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Impacts of El Niño-Induced Drought in Zambia

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Introduction

Over the recent years, Zambia has experienced extreme swings in temperature and precipitation, which constitute key drivers of several natural hazards such as floods, droughts, and extreme weather events such as the 2023–2024 *El Niño* – induced drought. Regarded as one of the most powerful *El Niño*–Southern Oscillation events in recorded history, it has resulted in widespread droughts, flooding, and other natural disasters across the globe and in Southern Africa in particular.

In February 2024, the government of Zambia classified the recent prolonged droughts due to El Niño weather effects as a National Disaster. The government reported that the drought had destroyed nearly 1 million hectares of maize, representing about 40 percent of the land under maize production in 2024. This level of reduced production is likely to impact the country's food security situation significantly.

El Niño – induced droughts have inflicted a heavy toll on the economy, with far-reaching adverse effects on the most vulnerable due to failed crops and livestock losses. Over 50 percent of Zambia's population is employed in agriculture, contributing up to 20 percent of the country's Gross Domestic Product (GDP).

Zambia relies on maize as a staple food. The 8th National Development Plan (2022-2026) aimed at increasing smallholder yields by two-and-a-half fold and commercial yields by 30 percent. Therefore, droughts such as the one induced by *El Niño* can be devastating for the country's food production goals and may expose households to the risk of food insecurity.

While the overall effects of the droughts are experienced at the national level, there are differentiated impacts spatially across the country. Some areas in the country might be exposed to more intense drought than others. Furthermore, the scale of devastation will be significantly higher in areas of the country where the severity of drought and population densities are highest. The present brief focuses on several spatial aspects of the drought that impact community vulnerability to shed light on hot-spot areas that require priority intervention and attention.

Drought Index and Drought Exposure for Zambia in 2024

Drought index measures the severity of drought conditions across a geographical space. As the value approaches zero, the severity of the drought increases, and values above 1 indicate the absence of drought conditions. The drought pockets are unevenly distributed, as shown by the drought index for Zambia in 2024 captured in Figure 1; the areas in the Eastern parts of the country, especially those bordering Malawi and Mozambique, are the most affected by the drought conditions. Vast areas in Central and Southern Zambia are also affected by drought. Parts of the Western and Northern provinces bor-

