RESEARCH ASSESSMENT & MONITORING (RAM)

More Than a Decade of Drought

Impacts and lessons learned across the Eastern Horn of Africa

2011—2022

WFP
World Food Programme

SAVING LIVES
CHANGING LIVES

February 2023

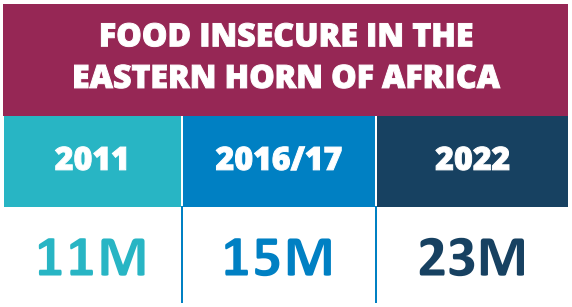
Key Findings

CURRENT DROUGHT SITUATION

- **The ongoing drought, which started in late 2020, is the most severe to hit the Eastern Horn of Africa in the last 60 years** and the situation is likely to continue in 2023. In addition, preliminary forecasts show that it is possible that there will be a 6th consecutive below-average season in parts of the drought-affected areas.
- The **2020-2023 drought emergency has been worsened by the concurrent macro-economic shocks**. These include ballooning external debt, rising costs of imports including for fuel and food; and higher inflationary pressures potentially undermining prospects of economic recovery post-COVID-19 pandemic.
- Droughts have combined with these factors in driving high malnutrition prevalence rates among children under 5-years and Pregnant and Lactating Women (PLW) and elevated mortalities owing to huge consumption gaps. An **estimated 5.1 million children were acutely malnourished in drought-affected areas** of the Eastern Horn of Africa as of December 2022. While malnutrition remains a concern in drought-affected areas, **mass mortalities have so far been avoided** thanks to increased assistance in most-affected areas.
- The 2011 drought led to a **declaration of famine in Southern Somalia after *two consecutive failed seasons*.** In 2022, **famine was averted Somalia despite *five consecutive failed seasons*** thanks to an increase in humanitarian assistance and commendable response by local communities in two districts of Bay Region in southern Somalia. However the risk remains high going into 2023.

IN COMPARISON TO THE 2011 AND 2016/17 DROUGHTS:

- As of the end of December 2022, the **ongoing drought had left approximately 23 million people severely food insecure** across the region (Kenya- 4.4 million, Somalia- 6.7 million and Ethiopia 11.8 million). In comparison, the 2011 and 2016/17 droughts left 11 million and 15 million people severely food insecure, respectively.
- In all three severe drought events, below-average rainfall combined with warmer-than normal temperatures resulted in: rangeland degradation and poor vegetation, and severe water shortages. These negatively impacted on livelihoods and food security of the people in affected areas.
- During the 2011, 2016/17, and 2020-2022 drought periods, spikes in food inflation occurred due to rising food prices.



LESSONS LEARNED

- **Lessons taken from the 2011 and 2016/17 droughts have been implemented to some extent**. There has been an **improvement in early warning systems, years of resilience investments as well as enhanced coordination and partnerships** which created an enabling environment for humanitarian access except in parts of southern Somalia. However, responses are still underfunded and the likelihood is that they will remain so going into 2023.
- **The establishment and expansion of government social protection systems over the last decade has helped improve responses to acute food insecurity.** Furthermore, the focus on building resilience at the local level has also allowed communities to respond swiftly.
- Nevertheless, there are **still significant challenges** despite these improvements. For example, the social safety nets have so far been mainly used to respond to shocks rather than anticipate them, as they receive insufficient funding and need to be scaled up.

Droughts, Severity and Impact

Drought Chronologies

The Eastern Horn of Africa is one of the world's most vulnerable geographical areas in terms of climate shocks and food insecurity. The region hosts a large population of pastoralist and agro-pastoralists. It normally experiences two rainy seasons in a year, from March - May (Long rains / *Gu*) and October - December (Short rains / *Deyr*). However, with increased climatic variability and change, droughts have been more frequent, longer and more extreme with shorter recovery periods and appear to have become the new normal (chronic).

