

Sudan Crisis Coordination Unit

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How to Improve Food Security and Livelihoods in Sudan

An analysis of current challenges and
potential solutions

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SCCU publications

SCCU publications are concise and informative documents that provide an overview of Sudan's complex and evolving humanitarian situation. The SCCU publications also offer practical and evidence-based recommendations for policymakers and humanitarian responders on addressing Sudan's most pressing issues and needs.

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- Adil M.A. Seedahmed (KI1), Executive Director, Sudanese Environment Conservation Society
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- Ibrahim Zakaria Yahia Adam (KI4), Medical worker, Umelkhair Leshmania Hospital, Rahad area, Gedarif state

Disclaimer

This report is the result of the work of the Sudan Crisis Coordination Unit (SCCU). The opinions, findings and recommendations expressed herein are time-sensitive and reflect the views of a group of local responders.

Summary

Co-authored by Dr Saada Naile¹

This report examines food insecurity in Sudan, a country heavily reliant on agriculture and natural resources and facing multiple challenges, including poverty, conflict, displacement, environmental degradation, and inflation. This report analyses the succession of events that have negatively impacted the agricultural sector, such as the secession of South Sudan in 2011, which resulted in a significant loss in oil revenue and foreign exchange, the emergence of gold as a major export commodity, and, critically, the crippling impact of the current conflict.

The report also discusses the food and nutrition insecurity affecting large portions of the population, especially in rural areas, alongside contributing factors. Here, recommendations are provided, based on current data and evidence, to improve the livelihoods and well-being of the Sudanese people. These recommendations address the country's food security challenges, particularly in the upcoming winter season and in conflict-affected areas, and include:

- To boost wheat production, the government and civil society should launch a rapid initiative with domestic and international funding and policies favouring farmers.
- Food Security and Livelihoods (FSL) partners and the humanitarian community should advocate and negotiate for humanitarian access, pauses, and corridors to deliver aid.
- There should be promotion of and support for *wadi* cultivation, home gardens, food crop diversification, smart agriculture, food exchange, and financial transfers.
- Marketing channels and producer-consumer associations linking rural and urban areas should be established.
- There should be further integration of the migrant economy into the national economy and investment in agriculture and the food industry.
- The various actors should include host communities in food distribution.
- There is a need to encourage intermediate agricultural technologies and effective agricultural extensions.

¹ Dr Saada is an assistant professor at Sudan's National Centre for Research, Medicinal and Aromatic Plants Research Institute in the Department of Agro-technology. She holds a PhD in plant production sciences focused on organic agriculture. She has worked with many organisations including SECS, HCNRE, EU, DNP project, and the Eastern Nile Watershed Management project. She is the founder of the Sudanese Organization for Organic Agriculture and Environment (2018).

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Background

Agriculture (farming, livestock, and fishing) still remains Sudan's primary economic sector, employing over 80% of the country's labour force and comprising a third of its GDP (Elbashir et al., 2004). In the last quarter of 1999, Sudan began exporting crude oil: the main source of revenue until the secession of South Sudan in 2011. Due to the succession, Sudan lost 75% of its oil production, 36% of budget revenues, over 65% of foreign exchange revenues, and 80% of total exports (Elhadary et al., 2018).

This impacted GDP growth, which decreased from 2.5% in 2010 to 1.4% in 2012, and reached 4.4% in 2016 (IMF, 2017). The inflation rate was also affected: inflation was 13% in 2010, jumping to 35.6% in 2012, before declining to 15.6% in 2017 (AfDB, 2017). Recently, gold has become one of the main generators of revenue, bringing in more than 90% of foreign earnings. According to the African Development Bank (AfDB, 2017), exports became the main source of the official gold sector's foreign exchange, accounting for 31.2% of exports in 2016 and 2017, the bulk of which was produced by the informal mining sector.

Despite this, nearly half of the people in Sudan are living below the national poverty line (UNDP, 2023). Alongside poverty, Sudan faces several other challenges hindering its development, including:

- High debt
- Protracted conflicts and displacement
- Large influxes of refugees from neighbouring countries
- Depletion of its natural resources
- Recurrent natural disasters
- Dramatic economic downturn

In 2015, Sudan ranked at the bottom end of the UN's Human Development Index (HDI), 165 out of 188 countries (UNDP, 2016), as compared to 150 of 182 in 2009 and 147 of 177 in 2008. In 2017, Sudan ranked 167 out of 189 countries and territories on the HDI.

Food and nutrition insecurity have been prevalent since 2014, when data showed that 36% of the population was living below the global poverty line, the rate of chronic malnutrition was 38.2%, and the rate of acute malnutrition stood at 16.3%. These rates have remained at persistently high levels over the past 10 years ([IFAD, 2020](#)).

