability. Although transporters reported increasing movements ahead of the rainy season by pre-positioning commodities before access deteriorates, transport volumes decline once heavy rains begin, contributing to tighter market supply. By contrast, the post-harvest period (approximately October–March, with slight variation between localities) was described as the period of greatest commodity availability and

relatively lower prices, reflecting increased market supply following the harvest and improved trading conditions.

5.4 Buyer-Seller Relationships and Market Information

Trading relationships in both localities are described as long-standing and largely trust-based, particularly between wholesalers and downstream market actors. Respondents reported that wholesalers commonly extend short-term trade credit (typically five to six days, according to one Kadugli wholesaler) to established customers, including millers, retailers, and market traders, based primarily on personal reputation rather than formal contracts. As one respondent explained, "we do not issue receipts or write cheques... it is mainly based on personal trust." On the other hand, transactions with unfamiliar buyers generally require immediate cash payment. These findings suggest that access to trade credit depends primarily on established, relationship-based and trust-driven commercial arrangements.

Market information is also exchanged primarily through informal channels. Rather than relying on formal market information systems, respondents reported monitoring harvest conditions, trader purchasing behaviour, and commodity availability to anticipate future price movements. One Kadugli farmer explained that when larger producers achieve good harvests and traders begin purchasing and storing grain in significant quantities, other market participants interpret these activities as signals of future price increases and adjust their marketing decisions accordingly.

5.5 Market Structure and Power

Findings suggest that wholesalers occupy the most critical position within the current sorghum market system in both market hubs. Respondents reported a reduction in the number and activity of brokers and assemblers, alongside greater reliance on wholesalers for grain procurement, storage, and distribution. This shift has increased the centrality of wholesalers within the supply chain, particularly in coordinating commodity flows between producers and downstream market actors. The financing arrangements reported by respondents further reinforced this interpretation. With limited access to formal credit, wholesalers rely primarily on personal capital while extending short-term trade credit to established buyers. These trust-based relationships facilitate continued market transactions despite liquidity constraints and limited cash availability across both market systems. By providing this financing function in the absence of formal credit, wholesalers become an essential source of finance for downstream traders, increasing those traders' dependence on wholesalers and reinforcing the latter's central role within the supply chain. This concentration of financial and market influence may also reduce market resilience, as disruptions affecting wholesalers could have cascading effects throughout the supply chain.

This is consistent with farmers' accounts of relatively limited bargaining power, reflecting the reduced number of active wholesalers, concentrated financial capacity at the wholesalers' level and the decline in the

operations of brokers and assemblers following the outbreak of the conflict in April 2023. These changes may have reduced competition among wholesale-buyers, limit the marketing channels available to farmers, and increase farmers' dependence on a smaller number of wholesalers, thereby weakening their ability to negotiate prices. Additionally, farmers in both market hubs indicated that most farming households were no longer producing sufficient surplus for commercial sale and therefore retained much of their harvest for household consumption, releasing grain primarily when immediate cash needs arose. Limited marketable surplus, combined with constrained market access and the decline of intermediary actors, reduces the marketing options available to farmers which may limit farmers' flexibility in deciding when and to whom they sell their produce.

Transporters and millers occupy an intermediate position within the supply chain. Both groups face increasing operating costs associated with fuel prices, checkpoint charges, and transport disruptions. Respondents nevertheless indicated that a substantial proportion of these costs is reflected in transport charges and milling fees rather than being fully absorbed by transporters or processors.

6. Storage and Post-Harvest Handling

6.1 Storage Practices

Storage practices in both localities are reportedly informal and largely household based. Farmers reported using every space available, including spare rooms, barrels, and raised traditional platforms known locally as *seeb*,²⁵ rather than purpose-built grain storage facilities. Respondents attributed this practice to two main factors: the limited availability of formal storage facilities and security concerns that discourage the use of shared market storage. Some farmers reported preferring to keep grain at home, where they can monitor it directly, rather than storing it in market facilities where it may be more vulnerable to theft. One Kadugli farmer explained this trade-off: "Due to the lack of security, we were worried about storing it in the market where you can be robbed at any time. That's why we store it in our home to keep an eye on it."

Wholesalers, by contrast, generally have better storage capacity than other actors within the supply chain, reflecting their central role in grain aggregation, trading, and distribution. However, respondents indicated that current market conditions have reduced their tendency to hold significant stocks. As one Kadugli wholesaler stated, "We do not store. We sell immediately." This appears to be linked to liquidity constraints, uncertainty over future prices, and the need to maintain cash flow in a volatile trading environment. While available storage capacity provides some buffering potential, reduced stockholding limits the ability of wholesalers to smooth temporary supply disruptions or seasonal price fluctuations.

²⁵ Seeb is a traditional raised grain storage structure used by rural households to store cereals.

6.2 Post-Harvest Losses

Weevils, termites, and rats were consistently identified across farmer interviews in both localities as the main causes of post-harvest losses. Reported losses generally ranged between 5–10% of stored grain, with respondents providing examples such as: “Out of 100 sacks, maybe 10 or 5 sacks can become spoiled” and “From every 10 sacks, you lose one sack.” Several farmers noted that losses increase when grain cannot be adequately cleaned or dried before storage. Limited access to affordable and effective pest-control products was frequently cited as a key constraint preventing better management of storage losses.