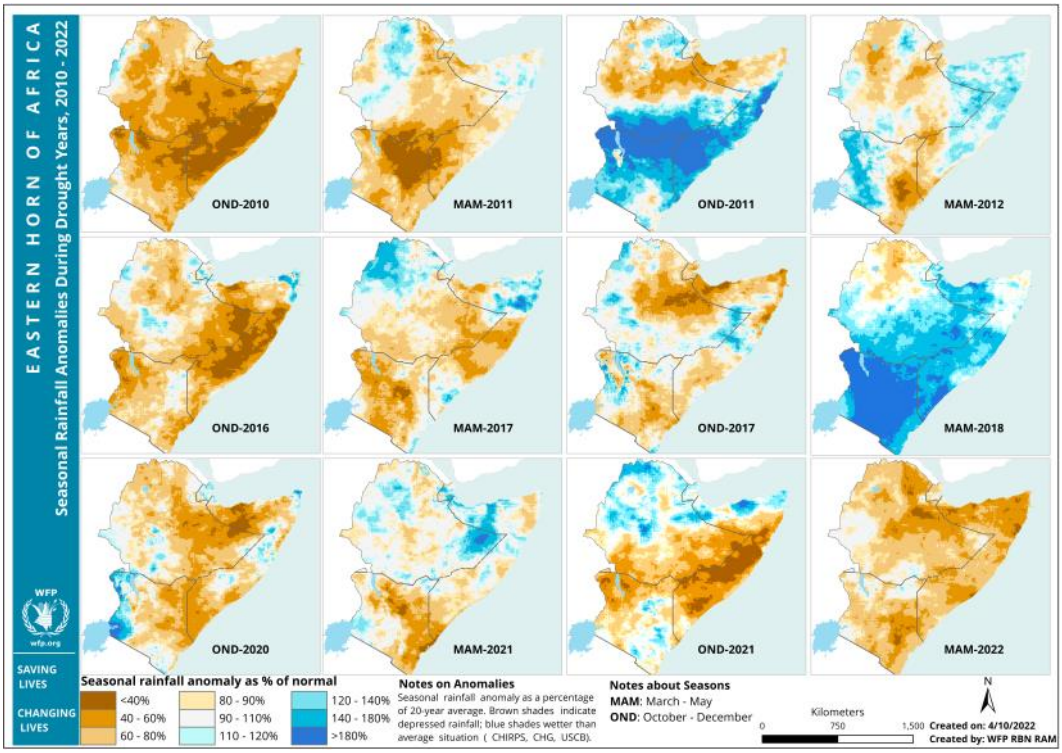
Since 2010, there have been three major droughts affecting the eastern part of the sub-region: 2011, 2016/17, and 2020-2022.[1]

The severe drought conditions largely resulted from consecutive seasons of below-average rains (Map 1). The performance of the October-December rains seems to be a major influencing factor given the prolonged period of dry and hot weather that follows before the next rainfall season starts.

The 2011 drought occurred after two consecutive failed seasons (Oct-Dec 2010 and March-May 2011) and was made worse by the existing vulnerabilities of households who had not fully recovered from the effects of a 2008/09 drought. In Somalia, Ethiopia and Kenya, the drought conditions, exacerbated by existing instability and conflict, meant that an estimated 11 million people were left food insecure in drought-affected areas particularly among pastoralists and agro-pastoralists.[2] The famine conditions caused the deaths of over 260,000 people, including 133,000 children mostly under the age of 5-years.[3] A wetter -than-normal OND 2011 season initiated the recovery from the drought (Map 1).

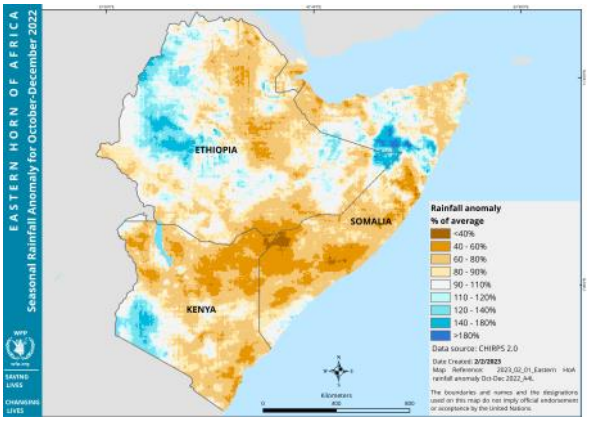
The next drought in 2016/2017 was due to three consecutive seasons (OND 2016, MAM 2017 and OND 2017). However, recovery was possible following a wetter-than-normal MAM 2018 season. The drought was also severe, greatly limiting crop production, pasture growth and water availability and food security impacts were severe particularly in Somalia and Ethiopia.[4] However, the scale up of humanitarian response averted famine.[5] The ongoing drought is the most severe that the region has experienced in decades, following 5 consecutive below-average seasonal rains since late (Oct-Dec) 2020, with no recovery periods unlike those seen in 2011 and 2016/17 (Map 1).

