

Northern Ethiopia: Conflict and Food Insecurity

Updated September 27th, 2022

Highlights

- Since the start of the civil war in northern Ethiopia in November 2020, the conflict has impacted agricultural production and livelihoods in Tigray and neighbouring regions of Amhara and Afar (Figure 1).
- In affected regions, the majority of the population are farmers that rely on local agriculture for their food supply.¹ Since the start of the conflict, fields have been abandoned, farmers have been prevented from ploughing or harvesting, seeds for planting have been stolen, farm equipment has been looted, and livestock has been killed.² Crops that were able to be sown have often been pillaged and burned before they were able to be harvested.³
- From September to the end of 2021, the number of Internally Displaced Persons (IDPs) in Tigray doubled to 4.2 million due to the ongoing conflict.⁴ By April 2022, the total number of IDPs decreased back to 2.1 million across Tigray, Amhara, and Afar, but the ability to carry out agricultural activities remains constrained among those left in rural areas.⁵
- Since the onset of conflict, cereal yields have been negatively affected in parts of the major producing Tigray and Amhara regions as well as in the minor producing Afar region for the 2020 *Meher* season, 2020 *Belg* season, 2021 *Meher* season, and 2022 *Belg* season with significant implications for food security in affected regions.⁶

Density of Violent Attacks in Ethiopia from November 2020 to August 2022

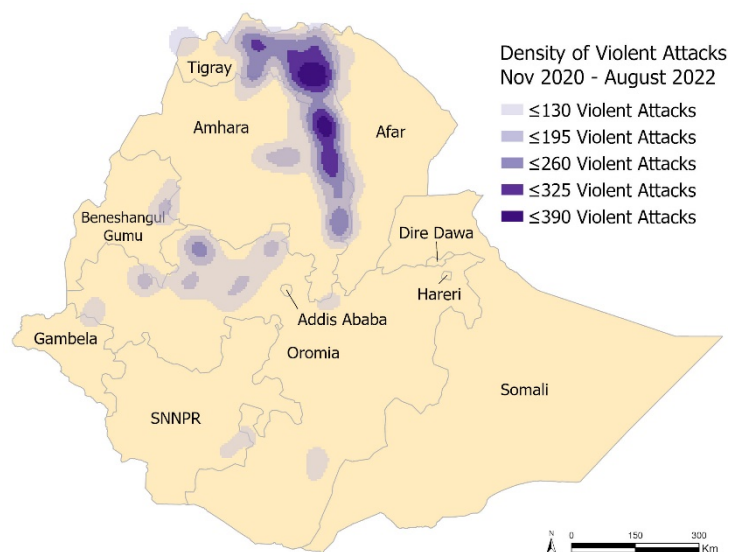


Figure 1: Density of violent attacks in Ethiopia from November 1, 2020 to August 31, 2022. Number of events extrapolated from ACLED data warehouse using violent event types (battles, explosions/remote violence, and violence against civilians). Source: ACLED

Overview

In August 2020, parliamentary elections in Ethiopia were delayed in response to the onset of the coronavirus pandemic, and the prime minister's term was extended. In response, Tigray region defied the central government by holding its own regional elections. Then in November, Ethiopia's prime minister, Abiy Ahmed, ordered a military assault against Tigray in response to an alleged attack on federal army camps, marking the start of the civil war that continues today. In conflict-affected areas of Tigray, Amhara, and Afar regions (Figure 1), the outcomes of the last three agricultural seasons as well as the current ongoing 2022 *Meher* season have been impacted by the direct and indirect impacts of the ongoing conflict, including widespread displacement and field abandonment, direct attacks on the agricultural and livestock sectors, loss and decreased affordability of agricultural inputs, and limited market supply and access.

In Tigray region, three-quarters of the population are farmers that grow on less than a hectare of land and depend on subsistence agriculture for their basic food and income needs. As conflict has constrained agricultural production, households now face extreme food insecurity, partially due to missed harvests and crop destruction. Additionally, households are often unable to afford food commodities in markets due to the economic impacts of domestic conflict, and market supply and access is constrained due to infrastructure damage and insecurity. This leaves households reliant on humanitarian aid; however, movement restrictions, roadblocks, blockages, and theft make it difficult to deliver the necessary aid to households in need. In conflict-affected areas of northern Ethiopia, the 2022 *Meher* seasonal outcomes are likely to be constrained by persistent conflict and related socio-economic challenges, and food insecurity and dependence on humanitarian aid are likely to increase as a result.

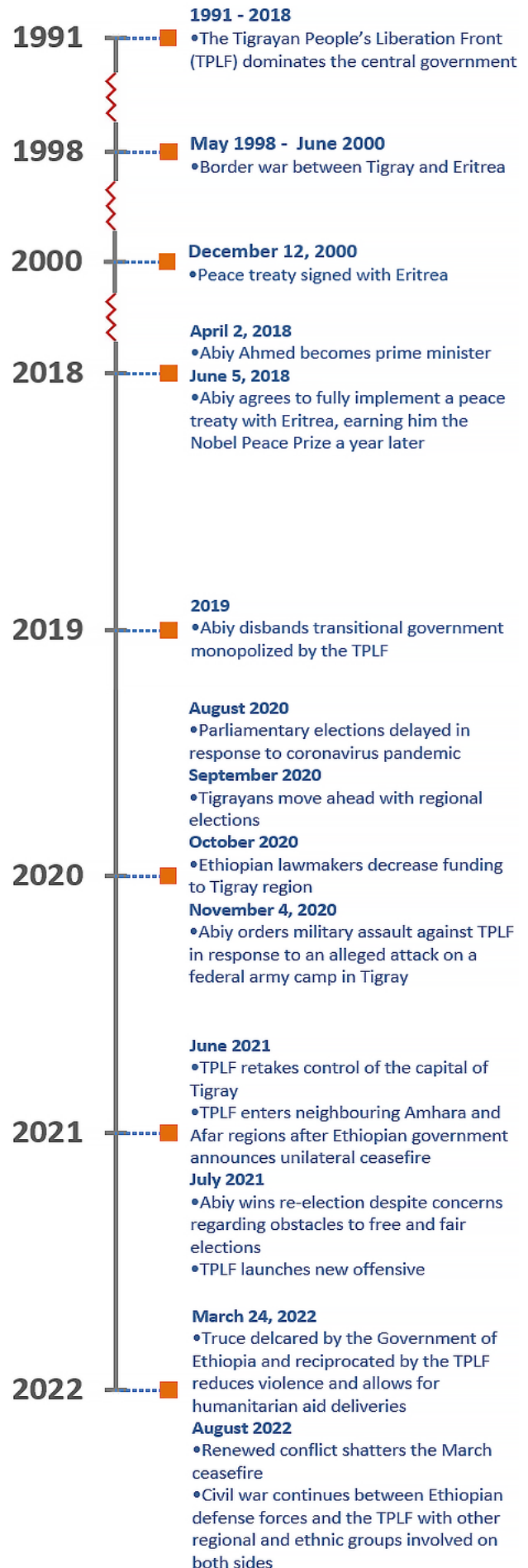
Background of Conflict

The current-day conflict in Ethiopia stems from several decades of regional tensions rooted in ethnic alliances. In the 1970s and 1980s, the Tigrayans, who today make up roughly 7 percent of the Ethiopian population, fought to end the previous military socialist regime and seize control of the government. Beginning in 1991, a transitional government was put in place, and the Tigrayan People’s Liberation Front (TPLF) monopolized power of the central government but gave autonomy to the country’s regions and brought about relative stability and growth to the country.⁷ However, concerns regarding political repression, access to resources and opportunity, and the ethnic minority-led government sparked dissatisfaction and protests.⁸

In addition to tensions between Tigrayans and the central government, there have long been tensions between Tigray and neighbouring Eritrea. Beginning in 1998, a war was fought over the shared border until 2000 when a peace treaty was signed with Eritrea, ending the territorial conflict. However, the peace treaty was not fully implemented until 2018 when Abiy Ahmed became prime minister and signed a new declaration for peace, earning him the Nobel Peace Prize. The 2018 election win for Abiy also signalled the transfer of power away from the TPLF.⁹ A year later in 2019, Abiy disbanded the transitional government, but the TPLF rejected his new Prosperity Party that sought to merge several ethnic and regional parties and replace the old ruling coalition.¹⁰ In response to the onset of the coronavirus pandemic, parliamentary elections were delayed in August 2020, and Abiy’s term was extended.¹¹

