Chapter 12

NUTRITION AND DIETS
Research and Action, Looking Back to Move Forward

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Key messages

- Over the past 50 years, the nature of malnutrition has shifted, with overweight and obesity growing steadily, while problems of undernutrition have declined, albeit slowly. Every country is now facing multiple burdens of malnutrition, often within the same communities, households, and even individuals.
- Research has evolved in its contribution and response to changing trends in nutrition policy and development; the focus has shifted from multisectoral planning to the relative isolation of nutrition from other sectors, and then back to a greater emphasis on nutrition as a key driver and key outcome of development.
- Research has played a critical role in providing evidence of what works, how, and at what cost for improving nutrition through agriculture, social protection, education, and women's empowerment programs and policies.
- Countries are now increasingly demanding knowledge and insights on *how* to drive progress in nutrition policy and programming, and especially on how to leverage food systems to achieve sustainable healthy diets, with a sharper focus on political economy and equity.

Looking to the future, research on nutrition policy and programming should aim to:

- **Continue building the evidence base** needed to facilitate food systems transformation, including developing evaluation tools and methods to capture systemwide effects of interventions and refining modeling tools and techniques to capture diet and nutrition outcomes more accurately.
- **Strengthen the understanding of how food environment interventions affect diet and nutrition outcomes**; this includes research on how best to describe and analyze complex food environments and identify which interventions work best, in which contexts, and at what cost.
- **Investigate the potential role and benefit of public–private partnerships** with companies whose products and practices support healthy diets and nutrition.
- **Examine how interventions implemented by sectors such as health**, water and sanitation, social protection, education, and women's empowerment can complement and enhance the positive impacts of food systems transformation on sustainable healthy diets, nutrition, and health.
- **Invest in capacity strengthening and policy research** that generates evidence of what works and how within complex food systems, while also identifying how this evidence can be best used to drive change.

The last half-century has seen major changes in the nature of malnutrition around the world, as well as in our understanding of its manifestations and key drivers, the people most affected, and the policies and programs developed to address it. In 1975, the primary concern was undernourishment and hunger, or insufficient dietary energy (UN 1974). At the beginning of the 21st century, the focus started to shift to the "double burden of malnutrition," with overweight and obesity joining undernutrition and micronutrient deficiencies to become a major public health challenge around the world (Gillespie and Haddad 2001). Over the decades, evidence has accumulated on the links between malnutrition and a range of noncommunicable diseases (NCDs) and on the pivotal importance of healthy diets and nutritional well-being in driving human and economic development.

In this chapter, we review the evolution of nutrition in both policy and programming before looking to the future. Aligning with IFPRI's mandate,

we pay particular attention to agriculture, food systems, and multisectoral approaches to addressing malnutrition.

The chapter comprises three sections. In the first, we examine the last 50 years of policy relevant to nutrition, highlighting key events and priorities. In the second, we focus on how nutrition has been incorporated into agricultural programming, and in the third, we discuss future directions for nutrition policy, programming, and research as the field continues to evolve. Throughout we highlight IFPRI's contributions since its founding, and potential future research contributions.

Evolution of nutrition-relevant policy and research

The global food crisis of the early 1970s led the first-ever World Food Conference to focus on access to food in addition to aggregate food production. Hosted by the Food and Agriculture Organization of the United Nations in 1974, the conference concluded with a proclamation that has been reiterated thousands of times since: "Every man, woman, and child has the inalienable right to be free from hunger and malnutrition."[1] That same year, Donald McLaren's *The Great Protein Fiasco* refuted the long-standing belief that protein deficiency was the main cause of malnutrition (McLaren 1974). This publication followed work in India showing that if people's diets were adequate in calories, their protein intake would also likely be adequate (Sukhatme 1970). Solutions to malnutrition began to be sought in the wider social and economic arena, well beyond technological nutrient fixes.

In 1976, the World Bank published a groundbreaking study showing that economic growth alone was not the solution to malnutrition (Reutlinger and Selowsky 1976), a finding later amplified by Amartya Sen's seminal work on entitlements that emphasized the links between inequality, hunger, and famine: "Starvation is the characteristic of some people not having enough food to eat, not the characteristic of there being not enough food to eat" (Sen 1983).

