

Food systems, climate change, and nutrition: Taking a unified approach



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Children help planting the community garden of the Municipality of Guatemala

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What we know:

Current food systems are largely failing those who rely upon them and there is a global imbalance in food availability, food costs, environmental impacts, and – ultimately – food justice. The broader topic of food systems has been gaining greater attention in recent years, which is important, but framing the learning from this renewed focus into practical steps remains a challenge.

What this adds:

This article consolidates some of the recent food systems learnings, highlighting critical insights and areas of focus that can be taken forwards. Ultimately, nutrition, food systems, and climate change are interconnected and efforts to improve any one of these entities relies upon the others.

The intricate relationships between food systems, climate change, and nutrition have become increasingly evident. These interconnected challenges present a daunting task but also an unparalleled opportunity for collaborative action. Despite the challenges, there are still some cards left to play. Evidence does exist, proven strategies can be put into place, and innovations are being ushered in on areas where we currently fall short. Yet, as ever, although we may have the cards in our hand, discerning which ones have value – and how to play them – can be overwhelming. By drawing from the insights of recent publications (ENN, 2024; FAO, 2023) and webinars (ANH Academy, 2024a; UN Nutrition, 2024) we can reorient ourselves among all the noise. There is a path forward that leverages existing knowledge, fosters partnerships, and drives impactful change.

This article seeks to inspire collective action and to highlight practical steps that can be taken immediately to address these critical issues.

Understanding the interconnections

Food systems significantly influence nutritional outcomes by determining the accessibility and quality of foods available. Food security and healthy diets are crucial for maintaining optimal nutritional status as they ensure consistent access to sufficient, safe, and nutritious food that meets dietary needs for an active and healthy life. A lack of food security can lead to malnutrition, while

an unhealthy diet can contribute to nutrient deficiencies and chronic diseases – both of which impair physical and cognitive development and overall well-being. The diets of mothers, infants, and young children are particularly vulnerable to disruptions in food systems. These groups often have both increased nutrient needs and less agency over what they consume, which is constrained by gender inequality and sociocultural norms.

Concurrently, food systems contribute substantially to environmental degradation, exacerbating climate change, which in turn heightens the risk of malnutrition (figure 1). Agricultural activities, including deforestation for crop and livestock production, contribute to habitat loss and biodiversity decline. The use of synthetic fertilisers and pesticides leads to soil degradation and water contamination, further stressing ecosystems. Additionally, the extensive water use required for irrigation depletes freshwater resources, while food transportation and processing add to the carbon footprint. Livestock farming is particularly impactful, producing large quantities of methane, a potent greenhouse gas. Together, these processes release about one-third of the world's greenhouse gases and contribute decisively to global warming, altering weather patterns and intensifying the effects of climate change.

At the same time, climate change negatively affects food systems by altering rain patterns and thus reducing soil fertility, crop yields, and nutrient composition, leading to a reduction in macro- and micro-nutrients in the global food sup-

ply. These changes are compounded by indirect impacts, such as increased pests, and contribute to increased spoilage and food safety hazards. Climate change can also disrupt food supply chains and transportation, increasing food price volatility and reducing food accessibility.

It is the poorest people in all societies, and those living in low- and middle-income countries, who are likely to suffer the most from exposure to climate shocks, to unsustainable food systems, and to the livelihood threats posed by ill health and poor nutrition (FAO, 2023). And it is often these populations that are most exposed to climate shocks and disrupted food systems who are also most vulnerable to malnutrition.

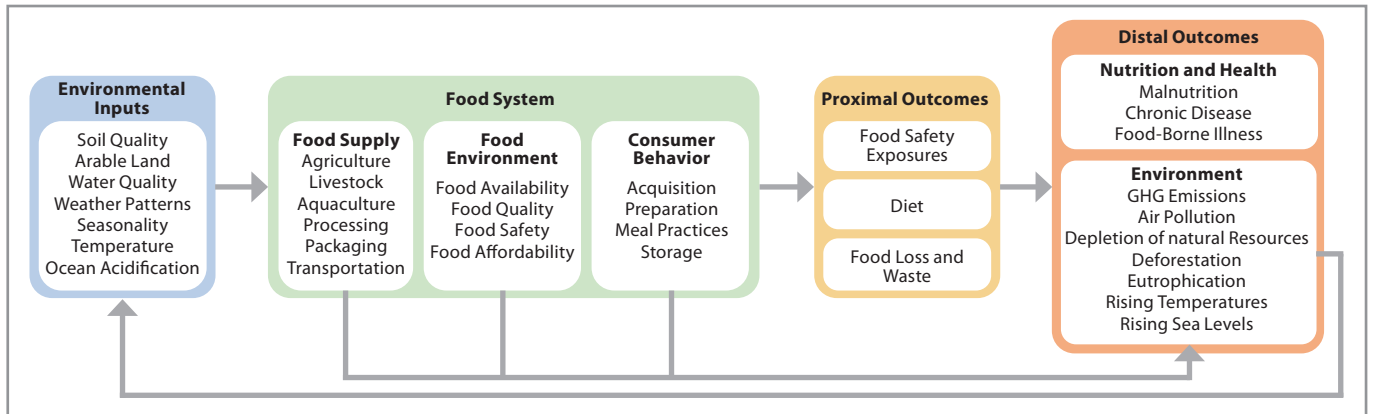
Four immediate steps for collective action

In a recent literature review including 135 peer-reviewed articles and reports, ENN examined how the intersections of food systems, climate, and nutrition have evolved (ENN, 2024). We identified key topics that have emerged or remained neglected since the first UN Food Systems Summit in 2021. Key emerging topics include an increasing focus on 'all forms of malnutrition' and the growing linkages across urban, peri-urban, and rural areas. Infants, women, and children continue to be disproportionately affected by malnutrition, the negative effects of climate change, and weaknesses in current food systems. At the same time, there is greater recognition of the co-benefits of more systematic, multisectoral, and longer-term action that integrates climate and nutrition considerations into food systems policies and programmes. Two areas were singled out as neglected but of critical importance: i) how sustainable food systems can be leveraged to prevent malnutrition; and ii) establishing sustainable food systems in conflict-affected settings.