MAP 1: SEASONAL RAINFALL ANOMALIES DURING THE MAJOR DROUGHTS IN EASTERN HORN OF AFRICA



As of December 2022, the 5th consecutive below-average rainy season (Oct-Dec 2022) had just ended (Map 2). An estimated 23 million people were facing food insecurity, livelihood disruption, loss of livelihood assets and increased consumption gaps across the Eastern Horn of Africa. There had been severe water scarcity, poor vegetation and lack of livestock grazing resources which increased livestock migration in search of water and pastures and more than 1 million people had been displaced due to the drought.[6]

MAP 2: SEASONAL RAINFALL ANOMALY FOR THE OND 2022 SEASON

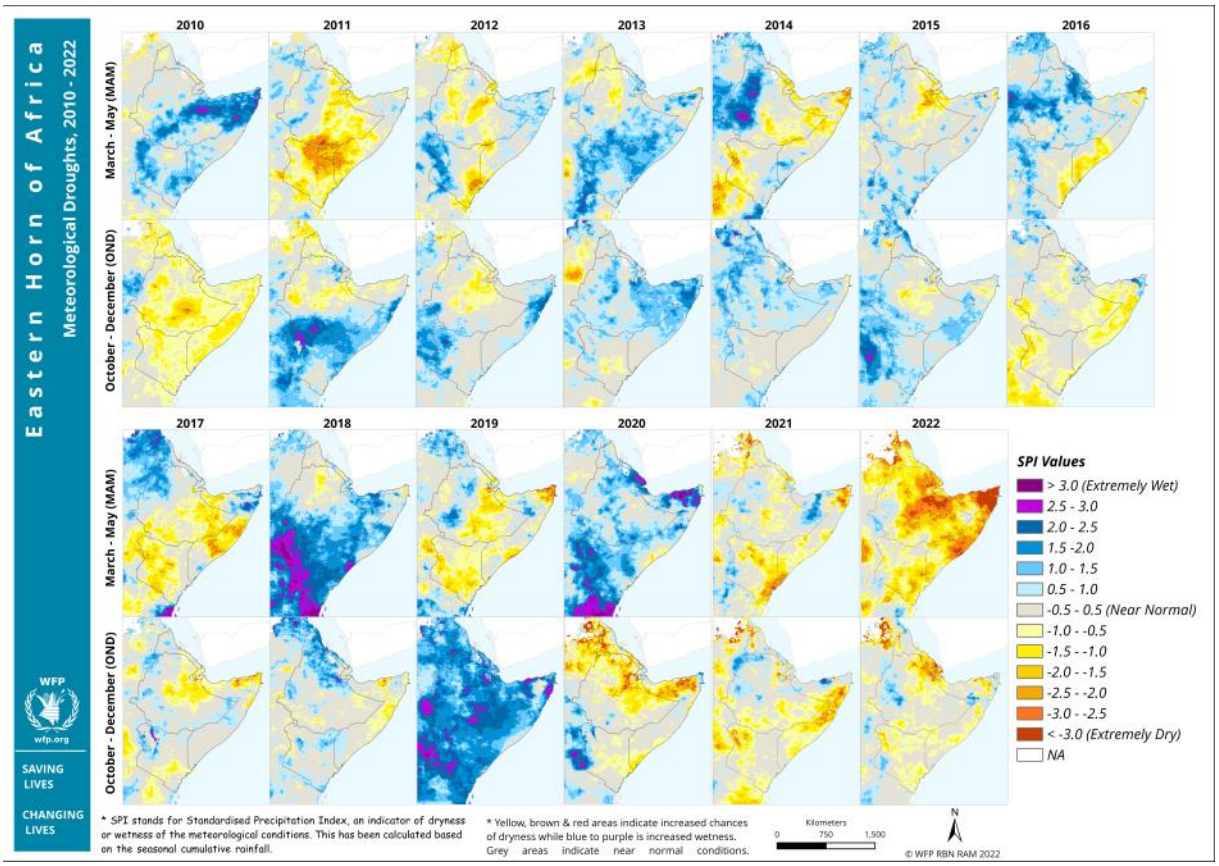


Drought Severity

There are different indices for assessing drought severity, including anomalies. However, the limitation of the anomaly method is that it is a challenge to determine whether the rainfall deficit qualifies for any of the definitions of drought (meteorological, hydrological, agricultural, or socioeconomic). The Standardised Precipitation Index (SPI)[7] is an index widely used to characterise meteorological drought. On a short time scale it relates to soil moisture and on longer time scale to hydrological conditions. SPI implies the number of standard deviations the rainfall amount deviates from the long-term average. Positive values (blue to purple) depict increasing wetness while orange to red/dark red indicate increasing dryness; and can be used to compare across regions with different climates.

