SPARC
Supporting Pastoralism and Agriculture in Recurrent and Protracted Crises

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POLICY BRIEF

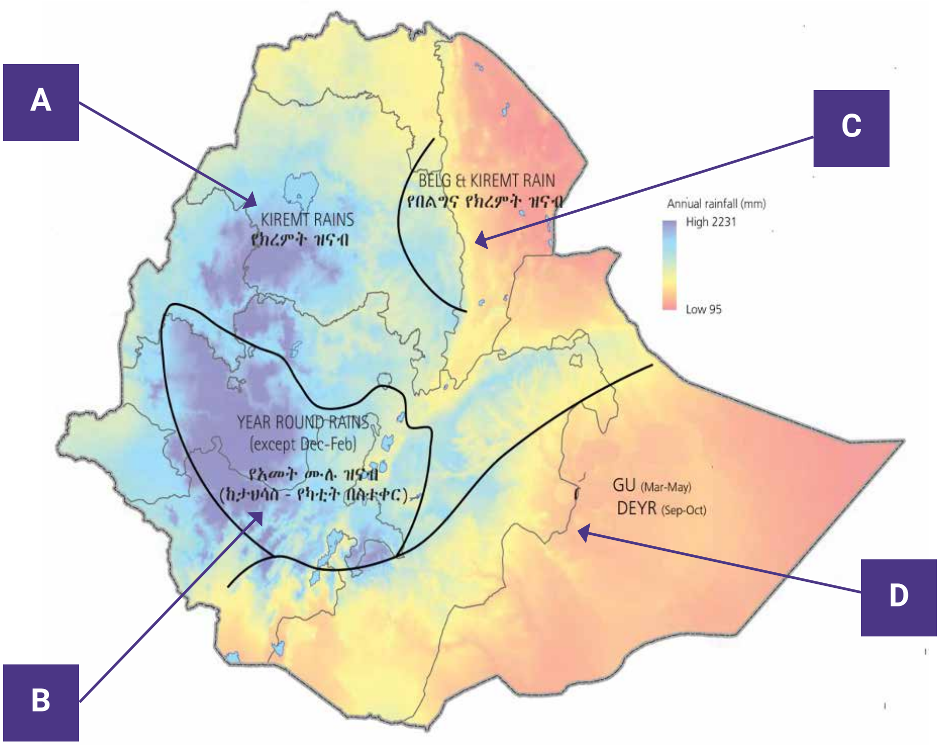
ALIGNED CLIMATE DRIVERS AND POTENTIAL IMPACTS ON FOOD SECURITY IN ETHIOPIA IN 2024

Adrian Cullis and Solomon Bogale

Summary of key findings

- Smallholder farmers and pastoralists in Ethiopia depend on seasonal rains. A range of factors drive variable rainfall and localised drought that can affect local seasonal food production and household food security.
- El Niño–Southern Oscillation (ENSO) and Indian Ocean Dipole (IOD) climate drivers can result in significant seasonal rainfall anomalies around the world. In Ethiopia, these anomalies are most pronounced when negative and positive ENSO and IOD phases align. Since 2000, this occurred in 2002–2003, 2010–2011, 2015–2016 and 2020–2022.
- These alignments resulted in poor and failed rains in one or more of Ethiopia's rainfall zones, poor crop and livestock production, reduced household food security, and greatly increased numbers of people needing humanitarian assistance.
- ENSO and IOD alignments impact poorer households particularly, and it can take years for affected households to build back their livelihood assets.
- Most recently, the autumn 2023 El Niño and positive IOD phase alignment resulted in abnormally heavy rains, and the worst flooding in 40 years, in Ethiopia's southern pastoral areas (and neighbouring countries). This alignment is forecast to continue into 2024.
- If this El Niño and positive IOD alignment continues, further heavy rain can be expected in Ethiopia's southern pastoral areas, and severe drought in the central and northern highlands.
- Already facing multiple conflicts and associated displacement, hundreds of thousands of refugees from neighbouring countries and a poorly performing economy, Ethiopia can ill-afford further elevated levels of people in need of humanitarian assistance.
- Given the threat of a significant spike in the number of people in need of additional humanitarian assistance in 2024 because of the positive ENSO and IOD alignment, the authors recommend that the Ethiopia Disaster Risk Management Commission (EDRMC) establishes a specialist ENSO–IOD facility. With international support, the facility can plan for the impact of a drought in the central and northern highlands and estimate and resource the additional amount of humanitarian assistance required.