Available data also shows that Sudan's age demographics are shifting in favour of the working-age population, implying the country is at the threshold of a demographic dividend.² The Sudanese government should, as a priority, set policies to take advantage of this demographic dividend, as over 50% of the population are aged between 15 and 64, while only 3% is elderly. Moreover, the fertility rate has declined sharply—from 7 children/woman in the early 1980s to less than 4 in 2008 and is expected to reach 3.57 in 2025—and the dependency ratio and life expectancy have also both decreased. All these indicators suggest that Sudan is in the first stage of its demographic dividend, or will obtain it in the near future, and should adopt and implement evidence-based policies, for young people in particular, in order to harness this.

² The concept of a demographic dividend has become one of the most scrutinised issues in the field of development studies and economic growth (Turbat V., 2017). Simply put, a demographic dividend happens when the working-age population exceeds the dependent population, namely children and old people, leading to several socio-economic gains. A demographic dividend will accelerate economic growth and generate financial gains (Pool, 2007), increasing the labour force and a decline in the dependency ratio, which helps maintain a high savings rate and leads to heavy investment as the main source of GDP growth (Fang, 2012). A demographic dividend should not be taken for granted and will not continue forever, as it lasts around forty years (Elhadary et al., 2018). It is well documented that there is a positive correlation between an increase in the working-age population and economic growth, if political will is ensured.

As indicated, economic growth does not happen unless sound policies are adopted and implemented. However, the potential to leverage this demographic dividend and maximise economic opportunities will be challenging when, at present, the government is unable to fulfil its population's aspirations, especially its youth.

Livelihood challenges

Sudan is lagging behind in maximising the benefits of these demographic windows; a situation unaided by decision makers' failure to even recognise them. Lack of clear youth policies, high rates of unemployment, massive informal migration, brain drain, and lack of investment in human capital (development) are some of the barriers shaping the current situation for the people of Sudan (Elhadary et al., 2018). Moreover, continuous killing, arrests, and violence, especially after the 2013 revolution, has hindered youth access to job opportunities, decent incomes, and quality education.

Until 2003, Sudan's economy was dominated by the agricultural sector, which accounted for around 40% of total GDP between 1996 and 2002. From 2003, with increased contributions from the service sector and industries related to the exploitation and export of mineral oil, which boomed for a decade, agriculture's share of national GDP declined. An estimated 80% of the country's rural population relies on agriculture-based production for their food and income and about 65% of GDP is generated by the agricultural sector, followed by 34% for crops, and relatively marginal contributions by forests and fisheries (FAO & CBS, 2016). Now, due to the loss of oil revenue in post-secession Sudan, there is renewed focus on the sector. Employment in agriculture (as a percentage of total employment) also increased from 49.2% in 2010 to over 53% since 2012. Livestock and crop export contributions were estimated in 2016 at 24.7% and 24% of the total value of commodity exports respectively.

Crop farming in Sudan is practised under two main systems:

- Rain-fed, both mechanised and traditional, used in over 90% of cultivated land; and
- Irrigated, which stands at around 10% of available cultivated land.

Semi-mechanised rain-fed farming is practised by large farmers and companies with low-rent leases granted by the federal government, while traditional rain-fed farming is practised for food, income, and subsistence by family households with farms between 2 and 50 hectares in size ([IFAD CSPE, 2020](#)).

No respite: ongoing challenges in food insecurity

Economic

Throughout most of its history, the country has been beset by conflict. Its economy has been hard-hit by the loss of oil revenue following South Sudan's secession in 2011 alongside its debt burden, economic sanctions, unstable political environment, and continued conflict. In 2019, a fundamental change in the political context occurred: the country's long-time president was ousted and a transitional government established, paving the way for democracy. Since Omar al-Bashir's removal from power, Sudan has been affected by a series of events with dire consequences for its farming and pastoralist communities, gradually increasing food insecurity. Now, this is a serious and widespread problem, with millions of people struggling to meet basic needs.

According to the latest assessment by the World Food Programme ([WFP](#)) and the Food and Agriculture Organization ([FAO](#)), one-third of Sudan's population, or **15 million people**, have been facing acute food insecurity since 2019, and this is projected to rise to over **20 million people by September 2023**.

The COVID-19 pandemic brought inflation--caused, in part, by global inflation and restrictions on movement--in the price of livestock, crop production, and fuel for transportation, limiting Sudanese farmers' ability to harvest their fields (FAO, 2021).

Climate change

Compounding an already precarious situation, climate change is also affecting Sudan. Over the past few decades, the country has witnessed increasing temperatures, erratic seasonal rainfall patterns, severe flooding, and a higher occurrence of drought. Since 2017, floods have affected an average of 388,600 people each year, with the worst floods damaging 37,000 houses across Sudan in 2020. Available evidence indicates that climate change has intensified competition for access to water sources, pastures, and traditional grazing lands (ACAPS, 2023).

