

Market Assessment

South Sudan



February 2015

Data collected in October 2014



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South Sudan Rapid Market Assessment

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The views in this report and any errors and omissions are those of the authors.

Acronyms

DRC	Democratic Republic of Congo
GDP	Gross Domestic Production
IDP	Internally Displaced People
IGAD	Intergovernmental Authority for Development
IMF	International Monetary Fund
IPC	Integrated Food Security Phase Classification
IRF	Impulse Response Function
NBS	National Bureau of Statistics
NDVI	Normalized Difference Vegetation Index
POC	Protection of Civilians site
SSP	South Sudanese Pound
UNMISS	United Nations Mission in South Sudan
SPLM	Sudan People's Liberation Movement
SPLM-IO	Sudan People's Liberation Movement - In Opposition
UGX	Ugandan Shilling
US\$	United States Dollar
VAM	Vulnerability Analysis and Mapping
VAR	Vector Autoregression
WFP	World Food Programme

Key Findings

Uncertainty and an over-reliance on oil exports have led to a depreciating unofficial exchange rate and almost exhausted foreign exchange reserves in South Sudan. The country's gloomy macroeconomic performance has placed further pressure on an already stretched internal demand, creating a vicious circle whereby the private sector has little incentive to take on the challenges arising from insecurity, poor infrastructure and the lack of US dollars needed to import goods from abroad.

Food availability varies across markets, which largely depend on imports. The closer markets are to supply sources (including local production), the greater the availability of goods and the lower the prices.

Conflict continues to impact trade flows, mainly in states directly affected by conflict. In the rest of the country, the impact is indirect, through localized insecurities and increasing roadblocks. The import flow from Uganda is vital for South Sudan, and it has improved along the Kampala-Nimule-Juba route.

The food deficit has been widening amidst dwindling imports in conflict-affected states (Jonglei, Upper Nile and Unity). In the past three years, these states have received over half of all in-kind food assistance, yet markets can barely offset local supply shortfalls. In non-conflict states, production is expected to be good, but food deficits will remain.

Supply chains are restricted by conflict as well as by structural market inefficiencies. Cargo aircraft from Juba have partially replaced insecure river and road networks in Unity and Upper Nile. Where traditional routes continue to function, largely informal trading channels connect conflict-affected states to neighbouring countries, but these areas are virtually cut off from the rest of South Sudan. Elsewhere, there is potential for supply chains to be organized along the main trading route Kampala-Nimule-Juba and along the western corridor (Juba-Rumbek-Aweil).

The combined effect of the conflict and the poor road network has isolated already fragmented markets. Insecurity, poor infrastructures, checkpoints and corruption have deterred traders from venturing inland or from moving between government- and opposition-controlled areas.

The large variation in prices across markets confirms inefficiencies and food availability issues. Prices are highest in Bentiu and other conflict-affected areas, eroding the already limited household purchasing power. Meanwhile, the loss of livelihoods is making humanitarian assistance even more crucial. In-kind food assistance – where delivered in significant amounts – is found to reduce prices by increasing supply, even though in conflict-affected states (i.e. Bentiu) it may crowd out sorghum traders.

Financial institutions are weak except in Juba. Traders rarely have access to loans or foreign exchange. In conflict-affected areas, financial institutions are almost non-existent, except for a few money transfer agencies.

There is a large variation in the capacity of markets to secure the food supply and offer a relatively stable market environment to support market-based interventions. Market capacity is low in Akobo, Bentiu and Malakal as a result of the conflict, and in Rumbek because of poor road conditions. Capacity is moderate in Yambio and Bor; moderately high in Aweil, Wau, Nimule; and high in Juba and Torit, where there is a large number of traders and supply is stable.

Executive summary

This paper reports the findings of a countrywide rapid market assessment in South Sudan that was conducted from 17 to 31 October 2014. The main purpose was to understand the impact of the conflict on food trade and in particular, on the functioning of internal markets and regional trade.

South Sudan has a huge number of displaced civilians, and household food security is limited in many parts of the country. Therefore, the study also sought to assess the potential for market-based food assistance.

The team mission consisted of market analysts from the World Food Programme (WFP) Headquarters and Regional Bureau. With support from the WFP country office, they visited 12 major markets across South Sudan. The mission consulted key informants and stakeholders, including local authority officials, traders, transporters and their representatives. Information on food availability, market environment, structure, conduct and overall performance was collected using a checklist approach. The study was complemented by a review of existing literature and analysis of food prices, production and remote sensing.

The main findings are summarized as follows:

A fragile market environment

South Sudan's fragile economy is mostly dependent on oil. As oil production partially resumed, a timid economic recovery occurred in the first part of 2013 before the conflict flared in mid- December. Since then, the fighting along ethnic lines has spread to the oil-producing states, undermining the macroeconomic environment.

With sharply declining oil revenues, the country is running out of resources to finance its import requirements and domestic running costs, including the payment of salaries. As a result, defending the pegged exchange rate is a challenge. The shortage of foreign currency is a major issue countrywide and is reflected in depreciating black-market rates against the US dollar.

These macroeconomic imbalances exert a negative effect on an already gloomy market environment, where supply flows are restricted by very poor infrastructures, corruption and seasonal hindrances to the movement of goods and people. On the demand side, market functioning is hampered by increasing poverty and weak household purchasing power.

Markets and conflict

In the Greater Upper Nile, the conflict has had a direct negative impact on the food trade. The fighting and ethnic violence have destroyed market infrastructures and commodity stocks, and displaced most of the traders. The markets in Unity, Jonglei and Upper Nile are a long way from recovery, as many traders have lost their capital and are unlikely to take any risks in a situation where the prospects of a political settlement leading to peace and the return of the population remain uncertain.

Indiscriminate violence against the population has not only affected livelihoods, it has also damaged local production, undermining local food supplies. Consequently, many parts of Greater Upper Nile now depend on trading flows from Juba via cargo aircraft and inflows from neighbouring countries (mostly Sudan and Ethiopia). However, food supply chains are stretched the further away the markets are from cross-border points. Moreover, there are very few (if any) traders willing to take the high risk of crossing from government- to opposition-controlled areas, and vice versa. The analysis shows that many markets in the Greater Upper Nile are virtually isolated, with low supply volumes and high prices.

The conflict has also generated local insecurity even in areas where there has been no fighting. The assessment identified an array of largely unofficial checkpoints or roadblocks in states such as Eastern Equatoria, Lakes, Northern Bahr el Ghazal and Western Equatoria. These are being used to extort payments from transporters and traders, which is raising the cost of doing business. These increases are ultimately passed on to consumers in the form of higher prices.

The analysis found that huge amounts of in-kind food assistance are likely to have a smoothing effect on price volatility. However, for some markets (particularly Bentiu – analysis was not possible for Malakal), sorghum prices show a counter-intuitive increase after food aid deliveries. While the model used does not fully explain this variability, crowding-out phenomena are likely, particularly where the pay-off for taking the risk of trading sorghum is lowered by food aid deliveries.

Markets and food availability

Markets are generally functioning poorly in many parts of the country. The major exception is Juba, which is connected to nearby Uganda by the only tarmac road in South Sudan. In general, along the western trade corridor (Nimule-Torit-Juba-Rumbek-Wau-Aweil), markets perform at decreasing levels the further traders have to venture into the country. Therefore, while maize prices in Juba clearly follow those in Gulu (Uganda), albeit with some delay, this is not the case for Rumbek. The latter is an example of a poorly functioning market unaffected by the conflict, but one that is limited by seasonal and infrastructural problems. At the peak of the 2014 rainy season, transporters were unwilling to lease their trucks to transport goods to Rumbek, resulting in very low market supplies and high food prices.

Almost all South Sudanese states have a food deficit and hence require a combination of stable supply flows through functional markets and in-kind food assistance to fill the gaps. The upcoming dry season will allow traders to expand their supply capacity and eventually preposition stocks for the next rainy season. Indeed, despite the low harvest forecast for conflict-affected areas,¹ the food supply will improve thanks to the expected good harvest in the rest of the country. The combined effects of better seasonal road access for traders and normal harvests in non-conflict areas will improve overall food availability in many markets in the coming months.

However, availability in the Greater Upper Nile states will remain a challenge because of local supply shortfalls and the significant obstacles to imports and the movement of goods, especially between government- and opposition-held areas.

Potential for market-based interventions

From a demand-side perspective, there are grounds for promoting market-based food assistance programmes. Household purchasing power has been severely reduced in recent years, when at least two severe crises² have dramatically curtailed the resilience of many communities.

The displacement of almost 2 million people has also changed the market landscape in many states, with former market hubs now serving a drastically reduced number of people. In many markets, traders claim to have reduced their supply as a result of this depressed demand.

However, as the price differences between markets show, there are much stronger constraints to supply.

¹ This season, the proportion of agricultural land planted in the Greater Upper Nile has varied between 25 and 70 percent.

² The dispute over oil-transit fees with Sudan in 2012 and twelve months of civil war.

Traders' supply capacity is hampered by the lack of foreign exchange; time and resources are lost in the chase for US dollars in the black market, because supply chains are organized in such a way that many traders have to directly engage in importing activities by travelling abroad.

Moreover, traders are not supported by the financial system, which is poorly developed and threatened by the conflict. In many parts of the Greater Upper Nile, both in opposition-controlled areas and where control is disputed, there are no banks; money transfers are rare and run on a very small scale. Elsewhere in the country, one or two banks may be present; the major exception is Juba with its larger number of active financial institutions. These constraints should be borne in mind during the design phase of potential market-based interventions.

Many markets have very weak connections during the rainy period of the year. Poor roads, high transportation costs feeding into low market supplies, and high taxes at checkpoints are the major challenges, as explained in the case of Rumbek. Even so, market-based interventions may be piloted in a few areas unaffected by conflict where the constraints are primarily seasonal. Any pilot intervention should have a limited caseload of beneficiaries and the operational willingness and preparedness to switch back to general food distribution during the rainy season, should food availability become an issue and prices rise steeply.

Conflict has further isolated many communities in the quadrilateral zone formed by the towns of Bor, Bentiu, Malakal and Akobo. There is very little appetite for traders to take any additional risk there: reportedly, crossing from government- to opposition-controlled areas (and vice versa) is too hazardous for traders and no mitigation measures are in place except paying bribes. When conflict escalates, violence becomes indiscriminate and looting the norm. Traders, who have already borne many losses in the past year, are not likely to risk major investments.

In locations very close to the borders (e.g. Renk and Akobo), where import supplies are somehow flowing, there might be some potential to explore cash and vouchers as long as the dry season does not bring additional violence. At the time of writing, conditions are not favourable for market-based interventions in Bentiu and (to a lesser degree) in Malakal. By contrast, Bor seems to have partially resumed its market functionality, leaning economically towards Juba, thus allowing for a very cautious piloting of market-based interventions.

Elsewhere, especially in the Equatoria, market-based interventions would seem well placed, with the combination of a good harvest and a secure import flow from Uganda. To a less certain degree, markets in Bahr el Ghazar – particularly Aweil – may also have the response capacity to support market-based interventions.

Actual access to market and economic connections to the assessed markets should be explored in the design phase should detached IDP sites and rural settlements be selected for C&V programs, as well as the capacity of local traders to link-up with wholesalers in the state capital markets. On the demand side, it is crucial to figure out whether markets in the closest main town are really serving those camps.

Food distributions have played a very significant role in South Sudan, accounting for 13 percent of total supply for the past two years. As a result, any change from general food distribution to a cash and vouchers programme should be extremely gradual to avoid competition effects over a reduced supply between beneficiaries and non-beneficiaries.

For market-based transfer modalities, prices should be monitored in nearby markets. In general, recurrent price analysis needs to be planned to evaluate the impact on markets of both food

distribution and cash and vouchers. Ideally, monitoring should also include a control group of traders/markets where no food assistance activities are underway.

1. Background and objective of the study

Two years after secession from Sudan, the Republic of South Sudan – the world’s youngest nation – has fallen into severe turmoil. In December 2013, political rivalries within the ruling party, the Sudan People’s Liberation Movement (SPLM), erupted into abrupt clashes in Juba which quickly spread across the country, in particular to Bor and most of the Greater Upper Nile. The conflict has rapidly degenerated into indiscriminate ethnic violence. Notwithstanding the protracted peace talks and political pressure from the Intergovernmental Authority for Development (IGAD) and other external stakeholders, the negotiations are far from reaching a resolution. Moreover, the two parties in the conflict do not seem to be in full control of the different combatants on the ground. As a result, at the time of writing, 1.4 million people are internally displaced and nearly half a million are displaced as refugees in neighbouring countries.³ The high hopes that were held for peace following the signing of the Comprehensive Peace Agreement, the end of decades of civil war and the transition to an independent country now seem very distant.

The uncertain political scenario exacerbates the challenges faced by this extremely vulnerable country, with its very poor and damaged economic and social infrastructures. There is only one major tarmac route, southbound from Juba to Nimule on the border with Uganda. Most of the roads connecting state capitals are impassable during the rainy season.⁴ Macroeconomic performance is gloomy, with endemic corruption and the potentially strong oil sector disrupted by the conflict. In this context, the food security situation is critical, with 2.5 million people projected to be in food security ‘phase 3’ (*crisis*) or ‘phase 4’ (*emergency*) by the first quarter of 2015 (IPC 2014).⁵ In particular, households in conflict-affected states have almost exhausted their coping mechanisms and are unlikely to be in a position to withstand further shocks.

The upcoming dry season brings uncertainties related to the next phases of the conflict, especially with regard to peace talk outcomes and a possible fresh outbreak of armed action as the dry weather improves road conditions. However, more passable roads and the arrival of the harvest season may also improve the availability of food crops and could extend the reach and effectiveness of the humanitarian response, including the implementation of market-based interventions where appropriate.

Against this backdrop, the WFP country office in South Sudan commissioned a rapid market assessment, with the following objectives:

- I. Understand how the outbreak of the conflict has changed regional trade flows and constraints previously identified by traders (WFP 2012);
- II. Analyse to what extent these changes have impacted overall market functioning, including trade volumes and market performance;
- III. Provide insights to determine/estimate market supply capacities and potential to meet food demand gaps;
- IV. Determine the capacity of local infrastructures to support market-based interventions, highlighting the constraints to market functioning in conflict and non-conflict affected states;

³ WFP, South Sudan [Dashboard](#) as at 21 November 2014.

⁴ Typically, the rainy season runs from April to December, varying according to latitude.

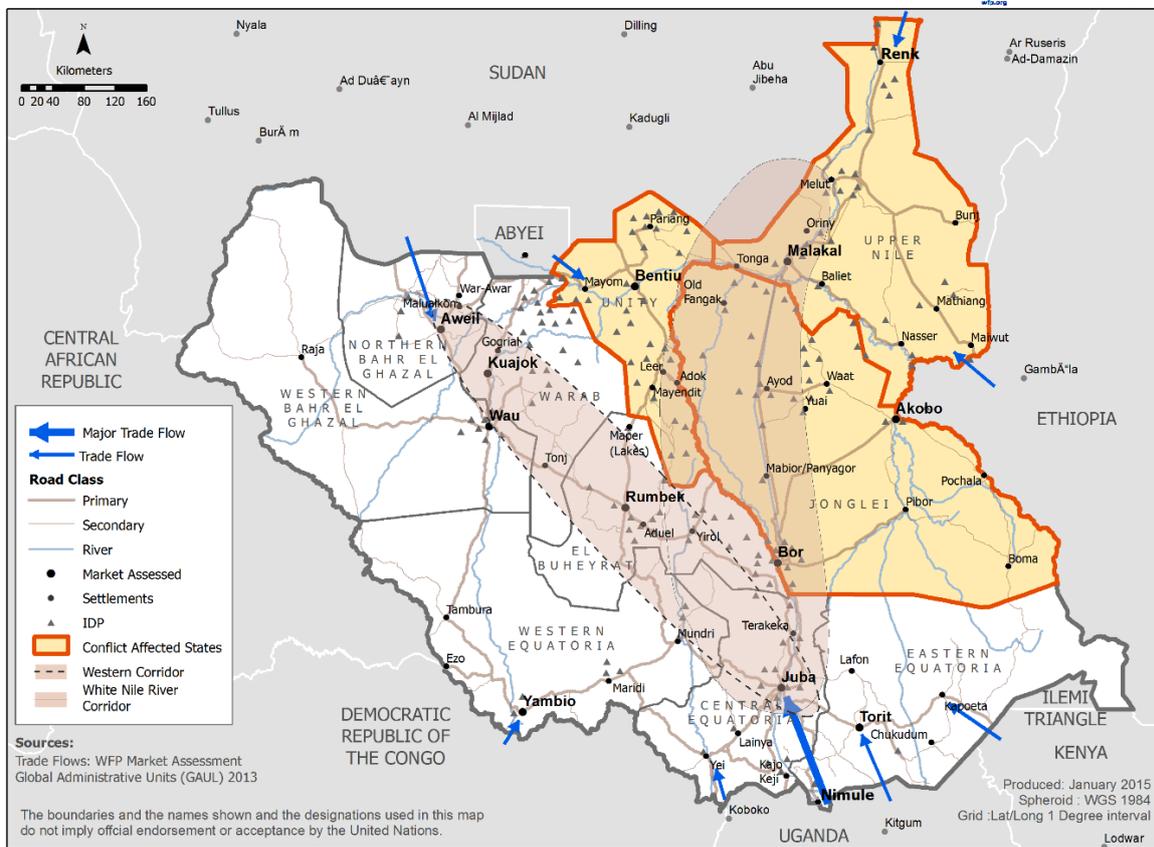
⁵ The Integrated Food Security Phase Classification (IPC) is a five-step comparable scale through which the food security situation in a country is classified from *minimal* (phase 1) to *famine* (phase 5).

- V. Determine whether cash and vouchers or in-kind food assistance would be the best option to address prevailing food insecurity and in which area; and assess local traders' capacity and willingness to penetrate along the different trading routes to supply cereals and other foods to food-insecure areas, if cash and vouchers are introduced.

Map 1 sets the stage for this market assessment, showing the markets included in the study, import flows, major trade corridors, conflict-affected states and IDP settlements. Field activity covered both internal and external (from Uganda, Ethiopia, Kenya and Sudan) trading routes in the second half of October 2014. The mission conducted visits and interviews with key informants (importers, transporters and traders) operating in 12 markets countrywide⁶ in the second half of October 2014. Additional information was obtained from local authorities and international organizations. A literature review and secondary data analysis, including remote sensing and econometric tools, complemented the findings.

Map 1 - Market assessment at a glance

SOUTH SUDAN - Setting the Stage



2. Economic and market environment

South Sudan has had to address a number of challenges connected with the enormous effort of creating a nation from scratch. This includes “tackling poverty, low social indicators and the need to build sustainable peace and security for all citizens”, with the ambition of “recovering from conflict and wishing to move onto a fast-track development path” (SSDP 2011). Based on these aims, the 2011 Development Plan was designed around four pillars, which sought to identify the key priority

⁶ Namely, Akobo, Aweil, Bentiu, Bor, Juba, Malakal, Nimule, Renk, Rumbek, Torit, Yambio and Wau.

areas of intervention for the following three years. The pillars include 1) economic development, 2) social and human development, 3) governance and 4) conflict prevention and security.