In September 2020, the Tigrayans moved ahead with their own regional elections, an unprecedented act of defiance against the central government.¹² In response, Ethiopian lawmakers decreased funding to Tigray region in October of that year.¹³ Then on November 4th 2020, Abiy ordered a military assault against the TPLF after an alleged attack on a federal army base in Tigray region,¹⁴ which the Tigrayan forces denied, claiming the assault was a pretext for invasion.¹⁵ The situation quickly escalated into a wider political and ethnic war with civilians suffering the brunt of the violence and atrocities. In June 2021, the TPLF retook the capital of Tigray, and the party launched a new offensive after Abiy won re-election in July despite boycotts regarding obstacles to free and fair elections.¹⁶ From late June 2021, renewed fighting spilled over into neighbouring Amhara and Afar regions, leading to new population displacements.¹⁷ More than a year later, civil war continues between the Ethiopian defence forces, led by Abiy with soldiers from neighbouring Amhara region and Eritrea, and the TPLF with other ethnic groups involved on both sides.¹⁸

Northern Ethiopia Conflict Timeline



Background of Agricultural Production

In Ethiopia, the agro-climatic zones that make up the country include *Berha* (hot arid), *Kola* (warm semiarid), *Weyna dega* (cool sub humid), *Dega* (cool to humid), and *Wurch* (cold to moist).¹⁹ According to a 2011 International Food Policy Research Institute report and as depicted in Figure 2, most agricultural production takes place between the *Weyna dega* and *Dega* zones, which mostly overlap with Tigray, Amhara, Oromia, and SNNP regions.²⁰

Acro-Climatic Zones and Croplands of Ethiopia

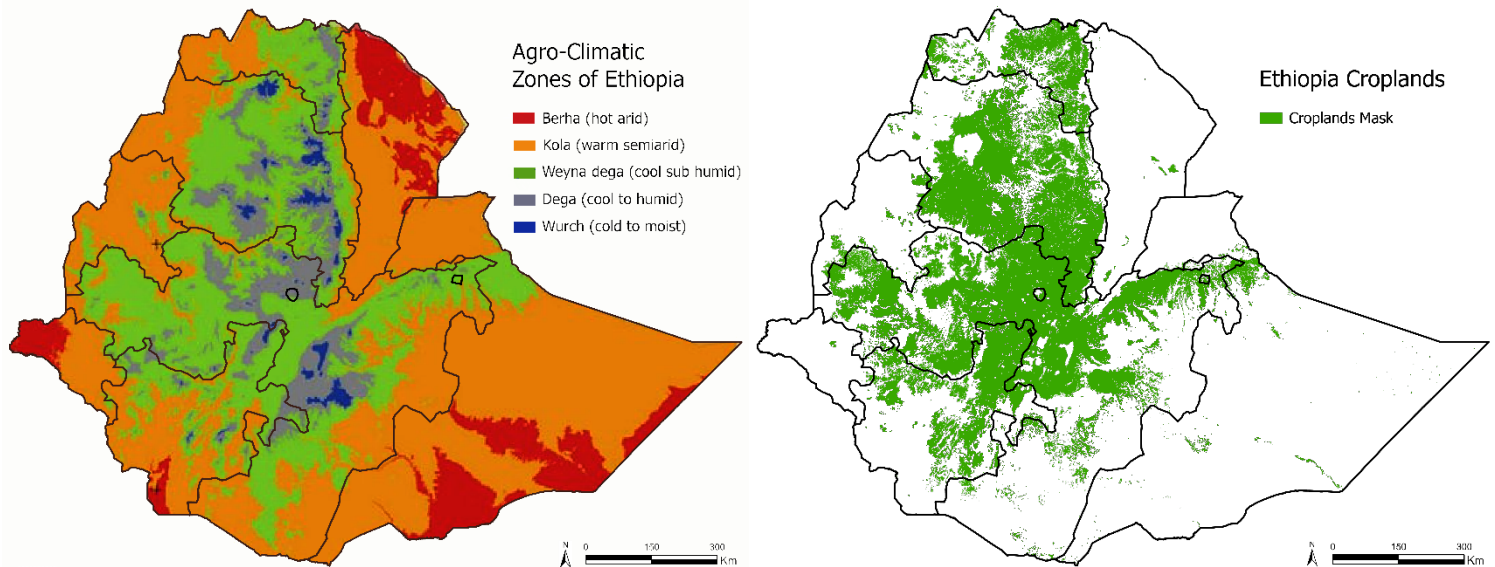


Figure 2: Agro-climatic zones and croplands in Ethiopia. Agro-climatic zones map adapted from the following source: Berhanu, Belete, Yilma Seleshi, and Assefa M. Melesse. 2014. "Surface Water and Groundwater Resources of Ethiopia: Potentials and Challenges of Water Resources Development." In *Nile River Basin*, 97–117. Springer International Publishing. http://dx.doi.org/10.1007/978-3-319-02720-3_6. Source for croplands mask: JRC ASAP

Prior to the conflict, about 80 percent of the population in northern Ethiopia relied on agriculture as their primary source of food and income.²¹ In the Ethiopian highlands, including Amhara and Tigray regions, mixed crop-livestock farming is the dominant production system, with crops as the primary livelihood source, followed by livestock. In this system, livestock provide power for ploughing and manure for fertilizer, and crop residue provides feed for livestock. Transhumant systems are also present in western Tigray and Amhara and involve the seasonal movement of animals from highland to lowland rangelands.²² In Tigray, about 75 percent of the total population of 5.7 million are farmers that rely on local yields for their food supply.²³ Farmers in this region rely primarily on a mix of farming teff, wheat, and barley crops as well as livestock.²⁴ Most Tigrayan farmers also have small plots of less than a hectare in total and grow subsistence crops on rainfed lands and cash crops on irrigated lands near river banks.²⁵ In southern and eastern parts of the country as well as in Afar, pastoral and agro-pastoral livestock production are the dominant livelihood sources. Pastoral systems consist of no crop production, and agro-pastoral systems are dominated by livestock husbandry as well as limited crop production.²⁶ Even amidst the conflict and displacements in Tigray, Amhara, and Afar, agriculture and livestock production are crucial to livelihoods in these regions.²⁷

The *Meher* and *Belg* seasons are the two primary growing seasons in Ethiopia with *Meher* being the main producing season and *Belg* the minor producing season. The main *Meher* season takes place across the whole of the country with planting in June coinciding with the *Kiremt* rains from June through mid-September and harvest from October. The secondary *Belg* season only occurs across *Belg* receiving areas, including southern Tigray, eastern Amhara, Afar, East Oromia, and SNNPR regions, and begins in mid-January, coinciding with the *Belg* rains from February through May with harvest from June.²⁸ In southern Tigray, eastern Amhara, and Afar, overall grain production greatly depends on rainfall patterns during the *Belg* season.²⁹ Conversely, western agricultural areas, including northern Tigray and western Amhara, experience only the *Meher* season with planting from mid-April and harvest from October (Figure 3).³⁰