The seasonal SPI analysis from March 2010 to December 2022 (Map 3) show incidences of meteorological droughts of varying severity across space and time. In March-May 2011, the meteorological drought was quite severe in southern Ethiopia, northern Kenya, and parts of southern Somalia, which was a key driver for the famine conditions experienced from July.

MAP 3: STANDARDISED PRECIPITATION INDEX (SPI) DURING THE MAM AND OND SEASONS (2010-2022)



The 2016/17 drought affected parts of the region, but it was less severe than the 2011 drought. Only parts of central Somalia had severe conditions over March-May 2017 period. Nevertheless, by March 2017 the majority of water points in the region were in Alert or Near-Dry status despite the fact that it was the peak rainfall season and the cumulative river basin rainfall was well below average in Kenya and Somalia.[8]

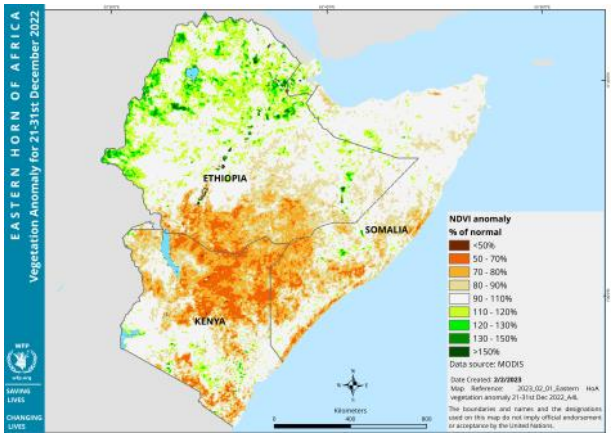
Since late 2020, the cycle of poor climatic performance and drought conditions have persisted following poor seasons in 2020, 2021 and 2022. This has affected crop production in Somalia and some areas of Kenya, slowed rangeland regeneration and water replenishment.[9] The inadequate rainfall during the rainy seasons has been worsened by the dry and hot weather conditions over the non-rainy periods (Jan-March and June-Sept).

Vegetation conditions

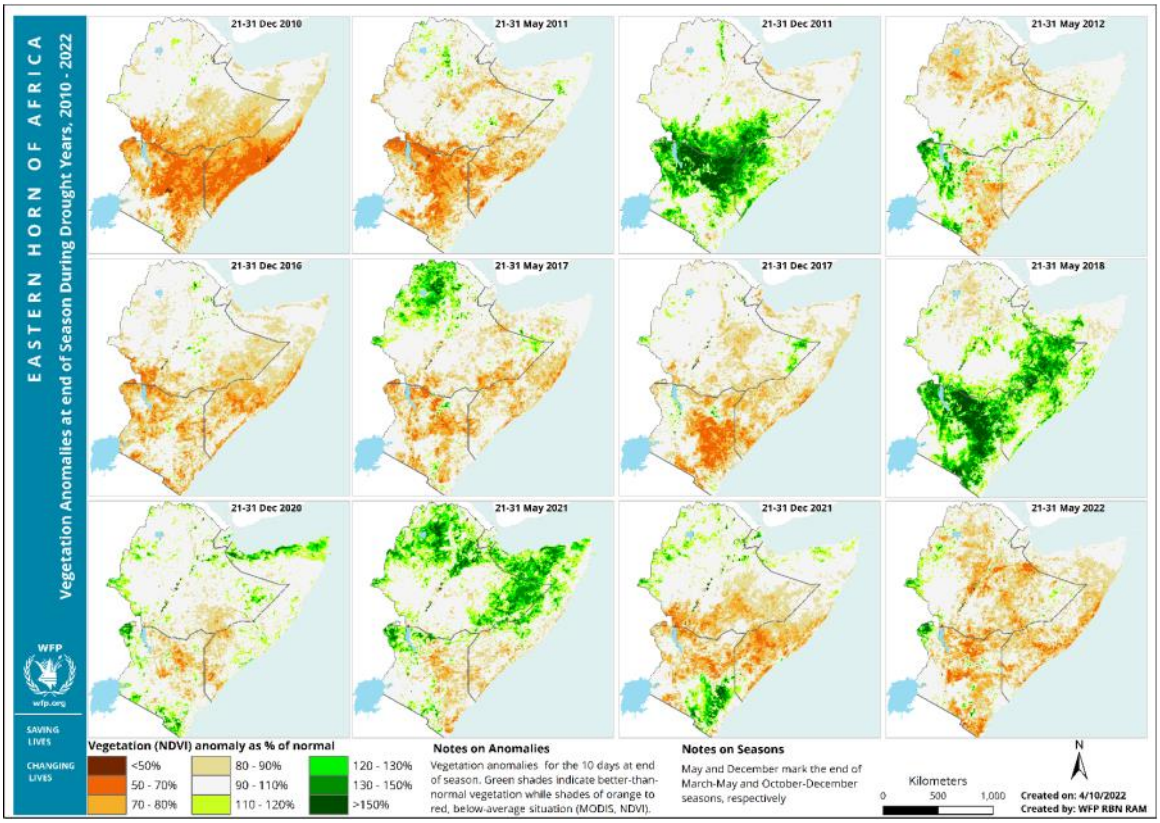
By the end of the Oct-Dec 2022 season, significant vegetation deficits prevailed in most of the ASALs of Kenya, southern Ethiopia and south-central Somalia owing to the poor seasonal rains (Map 4). The areas of the map coloured between orange and red are those with vegetation deficit. This has led to inadequate rangelands recovery and vegetation regeneration, which impacted on the availability of livestock grazing resources. It also indicates poor growth conditions in crop growing areas.