The biggest economic challenges relate to political instability, tribal conflicts over land resources, an over-reliance on oil production, the under-performance of the agricultural sector, poor infrastructures and road network, a large informal sector, and high import dependency. The latter refers to manufactured goods and food, but also to foreign traders having most control over supply chains. Moreover, the country has to deal with very high adult illiteracy rates and extremely high poverty rates, and a significant part of the population is displaced with poor livelihoods (Muvawala and Mugisha 2014).

2.1 Macroeconomic prospects: the curse of oil

South Sudan has 3.5 billion barrels of proven oil reserves (0.2 percent of the world total). Yet so far, the sector has stalled because of its total reliance on the Sudanese pipeline and the dispute with Sudan over the oil-rich Abyei region. The dispute eventually led to a protracted crisis in 2012 that halted oil production for most of the year. Before the outbreak of the current civil war, there were timid signs of recovery in 2013, with the partial resumption of oil production from 31 to 99 thousand barrels daily (a yearly equivalent of 1.5 to 4.9 million metric tons).⁷ This boosted the economic outlook, with GDP in the local currency – the South Sudanese Pound – rising by as much as 31 percent in a year. Yet, since independence, the overall GDP has fallen by around one third.⁸

Figure 1 - GDP per capita



Source: World Bank – World Development Indicators

The macroeconomic performance in 2013 appears even less positive when population changes and purchasing power parity are considered in the GDP, which is at nearly half of the value recorded in 2011 (-42 percent, see Figure 1). Preliminary data for 2014 are not available,⁹ but it is likely that almost a year of civil war and indiscriminate violence has had a tremendously negative impact on economic development. Oil production in the Upper Nile has been disrupted, while

production in Unity was completely shut down for a time (MFEP 2014). The overall political uncertainty is not conducive to private-sector investment or to increasing non-oil revenues, such as those from agriculture, construction and services.

The dominance of the oil sector as a share of a shrinking GDP and as the only driver for hard currency (Table 1) is likely to be confirmed both in 2013 and 2014. Despite the collapse that occurred in 2012 with the dispute over transit fees with Sudan – when the oil sector’s share of GDP fell from 60 percent to 4 percent – the sector continues to have the lion’s share of total exports. This means that no replacement for oil has materialized so far; as such, the non-oil sector’s 96 percent share of GDP recorded in 2012 has to be deemed quite marginal when translated into actual value. Even if all the

⁷ [British Petroleum Review of World Energy](#), June 2014.

⁸ Between 2012 and 2013, GDP increased from SSP31.2 to SSP40.7 billion. In 2011, GDP was SSP58.8 billion. Source World Bank, World Development Indicators.

⁹ To the best of the authors’ knowledge.

constraints to a full exploitation of the oilfields were lifted, current reserves are projected to run out in two decades, so alternative economic strategies need to be planned and implemented urgently.

Table 1 - Non-oil vs. oil sector (as a share of GDP and exports)

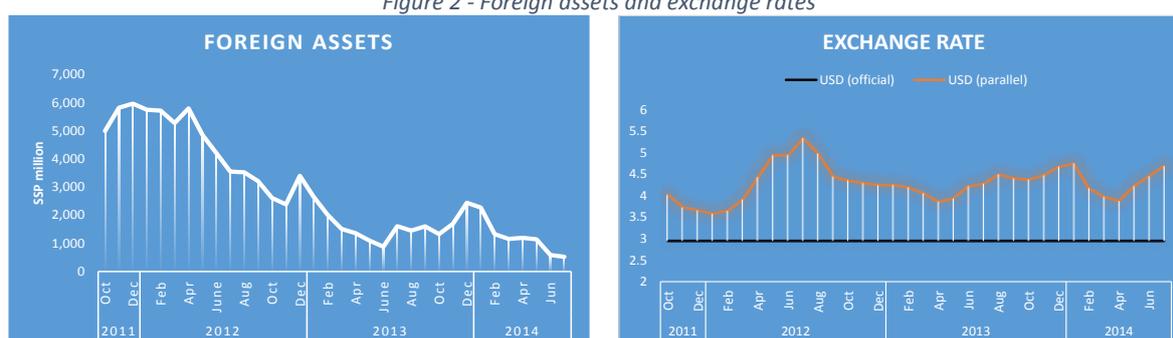
	2009	2010	2011	2012
Non-oil GDP (% of GDP)	47	44	40	96
Oil GDP (% of GDP)	53	56	60	4
Non-oil exports (% of total exports)	3	3	2	22
Oil exports (% of total exports)	97	97	98	78

Source: Draft National Budget Plan Financial Year 2014/15

With some occasional and short-lived exceptions, South Sudan has been depleting its foreign assets since early 2012 and the start of the oil crisis (Figure 2 – left pane). The outbreak of the current crisis immediately halted the initial restocking that was triggered by the partial resumption of oil exports, leading to the lowest ever recorded level of foreign assets in July 2014. In the eight months from December 2013 to July 2014, official records show that foreign reserves dropped from SSP2.4 billion (US\$814 million) to SSP517 million (US\$175 million)¹⁰ – a remarkable 78 percent fall in the local currency unit.

Officially, the South Sudanese pound is pegged to the US dollar; as the economy has plummeted, the parallel exchange rate has come under pressure as well, increasing the spread¹¹ from the official rate (Figure 2 – right pane). According to the International Monetary Fund (IMF), “the persistent parallel market premium since September 2011 strongly suggests that the official exchange rate is overvalued” (IMF 2014). The combination of the depreciating exchange rate and almost exhausted foreign assets has had adverse effects at all levels of the economy, making the country’s import dependency even more penalizing and potentially transmitting further stress on an already stretched internal demand. It is notable that the unofficial exchange is oscillating between 80 and 120 percent above the official exchange rate. This creates a vicious circle, where the private sector has little incentive to tackle the challenges arising from insecurity, poor infrastructure and the lack of dollars to import goods from abroad. Field visits conducted during the assessment and focusing on food supply chains largely confirm this result.¹²

Figure 2 - Foreign assets and exchange rates



Source: Bank of South Sudan – Statistical Bulletin July 2014

¹⁰ Bank of South Sudan, Statistical Bulletin July 2014.

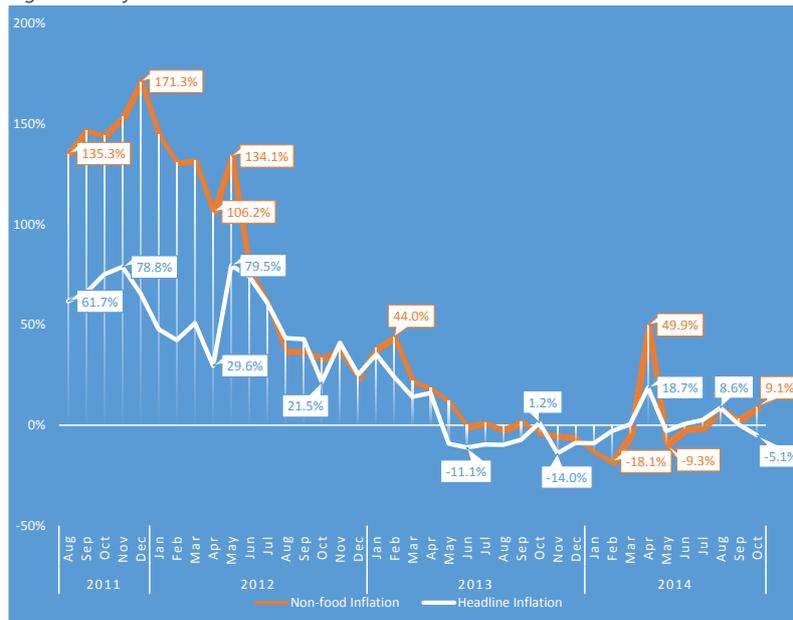
¹¹ “Initial attempts to reform the foreign exchange market and to unify the official and parallel exchange rates in November 2013 were not successful due to resistance from powerful interest groups that benefit from the rents generated by the current system” (Muvawala and Mugisha 2014).

¹² See Section 4. Market structure and conduct for further details.

The government planned to loosen the tight fiscal policy – implemented so far to control inflationary pressure – by temporarily increasing monthly spending from SSP550 to SSP650 million (between January to March 2014) in order to pay salaries and transfer funds to states and counties (MFEP 2014). In total, the budget ceiling allocated is 37 percent higher than that of the previous fiscal year. The likely outcome will be to increase South Sudan’s debt as oil revenues can hardly cover such an increase in expenditures, particularly in the light of sustained low international crude oil prices. In the light of the conflict, the consequence of this increased debt will be further cuts to spending on service delivery and infrastructure (Muvawala and Mugisha 2014) in favour of the army and security forces (MFEP 2014). Planned expenditures for the 2014/15 financial year allocate 39 percent of the budget for salaries, 22 percent for transfers, 7 percent for the arrears fund, and 6 percent for investments in peace and reconstruction.¹³

South Sudan’s economic situation is critical. The country is heavily reliant on foreign debts and international assistance, largely because of its limited new resources, the bigger budget needed to meet operational and emergency costs, and the very few resources left for investments – infrastructure expenditure is currently set to fall by 27 percent. Although estimates of total indebtedness including contractual arrears are not fully reliable, they may exceed SSP10 billion (US\$3 billion). In terms of development and humanitarian aid, donors pledged US\$1.6 billion in the 2012/13 financial year, and may donate as much as US\$2 billion for the following year.¹⁴

Figure 3 - Inflation



Source: Bank of South Sudan

Consumer price patterns reflect this situation (Figure 3). During the peak of the oil crisis in 2012, headline inflation remained between 40 and 50 percent, with fluctuations well into double figures until May 2013. Deflation then occurred for almost a year with sluggish economic performance, tight fiscal policy, weak demand and dwindling resources. The outbreak of the conflict in December 2013 slightly reversed this trend. There were spikes in April (up 50 percent) and August 2014

(up 9 percent), mostly driven by year-on-year price increases of non-food items, but the latest official records show inflation at -5 percent in October. When compared to the historically huge volatility, this temporary price stabilization may be the product of upward pressure associated with the uncertainties of the conflict, balanced by the downward momentum exerted by depressed aggregate demand.

¹³ The specific breakdown (in million SSP) is as follows: salaries, 4,738; transfers to states and counties, 2,470; basic operating costs, 2,704; arrears fund, 800; emergency contingency fund, 250; and priority investments in peace & reconstruction, 676. Source: Draft National Budget Plan Financial Year 2014/15.

¹⁴ All estimates according to the Draft National Budget Plan Financial Year 2014/15. Debt estimates in US dollars according to the [Economist Intelligence Unit](#).

2.2 Import dependency

South Sudan is highly dependent on imports of goods and services, which are almost entirely financed by oil exports. With oil exports plummeting and a steady if not increasing need for imports, the trade balance turned from a surplus of SSP20.5 billion in 2011 to a deficit of SSP10 billion in 2012, with the negative balance widening thereafter (Figure 4). In absolute terms, this deficit is almost one third of GDP.

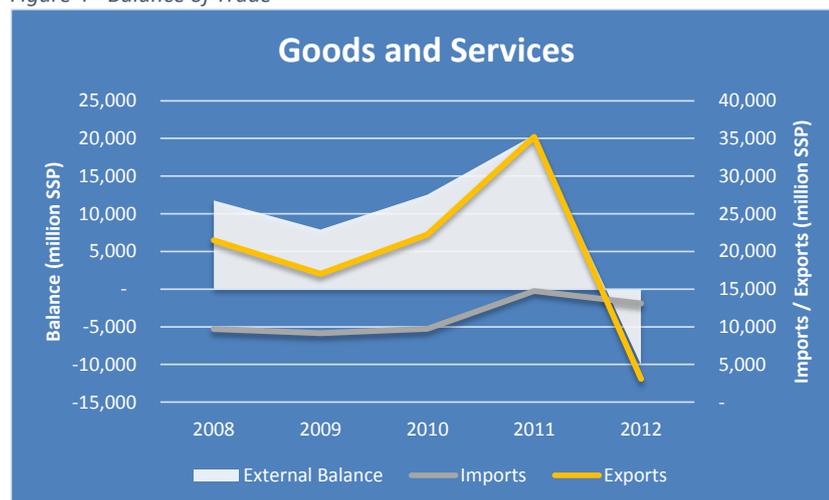
In 2012, the export composition was quite stretched. China was the main commercial partner accounting for 77 percent of total exports, followed by Japan with a 22 percent share.

On the import side, 30 percent of South Sudan's 2012 imports were from China, with a significant portion dedicated to machinery for infrastructure development (e.g. road construction and the new airport in Juba). Other key commercial partners are Pakistan, Uganda and the United States (see Table 15 in Annex I).

A review of different sources shows that imports (both formal and informal) do not follow a stable trend but vary greatly from year to year. This underlines how sensitive they are to South Sudan's volatile and challenging business environment.

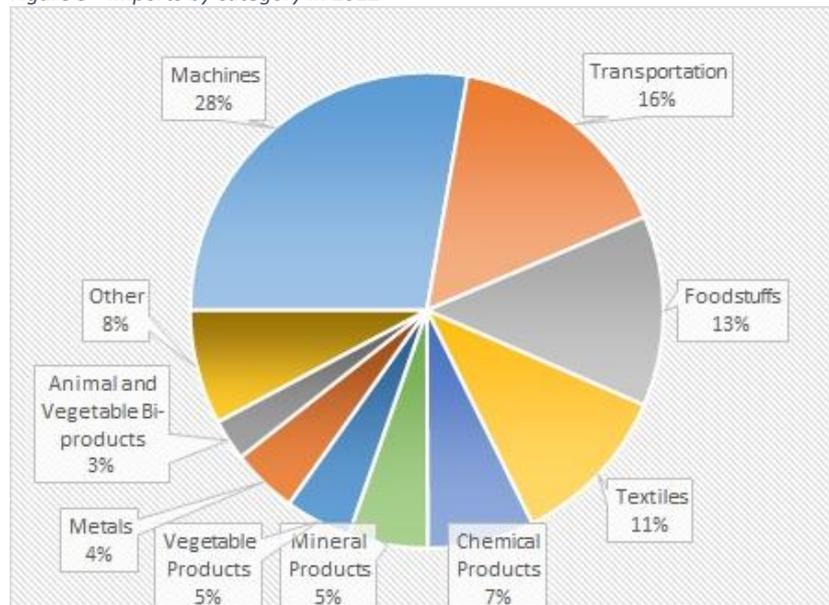
The import control policy designed to safeguard the value of the national currency has also prevented the country from securing a sustained import flow (Tibrichu 2014, Yoshino, Ngungi and Asebe 2011, Nile Basin Initiative 2012, AfDB 2013). In 2012, 18 percent of total official imports were food and vegetable products (Figure 5). Sugar imports accounted for as much as 9 percent of the total import burden (over US\$10.4 million) – almost as much as the imports of large construction vehicles (US\$6.8 million) and cars (US\$6.4 million) together.¹⁵ Other major food imports included dried

Figure 4 - Balance of Trade



Source: World Bank – World Development Indicators

Figure 5 - Imports by category in 2012



Source: Observatory of Economic Complexity

¹⁵ Source: Observatory of Economic Complexity.

legumes (US\$1.9 million), rice (US\$1.4 million) and sorghum (US\$0.8 million).¹⁶ Yet these volumes and values are indicative of 2012 only, when the major dip in the whole economy may have curtailed import records. Moreover, official statistics largely under-report actual flows. Interviews with traders confirmed that most food supplies – in particular processed products – are sourced from abroad through unofficial channels. In 2013, 1.85 million mt of food were informally imported, with maize and sorghum at the top.¹⁷

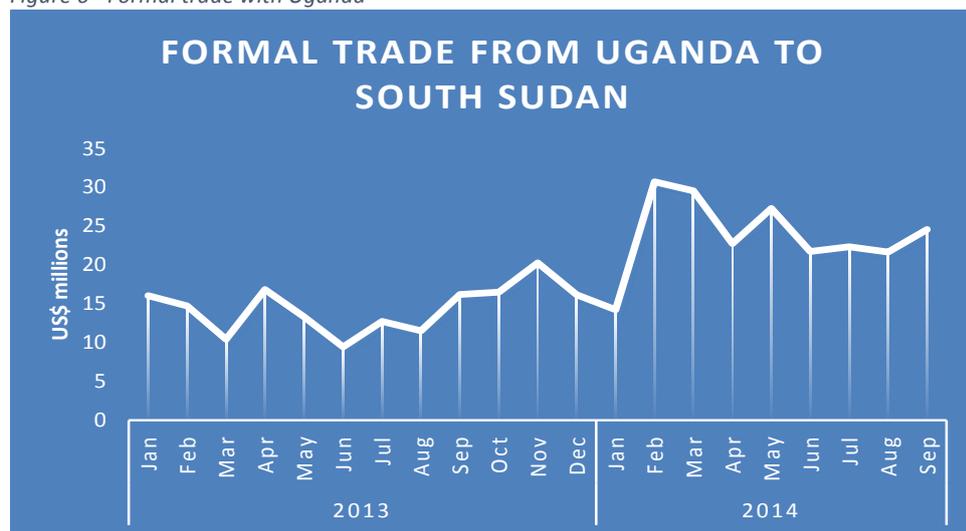
Yet there have been major challenges to food imports, notably the closure of border crossings and insecurity, particularly along the borders with Sudan and Ethiopia. Following the post-independence conflict with Sudan, the borders between the two countries were closed and they remained closed at the time of the assessment. Nonetheless, a thriving informal trade between the two countries continues.

Most formal food imports now come from or through Uganda, and to lesser degree from Ethiopia and Kenya. But there are also substantial informal import flows between South Sudan and these countries. The civil war appears to have boosted Uganda’s exports to South Sudan up to US\$240 million in the 2013/14 financial year, an average increase of 196 percent compared to the 2012/13 financial year (Figure 6).

Immediately after the outbreak of the conflict, food imports fell as a result of the high risks traders faced, but they rose sharply after January in response to improved security and high demand. The assessment established that the conflict has continued to impact trade flows, but principally in the states directly affected by it. In the rest of the country, the impact is indirect, though localized insecurities and roadblocks have increased.

The actual quantities of food imported remain unclear, but the annual cereal import requirements (i.e. the gap between estimated demand and local production)¹⁸ for the past four years vary between 350,000 mt and 500,000 mt.

Figure 6 - Formal trade with Uganda



Source: Bank of Uganda

¹⁶ Followed by maize grains/meals, rice and vegetable oils.

¹⁷ The actual figures are as follows: maize 360,890 mt; rice 238,257 mt; beans 221,762 mt; sorghum 317,114 mt; sugar 254,772 mt; maize flour 221,643 mt; wheat flour 188,907 mt; and sesame 46,276 mt. Source: East Africa Crossborder Trade Bulletin, January 2014.

¹⁸ See the next section for more details.

3. Food availability

Food availability is underpinned by domestic production, imports and food aid. This section provides an overview of the past season and the outlook for the coming one, and it seeks to estimate the import requirements needed to bridge the supply-demand gap.

3.1 Overview (the 2013/14 season)

Food availability in South Sudan was a big challenge during the 2013/14 season. The underlying problems include the country's poor state of development, low investment in the agricultural sector and poor infrastructure, which were compounded by endemic insecurity. At the time of the assessment, the internal movement of food was severely disrupted by poor road conditions and a general lack of transport.