A growing appreciation for the wider drivers of undernutrition paved the way for nutrition planning bodies to be established in 26 countries around the world. By the 1980s, however, most had ceased operations; although addressing malnutrition requires a multisectoral response, such actions cannot be elaborately choreographed by any singular entity, especially when its funding and political clout is inadequate (Field 1987).

1 The World Food Conference was the key event that precipitated the creation of IFPRI in 1975.

The false promise of nutrition planning led to a period of "nutritional isolationism" in the 1990s, during which nutritionists focused largely on two interventions that needed little involvement from other sectors: micronutrient supplementation and breastfeeding (Gillespie et al. 2003). This relative isolationism occurred despite UNICEF's publication of a groundbreaking conceptual framework on the determinants of malnutrition. Showing the importance of underlying and structural drivers, this framework remains influential to this day (UNICEF 1990). In 1996, the World Food Summit in Rome concluded with a commitment to "implement policies aimed at eradicating poverty and inequality and improving physical and economic access by all, at all times, to sufficient, *nutritionally adequate* and safe food and its effective utilization" (FAO 1996). Quality of diets—not just total calories—was being incorporated into food security definitions and goals.

As the new millennium dawned, global nutrition governance was considered fragmented and dysfunctional (Morris et al. 2008), and other challenges captured donor funding and political attention. The accelerating AIDS epidemic in Africa was one such challenge that had major implications for food and nutrition security. IFPRI responded in 2001 by co-founding the Regional Network on AIDS, Livelihoods, and Food Security (RENEWAL) with the International Service for National Agricultural Research. RENEWAL combined locally prioritized research with capacity strengthening and policy communications in a pioneering "network of networks" approach in eastern and southern Africa. Evidence on the bidirectional links between HIV and food and nutrition security was used to adapt agricultural strategies and actions, as well as to strengthen HIV policies aimed at prevention, treatment, care, and mitigation.[2]

Propelled by a confluence of factors, including the food price spikes of 2007/08, nutrition started to garner attention within the development agenda. In 2008, the first *Lancet* Maternal and Child Nutrition Series highlighted the critical importance of nutrition in the first 1,000 days of a child's life—from conception to the second birthday—and recommended a package of nutrition-specific interventions to support lasting benefits throughout life. The same year, the influential Copenhagen Consensus concluded that nutrition interventions were among the most cost-effective in development (Copenhagen Consensus Center 2008). Global Burden of Disease assessments

2 RENEWAL's influence was acknowledged in the 2006 UN Declaration on AIDS that "all people at all times [to] have access to sufficient, safe, and nutritious food…as part of a comprehensive response to HIV/AIDS."

at this time also elevated the importance placed by the public health and biomedical communities on diets and nutrition (IHME 2025).

Harnessing this growing momentum, the Scaling Up Nutrition (SUN) Movement was launched in 2010. This multicountry network of governments, supported by global actors, generated political momentum and increased discourse on nutrition, albeit sidestepping challenges related to commercial drivers of malnutrition.

Research on governance and the political economy of nutrition picked up in the 2010s, with studies drawing on insights and frameworks from the broader literature on development, political science, and health policy. In 2012, IFPRI launched the multipartner Transform Nutrition consortium, partly to address the question of how enabling environments for nutrition could be cultivated to use existing political and economic resources more effectively. The 2013 *Lancet* Maternal and Child Nutrition series featured IFPRI-led research on nutrition-sensitive programs and the politics of reducing malnutrition (Gillespie et al. 2013). The latter article highlighted the pivotal importance of well-communicated evidence, strong governance, capacity, and financing for generating political momentum and transforming it into on-the-ground impact.

The 2010s also saw the launch of CGIAR's Agriculture for Nutrition and Health (A4NH) program, led by IFPRI. Working with partners in high-burden countries, A4NH investigated the connections between gender-sensitive agriculture, nutrition, and health and their program and policy implications (A4NH 2021). The Leveraging Agriculture for Nutrition in South Asia (LANSA) consortium (2012–2018) worked to change public and political discourse on nutrition-sensitive agriculture in the region (A4NH 2018). In India, the Partnerships and Opportunities to Strengthen and Harmonize Actions for Nutrition in India (POSHAN) project was launched in 2011 to generate, synthesize, and mobilize diverse types of nutrition data and evidence to support national and state-level policy decisions (IFPRI, n.d.-a).