One Kadugli farmer described the extent of these losses:

“During storage, there are pests, moths, and rats. Out of 100 sacks, maybe 10 or 5 sacks can become spoiled. Rats damage them. Some grain gets lost, and after cleaning you may only recover 4 or 5 sacks. The rest is wasted.”

— Sorghum Farmer, Kadugli (VOP)

A small number of Kadugli respondents also reported a separate, conflict-related source of post-harvest loss: displacement occurring around the harvest period, which resulted in crops being abandoned in fields and subsequently lost to theft, animals, or delayed harvesting. This highlights that conflict-related disruptions can affect losses not only through storage conditions but also through reduced ability to complete harvesting and secure production.

7. Milling

7.1 Operating Conditions

Millers in both market hubs operate primarily using purchased fuel rather than grid electricity, which several respondents reported had been unavailable for an extended period. As a result, milling operations are highly dependent on fuel availability and prices. Multiple millers indicated that milling fees are influenced more strongly by fuel price movements than by changes in sorghum availability, reflecting the importance of energy costs in determining operating expenses.

Reported milling capacity varies considerably across the interviewed mills, ranging from approximately 1 to 13 sacks per day under typical operating conditions, with a maximum reported capacity of 20 sacks per day. However, most millers reported that current utilisation levels remain below those observed before the conflict, reflecting reduced household purchasing power, lower household grain availability, and broader market disruptions.

Table 9: Overview of milling conditions

Indicator	Reported Range
Daily milling capacity (typical operations)	Approximately 1–13 sacks per day, depending on mill size and location
Maximum daily milling capacity	Approximately 20 sacks per day
Number of customers served per day	Approximately 15–50 customers, depending on milling capacity and market conditions
Main operating cost	Fuel, identified by all interviewed millers as the dominant operating expense
Monthly maintenance and spare parts cost	Approximately 150,000–350,000 SDG

7.2 Market Insights into Household Food Stress

Millers provide an important point of observation on household food access conditions because they interact directly with households at the stage where grain is processed for consumption. In addition to selling both milled and whole-grain sorghum, millers also process sorghum brought by households, which places them in a good position to observe changes in the quantity of grain available for processing, customer frequency, and households' ability to pay for milling services.

"The miller represents the family, many people depend on the milling owner. They come to you with hopes that you could help them. Someone may come to you and say it has been two days since they had sorghum in their household, and you easily believe them, because as a miller you know these circumstances."

— Sorghum Miller, Kadugli (KII)

Millers identified two main changes that they associate with increasing household economic pressure. First, households are reportedly bringing smaller quantities of grain for processing. As one respondent explained, "some who used to bring one malwa are now bringing only half a malwa." Second, some regular customers have stopped visiting mills altogether. Rather than indicating improved household food availability, millers interpreted this as a possible sign of reduced availability of sorghum for processing or an inability to afford milling services. However, reduced milling activity may also reflect changes in household processing practices, such as increased use of in-house milling equipment.

In both market hubs, millers also reported extending informal credit to a very limited number of trusted customers who were temporarily unable to pay for services. This reflects the broader pattern of trust-based financial arrangements observed across the sorghum supply chain.

8. Food Security and Consumption

8.1 Seasonal Access to Sorghum

Household access to sorghum follows a consistent seasonal pattern in both market hubs, closely linked to the agricultural production cycle and seasonal market conditions described earlier. Sorghum availability is generally highest from approximately January to March, following the main harvest period when household stocks and market supplies are replenished. Access gradually becomes more constrained from April to June as household stocks decline and market dependence increases. The period from July to September was consistently identified by respondents as the most difficult period of the year, corresponding with the lean season and coinciding with the rainy season, when transport constraints and reduced market accessibility can further affect supply flows.

One respondent referred to this period as the “August problem”, describing it as the point of greatest pressure due to declining food stocks, reduced household purchasing power, and limited income opportunities as households are engaged in agricultural activities. This seasonal pattern highlights the interaction between production cycles, household resources, market access, and transport conditions in shaping food availability and access.

8.2 Household Coping Strategies

The most commonly reported coping mechanism across both localities is meal reduction, specifically reducing the number of meals consumed per day rather than immediately changing dietary preferences. This may reflect the combined effects of seasonal food access constraints and conflict-related disruptions. During the lean season, declining household stocks and increased dependence on markets place additional pressure on households, while conflict-related disruptions may constrain households' ability to purchase food. This pattern is an indicative of severe income constraints and reduced purchasing capacity, which may limit households' ability to access available food commodities even when sorghum remains available in local markets. One Kadugli farmer described this experience as: “Sometimes an entire day passes with only one meal... one might even have only a cup of *medida* (a traditional fermented porridge) to survive on.” A Rashad female-headed household supporting ten dependents similarly explained that meal reduction became necessary only after the outbreak of conflict, linking the change directly to the loss of household income:

“We reduce the number of meals because we do not have the income to switch to something else... It only started after the conflict and after my husband became unable to work.”

— Household Consumer VoP, Rashad

Dietary substitution was reported by households as another important coping strategy. The households also cited rice, lentils, tamalika (wild green leafy vegetables), and locally available alternative flours such as mraheg as substitutes when sorghum becomes less affordable or household stocks are depleted.