Agricultural Calendar in Ethiopia

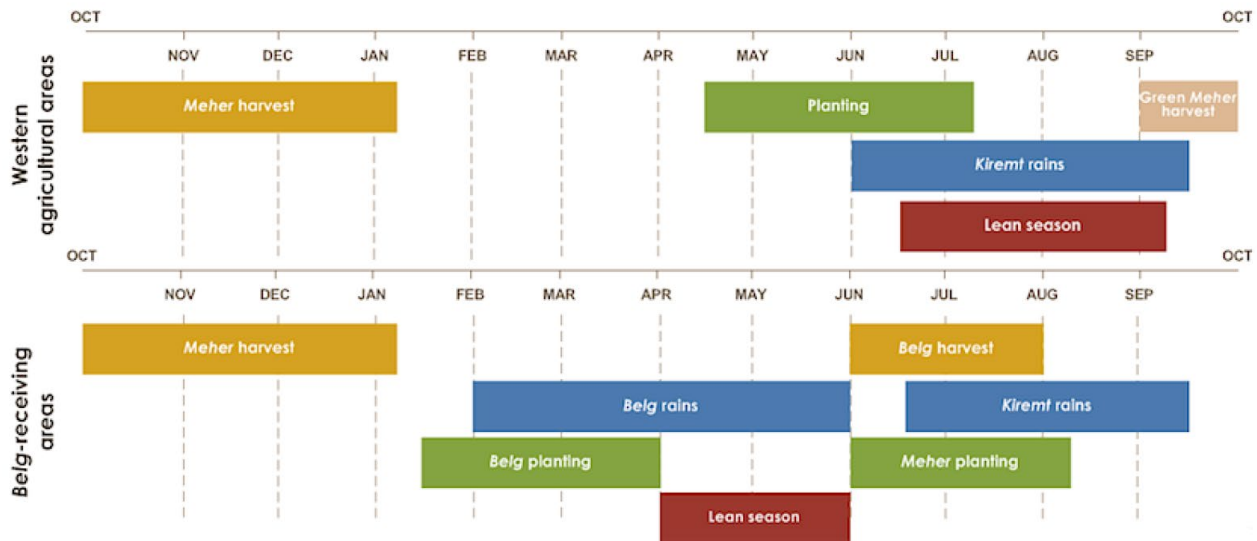


Figure 3: Agricultural calendar for a typical year in Ethiopia. Source: "Ethiopia." 2022. Famine Early Warning Systems Network (FEWS NET). July 2022. <https://fews.net/east-africa/ethiopia>.

In 2011, Ethiopia’s five major cereal crops, including teff, maize, wheat, sorghum, and barley, accounted for three-quarters of total cultivated area and 68 percent of total production.³¹ Additionally, as of 2022, the agricultural sector accounts for 40 percent of the country’s Gross Domestic Product, 80 percent of exports, and 75 percent of the total workforce.³² Furthermore, Ethiopia’s commodity exports mostly come from the small cash-crop sector,³³ with the oilseed industry, including sesame, soybean, and Niger seed production, accounting for 20 percent of the country’s agricultural export profits. Sesame is the most significant oilseed crop, with Amhara accounting for 44 percent of national sesame output and Tigray accounting for 31 percent. Along with the severe macroeconomic challenges throughout the country, including depreciation and low foreign exchange reserves, the loss of sesame production in Amhara and Tigray as a result of the conflict has the potential to have a significant impact at the national level.³⁴

Despite the country’s high reliance on agriculture, the sector is constrained by factors such as periodic drought, limited infrastructure that makes it difficult to transport goods to market, and degradation of soil quality due to overgrazing, deforestation, and high population density.³⁵ Furthermore, conflict in the north has greatly impacted the last three agricultural seasons since its onset in November 2020 and is likely to impact agricultural outcomes for the 2022 *Meher* season that is currently underway, and livestock production has also been negatively impacted.

Impacts of Conflict on Agricultural Production

In northern Ethiopia, conflict has had a significant impact on agricultural production in affected regions. Even prior to the onset of conflict, production in the north had been impacted by erratic and below-average rainfall, the worst desert locust invasion in 25 years, and the onset of the COVID-19 pandemic that resulted in disruptions to agricultural input distribution. While national cereal yields for the 2019 *Meher* season were near-average, some localized areas of the north experienced below-average production due to the desert locust invasion.³⁶ Additionally, 2020 *Belg* yields were below-average throughout most parts of the country due to a combination of the aforementioned constraints.³⁷

Then from the onset of conflict in November 2020, production in the north has been further impacted by both direct attacks on the agricultural sector, such as restricted field access, supply and transportation blockages, destruction of agricultural tools and livestock, and burning and pillaging of crops by armed forces, as well as indirect consequences of conflict, including displacement, field abandonment, market disruptions, economic downturn, and input shortages. As a result, agricultural production has been significantly hindered in Tigray and surrounding regions impacted by insecurity. Despite near-average national yields for the 2020 *Meher* season, localized production shortfalls occurred once again in Tigray region due to the onset of conflict.³⁸ As the conflict escalated, below-average yields resulted in southern Tigray and eastern Amahara for the 2021 and 2022 *Belg* seasons and in Tigray, Amhara, and the minor producing Afar region for the 2021 *Meher* season due in large part to the impacts of conflict on agricultural production.³⁹

Primary Impacts of Conflict on Agricultural Production

Large-scale Displacements and Field Abandonment

According to the International Organization for Migration (IOM), the number of internally displaced persons (IDPs) reached 1.9 million in Tigray in May 2021.⁴⁰ In June, instances of farmers abandoning sorghum, teff, and sesame fields in western Tigray to escape violence were reported. Many fields had damaged crops left to rot as ethnic Tigrayans fled the area.⁴¹ Additionally, large areas of farmland were abandoned due to a lack of oxen to plough, seeds to plant, and fertilizers to apply on fields.⁴² Renewed conflict from June that spilled over into Afar and Amhara regions increased the number of IDPs to 2.1 million people by September,⁴³ and by the end of 2021, the number of IDPs doubled to 4.2 million. An estimated 85 percent of the increase in displacements is attributed to conflict, with the remaining amount attributed to climatic shocks, including drought, the desert locust invasion, and flooding.⁴⁴ Throughout 2021, the most fertile areas of Tigray were occupied by armed forces, resulting in displacement from these fertile areas, limited ability to grow food, and restricted labour opportunities.⁴⁵ As IDPs fled their homes, their assets and livelihoods were left behind, and many displaced households have moved from rural areas to urban centres where they can access humanitarian assistance, resulting in loss of assets and field abandonment.⁴⁶

However, in December 2021, conflict temporarily declined as government forces took control of Afar and Amhara regions, allowing some IDPs to return to their areas of origin, though conflict and displacement continued in localized areas of these regions bordering Tigray. In Afar, an estimated 30,000 IDPs were able to return to their places of origin. In Tigray, 8,800 IDPs were able to return to Eastern, Central, Southern, and South-Eastern zones, and 3,300 were able to return to North-Western zone.⁴⁷ However, many young men who typically plough the fields had either fled the violence, joined the armed forces, or were killed.⁴⁸ Of those left alive in rural villages, including the elderly and children, many are unable to undertake the physically demanding farm work, resulting in a loss of agricultural labour to tend the fields.⁴⁹ By April 2022, the total number of IDPs decreased back to 2.1 million across Tigray, Amhara, and Afar, but the ability to carry out agricultural activities remains constrained among those left in rural villages, and the humanitarian needs in all three regions remain high.⁵⁰

Targeting of the Agriculture Sector

In Tigray, agricultural production has been targeted to weaken the region's political and economic position as the majority of the population is dependent on rainfed subsistence agriculture for their food needs and livelihoods,⁵¹ and instances of direct attacks on the agricultural sector have been reported. For instance, in May 2021, the deputy head of Tigray's interim government stated that farmers had been disallowed from carrying out agricultural activities and that seeds had been blocked from reaching parts of the northern region.⁵² While 75 percent of the Tigrayan population relies on agriculture as their primary source of food and income,⁵³ 80 percent of households in conflict-affected areas had no food stocks or limited food stocks by May 2021, partially due to the missed harvest as well as crop destruction.⁵⁴ Additionally, in a June 2021 news report, farmers, aid workers, and local officials noted that farmers had been stopped from ploughing or harvesting, seeds for planting had been stolen, farm equipment had been looted, and livestock had been killed.⁵⁵ Another report noted direct instances of crop pillaging and burning.⁵⁶ Women and children were also reported to have worked the lands during the daytime while adult men remaining in the rural villages worked at night to avoid being a target.⁵⁷ Furthermore, by June 2021, most agricultural services were no longer available as many outlets and warehouses had been closed or vandalized, reducing the availability of agricultural inputs and seeds.⁵⁸

Limited Availability and Decreased Affordability of Agricultural Inputs

In Tigray, productive assets such as seeds, animals, or tools have been looted or destroyed by armed forces.⁵⁹ As such, even when farmers have been able to access their fields, they often do not have the inputs or tools necessary to farm.⁶⁰ Additionally, seed markets have disappeared due to the breakdown of essential services and infrastructure.⁶¹ Prior to the conflict, Tigray did not have a seed enterprise for local seed production and instead relied on seed sourced from the Office of Agriculture. While regional authorities have since established one, adequate seed supply remains a concern.⁶² Of the farmers that do have access to seeds, many have had to resort to eating the seeds they needed to plant for the next season due to severe food insecurity.⁶³ Additionally, according to a 2013 household survey, 70 percent of farmers in Tigray used fertilizer, primarily for cereal crops. While only 10 percent of surveyed farmers reported being able to purchase fertilizer with credit, most of these were from Tigray region.⁶⁴ However, farmers now face difficulties purchasing agricultural inputs such as seed and fertilizer primarily due to market supply disruptions and, to a lesser extent, inflation and loss of income.