FIGURE 1: ETHIOPIA'S RAINFALL ZONES



- **Zone A**
  Summer rains
- **Zone B**
  Near year-round rains
- **Zone C**
  Spring and summer rains
- **Zone D**
  Spring and autumn rains

Source: Map adapted by Dr Dawit Abebe from CSA et al. (2006).

1. Introduction

This brief explores the climatic and food security outcomes of positive and negative El Niño–Southern Oscillation (ENSO) and Indian Ocean Dipole (IOD) phase alignment in different rainfall zones in Ethiopia, since 2000. During this time there have been two positive (El Niño and positive IOD) and two negative (La Niña and negative IOD) phase alignments. The positive alignments occurred in 2002–2003 and 2015–2016, while the negative alignments occurred in 2010–2011 and 2020–2022. Each of the four alignments resulted in poor or failed rains in one or more of Ethiopia's main seasonal rainfall zones and the emergence of drought conditions. Primary and secondary food security assessments and humanitarian food assistance records confirm that each alignment and the associated drought conditions resulted in a spike in the number of people requiring humanitarian assistance compared to previous years, when ENSO and IOD phases were not aligned.

1.1 Ethiopia's agriculture and rainfall zones

An estimated 90% of Ethiopia's smallholder farmers and pastoralists are dependent on seasonal rains for their food production and associated food security (Tofu et al., 2022; Regassa et al., 2022). Normal seasonal rainfall therefore helps ensure household food security, whereas delayed-onset, erratic,[1] and/or poor rains expose households to heightened food insecurity. Poorer rural households are especially vulnerable to significant seasonal rainfall anomalies (Hallegatte et al., 2017).

Ethiopia's rainfall zones are complex and include a mix of mono- and bi-modal systems (see Figure 1).

1.2 Climate drivers

Ethiopia's seasonal rainfall systems are the result of a complex range of factors including the migration of the Intertropical Convergence Zone (McSweeney et al., 2007), Ethiopia's mountainous terrain, energy and moisture cells over the Indian Ocean, and the Madden–Julian oscillation (Nicholson, 2018). Large-scale seasonal rainfall anomalies around the world are, however, driven by the alignment of ENSO and IOD climate drivers (Met Office, 2023). Both ENSO and IOD are single climatic phenomena, but each exhibits neutral, positive and negative phases as measured by shifts in sea surface temperature at different locations or indices in the eastern Pacific Ocean and across the Indian Ocean (ibid.).

1 Including rainy seasons that have significant gaps between individual rainfall events during the cropping season.

These phases are categorised as moderate, strong and very strong. It is the varying strength of these different phases that drives different climate outcomes around the world (Bureau of Meteorology, 2023a).

Moderate and strong ENSO and IOD phases since 1950 are presented in Tables 1 and 2. As the tables show, since the turn of the millennium, positive ENSO (El Niño) and IOD phases aligned in 2002–2003 and 2015–2016, while negative ENSO (La Niña) and IOD phases aligned in 2010–2011 and 2020–2022. Each of these alignments resulted in poor or failed seasonal rains in one or more of Ethiopia's rainfall zones that triggered drought conditions and heightened food insecurity, and caused a spike in the number of people requiring humanitarian assistance.

TABLE 1: EL NIÑO AND LA NIÑA YEARS AND INTENSITIES SINCE 1950

El Niño (Positive ENSO)			La Niña (Negative ENSO)	
Moderate (+1.0 to +1.4°C)	**Strong** (+1.5 to +1.9°C)	**Very strong** (>2°C)	**Moderate** (-1.0 to -1.4°C)	**Strong** (-1.5 to -1.9°C)
1951–1952	1957–1958	1982–1983	1955–1956	1973–1974
1963–1964	1965–1966	1997–1998	1970–1971	1975–1976
1968–1969	1972–1973	***2015–2016***	1995–1996	1988–1989
1986–1987	1987–1988		2011–2012	1999–2000
1994–1995	1991–1992		***2020–2021***	2007–2008
2002–2003			***2021–2022***	***2010–2011***
2009–2010				

Source: Bureau of Meteorology (2023a).