3.1.1 Domestic production

South Sudan has abundant land and water resources suitable for producing diverse crops and livestock, but this potential remains largely untapped. Production varies across the ten states. Greater Equatoria (the states of Western, Central and Eastern Equatoria) has a bi-modal rainfall pattern that enables two to three harvests a year. This contrasts with the uni-modal rainfall pattern and single harvest in most of the rest of the country (FAO/WFP 2013). Most production is rainfed and at subsistence level, except for the mechanized cereal production (also rainfed) in the Upper Nile counties of Renk, Melut and Malakal. Annual production varies significantly because of the high rainfall variability across the country.

South Sudan also produces significant numbers of cattle, goats and sheep. However, most of the larger stocks are held as assets, except for goats and sheep, which are important sources of cash income. The main cereal crop grown is sorghum, which accounted for 69 percent of area sown in 2013, followed by maize (27 percent). Finger millet and rice made up the remaining 4 percent. Sorghum is also the main staple, except in the three Equatoria states where the main staples are maize and cassava. Other food crops produced in the country include sweet potato, yams, sesame, groundnut, okra, cowpea, green-gram, pumpkin, *bambara* nut and a wide variety of vegetables.

The 2014 Crop and Food Security Assessment Mission (FAO/WFP 2014) estimated the total national demand for 2013/14 at 1,299,000 mt against 891,000 mt of local production, giving an overall deficit of 408,000 mt (see Table 3 in paragraph 3.2). The distribution of production and deficits varied widely across the states. Western Equatoria was the only state with a surplus, estimated at 62,000 mt. Western Bahr el Ghazal and Eastern Equatoria had fairly low deficits. Jonglei had the largest deficit at 125,000 mt, followed by Upper Nile (65,000 mt), Unity (64,000 mt) and Northern Bahr el Ghazal (61,000 mt). The IPC analysis in September 2014 revealed a similar pattern, but with a larger national deficit of 653,000 mt. Again, only Western Equatoria registered a surplus (19,000 mt); while Jonglei had the largest deficit (147,000 mt), followed by Upper Nile (114,000 mt), Eastern Equatoria (102,000 mt), Northern Bahr el Ghazal (91,000 mt) and Warrap (77,000 mt).

The worsening and significantly higher deficits in the conflict-affected states reflect the impact of the conflict on production. The conflict displaced a large proportion of the population, resulting in missed planting in March/April 2014. Because of food shortages, many households also consumed grains initially meant for planting, meaning still more missed planting opportunities were missed. The conflict destroyed market and transport infrastructures, as well as food storage facilities. All of these factors will reduce food availability through domestic production, pushing up import requirements even further.

3.1.2 Food aid

The persistent national food deficit, the higher economic burden of importing goods, and the reduced local flow of food because of insecurity and seasonal constraints have made humanitarian food assistance crucial to the most vulnerable communities.

Table 2 - Cereal food distributions (thousand tons) by state

	2012	2013	2014
Central Equatoria	4	4	9
Eastern Equatoria	6	4	4
Western Equatoria	2	3	3
Jonglei	24	10	24
Upper Nile	21	32	25
Unity	12	19	25
Lakes	5	5	14
Warrap	19	25	21
W Bahr el Ghazal	6	6	4
N Bahr el Ghazal	13	11	7
South Sudan	112	119	136

Source: WFP

In the past three years, the Greater Upper Nile (Jonglei, Upper Nile and Unity) has received over half of all cereal in-kind food assistance in South Sudan. Of the states unaffected by the conflict, Warrap was the top recipient, with a 15 percent share. The remaining six states received less than one third of total distribution (Table 2).

Cumulative food aid distributions from January to October 2014 show the conflict-affected states as the biggest recipients (see Table 3 in paragraph 3.2). The distribution of food aid broadly reflects the impact of the conflict on food security and also the food production trends across states: states with high production (Western Equatoria, Eastern Equatoria and Western

Bahr el Ghazal) required the least food assistance. Meanwhile the relatively high distribution figures for Warrap and Lakes (non-conflict affected states) reflect a combination of poor local production and poor road access during the rainy season.

3.2 Outlook (season 2014/15)

Preliminary 2015 harvest projections suggest that South Sudan will have a better harvest in 2014/15 compared with the previous season. This is based on good weather conditions at the start of the growing season (Table 3). The Greater Equatoria harvest is likely to be 5 percent bigger than last year, while good early rains and the record levels registered by the seasonally cumulative vegetation index (NDVI) mean cereal production in Warrap and Lakes is likely to rise by 25 percent from last year. Bahr el Ghazal is also expected to have good production (10 percent higher than last year). However, insecurity in the Greater Upper Nile has hampered all phases in the cropping season, with output is expected to drop by 30 percent.¹⁹

Although these figures are tentative,²⁰ they still provide a basis for estimating South Sudan's supply requirements when triangulated with the volume of cereal distributed from WFP²¹ and estimated

¹⁹ Preliminary projections for 2015 harvest from IPC TWG as at July 2014 reported the following expected changes from a normal year: Greater Upper Nile: between -25% and -35%; Greater Equatoria and (North and West) Bahr el Ghazal: no change; Lakes and Warrap: +15%. Based on rainfall and NDVI data available in early December, these projections were adjusted upward by 5% for all the Equatoria states, and by 10% for the other states. No reliable field information is currently available for the conflict-affected states, but it seems fair to forecast production at least 30 percent below that of last year. All the changes reported in the text are against CFSAM 2014 data.

²⁰ The forthcoming *Crop and Food Security Assessment Mission 2015* remains by far the best source for actual production estimates in South Sudan.

²¹ From 2011 to 2013, cereals made up an average 80 percent of in-kind food assistance. Actual data was also available for 2014 up to October with no breakdown. From then on, cereal distributions have been estimated based on each state's three-year average. Planned figures for 2015 are taken from the residual monthly budget in the South Sudan PRRO 200572. Also, to make the time period consistent with the agricultural year, monthly distributions were lagged by two months, thus a year runs from November to October.

demand based on population growth²² and cereal requirements.²³ The difference between demand and production/food distribution gives the import requirements (or potential surplus) for each state, as shown in Table 3 and Figure 7.

Nationwide, demand is expected to remain fairly stable because the growth rate previously used to estimate the population was revised downwards for mid-2015, probably as a consequence of the civil war.²⁴ With local supply up 4 percent, the deficit is estimated to drop by 18 percent (from 408,000 to 347,000 mt between 2014 and 2015). When food distributions are accounted for, the deficit shrinks still further, resulting in cereal import requirements of 19 percent of total local supply (down from 26 percent in 2014). General food distribution plays a key role, accounting for 13 percent of supply (without imports) and meeting 10 percent of demand.

Despite the limitations,²⁵ it is vital to estimate supply and demand in order to gauge each state's potential for market-based interventions. If per-capita consumption needs are similar from one year to the next, the higher the import requirements, the more markets have to supply food. If markets fail to supply enough food – a very likely scenario in conflict-affected states – food availability may become a major problem for households, compounding their limited access to food.

Specifically, the Greater Upper Nile states will need to compensate for their local supply shortfalls by importing an average of 119 percent of the volume of cereal they obtain from production and cereal distributions combined. The highest deficit is expected in Jonglei (151 percent). In total, 210,000 mt (30,000 mt more than last year) will need to be transported to markets in conflict-affected states, with the limitations to market functioning described in the section below.

Table 3 - Cereal: Expected surplus/deficit in 2014 and 2015

State	2014					2015				
	Demand (’000 MT)	Production (’000 MT)	Cereal FD (’000 MT)	Import Requirement (’000 MT)	as a share of local supply	Demand (’000 MT)	Production (’000 MT)	Cereal FD (’000 MT)	Import Requirement (’000 MT)	as a share of local supply
Central Equatoria	205	150	9	46	29%	200	158	9	33	20%
Eastern Equatoria	144	116	4	24	20%	139	122	5	12	9%
Western Equatoria	117	179	3	-65		114	188	3	-77	
Jonglei	195	70	24	101	107%	188	49	26	113	151%
Upper Nile	105	40	25	40	62%	102	28	22	52	104%
Unity	90	26	25	39	76%	89	18	26	45	102%
Lakes	109	75	14	20	22%	112	94	16	2	2%
Warrap	129	100	21	8	7%	124	125	20	-21	
W Bahr el Ghazal	59	50	4	5	9%	59	55	5	-1	
N Bahr el Ghazal	146	85	7	54	59%	151	94	7	50	50%
SOUTH SUDAN	1,299	891	136	272	26%	1,278	931	139	208	19%

Source: production and demand data for 2014 from CFSAM. Actual in-kind food assistance data from WFP. Projections for 2015 are based on authors' calculations as described in the text and footnotes

Besides Western Equatoria, which usually is a surplus state, Warrap and Western Bahr el Ghazal may also have enough local produce to meet demand. In fact, if food distributions are factored in, both states should have some surplus for the first time in the last five years.²⁶ The deficit recorded in Central

²² Population estimates for mid-2015 are from [IPC – NBS](#) as at September 2014.

²³ At the state level, per-capita consumption rates for 2015 echo those reported in the CFSAM 2014.

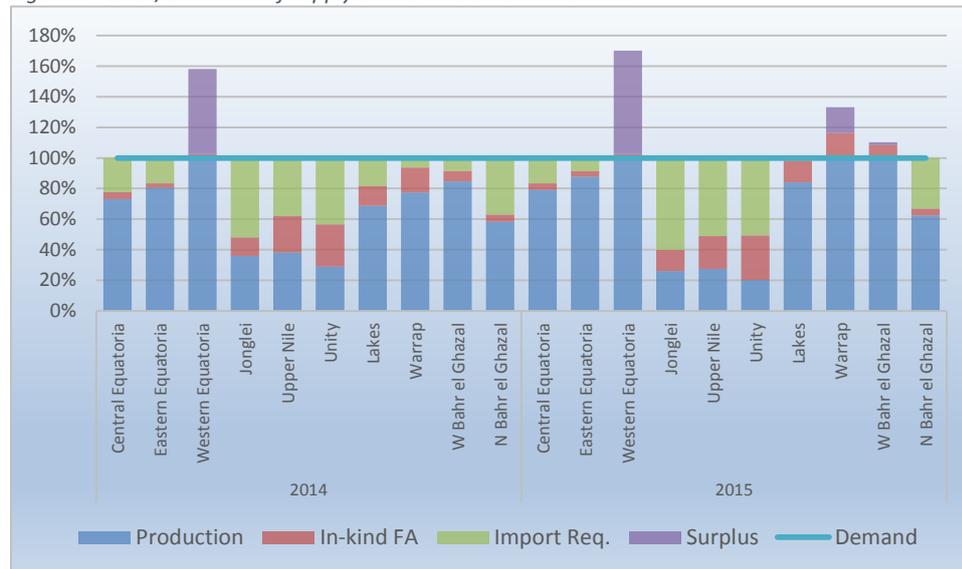
²⁴ The growth rate used by IPC-NBS is 1.8 percent from mid-2014 figures. Interestingly, the mid-2014 population projections from IPC and those of the CFSAM 2014 differ considerably (the former reports 415 thousand fewer people). This may reflect the huge refugee outflow since December 2013 (475 thousand according to [OCHA](#) as at 18 November 2014).

²⁵ Besides the assumptions used to project demand/production/in-kind food assistance for 2015, the analysis does not consider carryover stocks because of a lack of data.

²⁶ The production/demand/food aid data reviewed goes back to 2011.

Equatoria – where the capital is – should not be of concern, as Juba is the major market hub in the country and has a relatively stable flow of commodities coming from Uganda. The same applies to Eastern Equatoria. Northern Bahr el Ghazal will have to import as much as half of the volume of cereal it will obtain from local production and food distributions, and it will therefore be over-reliant on informal trade from Sudan. For Lakes, it appears that food aid will continue to play a buffer role to address local production deficits, particularly when rainy season flooding cuts off part of the state.

Figure 7 - 2014/15 Shares of supply based on demand estimates



Source: production and demand data for 2014 are from CFSAM. Actual in-kind food assistance data is from WFP. Projections for 2015 are based on authors' calculations as described in the text and footnotes. The food assistance figures used in the calculation are planned and may not show actual distribution, which is subject to funding levels.

4. Market structure and conduct

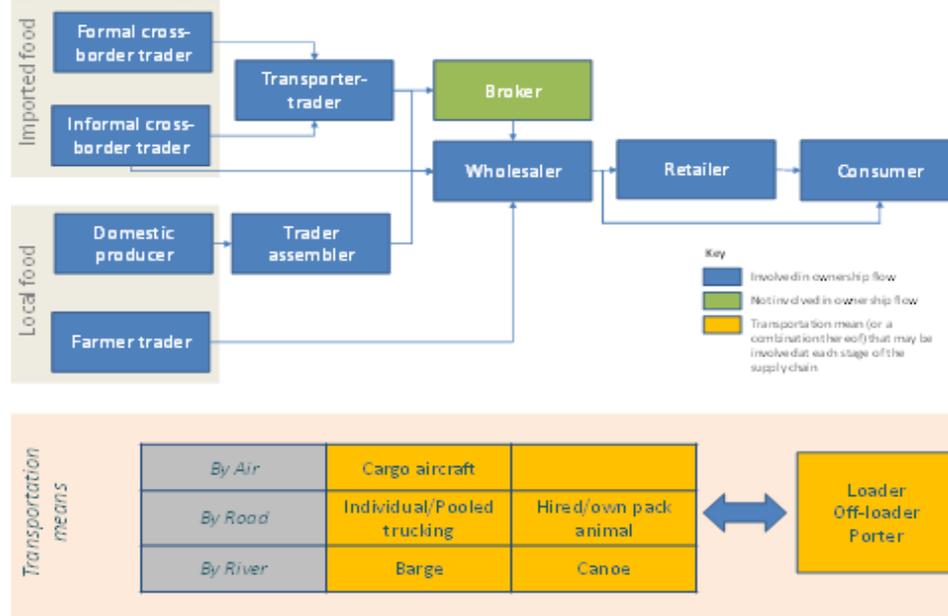
This section describes the actors involved in the food supply chains, the trading flows and the findings from the field visits to South Sudan's main markets. At the end of the section, remote sensing analysis is used to verify the intuitions from field visits.

4.1 Food supply chains (imported and domestic)

Figure 8 illustrates South Sudan's food supply chains, differentiating between imported and local goods. It also categorizes the means of transportation used by the agents involved in the various steps. Transport is a critical factor because it affects a specific market's supply capacity and the seasonal constraints likely to undermine the stability of supply flows. Since insecurity is jeopardizing traditional trading routes, some supply chains have adapted to the conflict, incurring huge inefficiencies, as will become clear in the next sections describing markets and prices.

For conflict-affected areas controlled by the central government, cargo aircraft from Juba have become one of the most reliable supply sources, partially replacing insecure rivers and roads in Unity and Upper Nile. Even when traditional routes continue to function, the largely informal trading channels from Sudan are also expensive, involving hiring loaders, off-loaders and porters at each trading point when the goods change ownership and means of transportation. The same is true in opposition-controlled areas, where supply chains have shifted towards Ethiopia, virtually cutting off part of Jonglei from the rest of South Sudan. In the remainder of the country, supply chains could be organized along the main trading route Kampala-Nimule-Juba and other minor routes from Uganda, Kenya and Sudan.

Figure 8 - Food supply chains



Source: the authors, plus data from WFP 2012

The further markets are from the capital city, the greater the inefficiencies induced by poor infrastructures and corruption. These inefficiencies affect the supply chains and limit the interaction of global supply-chain operators with South Sudanese markets. For the past couple of years, foreign traders have preferred to sell directly to South Sudanese traders rather than deal with the hassle of duties and transportation (WFP 2012).²⁷ South Sudanese cross-border traders generally assemble, purchase and move goods from capital cities and major production areas, venturing as far as Jinja and Mbarara in Uganda and dealing with a devaluating local currency that has limited acceptance. This study consistently reports the chase for US dollars in the black market as one of the most critical and widespread constraints to business in South Sudan. Foreign currency is very scarce and is no longer accessible through banks. Traders typically change their South Sudanese pounds to US dollars in Torit or Juba and then exchange the dollars for Ugandan shillings to pay for goods and transport in Kampala. This process erodes their capital, thereby increasing the cost of their business. This finding is confirmed by macroeconomic evidence described earlier in this report (see Figure 2).

Traders also cited high taxation (both official and unofficial) at customs and checkpoints as one of their main challenges. The issue of checkpoints has been investigated by the National Bureau of Statistics (NBS 2011). Their study found that checkpoints were widespread: there were as many as 6 checkpoints between Juba and Nimule, 32 between Juba and Aweil, 24 between Juba and Wau, and 9 between Wau and Aweil. The demand for payment was widespread. This market assessment did not establish the number of checkpoints in 2014, but the numbers are likely to be the same if not higher because of insecurity.²⁸

²⁷ This paragraph largely builds upon a previous market assessment conducted in South Sudan following independence (WFP 2012). The information has been updated with evidence gathered in the field.

²⁸ According to *South Sudan Cost-to-Market Report. An Analysis of Check-points on the Major Trader Routes in South Sudan*, "there is on average one checkpoint per 25 km" with widespread payment being demanded. "On all routes surveyed, drivers made some payment almost every time they were forced to stop. On the Juba-Torit and Torit-Juba routes, drivers made a payment at an average of 93 percent of the checkpoints encountered. On

Domestic production usually relies on short supply chains, with farmer-traders using low-capacity means of transportation and selling directly to customers, retailers and, to a lesser extent, to wholesalers operating in the markets. For imported goods, transporters play a major role, with pooled (for small-scale traders) or individual (for large-scale traders) trucking. Brokers may link foreign suppliers with local traders when supply chains get longer.

Some wholesalers engage directly in cross-border trading, usually by selling off-the-truck cereals. Others run their business through stores or stalls of various sizes, mostly depending on the market. Traders in conflict-affected areas operate with very low capacity²⁹ as the conflict renders investments risky and market conditions extremely volatile. Elsewhere in the country, trader storage capacity also varies, but it is generally much higher than in the Great Upper Nile (e.g. 25 mt in Torit). Wholesalers often play a dual role, engaging in the retailing sector too. In almost all the non-conflict area markets covered by this assessment, traders come from across the region (Sudan, Uganda, Kenya, Ethiopia, Somalia and Eritrea): in many markets, they actually outnumber and out-scale their South Sudanese counterparts.

Pure retailers usually have a marginal role in the supply chains, mostly involved in petty trade or small-scale activities. In the context of market-based interventions, they cannot be considered suitable partners because of their limited volume of trade and inconsistent capacity to deliver.

4.2 Greater Upper Nile

The assessment team visited markets in Akobo and Bor in Jonglei state, Bentiu in Unity state, and Malakal and Renk in Upper Nile state. Most of the findings cited here are liable to change if violence escalates during the dry season.

4.2.1 Trade flows

The whole of the Greater Upper Nile normally suffers a food deficit and demand is met by trade flows from other states or by imports from Sudan and Ethiopia. The conflict has truncated traditional commercial flows within the states of Jonglei, Upper Nile and Unity, and imports flows from neighbouring countries fail to spread as they did in the past (Map 2).

Most cereals arrive in Upper Nile from Renk, or even further north from White Nile, Blue Nile and Sennar in Sudan through smuggling routes. Traders purchase in Renk, then they transport goods using the road up to Melut. The goods are then loaded onto barges to Kodok and eventually to Malakal. Other trading routes used to come from the Blue Nile area through Maban county, or go southeast from Gambela in Ethiopia,³⁰ but these have been cut off by the conflict.