By the mid-2010s, many countries were expressing a demand for knowledge and insights on *how* to drive progress in nutrition policy and programming; evidence of *what* to do was not enough. This demand provided the impetus for IFPRI's Stories of Change in Nutrition (SoC) initiative, launched in 2015 (IFPRI, n.d.-b). Working directly with local researchers and policymakers, SoC focused on countries that had exceeded expectations in reducing child undernutrition, and by 2021, it had published success stories from 23 countries and 4 Indian states (Gillespie et al. 2016). SoC identified seven crucial components for progress—commitment, coherence, accountability, data, capacity, finance, and leadership—and showed how stories can *inspire* as well as

inform action. Building on emerging lessons from these initiatives, Transform Nutrition West Africa (TNWA) was launched in 2017 to support decisions and actions to improve maternal and child nutrition through an inclusive process of knowledge generation and mobilization (IFPRI, n.d.-c).

These initiatives—Transform Nutrition, A4NH, LANSA, POSHAN, SoC, and TNWA—were all grounded in a collaborative ethic that bridged international and transdisciplinary boundaries to maximize the relevance and use of global and local knowledge. Going beyond research on policy, they actively engaged partners in the policy process. The initiatives also incorporated capacity and leadership development activities: in partnership with the Institute of Development Studies (IDS), a series of summer schools for policymakers and practitioners engaged several hundred students from across the world (Transform Nutrition 2017). Regional adaptations were later launched in South Asia and West Africa.

As the 2010s progressed, recognition grew of the coexistence of multiple forms of malnutrition—including undernutrition, micronutrient deficiencies, and overweight and obesity—that occur within the same countries, communities, households, and even individuals. The global magnitude of this challenge was documented by the 2020 *Lancet* series on the Double Burden of Malnutrition (Popkin et al. 2020), which also introduced the concept of double-duty actions, defined as interventions, programs, and policies that simultaneously prevent or reduce the risk of undernutrition and of overweight, obesity, or diet-related NCDs (Ruel and Hawkes 2019). The need for double-duty actions was driven by evidence showing that some social protection programs that provided food or cash to poor households in highly food insecure areas had done harm by inadvertently exacerbating obesity in women (Leroy et al. 2013, 2019).

The coexistence of multiple forms of malnutrition also demands research and action to address the commercial determinants of health. As food systems have become increasingly imbalanced and misaligned with the needs of people and planet, a select few transnational corporations have dominated global markets with highly profitable but unhealthy, ultra-processed food (UPF) and beverage products. Between 1962 and 2021, the market capitalization of the UPF sector increased from around US$80 billion to more than $1.6 trillion in real terms (Wood et al. 2023). These products—and the commercial and political practices of the companies that sell them—are increasingly associated with a range of harms, including undernutrition, obesity and diet-related NCDs, and environmental degradation (Lane et al. 2024; Monteiro 2009; Van Tulleken 2023).

As the 2019 *Lancet* Commission on the Global Syndemic of Obesity, Undernutrition, and Climate Change highlighted, concerns were growing around not only the hyper-concentration of market power in the food system, but also the way in which companies and their associations sought to influence policy to prevent regulations promoting nutrition and health (Swinburn et al. 2019). This tension was heightened in the lead-up to the 2021 United Nations Food Systems Summit, where opaque governance led many organizations to boycott the Summit (Nisbett et al. 2021). Conflicts of interest emerged as a major research focus (Freudenberg et al. 2021; Gillespie 2023).