TABLE 2: POSITIVE AND NEGATIVE IOD YEARS AND INTENSITIES SINCE 1950

Positive IOD				Negative IOD		
Moderate (+0.4 to +0.9°C)		**Strong** (+1.0°C and above)	**Moderate** (−0.4 to −0.9°C)		**Strong** (−1.0°C and above)
1963	***2002***	1961	1958	2005	2016
1967	2006	1972	1975	***2010***	***2021***
1982	2007	1994	1984	***2020***	***2022***
1987	2012	1997	1985		
1991	***2015***	2019	1992		
	2017		1995		
	2018		1996		
			1998		

Source: Tokyo Climate Centre (2023).

2. Food security outcomes during years of ENSO and IOD alignment: fieldwork findings

Standard participatory rural appraisal techniques[2] were used in 2016 and 2023, following the ENSO and IOD alignments, to assess the impact on agricultural sector production. The results of these assessments are presented here.

2.1 Aligned El Niño and positive IOD phases: 2015–2016

Agriculture sector assessments[3] were carried out in eastern Amhara, Oromia and Tigray in early 2016, following the 'very strong' El Niño[4] and positive IOD phase alignment of 2015 that resulted in poor/failed spring and summer rains and caused serious drought in Rainfall Zones A (central and northern highlands) and C (north-eastern rangelands) (Sjoukje et al., 2018). The results of the assessments are presented in Table 3. As indicated, the drought conditions resulted in: reduced planting, and poor crop establishment and harvests; lost milk production, poorer livestock body condition and reduced livestock prices; inflated cereal prices; and limited labour opportunities and poorer wage rates.

TABLE 3: AGRICULTURE SECTOR ASSESSMENT FINDINGS (N = 533 SMALLHOLDER FARMERS)

		Amhara region	Oromia region	Tigray region
Sector	**Indicators**	**Zones**		
		North and South Wollo, Wag Himra (203 smallholders)	East and West Hararghe (190 smallholders)	South Tigray (140 smallholders)
Agriculture	Spring cropping	▪ <25% of fields planted ▪ poor germination ▪ little or no harvest	▪ delayed and reduced spring planting	▪ failed early spring rains with little planting ▪ late rains supported some planting
	Livestock	▪ livestock graze crops ▪ shortage of drinking water ▪ reduced milk yields ▪ cattle prices fell up to 80% (Dec '14 to Nov '15)	▪ livestock graze crops ▪ sharp declines in milk yield ▪ cattle prices fell up to 50% (Nov '14 to Nov '15)	▪ livestock graze wilted crops ▪ a collapse in local milk production from cattle ▪ cattle prices fell: 30% for oxen and 50% for cows
	Summer cropping	▪ 90% fields planted ▪ poor germination ▪ replanted in Aug/Sept ▪ crop losses of 75%	▪ delayed summer planting with 80–90% planted later ▪ extreme wilting: 80% losses ▪ replanting continued to Sept	▪ delayed summer planting and repeat planting to Aug/Sept ▪ crops wilted, losses of 85%
Markets and prices	Cereal prices	▪ sorghum prices doubled (May '15 to Nov '15)	▪ sorghum prices doubled (Jan '15 to Nov '15)	▪ teff prices doubled (Nov '14 to Nov '15)
Rural employment	Casual labour rates	▪ limited seasonal labour ▪ wage rates fell to ETB 25 a day	▪ daily wage rates fell from ETB 100 to 30 a day (Dec '14 to Nov '15)	▪ daily wage rates fell from ETB 80 to 25 a day

Source: Authors' research.

2 The techniques included transect walks, observation, semi-structured focus group discussions, and various proportional piling and ranking tools.

3 Funded by the United States Agency for International Development (USAID), the Agriculture Knowledge Learning Documentation and Policy (AKLDP) project was implemented from 2014 to 2018 by the Feinstein International Center, Tufts University (https://agri-learning-ethiopia.org/).

4 The 2015–2016 El Niño was the strongest on record, with anomalies of more than +2°C.

2.2 Aligned La Niña and negative IOD phases: 2020–2022

The alignment of La Niña and negative IOD phases resulted in failed 2020 autumn rains in Rainfall Zone D (southern pastoral areas). Unusually, the alignment continued through to 2022, resulting in the first five consecutive failed spring and autumn rains in living memory and widespread and severe drought conditions (FEWS NET, 2023).