Respondents described a gradual progression in coping behaviour, whereby households first reduce meal frequency and later adopt alternative foods as economic pressure increases. This may indicate a progressive deterioration in food access conditions rather than the simultaneous use of all coping mechanisms.

Table 10: Seasonal pattern of sorghum availability and household coping strategies

Period	Seasonal Sorghum Supply Condition	Common Coping Household Coping Strategies
Oct–Dec	Improving availability following the new harvest	Increased supply availability; improved access to own-produced grain and seasonal food sources
Jan–Mar	Relatively high availability following harvest	Consumption primarily based on own production, with limited reliance on stress-related coping strategies
Apr–Jun	Gradually declining availability as stocks reduce	Increased market purchases and adjustment of household spending priorities
Jul–Sep	Most constrained period (lean season; coincides with rainy-season access challenges)	Reduced meal frequency; dietary substitution; reliance on casual labour and remaining household stocks

8.3 Consumption Patterns and Household Spending Priorities

Reported household consumption is approximately 5–6 malwas of sorghum per week (equivalent to approximately 15–18 kg) for an average family of five members. Households described purchasing sorghum in small quantities several times per week rather than through bulk purchases. This purchasing pattern could be associated with irregular income flows, limited liquidity, and constrained purchasing power, highlighting the short-term nature of household food purchasing patterns. When asked how they would allocate hypothetical cash assistance, respondents consistently identified sorghum as the highest spending priority, followed by education and healthcare expenses. Beyond immediate expenditure priorities, several respondents identified improved security and broader stability as essential conditions for restoring livelihoods, improving market access, and strengthening household welfare.

To illustrate reported spending priorities, the assessment captured hypothetical household allocations of 100,000 SDG:

- **Illustrative allocation (Kadugli household):** 40% for sorghum; 20% for education; 20% for healthcare; 10% for substitutes; and the remaining 10% for other expenses.
- **Illustrative allocation (Kadugli household):** 60% for sorghum; 10% for education; 10% for healthcare; 10% for substitute food items; and the remaining 10% for other expenses.

In the hypothetical cash allocation exercise, households consistently prioritised sorghum over other expenditures, with education and healthcare identified as the next highest priorities. These examples reinforce the importance of sorghum as the primary spending priority while illustrating how households would allocate limited resources across other essential needs under constrained conditions. Respondents also described purchasing sorghum in small quantities several times per week rather than in bulk, illustrating the purchasing practices reported during the assessment.

9. Financing and Credit

9.1 Pre-harvest Financing arrangements

Since April 2023, the main financing mechanism reported by farmers in both market hubs is a pre-harvest forward-sale arrangement locally referred to as Salam or Mashal. Salam is an Islamic pre-harvest financing contract in which buyers pay in advance for agricultural products to be delivered after harvest, while Mashal refers to informal advance financing or forward-purchasing arrangements between traders and farmers. Under these arrangements, farmers receive cash or agricultural inputs before or during the agricultural season in exchange for committing to delivering grain after harvest at a predetermined quantity or price. These agreements are commonly made when farmers require immediate resources for production or household needs and may be established verbally or through informal written agreements. These findings are consistent with the FAO Crop and Food Security Assessment Mission (CFSAM), which reported that farmers have had limited access to formal agricultural finance since the outbreak of the conflict. Before the conflict, the Agricultural Bank of Sudan provided seasonal agricultural financing, benefiting 2,180 farmers in 2022. The disruption and reduced availability of these formal financing services have reportedly increased farmers' reliance on informal pre-harvest financing arrangements such as Salam and Mashal.

One Kadugli farmer described the arrangement as follows: a trader may provide one sack of grain or equivalent cash in exchange for receiving two sacks after harvest, with the exchange rate generally set below the expected market value at harvest.

"He gives you grain or cash in exchange for grain, or gives you one sack now in return for two sacks later — less than the upcoming season's market price... Do you think this type of agreement reduces your ability to negotiate? Yes, exactly, that is correct."

— Sorghum Farmer KII, Kadugli

While respondents generally viewed these arrangements as an important source of finance rather than as a coercive practice, they acknowledged that such agreements reduce farmers' flexibility by committing future production before market conditions are known. This can limit farmers' ability to benefit from seasonal price increases after harvest, with a larger share of potential gains accruing to traders who assume the risks associated with advance financing and future market conditions.

9.2 Informal Financing Networks Among Wholesalers and Retailers

Unlike farmers, wholesalers reported relying primarily on personal capital to finance trading activities. As one Kadugli wholesaler stated, "No bank financing at all." However, wholesalers continue to maintain trust-based credit relationships with established downstream buyers, including millers, retailers, and known traders. These arrangements typically involve short repayment periods of approximately five to six days and are based on established commercial relationships rather than formal contracts.

In Rashad, respondents described a greater reliance on credit-based transactions, reflecting liquidity constraints among buyers and traders within the local market. These financing arrangements indicate that while formal financial access remains limited, established trading relationships continue to provide some degree of liquidity and continuity within the market system.