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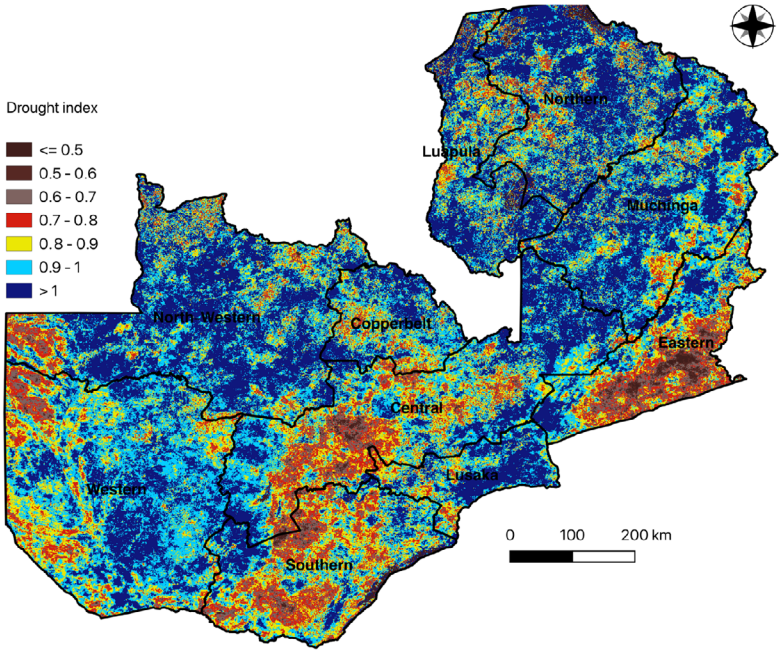
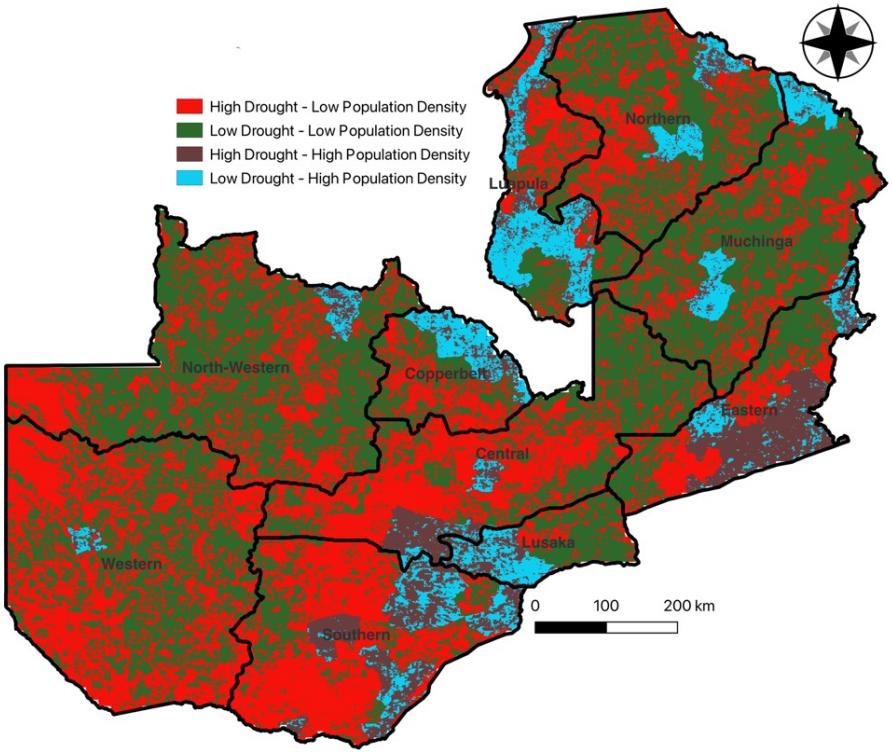
dering Angola are also severely affected by drought. Though less affected, small pockets in Copperbelt, Luapula, and Muchunga provinces are affected by drought. Based on the map in Figure 2, areas in the Eastern and Southern parts of the country are highly vulnerable because of the high levels of drought coupled with high population density. In contrast, parts of the Western, Central, and Southern provinces, though impacted by severe drought, are less densely populated; hence, the level of drought exposure is lower.