Additional imports come from Abyei to Bentiu, but insecurity and flooding have dramatically reduced the supply from there. At the time of the assessment, commercial flights from Juba to Bentiu (and to a lesser degree to Malakal) were probably the most important supply source for the area, pushing up prices tremendously.

Goods from Ethiopia reach Akobo in eastern Jonglei, usually transported using the tarmac road on the Ethiopian side up to Metar port (or brought by river from Itang port). Both solutions face seasonal

every other route, drivers made a payment at an average of 97 percent or more of the checkpoints they stopped at. It is clear that payments are not only made at the international borders.”

²⁹ In Bor, the larger traders have around 10 mt storage, but storage is much lower elsewhere.

³⁰ One trade route is via Maiwut, but it is impassable almost all year round. The other is via Nasser, using the Sobat river, ultimately connecting Malakal to Akobo.

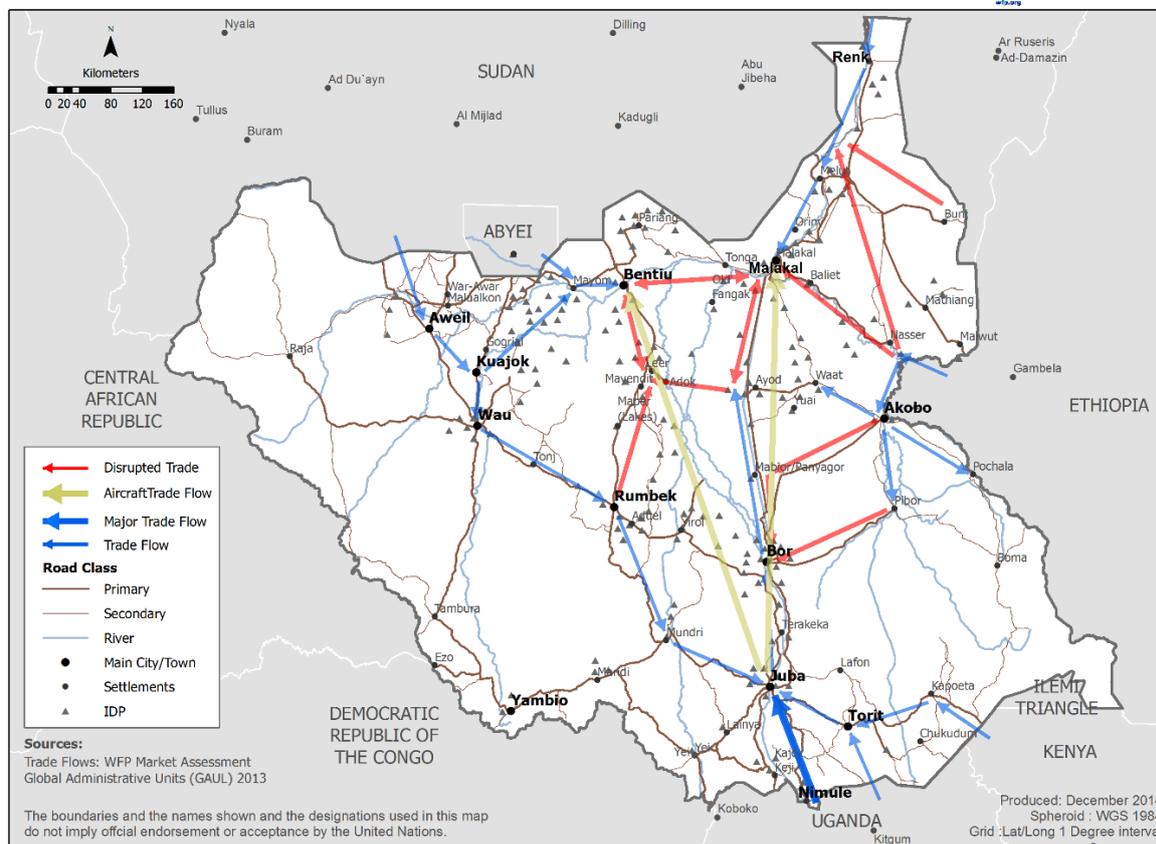
challenges either from falling water levels or flooded roads. Most of the trading routes connecting Akobo to the rest of Greater Upper Nile have been severed by the conflict,³¹ as have those to Bor and most of Jonglei.

Reportedly, no trading routes south remain open between Malakal and Ayod along the White Nile trade corridor. Bor traders are no longer supplying Ayod, Waat and Lankien county markets in northern Jonglei (nor Leer by river). Bor leans commercially towards Juba (and ultimately, Uganda).³² Other commodities may be sourced from further southeast from Kenya via Kapoeta and Juba. A few products (e.g. sugar) may also be imported from Sudan, travelling all the way from Aweil, Wau Rumbek and Juba before finally reaching Bor.

Traders have not been able to put in place any mitigation measures, bearing all the shipping risks. Allegedly, in the periods between fighting, the only way to avoid looting is to pay bribes.

Map 2 - Greater Upper Nile trade flows

SOUTH SUDAN - Greater Upper Nile Trade Flows



4.2.2 Main markets

Akobo (Jonglei state)

Overview. At the time of the assessment, Akobo was the stronghold of the Sudan People’s Liberation Movement – In Opposition (SPLM-IO). It is surrounded by rivers, which make the area fertile but also prone to flooding. During the rainy season, road connections are cut off and river transport is the only

³¹ Traditional trading routes used to connect Akobo to Bor and Malakal but they are currently unusable because of the conflict. Some residual trading still takes place with Watt, Pochalla and Pibor.

³² The travel time to Juba varies from 3 hours to 7 days depending on the season and the means of transportation.

viable alternative.³³ Being close to the border with Ethiopia,³⁴ Akobo continues to receive a decent flow of goods from the Gambela region.

Market functioning. The market in Akobo is constrained by limited demand and contracted supply. Households have little purchasing power, as government salaries were suspended and communities are running out of cash as their resources are draining towards Ethiopia. Ethiopian traders play a major role either directly involved in trade activities or owning the boats for transportation. Yet they are becoming reluctant to take the South Sudanese pound, which further reduces supply.

Table 4 - Cost of importing a 50 kg bag of sorghum from Ethiopia

Hiring of boat	SSP65
Porters in Gambela	SSP60
Taxes (Ethiopian side including armed escort)	SSP15
Taxes (Akobo)	SSP5
Porters in Akobo	SSP5
Total	SSP150

The cost of importing 1 mt of sorghum from Gambela is around SSP3,000 (of which SSP400 go in taxes [see Table 4]). Food distributions also temporarily suppress market activity, reducing the incentive for traders to engage. There are reportedly

fewer than one sixth of the wholesalers who were operating before the crisis, but this figure is likely to return to up to half the usual number in the coming dry season. Market capacity is down anywhere between 40 and 70 percent from usual volumes, depending on the season. At the time of the field visit, sorghum, maize, wheat, sugar, and vegetable oil were being sold in the market.

Potential. Market-based transfer modalities could be considered in Akobo, in particular to address the problem of household purchasing power and to give some momentum to traders' activities. Despite the challenges, the contraction of trading flows is being partially offset by local production and food distributions, the supply route from Ethiopia is somehow reliable, and the upcoming dry season may allow traders to expand their supply capacity, even though the costs associated may be relatively high. The absence of the financial sector – there are no operating banks or money transfers³⁵ – would need to be addressed for market-based options to be implemented. Any decision to reduce general food distributions would need to take into account the likely negative impact on overall food availability. If the pay-off was rewarding, traders in Akobo might also consider expanding their business to Pibor and West Akobo (Uror county and Lankien county). However – as insecurity and risk grow exponentially – the assessment found no interest in trading in SPLM-controlled areas (e.g. Malakal and Bor).

Bor (Jonglei state)

Overview. When the conflict flared in December 2013, Bor was among the most disputed towns, changing hand several times between the SPLM and the SPLM-IO. Indiscriminate violence drove most of the population away, with press headlines describing it as a 'ghost town'. Currently, 100,000 of the 221,000 inhabitants of Bor South county (SSCCSE 2010) are still displaced in Awerial on the opposite bank of the White Nile, particularly in Mingkaman camp.³⁶

Market functioning. The market was completely destroyed when the violence broke out, with almost no trading activities in the subsequent few months. The improving political stability in Bor has meant the partial resumption of market activities, and vegetables and staples are now widely available. However, as most of the shops and buildings were razed and looted, the market still contains several

³³ The small, unpaved airstrip can be used safely by helicopters and if it is not too muddy, by small caravan aircraft. It is mostly used by humanitarian flights.

³⁴ Which can be reached in 30 minutes using 'speedy' boats.

³⁵ Reportedly, before the conflict there used to be a money transfer agency operating with Juba.

³⁶ OCHA, [South Sudan situation map](#), November 2014.

abandoned or under-construction sites. One third of traders have returned, though few have more than 10 mt storage capacity.³⁷

There are five checkpoints from Juba to Bor. Minibuses carrying people pay SSP5 for each passenger, while lorries transporting food pay a lump sum of between SSP1000 and SSP1500 at the entrance to Bor. Traders also mentioned that a lot of time is wasted at checkpoints, and that they would prefer to pay extra sums along the way if the whole process was shorter.

Even though the population is slowly returning, demand remains low compared to pre-crisis levels, as does supply. Market capacity will increase greatly in the dry season, because lorries will be able to supply the market more regularly and with shorter travel times. In fact, if the situation remains stable, food availability should not be an issue, considering that Bor is less than 200 km from Juba, the roads are passable all year round, and the town has both a river port³⁸ and an airport.

Potential. By and large, the market in Bor is the most vibrant³⁹ in the whole Great Upper Nile region, with a high potential for market-based interventions. There is a need to explore how these programmes could benefit IDP communities in Awerial in terms of expanding Bor's catchment area, leveraging demand, and possibly stimulating the population to return.

Bentiu (Unity state)

Overview. Before the conflict, Bentiu used to be a vibrant trading hub, with household livelihoods based on oil factories, government employment and livestock. But the civilian massacres committed by different fighting groups loosely associated with the two parties in the conflict forced most of the civilian population to seek shelter in UNMISS Protection of Civilians sites (POC). At the time of the assessment, both sides of the conflict were claiming control over different parts of Bentiu, creating a very tense situation. The government hold over the airport strip in Rubkona county was relatively more stable. The airstrip is around 5 km north of Bentiu on the opposite bank of the Bahr al-Ghazal river, between the town and the POCs.

Two small markets are operating in Bentiu⁴⁰ and Rubkona, mostly providing goods to soldiers and their families. The biggest markets are in the POCs, serving 50,000 people.⁴¹ Almost half of the traders left after the violence; the remaining traders run small-scale businesses.

Market functioning. Market functionality is severely limited by the appalling road conditions and widespread insecurity, which effectively make Bentiu an economy under siege, with hardly any fuel available. Unsurprisingly, the most important and reliable flow of products comes from Juba on fixed-wing aircraft.⁴² This mode of transporting rice, vegetable oil, wheat flour, biscuits and sugar is expensive, sending retail prices sky high. In particular, sugar was found to be three times more expensive than in Malakal.⁴³ There are apparently four or five major cereal importers, but it was not

³⁷ Somalis and Sudanese seem to be the major cereal traders currently operating in Bor.

³⁸ According to the customs office, there are around ten boats a day (two of which bring food), each with a capacity between 45 to 100 mt.

³⁹ There is one operational bank, as well as several money transfer agents.

⁴⁰ The team was not able to visit the market in Bentiu because of security constraints.

⁴¹ OCHA, [South Sudan situation map](#), November 2014.

⁴² With a capacity of 1 to 2 mt, depending on the goods transported. Key informants also reported a few *Antonov* aircrafts landing in the airport, which probably have greater storage capacity.

⁴³ One bag (50 kg) was SSP1,850 in Bentiu vs. SSP580 in Malakal (prices collected at the end of October 2014).

possible to estimate how much traders had to pay (formally or informally) to secure their shipments from Juba.⁴⁴ Checkpoint payment before the entrance of the POC is also required.

Alternatively, sorghum from the Abyei region (or from West Kordofan) can be purchased in Mayom. During the rainy season, porters can take up to three days for the round trip, while in the dry season they use cars (rent SSP12,000 – loading capacity 200 bags) or little lorries (rent SSP25,000 – loading capacity 350 bags).

Ideally, there could be an additional trading corridor from Mayom up to Kuajok, but this solution would require engaging with other intermediaries because traders in Bentiu fear ethnic violence in Warrap state. Currently, many traders do not even venture outside the POCs.

There used to be some residual southbound trading activity with Leer market, close to the port of Adok, which connected the town with Juba via the River Nile. However, this trading route has become extremely challenging for Bentiu traders, as it would mean moving from SPLM-IO to SPLM-controlled territories. Very minor trade goes towards Malakal, mostly using small boats which are highly exposed to looting.

According to key informants, the market supply capacity can be estimated to cover 6/7 weeks only, because traders were not able to preposition their stocks to face the rainy season. Capacity is likely to grow during the dry season, although the improvement in trade flows brought by better road access might be counteracted by fighting for the control of the two major access points to Bentiu and Rubkona, namely the airport strip and the road junction to Mayom.

Potential. Given current conditions, a market-based response does not appear viable in Bentiu. Trader supply capacity is restricted by circumstances beyond their control because of the volatile security situation, and the only supply source from Juba is shrouded in uncertainty. Moreover, in-kind food assistance up to October met 28 percent of total demand for 2013/14 in Unity state (see Table 3), so if cereal food aid was cut, it is more than likely that additional pressure would be passed on to already inflated prices.

Renk (Upper Nile state)

Overview. Most informal trade flows from Sudan transit Renk before reaching the Greater Upper Nile states. As most of South Sudan's mechanized farms are located nearby, the market used to be one of the region's foremost trading hubs. However, insecurity has affected the 2014/15 agricultural season, likely reducing the overall area cultivated and the output.

Market functioning. Most of the population has been displaced so local demand has plummeted. Even so, nearly 600 trucks of different sizes continue to arrive each month (around half of last year's volumes) to dispatch commodities elsewhere, and this is expected to increase in the dry season. Wholesalers may rely on high storage capacities, with stocks being hosted in one of the four large warehouses held by the Ministry of Agriculture.

Potential. Unless violence escalates, Renk's proximity to the border and its role as a supply market mean that market-based transfer modalities could be implemented relatively risk-free.

⁴⁴ Traders were reluctant and very vague when asked about this.

Malakal (Upper Nile state)

Overview. One fourth of the population in Malakal has been displaced into POCs or other IDP sites.⁴⁵ The remainder has moved elsewhere in the countryside or left the Upper Nile for destinations such as Khartoum and Juba.

Despite timid signs of recovery, insecurity remains the major issue here. It pervades market activities because traders are not eager to invest so as to minimize their potential losses from looting. It also dominates life in the POCs, with high tension among ethnic groups. Currently, there are three functional markets. One is in the town, dealing mostly with lunch/street food and with very few traders selling cereals. The second and the biggest market is situated at the POC alpha gate, and the third market is inside the POC, with tiny petty-trade activities.⁴⁶

Market functioning. Because of the conflict, only one sixth of traders are now operational and overall trading capacity has been reduced to a meagre 10 percent of pre-conflict levels. The dry season could improve road mobility and increase supply. Unlike Bentiu, the commodity flow from Sudan is more stable and is possible all year round via road and river transport. But most packaged food arrives from Juba by cargo flights, at a cost of SSP11 per kilogram.

Table 5 - Cost of importing a 10 kg bag of sugar from Sudan

Cost in Renk	SSP85
Road transport to Melut	SSP20
River transport to Malakal	SSP5
Transport to the market	SSP2
Porters	SSP2
Taxes	SSP1
Total	SSP115

Imported commodities are available all year round, including cereals, vegetable oil, pulses and sugar. For the latter, one fourth of the cost is transport, excluding checkpoints (Table 5). Traders reported the presence of 10 checkpoints between Renk and Malakal, each asking for arbitrary payments – an average of SSP100 per

shipment. Even when these unofficial payments are made, the risk of looting escalates when fighting occurs.

Potential. In principle, traders ought to be able to provide additional supply if a cash and vouchers programme is implemented. The close proximity to mechanized agricultural schemes in Renk should facilitate a good flow of supply to Malakal. However, traders blamed sloppy demand (poor purchasing power and few customers) as one of their major concerns. The number of checkpoints pushes up prices, and it is not practical to rely on air cargo from Juba because that is also very expensive. Moreover, while the security situation was relatively stable at the time of the field visit, the whole area remains one of the most disputed in South Sudan. There is a high risk of interruptions to the main trade route towards Renk. All these factors could pose significant problems to the implementation of market-based interventions.

4.3 Greater Equatoria and Bahr el Ghazal

In Equatoria and Bahr el Ghazal, the assessment team visited seven key markets: Juba in Central Equatoria; Torit and Nimule in Eastern Equatoria; Yambio in Western Equatoria; Rumbek in Lakes; Wau in Western Bahr el Ghazal; and Aweil in Northern Bahr el Ghazal. The main trade routes along this belt and with the neighbouring countries are depicted in Map 3.

⁴⁵ According to OCHA, there are 39,000 people in Wau Shiluk; 17,478 in Malakal POC; 3,000 in Detang; and 6,920 on Malakal Shiluk (Island). The county population was estimated to be 126,483 in 2010 (SSCCSE 2010).

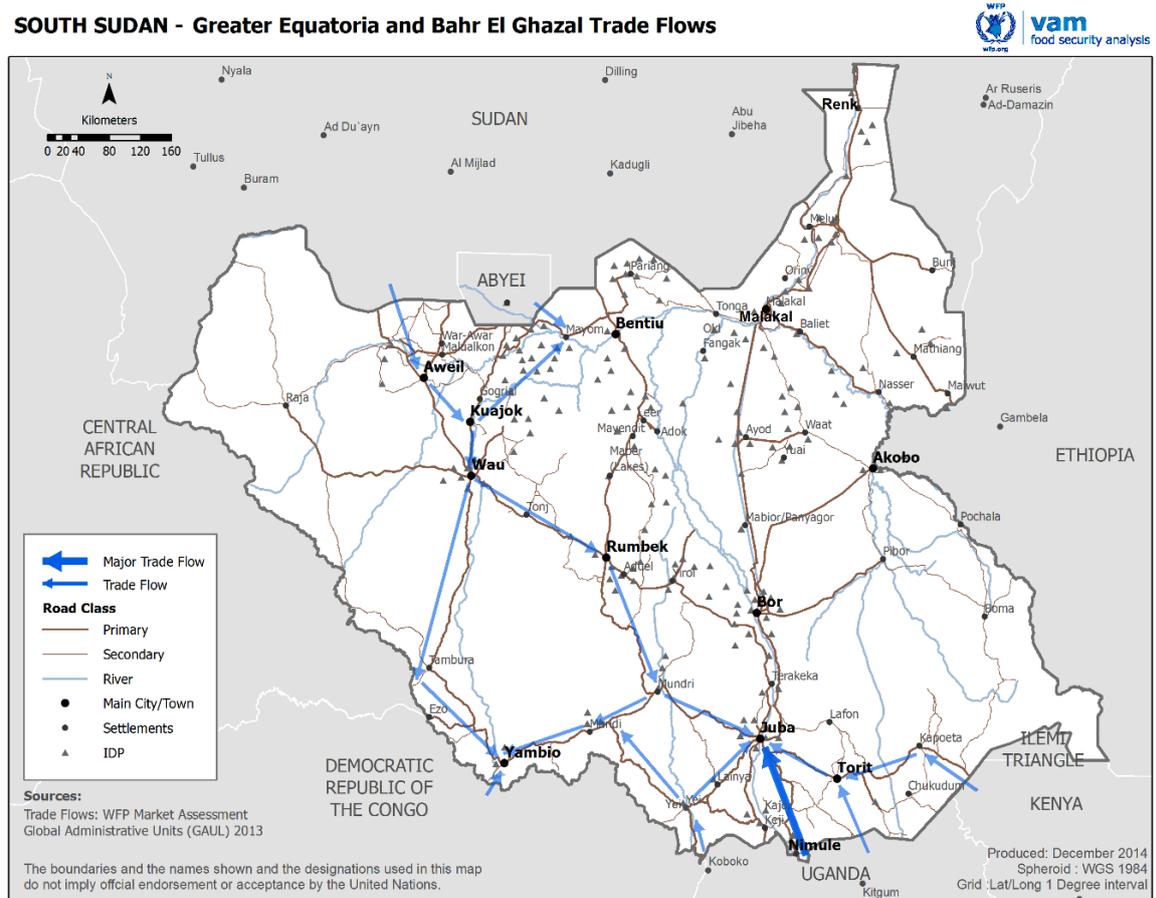
⁴⁶ A fourth market inside the POC was looted during the field visit.