The findings of an agriculture sector assessment carried out in February 2023, the penultimate month of the drought, are presented in Table 4, while commodity price trends from February 2021 to February 2023 are presented in Table 5.

As indicated in Table 4, the droughted rangelands and limited access to livestock feed resulted in a collapse in milk production, loss of livestock body condition, a collapse in livestock prices and high levels of livestock deaths. Local rainfed cereal production also failed in 2021 and 2022.

As shown in Table 5, the protracted and severe drought increased cattle and camel milk prices by 40% and 50%, respectively (if indeed milk was available for purchase at all), while cereal prices increased by more than 100%. The price of firewood doubled and doubled again as fewer women had the energy for collecting and supplying firewood in local markets, while the price of charcoal fell by 40% as pastoral men sought productive employment and subsequently over-supplied local charcoal markets.

TABLE 4: AGRICULTURE SECTOR DROUGHT IMPACTS – YABELLO WOREDA (N = 3 FOCUS GROUPS)

Drought indicators	Impacts
Rangelands	▪ droughted rangelands ▪ little or no pasture or water ▪ localised rangeland recovery following the 2022 spring rains; livestock from still droughted areas trekked to these areas and the improving rangeland was quickly overgrazed; all potential benefits for local pastoralists were lost
Livestock	▪ little or no milk without livestock feed supplementation[5] ▪ poor body condition[6] ▪ falling and low livestock prices, high livestock mortality ▪ camels less susceptible to drought; camel milk sold daily in some local markets
Rainfed farming	▪ failed cereal harvests in 2020, 2021 and 2022
Livelihoods	▪ households forced to sell livestock and other assets to purchase grain ▪ 30,000 pastoral families lost most or all livestock and moved to market towns

Source: Authors' research.

5 A woman in Doyo Dalacha *olla* presented an empty *gorf* (gourd) to the focus group and said that the last time all her gourds had been full was before the drought induced by the 2010–2011 La Niña. She went on to say that it was three years ago that her gourds contained any milk at all.

6 Condition Score S1 and Condition Score S2 (Robinson, 2010).

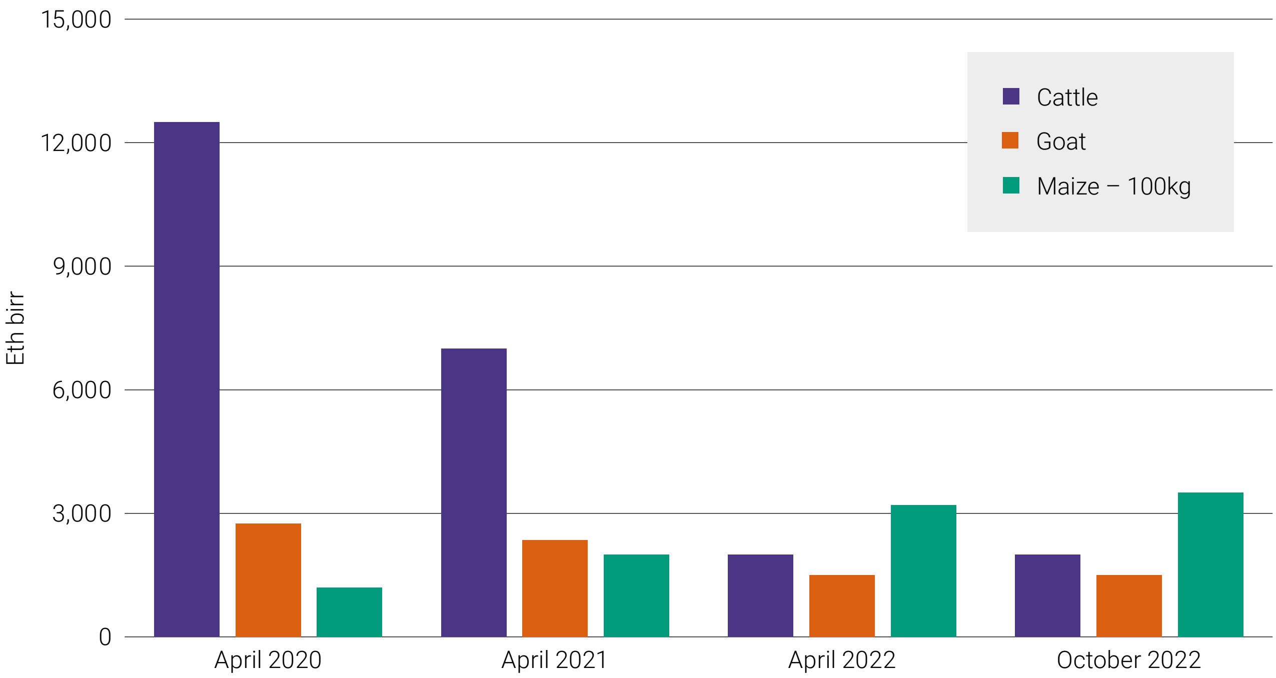
TABLE 5: COMMODITY PRICE TRENDS, FEBRUARY 2021 TO FEBRUARY 2023 (N = 8 YABELLO WOMEN MARKET TRADERS)