9.3 Working Capital Constraint and Limits to Market Expansion

Across respondent groups, limited working capital emerged as a major constraint affecting market participation and expansion. Traders and assemblers reported that their ability to increase trading volumes is restricted not only by insecurity and access constraints but also by insufficient capital to purchase larger quantities of grain, transport commodities, or hold stocks during periods of lower prices.

Assemblers explained that inadequate working capital limits their ability to take advantage of seasonal market opportunities, particularly purchasing grain during the harvest period when availability is higher and prices are generally lower. Without access to formal credit or affordable short-term financing, many small traders and assemblers rely on personal savings or informal borrowing, limiting their ability to expand operations. One Rashad assembler described this constraint directly: "If capital were adequate, I could expand the trade, but capital is not sufficient to expand."

Some returnee households reportedly finance small-scale trading activities through livestock sales. While this provides an entry point into trading, it also involves the liquidation of productive assets that may otherwise support longer-term household resilience.

10. Conflict and Structural Change

10.1 Conflict-Related Access Constraints and Informal Market Payments

Checkpoint-related payments were reported by transporters and wholesalers in both localities as a significant additional cost within the sorghum supply chain. Respondents described multiple types of charges, including payments at military checkpoints, local administrative points, and Zakat-related collection points. These were generally described as separate and cumulative rather than as a single coordinated payment.

Several respondents reported that payments were sometimes made in cash and sometimes through in-kind contributions, such as grain deductions. One Rashad wholesaler described the burden as approximately one sack taken for every ten sacks transported, in addition to fixed cash payments at checkpoints.

"Both, actually. Even security itself is responsible for the situation. The commander wants a tax, the local people want a tax, the Zakat authority wants a tax, you can't operate."

— Sorghum Wholesaler KII, Rashad

Several routes that were in regular use before the conflict are currently described by transporters as unusable due to armed-actor control: Alfayed, Om Baramita, and Khor Aldreeb recur across more than one Rashad transporter interview as areas where traders risk looting, confiscation, or worse. One transporter is explicit that this is a qualitative change in risk, not merely a cost increase: "before the conflict there were no looting or air strikes, now when you go there you get targeted."

10.2 Changes in Intermediary Networks and Market Concentration

Conflict-related disruptions have likely contributed to changes in the structure of the sorghum supply chain, particularly through the decline in activity among brokers and assemblers. Assemblers reported that fewer intermediary actors are currently operating in production areas, reducing the number of available channels through which farmers can access markets.

As intermediary networks contracted, wholesalers became relatively more central within the supply chain, with greater influence over aggregation, distribution, and price negotiations. This does not necessarily reflect an expansion of the supply chain but rather a shift in the balance of market power, where fewer active intermediaries and limited competition have reduced options available to farmers and smaller traders. A Rashad wholesaler described the broad impact of conflict: "Nobody was unaffected regardless of their source of income and regardless of their power." Similarly, a Kadugli farmer's description of the disappearance of "capitalist traders" reflects the producer perspective on the decline of previously available trading channels.

10.3 Displacement Effects on Agricultural Production and Market Demand

Traders across all targeted categories reported that displacement has affected both supply and demand dynamics within the sorghum market system. On the supply side, displacement has reduced farmers' ability to cultivate and access agricultural land. One Al-Bardab farmer described the extent of this disruption: "We left the land, I left it. We cannot go back to Al-Bardab anymore." Such disruptions may have contributed to reduced local production and increased reliance on external supply sources in some areas.

On the demand side, displacement has had mixed effects. Out-migration reduced consumption demand in some locations, while areas receiving displaced populations experienced increased demand for food commodities and milling services. However, retailers noted that these effects have changed over time as some displaced households returned to their areas of origin or adjusted their livelihood strategies.

11. Vulnerability and Hazard Analysis

11.1 Structural Bottlenecks

Six interrelated bottlenecks were identified, describing how risk, market insufficiencies and costs are transmitted throughout the sorghum supply chain. Rather than operating independently, these constraints reinforce one another, creating cumulative barriers to market recovery and limiting the resilience of both producers and traders.

- **Forward-sale lock-in:** Salam and Mashal financing arrangements secure farmers' access to seasonal finance but reduce their ability to benefit from favourable post-harvest price increases, potentially transferring a larger share of the resulting gains to financiers.
- **Multi-layered checkpoint taxation:** Multiple formal and informal levies imposed by military authorities, local administrations and the Zakat Authority substantially increase transaction costs and reduce trader profitability.
- **Single-corridor dependency:** Rashad's entire reliance on a single transport corridor creates a significant structural vulnerability, exposing the market to major disruption whenever that corridor becomes inaccessible.
- **Broker and assembler contraction:** The decline of intermediary traders has reduced market competition, weakened producer access to buyers and narrowed the geographic reach of commercial grain collection.
- **Financing storage issues:** Limited working capital has reportedly constrained farmers' and small traders' ability to hold grain until prices improve, potentially increasing reliance on sales shortly after harvest when prices are typically lower.

- **Fuel-cost pass-through:** Rising fuel prices are reportedly reflected in transport, milling and retail costs, with respondents reporting limited ability among market actors to absorb these increases.