Political

In October 2021, tensions rose as the Sudanese Armed Forces (SAF) orchestrated a coup to regain power, ending the transitional government in place since the ousting of Omar al-Bashir (Guardian, 2023). This created the context for increasing clashes in parts of the country throughout 2022, further exacerbating Sudan's already frail food security situation. A report by the World Food Programme shows an additional 314,000 people displaced as a result of this fighting, mainly from the Blue Nile, West Darfur, South Darfur, North Darfur, and West Kordofan regions (WFP, 2022). The breakdown in the rule of law in these regions saw vulnerable communities, such as girls, exposed to sexual and gender-based violence (SGBV) (ACJPS, 2023). Such events brought the number of food insecure people in Sudan up to 18 million.

Tense geopolitical factors and internal tensions led to the drastic escalation to war between the SAF and Rapid Support Forces (RSF) on 15 April 2023, marking yet another blow to food security and pastoral communities' ability to access their farms and harvest. The war began as Sudan was preparing for most of the seasonal crops to be planted and wheat to be harvested (FEWS, 2023), after a long period of agriculture attempting to recover from the multiple shocks mentioned above (ReliefWeb, 2022). As it stands, the war has resulted in a catastrophe for the food sector, with regular pillages of food reserves and serious constraints on movement in many regions (FAO, 2023). With thousands of Sudanese fleeing to neighbouring countries, there is now grave concerns around food security in these countries, which are dealing with multiple crises of their own.

At the onset of the most recent crisis, the regions hit worst by food insecurity were Greater Darfur, Greater Kordofan, and Khartoum, with 43%–62% of the population gravely food insecure. Sudan's current rate of food insecurity is projected to be 19 million people, the worst it has ever been (WFP, 2023). The conflict and ensuing insecurity have resulted in the loss of thousands of lives and means of subsistence, population displacement, destruction of productive assets, disruption of supply chains and trade routes (limiting access to markets), and destruction of infrastructure and services. The conflict has also dealt a devastating blow to the country's economy in its capital, Khartoum, disrupting internal trade routes, threatening imports, and triggering a shortage in cash liquidity. The macroeconomic environment has worsened substantially, and, amid the conflict, the Sudanese economy will slide deeper into economic crisis in 2023.

These tensions also coincided with the onset of war in Ukraine, which hit Sudan hard, as it was highly reliant on wheat imports from Ukraine and Russia (FAO, 2022). Sudan's import of wheat was interrupted, causing serious harm to its economy and food security. For instance, the price of importing one tonne of wheat from Ukraine and Russia increased by 180% from 2021 to 2022 (Ibid.).

Such results reflect a significant increase in the expected magnitude of Sudan's food insecurity situation, with an additional 8.6 million people requiring urgent action compared to the same period last year (June–September 2022), when 11.7 million people were classified in [IPC](#) Phase 3 or above. The states projected to have the highest portion of people in need of urgent action are those directly affected by the fighting:

- West Darfur (62%);
- Khartoum and South Kordofan (56%);
- East, Central, and South Darfur (53%);
- North Kordofan (45%);
- North and West Darfur (43 %);

Additionally, states hosting increasing numbers of newly displaced IDPs also rank high in this regard, including:

- Red Sea (32%);
- Blue Nile and Sinnar (31%);
- Al Gedaref (30%);
- Gazera (29%);
- Northern (27%);
- White Nile (26%).

The most affected groups are those from host communities, protracted IDPs, those stranded in areas affected by direct fighting, and IDPs from all states whose livelihoods are directly impacted by the conflict in Khartoum, Greater Darfur, Greater Kordofan, and parts of Blue Nile ([IPC, 2023](#)).

Challenges and Solutions

- The information available shows the conflict has so far led to hundreds of civilian deaths, although the number is likely much higher given under-reporting. Almost 1.9 million people have now fled their homes in search of safety, including 1.67 million internally displaced and more than 500,000 refugees, asylum seekers, and returnees who crossed the borders to neighbouring countries, further exacerbating the burden of displacement already present prior to the conflict (roughly 3.8 million people) ([FSL cluster, 2023](#)).
- A severe humanitarian crisis is also unfolding in neighbouring countries, who are hosting over 1 million people fleeing Sudan. Of these, 67% are Sudanese nationals and 33% are other nationalities (DTM, 2023). The majority of arrivals were reported in Chad (41%), Egypt (27%), and South Sudan (23%). If fighting continues, it is estimated that over 1.8 million refugees and migrants affected by the crisis may require life-saving assistance across Sudan's neighbouring countries.
- A toxic combination of factors--conflict, extreme weather, and economic shocks--accelerated acute hunger in 2023. Sudan had already been facing record-high levels prior to the conflict, but now, four and a half months in, up to 2.5 million additional people are expected to slip into hunger, bringing the total number facing acute food insecurity to over 19 million, or 40% of the country's population.
- Civilians are fleeing conflict-affected areas in increasing numbers. Due to the disruption in normal trade routes and limited access, shortages of basic goods--including food, water, medicine, and fuel--have become extremely acute across the country and prices have increased dramatically, making them unaffordable to many. This is further exacerbated by the collapse of banking and financial services, frequent interruptions to internet, telecommunications, and electricity supplies, and the destruction of health facilities.