	Prices - Eth birr		
Commodity	**February 2021**	**February 2022**	**February 2023**
Cattle milk/litre	75	90	105
Camel milk/litre	60	75	90
Maize/quintal			
▪ Domestic*	1,500	2,600	3,500
▪ Food aid**	1,750	2,800	3,300
Wheat/quintal			
▪ Domestic	1,800	3,800	6,000
▪ Food aid	2,000	4,000	4,200
Water – 20-litre jerrycan	5	5–10	15–20
Bundle of firewood	40	80	140
Sack of charcoal – 100kg	700	600	400

Notes: *Produced in Ethiopia and transported by private sector traders to Borena; **imported and distributed as food aid and sold in markets.

Source: Authors' research.

FIGURE 2: CATTLE, GOAT AND MAIZE PRICE TRENDS, APRIL 2020 TO OCTOBER 2022



Source: The authors.

From April 2020 to October 2022, the respective prices of cattle, goats and 100kg maize are presented in Figure 2. Between April 2021 and April 2022, the sale price of cattle and goats fell below the rising price of 100kg maize. These price trends confirm the collapse in pastoral purchasing power and reflect the severity of the drought.

TABLE 6: PASTORALISTS' PERCEPTIONS OF LIVESTOCK LOSSES BY TYPE (N = 3 FOCUS GROUPS)

Livestock type	Livestock loss and sales scores (out of 300)	Livestock losses and sales – %	Rank
Cattle	277	92	1
Sheep	246	82	2
Goats	222	74	3

Source: authors' research.

TABLE 7: WOMENS' DROUGHT SEVERITY SCORE (N = 1 FOCUS GROUP OF 10 FORMER PASTORAL WOMEN)

Gadaa	Drought year	Severity score	Rank
Goba Bule: 1968–1976	1972–1973	20	3
Jilo Aga: 1976–1984	1983–1984	24	2
Kura Jarso: 2016 to present	2020 onwards	56	1
		100	

Source: Authors' research.

Using the proportional piling technique, focus groups scored livestock mortality at over 90%, 80% and 70% for cattle, sheep and goats, respectively (see Table 6). While recognising this information is unlikely to reflect actual losses, the results accurately represent local perceptions of the drought's severity and associated losses.[7] This is confirmed by the ranking by a focus group of displaced pastoral women – who had lost most of their livestock and had relocated to the Dubluk drought displacement camp – that the 2020–2022 drought was the worst in living memory. Using the eight-year *gadaa* age-set system,[8] the severity score was more than twice that of the 1983–1984 drought, ranked second (see Table 7).

2.3 The impact on humanitarian assistance

In 2014, around 4 million people required humanitarian assistance. This number rose to more than 10.2 million in 2016, following the aligned El Niño and positive IOD and associated drought (JGHPD, 2016). However, in 2016, the Productive Safety Net Programme (PSNP), introduced in 2005, provided cash and food transfers to an additional 8 million people, and therefore the total number of Ethiopians in need of assistance in 2016 was more than 18 million. To meet this expanded need, the 2016 Humanitarian Response Document (HRD) appealed for US$1.4 billion, the first such appeal to surpass US$1 billion (ibid.).