Overall, these bottlenecks illustrate that many of the current market constraints are structural rather than temporary. Addressing a single bottleneck in isolation is therefore unlikely to generate substantial improvements unless complementary interventions simultaneously strengthen finance, transport, market competition and institutional engagement.

11.2 Vulnerability Profiles Across Supply Chain Actors

Vulnerability is distributed unevenly across the chain, and the pattern differs between the two localities in one important respect. The assessment reveals that farmers and household consumers consistently face the highest overall vulnerability, while traders and millers experience more localised constraints depending on market structure and transport accessibility. Rashad's transporters and assemblers face substantially greater exposure than their counterparts in Kadugli because of the locality's dependence on a single transport corridor.

Table 11: Vulnerability of sorghum supply chain actors to risks in Kadugli

Actor Group	Vulnerability	Primary Drivers
Farmers	High	Reduced cultivated area; pest-related losses; limited access to inputs and extension services; reduced buyer competition; dependence on forward-sale arrangements
Transporters	Medium	High fuel and maintenance costs; seasonal access constraints; multiple feeder routes provide some operational flexibility
Wholesalers	Medium	Higher influence within the supply chain; reliance on personal financial sources; exposure to transport costs, informal payments, and reduced market volumes
Millers	Medium–High	Fuel-dependent operations; reduced purchasing power among households; fluctuating demand linked to displacement and market conditions
Household Consumers	High	Reduced purchasing power; high food prices; dependence on external supply sources; seasonal constraints on food access

The vulnerability profile for Kadugli indicates that risks are concentrated primarily among farmers and household consumers, who face both production and consumption pressures. Farmers remain highly vulnerable due to reduced cultivated areas, pest-related losses, limited access to agricultural inputs and extension services, and financing arrangements that may constrain their flexibility in marketing their

produce. Household consumers experience similarly high vulnerability as declining purchasing power, elevated food prices, and seasonal access constraints limit their ability to secure sufficient staple foods. Transporters, wholesalers, and millers face moderate to moderately high vulnerability, although the nature of these risks differs. Transporters are primarily affected by rising fuel prices, vehicle maintenance costs, and seasonal road constraints. However, the availability of multiple supply routes provides some resilience against complete market isolation. Wholesalers remain comparatively more resilient due to their established trading relationships and personal capital, although access to formal financing is reported to be limited, while their operations are increasingly affected by transport costs, informal payments, and reduced market activity.

Millers occupy an intermediate position within the value chain. Their operations remain highly dependent on fuel availability and are affected by changes in household demand and purchasing power. Limited opportunities for institutional procurement or external contracts have also reportedly constrained their ability to diversify revenue sources. Overall, Kadugli's market system continues to function despite significant structural pressures. The availability of multiple supply routes provides greater resilience than in Rashad; however, declining production, high operating costs, and weak household purchasing power continue to constrain market performance and food security outcomes.

Table 12: Vulnerability of sorghum supply chain actors to risks in Rashad

Actor Group	Vulnerability	Primary Drivers
Farmers	High	Limited marketable surplus; dependence on forward-sale arrangements; weak buyer competition; insecurity affecting cultivation and market access
Transporters	High	Dependence on a single corridor; Al-Korra crossing constraints; checkpoint payments; insecurity and route disruption risks
Wholesalers	Medium–High	Dependence on uninterrupted corridor access; exposure to transport costs and supply disruptions; increasing reliance on credit-based transactions
Assemblers / Brokers	High	Reduced trading volumes; declining direct sourcing from farmers; limited working capital; weakened intermediary role
Millers	Medium	Fuel-dependent operations; sensitivity to market demand; some opportunities through humanitarian engagement
Household Consumers	High	High food prices; declining purchasing power; supply disruptions linked to corridor constraints and seasonal access challenges

The vulnerability profile for Rashad indicates a market system that is considerably more exposed to systemic shocks than Kadugli, largely because of its dependence on a single commercial supply corridor. Farmers remain highly vulnerable due to limited marketable production, continued reliance on Salam/Mashal forward-sale arrangements, weak competition among buyers, and persistent insecurity that restricts access to farmland and discourages agricultural investment. These factors not only constrain production but also reduce farmers' ability to benefit from favourable market prices, limiting household incomes and weakening incentives to expand cultivation.

Transporters represent one of the most vulnerable actor groups in the Rashad market system. Their operations depend almost entirely on the Al-Korra corridor, where seasonal flooding, checkpoint taxation, insecurity and the risk of looting or confiscation combine to increase transport costs and disrupt commodity flows. Because there are no viable alternative routes, any interruption along this corridor has immediate consequences for the availability and price of sorghum and other essential commodities. Wholesalers, while benefiting from relatively strong market influence and established trading relationships, remain moderately to highly vulnerable because their businesses rely on the uninterrupted functioning of the same corridor. Respondents also reported increasing dependence on credit and mobile banking (Bankak), reflecting declining buyer liquidity and constrained cash circulation within the local economy.

Assemblers and brokers have experienced one of the most significant structural changes since the onset of the conflict. Reduced trading volumes, limited working capital and the decline in direct sourcing from farmers have substantially weakened their role within the value chain, reducing market competition and limiting farmers' access to buyers. Millers face comparatively lower levels of vulnerability than transporters and farmers, but their operations continue to depend heavily on fuel availability, household purchasing power, and functioning transport networks. Although some millers reported continued demand for their services, most also reported utilisation levels below those observed before the conflict. Household consumers remain highly vulnerable reportedly due to persistently high food prices, declining purchasing power, and frequent supply disruptions that are transmitted rapidly through the market.

