

NEXUS OF CLIMATE CHANGE AND FOOD SECURITY

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Executive Summary

From climate change to global pandemics to food insecurity, humanity is confronted with enormous challenges that demand resilient and long-term solutions. Somalia is at the forefront of climate change, a nation where violence and insecurity are combined with the threat of environmental hazards brought on by a fast-changing climate.

This study examines Somalia's food security concerns in the light of devastating climate extremes. According to our findings, Somalia has warmed quicker than the rest of the world. Droughts and floods have become increasingly frequent, putting more households in danger of being food insecure. In the future, climate change will pose a new challenge to food security. Droughts and floods alternate with alternating droughts because of climate change.

The production ecosystem perspective highlights the necessity of a complete approach to sustainable crop

types. Integrated crop protection, soil fertility, and floods, as well as a reduction in external inputs, are among the production difficulties.

The Challenges of Climate Change and Food Security

Climate and weather extremes like temperature shifts, erratic rain patterns, and increased flood and drought frequency make agriculture more vulnerable than other industries. Anthropogenic global warming, regardless of its cause, has become a global issue in recent years, drawing the attention of non-governmental organizations (NGOs), international organizations, and world leaders to address global environmental problems.

It is a crucial component of agricultural production because it affects all facets of our livelihood systems' long-term viability. According to observations made in many climates and locales, crops and farming systems are climate-sensitive (Gitz et al., 2016). Agriculture provides food, income, and work to over 80% of these people in Sub-Saharan Africa (SSA) and Somalia.

However, the agricultural sector produces insufficiently, resulting in widespread poverty and malnutrition. Around 300 million people live in poverty in Sub-Saharan Africa. Hunger is most common in rural areas, with over 70% of people living in extreme poverty. Malnutrition is frequent in many

households due to insufficient carbohydrate, protein, and micronutrient intake, which affects roughly 51% of the population (Kamara, 2017).

We also know that agriculture is the key source of income for the country. The Somali people, on the other hand, grow maize as their main crop and rely on it in a variety of ways.

According to the United Nations' Food and Agriculture Organization, 1.3 billion tons of food are lost each year, enough to feed almost 33% of the world's population. The rise in extreme climate-related events is the most concerning of the drivers of food insecurity, as farming and food production systems are the most sensitive to climate change, affecting the availability and accessibility components of food security (Hanumankar et al., 2022).

Smallholders and family farms, which account for around 85 percent of all farm production units worldwide, are particularly sensitive to climate change. The impacts of climate change on eating have gotten significantly less consideration (Rosegrant et al., 2015).

Over 3.5 million Somalis are anticipated to face food insecurity or a loss of livelihood assets by the end of the year, all of which are indicators of crisis (IPC Phase 3) or worse repercussions if humanitarian aid is not delivered. The combined effects of poor and variable seasonal rainfall, flooding, and violence are the key drivers of acute food shortages in Somalia.

The April to June 2021, GU rainfall season had quite a late start, an early end, and diverse rainfall distribution. As a result, rainfall totals in numerous parts of Somalia have fallen below the 40-year average, particularly in central and southern Somalia.

Gu agricultural output in southern Somalia was lower than usual due to a lack of rain, while crop harvest expectations in the Northwest's agro-pastoral subsistence areas were bleak (December & July 2022).

According to the UNHCR, Somalia has 2.97 million internally displaced persons. 574,000 people have been evacuated for the first time between January and August 2021. Conflict/insecurity (413,000), drought (90,000), and floods were the leading causes of displacement in the year ended August (59,000). In April 2021, more than half of the new displacements (250,000) were due to insecurity, whereas flood-related relocations occurred in May. Food, livelihood help, and shelter are the top priorities for the displaced (Fig. 1 & 2).