By 2020, an estimated 7 million people in Ethiopia required humanitarian assistance. The 2021 Humanitarian Response Plan (HRP) appealed for support for 23.5 million people. This increase reflected the combined impacts of the Covid-19 pandemic, inter-ethnic conflict and civil war, and plagues of desert locusts, but the need for assistance was also exacerbated by La Niña and negative IOD phases and the resultant drought in the southern pastoral areas (JGHPD, 2021).

During 2022, the continuing La Niña and negative IOD alignment and associated deepening drought helped maintain the number of people in need of humanitarian assistance at above 20 million, or more than 28 million including PSNP beneficiaries. The 2021 HRP request for Ethiopia was for a staggering US$3 billion (JGHPD, 2022)

7 The Borana Zone Drought Action Plan reports the loss of 2.2 million cattle with an estimated value of over US$400 million. Together with sheep and goats, total losses are estimated to be 46%. The Action Plan also reports that an estimated 34,769 households lost all their livestock and have been displaced to camps for internally displaced persons (IDPs) (Oromia Region EOC, 2023).

8 *Gadaa* is a Boran age-set system in which all males are born into an age-set that moves together through all the stages of life as an eight-year generation (www.britannica.com/topic/gada).

3. Food-security outcomes during other years of ENSO and IOD alignment

The food-security impacts of two previous ENSO and IOD alignments in 2002 and 2010 are briefly explored here, using secondary data sources.

3.1 El Niño and positive IOD phases: 2002

The 2002 alignment of El Niño and positive IOD phases resulted in poor spring and summer rains across Rainfall Zone A (the central and northern highlands) and Rainfall Zone C (pastoral lowlands of Afar and northern Somali regions). The resultant drought affected more than 15 million people and was described as the 'most serious drought since 1984' (Anderson, 2004). The assessment also recognised, however, that the impact was exacerbated by the 'lack of recovery from previous droughts, a cereal price collapse after the bumper harvest of 2001, high levels of indebtedness, the deterioration of global coffee prices, and a livestock export ban to the Middle East' (ibid.). Impressively, the government and its international development partners imported more than 1.8 million tonnes of food aid (ibid.), and the United States alone provided food aid assistance valued at more than US$500 million in 2003 (Lentz and Barrett, 2004). The government launched the PSNP[9] in 2005, which initially provided predictable food and cash transfers for six months to 4.5 million people (WBG and GFDRR, 2013).

3.2 La Niña and negative IOD phases: 2010

In early autumn 2010, La Niña and negative IOD phases aligned (FEWS NET, 2010; Tokyo Climate Centre, 2023). This resulted in failed autumn rains in 2010 and poor spring and autumn rains in 2011 in Rainfall Zone D (the southern pastoral lowlands) and across the wider Horn of Africa. The year 2011 was the driest in the Horn of Africa since 1995 (Ververs, 2011), and the drought resulted in the loss of thousands of pastoral livestock in southern Ethiopia and increased the number of people in need of emergency assistance to more than 13 million (Oxfam and Save the Children, 2011).

In the wider region, an estimated quarter of a million people died of famine in Somalia between October 2010 and April 2012 (UN, 2013). In response, the Inter-Governmental Authority on Development (IGAD) convened an African Union Conference in Addis Ababa, Ethiopia in August 2011, followed by a Regional Summit in Nairobi, Kenya and the launch of the IGAD 'Ending Drought Emergencies in the Horn of Africa' initiative in Djibouti in November 2011 (IGAD, 2011). This IGAD initiative continues to the present day.