Compared with Kadugli, Rashad exhibits a much higher concentration of systemic risk because nearly all market actors depend on the same transport corridor for commercial food supplies. Consequently, localised disruptions, whether caused by conflict, flooding or logistical constraints, rapidly cascade throughout the value chain, simultaneously affecting transporters, wholesalers, retailers, millers and consumers. This interconnected risk structure may result in sharper price increases, more frequent supply shortages and reduced market resilience, making Rashad substantially more susceptible to market failure during periods of renewed insecurity or seasonal access constraints.

11.3 Supply Disruption Hazards

Three broad categories of hazard recur across the assessed market hubs, each affecting the two market systems differently and reinforcing broader market fragility.

- Climatic hazard:** seasonal road impassability is reportedly the primary climatic hazard affecting the sorghum supply chain. The Al-Korra crossing on the Rashad corridor and several Kadugli feeder routes serving Kadugli become difficult or impassable during the rainy season. Stream crossings frequently cause delays lasting hours and, in some cases, more than a day. Although these disruptions are seasonal and predictable, they can constrain the movement of sorghum and agricultural inputs, increase transport costs, and reduce the reliability of market supply, particularly during the lean season when food demand is highest. The effects are most pronounced in Rashad, where the Al-Korra crossing represents a critical bottleneck on the single viable commercial corridor, while Kadugli has multiple feeder routes that provide some degree of alternative access.
- Logistical hazard:** Fuel shortages, scarcity of vehicle spare parts, increasing checkpoint fees, and progressive road deterioration are reported by transporters as major operational constraints and contribute to transportation being one of the largest and most volatile cost components of the supply chain. These constraints are likely to result in increasing the cost and uncertainty of moving commodities and are generally reflected in transport charges and, to varying degrees, in downstream milling and retail costs. The extent to which these costs are passed on to wholesalers, millers, retailers, and consumers varies according to market conditions, bargaining power, and competition. Fuel-related cost pressures affect both market hubs, while road deterioration and access constraints have a particularly strong effect on routes serving more isolated production areas.
- Conflict-related hazard:** armed-actor checkpoint taxation, the abandonment of named routes (Alfayed, Om Baramita, Khor Aldreeb), and the historical experience of siege-related market isolation and access constraints in Kadugli represent major conflict-related risks affecting market operations. Unlike seasonal disruptions, conflict-related shocks are difficult for market actors to anticipate or mitigate. They can restrict access to production areas, disrupt established trading routes, increase transport and transaction costs, and reduce the number of traders willing or able to operate in affected areas. In Kadugli, these risks have contributed to periods of isolation and a shift towards more distant sources of sorghum, while in Rashad, insecurity reinforces the vulnerability created by dependence on a single commercial corridor.

Across both market hubs, the hazards are inter-related and, in some cases, may not be seen independently. Climatic disruptions can amplify logistical constraints by reducing route accessibility and increasing transport costs, while conflict-related restrictions can further limit the availability of alternative routes and market actors. In Kadugli, the presence of multiple feeder routes provides some redundancy, allowing traders to

partially compensate when individual routes become inaccessible. In Rashad, by contrast, dependence on a single viable commercial corridor means that disruption along the route can rapidly affect the availability and cost of sorghum. The resulting differences in route redundancy contribute to greater systemic exposure to supply disruption in Rashad, although both markets remain vulnerable to the combined effects of insecurity, high operating costs, and seasonal access constraints.

12. Comparative Analysis of Sorghum Supply Chain Systems in Kadugli and Rashad

The evidence presented across the assessment demonstrates that Kadugli and Rashad represent two structurally different sorghum market systems, each with distinct drivers of vulnerability and adaptive capacity. Although both localities have experienced significant disruption due to conflict, their supply-chain configurations, production capacity, transport conditions, financing mechanisms, and market relationships shape different risk profiles and recovery pathways. These differences have important implications for market performance, household food security, and the design of context-specific interventions, suggesting that a single programming approach is unlikely to be equally effective across both locations.

Table 13: Comparison of Sorghum Supply Chain Systems in Kadugli and Rashad

Comparison Dimension	Kadugli	Rashad
Supply sources	Mixed supply base: remaining local production (including Al-Bardab and surrounding areas) combined with inflows from external markets, including sources outside South Kordofan	Primarily dependent on inflows through the Abu Jubayhah corridor, while most local production is retained for household consumption
Main vulnerability	Reduced local production, city-level access disruptions, and vulnerability of multiple feeder routes to seasonal and security-related constraints	High dependence on a single main supply corridor and exposure to disruptions at the Al-Korra crossing
Intermediary networks	Reduced intermediary activity; wholesalers remain central to aggregation and distribution	Reduced role of brokers and assemblers, increasing dependence on wholesalers and weakening producer-market linkages
Financial Services	Continued use of bank transfers among wholesalers alongside personal capital; farmers rely primarily on Salam/Mashal arrangements	Greater reliance on informal credit and digital payments (e.g., Bankak) among traders, reflecting liquidity constraints; farmers also rely on Salam/Mashal arrangements

The comparison highlights that Kadugli has a relatively more diversified market structure, although this does not imply that the system is stable or free from significant constraints. The presence of multiple supply routes and some remaining local production could provide a degree of flexibility when individual routes are disrupted. This allows traders to adjust sourcing strategies and reduces dependence on any single access point. Continued use of digital payments among wholesalers and established commercial relationships also contribute to market continuity. However, declining production, high transport costs, fuel constraints, and reduced household purchasing power continue to place substantial pressure on the system.