In March 2022, the federal government declared a humanitarian truce to help improve access to agricultural inputs and basic necessities; however, the flow of supplies into Tigray remained restricted as of April.⁶⁵ According to an April 2022 report from the United Nations Office for the Coordination of Humanitarian Affairs (UN OCHA), humanitarian organizations face growing challenges in delivering supplies due to supply shortages and suspension of basic services.⁶⁶ Additionally, an uptick in conflict in late August 2022 upended the March ceasefire, again resulting in a halt to most humanitarian services.⁶⁷ According to a UN Department of Global Communications report from September 8th, there had been no humanitarian convoy movements into Tigray since August 23rd, which is likely to prevent the delivery of supplies such as fertilizer for the upcoming *Belg* planting season in January 2023.⁶⁸

Ethiopia has also been experiencing persistent high inflation for the past five years, and in May 2022, the annual inflation rate reached a high of 37.2 percent (Figure 13), further reducing household purchasing power. In 2020 and 2021, the high inflation levels were primarily driven by weak domestic supply due to the conflict-induced reduction in agricultural production, devaluation of local currency, increased government spending related to the armed conflict, and COVID-19-related supply chain disruptions.⁶⁹ Additionally, in 2022, the supply and prices of fuel and fertilizer imported from Ukraine and Russia have been affected by the current Ukraine conflict, underpinning inflation.⁷⁰ Macroeconomic spill-over effects from the war in Ukraine continue to inflate agricultural production costs throughout Ethiopia while it is simultaneously contending with multiple climatic shocks, including flooding in parts of the north and west as well as an exceptionally prolonged drought in southern areas since late 2020, with an expected unprecedented fifth consecutive poor *Deyr/Hageya* rainy season between October and December.⁷¹ In Tigray, some household incomes have been further limited by the non-payment of salaries and halt in remittances⁷² due to the severance of basic services such as communication, banking, electricity, and trade.⁷³

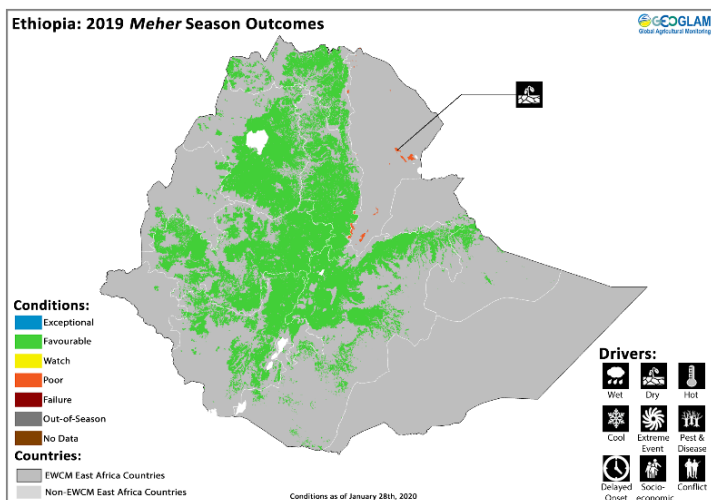
Targeting of the Livestock Sector

In 2016, the livestock sector accounted for 10 percent of the country's export income.⁷⁴ Since the onset of conflict, livestock have been lost as a result of looting, displacement, and disease,⁷⁵ and oxen that are used to plough fields have been looted and killed by armed forces.⁷⁶ In April 2021, conflict zones in Tigray shifted to areas with high livestock populations, including in the South Eastern, Eastern, and Southern administrative zones of Tigray, and an estimated 80 to 90 percent of cattle were looted in parts of the Western and Central zones.⁷⁷ According to a UN briefing from June 6th, 2021, 90 percent of oxen and livestock had been looted or slaughtered in a northwestern town in Tigray.⁷⁸ Many households that still held livestock resorted to selling them off to generate income for food purchases. This in turn generated a high supply of livestock in the trade market, decreasing the sale price for herders.⁷⁹ Additionally, 183 of 198 veterinary clinics had been damaged or destroyed as of October 2021,⁸⁰ and livestock diseases have resulted in high mortalities due to limited access to veterinary services.⁸¹

The combination of looting, displacement, and diseases has degraded the livelihoods and income-earning opportunities of pastoralists and agro-pastoralists, and many have been forced to eat or sell their remaining animals to afford basic food items.⁸² Furthermore, the delayed onset of the February to May 2022 rains resulted in water and pasture shortages, leading to the death of up to 1.5 million livestock and displacing an additional 40,000 households.⁸³ In Afar region where pastoral and agro-pastoral livelihoods dominate, large-scale livestock loss has led to extremely limited income and food access.⁸⁴ Higher than average staple food prices and low income from livestock sales have drastically reduced household purchasing power for these pastoral households.⁸⁵ However, while the *Diraac/Sugum* rains from March through May were among the driest on record in southern Afar, the *Karma* rains from July through mid-September were favourable and are likely to enhance livestock conditions and improve purchasing power for vulnerable households.⁸⁶

Overview of Seasonal Outcomes in the Context of Conflict

2019 Meher Season Outcomes (June 2019 – January 2020)



For the 2019 *Meher* season, final yields were favourable at the national level, though yield losses resulted in some localized parts of eastern Amhara, Tigray, and Afar regions as they were worst affected by the desert locust invasion. Additionally, poor *Kiremt* rainfall impacted production in parts of the minor producing Afar region (Figure 4).⁸⁷

Figure 4: Ethiopia 2019 Meher season outcomes as of January 28th, 2020. Source: GEOGLAM Crop Monitor

2020 Belg Season Outcomes (January 2020 – July 2020)

For the 2020 *Belg* season, national production was below-average, mainly due to impacts of the desert locust invasion as well as delays in input distribution associated with COVID-19 restrictions, below-average *Belg* rains from the beginning of the season that resulted in delayed and reduced plantings, and localized flooding (Figure 5).⁸⁸

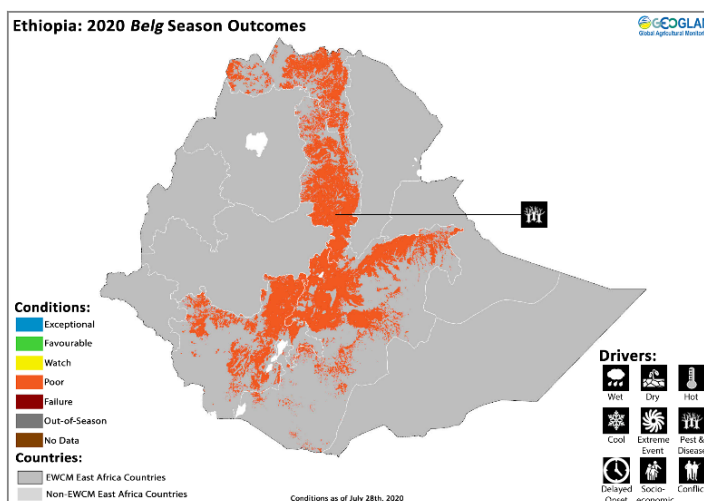
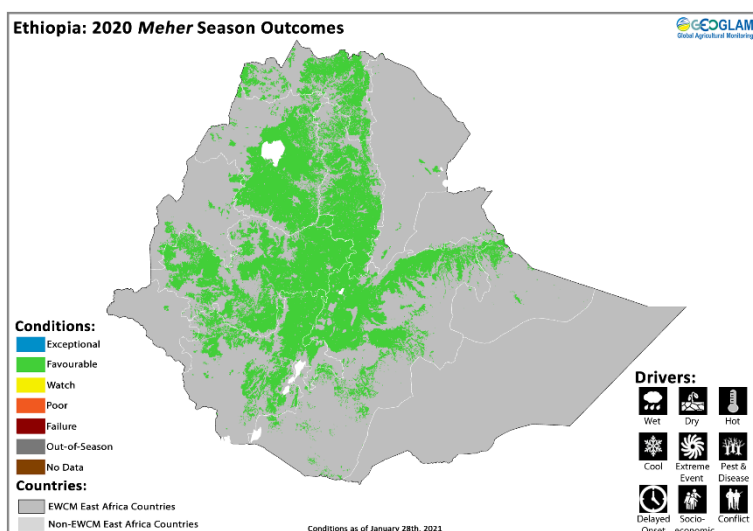