4.3.1 Trade flows

Most food imports come from Uganda and enter South Sudan via the Kampala-Nimule-Torit-Juba route. In order of relevance, other smaller but important routes from Uganda include Kampala-Kaya-Yei-Yambio, Kampala-Kitgum-Tseretsenye-Torit and Kitgum-Poger-Torit. Goods from Kenya tend to originate in Kitale and enter via the Logichogio-Nadapal-Kapoeta-Torit route. Commodities from Uganda and Kenya do find their way as far north as Aweil. Previously, the northern markets (Aweil, Wau and Rumbek) were largely supplied from Sudan from sources as far away as Khartoum, South and North Kordofan, and South Darfur – through El Obeid and other markets. In normal times, when roads are accessible, these commodities stream south through Aweil and Wau to Rumbek and onwards to Juba, and from Wau to Yambio in the west.

Even though the conflict has had no direct impact on markets in Greater Equatoria and Bahr el Ghazal, there may have been indirect effects. Immediately after the December 2013 clashes, a large number of traders moved southwards. Traders from Jonglei reportedly moved to Torit and took up business in that market, thereby increasing competition. The conflict has created an environment of insecurity with a proliferation of banditry, especially along the Torit-Kapoeta route to Kenya, where trucks are reportedly being looted with increased frequency. This kind of insecurity has permeated most of the trading routes, with unofficial checkpoints and roadblocks being set up to extort money. Traders have not found effective ways to deal with this, though those coming from Kenya opt to take the longer route through Uganda to avoid looting.

Map 3 - Greater Equatoria and Bahr el Ghazal trade flows



The main commodities traded include sorghum and wheat flour from Sudan via Aweil and Wau; maize flour, sugar and cooking oil come from Uganda via Nimule-Juba-Mundri and Kaya-Mundri-Yambio

routes. Equatoria and Bahr el Ghazal have high agricultural potential; some of the food on these markets is supplied from local production, including groundnuts, *simsim*, roots and tubers, vegetables and fruits. Sales of food aid were also reported but in limited quantities. In general, food supplies are more abundant during the dry season (December to April) when roads are passable. Despite the challenges, food availability across the markets is generally high.

4.3.2 Main markets

Nimule (Eastern Equatoria state)

Overview. Nimule is 190 km south of the national capital, Juba. It is the main border crossing to Uganda and the most important route for imports of food and non-food commodities into South Sudan. It also has the longest tarmac road in the country, ensuring easy movement towards Juba. The local market is relatively small, serving local and nearby counties and *payams*.

Customs officials believe that 80 percent of all goods imported into South Sudan enter through this border. Customs clearance is done manually, which causes significant delays.⁴⁷ A variety of food commodities are traded on this market, including maize flour, wheat flour, maize grain, sorghum, rice, beans, vegetable oil, sugar, cabbages, onion, green bananas and livestock. Most of these are imported from Uganda, but among the local produce are vegetables, sorghum, ground nuts and beans.

Market functioning. The conflict has not had a direct effect on trade and markets in Nimule. There was an initial fall in the volume of goods entering the country, as traders sought to reduce their exposure to the risks associated with the volatile situation in Juba. But trade volumes increased when the situation in Juba stabilized (see Figure 6 above).

It was not possible to estimate the volume of goods on the market, but there were few wholesalers. Commodity volumes on the market are reported to have been stable and the market is well connected with neighbouring counties. Indeed, some traders obtained some of their stocks from wholesalers in Juba.

Potential. There is assured availability of food through direct imports from Uganda and from local production, resulting in stable food prices on the market. This makes Nimule suitable for market-based food assistance.

Torit (Eastern Equatoria state)

Overview. Food was widely available in Torit, mostly imported (from Uganda and, to lesser extent, Kenya), including 80 percent of maize flour, 50 percent of sorghum, and nearly all vegetable oil, sugar and wheat flour. But most of the vegetables, some sorghum, ground nuts and beans are also locally produced, though these are mostly available during the harvest season. Traders also reported the sale of food from government sources and food aid, but in relatively small amounts.

Market functioning. The market remains very vibrant with large quantities of goods, although traders face several constraints, including foreign exchange scarcity, high taxes (Table 6), a long customs clearance process at Nimule, and insecurity on the route to Kenya.

⁴⁷ There is little agreement on the time needed to clear one truck: it may take 2-3 hours according to custom officials, or up to 2-3 days according to traders.

Table 6 - Taxes and fees in Torit for 25 mt of sorghum/maize flour

Tax	SSP3,500 ⁴⁸
Municipal tax	SSP300
Commerce tax	SSP75-100
Revenue authority	SSP500
Security tax	SSP60
Monthly ground rent	SSP25
Monthly collection tax	SSP28
Yearly business profit tax	10%

The quantities of food commodities could not be estimated but was noticeably large. There were an estimated 300 wholesalers, each importing at least 25 mt of food a month.

Potential. Traders were keen to participate in a cash and vouchers programme, claiming that they can easily expand their business to meet any increase in

demand. Storage and transport do not constitute major challenges to them. Most wholesale traders import directly from Uganda and Kenya; a steady supply and low prices are also assured by proximity to the main import route and to productive areas. Consequently, Torit and surrounding locations are potentially well suited for market-based assistance.

Juba (Central Equatoria state)

Overview. Juba hosts *Konyo Konyo*, the biggest market in the country. Supply from local production is insignificant compared to imported food, which reportedly accounts for 85 to 90 percent of total supply in the market.

Staples such as maize, sorghum and beans are mainly sourced from Gulu market in Uganda. Processed foods such as wheat and maize flour are sourced from Kampala, where there are large-capacity millers. Other goods such as rice, cooking oil and sugar are imported through Mombasa from Asian countries such as India and Pakistan. Big traders get most of their industrial processed food through agents in Dubai and Mombasa.

Foreign traders control the most of the food import flow.⁴⁹ The major processed food importers are from Uganda, Kenya, Sudan, Ethiopia, Eritrea and Somalia. Staple food importers are mainly Ugandans.

Market functioning. The outbreak of the conflict temporarily affected prices: a short-lived tremble followed the violence in mid-December 2013. The political situation then stabilized and market prices are now back to normal. However, *Konyo Konyo* traders reported a sharp decline in customers coming from conflict-affected areas such as Malakal and Bentiu, while in the past large volumes used to be purchased from the Greater Upper Nile. Moreover, since the conflict started, local demand has fallen because IDPs receiving food assistance are less dependent on markets.

As a result, it takes longer to sell imported stocks compared to before the conflict, with transaction and storage costs consequently higher. There used to be around 50 staple food wholesalers (importing from Uganda), but there are now 20 to 30. The Chamber of Commerce has confirmed they had 30 percent fewer members in 2014 than the previous year.

Transporters have reported a large drop in the demand for trucks over the past year. Besides their reluctance to enter conflict-affected areas, they said that the fees for using the roads have increased from SSP170 to SSP200 per truck. Repeated tax payments along the supply routes (from national to *boma*-level checkpoints), as well as requests to pay more than the official taxes and fees at checkpoints, has put additional pressure on traders. Transporters also cited a shortage of fuel at the time of the assessment as a major constraint on their business.

⁴⁸ SSP7,500 in the case of beans.

⁴⁹ According to Chamber of Commerce information, about 70 percent of food importers are foreign.

Potential. Traders have said that if effective demand increases, they would be able to double the current volume of trade. The round-trip to get staples from Gulu and Kampala in Uganda takes about one week. There are financial institutions in Juba, meaning partnerships could be feasible for market-based interventions. Given the current market functioning, the number of traders involved, and the stability of supply flows, Juba presents by far the best environment for piloting a cash and vouchers programme in the country.

Yambio (Western Equatoria state)

Overview. Yambio is in an agriculturally productive state, making it a potential breadbasket for South Sudan. Its close proximity to DRC, Central African Republic and Uganda also offers high potential for trade. However, it is far from Juba and the main trade access routes are poor and often impassable during the rainy season. The road to Uganda, its principal source of food imports through the border crossing at Kaya, was severely disrupted by the rainy season at the time of the assessment. Some of the goods traded in Yambio come from Sudan, via Wau, a route that was also affected by the rainy season. Local production is the source of some trade, and a limited amount comes from Juba via Mundri.

Market functioning. Poor road conditions reduced the supply of food to the market, resulting in high prices between March and November. Traders expect the dry season (from December to February) to improve accessibility and increase supply from all of the main sources. Most of the counties produce a variety of food including *simsim*, maize, cassava, ground nuts, fruits and vegetables. These are also sold on local markets during the harvest period.

Traders and trade representatives said that challenges included a lack of credit and foreign exchange to import food commodities, and high taxation at checkpoints, with traders paying up to SSP7,000 between Kaya and Yambio. Nonetheless, trader numbers were high, between 200 and 300, and included Ugandans, Kenyans, Ethiopians, South Sudanese and Eritreans.

The market offered a wide range of goods including maize flour, rice, sorghum, beans, cooking oil, Irish potatoes and vegetables. Most food came from Uganda, the source of an estimated 60 percent of beans and rice, 100 percent of vegetable oils and a very high proportion of maize meals. About 40 percent of sorghum and 50 percent of vegetables were believed to come from local production. Palm oil, some cassava flour and rice were from DRC.

The cost of doing business is high, leading to relatively high prices. According to traders, it costs an average US\$25,000 to buy a 50 mt consignment of assorted goods. It then costs between US\$6,000 and US\$7,500 to transport them, and up to SSP14,000 (about US\$2,500) in taxes from the border at Kaya up to Yambio. Prices tend to be highest between July and November.

Potential. Notwithstanding these challenges, food was widely available on the local market, albeit at high prices. Given its diversity of supply sources, Yambio could be suitable for market-based food assistance. The dry season is expected to increase road accessibility to all supply sources (Uganda, Sudan via Wau, and possibly Juba), which will lower prices.

Rumbek (Lakes state)

Overview. Rumbek is in a deficit state in the centre of South Sudan. Consequently, it relies on food imports from (and through) neighbouring states, especially from Wau and Juba. At the time of the assessment, the supply of food was very low because of inaccessible roads, so prices were high. However, supply conditions (and prices) should improve with the arrival of the dry season in December, when access routes to Wau and Juba will improve.

Market functioning. The conflict has had no direct impact on markets, but it has created general insecurity and uncertainty, leading to numerous roadblocks and extortion through official and unofficial taxes. The roadblocks lie along the main trade route to Wau and Juba, not only disrupting normal trading flows but also increasing the cost of doing business. The lack of incentives to trade has ultimately led to low market volumes. Not surprisingly, prices in Rumbek were very high, next to those in the conflict-affected markets of Malakal and Bentiu. The situation in Rumbek is a good example of how market functioning in South Sudan is affected by chronic failures beyond the conflict.

Potential. There is a very low assurance of food supply, mainly because of inaccessible roads. Because Rumbek is in a food-deficit state, there are limited opportunities to supply the market from local sources. Although greater road accessibility during the dry season will increase food supply, particularly from Juba and Rumbek, prices could remain high, reflecting high transportation costs. Therefore, market-based assistance here would be risky, although it could be considered on a limited scale during the dry season.

Aweil (Northern Bar el Ghazal state)

Overview. Aweil lies along a key trade route that connects El Obeid in Sudan to Northern Bar el Ghazal. It is a gateway for the flow of food to many markets in states including Warrap (Warrap, Tonj), Western Bahr el Ghazal (Wau, Raja), Lakes (Rumbek) and Western Equatoria (Yambio). Unsurprisingly, the main foods come from Sudan (i.e. sorghum, wheat flour, broad beans, sugar and vegetable oil). Aweil is also the end destination for food coming from or through Uganda, such as maize flour, sugar, salt, vegetable oil and tea leaves. Limited quantities of sorghum and groundnuts are produced locally.

The conflict has had no effect on food availability and the overall functioning of the market. Traders said there was continued free movement of goods between Sudan and South Sudan, although the border crossings are not formally open to trade.

Market functioning. There are a large number of traders on the market, mostly from Sudan (Darfur), but also from Ethiopia, Kenya, Uganda, South Sudan and Somalia. According to traders, Aweil market is well connected with county markets in Nyamulel, Arad, Gok Machar, Akuem, Wanyjok, Warwar, Malek Alel and Aruyo.

At the time of the assessment, one of the two entry routes from Sudan was reported to be closed. Trade routes to Wau, Rumbek and Yambio were in a poor state and impassable at several points. The situation was said to be worse for the trade route from Uganda (Kaya-Yei-Yambio-Tambura-Wau-Aweil), particularly between July and October. The poor road conditions, together with several road blocks and high taxes, significantly increased the cost of business, pushing up prices. At the time of the assessment, 50 kg of maize flour cost SSP235 compared with SSP200 in the previous month. A 50 kg bag of sugar was sold at SSP400, 25 percent more expensive than the previous year. The black market rate was SSP5.2/US\$.

Potential. Although the supply route to Sudan continues to serve the market well, the unofficial nature of the trade means it could be disrupted. In the dry season, however, the trade routes further south will become more accessible, enabling supplies from East Africa and surplus states in the south to increase. Subject to continued food flows from Sudan, Aweil could offer some potential for market-based food assistance.

Wau (Western Bar el Ghazal state)

Overview. Wau is a hub market with around eight of the largest market chains⁵⁰ in this region of South Sudan. It has very large multinational traders, the vast majority from Sudan. It is well connected to supply routes to Sudan and to Uganda, but the rainy season creates road access problems. At the time of the assessment, many of the roads towards Rumbek and Tambura – the routes followed by supplies from East Africa (via Uganda) – were inaccessible. This left Sudan as the main source of supply (up to 70 percent of total volumes), despite the informal nature of the trade between the two countries.

Market functioning. Sorghum, wheat flour and sugar were reportedly imported from Sudan. Locally produced commodities, such as sorghum, cassava, sweet potatoes and cowpeas, are usually available from December to April, when roads are accessible. Maize flour and cooking oil are imported from Uganda and Kenya via the Kaya border crossing or via Juba.

The conflict has had no direct impact on trade, as none of the main trade routes from Sudan and Uganda have been directly affected. As in other non-conflict states, traders are mostly constrained by poor road conditions (especially in June-October) and by arbitrary roadblocks and taxes (Table 7).

Table 7 - Partial list of roadblock taxes

Fire brigade	SSP50
Checking of vehicle documents	SSP50
Searching of vehicle	SSP100-200
Bureau of Standards (depending on vehicle capacity)	SSP350-560
Traffic	SSP30
Wildlife	SSP30
Customs	SSP120

The number of traders was reported to be unchanged from the pre-conflict period; at the time of the assessment, there were believed to be 3 large importers, 150 wholesalers and over 600 other traders.

Potential. The assessment observed a large volume of commodities traded in Wau. The trading network with Sudan appears to be strong enough to sustain a vibrant market, likely capable of supporting market-based food assistance in and around Wau.

4.4 Market catchment areas and IDP settlements

Field assessment findings were double-checked using remote sensing analysis. For this purpose, the WFP VAM Unit developed a methodology that draws up the accessibility of markets and their catchment areas (WFP 2014).

The term ‘accessibility’ here refers to the time it takes to reach a location of interest (i.e. a particular market), accounting for the road network, topography, land cover and specific restrictions of movement (e.g. checkpoints, cross-border procedures).

Accessibility in terms of ease of physical access to markets and social infrastructure strongly determines household food security and poverty outcomes, as it contributes to the diversification of household economies, offering opportunities both for selling goods and for casual work.

It is also important for traders because reaching more isolated markets may be unfeasible or may generate additional costs that have to be transmitted to customers. In South Sudan, accessibility is a key factor influencing market functioning, because access to markets is challenged by the conflict as well as by poor infrastructures and seasonal constraints to the movement of people and goods.

The methodology encompasses two steps:

⁵⁰ Within Wau, there are four large markets (Suk Jaw, Wau Market, Suk Hajar and Eastern Bank). Other smaller markets include Suk Nazareth, Abdullatief, Lokoloko and Al Salaam.

1. The shortest travel time (and distance) from each point on the map to the market locations is determined, taking into account the different travel speeds allowed by various surfaces and slopes (e.g. swamps vs. flat open ground, tarmacked road vs. track) as well as any natural or man-made barrier encountered (national borders, rivers, mountains). This highlights locations with greater accessibility problems, which are therefore prone to chronic poverty and food insecurity, and whose markets are less likely to function (Map 4 - left panes).
2. All locations that have a shorter travel time to one particular market than to any other are classified as one catchment area. The assumption is that people within this area naturally refer to the closer (in terms of time) market. To reflect the relatively higher market attractiveness exerted by larger towns compared to smaller settlements (higher profitability for traders and better choice for customers), sub-catchments of main towns in South Sudan are finally aggregated into main catchments around the state capitals (Map 4 - right panes).

Insecurity along the road network associated with the conflict has changed travel times and catchment areas. The rainy season, when many roads flood and are therefore not passable, has a further impact. However, for the sake of simplicity, all roads not affected by the conflict were considered passable, which means that the maps below only apply in the dry season. Map 4 panes compare the pre-conflict (lower panes) and current situation (upper panes), considering that crossing from SPLM to SPLM-IO controlled areas (and vice versa) is virtually impossible.

At glance, it is clear the conflict has isolated many markets in the Greater Upper Nile region, increasing the time needed to get from one place to another. This is shown on the maps on the left in dark green: there are virtually no trading flows between different conflict-affected areas. Markets are therefore isolated, overall availability is reduced where entry-ports from neighbouring countries are too distant, and the potential demand for traders has shrunk.