On the other hand, Rashad exhibits a more concentrated and fragile market structure, with multiple vulnerabilities converging around its main supply corridor. Dependence on grain inflows through Abu Jubayhah and the Al-Korra crossing means that seasonal access constraints, insecurity, and transport disruptions have immediate implications for commodity availability and prices. Reduced activity among assemblers and brokers has weakened some producer-market linkages and reduced competition among buyers, while increased reliance on informal credit and digital payments reflects liquidity constraints within the trading system. Although some millers reported constructive engagement with humanitarian actors, these opportunities do not offset the broader structural risks associated with concentrated supply dependence.

Overall, Kadugli demonstrates greater capacity to adapt to localised disruptions because market actors can draw on a more diversified sourcing base and multiple transport options. Rashad, however, remains more exposed to systemic shocks because disruptions affecting its main transport corridor can rapidly affect multiple stages of the supply chain. These findings highlight the importance of tailoring interventions to local market structures: in Rashad, improving transport reliability and contingency planning around key access constraints are likely to have significant benefits, while in Kadugli, priorities should include restoring agricultural production, improving farmer access to inputs and finance, and strengthening competition within the supply chain.

12.1 Market Trajectory

Findings suggested cautious and uneven improvement signals in both localities, although neither market system can yet be considered stable. In Rashad, reports of increased production among some farmers as security conditions improved, together with transporters' efforts to increase deliveries before the rainy season, indicate some adaptation by market actors. However, these improvements remain highly dependent on continued access, security conditions, and the functionality of the main transport corridor.

In Kadugli, millers reported signs of improving stock availability following earlier periods of severe disruption, describing the market as gradually improving. Nevertheless, fuel shortages, spare-parts constraints, and reduced household purchasing power continue to limit recovery.

13. Conclusion

This assessment demonstrates that the sorghum market systems in Kadugli and Rashad remain operational despite nearly two years of conflict, but their functionality has been substantially weakened by the combined effects of insecurity, climatic constraints, deteriorating infrastructure, and limited access to finance. Rather than experiencing complete market collapse, both systems have adapted to a more constrained operating environment characterised by higher transaction costs, reduced competition, lower agricultural production, and increased dependence on external supply. These adaptations have enabled the continued movement of food commodities but have simultaneously reduced market efficiency, increased consumer prices, and weakened the resilience of market actors across the value chain.

The assessment also reveals that vulnerability is not evenly distributed across market actors. Farmers and household consumers consistently face the highest levels of vulnerability. Farmers are constrained by insecurity, pest infestations, declining cultivated areas, limited access to agricultural inputs and extension services, and financing arrangements that reduce their bargaining power and income. Household consumers face declining purchasing power, persistently high food prices, and humanitarian assistance that is often insufficient to meet basic needs. Small traders and assemblers have experienced a significant contraction in market participation due to limited working capital, while transporters continue to face rising operating costs associated with fuel shortages, checkpoint taxation, deteriorating roads, and insecurity. Although wholesalers have generally demonstrated greater resilience because of stronger capital bases and established commercial networks, they also remain vulnerable to disruptions affecting major supply routes. A key finding is that the two market systems exhibit fundamentally different risk profiles. Kadugli retains a relatively diversified supply network supported by multiple feeder routes and residual local production, providing a degree of redundancy that allows markets to continue functioning despite localised disruptions. Rashad, by contrast, is structurally dependent on a single commercial supply corridor through Abu Jubayhah and the Al-Korra crossing. This dependence creates a high concentration of systemic risk, whereby disruptions caused by conflict, flooding, or transport constraints rapidly affect the entire market, resulting in commodity shortages, sharp price increases, and reduced food access.

Financing constraints emerged as one of the most significant structural barriers to market recovery. Across multiple actor groups, insufficient working capital was consistently identified as the primary factor limiting business expansion, often exceeding insecurity itself as a constraint to trade. Farmers remain dependent on informal forward-sale arrangements that reduce their ability to benefit from seasonal price increases, while traders rely heavily on personal savings and informal credit in the absence of accessible financial services. These findings suggest that improving access to finance is likely to have benefits across multiple segments of the value chain.

Finally, while humanitarian assistance continues to play an important role in supporting vulnerable households, the assessment indicates that current interventions have had limited influence on strengthening local market systems. Assistance was frequently described as insufficient in scale or duration, and opportunities to stimulate local markets through procurement and market-based programming appear underutilised. The findings therefore suggest that future programming should increasingly combine humanitarian assistance with interventions that strengthen market functionality, improve supply chain resilience, and restore livelihoods.