Figure 5: Ethiopia 2020 Belg season outcomes as of July 28th, 2020. Source: GEOGLAM Crop Monitor

2020 Meher Season Outcomes (June 2020 – January 2021)



From May 2020, an early onset of the *Kiremt* rains and abundant precipitation benefitted planting activities and crop germination, and rainfall amounts remained at above-average levels with May to September rains estimated at more than 50 percent above the long-term average in some regions. Despite localized flooding, desert locust presence, and constrained input access in some areas, vegetation conditions were favourable across *Meher* cropping areas in September 2020.⁸⁹

However, in Tigray, the onset of conflict in November 2020 compounded these issues and resulted in limited field access, field abandonment, and displacement across regional and national borders, causing

Figure 6: Ethiopia 2020 Meher season outcomes as of January 28th, 2021. Source: GEOGLAM Crop Monitor

some farmers to miss the 2020 *Meher* season harvest. While final yields were favourable at the national and regional levels (Figure 6), production shortfalls occurred in the localized conflict-affected areas of Tigray.⁹⁰ Additionally, in the localized conflict-affected areas, an estimated 90 percent of the 2020 *Meher* season crops were lost through burning and pillaging by armed forces, according to the UN Food and Agriculture Organization (FAO).⁹¹

2021 Belg Season Outcomes (January 2021 – July 2021)

The 2021 February to May rainy season was characterized by an erratic distribution over most cropping areas with February to mid-April rainfall amounts ranging from 30 to 80 percent below-average in southern Tigray and eastern Amhara, resulting in delayed and reduced plantings and germination failures. As of mid-April, severe drought affected more than 70 percent of cropland across the country. Despite rainfall improvements in the second half of April and early May, continued drought conditions in some areas as well as the end of the rainy season in May did not allow for maturation of late planted and replanted crops. In Tigray region, ongoing conflict, market disruptions, and input shortages also impacted agricultural operations throughout the season.⁹² As a result, final yields were below-average for the 2021 *Belg* season at the national level due to delayed rainfall onset and poor rainfall performance throughout the season as well as ongoing conflict in Tigray region that spilled into neighbouring Amhara and Afar in June 2021 (Figure 7).⁹³

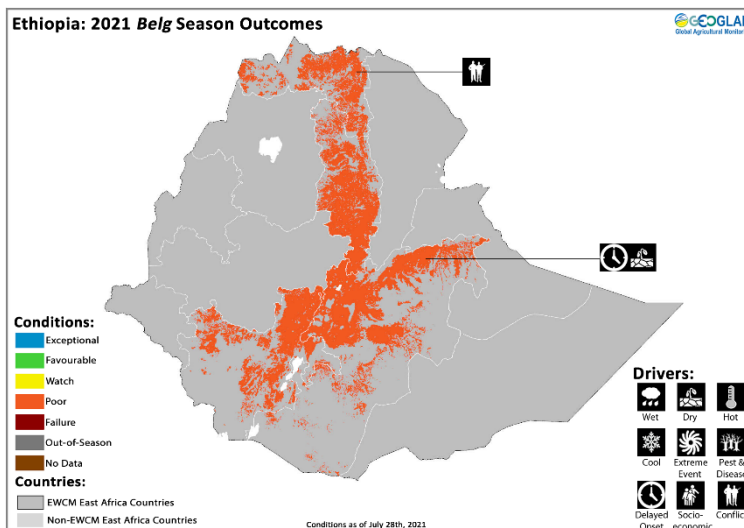


Figure 7: Ethiopia 2021 Belg season outcomes as of July 28th, 2021.

Source: GEOGLAM Crop Monitor

2021 Meher Season Outcomes (June 2021 – January 2022)

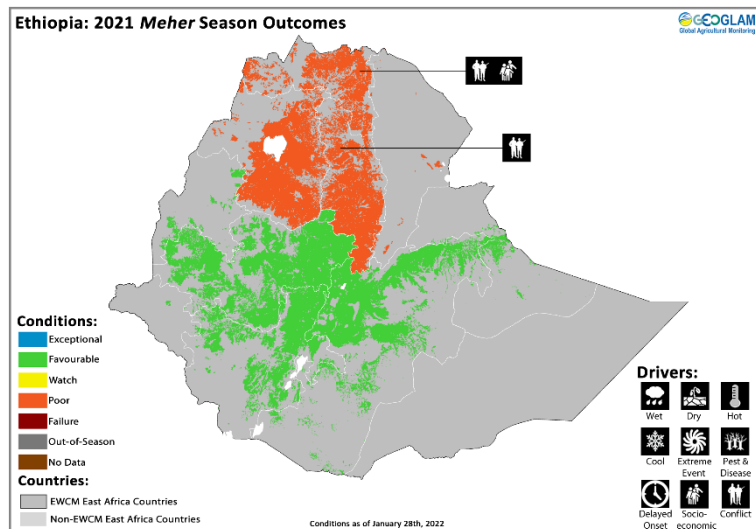


Figure 8: Ethiopia 2021 Meher season outcomes as of January 28th, 2022.

Source: GEOGLAM Crop Monitor

In Tigray, land preparation usually occurs between March and July. While rainfall conditions in early 2021 were conducive to ploughing, less cropland had been ploughed as of early May compared to previous years. According to telephone interviews, soldiers weren't allowing farmers to plough their land. Additionally, from March to early June 2021, farmers in conflict zones had very limited access to inputs such as seed and fertilizer for the 2021 *Meher* season, and farm tools had been destroyed. Furthermore, while land preparation is typically done using oxen to plough fields, violence resulted in deliberate looting and killing of these assets. While war conditions delayed land preparation and planting in May, most areas

of the Tigray region came under the control of Tigrayan forces in June, allowing farmers to buy and exchange seeds in rural markets and plough and sow their fields. By early June, most farmlands had been tilled at least once in areas occupied by Tigrayan forces. Conversely, most of the farmland in western Tigray that remained occupied by Amharan forces had not been tilled.⁹⁴

While a timely onset of the *Kiremt* rains in early June provided good conditions for planting,⁹⁵ many farmers in conflict-affected areas reported not being able to plant their crops.⁹⁶ In mid-June, there were reports that farmers had been prevented from planting and that armed forces were blocking the transportation of agricultural supplies into Tigray.⁹⁷ However, on June 15th, Ethiopia's state agricultural minister stated that 70 percent of farmers had started farming long-season cereals such as sorghum and maize despite planting delays in 15 of Tigray's 61 districts.⁹⁸ Additionally, on June 28th, the Federal Government declared a ceasefire to ensure the success of the ongoing 2021 *Meher* agricultural season.⁹⁹ Still, overall planting levels in Tigray were well

below-average as of November 2021.¹⁰⁰ According to a January 2022 World Food Programme (WFP) report, only 52 percent of households surveyed in Tigray region were able to sow seeds for the *Meher* planting season, and only 36 percent were able to sow seeds on time.¹⁰¹