- The IOM's Displacement Tracking Matrix (DTM) reported over 3.8 million internal displacements over the four and a half months of conflict, with the majority recorded in River Nile, East Darfur, and Northern states ([IOM](#)).
- At least 2 million children have been displaced ([UNICEF](#)). Clashes have had a severe impact on civilians, with reports of widespread human rights violations including gender-based violence (GBV), forced displacement, and killings. Since the start of the fighting, according to the Sudanese Ministry of Health, 1,105 people have lost their lives and 12,115 have been severely injured ([OCHA](#)).
- Attacks on healthcare facilities continue to be reported across the country, including on hospitals, ambulances, laboratories, warehouses, health workers, and patients. Almost 150 attacks have been registered by the WHO Surveillance System of Attacks on Healthcare since the start of the fighting until August 2023 ([WHO](#)).
- According to WHO, over 80% of hospitals are now out of service. Reports of GBV are on the rise as women and girls are on the move (UNFPA), community and family safety nets are disrupted, and the health sector is collapsing due to attacks, looting, and occupation of medical facilities (WHO and ICRC).
- According to the WFP, food insecurity in Sudan is estimated at a new record high: 42% of the population (20.3 million people) were facing acute food insecurity between July and September 2023 ([WFP](#)).
- Livestock productivity is low--although information on this is scattered and variable--due to disease and parasites, sub-optimal breeding, poor herd management practices, reduced access to traditional range resources, stock routes, crop residues, insufficient water sources, and overgrazing of remaining rangelands.
- Thousands in Khartoum were exposed to looting, plundering, and the systematic robbery and theft of homes and property, exposing them to greater vulnerability and poorer conditions. They lost their savings and property without any protections or a clear idea of the possibility for compensation. Those who are financially capable are less vulnerable to food insecurity and can adapt to the new economic crisis.

Challenges facing agriculture, nutrition, and livelihoods.

- The agriculture sector is dominated by small-scale farmers employing largely rain-fed and traditional practices, rendering Sudan highly vulnerable to climate variability. Sudanese communities' direct dependence on the natural environment has contributed to competition and conflict over scarce natural resources.
- Following the onset of war on 15 April 2023, farmers and the agricultural sector at large faced several challenges; the war's effect on the stability of rural communities being paramount. With the war spreading to other states, many rural communities were forced to migrate either internally or outside the country, as was the case in the Greater Darfur and Kordofan regions.
- There is an acute funding shortage and lack of provision of agricultural inputs in both the rain-fed and irrigated sectors. As most of the meagre financial resources available were earmarked for the war effort, the WFP estimates that, with the ensuing failure of the agricultural season, more than 20 million Sudanese people are at risk of famine.
- The situation is aggravated by acute fuel shortage in a number of states and the unreasonable increase in the price of agricultural inputs.
- Another challenge facing both rural and urban communities is the severe shortfall in household finances, as the war has disrupted millions of livelihoods.
- Continued disruption to overall commerce and trade will negatively impact wealthier household income sources and reduce their capacity to hire labour throughout the season, thus reducing agricultural labour opportunities and likely lowering agricultural wages below typical rates.
- Planting and production in irrigated (mainly wheat) and semi-mechanised sectors are likely to be significantly impacted by reduced access to agricultural finance and inputs, compounding challenges faced last year. Production will face labour shortage challenges and high cost, but family labour may compensate in some states. The high cost of fertilizers has had a minor impact in the western part of the country.
- The conflict's direct and indirect impacts are likely to disrupt agriculture production, including both the rainy and winter planting seasons.
- In the metropolitan and industrial state of Khartoum, the conflict has severely disrupted both formal and informal livelihood opportunities.
- There is a scarcity of food, especially with the looting and burning of factories and markets, and consumers are therefore dependent on food from distant regions (the

neighbouring countries of Egypt and Ethiopia), which increases the cost of purchasing. This is alongside the suspension of most salaries, which has weakened purchasing power and increased the need gap.