14. Recommendations

14.1 Short-Term Recommendations

- **Improve market access through critical transport support**

Priority should be given to maintaining the functionality of key transport corridors before and during the rainy season. This includes emergency road maintenance at major bottlenecks, particularly the Al-Korra crossing serving Rashad, temporary rehabilitation of damaged feeder roads, and coordinated efforts to facilitate humanitarian and commercial access where security conditions permit. Maintaining physical access will reduce transport costs, improve commodity availability, and stabilise food prices.

- **Expand market-based humanitarian assistance**

Where markets remain functional, humanitarian assistance should prioritise unrestricted cash transfers or cash-plus approaches rather than blanket in-kind food assistance. Cash assistance should be calibrated to prevailing market prices and household expenditure requirements to improve purchasing power while supporting local traders and stimulating market activity.

- **Provide emergency working capital support for traders**

Small traders, assemblers and transporters require rapid access to working capital to restore trading volumes and improve commodity circulation. Grant-based revolving funds, temporary credit guarantees, or Sharia-compliant financing mechanisms could enable businesses to rebuild inventories, increase purchasing during harvest periods, and improve food availability throughout the lean season.

- **Support the upcoming agricultural production season**

Farmers should receive timely distributions of quality seeds, pest management inputs, hand tools and extension support before planting seasons. Particular attention should be given to controlling buda infestations and restoring production in areas where security conditions permit cultivation.

- **Strengthen market monitoring and early warning systems**

Routine monitoring of commodity prices, fuel availability, transport costs, road accessibility and conflict-related disruptions should be strengthened to provide early warning of market shocks. Such systems would enable humanitarian actors to adjust programming before localised disruptions escalate into broader food security crises.

14.2 Long-Term Recommendations

- **Strengthening transport infrastructure and market connectivity**

Investment in all-weather transport infrastructure should become a strategic priority, particularly along the Abu Jubayhah–Rashad corridor and key feeder roads serving agricultural production areas. Improving road quality and constructing climate-resilient crossings would substantially reduce transport costs, improve market integration and increase the resilience of food supply chains to seasonal shocks.

- **Expand access to agricultural and commercial finance**

Develop sustainable financial products tailored to farmers, traders and millers, including seasonal agricultural loans, warehouse receipt financing, inventory credit and Islamic finance mechanisms compatible with local practices. Improving access to affordable finance would reduce dependence on forward-sale arrangements and strengthen market competition.

- **Restore agricultural productivity**

Long-term investment is required to rebuild agricultural production through improved extension services, integrated pest management, climate-resilient farming practices, improved seed systems and rehabilitation of productive land. Supporting farmer organisations and producer cooperatives could also strengthen bargaining power and improve market access.

- **Promote more competitive and inclusive markets**

Programming should support the recovery of assemblers, brokers and other intermediary market actors that have historically linked producers with larger markets. Expanding market competition would improve farmgate prices, increase market efficiency and reduce dependence on a small number of dominant wholesalers.

- **Strengthening local procurement and market partnerships**

Humanitarian and development agencies should increase procurement from local producers, millers and traders where market conditions allow. Transparent procurement systems that engage a broader range of market actors can simultaneously strengthen livelihoods, stimulate local economic recovery and improve the sustainability of humanitarian operations.

- **Build market resilience to conflict and climate shocks**

Future programming should adopt a market systems resilience approach by supporting diversified supply routes, expanding local storage capacity, strengthening community-based contingency planning and improving coordination between government institutions, humanitarian agencies and private sector actors. Diversification of supply sources and investment in storage infrastructure would reduce vulnerability to localised disruptions and improve food system resilience.

- **Integrate livelihoods recovery with market systems development**

Livelihoods interventions should move beyond household-level assistance and focus on strengthening the entire sorghum value chain. Combining support for production, transport, processing, trade and market governance will help restore employment opportunities, increase household incomes and improve the long-term sustainability of local food systems. Particular attention should be given to women-headed households, returnees and small-scale traders, who were consistently identified as among the most vulnerable groups in the assessment.

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We gratefully acknowledge the support of Ahmed Suliman for his contribution to this report. Mr. Suliman is a development professional with over 12 years of experience in programme design, management, and analysis, specialising in value chain and supply chain analysis, market systems development, and evidence-based programming in fragile and conflict-affected contexts. He has worked with UN agencies, international organisations, and research institutions on agriculture, food security, and livelihoods programming.

ABOUT IMPACT

Founded in 2010 and headquartered in Geneva, IMPACT Initiatives is a leading applied research organisation and the largest independent provider of data in crisis-affected contexts. Through our initiatives, we enable humanitarian and other aid actors to make better, evidence-based decisions by delivering timely, relevant, and methodologically rigorous data and analysis. Our extensive presence across crisis-contexts allows us to collect data directly from crisis-affected people wherever needed, including among the most vulnerable and hard-to-reach.

ABOUT DataQ

DataQ is a Sudanese research and advisory firm dedicated to inclusive participation in Research and MERL processes as a pathway to more participatory and locally led humanitarian systems. DataQ's approach focuses on leveraging local capacities and resources while equipping communities with the tools and platforms they need to shape the policies and programs that impact their lives. Since its establishment DataQ has supported over 45 local and international partners through tailored research, MEAL, and capacity-building services.