



Nourishing the Future on a Warming Planet

Climate and nutrition profoundly impact each other. Well nourished communities who have access to sufficient, affordable and nutritious food from climate-smart and resilient food systems would be better placed to weather climate shocks and extremes when they arise. However, global food systems are failing to deliver good nutrition for all. And as climate shocks become more frequent and severe, coupled with the food price rises that often follow, millions of additional children will be malnourished—suffering from wasting and stunting, impacting health and education outcomes, reducing lifetime earning potential and restricting the economic growth and the eradication of poverty and inequalities for countries across the globe. Often without the means to adapt to climate shocks and access nutritious food by alternative means, low-income and marginalised populations are the most vulnerable to both malnutrition and climate shocks.

Captured in the Sustainable Development Goals, the future of people and the planet are deeply intertwined. The status quo of inequitable, unsustainable, and fragile global food systems that drives climate change and malnutrition risks leaving large portions of the world's population behind. With climate-smart, nutrient-sensitive mitigation and adaptation policies, people can thrive and positively contribute to the future of the planet. If the world is to achieve its climate goals, malnutrition must be seen as a climate problem and placed front and centre of the COP27 climate negotiations.

The interplay between nutrition and climate

Global food systems are contributing to climate change and vulnerable to its impacts. Agriculture and food systems produce up to one-third of greenhouse gas emissions and alone make it impossible to limit warming to 1.5°C, even if all fossil fuel emissions were stopped.¹ Food production investments, research and policy have prioritised four crops (maize, wheat, potato and rice) over nutritious foods with negative outcomes for both people and planet: insufficiently diverse diets in which 60% of the calories we consume are from four crops; 60% of global biodiversity loss is connected to production and consumption practices²; and increasingly fragile food systems that are vulnerable to weather extremes and disease. Animal-sourced foods, a key source of protein and micronutrients for a healthy diet, are often resource-intensive with a colossal impact on the environment and remain largely inaccessible to the poorest populations who are most vulnerable to climate change.

The impacts of climate change are felt from farm to fork with severe nutrition outcomes. Agriculture accounts for 26% of total damage and losses from climate-related disasters, undermining the incomes, livelihoods, food security and nutrition of smallholder farmers and rural communities in particular.³ Climate change is not only reducing food productivity growth by 21%⁴, but also the diversity, quantity

¹ Science's [Global food system emissions could preclude achieving the 1.5° and 2°C climate change targets](#)

² Crop Trust

³ WRI's Food Systems at Risk: Transformative Adaptation for Long-Term Food Security

⁴ [WFP's The Climate Crisis and Hunger](#)



and nutrient quality of the food produced.⁵ Increased carbon dioxide will reduce protein, iron, zinc and other micronutrients in staple crops eaten around the world.⁶ A rise in nitrogen and phosphorus fertiliser use, required to continue growing in less fertile soil, could also affect food quality.⁷ The reduced availability and quality of water, from rising temperatures and droughts, could see an increase in sanitation challenges and water-borne diseases – two key drivers of malnutrition.⁸ Additionally, rising temperatures increase the risk of food safety concerns, as the growth of pathogens’ spikes in warmer temperatures and refrigeration is required to prevent the spoilage of dairy, meat and other perishable foods.⁹ Polluted water and food that results in illness will reduce the absorption of micronutrients and result in undernutrition.

Reduced access to sufficient, safe, affordable and diverse diets will lead to a rise in negative nutrition outcomes like stunting and micronutrient deficiencies, especially for low-income communities. Children who suffer from stunting can have compromised brain development, growth and immune systems that limit their educational attainment and productivity as well as heighten their susceptibility to both infectious and non-communicable diseases in later life.