- As a consequence of the crisis, consumers may tend to buy cheap food of unknown quality, potentially causing diseases that increase the spread of epidemic diseases such as cholera, especially among IDPs who are not hosted or joined at gathering points.
- There are also practices that may appear later, including increased use of pesticides and fertilizers to speed up production and make a quick profit, which can cause health problems.
- A number of factory exits from the circle of food production is also a real challenge, as some moved outside Sudan, increasing the cost of food transportation and distribution. In some cases, this has been accompanied by weak infrastructure services in the new production areas, leading these factories to drop the Sudanese market. This is true especially for those who provide milk products and children's meals.
- The conflict has severely affected the country's economy in its capital, Khartoum, disrupting internal trade routes, threatening imports, and triggering a cash crunch. The macroeconomic environment has worsened substantially and the Sudanese economy will slide deeper into economic crisis amid the conflict.
- There is a decline in irrigated agricultural areas due to the reduction in irrigation efficiency, which is currently estimated at 82%, compared with the 23% average over the last 5 years (FAO, 2023).
- The youth migration and exodus of expertise is depleting Sudan's demographic dividend and directly influencing food security by decreasing the labour and expertise key to working and planning for a better agricultural future.
- The affected production of staple crops (millet and sorghum) is 'expected to escalate 200–700% above the five-year average and 100–200% above last year. Access to staple food commodities in Sudan will continue to be constrained by significantly high prices, low purchasing power, and limited cash retrieval' (KI1).
- High transportation costs—either due to fuel scarcity or the RSF levies and royalties imposed on roads linking Khartoum and Kosti to the Kordofan and Darfur regions, as well as those interconnecting these states—alongside the risks of travelling via insecure routes will induce a further rise in cereal prices. Remittances from outside will maintain the purchasing power for essential food items' (KI1).
- Sudan is dependent on wheat imports from the Black Sea region. Interruption to the flow of grain into Sudan, especially after the war between Ukraine and Russia, has increased prices and made it more difficult to import wheat.
- The private sector has been importing wheat since 2011, without government engagement.

- Wheat production is not feasible after the government lifted subsidies on bread.
- Sudan used to produce only 600,000 of the 2.5 million tonnes of wheat demanded annually.
- The expected danger and damage caused by cross-border pests, such as locusts and birds, which appear before the harvest season on their way west, passing through Kassala and Gedaref, Gezira, White Nile, and North Kordofan states. Such pests attack crops in the milk
- stage, causing great crop loss if not controlled. This had previously been managed nationally, via aircraft fumigation, but now, after the destruction of institutions in Khartoum, particularly the General Administration for Crop Protection, the results are expected to be disastrous: these pests will cause famine if preparation and appropriate arrangements are not done now.
- The negative impacts of climate change, as a forecasted, below-average main season rainfall will negatively affect agricultural production, water stocks, and pasture conditions for livestock, in turn impeding access to food.

Livestock and livelihood challenges

Insecurity is greatly affecting the mobility of livestock, especially in Kordofan state, where there is a density of RSF fighters. Pastoral herder communities/groups fear travelling too far from known regions under current security conditions. As they consider livestock to be a moving bank, a considerable resource, they do not want to leave their home territories and put their wealth at risk. Most travel during the farming rain season to northern parts that are now insecure (KI2).

This puts more pressure on the region from an environmental point of view and causes farmer-pastoralist conflicts. Livestock trespassing on fields during harvest endangers the harvest and causes disputes. With the scarcity of rain and low yields, the conflict is expected to worsen at harvest time. Herders usually remain in bare, non-cultivated lands--either farms or forests--for days to months, depending on the richness of the pastures. As such bare lands will soon be exhausted of resources, a livestock movement to richer lands is expected. This crisis has affected the amount of cultivated areas and decreased and disrupted the food chain, as residues and fodder are not enough for everyone to feed their animals.

- Herders are expected not to move north this season due to insecurity, but they may consider crossing borders illegally in search of more resources.
- Forests and nature regulations will also be affected, as some herders may cut down trees to feed their herds, putting more pressure on natural resources and leading to communal disputes with the natural sanctions guards (such as at Dinder National Park, Jebel Eldair National Park, El Radoum protected area, and Khor Abuhabil sanctuary).

- While there is currently not a problem in the availability of pastures, there will soon be an accessibility issue and a scarcity of resources due to the dry season. Importantly, most farming is for commercial use and not accessible to all (KI2).
- Due to the scarcity of natural range lands and livestock keepers' disrupted access to water and pastures, inter-communal conflicts are erupting between pastoralists and farmers and amongst pastoralists.
- North Kordofan has more RSF fighters than South and Central Kordofan. There is very limited access to Darfur and multiple security risks. There were some RSF soldiers in Al Butana and people are now fearful of moving.
- The unavailability of livestock vaccines, given the closure of the main laboratory in Khartoum, will have an impact on livelihoods.
- Women are more vulnerable in times of conflict. Those previously able to contribute to securing food for their families may no longer be able to move around and sell products such as milk and butter. There is limited movement due to security and community restrictions. Unless settled in certain regions, women will also be unable to contribute to farming.
- At the end of the rainy season and beginning of summer, there will be a scarcity of pastures usually left when pastoralists leave the land. Due to limited access to remote areas, such pastures have now been consumed. Pastoralists usually return between November and January, depending on the region. This is in addition to the scarcity of rain Sudan as a whole has received in recent years, leading to a severe lack of pastures available to livestock.
- Pastoralists belonging to certain ethnic groups are negatively affected and targeted by violence, even if they are not party to the conflict; only due to their blood relations with the conflicting parties. RSF is, generally, formed of three ethnic groups: Messiriya and Kababeesh in Kordofan and Rezigat in Northern Darfur, whose leaders are more heavily engaged in the fight. Still, every individual is dealt with as an enemy, targeted as a driving force of the conflict, and faces violence and difficulties as a result (KI2).
- In Gedarif state, the SAF has begun calling on the youth to join and around 400 have already been recruited (KI4, Rahad area). Although this is not yet enough to affect the agricultural sector, if more join in greater numbers, it will disrupt agricultural and pastoral activities and, thus, household food security.