Amid the disproportionate effects of the COVID-19 pandemic and unequal access to vaccines, the early 2020s have seen a sharper focus on equity (Alonso et al. 2023; Gillespie 2020). The *2020 Global Nutrition Report*'s core theme of nutrition equity was informed by A4NH's conceptual work, developed from wider connections with health professionals (Development Initiatives 2020; Harris et al. 2021). This work also aligned with a resurgent agenda to decolonize research and development, fueled in part by the Black Lives Matter movement. IFPRI and IDS researchers reflected on what could be learned from a reassessment of the history of international nutrition (Nelson et al. 2021). A greater appreciation of historically configured power asymmetries—including the perspectives of those with limited power in the global arena—is key to avoiding repeated cycles of top-down "quick fixes" and to driving sustainable progress.

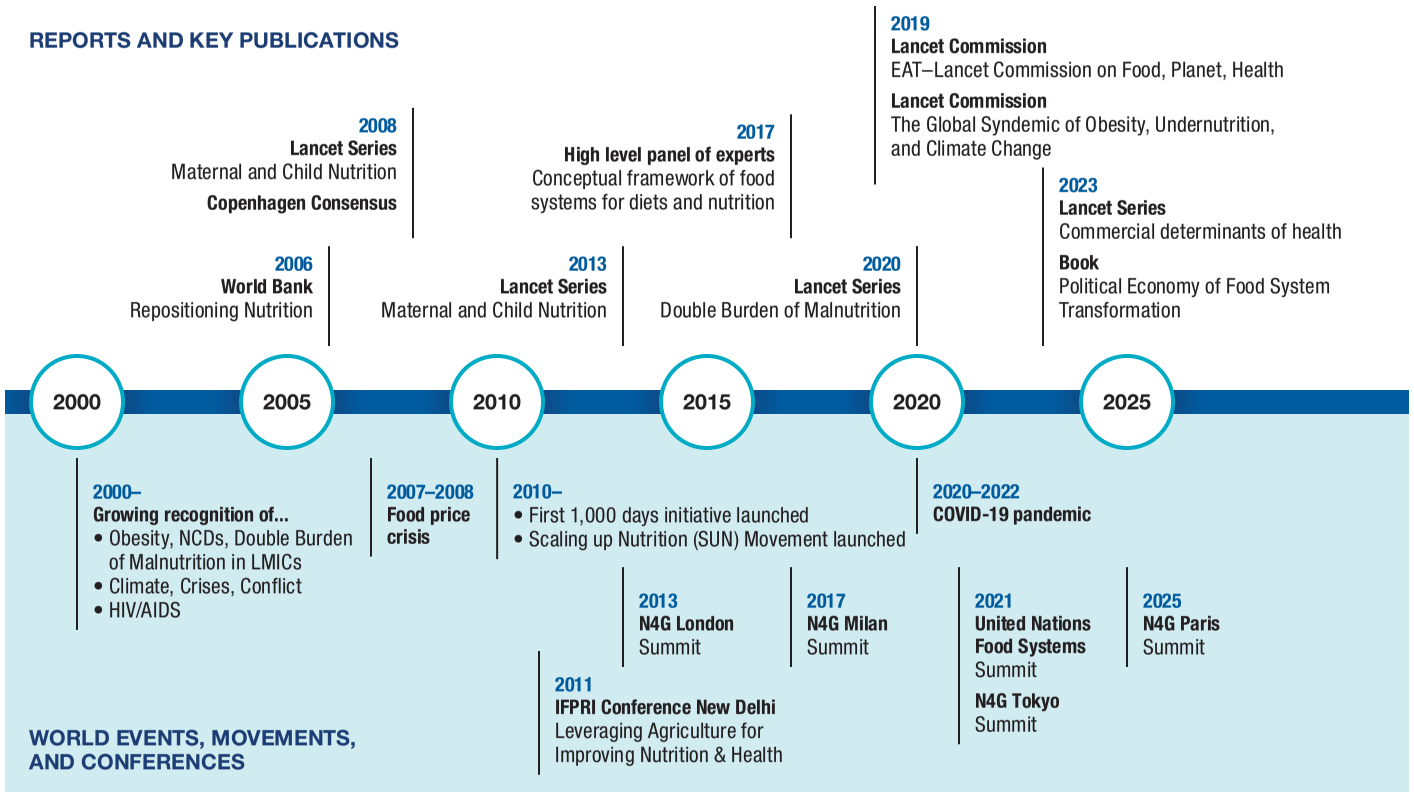
In Figure 12.1, we provide a timeline showing key reports, publications, world events, movements and conferences—as well as shifts in program and policy research focus.[3]