By September, ongoing hostilities, erratic rainfall, and limited access to agricultural inputs continued to impact farmers in conflict-affected areas of northern Ethiopia,¹⁰² and only 320,000 out of 1.3 million hectares of farmland in Tigray were reported to have been cultivated due to the narrow window during the planting season. While normal harvests are about 21 million quintals, the expected harvest was only estimated to be between 2.4 and 2.8 million quintals or 13 percent of average agricultural yields. Additionally, only 25 to 50 percent of normal cereal production was estimated to be available in September due to the missed planting season in many parts of Tigray.¹⁰³ Furthermore, as the security situation affected farming activities, some farmers shifted from high-yielding long-cycle crops to short-cycle crops, further decreasing production for the *Meher* season.¹⁰⁴

Similar to the situation in 2020, an escalation of conflict once again in November 2021 occurred during the peak of the *Meher* harvesting period with many farmers unable to access their fields and carry out harvesting activities.¹⁰⁵ Additionally, sustained fighting in the north resulted in new displacements and further escalation of conflict, and a state of emergency was declared in November 2021. Final yields in January 2022 were below-average in the northern main producing regions of Tigray and Amhara as well as in the minor producing Afar region as insecurity continued to impact farmers' access to agricultural fields and inputs (Figure 8).¹⁰⁶ In 2021, Tigrayan farmers produced a total of 900,000 tonnes of staple foods, accounting for 40 percent of normal production and seven to eight months of annual cereal needs as farmers had access to improved seeds and fertilizers provided by the government and Agriculture Cluster partners.¹⁰⁷

2021 Planted Area Change Estimation

NASA Harvest, in partnership with the United States Agency for International Development (USAID), undertook an analysis of planted area change between 2020 and 2021 in Tigray region. The objective of the analysis was to compare planted area change estimates from satellite data to other data sources and interpret findings in the context of the current conflict in Tigray. For this analysis, the NASA Harvest team created cropland maps for the years 2020 and 2021 of Tigray region. The cropland maps were created using their published machine learning methodology that predicts the likelihood that a satellite pixel contains cropland based on a 12-month time series of satellite observations from multiple data sources at 10m/pixel spatial resolution. The 2020 and 2021 maps were differenced to create a change map with two stable classes (planted to planted or not-planted to not-planted) and two change classes (planted to not-planted or not-planted to planted). The change map was used to generate a stratified random sample of reference points in the Tigray region. These reference points were each labelled by multiple experts trained in photointerpretation of satellite images to assign a reference label of stable planted, stable not-planted, planted gain, or planted loss. The reference sample was then used to generate statistically robust estimates of planted area change following best practices from the scientific literature.

Over the study area in Tigray region, the analysis found some evidence of planted area loss as exemplified in Figure 9. A small percentage of planted area gain was also observed as exemplified in Figure 10. The analysis found that the majority of the agricultural land use in Tigray did not change significantly in the satellite images. However, the methodological approach used in this study was designed to detect a complete change in the land cover/land use observed each year. It was not designed to detect more granular impacts to agricultural production, such as delayed ploughing or planting, delayed or cancelled harvest, changes in the type of crop planted, changes in availability and application of nutrients/fertilizers, etc. The differentiation between fallow fields and planted cropland for smallholder farms is extremely difficult from analysis of satellite imagery alone and could be a source of underestimation in planted area loss if fallow fields were interpreted as planted cropland by the model. Overall, this analysis exemplified the difficulties of remote, automated planted area change estimation over smallholder agriculture systems in the absence of ground truth data to validate results. This study also did not consider ways other than planted area loss in which the conflict may be impacting food security in the region, such as supply and food aid blockades or limited market access. These impacts are detailed in the previous and following sections of this report.

Example Areas with Planted Area Loss

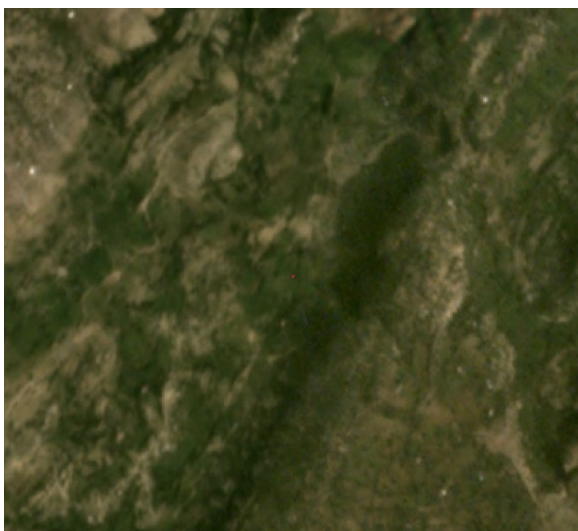
PlanetScope Basemap Jul-Oct 2020



PlanetScope Basemap Jul-Oct 2021



PlanetScope Basemap Jul-Oct 2020



PlanetScope Basemap Jul-Oct 2021



Figure 9: Example areas in Tigray with planted area loss detected in map, illustrated using image composites from July through October 2020 versus 2021. Source: NASA Harvest

Example Area with No Planted Area Loss

PlanetScope Basemap Jul-Oct 2020



PlanetScope Basemap Jul-Oct 2021

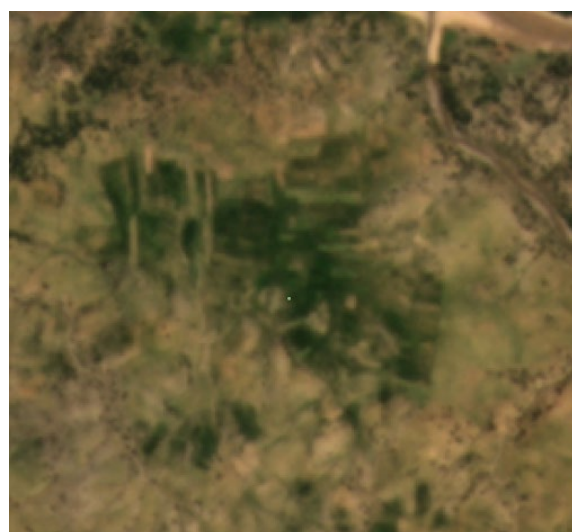


Figure 10: Example area with planted area gain detected in map, illustrated using image composites from July through October 2020 versus 2021. Source: NASA Harvest

2022 Belg Season Outcomes (January 2022 – July 2022)

Even prior to planting for the 2022 Belg season, a January report from UN OCHA estimated a harvest reduction of up to 50 percent in Tigray due in part to a lack of fertilizers, which are usually delivered in January. While the estimated fertilizer need in Tigray is about 600,000 quintals, no fertilizer was available as of early January.¹⁰⁸ In March, the security situation in Tigray and adjacent areas of Amhara improved following a ceasefire, but by then the planting window was nearly over. In Amhara region, less than 40 percent of the planned area was sown as of mid-March due to early-season dryness and insecurity.¹⁰⁹

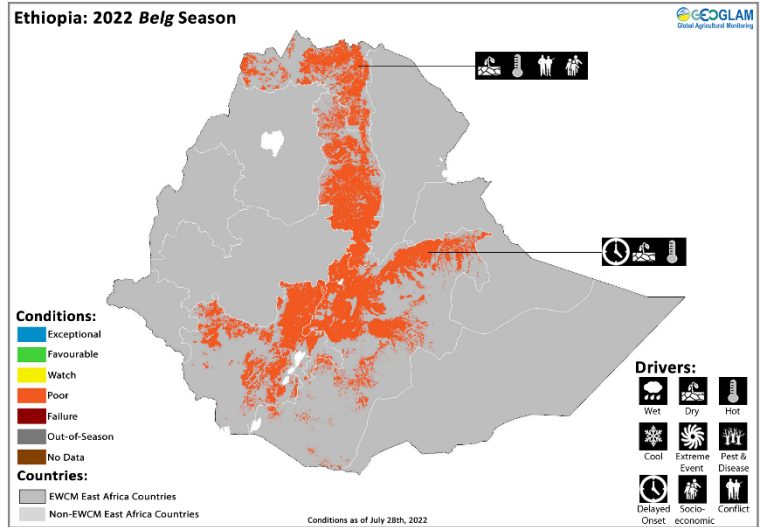


Figure 11: Ethiopia 2022 Belg season outcomes as of July 28th, 2022. Source: GEOGLAM Crop Monitor