Similarly, there was inadequate vegetation recovery during the major droughts of 2011, 2016/17 and from late 2020 as revealed by the Normalized Difference Vegetation Index (NDVI) (Map 5).

MAP 4: VEGETATION ANOMALIES AT END OF OND 2022



MAP 5: VEGETATION ANOMALIES AT END OF SEASON DURING EXTREME DROUGHT SEASONS



Food insecurity

The areas most affected by food insecurity because of the droughts in the Eastern Horn of Africa have been Somalia, the Arid and Semi-Arid (ASAL) Counties of Kenya and southern & south-eastern Ethiopia. In 2011, an estimated 4 million people were acutely food insecure in Somalia (more than half of the population)[12] compared to 3.3 million in 2017.[13] In 2022 the number peaked at 6.7 million.[14] Nevertheless, improved humanitarian access and increased assistance have so far helped to prevent a famine like that seen in 2011.[15] While the caseload of acutely food insecure was higher at the peak in 2022 than 2011, the number of people in Catastrophe (IPC 5) in 2011 was estimated to be 490,000 people whereas in 2022 the estimated number was 214,000. In Kenya 3.8 million people were food insecure in 2011,[17] 2.6 million in 2016/17[17] and an estimated 4.4 million are likely to facing acute food insecurity as of December 2022.[18] The situation in Ethiopia is also dire. More than 22 million people are estimated to be food insecure of which 11.8 million due to significant livelihoods losses in drought-affected areas.[19] This is much higher than the population that were food insecure in 2011 (4.5 million)[20] and 2016/17 when 10.2 million were acutely food insecure.[21] In total, an estimated 23 million people in the Horn of Africa were severely acute food insecure in 2022,[22] 10 million more than in 2011 and 4 million more than in 2016/17.

TABLE 1: PEAK FOOD INSECURE POPULATIONS DURING SEVERE DROUGHT PERIODS (MILLIONS)

Country	2011	2016/17	2022
Somalia	4	3.3	6.7
Kenya	3.8	2.6	4.4
Ethiopia	4.5	10.2	11.8

Nutrition

Drought also has a significant impact on human health including an increased risk of food and water shortages, malnutrition and water- and food-borne diseases. In 2022, an estimated 5.1 million children were likely to be acutely malnourished across the drought-affected areas of Kenya, Somalia and Ethiopia[23] compared to in 2017 when OCHA estimated it was 5.4 million.[24] In Somalia an estimated 1.8 million children were acutely malnourished in 2022[25] compared to 1.4 million in 2017.[26] In Kenya, an estimated 884,000 children were acutely malnourished in 2022 compared to 420,000 in 2017, a doubling of the caseload over a 5-year period.[27]

As of the end of 2022, maternal malnutrition is likely to affect 1.3 million PLW in the drought-affected areas of the Eastern Horn of Africa including 969,000 in Ethiopia, 111,600 in Kenya and 184,400 in Somalia. [28]

What does a famine declaration mean?