Figure 1: Zambia Drought Index in 2024



Source: AKADEMIYA2063 Africa Agriculture Watch (AAgWa), 2024

Figure 2: Drought Exposure, Zambia 2024

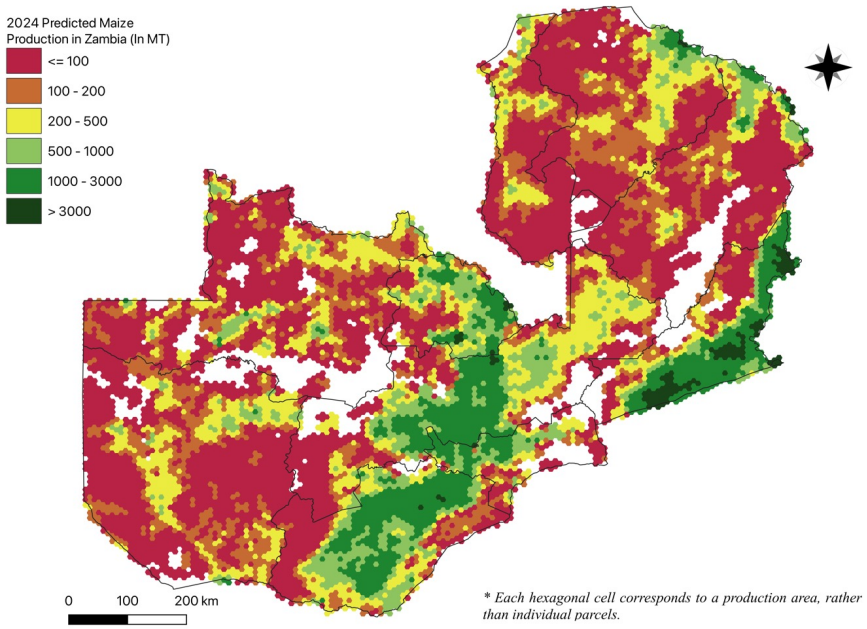


Source: AKADEMIYA2063 Africa Agriculture Watch (AAgWa), 2024

Impact of Drought on Maize Production

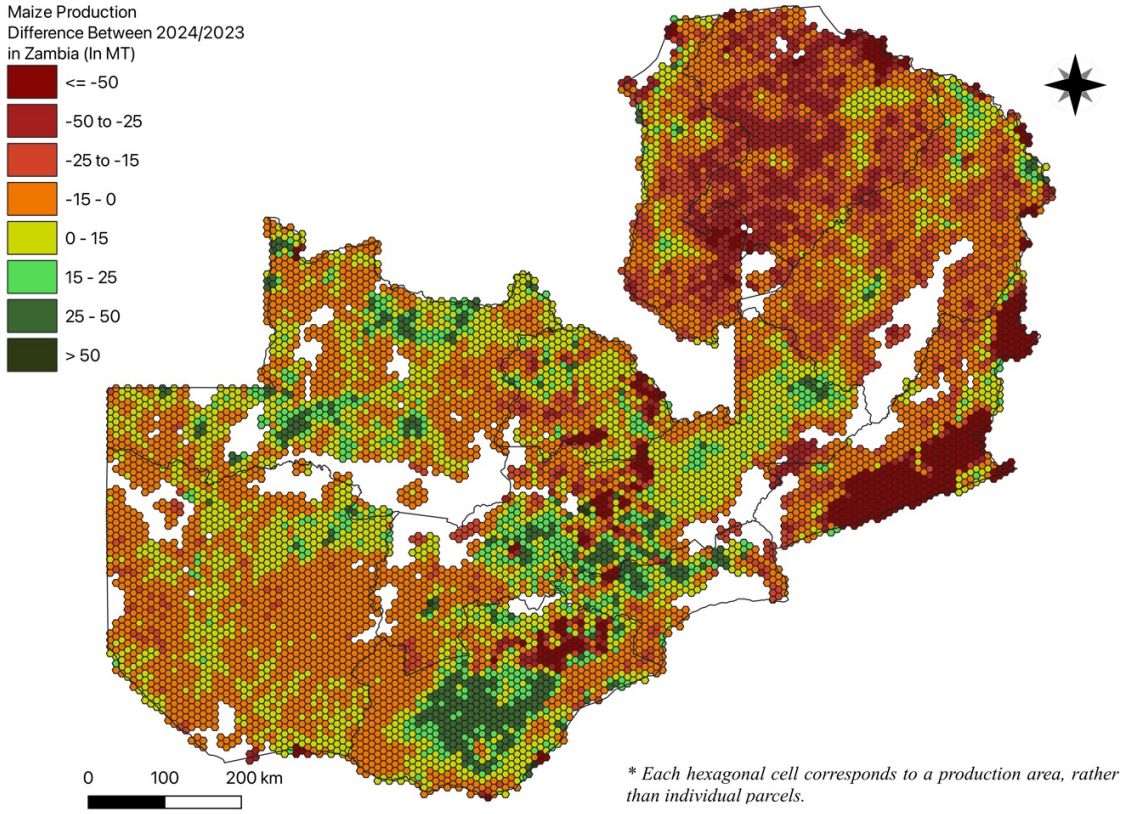
Maize production forecasts for 2024 show a significant reduction in production levels in 2024 compared to 2023 (see Figures 3 and 4).

Figure 3: Predicted Maize Production in Zambia in MT (2024)



Source: AKADEMIYA2063 Africa Agriculture Watch (AAgWa), 2024

Figure 4: Maize Production Differences Between 2024/23 in Zambia



Source: AKADEMIYA2063 Africa Agriculture Watch (AAgWa), 2024

Maize production in Zambia after the full effects of El Niño in 2024 is forecasted to be lower by about 6 percent (see Annex Table) compared to Production Forecasts (MT) at the beginning of 2024. The reduction in production is predicted to vary spatially across the country, with the highest reduction in production ranging between 11-39 percent expected mainly in different districts of the Western Province, as shown in the annex. Some of the severely hit districts include Shang'ombo (39 percent), Sikongo (38 percent) and Sioma (30 percent). Interestingly, though not a major maize production Province, some districts in the Luapula Province will see an increase in their maize production. Those include, among others, Chipili (84 percent), Samfya (83 percent), and Chifunabuli (56 percent).