Food Assistance

This is a man-made humanitarian crisis resulting from international lack of attention and silence, which allows perpetrators of human rights violations to go on with complete impunity. Insecurity, widespread looting, loss of humanitarian resources, and the destruction of facilities mean that providing food assistance will continue to be extremely difficult. Access to some of the most violence-affected areas will remain severely constrained given the targeting of aid workers and, thus, the reliance on air drops, even if humanitarians intend to scale deliveries to 4.9 million people. The areas of eastern Sudan, such as Gedaref and Kassala, most likely will continue to receive aid, but most safe places hosting IDPs from Khartoum, Kordofan, and Darfur have access issues.

- Food aid is a political distraction, temporarily stopping up holes/flaws in the global humanitarian system instead of implementing practical, long-term political solutions.
- Due to access constraints, including insecurity, and compounding factors such as breakdowns in communication, aid diversion, and road access in the upcoming rainy season, the conflict will negatively affect food assistance.
- During the rainy season, remote areas, including areas hosting substantial numbers of refugees and IDPs, are likely to become inaccessible, including in parts of Gezira, Darfur, and Kordofan.
- The conflict will negatively impact all aspects of food security, pushing more people—especially IDPs—into acute food insecurity. This includes increasing rates of malnutrition.
- In the distribution period, increasing demand on less resources places a real burden on humanitarian workers, challenging them to satisfy the needs of the neediest IDPs living in hosting communities.
- Humanitarian aid is still suboptimal, and the gap is widening.
- Food insecurity is expected to reach acute levels, particularly in main urban centres, among the newly displaced and in the greater Darfur region. In other rural areas, the affected population is likely to experience atypically high levels of acute food insecurity in November, as the conflict will prevent much-needed crop production and harvest.

Water and Energy use

- The failure of Khartoum's electricity network and the consequent power shortages in all states is a big problem.
- The 2023 agricultural season witnessed a significant reduction in the water carried by the Blue Nile, as Ethiopia opted to complete the water storage of the Renaissance Dam without any consideration of the impact on Sudan.

- There is a lack of spare parts for water supply equipment (hand pumps and solar cells).
- There is an increasing deficit in water sources and electricity due to the influx of IDPs in all cities and towns.
- The increase in water-borne diseases and lack of good hygiene practices among IDPs at gathering points represent a real challenge to health, both directly and indirectly, especially when related to food handling and processing.
- Surface water is infected by agrochemical residues due to the over use of the El Gazira and El Managil schemes.

The negative impacts of the Renaissance Dam on Sudan water security

Source: a published article by Dr. Abdallah Abdulsalam Ahmed, Ministry of Water Resources, 2023.

- *A sharp decline in the Blue Nile's revenues has caused severe and irreparable damage to many of Sudan's economic, social, environmental, and even security interests. This loss is due to the escape of water from all irrigation stations, agricultural projects, and water stations, affecting drinking water for main cities that depend on the Nile, groundwater, and all meters on the banks of the Blue Nile and Main Nile. Moreover, there is also a loss of large areas of floodplain agriculture and known areas--represented by Wadi Al-Salim and the valleys in Northern State and Nile River State, as well as the large islands along the Nile.*
- *There is little hope that any of Sudan's reservoirs can find sufficient water for storage, and thus Sudan will lose most, if not all, of the irrigated agricultural sector, which will inevitably experience a decrease in irrigation water. There will also be a devastating thirst and the energy sector will be negatively affected.*
- *The amount of water the river is expected to provide for the rest of the year will not be sufficient to fill the reservoirs of Roseires, Sennar, and Meroe. This will have disastrous effects on summer and winter agriculture and electrical generation.*
- *This year, flood agriculture along the Blue Nile and Main Nile has been completely lost. As for fruit and palm projects on the rivers' banks, they have also been lost. Households depending on these as a main food and income source will become greatly insecure.*
- *The drying banks of the Blue Nile and Main Nile, caused by the decline in the rivers' levels this year, cannot be compensated for in the future. This is catastrophic by all standards.*
- *Due to the decline in water levels, farmers who previously irrigated their lands for free using flood irrigation are now obliged to pay and use pumps. Alongside the scarcity in fuel and electricity, cultivation becomes impossible.*
- *The daily revenues of the Renaissance Dam, which affects the Atbara River, decreased in the recent period to about 25% of standard revenues or the past years' average. This has consequences on people's livelihoods living in the area.*

Proposed Solutions and Recommendations

These recommendations aim to address Sudan's food security challenges, especially in the upcoming winter season and in conflict-affected areas.