Nutrition-sensitive agriculture: Refocusing the goal

Since the 1980s, research has focused extensively on the linkages between agriculture and nutrition, with significant contributions from IFPRI (Pinstrup-Andersen et al. 1984). Early work demonstrated that agriculture affected nutrition through a variety of pathways, such as by increasing employment and farmer's incomes and by lowering food prices. Agriculture could also negatively affect nutrition by increasing workers' nutrient and energy

3 We recognize that perceptions of key events and trends will differ by organization and individual. Our shared perspective derives from our roles as policy and program researchers within IFPRI during much of this period.

FIGURE 12.1 Timeline



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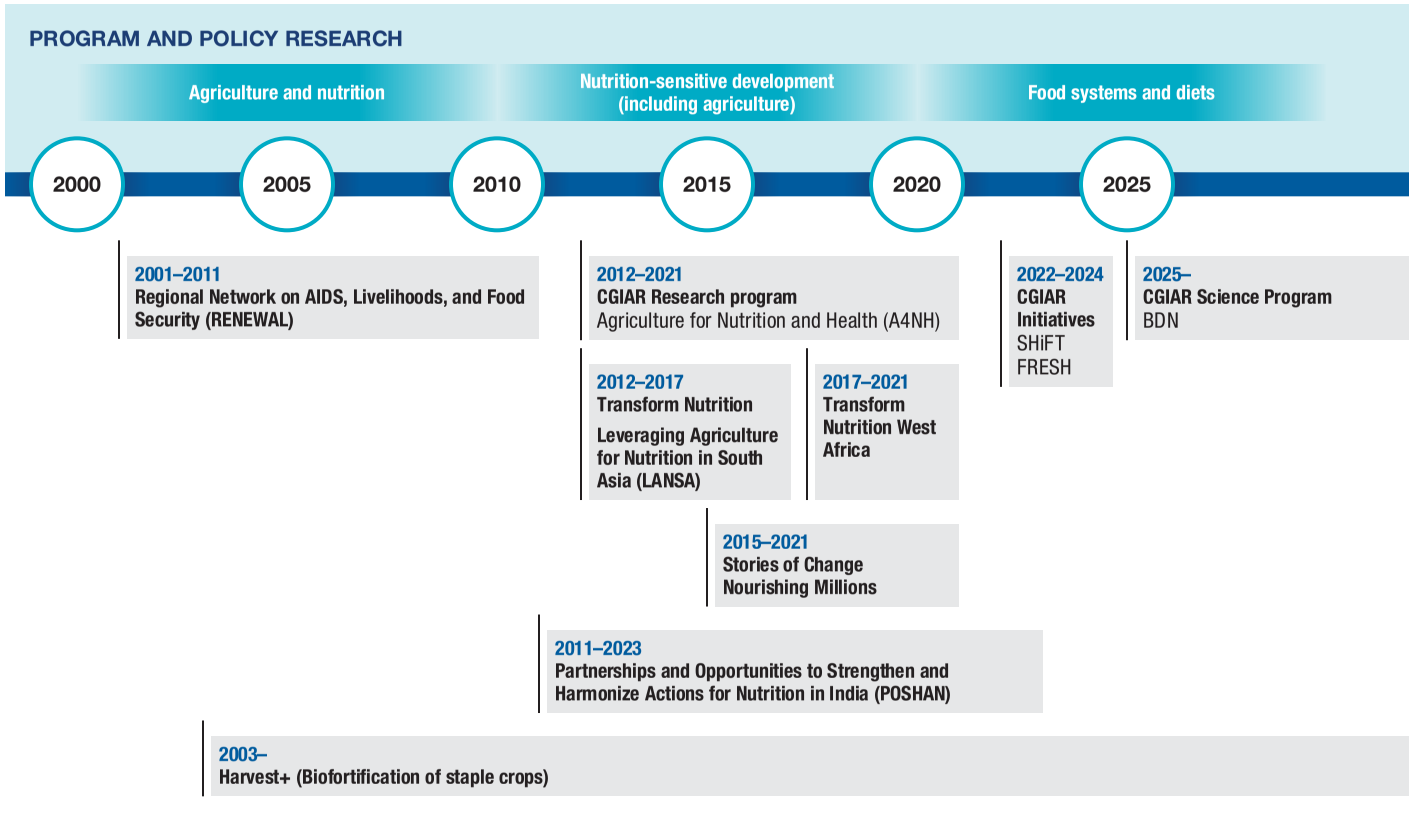