Famine is a classification of IPC Phase 5 at area level. In a given area, famine occurs when food security, nutrition and mortality all suggest famine conditions, meaning at least 20% of the population is affected, with about one out of three children being acutely malnourished and two people dying per day for every 10,000 inhabitants due to outright starvation or to the interaction of malnutrition and disease. IPC Acute Malnutrition Prevalence (IPC AMN) are classified Serious when GAM is 10-14.9 percent (Phase 3), Critical when GAM 15-29.9 percent (Phase 4) and Extremely Critical when GAM exceeds 30 percent (Phase 5). One of the three determinants of Famine is GAM > 30 percent.[29]

In June 2011, OCHA reported that newly arrived Somali refugees had GAM rates as high as 45 percent[30] and subsequent FSNAU surveys prior to the declaration of famine in 2011 in crisis-affected regions of southern Somalia found that the prevalence of GAM was more than 30 percent in 11 of 16 surveys, exceeded 40 percent in 7 and in 2 was 50 percent.[31] In comparison, as of December 2022 GAM levels in surveyed areas at risk of famine in Somalia ranged between 15 percent and 29.9 percent.[32] GAM prevalence was in Phase 3 and above in 58 out of the 74 districts in Somalia, and higher than 30 percent in one district, Burhakaba. Evidence of famine-level mortality was also found with crude death rates above 2 in Lower Shabelle and Bakool agropastoral areas.[33]

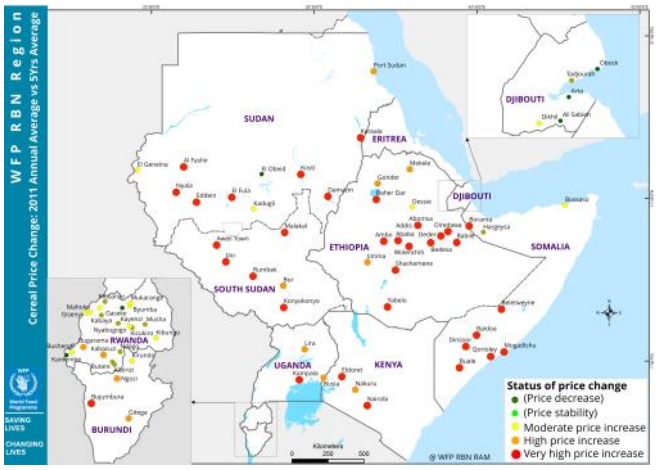
Impacts on food prices and food inflation

High food prices that significantly reduced purchasing power for key commodities were visible in all 3 analysed droughts. During the third quarter of 2011 the drought resulted in significant year-on-year price increases for local grain in Kenya (maize +200%) and Ethiopia (maize +96%, wheat +78%) while in Southern Somalia cereal prices were between two and seven times above their 5-year average in most of the regions.[34] Similar price rises were seen in 2017. In Kenya, maize prices increased by 45-65 percent between January and May, In Ethiopia, maize prices increased by 35-55 percent and in Somalia, prices of maize and sorghum increased sharply in December 2017-16 and remained high despite large-scale humanitarian assistance.[35]

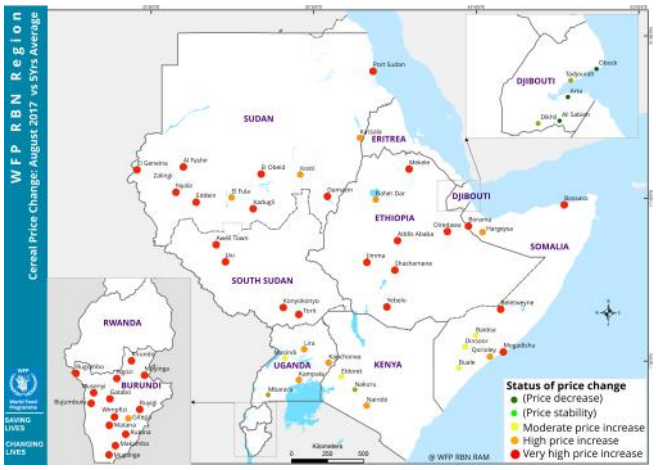
Analysing WFP food price data, 2022 cereal prices are significantly higher than the recent 5-year averages in most markets (red and orange circles) comparable to trends in 2011 and 2017 (Maps 6, 7, 8).