3.3 Overview of humanitarian needs

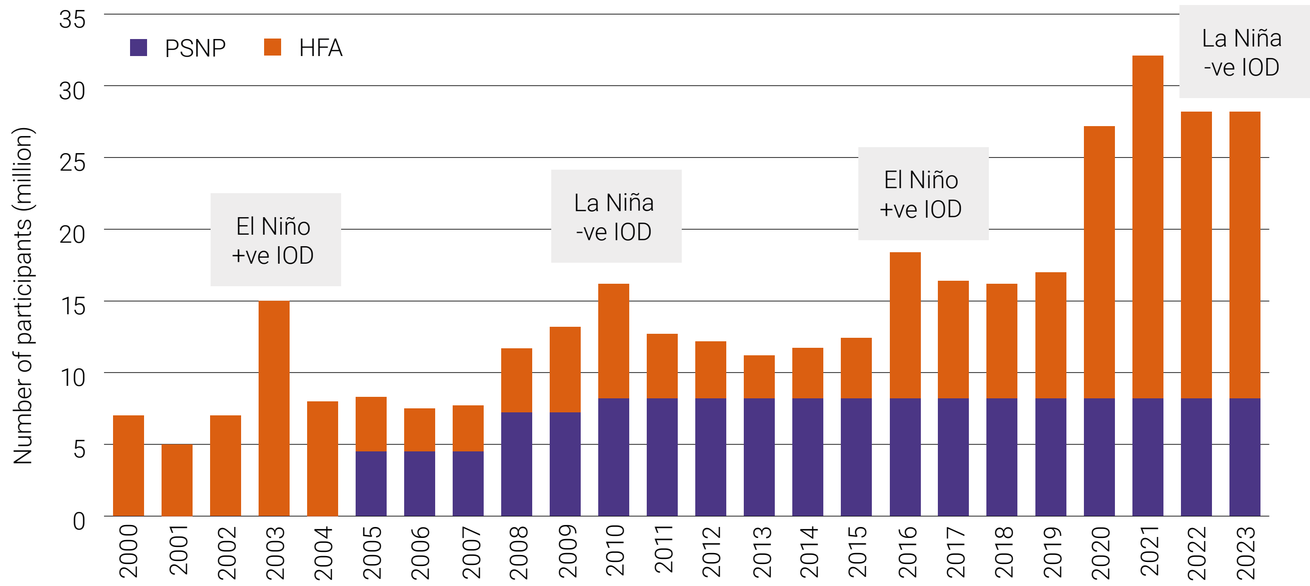
The number of people requiring emergency humanitarian food assistance (HFA) and PSNP assistance between 2000 and 2023 is presented in Figure 3. The figure also highlights years of ENSO and IOD phase alignment. In the positive alignment years of 2002–2003 and 2015–2016, the number of people requiring humanitarian assistance rose by 114% and 142%, respectively, compared to the preceding years; while in 2010–2011 and 2020–2022, the increases were 25% and 33%, respectively.[10] This higher number of people affected by drought in the highlands compared to the pastoral lowlands is a reflection of the different population densities of the two areas, with the population density in the highlands a fraction of that of the pastoral lowlands.[11]

9 The PSNP is a social protection programme that helps prevent chronically food-insecure households from selling livestock and other household assets during lean and drought times, through predictable food and cash transfers. Under the current PSNP V, 8.3 million chronically food-insecure people receive predictable cash and food transfers.

10 Data sourced from JGHPD (2016) and JGHPD (2022).

11 See Central Intelligence Agency population density map of Ethiopia (https://www.cia.gov/the-world-factbook/static/1194a68753dc379b46be153284911d65/ETHIOPIA_Population_density.jpg).

FIGURE 3: NUMBER OF PEOPLE REQUIRING HUMANITARIAN ASSISTANCE, 2000–2023



Source: JGHDP (2023)

4. Current ENSO and IOD forecasts, implications and mitigation

4.1 Recent ENSO and IOD forecasts and climate outcomes

In June 2023, the Australian Bureau of Meteorology (BOM) issued an El Niño alert, as sea surface temperatures warmed in the central and eastern Pacific. The same alert also reported emerging positive IOD conditions (Bureau of Meteorology, 2023a). In July 2023, the United States Climate Prediction Center (CPC)[12] confirmed the emergence of a 'young El Niño' in its monthly 'El Niño – Southern Oscillation Diagnostic' (CPC, 2023a). In August 2023, the 65th Greater Horn of Africa Climate Outlook Forum forecast above-normal autumn rainfall over the pastoral areas of southern Ethiopia, northern Kenya and Somalia, and identified 1997 as the 'best fit' analogous year for current climate model trends and forecasts for 2023 (IGAD Climate Prediction Centre, 2023). Table 1 identifies 1997–1998 as one of the strongest El Niño years on record.

In November 2023, BOM confirmed the emergence of a strong El Niño together with a moderate IOD (+1.4°C) and forecast the IOD would ease in January 2024 (Bureau of Meteorology, 2023b). In November 2023, the CPC's ENSO Diagnostic also reported 'strong El Niño conditions,' and a 55% chance that El Niño conditions would continue through to July 2024, with a 30% chance of an 'historically strong' episode (CPC, 2023b).