Throughout the country, the 2022 Belg season crops were affected by severe rainfall deficits resulting from several consecutive failed rainy seasons since late 2020 in many areas, particularly in the agro-pastoral south and southeast, as well as a poor 2022 March to May *Gu/Genna* rainfall season, elevated temperatures, and ongoing conflict in the northern regions of southern Tigray and eastern Amhara (Figure 11).¹¹⁰ However, in southern parts of SNNPR, farmers were able to harvest due to some rainfall received.¹¹¹

2022 Meher Season Conditions as of August (June 2022 – January 2023)

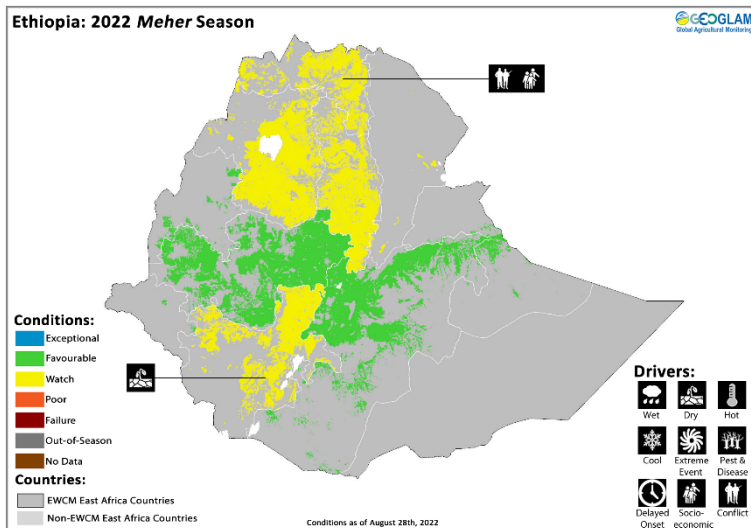


Figure 12: Ethiopia 2022 Meher season as of August 28th, 2022. Source: GEOGLAM Crop Monitor

Planting of main *Meher* season cereals began in May for harvest from September.¹¹² Shortages of agricultural inputs such as seeds, oxen, and fertilizers constrained planting operations in Tigray and neighbouring areas of Amhara region. While the ceasefire in March is likely to have boosted household engagement in agricultural activities,¹¹³ fighting erupted again in August, upending the ceasefire.¹¹⁴

As of late July, prolonged drought in the south and central Rift Valley and eastern highlands cropping areas were disrupting pastoral and agro-pastoral livelihoods. These areas received below-average to average rainfall during June and July, following exceptionally low February to May 2022

rainfall.¹¹⁵ Rainfall in August provided some relief from severe deficits and improved crop prospects in East Oromia and North Somali but also resulted in episodic heavy rains and flooding in Tigray, Amhara, Afar, Oromia, and Gambella regions.¹¹⁶ In SNNPR, located in the southwest of the country, concern remains due to dry and hot conditions during the *Belg* and *Kiremt* seasons (Figure 12).¹¹⁷ La Niña conditions are expected to continue into late 2022, resulting in a likely return to low rainfall and compounding impacts from recent dry seasons.¹¹⁸ Given the current dry soil moisture conditions and anticipated poor rains, severe or exceptional hydrologic drought conditions are highly likely in affected regions.¹¹⁹

Additionally, the country continues to face compounding challenges relating to prolonged drought, conflict in northern regions, and severe macroeconomic challenges exacerbated by the effects of the Ukraine war.¹²⁰ In northern areas, including Tigray and neighbouring regions of Amhara as well as the minor producing Afar region, impacts of the domestic conflict and related socio-economic challenges, including limited access to inputs such as seeds and fertilizers, are likely to further impact seasonal outcomes (Figure 12).¹²¹ Poor 2022 agricultural production could result in a significant increase in food insecurity.¹²²

Impacts of Conflict on Food Security

Conflict, drought, and rising food costs are together driving food insecurity in Ethiopia.¹²³ In conflict-affected areas of the north, households face extreme difficulty accessing food from harvests, markets, and humanitarian assistance.¹²⁴ According to the UN OCHA Ethiopia Humanitarian Needs Overview from August 2020, immediately prior to the onset of conflict in November, 5.5 million people in northern Ethiopia were projected to be food insecure, including 1.1 million in Tigray region, 4 million in Amhara region, and 387,000 in Afar region.¹²⁵ In the 2021 IPC projections, which were valid up to September 2021, 4.4 million people in northern Ethiopia were projected to face high levels of IPC Phase 3 (Crisis) and above levels of acute food insecurity, with 401,000 people in Tigray region, equivalent to 10 percent of the population, projected to face IPC Phase 5 (Catastrophe).¹²⁶ In Tigray, the risk of famine was based on limited humanitarian assistance, increased conflict, and low availability of commercial goods and services.¹²⁷ Comparatively, according to the Ethiopia Humanitarian Response plan published in July 2022, a total of 13 million people in northern Ethiopia were estimated to be in need of food assistance, including 4.8 million in Tigray region, over 7 million in Amhara region, and 1.2 million in Afar region, a significant increase from pre-conflict levels.¹²⁸ There has been no updated IPC analysis since 2021, and without a recent IPC analysis, no updated information is available on the current number of people in IPC Phase classification.

While the *Meher* harvest from September 2022 is expected to somewhat mitigate more severe food consumption deficits, high concern remains for households whose food stocks are expected to run out by early 2023 and who are unable to engage in agricultural activities due to the low availability and high cost of agricultural inputs.¹²⁹ However, the ability to purchase food in the markets is constrained due to limited market access and increased food prices, and humanitarian assistance is often unavailable due to security concerns and blockages.¹³⁰ More than three-fourths of the population in Tigray region have resorted to negative coping strategies to deal with food insecurity, such as reducing portions or the number of meals per day.¹³¹ Several consecutive seasons of below-average harvests in combination with water and pasture shortages and related livestock losses are likely to worsen the food security situation.¹³² The conflict in Ukraine is also exerting additional pressure on imported food prices, further contributing to macroeconomic challenges that were already present before the conflict, such as currency depreciation, inflation, and public debt.¹³³

Limited Market Supply and Access

In Tigray, lack of commercial supplies arriving has led to severe shortages of essential food commodities in markets, resulting in significant price increases that make them unaffordable for most of the population. The decreased affordability of food items has been compounded by the conflict-induced loss of livelihoods and non-payment of public salaries, and, to a lesser extent, inflation throughout the country.¹³⁴ As of January 2022, food and income access were extremely limited in Tigray. In Amhara, household ability to purchase food remained limited despite improvements in trade route access and market supplies.¹³⁵ Additionally, food prices in July remained extremely high in Tigray compared to neighbouring regions, driving consumption deficits.¹³⁶ Transportation of supplies to markets has also remained difficult due to inaccessible main access roads,¹³⁷ and market supply constraints have put further upward pressure on food prices.¹³⁸

Even when supply is available, markets can often not be accessed or remain non-functional due to the conflict. For instance, in June 2021, markets were reported to be non-functional in rural areas due to active fighting,¹³⁹ and in September, infrastructure in 85 of the 200 markets in Tigray had been damaged or destroyed, according to IOM. Additionally, access to the remaining functioning markets in Tigray and Afar has been reduced due to the escalation of conflict and insecurity from June as well as decreased affordability.¹⁴⁰ Conflict has also resulted in destruction of all types of infrastructure, including infrastructure for food storage,¹⁴¹ and there have been reports of food silo contamination by mixing grain with sand and soil.¹⁴² A June 2021 news report also noted instances of burnt grain stores in Tigray.¹⁴³ While some markets were at least minimally functional as of January 2022, 83 percent of households reported challenges in accessing markets due to either lack of money to buy goods or market supply issues. Additionally, some households in conflict zones reported insecurity and fear of public areas to be a key reason driving limited market access.¹⁴⁴