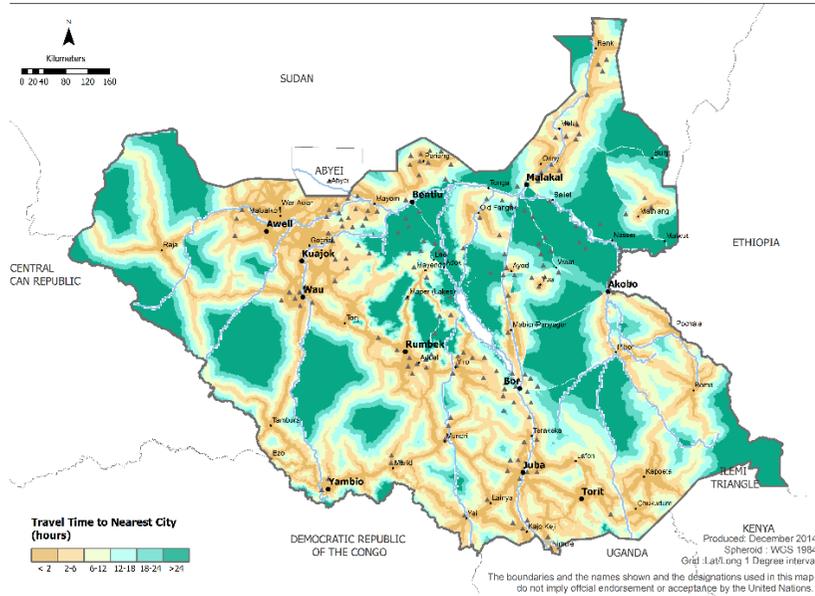
The catchment areas for usual trade hubs such as Bor and Bentiu disappear when catchment areas are represented in conflict times (right panes). This is consistent with the findings of the assessment, where the supply comes from Juba and the potential role of Bor as a supply market to the rest of Jonglei state has been abandoned because of the conflict. On the other hand, Bentiu struggles to supply its remaining markets. Counter-intuitively, the catchment areas for Malakal, Akobo and Rumbek are bigger in the current situation with the loss of Bor and Bentiu. However, in these areas, the reality is better portrayed by sub-catchments areas, as travel distances are too high to consider the main catchment areas as homogeneous.

Unfortunately, the market assessment team failed to reach these smaller markets (e.g. Ayod, Leer, and Waat) because of time and security constraints, but it is clear that the potential for market-based interventions should be assessed against the market functionality over there. It is highly likely that most of the constraints highlighted in this report would apply there as well, with the aggravating circumstance that these markets usually rely on now cut-off vertical trade corridors along the White Nile.

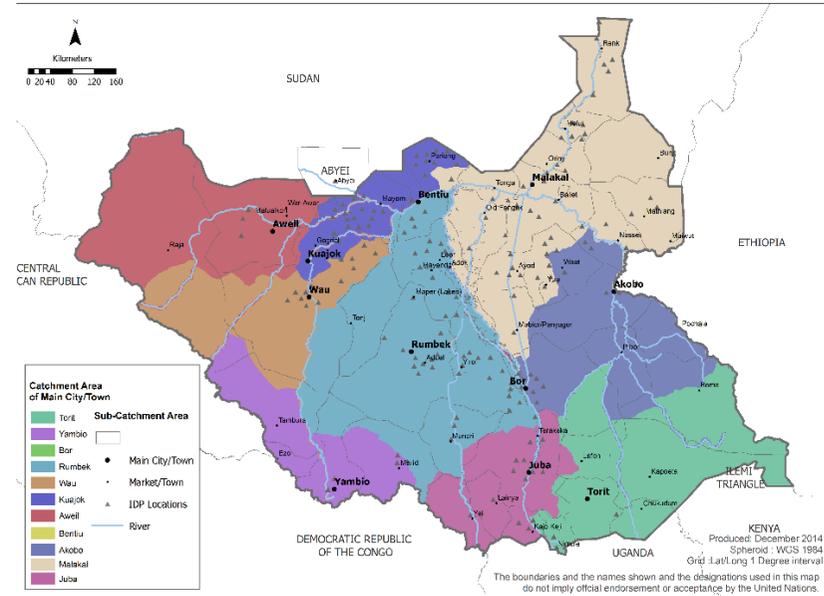
Many IDP sites are located in very remote areas, and others remain geographically disconnected despite being relatively close to main towns (e.g. Mingkman from Bor). The next Food Security Monitoring System round would be a good opportunity to assess the physical access to market of IDP sites and rural settlements. However, unless the security situation improves, it would be very difficult and probably ineffective to plan market-based interventions for these places, particularly for the camps between Bentiu and Adok, and those between Malakal and Akobo.

Map 4 - Travel time and market catchment areas

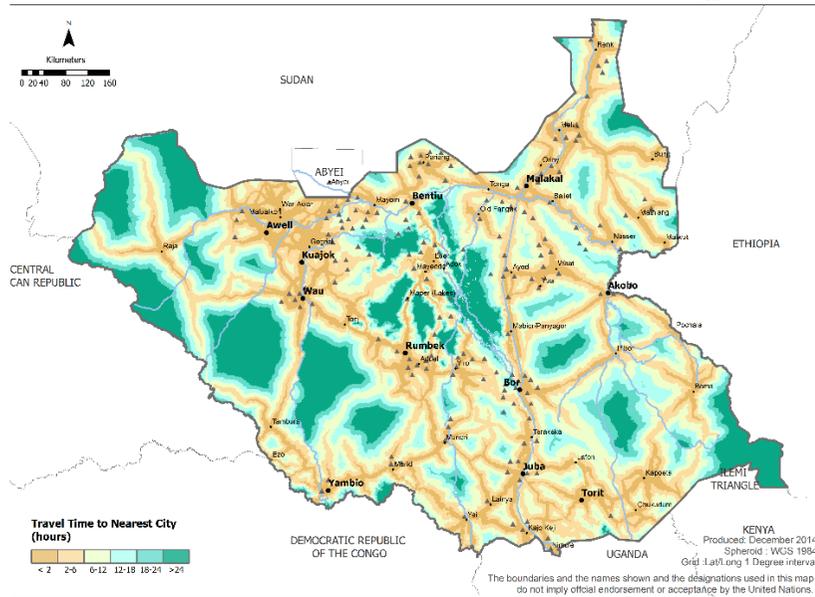
SOUTH SUDAN - Current Travel Time



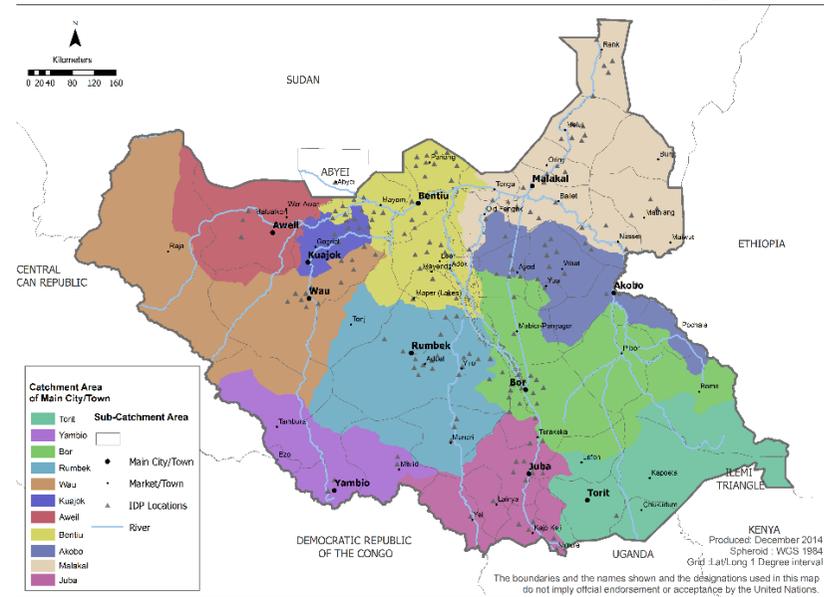
SOUTH SUDAN - Current Catchment Areas



SOUTH SUDAN - Pre-Conflict Travel Time



SOUTH SUDAN - Pre-Conflict Catchment Areas



The camps in Greater Equatoria close to major markets would be the ideal place to start piloting market-based interventions, if the required sectorial assessments return positive results. Similarly, but with a relatively higher risk, interventions could be piloted in camps in Bahr el Ghazal (around Aweil) and Warrap (around Wau). The many camps located between Mayom and Aweil could also be explored as potential sites if the conflict does not escalate during the dry season. Most of the locations around Rumbek present seasonal challenges that require prepositioning of in-kind food assistance for the rainy season, as well as the operational willingness and preparedness to switch between different food assistance modalities. The potential in Awerial county camps relies on trading connections with the market in Bor, which were not assessed in this study.

Table 8 ranks IDP settlements by number of inhabitants, differentiating between camps with more than 25,000 people and those with fewer. In total, 16 camps host nearly half of the total displaced population in South Sudan. These are currently among the most inhabited settlements in conflict-affected areas. It is strongly recommended to assess the willingness and capacity of traders operating locally to sustain gradual and very limited cash and vouchers operations. In this regard, their capacity to link up with wholesalers in state capital markets is key. It is also vital to understand whether the households living in the IDP POCs do access markets in the closest main town, or whether they just rely on the tiny markets inside the camps.

Table 8 - IDP settlements in South Sudan as of November 2014⁵¹

IDP camps with more than 25,000 people (#16)			
State	County	Site	IDPs
Lakes	Awerial	Mingkaman	96,874
Unity	Rubkona	Bentiu PoC	49,612
Jonglei	Nyirrol	Chuil	47,221
Jonglei	Akobo	Akobo East	44,688
Jonglei	Nyirrol	Padding	43,105
Upper Nile	Malakal	Wau Shiluk	39,000
Unity	Panyijjar	Nyal islands	38,501
Unity	Rubkona	Nhialdu	37,600
Jonglei	Fangak	Phom	35,000
Jonglei	Nyirrol	Pultruk	34,935
Jonglei	Canal/Pigi	Khorfulus, Kaldak, Khorlemon	30,000
Unity	Mayom	Mankien	30,000
Upper Nile	Fashoda	Kodok	28,281
Jonglei	Bor South	Bor town	27,118
Unity	Panyijjar	Ganyliel islands	27,000
Jonglei	Akobo	Walgak	25,729
			634,664
Remaining camps (#163)			
State	Site		IDPs
Jonglei	Other		330,940
Upper Nile	Other		189,184
Unity	Other		109,017
Central Equatoria	Other		75,070
Lakes	Other		40,579
W. Bahr el Ghazal	Other		26,661
Warrap	Other		10,982
Eastern Equatoria	Other		7,566
Western Equatoria	Other		4,729
N. Bahr el Ghazal	Other		3,182
			797,910
Total in 179 camps			1,432,574

Source: OCHA, South Sudan situation map (November 2014).

⁵¹ Abyei IDPs (6,676 people) are excluded from this count.

5. Market performance

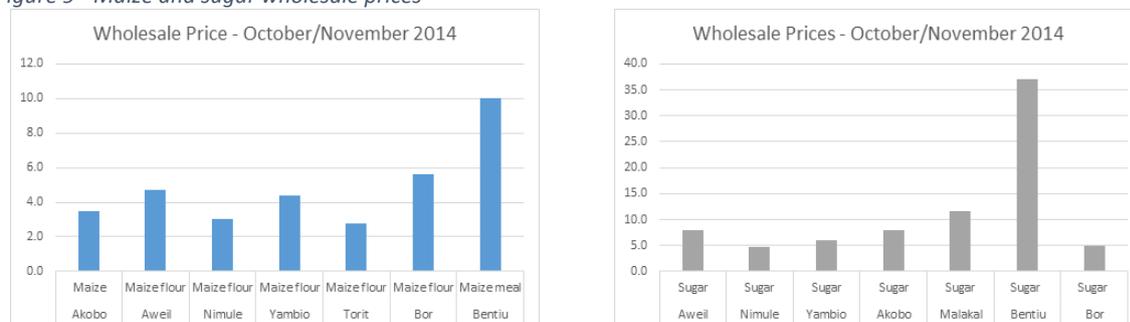
As a result of the market environment described above, prices follow very different patterns across markets. This section analyses wholesale and retail prices to confirm the findings from the assessment. Taking Juba to be the best functioning market in the country, where most of the import flows transit, this part of the study also investigates the causal relation between prices in Konyo Konyo and some key markets in Uganda, as well as the impact of in-kind food assistance on a number of markets.

5.1 Wholesale prices

Figure 9 (left pane) shows the wholesale price for maize collected during the market assessment in seven markets. It reveals distinct patterns. The highest prices were recorded in the conflict-affected states of Bentiu (SSP10/kg) and Bor (SSP5.6/kg), highlighting the impact of the conflict on food availability and prices in markets in these states. The lowest prices were recorded in Torit (SSP2.8 /kg) and Nimule (SSP3.0/kg) in the non-conflict state of Eastern Equatoria. These markets are located close to or along the main import route from Uganda. Price levels were also low in Akobo, which is close to the source of supply from Ethiopia. Meanwhile, the prices were moderate in Aweil and Yambio, neither of which is directly affected by the conflict. However, both Aweil and Yambio are very distant from the main source of supply, and most of the supply routes were impassable at the time of the assessment.

The price of sugar shows a similar pattern (Figure 9, right pane): prices were highest in Bentiu at SSP37 /kg, which is over seven times the level in Nimule, where sugar was cheapest. Malakal had the second highest price, which was double the price in Nimule, but one third of the price in Bentiu. The price in the third conflict-affected state, Bor, was quite low; this is explained by the general stability and good connection with its main supply sources in Juba. Nimule, which is situated on the border with Uganda, lies on the main supply route and is well connected with supply sources.

Figure 9 - Maize and sugar wholesale prices



Source: WFP

5.2 Retail prices

Retail prices are displayed in Figure 13 to Figure 17 in Annex I. White sorghum, vegetable oil, field beans, white maize and wheat flour were monitored in key markets⁵² between January 2010 and October 2014. The gaps in data reflect the difficulties in collecting data during the worst phases of the conflict.

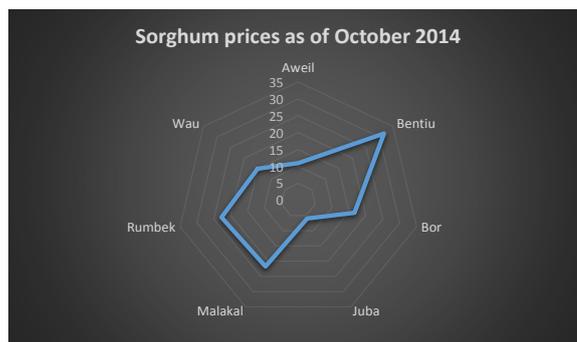
The retail price levels clearly reflect the findings of the assessment. Once again, Bentiu is the most expensive market, followed by Rumbek and Malakal (Table 9). Year-on-year sorghum prices more than doubled in Bentiu in October 2014 (up 111 percent), with a striking month-on-month increase of 36

⁵² Aweil, Bentiu, Bor, Juba, Malakal, Rumbek, Torit and Wau.

percent from September 2014. Prices in Malakal were 45 percent above the previous year, while in Rumbek, prices actually fell by 9 percent.

Table 9 - Sorghum price changes as at October 2014

Market	m/m	y/y
Aweil	-6%	26%
Bentiu	36%	111%
Bor	9%	-17%
Juba	-17%	-60%
Malakal	1%	45%
Rumbek	11%	-9%
Wau	1%	11%



This confirms the different price pressures in these markets. Pressures are conflict-driven in Bentiu and Malakal but appear to be seasonal in Rumbek, linked to road access and possibly agricultural performance. If the next

harvest is as good as forecast, the seasonal price pattern will be slightly less pronounced in places such as Aweil, Kuajok and Wau (see also seasonal patterns in Figure 18 - Annex I).

Juba (and to a limited extent, Bor) shows a less pronounced seasonal pattern, because most of its food imports come from nearby Uganda via the country's only tarmac road.

The response of maize grain⁵³ prices in Juba to a price change in Kampala and Gulu (Uganda) is described in Table 10. While there is a partial immediate transmission, the highest impact is from Gulu with a delay of three months.

Table 10 - Effect of Price Shock on Juba Market

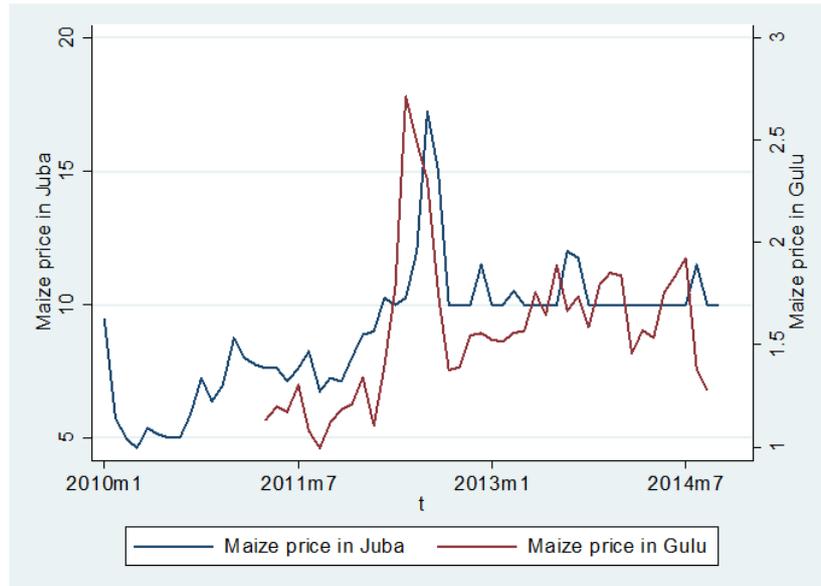
Impulse from	Kampala	Gulu
First transmission	Instantaneous	Instantaneous
Size of the shock transmitted instantaneously	24%	15%
Size of the shock transmitted 1 month later	24%	10%
Size of the shock transmitted 2 months later	34%	71%
Duration of the shock (<5%)	9	11

Source: Authors' calculation based on WFP data

At glance, the two time series show very similar patterns (Figure 10), with Juba price changes mostly following those in Gulu. This suggests that prices in Gulu could be monitored to gauge the likely future trends of maize prices in Juba.

⁵³ The choice of maize grains reflects both data availability and its relative importance in the food imports flow. Prices recorded in Ugandan shillings (UGX) were first exchanged into US dollars (US\$) and finally into South Sudanese pounds (SSP) to mimic the efficiency loss incurred by South Sudanese traders who have to face the risks associated with two exchange rates.

Figure 10 - Maize grain prices in Juba and Gulu (Uganda)



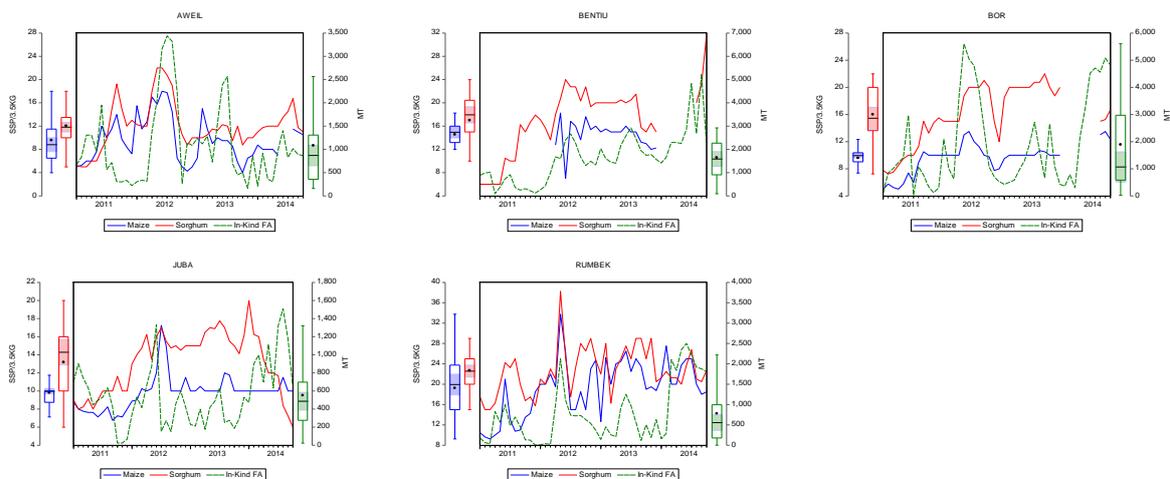
Source: WFP

5.3 Impact of in-kind food assistance

Additional analysis using Impulse Response Functions (IRF)⁵⁴ was carried out to test any potential link between in-kind food assistance and the retail prices of sorghum and maize. The depth of the analysis and the results were partially limited by data gaps in most of the conflict-affected markets – which are the top recipients of food aid not just because of the conflict but because of underlying structural weaknesses too.