Immediate responses required to address food security:

To prepare for the winter season, the government and civil society organisations have agreed to launch a crash programme to boost food production, particularly wheat. The programme will require domestic and international funding, as well as policies that incentivise wheat farming in the northern regions. This is a reversal of the Ministry of Finance's previous decision not to buy wheat from local farmers.

Meanwhile, FSL partners and the humanitarian community urge all parties involved in the conflict to respect and facilitate humanitarian access, which is essential to effective humanitarian action. They also call for urgent negotiations to establish and enforce humanitarian pauses and corridors that allow for the safe movement of people and goods between conflict-affected and safe areas.

For rural communities and in areas with adequate rainfall, the government will support *wadi* cultivation and home gardens by providing free inputs and extension services. The programme will also promote the diversification of food crops and the adoption of smart agriculture techniques. Furthermore, the programme will enhance linkages between rural producers and urban markets by creating marketing channels and establishing both producer and consumer associations. This will increase rural household income and food security. The programme will also encourage financial transfers from abroad and integrate the migrant economy into the national economy. This will stimulate investment in agriculture and the food industry, as well as create more employment opportunities.

Finally, food distribution carried out by international, humanitarian, and community organisations and others should also **consider host communities**. This will help reduce tensions and foster social cohesion between displaced and host populations, as well as ensure that the most vulnerable groups are reached.

Medium and long-term responses for building resilience and withstanding further crises:

- **Encourage intermediate agricultural technologies and farmers' ownership of them.** These technologies, such as improved seeds, fertilizers, irrigation systems, and storage facilities, can enhance the productivity, resilience, and income of smallholder farmers. However, they must be affordable, accessible, and appropriate to the local context and farmer preferences.
- **Effective and innovative agricultural extensions in the context of climate change.** Extension services can provide farmers with information, training, and advice on how to adapt to changing weather patterns, pest outbreaks, and market fluctuations. They can also facilitate linkages between farmers and other actors in the value chain, such as input suppliers, processors, traders, and consumers.

- **Community outreach and screening for malnutrition needs more focus.** A smart survey needs to be conducted (the last was in 2018). Malnutrition is a serious health problem affecting children, pregnant women, and lactating mothers in particular. A smart survey can help identify the prevalence and causes of malnutrition, as well as the appropriate implementing design and interventions, such as supplementary feeding, micronutrient supplementation, and behaviour change communication.
- **An early warning call is needed to advocate for national pest management.** Due to the current ground combat, this can be done using military aviation. It is expensive and includes the cost of materials used, logistics, and incentives for team members participating at the state level, in addition to being time-consuming and risky due to movement in insecure areas. Pest infestations, such as locusts and fall armyworms, can cause significant crop losses and threaten food security. An early warning call can alert the authorities and stakeholders to take preventive and control measures before the situation worsens.
- **Support herders with funding. Alternatively, support them with farming inputs and services for the current period to avoid food insecurity.** Herders are among the most vulnerable groups in conflict-affected areas, as they face challenges such as loss of livestock, reduced mobility, restricted access to grazing land and water sources, and increased exposure to violence and theft. Supporting them with funding can help them to restock their animals, purchase veterinary services and animal feed, and diversify their livelihoods. Alternatively, supporting them with farming inputs and services can help them to engage in crop production during the rainy season or in areas where irrigation is available.
- **Open safe corridors and secure farming and alternative routes for farmers and herders.** This would enable access to fields and pastures without fear of attack or harassment by armed groups or other parties. It would also facilitate movement to markets where they can sell their produce or buy inputs. This would require coordination and dialogue among the relevant authorities, security forces, humanitarian actors, community leaders, and conflict parties.
- **Facilitate the exchange and sharing of resources among different groups, such as pastoralists and farmers.** For instance, pastoralists can provide milk and meat for farmers, while farmers can offer crops and fodder for livestock. This way, both groups can benefit from each other's products and services, reducing the risk of competition and conflict over scarce resources.
- **Communicate effectively with communities about changing environmental and social conditions,** such as droughts, floods, migrations, and border disputes. Community leaders should play a key role in informing their members of the challenges and opportunities they face and how to cope using local knowledge and resources. For example, community leaders can inform their members that they will be hosting herders from other regions for longer periods of time this year, due to the prolonged dry season, and explain how this is an opportunity for mutual learning and support, not a threat.

- **Engaging with other stakeholders, such as neighbouring countries, regional organisations, and international agencies**, to address cross-border issues affecting communities. For example, conflicts at the borders with Eritrea or Ethiopia can be

prevented or resolved by collaborating with local community leaders from both sides of the border who can act as advocates for their people's rights and needs and raise awareness around the causes and consequences of conflict. Additionally, community leaders can also work with other actors to facilitate the movement of people and goods across borders in a safe and orderly manner, avoiding aggression and violence.