Annex – 2024 Zambia Maize Production Forecast at Sub-district Level

Province	District	Production Forecasts (MT) after the Full Effects of El Niño in 2024	Production Forecasts (MT) at the beginning of 2024	Difference (MT)	Change (%)
Central	Chibombo	104501	112094	-7593	-7%
Central	Chisamba	78543	83088	-4545	-5%
Central	Chitambo	32351	31351	1000	3%
Central	Itezhi-tezhi	18974	22201	-3227	-15%
Central	Kabwe	21119	22360	-1241	-6%
Central	Kapiri Mposhi	118097	125350	-7253	-6%
Central	Luano	15184	15919	-735	-5%
Central	Mkushi	38983	40055	-1072	-3%
Central	Mumbwa	84552	91677	-7125	-8%
Central	Ngabwe	5623	5641	-18	0%
Central	Serenje	32627	32923	-296	-1%
Copperbelt	Chililabombwe	7409	7531	-122	-2%
Copperbelt	Chingola	13641	14167	-526	-4%
Copperbelt	Kalulushi	8077	8325	-248	-3%
Copperbelt	Kitwe	10994	11452	-458	-4%
Copperbelt	Luanshya	5950	6215	-265	-4%
Copperbelt	Lufwanyama	40841	40461	380	1%
Copperbelt	Masaiti	50615	52777	-2162	-4%
Copperbelt	Mpongwe	59928	62887	-2959	-5%
Copperbelt	Mufulira	4106	4202	-96	-2%
Copperbelt	Ndola	23062	24174	-1112	-5%
Eastern	Chadiza	31034	33569	-2535	-8%
Eastern	Chasefu	41960	44978	-3018	-7%
Eastern	Chipangali	43315	46766	-3451	-7%
Eastern	Chipata	50665	54225	-3560	-7%
Eastern	Kasenengwa	50420	54709	-4289	-8%
Eastern	Katete	57917	62938	-5021	-8%
Eastern	Lumezi	54757	58940	-4183	-7%
Eastern	Lundazi	35849	38253	-2404	-6%
Eastern	Mambwe	9571	10775	-1204	-11%
Eastern	Nyimba	34825	38437	-3612	-9%
Eastern	Petauke	126915	137254	-10339	-8%

Province	District	Production Forecasts (MT) after the Full Effects of El Niño in 2024	Production Forecasts (MT) at the beginning of 2024	Difference (MT)	Change (%)
Eastern	Sinda	76243	82284	-6041	-7%
Eastern	Vubwi	10120	10906	-786	-7%
Luapula	Chembe	1989	1535	454	30%
Luapula	Chiengi	10647	11059	-412	-4%
Luapula	Chifunabuli	1054	677	377	56%
Luapula	Chipili	2770	1509	1261	84%
Luapula	Kawambwa	16276	14918	1358	9%
Luapula	Lunga	339	86	253	293%
Luapula	Mansa	18079	16402	1677	10%
Luapula	Milengi	3698	2476	1222	49%
Luapula	Mwansabombwe	3962	4002	-40	-1%
Luapula	Mwense	4951	4498	453	10%
Luapula	Nchelenge	8300	8274	26	0%
Luapula	Samfya	1938	1060	878	83%
Lusaka	Chilanga	22358	23660	-1302	-6%
Lusaka	Chirundu	2014	2523	-509	-20%
Lusaka	Chongwe	32393	34279	-1886	-6%
Lusaka	Kafue	14962	16112	-1150	-7%
Lusaka	Luangwa	593	815	-222	-27%
Lusaka	Lusaka	2943	3125	-182	-6%
Lusaka	Rufunsa	27401	28971	-1570	-5%
Lusaka	Shibuyunji	24351	26389	-2038	-8%
Muchinga	Chama	9778	10053	-275	-3%
Muchinga	Chinsali	11002	9536	1466	15%
Muchinga	Isoka	30364	31697	-1333	-4%
Muchinga	Kanchibiya	13476	11873	1603	14%
Muchinga	Lavushimanda	9819	7612	2207	29%
Muchinga	Mafinga	12507	12648	-141	-1%
Muchinga	Mpika	11750	10983	767	7%
Muchinga	Nakonde	27382	28901	-1519	-5%
Muchinga	Shiwamg'andu	14350	11446	2904	25%
North-Western	Chavuma	6006	7162	-1156	-16%
North-Western	Ikelenge	5787	5539	248	4%
North-Western	Kabompo	9204	9774	-570	-6%
North-Western	Kalumbila	20204	19795	409	2%
North-Western	Kasempa	24682	24428	254	1%
North-Western	Manyinga	11345	11947	-602	-5%
North-Western	Mufumbwe	23477	24781	-1304	-5%