As forecast, in the riverine areas of southern Ethiopia, northern Kenya and Somalia, the aligned ENSO and IOD phases led to abnormally heavy autumn rains in November 2023 and severe flooding that resulted in loss of life (Gil, 2008).

Using vastly improved forecasting systems, climate scientists have accurately forecast seasonal rainfall patterns in the Horn of Africa some six to eight months ahead of time, since 2020 (Funk et al., 2023; Hugo, 2022). Current climate reports forecast below-normal 2024 spring rains in Rainfall Zones A and C (FSNWG, 2023), which are expected to exacerbate the already emerging highland drought conditions (DRM–ATF, 2023).

Forecasts for the summer rains in Rainfall Zones A and C will be available from mid-January 2024 onwards. However, based on the continued alignment of El Niño and positive IOD phases, the analysis in this brief suggests that seasonal spring and summer rains in Rainfall Zones A and C (see Table 8) will be significantly below normal. In contrast, the southern pastoral areas are expected to receive above-normal spring rains. Poor rains in 2024 in Rainfall Zones A and C that continue to experience conflict could result in a huge spike in the number of people in need of humanitarian assistance in the coming 18 months – see Table 8.

12 Part of the National Oceanic and Administration (NOAA) and US National Weather Service.

TABLE 8: ANTICIPATED CLIMATE FORECAST FOR ETHIOPIA'S RAINFALL ZONES

Rainfall Zones A and C (Central and northern highlands and north-eastern pastoral areas)	**Rainfall Zone D** (Southern pastoral areas)
▪ Spring 2024 – below-normal/poor spring rains (February–March) ▪ Summer 2024 – below-normal/poor summer rains (June–September)	▪ Spring 2024 – above-normal spring rains (March–May)

Source: Authors' research.

4.2 Mitigating ENSO and IOD alignment impacts

As has been detailed, there have been four aligned ENSO and IOD phases since 2000, including two since 2015, and a fifth is currently occurring. Given that each of these alignments has resulted in a significant spike in the numbers of people requiring humanitarian assistance, Ethiopia urgently needs to improve its preparedness, mitigation and response capacity. This might include a permanent specialist facility within the Ethiopia Disaster Risk Management Commission (EDRMC), that will routinely track and report on ENSO and IOD climate drivers. In response to the analysis and forecasts that it produces, the facility will need to be able to draft additional staff to address future droughts as and when they occur, whether driven by negative or positive alignments.

In addition to managing ENSO- and IOD-induced drought, the facility will also need to address flood preparedness, mitigation and response in rainfall zones where ENSO and IOD phase alignment is driving abnormally high rainfall and flooding.

5. Conclusion

This brief highlights the impacts of two positive and two negative ENSO and IOD phase alignments since 2000. Each of these alignments resulted in significant rainfall abnormalities in one or more of Ethiopia's rainfall zones that in turn negatively affected agricultural and pastoral production. In each case, poor production resulted in heightened household food insecurity and a spike in the number of people requiring humanitarian assistance, compared to the preceding year. The cost of responding to these climate crises has typically been significant, including in 2016 which saw the first HRP appeal of over US$1 billion.

Climate forecasting services report the recent alignment of El Niño and positive IOD phases that have already resulted in abnormally heavy autumn rains in Rainfall Zone D (the southern pastoral areas). Abnormally heavy spring rains are similarly forecast in the same rainfall zone, while poor or failed spring rains are forecast for Rainfall Zones A and C.

Previous El Niño and positive IOD phases in 2002–2003 and 2015–2016 resulted in poor or failed summer rains, drought and high levels of food insecurity in Rainfall Zones A and C. If similar conditions and associated spikes in the number of people requiring humanitarian assistance are repeated in 2024, many millions of people are likely to be affected. For this reason, the Ethiopian government and its development and humanitarian partners may wish to organise accordingly, including the possible establishment of a specialist and permanent ENSO and IOD unit within the EDRMC. This increased level of preparedness is especially important at this time, as more than 20 million people are already in need of humanitarian assistance, and a further significant spike in the numbers could stretch Ethiopia's emergency response capacity to breaking point.

Acknowledgements

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