- **Investing in sustainable solutions** that can improve the livelihood and well-being of communities, such as water compact units and alternative solar energy systems. Water compact units are devices that can collect, filter, and store rainwater for domestic and agricultural use, reducing dependence on unreliable sources. Alternative solar energy systems are systems that can harness the power of the sun to generate electricity for lighting, heating, cooling, and other purposes, reducing dependence on fossil fuels and grid power. These solutions can not only enhance community resilience and adaptability to climate change and other shocks, but also create opportunities for income generation and innovation.

Sectoral recommendations

Sector Challenges	Solution
Agriculture, nutrition, and livelihoods	<ul style="list-style-type: none"> ▪ Encouraging farmers to use ARC's improved seeds and packages, such as 'Imam' wheat, which can boost productivity and climate resilience. ▪ Improving FAO's seed programme, which gives millet and sorghum grains to needy farmers in eight regions, by ensuring timely, adequate, and suitable seeds. ▪ Supporting WFP's wheat project, which aims to double Sudan's wheat output in two seasons, by providing inputs, training, and markets to small farmers in five states. ▪ Improving nutrition, especially for women and children, by addressing malnutrition causes. This can include promoting diverse diets, supplements, breastfeeding, and hygiene. ▪ Diversifying and strengthening rural livelihoods by improving access to finance, skills, and social protection. This can include supporting agro-pastoralism, off-farm activities, and microfinance. ▪ Increasing the agricultural output and resilience of small-scale farmers and pastoralists by providing them with seeds, fertilizers, tools, vaccines, and other inputs, as well as supporting them in adapting to climate change and managing natural resources sustainably. ▪ Strengthening the capacity of agricultural institutions and stakeholders through the Arab Organization for Agricultural Development (AOAD), which can offer training, technical assistance, and coordination for pest control and management using the army's aircrafts and pilots. ▪ Expanding the social protection programmes that target the most vulnerable households through the Social Protection Register, and promoting home gardening and small-animal rearing to improve nutrition and livelihoods. ▪ Developing a digital agriculture platform that provides farmers with information, training, and technical support, as well as facilitating their access to extension services, markets, and agricultural inputs, thereby reducing their production costs. ▪ Establishing aquaculture farms that can diversify rural communities' nutrition and income sources and create new employment and business opportunities in the fishing sector. These efforts can be supported by international organizations such as IFAD, AfDB, and AOAD.
Livestock	<p>One possible way to address Sudan's food security challenges, with a focus on livestock, is to support some herders' transition from nomadic to sedentary lifestyles. This would allow them to have more stable access to land, water, and crops, as well as avoid the risk of conflict and violence currently affecting their mobility and livelihoods. However, this transition</p> <p>requires careful planning, coordination, and adequate infrastructure and services to ensure that herders can maintain their livestock production and</p>

	<p>income.</p> <p>Another possible way is to promote the use of digital technologies and innovations in the livestock sector, such as the FAO-sponsored initiative in digital agriculture training. This initiative uses a smart system to automate sheep feeding, monitoring, and production, as well as electronic sensors to detect sick or ready-for-consumption sheep. This technique reduces production costs, shortens the value chain, and lowers the prices of meat for consumers. The same technique can also be used by GPs in Sudan to track livestock mobility and movement, and to help pastoralists find secure locations where resources are available. This would enhance herders' resilience, adaptability, and access to information and markets.</p>
HFA	<p>Digital technology can support people in crisis situations by providing practical information and guidance. For example, in Homs, Syria, a Facebook page was created to share recipes for people living under siege, with limited access to food. The page described how to prepare edible plants, turtle meat, cat meat, and cockroaches found in the city. The page also served as a platform for people's exchange of experiences and coping strategies.</p>
Water and energy	<p>Establish and rehabilitate water yards in rural and remote areas. Water yards are facilities that collect and store water from boreholes, wells, or rainwater harvesting systems and distribute it to surrounding communities through pipes, taps, or tanks. Water yards can improve access to safe and reliable water sources for domestic use, irrigation, livestock, and sanitation. They can also reduce the time and labour spent fetching water, especially for women and children.</p> <p>In areas where water yards are not feasible or cost-effective, construct hand pumps. Hand pumps are simple devices that allow people to extract groundwater by manually pumping a handle. Hand pumps can provide water for drinking, cooking, washing, and small-scale irrigation. They can also enhance resilience to drought and climate shocks, as groundwater is less vulnerable to evaporation and contamination than surface water. Hand pumps are easy to install, operate, and maintain, and can empower communities to manage their own water resources.</p>

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Sudan Crisis Coordination Unit

About the SCCU

The Sudan Crisis Coordination Unit (SCCU) aims to facilitate the coordination of resources and efforts among various groups and networks, including diaspora organisations, humanitarian aid agencies, local civil society organisations, and government agencies.

For further details, please visit: <https://sudancu.org>