A Vector Autoregression (VAR) model was built around the two variables of interest, also controlling for production data by state, seasonality factors and the number of fatalities as a general proxy for insecurity. Figure 11 provides an overview of the trends of prices and food assistance by market. The specification and outcomes of the VAR model are presented more systematically in Annex II.

Figure 11 - Maize, sorghum and in-kind food assistance



Source: WFP

⁵⁴ The IRF measures the response of one variable (in this case the prices of sorghum or maize) to an impulse in another variable (the volume of food being delivered) in a system that also involves other variables.

Because of monthly data availability, the analysis only covered markets in Aweil, Bentiu, Bor, Juba and Rumbek. All these markets present interesting features: Bentiu and Bor are conflict-affected markets; Rumbek market functioning suffers from structural imbalances; and Aweil and (to a larger extent) Juba markets rely on direct import flows from neighbouring countries.

The analysis seeks to isolate the shock that an injection of in-kind food assistance may have on the prices of sorghum and maize, once other key variables are controlled. The model also estimates the extent of this shock and its duration. The pass-through shocks in Table 11 and Table 12 show the average price changes in SSP per 1,000 mt of in-kind food assistance in the first four months after the delivery. Beyond the single values (expressed with a 95 percent confidence interval), it is worth noting the reaction of prices, the relative intensity of the shock and the duration.

In Juba, in-kind food assistance is not expected to have an impact on maize prices. Considering that historically food aid has generally been far lower than 1,000 mt, the price effect is negligible and immediately absorbed by the market. This also confirms how maize prices in Juba are more linked with Ugandan markets.

Elsewhere, maize prices are dumped for a period of between 3 and 12 months (Table 11). The impact occurs promptly in Aweil and Rumbek. In the remaining two markets, it lags by one month. With the significant exception of Rumbek, the effects are fairly limited. To put the results into context, maize is the preferred staple in the Equatoria states, while sorghum is mostly consumed in the northern part of the country. Moreover, sorghum makes up the bulk of in-kind food assistance, so it is likely that beneficiaries in Aweil, Bentiu, and Rumbek would demand lower quantities of maize (as long as sorghum is more available), thereby reducing the price. In Rumbek, the seasonal variability of prices further exacerbates this phenomenon, while in Bentiu the effect is very limited and short-lived, allowing for all the constraints previously described.

Table 11 - Maize price shock (in SSP) to in-kind food assistance deliveries

State		N. Bahar El Ghazal	Unity	Jonglei	Central Equatoria	Lakes
Sampled Market		Aweil	Bentiu	Bor	Juba	Rumbek
In-Kind F.A. (Stand. Dev.)		843	1089	1682	352	729
Price Max		18.00	18.25	13.50	17.25	33.75
Price Min		4.00	7.00	5.00	4.63	8.00
Pass-through shock	1 st month	-7.77	0.00	0.00	1.03	-8.86
	2 nd month	-1.33	-1.72	-1.29	0.00	-11.26
	3 rd month	-0.61	-1.03	-2.20	-1.03	-2.16
	4 th month	0.00	-0.92	-2.47	0.00	-3.35
Duration of the shock		3 months	5 months	12 months	-	5 months

Source: Authors' calculations based on WFP data

For sorghum, the analysis shows mixed results (Table 12). As with maize, there is no significant effect in Juba, while in Aweil and Rumbek it takes one additional month for prices to adjust and reduce. While in Aweil prices adjust over the following three months, in Rumbek food aid could have a huge effect on prices. This is an interesting result, as Rumbek is prone to very high price volatility, and in-kind food assistance may be used as a smoothing factor. If market-based modalities were in place, switching back to food aid could stabilize prices if they increase too much during the rainy season.

Apparently, in Bor there is almost no clear pass-through to sorghum prices,⁵⁵ probably because in-kind food assistance data is delivered at the state level, which incurs certain bias considering the patchy security situation in Jonglei and the very different beneficiary caseloads by location. Figure 11 shows how Bor has performed differently from the other markets in this analysis, with decreasing or stabilizing prices and increasing food aid (at the state level) in the last few months of 2014. The model also fails to establish a clear link between food being delivered by WFP and sorghum prices. Counter-intuitively, the pass-through price effect is positive in the first month and then turns negative as expected from month two onwards. However, the unexplained variability remains high, which implies that the model does not provide a clear picture of causality. Still, it could be argued that the provision of in-kind food aid reduces traders' interest in sorghum because of the declining pay-off for the risks associated with running a business in such a volatile environment, thus likely triggering a price increase in the very short run. However, the shock expires quite quickly as the market adjusts to the new supply.

Table 12 - Sorghum price shock (in SSP) to in-kind food assistance deliveries

State	N. Bahar El Ghazal	Unity	Jonglei	Central Equatoria	Lakes	
Sampled Market	Aweil	Bentiu	Bor	Juba	Rumbek	
In-Kind F.A. (Stand. Dev.)	843	1089	1682	352	729	
Price Max	22.00	31.70	22.00	20.00	38.25	
Price Min	4.00	5.25	7.25	5.00	8.00	
Pass-through shock	1 st month	-0.63	2.75	2.33	0.67	0.87
	2 nd month	-7.45	4.20	1.04	0.00	-51.33
	3 rd month	-4.29	1.45	-0.26	0.00	10.38
	4 th month	-2.02	-0.43	-0.26	0.00	6.34
Duration of the shock	6 months	5 months	12 months	-	5 months	

Source: Authors' calculations based on WFP data

The findings of this section should be read with caution. While they provide evidence of bearish maize prices as a consequence of in-kind food assistance, they offer rather mixed evidence for sorghum. In conflict-affected areas, the counter-intuitive price effect could be the result of data constraints and the short-run crowding out of traders dealing in this commodity.

However, the model cannot consider what the net food security effect would have been if food aid had not been delivered. Where the demand gaps are huge, such as in conflict-affected states, markets are clearly not able to replace the role played by in-kind food assistance in filling the gap. The high variability of the model attached to sorghum prices in Bentiu confirms this caveat.

⁵⁵ Despite the positive sign reported in the table, the magnitude of the shock is negligible and the confidence interval indicates that the immediate reaction to food aid could be either price increases or prices decreases; in other words, according to the VAR model, there is no clear effect to depict.

Concluding remarks

Table 13 summarises the findings of the market assessment, taking into consideration the overarching context of conflict and the outcomes of market functioning in each market. Key elements for the summary include food availability, changes in trader numbers and market capacity, price evolution, and the availability of financial institutions. The table shows the supply stability implications for market-based assistance for each market, as well as threats and opportunities.

Conflict. The conflict has had a severe impact on markets in Greater Upper Nile (Akobo, Bentiu, Bor and Malakal), where it has destroyed market infrastructures, damaged stocks and displaced traders. The situation in Malakal and Bentiu remained unstable with signs of limited recovery at the time of the assessment. By contrast, Bor and Akobo have made a partial recovery. In the Greater Equatoria and Bahr el Ghazal, the conflict has had no direct impact on markets. However, a number of indirect impacts were discernible, including the proliferation of checkpoints/roadblocks which delay the movement of food and have pushed up the cost of trade. A scarcity of foreign exchange also emerged as a major indirect effect, primarily the macroeconomic consequences of the war. This has become a major obstacle to commodity imports, particularly from Uganda, Sudan and Kenya.

Food availability. The assessment found great variability of supply across the markets, directly or indirectly influenced by the conflict (with Bentiu and Malakal at the extreme end). But availability also reflects variations in the stability of the main supply sources, as well as the supply routes. Most of the food traded across the markets was imported from Uganda or Sudan, with a smaller amount coming from Ethiopia and Kenya, and a very small amount from DRC. The closer the markets are to supply sources (including local production), the greater the availability of food. Torit, Nimule and Aweil (and to some extent, Wau and Akobo) are relatively closer to their main import sources and generally had greater abundance of supply, compared to Rumbek and Yambio where availability was low.

Poor road conditions emerged as one of the greatest impediments to food availability, reflecting South Sudan's poor road conditions, particularly in the rainy season. This was by far the greatest challenge across Greater Equatoria and Bahr el Ghazal, where practically all the trade routes running south to Uganda (except the Kampala/Juba trade corridor) and north to Sudan were impassable at the time of the assessment.

Number of traders. The number of traders on the markets was directly affected by the conflict. This was clearly established for Akobo (with numbers down to 15 percent), Malakal (down to 15 percent) and Bor (down to 33 percent). Bentiu and Renk had equally low numbers. Traders were also fewer in Rumbek, as a result of poor trade opportunities. On the other hand, the number of traders increased significantly shortly after the conflict in Torit (the result of an influx of traders displaced from Jonglei). Elsewhere there were no significant changes reported (i.e. in Nimule, Yambio, Wau and Aweil).

Market capacity. Markets had low capacity in Akobo, Bentiu and Malakal as a result of the conflict, and in Rumbek because of poor road conditions. Capacity was medium in Yambio and Bor, and high in Aweil, Wau, Nimule and Torit, reflecting their proximity and accessibility to the supply sources. The availability of marketable surpluses from local production (especially for Torit, Nimule and Yambio, and to a lesser extent for Wau and Aweil) also contributed to the supply situation.

Table 13 - Summary findings (Potential, Threats and Opportunities)

Market	Conflict-Affected	Availability from	Traders in the market vs. last year	Market Capacity	Prices	Financial Institutions	Market-based Programming Potential	Threats	Opportunities
Akobo (Jonglei)	Yes	Ethiopia	15%	Low to Medium	High	None	Challenging	<ul style="list-style-type: none"> Security issues to bring cash in The only viable trade corridor is by river from Ethiopia in the rainy season Violence may resume in the dry season 	<ul style="list-style-type: none"> Proximity to Ethiopia for imports
Aweil (N. Bahr el Ghazal)	No	Sudan / Local supply	~100%	Medium to High	Medium	One bank	Yes	<ul style="list-style-type: none"> Reliance on informal trade Roads impassable in the rainy season 	<ul style="list-style-type: none"> Proximity to Sudan for imports
Bentiu (Unity)	Yes	Sudan / Juba	50% (mostly petty traders)	Low	Highest	None	No	<ul style="list-style-type: none"> Fighting ongoing at the time of the assessment Most supply chains cut off by the conflict or at risk (e.g. Mayom junction) Reliance on commodities from Juba via aircraft caravans 	
Bor (Jonglei)	Yes	Juba / Local supply (small)	33%	Medium	Medium High	One bank and local money transfers	Likely	<ul style="list-style-type: none"> Aerial IDPs may not have full access to Bor's market Violence may resume in the dry season No longer a trade hub towards the rest of the state 	
Juba (Central Equatoria)	Yes	Uganda / Local supply (small)	60% (of bigger importers)	High	Low	Several banks (seven at least)	Yes (high)		<ul style="list-style-type: none"> Major market-hub in the country Along the Kampala/Juba major trade corridor Several traders operating
Malakal (Upper Nile)	Yes	Sudan / Juba	15%	Low to Medium	Very High	Only local money transfers	No	<ul style="list-style-type: none"> Violence may resume in the dry season Many supply chains cut off by the conflict Reliance on commodities from Juba via aircraft caravans 	<ul style="list-style-type: none"> The trade corridor to Renk is still functioning
Nimule (Eastern Equatoria)	No	Uganda / Local supply	~100%	High	Low	Two banks	Yes		<ul style="list-style-type: none"> Along the Kampala/Juba major trade corridor
Torit (Eastern Equatoria)	No	Uganda / Local supply	>100% (traders from Jonglei)	High	Low	Two banks	Yes (high)		<ul style="list-style-type: none"> Along the Kampala/Juba major trade corridor Large storage facilities Several traders operating
Renk (Upper Nile)	No	Sudan / Local supply	50%	Medium to High	Medium	Two banks	Challenging	<ul style="list-style-type: none"> Violence may resume in the dry season 	<ul style="list-style-type: none"> Proximity to Sudan for imports Mechanized farm system Large storage facilities
Rumbek (Lakes)	No	Wau / Juba	<100% (supply challenges)	Low	Very High	Two banks	Challenging	<ul style="list-style-type: none"> Roads impassable in the rainy season Reliance on food imports 	
Yambio (Western Equatoria)	No	Uganda / Juba Local supply	~100%	Medium	Medium	Two banks	Yes	<ul style="list-style-type: none"> Roads impassable in the rainy season 	<ul style="list-style-type: none"> Local production
Wau (W. Bahr el Ghazal)	No	Sudan / Uganda / Juba	~100%	Medium to High	Medium High	Two banks	Yes	<ul style="list-style-type: none"> Roads impassable in the rainy season 	<ul style="list-style-type: none"> Large market chains Proximity to Sudan for imports

Price levels. Overall, prices for most foods were higher than their pre-conflict levels. The prices were very high in Malakal and Bentiu; high in Akobo and Rumbek; medium high in Bor and Wau; and low in Juba, Nimule and Torit. These price levels reflected a combination of factors for each market, with conflict judged to be the greatest causal factor in Malakal, Bentiu and Akobo, and to some extent in Bor. The poor access route discussed above was the dominant factor in Rumbek and Wau, but it also applies to varying degrees for most other markets. These factors have affected prices through their initial impact on supply. Other factors affecting prices included high taxes at checkpoints, high transportation costs because of poor road conditions and a low supply of trucks, and scarcity of foreign exchange and its unavailability through official channels. In short, all of these factors have increased the cost of trading, with costs ultimately passed on to consumers.

Financial institutions. The availability of financial institutions (banks and money transfer agents) was examined in terms of their role as sources of credit and foreign exchange, and also their potential role in market-based transfers. Most of the markets had commercial banks – mainly Kenya Commercial Bank and Equity Bank – close by (except in Akobo, Bentiu and Malakal). However, these banks played almost no part in facilitating trade through lending or sales of foreign currencies. In the conflict-affected towns of Bor and Malakal, there are some small-scale money transfer agencies operating.

Conclusion. A mixed picture emerges of the markets in terms of the certainty of their supply and the stability of the environment for market-based programming. Six of the markets – Juba, Aweil, Nimule, Torit, Yambio and Wau – are judged to offer some potential for market-based food assistance. Bentiu and Malakal do not appear conducive, while the situation in Akobo, Renk and Rumbek seems challenging. The conclusions drawn here relate to the current situation, taking into account the prevailing insecurity and road inaccessibility (in the rainy season), and to some extent the production season. However, most roads are likely to become more accessible during the dry season, probably improving supply in many markets (especially Rumbek, Yambio and Wau). The expected bumper harvest in non-conflict affected areas will also boost supply. Even so, the dry season could also lead to renewed conflict.

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Annex I – Additional tables and figures

Table 14 - Import/export by country

Imports Origin	%	Exports Origin	%
China	29.85%	China	77.48%
Pakistan	23.39%	Japan	22.34%
Uganda	15.19%	Others	0.18%
United States	14.07%		
Japan	9.80%		
Sudan	4.29%		
Tanzania	1.51%		
Hong Kong	1.39%		
Others	0.51%		

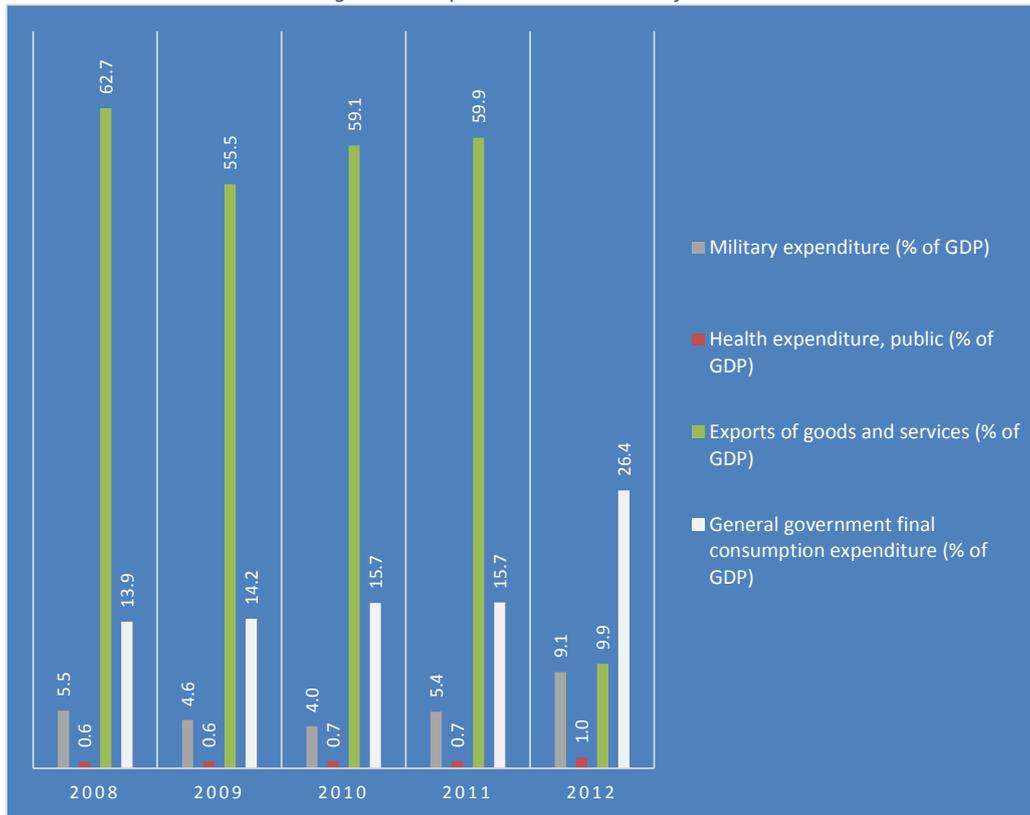
Source: Observatory of Economic Complexity

Table 15 - Import/export by category

Import categories	I %	Export categories	%
Machines	27.75%	Crude Petroleum	99.82%
Transportation	15.82%	Other	0.18%
Foodstuffs	12.96%		
Textiles	11.12%		
Chemical Products	7.29%		
Mineral Products	5.43%		
Vegetable Products	4.53%		
Metals	4.51%		
Animal and Vegetable Bi-products	2.83%		
Other	7.76%		

