



MALNUTRITION IN A WARMING WORLD: How Climate Change Impacts Nutrition Security in Low- and Middle-Income Countries

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Executive Summary

A series of global challenges in the past few years – including the COVID-19 pandemic, regional conflicts, and climate change – has sent the world hurtling in the wrong direction when it comes to food and nutrition security. Today, about 10 percent of the global population experiences hunger, significantly higher than in recent years, and 3 billion people are unable to afford a well-balanced, healthy diet that includes whole grains, fruits, vegetables, and animal-sourced foods.

Climate change, in particular, has imposed significant burdens on global nutrition outcomes. The increasing frequency of extreme weather events – including droughts, floods, wildfires, heat waves, and severe storms – has a disproportionate effect on low- and middle-income countries where large proportions of the population rely on agriculture to make a living. Extreme weather can lead to crop failures, pressure from diseases and pests, lost crop and livestock productivity, and lower nutritional value of food – ultimately hurting farmers' livelihoods and leading to higher costs for consumers. Low- and middle-income countries also often have limited capacity to adapt to climate challenges, due to a lack of safety net programs, robust infrastructure, and tools and technologies that would enable farmers to produce good crops even in the face of increasingly difficult conditions. Women are particularly vulnerable to food and nutrition insecurity, as they generally have lower incomes compared with men, and studies show that during times of financial pressure, they often reduce their food intake or skip meals so that other members of their household can eat.

High food costs and lost agricultural incomes contribute to increasing rates of malnutrition in all forms, including micronutrient deficiencies, undernutrition, and more recently, overweight and obesity, as families in some cases turn to processed foods that can be cheaper than healthier alternatives. Children, adolescents, and women who are pregnant or lactating have higher nutrient needs, leaving them especially at risk.

Key Recommendations

Improving nutrition outcomes and shoring up our global food system to deal with climate change will require a whole of society and government approach, to ensure that policy solutions work both for nutrition security as well as the natural environment. Within this context, governments and international stakeholders should consider the following five trends within our global food system and policy recommendations for addressing associated challenges:

Food Systems Trends	Policy Recommendations
Diet quality is a key driver of nutrition. The affordability of a healthy diet – the quality of food and not just the quantity – plays an important role in nutrition outcomes.	<ul style="list-style-type: none"> • Increase support for social protection programs (e.g. insurance mechanisms, cash transfers and school feeding programs) that improve consistent access to healthy diets, especially when households are affected by external shocks. • Promote price subsidies for healthy foods and incentives for farmers to produce nutritious crops.
In Sub-Saharan Africa and Southeast Asia, most food crops are produced by small- and medium-scale farmers. However, farmers often lack access to productive varieties that can withstand climate shocks, especially for nutritious foods.	<ul style="list-style-type: none"> • Increase investment in agricultural research that focuses on crop diversity, nutritious foods, and climate adaptation, as well as supply chain development. • Support international organizations such as CGIAR that conduct nutrition- and climate change-focused research in low- and middle-income countries, as well as research programs through whole-of-government initiatives like the U.S. Feed the Future initiative.
Three demographic factors underpin food-system dynamics in Africa. Agriculture remains the primary source of employment, there are high levels of employment in the informal sector, particularly among women, and there is a substantial youth population. Climate change affects agricultural labor and may have longer-term impacts on migration.	<ul style="list-style-type: none"> • Prioritize investments in the nutritious food value chain (e.g. animal-sourced foods, produce, legumes), especially varieties with climate-tolerant characteristics. • Prioritize investments in “forgotten crops” that are climate-resilient, nutrient-rich, and well-suited for local growing conditions in developing countries, including through the new Vision for Adapted Crops and Soils (VACS) initiative. • Enable countries to increase public expenditures on agriculture and nutrition, under their national and regional climate pledges.
Evolving agri-food value chains are driving changes in diets, livelihoods, and food waste and loss. Food systems in many countries are being reshaped by the increasing prevalence of supermarkets, food-service providers, and processing and transport companies. In Sub-Saharan Africa, regional food systems remain essential.	<ul style="list-style-type: none"> • Increase investments in infrastructure for storage and distribution that facilitates regional trade, especially for nutritious foods. • Increase scientific capacity and technology to enable food supply chains to work more efficiently and reduce food loss and waste.
Women play a central role throughout food systems, yet they experience numerous disadvantages that affect nutrition outcomes. Women in agriculture have lower access to land, capital, inputs, extension services, digital technology, and seed varieties, compared with their male counterparts, especially for cash crops.	<ul style="list-style-type: none"> • Prioritize family-system and gender-transformative approaches in nutrition and climate policy. • Implement policies that include social protections and address wage gaps for women working in agri-food systems. • Monitor and enhance access to education, particularly for adolescent girls, during climate shocks. Consistent access to education has an enormous impact on later-life economic mobility, as well as maternal and child nutrition outcomes. • Strengthen the collection of gender-disaggregated data for institutions, policy-making, and design of nutrition- and climate-focused interventions.