Decreased Household Purchasing Power

Conflict and limited market supply are driving increased food prices in Tigray, resulting in food inflation that is elevating living costs and eroding household purchasing power. In June 2021, annual inflation in Ethiopia increased to 24.5 percent and the highest level in the previous eight years. The increase is primarily attributed

to a rise in food prices.¹⁴⁵ By May 2022, the food inflation rate reached 43.9 percent compared to the same month the previous year (Figure 13), resulting in severe food access constraints for low-income and vulnerable households, including those impacted by conflict.¹⁴⁶ As of July 2022, a general inflation rate of 33.5 percent was slightly lower than in June 2022, reflecting a minor decline in food inflation. However, the government’s decision to ease fuel subsidies in early July resulted in an increase in fuel prices which will likely put upward pressure on the prices of market goods for the coming months.¹⁴⁷ According to the August 2022 FAO Global Information and Early Warning System (GIEWS) Country Brief update for Ethiopia, high levels of cereal prices are mainly the result of the continuous depreciation of the national currency which have caused an increase in prices of imports and fuel.¹⁴⁸ Cash and fuel supply shortages and security concerns have also contributed to the escalating market prices.¹⁴⁹

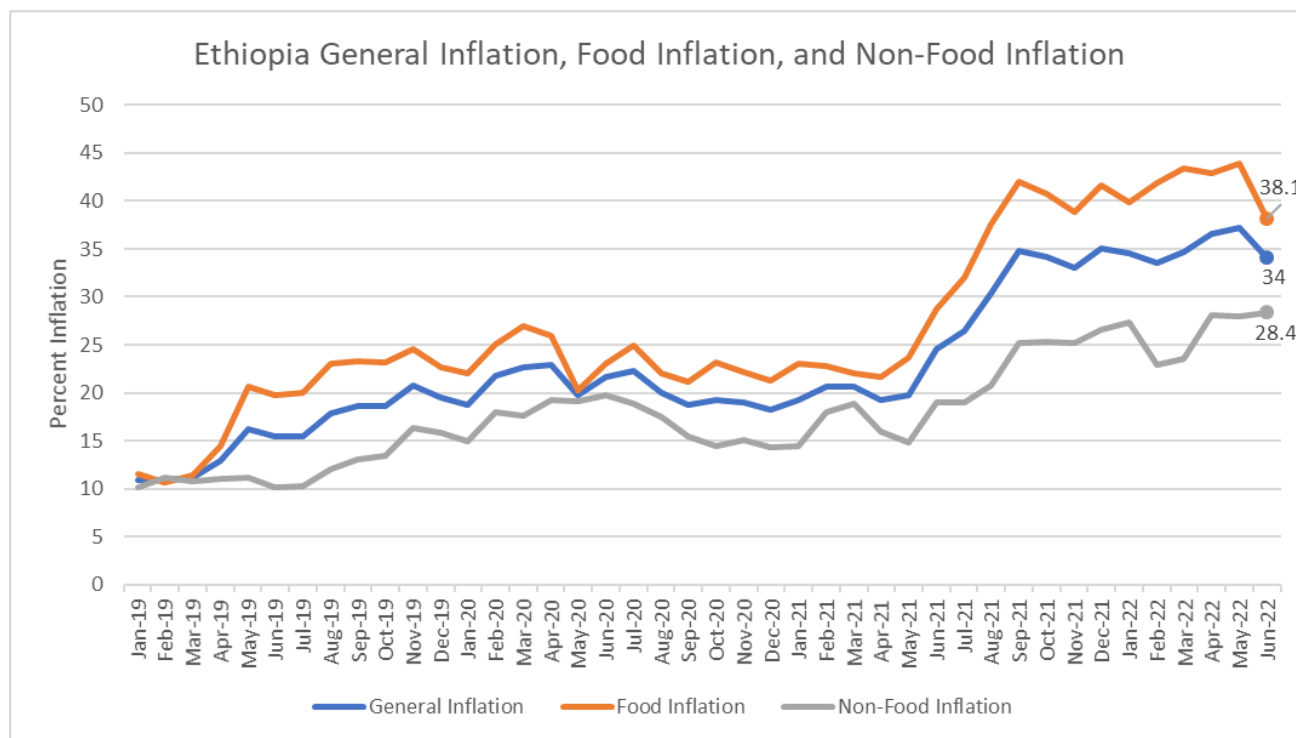


Figure 13: General inflation, food inflation, and non-food inflation rates in Ethiopia from January 2019 to June 2022. Source: Ethiopia Central Statistics Agency CPI reports from January 2020, January 2021, February 2022, April 2022, May 2022, June 2022, and July 2022 (Table D: Summary of Comparison of CPI Movements, Current vs. Last year’s Similar Months at Country Level) available at <https://www.statsethiopia.gov.et/our-survey-reports/>

Furthermore, livelihood opportunities have decreased in areas where IDPs have migrated due to the increase in labour supply. For instance, many IDPs from other areas have migrated to Mekelle and Shire towns, decreasing the livelihood opportunities for households residing in these areas and limiting their ability to earn income for food purchases. Access to regular income has also been a problem for salaried workers as electricity, mobile network, internet, and banking systems have remained dysfunctional in conflict zones.¹⁵⁰ From November 2020 to February 2021, salaries for workers employed by both the private and public sectors were not paid, and salary payments from March 2021 remained limited.¹⁵¹

Humanitarian Aid Constraints

Even before the conflict, close to a million people in Tigray region were already dependent on food aid as the region regularly faces threats of drought and locust impacts. By June 2021, the number of those dependent on food aid increased to 5.2 million, representing 91 percent of the region’s population, according to the WFP. However, aid convoys have been deliberately blocked from entering the region.¹⁵² Despite high levels of food insecurity, movement restrictions, roadblocks, and blockages make it difficult to access camps and deliver food aid and for humanitarian assistance to reach those in need.¹⁵³

According to a September 2021 news report, there have also been instances of humanitarian aid trucks, many of which are driven by Tigrayans, not returning from Tigray and hindering the supply of food aid. Possible explanations include cash and fuel limitations as well as violence and intimidation during checkpoints that prevent drivers from making the return journey.¹⁵⁴ Instances of looted aid warehouses and trucks have also been reported.¹⁵⁵ In conflict-affected regions, reliance on local yields has increased even more due to aid blockages

and theft as well as several consecutive seasons of below-average harvests.¹⁵⁶

Since December 2021, aid had only been delivered by air as main routes had been blocked, though air transportation is costly and can only deliver minimal supplies.¹⁵⁷ For the 401,000 Tigrayans facing IPC Phase 5 (Catastrophe) levels of food insecurity in 2021, only 10 percent of the required assistance arrived between July 2021 and March 2022, according to the June 2022 Hunger Hotspots FAO-WFP report.¹⁵⁸ Following the March 2022 truce between the Ethiopian government and opposition forces, aid began arriving again via roads in the Tigrayan capital as of April 1st.¹⁵⁹ According to the July 2022 FEWS NET Key Message update, ongoing food assistance deliveries have helped to mitigate food consumption deficits but have yet to lead to widespread improvements in food security.¹⁶⁰ Additionally, the collapse of the March ceasefire and newly erupted conflict from late August 2022 again resulted in a halt to most humanitarian services.¹⁶¹ Furthermore, staple foods are becoming increasingly difficult to access and afford amidst disruptions to trade routes from Ukraine and Russia in combination with related price shocks,¹⁶² impeding aid operations for vulnerable populations.¹⁶³

Conclusions

Since the onset of conflict in Tigray region in November 2020, the agricultural sector has been targeted by various parties involved in the conflict as the majority of the region is dependent on agriculture and livestock production for their basic food and income needs. High displacement levels have resulted in field abandonment, and those left in rural villages face numerous obstacles to carrying out agricultural activities, including restricted field access as well as limited availability and decreased affordability of agricultural inputs. This has drastically increased the number of people dependent on market supply or humanitarian aid. However, households do not have the income necessary to afford the increasing costs of basic food items, markets are often inaccessible or have limited supplies, and humanitarian aid is inadequate due to the ongoing insecurity as well as macro-economic and delivery constraints resulting from the Ukraine conflict. As conflict in northern Ethiopia continues, agricultural outcomes for the 2022 *Meher* season are likely to be severely impacted, further deteriorating livelihoods and increasing food needs in affected regions.

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