Source: Observatory of Economic Complexity

Figure 12 - Expenditures as a share of GDP



Source: World Bank – World Development Indicators

Retail prices

Figure 13 - Sorghum Retail Prices

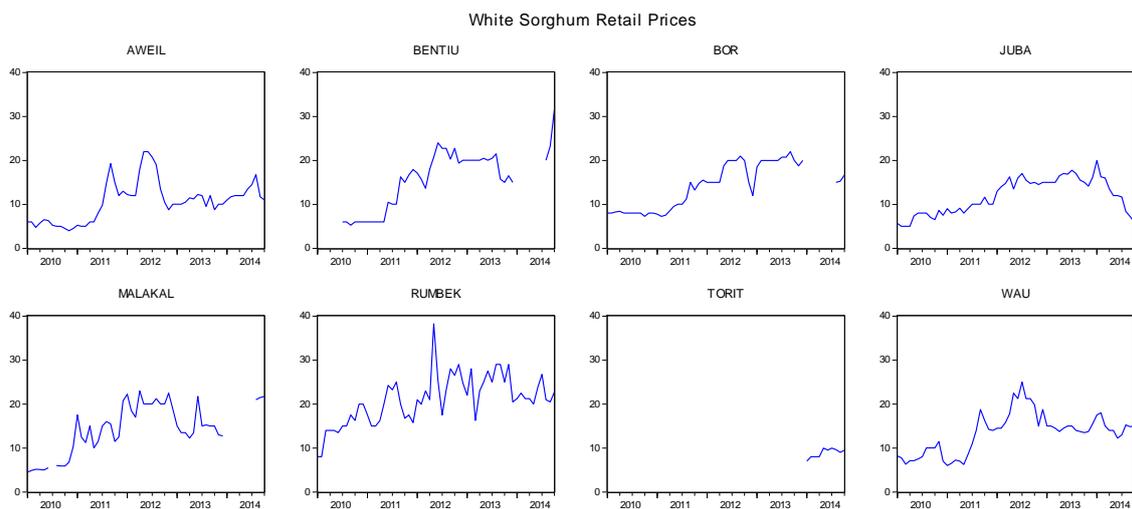


Figure 14 - Vegetable Oil Retail Prices

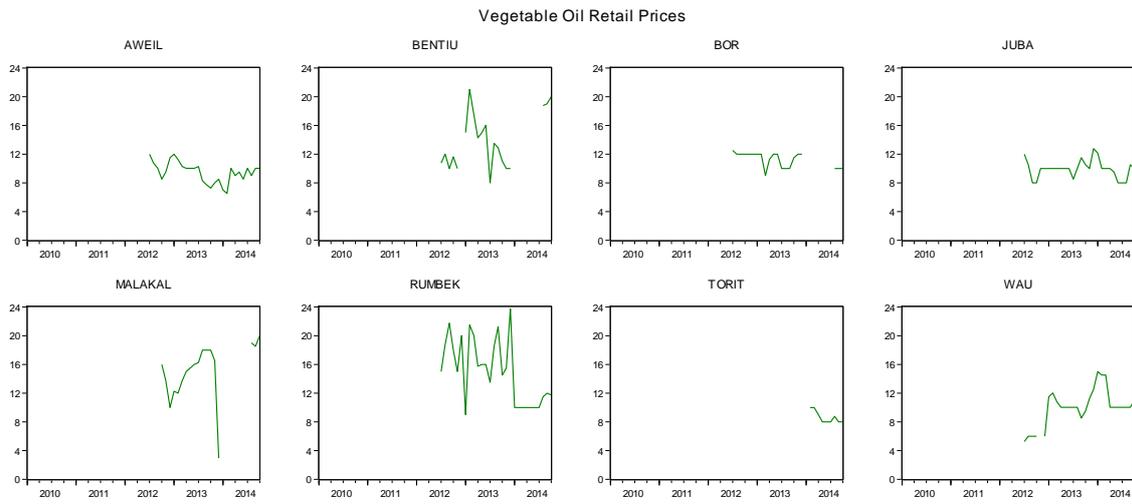


Figure 15 - Bean Retail Prices

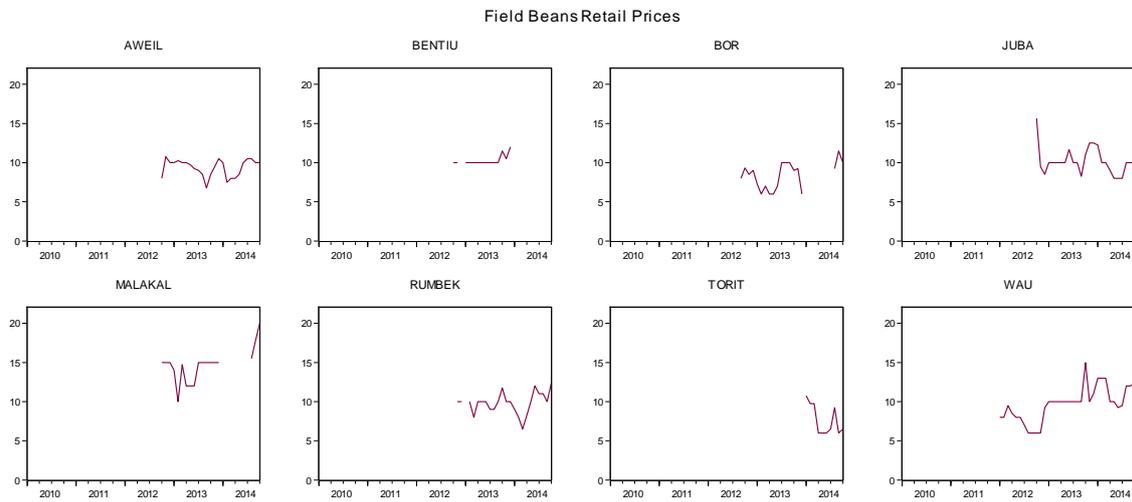


Figure 16 - Maize Retail Prices

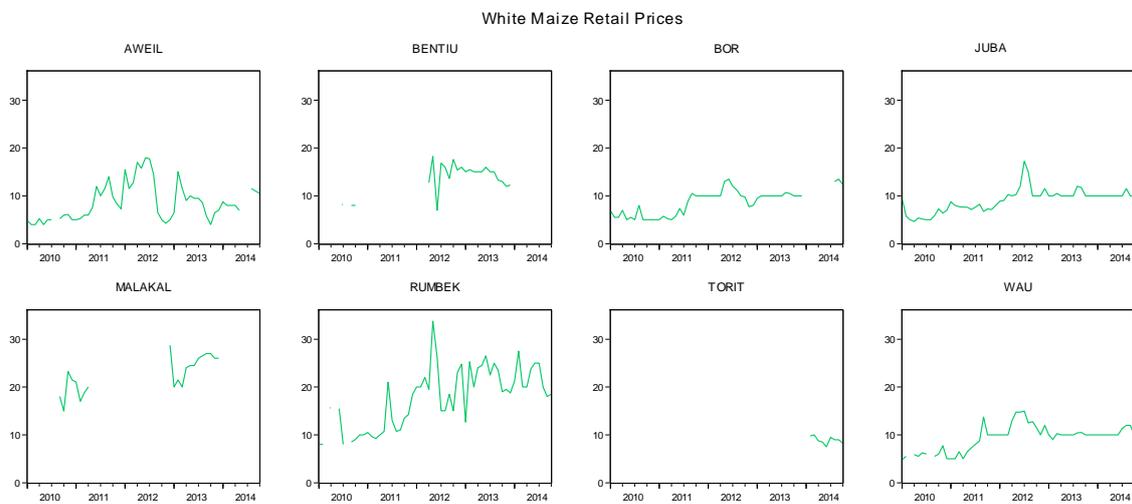
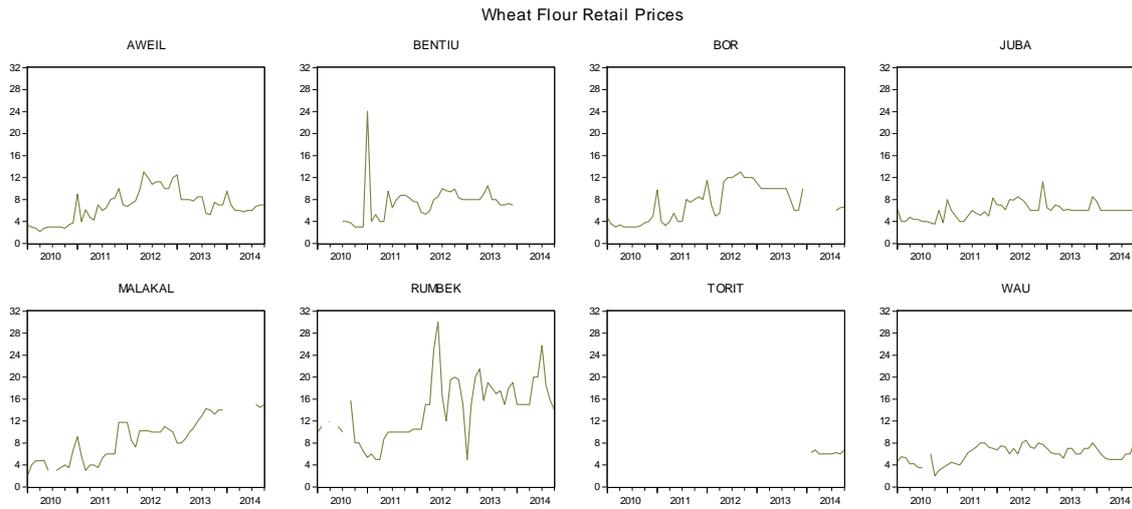


Figure 17 - Wheat Flour Retail Prices



Source: WFP

Figure 18 - Grand Seasonal Indices



Source: Authors' calculations based on WFP data

Annex II – Impact Response Analysis

The VAR model in section 5.3 is specified as follows:

$$\Delta P_{m,k,t} = A_i \Delta P_{m,k,t-i} + FA_{s,k,t-i} + F_{s,k,t-i} + Pr_s + S_s + \Delta P_{Juba,k,t-i} + \Delta P_{Gulu,k,t-i} + \varepsilon_{m,k,t-i}$$

$$FA_{s,k,t} = A_i FA_{s,k,t-i} + P_{m,k,t-i} + F_{s,k,t-i} + Pr_s + S_s + \Delta P_{Juba,k,t-i} + \Delta P_{Gulu,k,t-i} + \varepsilon_{m,k,t-i}$$

Where m refers to the market, s to the State, k to the commodity, t to the time and i to the time-lags. The notation of variables is as follows: ΔP refers to prices expressed in 1st-differences⁵⁶; A is the autoregressive factor; FA refers to in-kind food assistance in metric tons; F is the number of fatalities⁵⁷ as a proxy of overall insecurity in the state; Pr is the yearly cereal production by state; S is a seasonal factor expressed by the price grand seasonal index; and ε is the error term.

Depending on the market investigated, some exogenous variables were dropped to allow a better fit of the model. Moreover, in the case of sorghum, structural breaks derived from additive outliers⁵⁸ were considered to increase the explained variability, as well as other dummies when the times-series show unexpected price changes.

The results of the VAR model are presented in Table 16. Noticeably, in-kind food assistance shows statistically significant coefficients except in Juba and Bor (sorghum only), as described in the text. Where included, production is always significant and with the expected negative sign, while fatalities generally show positive signs when significant.

Table 16 - VAR Model Estimates

MAIZE						SORGHUM					
Dependent Variable	Aweil D1.Price	Bentiu D1.Price	Bor Price	Juba D1.Price	Rumbek D1.Price	Dependent Variable	Aweil D1.Price	Bentiu D1.Price	Bor D1.Price	Juba D1.Price	Rumbek D1.Price
Autoregressive(1)	-0.2272*	-0.4076*	0.9439*	-0.4821*	-0.4932*	Autoregressive(1)	-0.3056*	-0.6117*	0.1503	-0.2788*	-0.6184*
Autoregressive(2)				-0.5284*	-0.3231*	Autoregressive(2)	-0.1297*	0.0907	-0.2309*		-0.2461*
Autoregressive(3)				-0.2280*		Autoregressive(3)	-0.0414	0.0458			
In-kind F.A.						L1.Prices			-0.4031*		
Lag(1)	-0.00142*			0.00061	-0.00089	In-Kind F.A.					
Lag(2)		-0.00049*	-0.00027*	-0.00012	-0.00100*	Lag(1)	0.00048	0.0006746*	0.00031	0.0001	0.00009
Lag(3)				-0.00066		Lag(2)	-0.00043*	0.0001439	-0.00007		-0.00050*
Seasonal dummy	0.0695*		0.0769*		2.1629*	Lag(3)	-0.001297*	0.0006117			
Fatalities			0.00182*			Seasonal dummy	-0.0504*	-0.3567	0.0871	0.7239	2.7644*
Lag(1)					0.02931*	Fatalities	0.0473*	-0.00667	0.0020	0.0014*	0.0119
Lag(2)						Lag(1)	0.0605*		0.0035*	0.0020*	0.0478*
Lag(3)		0.0189*				Lag(2)			-0.0001	-0.0010*	0.0394
Price Juba	0.4888*					Lag(3)					
Lag(1)	0.6041*					Prices Juba					
Production					-0.03763*	Lag(1)					
						Production	-0.0404	-0.0061*	-0.19771*	-0.0657*	-0.0798*
						Dummy outliers	3.657*		2.54034*	0.4616	
						Dummy break 1	-3.412*	5.3083*	0.5297	0.9188*	0.3149
						Dummy break 2	1.7557*	-0.8078	0.1712	-1.6746*	
						Dummy break 3				-1.4635*	
D1.Price Gulu (Uganda)						Constant	4.2576*		18.442*	2.822*	6.6804*
Lag(2)				3.404*							
Lag(3)				3.182*							
Constant	-4.221	1.021	-6.661*	0.086	4.2530*	R-squared	0.8	0.928	0.45	0.69	0.47

Source: Authors' calculations based on WFP, FAO and ACLED data. The notation (*) refers to a level of significance of 95 percent.

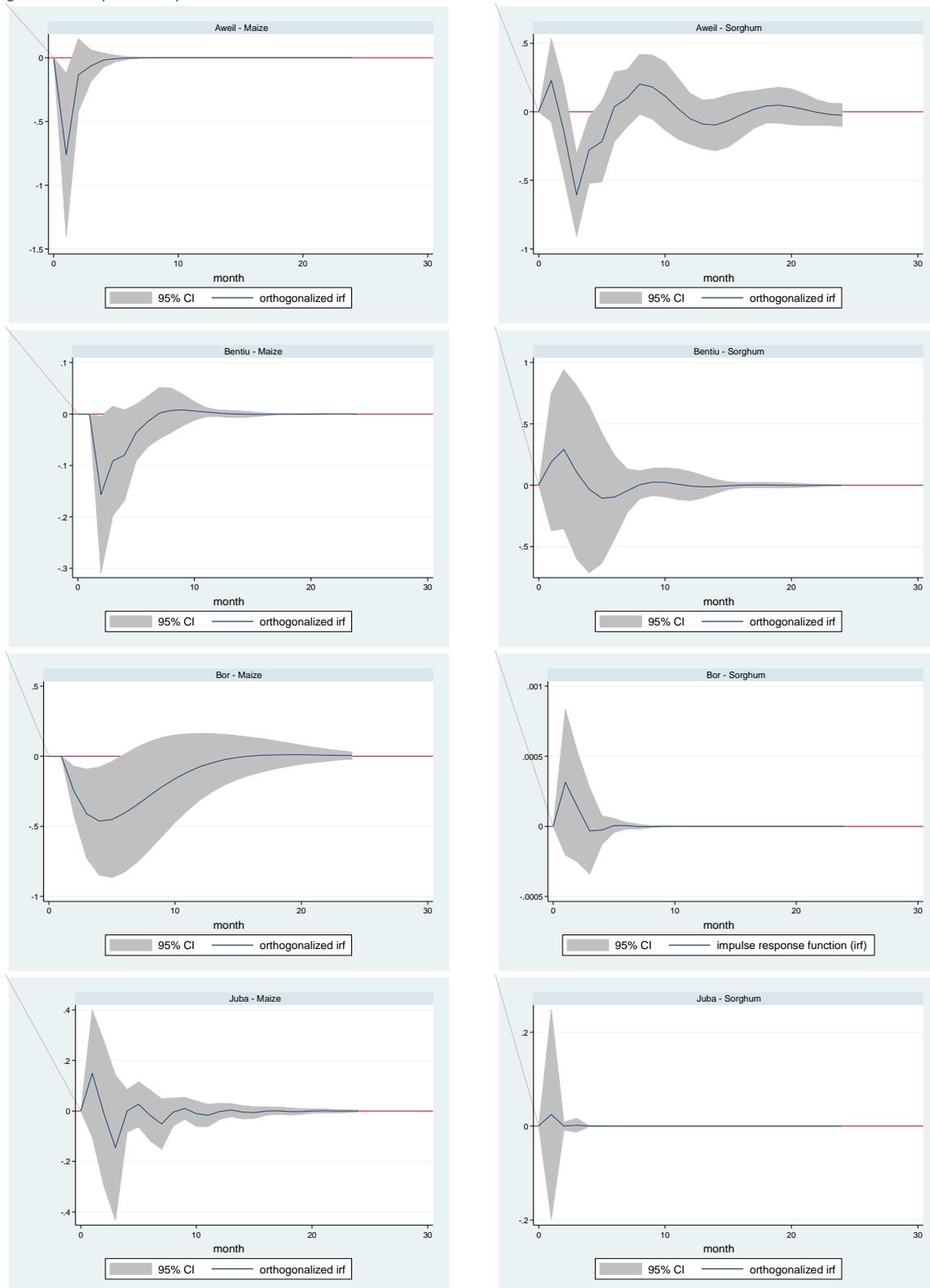
⁵⁶ Prices are expressed in differences to allow *stationarity* of the time-series.

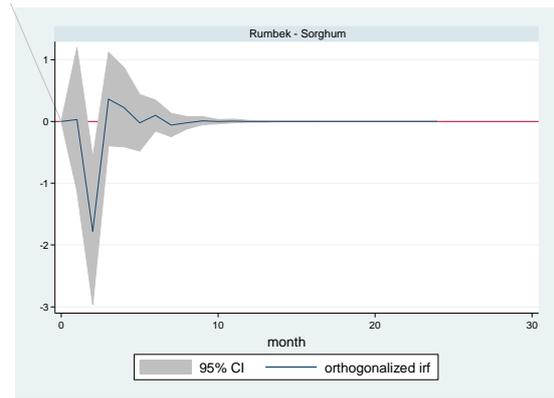
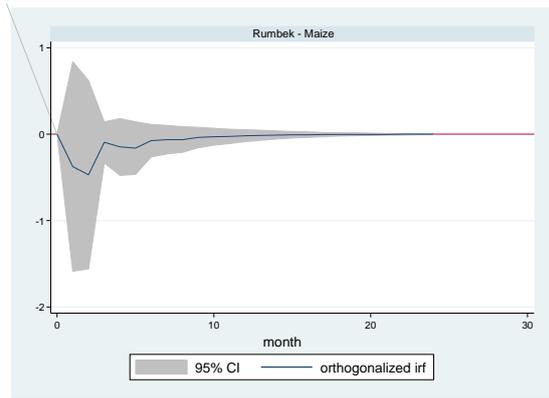
⁵⁷ Source: ACLED – Armed Conflict Location & Event Data Project.

⁵⁸ Additive outliers were computed using Clemente *et al.* procedure (Clemente J., A. Montañes, and M. Reyes. Testing for a unit root in variable with a double change in the mean. *Economic Letters*, 1998, 56, 175-182).

The impulse response functions described in paragraph 5.3 are showed in Figure 19.

Figure 19 - Impulse Response Functions





Source: Authors' calculations based on WFP, FAO and ACLED data.



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