Province	District	Production Forecasts (MT) after the Full Effects of El Niño in 2024	Production Forecasts (MT) at the beginning of 2024	Difference (MT)	Change (%)
North-Western	Mushindano	11750	11086	664	6%
North-Western	Mwinilunga	12994	10857	2137	20%
North-Western	Solwezi	26924	25438	1486	6%
North-Western	Zambezi	10050	11756	-1706	-15%
Northern	Chilubi	3170	1978	1192	60%
Northern	Kaputa	3093	2182	911	42%
Northern	Kasama	24918	22760	2158	9%
Northern	Lunte District	14662	13070	1592	12%
Northern	Lupososhi	2946	2018	928	46%
Northern	Luwingu	10292	8955	1337	15%
Northern	Mbala	34036	38119	-4083	-11%
Northern	Mporokoso	5567	4451	1116	25%
Northern	Mpulungu	13773	14061	-288	-2%
Northern	Mungwi	16211	13872	2339	17%
Northern	Nsama	3918	2805	1113	40%
Northern	Senga Hill	27856	30385	-2529	-8%
Southern	Chikankanta	35115	37059	-1944	-5%
Southern	Choma	61901	66614	-4713	-7%
Southern	Gwembe	3938	4508	-570	-13%
Southern	Kalomo	98005	106344	-8339	-8%
Southern	Kazungula	50652	58395	-7743	-13%
Southern	Livingstone	3510	4096	-586	-14%
Southern	Mazabuka	61919	65746	-3827	-6%
Southern	Monze	96899	103793	-6894	-7%
Southern	Namwala	41595	46153	-4558	-10%
Southern	Pemba	21090	22569	-1479	-7%
Southern	Siavonga	1714	1916	-202	-11%
Southern	Sinazongwe	19921	22651	-2730	-12%
Southern	Zimba	54098	59511	-5413	-9%
Western	Kalabo	7229	8580	-1351	-16%
Western	Kaoma	19366	21788	-2422	-11%
Western	Limulunga	4525	5405	-880	-16%
Western	Luampa	14901	17088	-2187	-13%
Western	Lukulu	8634	10080	-1446	-14%
Western	Mitete	3498	4523	-1025	-23%
Western	Mongu	8801	10612	-1811	-17%
Western	Mulobezi	9804	12965	-3161	-24%

Province	District	Production Forecasts (MT) after the Full Effects of El Niño in 2024	Production Forecasts (MT) at the beginning of 2024	Difference (MT)	Change (%)
Western	Mwandi	9252	12279	-3027	-25%
Western	Nalolo	6648	8118	-1470	-18%
Western	Nkeyema	11605	12912	-1307	-10%
Western	Senanga	12744	16047	-3303	-21%
Western	Sesheke	10601	13589	-2988	-22%
Western	Shang'ombo	5625	9230	-3605	-39%
Western	Sikongo	1657	2654	-997	-38%
Western	Sioma	5483	7819	-2336	-30%
TOTAL		2753809	**2916263**	-238998	-6%

MT (Metric tons): *1 MT is equivalent to 1,000 kilograms.*
Change: *refers to the relative difference and is calculated as (2024 prod – 2023 prod) divided by 2023 prod.*

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