Policy Brief

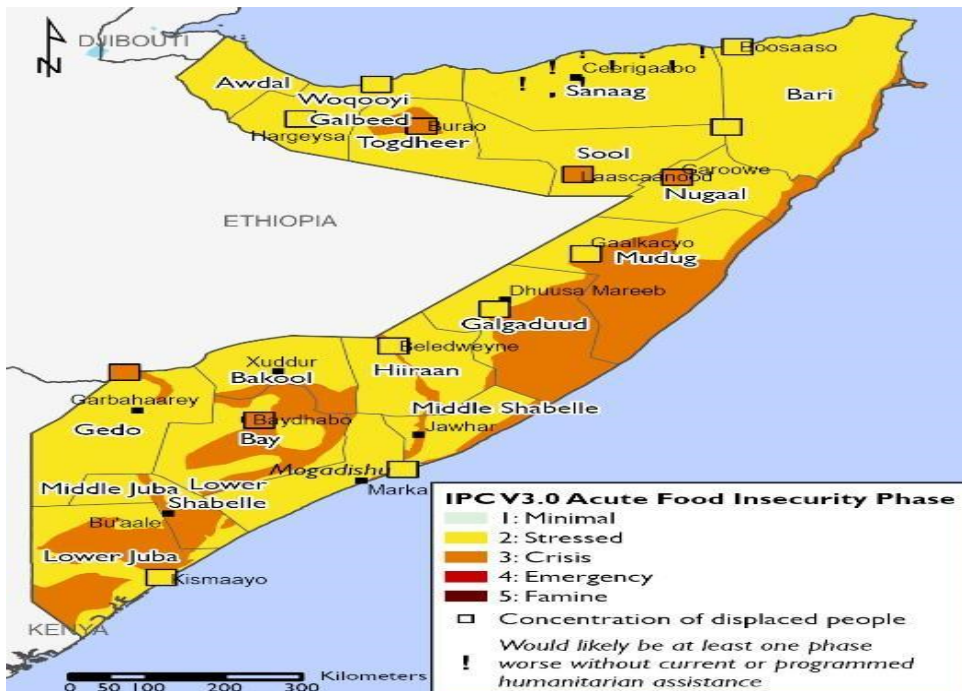


Figure 1: Current food security outcomes, October 2021

Source: FEWS NET AND FSNAU

The Causes of The Problem

In the future, global warming will pose a new challenge to food security. Because of climate change, droughts, and floods alternate with consecutive droughts. Droughts and floods are both caused by climatic change, which results in changing rainfall patterns and extreme weather. Devastating floods struck much of Europe in 2021.

It's important to note that if global warming, in the form of alternate droughts and floods, can wreak havoc in the world's most affluent countries, it's reasonable to assume that the consequences of climate change on all aspects of human life in less industrialized economies like Somalia will be even worse. The annual average rainfall in the Gu' (April to June) and the Dayr (October to November) ranges from 50 millimeters on the coast to 200 millimeters in the interior. Droughts that used to happen once every ten years are now happening 70 percent more frequently, with

more intensity and devastation.

"Food systems completely rely on a variety of the earth's natural resources, which, in many regions of the world, represent major limiting factors of production. There are several challenges to sustainably assuring food security. These include:

1) Widespread poverty, which inhibits people's capacity to grow and/or purchase the needed food;

2) Large increases in developing countries' populations, especially in urban areas;

3) and the degradation of natural resources such as soil and water, which undermines productive capacity. Thus, food security challenges become exponentially more difficult for fragile nations recovering from crises like Somalia for two main reasons: weak policy-making institutions and a lack of sustained economic development.

Poverty is both a cause and an effect of environmental degradation. Poor people often destroy their environment, not because they are ignorant or do not care, but to survive in the short-term, which leads to further degradation, in turn making people even poorer"(Vogler, 2016).

Unstable social and political environments, war and civil strife, financial insecurity, natural resource constraints, a depleted human resource base, gender inequality, literacy levels, poor health, natural disasters such as locust infestation, and a lack of good governance exacerbate food insecurity. All of these concerns contribute to a national food shortage or insufficient availability of food for individuals and families.

Overdependence on primary agriculture, declining soil fertility, minimal use of external farm inputs, environmental degradation, significant pre- and post-harvest food crop failure, negligible value addition, and product differentiation, and insufficient food storage and preservation are all features of Africa's undeveloped agricultural sector, all of which contribute to significant fluctuating prices (Ilaboya et al., 2012).