My reflection from leading this review is that, while work on generating evidence continues, we can now boldly move forward as we already have enough learning that can be immediately used to collectively gain momentum. Here are four things we can all start applying in our work today:

Future-proof solutions

Policies and programmes should not only respond to current drivers but also to increasing

Figure 1 Food systems and the environment for nutrition

Source: Fanzo et al, 2021

challenges such as rapid urbanisation and the rising burden of obesity. Long-term planning should be embedded within current initiatives to ensure sustainability. For example, using climate forecasting to target nutrition interventions to at-risk populations can help address both immediate and future nutritional needs. Climate scientists can share relevant climate information, such as weather forecasts and climate variability projections, with health and nutrition practitioners. By delivering this information in a simple manner, the nutritional needs of communities adapting to a changing climate can be addressed through better targeting and management of climate-impacted infectious diseases that can lead to malnutrition. Health ministries can also use climate information to improve planning, surveillance, and preparedness to protect nutrition and public health by enhancing resources and infrastructure, helping communities adapt better to both short-term and long-term climate effects.

Boost climate-nutrition collaboration

There is a clear link between climate policies and nutrition outcomes. Collaborative efforts can help develop co-benefits between environmental and nutritional goals. There needs to be increased representation of nutrition priorities and needs within climate dialogues so that climate action has a positive impact on the nutritional status of the world's population. In order for this to happen, we need to both demand a seat at the table and be welcomed. Similarly, working closely together across food systems, climate, and nutrition will help us ensure that co-benefits between environmental outcomes and diets/nutrition are not left to chance. There is ever-increasing guidance such as the Centre for Food Policy's "45 actions to orient food systems towards environmental sustainability" (Caleffi et al, 2023), which also examines co-benefits with nutrition. We need to invest in systematic and intentional efforts from the outset.

Don't forget conflict-affected and fragile settings

It is likely that in years to come that there will be more fragile settings, given the impact of climate change, global economic pressures, and conflicts at scale. Establishing sustainable food systems in conflict-affected areas is often overlooked. Yet it is exactly the populations in these areas who are most in need of sustainable nutrition and food security, economic opportunities, and mitigation of climate impact. A holistic

approach that includes the "missing middle" of the food system – beyond mere agricultural production – is essential. This means supporting the entire food system, from production through to consumption, and ensuring knowledge sharing across programmes to build resilient food systems in these fragile contexts. Often, this may be most viable through smaller-scale, contextually based practices, involving communities themselves (and women in particular) in their design and implementation. Building an understanding of how humanitarian assistance impacts local food systems and communities and how it can be more effective in strengthening these systems through longer-term funding is also key.

Document and share success stories

Something that came up repeatedly as we did our literature review is that we need more stories of how positive change has happened. We need to know more about what the practical doable actions are for increasing integration, navigating trade-offs, and building co-benefits. We can all do more to ensure a greater representation of low- and middle-income contexts in the learning shared. Understanding how globally focused theories and practices translate into different contexts will support the establishment of national priorities and investments. Learning already exists at the country level. It is often only a matter of capturing it and improving dissemination through, for example, national or regional academic partners and via engagement with global communities of practice such as the Agriculture, Nutrition and Health Academy. The Agriculture, Nutrition and Health Academy comprises of interdisciplinary researchers, practitioners, and policymakers that work on agriculture and food systems for improved nutrition and health, with over 9,000 members in over 145 countries. Peer-to-peer publications, such as Field Exchange, can also facilitate the sharing of experiential, evidence-based learning, beyond more formal journal publications.

Leveraging existing tools and partnerships

To navigate the wealth of existing knowledge, stakeholders can utilise tools such as the Climate Nutrition Evidence Data Base (Stronger Foundations for Nutrition, 2024) and the interactive Evidence and Gap Map (ANH Academy 2024b) that links climate change to food systems, nutrition, and health. Joining alliances like the Initiative on Climate and Nutrition (ATACH 2024) and the

Coalition of Action for Healthy Diets from Sustainable Food Systems for all (World Health Organization, 2024) can also provide a platform for shared narratives and coordinated action.

Moving forward together

The need for immediate and collaborative action is clear. While perfect solutions may not be available, we cannot afford to wait. By leveraging existing knowledge, fostering partnerships, and taking pragmatic steps, we can address the intertwined challenges of food systems, climate change, and nutrition. Each sector – climate, nutrition, and food systems – must recognise their roles as a part of this integrated approach, working together to create sustainable and resilient solutions. By doing so, we can ensure that food systems contribute to both environmental sustainability and improved nutrition, paving the way for a healthier and more resilient future for all.

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