The food inflation spikes have coincided with drought episodes in the Horn of Africa, reaching peaks in 2011, 2017 and 2022. Annual food inflation rates in 2011 Q3 were 122 percent in southern Somalia, 50 percent in Ethiopia and 24 percent in Kenya.[36] In comparison, in 2016 food inflation was 5.6 percent in Ethiopia[37] and reached a high of 10.4 percent by August 2017.[38] As of September 2022, Annual food inflation was 16.1 percent in Somalia, 15.5 percent in Kenya and 30.7 percent in Ethiopia.[39]

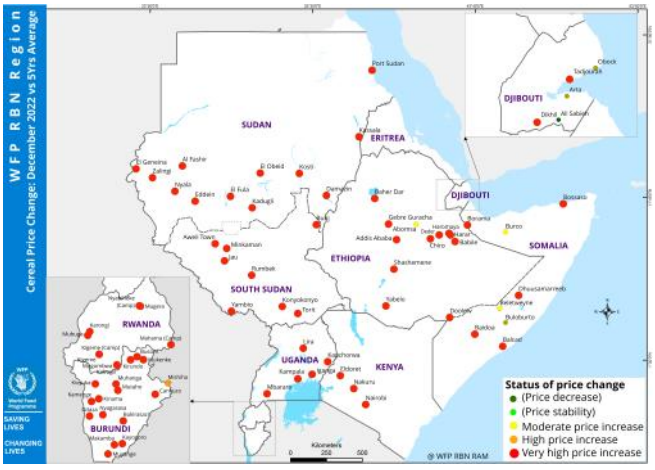
MAP 6: CEREAL PRICE CHANGE 2011 VS 5YA



MAP 7: CEREAL PRICE CHANGE 2017 VS 5YA



MAP 8: CEREAL PRICE CHANGE DECEMBER 2022 VS 5YA



Macroeconomic Trends

In 2011 in Kenya, following instability in 2008/9, the economy grew at rates above the five-year average (3.7%) lower than that for 2010 (5.6%).

Somalia had a much more fragile economic situation in 2011 meaning that both households and Government were particularly vulnerable to other shocks. In contrast, by 2016/17 the humanitarian assistance had given a sufficient boost to the economy coupled with increases in remittances sent by the Somalia Diaspora.[40]

In 2022 there have been multiple economic shocks. The macroeconomic situation in the Eastern Horn of Africa is characterized by rising debt distress and debt servicing costs, ballooning external debt, rising costs of imports including for fuel and food and higher inflationary pressures associated with the continued appreciation of the US Dollar against domestic currencies as well as effects of the conflict in Ukraine that all potentially undermine prospects of economic recovery following the COVID-19 pandemic.[41]

Drought Impact on Livestock Sector

Drought significantly impacts livestock production. They may suffer from deteriorating body condition, reduced production and productivity and even deaths due to increased trekking distances in search of water and pasture that could also be depleted or unavailable. In 2011 in some areas livestock mortality rates were between 40 percent and 60 percent.[42] In 2017 in Somalia the failure of both seasons in 2016 and early 2017 led to severe pasture deterioration, massive losses of livestock and reduction of milk availability with similar trends also seen in both Kenya and Ethiopia.[43] The deteriorating vegetation condition in 2022 has impacted livestock access to grazing and other food. As of the end of 2022, an estimated 9.5 million livestock have died since the beginning of the current drought, limiting access to food and a reduction of income for those who have them as their key source of income.[44]

Drought Impact on Crop Production

Rainfed agricultural production remains the primary source of food and livelihoods for millions of people in the region. However, changing weather patterns characterized by extreme weather conditions including frequent drought and flood episodes pose major threats to food availability and accessibility. Drought impacts on agriculture include crop losses, lower yields in both crop production, reduced land under cultivation increased land degradation and soil erosion.[45]

In Somalia, all drought years were linked to lower-than-average cereal production. During the 2011 drought, *Gu* season cereal production declined significantly by approximately 77 percent in 2011 relative to 2010 in Somalia.[46] In 2017 in Somalia early season dryness led to crop wilting and forced farmers to replant their crops and similar impacts were seen in Kenya while in Ethiopia cereal production reduced between 2017/16 (-1.9%).[47] In Southern Somalia in 2017 the *Gu* cereal production was estimated to be 78,400 tonnes, 37 percent lower than the long-term (1995-2016 average) and in the Northwest the *Gu/Karan* harvest was estimated to be 87 percent lower than the 2010-16 average (6,500 tonnes).[48] As of December 2022 the cereal harvest in Somalia was 34 percent below the five-year average.[49]

Displacement

As of December 2022, more than 1 million of people in the Eastern Horn of Africa have been displaced by drought.[50] A similar trend was witnessed in 2011 where those affected initially moved from rural to urban areas and for many across international borders.[51] In Somalia there have been 1.1 million people have been displaced by drought since 2021, already higher than the 900,000 displaced during the 2017 drought which also saw massive migration from rural to urban and peri-urban centres in Somalia.[53]