Implications for nutrition and climate

With global food prices spiking and fluctuating after climate events in food producing countries, climate change is contributing to rising food prices. A 5% rise in food prices increases the risk of wasting by 9%.¹⁰ Malnutrition is projected to be the leading cause of all climate-related child mortality by 2050.¹¹ Climate change is estimated to result in an additional 4.8 million malnourished children by 2050¹² and 529,000 deaths linked to hunger and decreased consumption of nutritious foods.¹³ And yet, food prices fail to account for the environmental costs associated with production and consumption, such as land use, freshwater extraction or soil degradation. One figure estimates the social cost of greenhouse gas emissions from current diets at an excess of USD \$1.7 trillion per year by 2030.¹⁴

The most vulnerable populations are the most susceptible to malnutrition and climate shocks. They are without the resources to adapt to a warming climate or the ability to access alternative nutritious food options, threatening decades of progress on hunger and nutrition.¹⁵ Small-scale food producers, fisher

⁵ J. I. Macdiarmid, S. Whybrow. [Nutrition from a climate change perspective.](#)

⁶ [2017 Global Nutrition Report: Nourishing the SDGs](#)

⁷ 2020 Global Nutrition Report: Action on equity to end malnutrition

⁸ [2012 Climate impacts on food security and nutrition: a review of existing knowledge](#)

⁹ Devin LaPolt. [Influence of Climate Change on Food Safety.](#)

¹⁰ IFPRI 2022. Global Food Crisis Raises the Risk of Wasting Among the World’s Most Vulnerable Children.

¹¹ WFP [Climate Crisis and Malnutrition – A case for acting now](#)

¹² Jessica Fanzo, Claire Davis, Recca McLaren and Jowel Choufani. [The effect of climate change across food systems: Implications for nutrition outcomes.](#)

¹³ Bryan, E. et al. [Gender-sensitive, climate-smart agriculture for improved nutrition in Africa South of the Sahara](#)

¹⁴ 2020 The State of Food Security and Nutrition in the World Report. “Social cost of GHG” is an FAO indicator that combines food-consumption estimates, GHG emissions footprint and the costs of climate damages linked with these emissions.

¹⁵ Jessica Fanzo, Claire Davis, Recca McLaren and Jowel Choufani. [The effect of climate change across food systems: Implications for nutrition outcomes.](#)



people and herders whose livelihoods rely on predictable weather patterns and abundant natural resources are among the most vulnerable. Women-led households are less likely to adapt to climate change.¹⁶ Coping strategies to withstand climate shocks – such as selling livestock, eating fewer or skipping meals, or deforestation for cooking – can worsen nutrition and health outcomes, reduce future incomes and lessen resilience to future shocks.

Climate-smart, nutrient-sensitive mitigation and adaptation policies are critical to safeguarding nutrition on a warming planet. Tackling climate change with a nutrition lens means considering the trade-offs of any climate action on food and nutrition security. Adaptive social protection or shock responsive social protection systems (systems that can be scaled quickly post-shocks or to respond to long-term climate impacts) can help communities to withstand the immediate aftermath of a climate event. The increased production and consumption of fortified foods that add additional micronutrients to our plates, and in the case of biofortification, help crops to adapt to climate change, can affordably nourish populations at scale. Additional research in food, water, health and social protection systems is required to keep pace with the changing climate to ensure nutrition is well protected.

Without such an approach, nutrition-blind mitigation policies risk doing more damage to global hunger and food consumption than the effects of climate change itself.¹⁷ One study projects an additional 78 million people facing hunger in 2050 in a scenario with climate impacts and emissions mitigation policies, compared to 24 million in a scenario with only climate impacts. The 78 million figure reflects the increased food prices and decreased food consumption brought about by mitigation policies.

Resources:

- [Micronutrient Resilience and Climate Change](#)
- [Climate change and nutrition: Scaling Up Nutrition \(SUN\) Movement Communications and Advocacy Toolkit](#)
- [Measuring What the World Eats: Insights From a New Approach](#)

¹⁶ Bryan, E. et al. [Gender-sensitive, climate-smart agriculture for improved nutrition in Africa South of the Sahara](#)

¹⁷ Hasegawa et. al. [Risk of increased food insecurity under stringent global climate change mitigation policy](#)