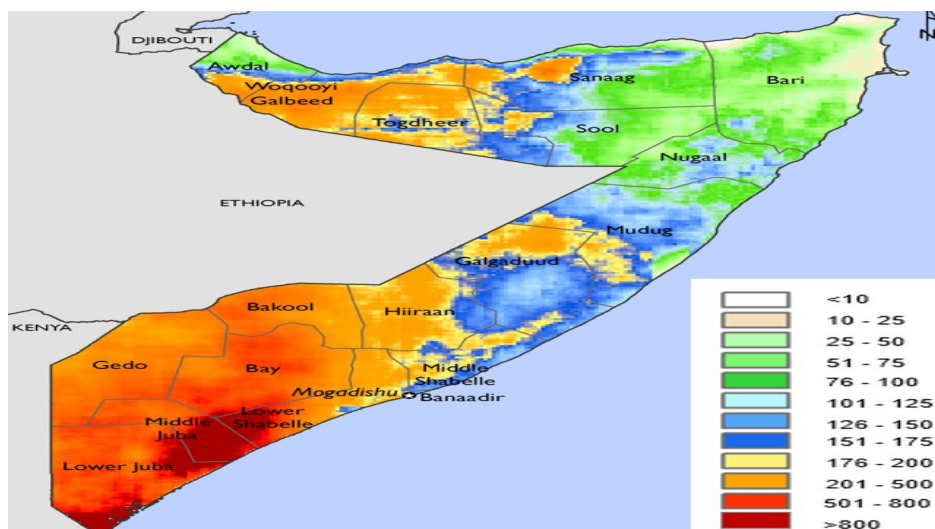


Figure 2: Estimated cumulative rainfall (chirps and chirps prelim) in millimeters (mm), April 1-June 30, 2018

Source: USGS/FEWS NET

Opportunities for Climate Change and Food Security:

Given a large number of malnourished people in Africa and the increasingly complex dangers to food security, policymakers have a Herculean task. More and more investments, innovations, and policy measures will be required to free people from hunger, led by a keen awareness of the dynamic risks and dynamics that define the variables influencing people's access to healthy food and the links with nutrition.

The International Model for Policy Analysis of Agricultural Commodities and Trade (IMPACT), developed by the International Food Policy Research Institute (IFPRI), sheds light on how to minimize these risks through appropriate policy actions. By predicting future global food scenarios until 2050, the IMPACT model assesses the potential consequences of government inaction and action

in key critical risk areas, including child malnutrition in poor countries, commodity prices, demand, grain yields, production, and net trade (Von Braun et al., 2005). It emphasizes the necessity of a holistic approach to addressing long-term production challenges, such as improved crop varieties, integrated crop protection, soil fertility, and water management, as well as a reduction in exogenous variables, termed the production ecological strategy (Sintética & Introduço, 2011).

Policy Limitations Related to Climate Change and Food Security:

Additionally, there is still a critical gap in the implementation of disaster risk management and mitigation policies aimed at addressing climate change consequences to help households and communities become more resilient. Poor governance structures, a lack of essential services, and the financial, technical, and informational resources required to build local community resilience to food insecurity exist. Somalia's humanitarian crisis is one of the world's most complicated and long running.

The population is threatened by a variety of hazards and shocks, including periodic droughts and floods, which have become more frequent and severe because of seasonal climate variability. Economic shocks, conflict, insecurity, and intercommunal violence all lead to population relocation, poverty, and food and nutrition insecurity, all of which continue to suffocate livelihoods, trade, and market functioning.

The Statues held a national conference on food security and agriculture development in Mogadishu on the 23rd and 25th of January 2018, which brought together participants from the most important stakeholders involved in Somalia's food security and nutrition efforts, including Federal State Members and government senior officials.

The limited resources available to conduct legal technical missions throughout Somalia (Report, n.d.). Insecurity in some sections of the country, including civil wars, poses a threat to the food industry's growth and expansion. This restricts the movement of potential employees interested in working on fortification programs. Certain localities, such as those held by Al-Shabaab, have restrictions, making NFFS implementation difficult.

Natural disasters, such as frequent floods, droughts, and epidemics, can reduce local grain production, which may have boosted the fortification and manufacturing programs. If government efforts are not adequately coordinated, poor governance could lead to the failure of the food fortification program (*Somalia National Food Fortification Strategic Plan Table of Contents*, 2019).

Recommendations

1. Changing climate mitigation: Create a national, independent environmental protection agency led by specialists to assist in the formulation of viable climate change mitigation policies.
2. Improving soil productivity and water conservation will increase agricultural diversification, save rainfall for emergency use, and improve soil quality.
3. Adaptation policies based on modified cultivars for long-term climate change have been developed.
4. Improving maize quality and refining regional climate models to better predict future climate circumstances to which farmers would be obliged to adjust will be required for developing long-term climate change adaptation plans.
5. Food storage system: Develop a food storage system in case of a climate-related emergency, which is now 70 percent more common than it was 30 years ago.
6. From current low-input agriculture to modern high-input agriculture.
7. Government agricultural input subsidy programs can help increase land productivity.
8. Farmers can also boost crop yields by investing in catchment systems and small-scale irrigation projects in areas where water is available.

9. Rising crop inputs and climate adaptation strategies show considerable promise for preserving or increasing future crop output in many regions; but, negative environmental implications of intensification, particularly overuse of nutrients and pesticides, must be avoided.

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