In Ethiopia as of July 2022, drought was the primary cause of displacement for 543,000 IDPs, nearly 20 percent of the total caseload and the second-largest reason after conflict[54] and already exceeding the 380,000 people displaced by drought in 2017.[55]

Humanitarian Assistance Responses and Lessons Learned

EARLY WARNING SYSTEMS, RESILIENCE BUILDING AND SOCIAL SECURITY NETS HAVE IMPROVED BUT DO NOT AVERT A DETERIORATING SITUATION

Since the 2011 famine there have been significant efforts to ensure this does not repeat. One area of investment has been in early warning systems at global, regional and national levels ensuring that actors have more time to respond after a potential risk is flagged. There have also been efforts to build resilience in the region which include the IGAD Drought Disaster Resilience and Sustainability strategy and the Livelihoods, Early Assessment and Protection (LEAP) system developed by WFP and the Government of Ethiopia which have been continually refined.[56] The establishment and expansion of government social protection systems in the region over the last decade has also transformed improved responses to acute food insecurity. The existing social security baselines allow countries to scale up responses quickly when necessary and connect a response with predictable needs for example depending on seasonal rain performance. This has also been linked to an increased focus on flexible funding and early response financing that allows the swift reallocation of funds prior to a shock without a threat to the overall programme budget. Finally, the focus on building resilience at the local level has allowed communities to respond swiftly.[57]

Nevertheless, there are still significant challenges despite these improvements. The social safety nets have so far been mainly used to respond to shocks rather than anticipate them, largely as they receive insufficient funding and need to be scaled up. The improvement in forecasting has translated into limited action.[58]

CONFLICTS AND ACCESS ISSUES CONTINUE TO HAMPER DROUGHT-RELATED ASSISTANCE

During the 2011 drought, Ethiopia, Kenya and Somalia were all affected. One of the key drivers in the 2011 famine in Somalia was the access issues stemming from the civil war and governance issues. In Ethiopia, famine prevention built on strong Government planning, humanitarian strategies and relationship with international support except for refugee response while in Kenya the response was also improved by solid international support.[59] Access restraints in Somalia peaked between 2011-12 due to control of Al-Shabaab in drought-affected areas and Western donor country counter-terrorism laws that criminalized any form of assistance that reached their control. Many actors such as WFP, ICRC and other NGOs were no longer working in Southern Somalia in mid-2011 as they were expelled or had operations suspended by the controlling power.[60] This meant that food assistance in 2010 was already at severely reduced levels leaving many households particularly vulnerable to shocks.[61] In 2016/17 the improvement in capacity and presence of field actors ensured that they were able to respond more quickly and more effectively.[62]

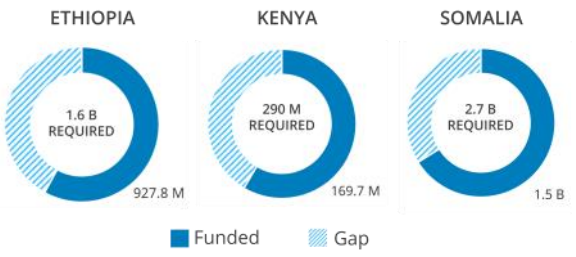
DELAYED RESPONSE INCREASES CRISIS SEVERITY

Post-evaluation of the Horn of Africa Drought Crisis in 2011 shows that the delayed response negatively affected all three countries, particularly Somalia. Humanitarian Country Teams (HCT) and donors missed critical warning signs and lacked contingency planning which meant they only intervened when the situation was too critical.[63]

The significant improvement in response timeliness in 2016-17 was critical, particularly in Somalia, in large part supported by improved early warning systems. There was an increased willingness of donors such as ECHO to respond based on initial analysis of livelihoods, food insecurity and nutrition information rather than waiting until these indicators were already showing a critical situation.

HUMANITARIAN RESPONSE FUNDING IS NOT SUFFICIENT TO MAKE LASTING CHANGE

Humanitarian response funding in all three droughts has been key to mitigating the initial issues. In 2011, there was consensus that a lack of fast initial funding impacted the humanitarian response. Donors reacted quickly but only once the scale of the situation was critical and leaving the countries susceptible to further shocks.[65] By the end of 2022 there had been significant donor contributions to the drought response, particularly to Somalia, mitigating famine for the moment. Nevertheless, USD 4.2 billion was required across Ethiopia, Kenya and Somalia and the response has only funded USD 2.6 Billion. It is essential that donors continue to provide humanitarian assistance and resilience systems to ensure communities are able to respond to shocks.[66]



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