requirements or by reducing women's time available for childcare (Pinstrup-Andersen et al. 1984). In the 1990s, IFPRI's research on the impacts of agricultural commercialization found that income growth was insufficient to improve child nutritional status. Researchers hypothesized that this result was due to the pernicious effects of poor living and water and sanitation conditions and low empowerment of women (von Braun and Kennedy 1994). The pioneering Breeding for Nutrition initiative, later named HarvestPlus, was launched in the late 1990s under the leadership of Howdy Bouis (Bouis and Welch 2010). This innovation successfully delivered staple crops with higher concentrations of bioavailable micronutrients, thus improving micronutrient intake and status among nutritionally vulnerable women and young children (CAST 2020).

The early 21st century saw renewed efforts to better understand the role of agriculture in improving nutrition. Several literature reviews on the linkages between agriculture interventions and nutrition showed beneficial impacts on poverty, production of targeted commodities, and household food security, but no meaningful impacts on child nutrition outcomes or complementary feeding practices.[4] In the 2013 *Lancet* Maternal and Child Nutrition series, IFPRI-led research on nutrition-sensitive programming suggested ways to reshape agriculture programs to enhance their nutrition impact (Ruel and Alderman 2013). Introducing the term "nutrition-sensitive agriculture" (NSA), the researchers highlighted the need for agriculture programs to incorporate specific nutrition goals and interventions, target mother and child dyads during the first 1,000 days of the child's life, and address key underlying determinants of malnutrition. The latter include poverty; food insecurity; inadequate diets; poor caregiving knowledge, practices, and empowerment; and limited access to basic social, health, water and sanitation, and education services.

Increased clarity on the objectives of NSA led to new efforts to develop detailed guidelines and recommendations to strengthen the design, targeting, implementation, and evaluation of NSA programs. Donors, program implementers, and researchers collaborated to carefully design, implement, and rigorously evaluate a new wave of NSA programs (see Box 12.1 for an example of collaboration between IFPRI and the World Food Programme). This evidence showed the new programs had more consistently positive impacts than earlier programs on household food security, consumption of targeted nutritious crops and animal products, and household, maternal, and child dietary diversity

4 Studies include Berti (2004); Leroy and Frongillo (2007); Leroy et al. (2008); Masset et al. (2012); Ruel (2001); Ruel and Alderman (2013); Webb-Girard et al.(2012); and World Bank (2007).

BOX 12.1 Linking nutrition research and implementation: An example of IFPRI-WFP partnership

In 2017, IFPRI and the World Food Programme (WFP) collaborated on the development of guidelines to enhance nutrition-sensitive programming, marking a significant milestone in WFP's global efforts to end malnutrition (WFP 2016). IFPRI and WFP worked together to support country offices in translating these strategies into actionable plans, and selected Sri Lanka as a focal country for this effort.

From 2017 to 2022, WFP's Food for Assets (FFA) program in Sri Lanka worked to address climate-related challenges and improve the resilience of rural agricultural households. Key interventions included the rehabilitation of community water reservoirs and livelihood diversification. Nutrition objectives aimed to diversify the diets of targeted households (including food-insecure households, those with children 6–23 months of age, and those with pregnant or breastfeeding women) and prioritize nutrition-relevant assets, such as backyard and commercial gardening and poultry-rearing along with the integration of nutrition-related social behavior change communication. In 2018, program impact pathways (PIPs), developed through multiple rounds of consultation, helped WFP teams identify opportunities to integrate nutrition objectives and actions into wider program design. The PIPs also provided a basis for subsequent evaluation of program contributions to nutrition outcomes.

Early findings highlighted the importance of integrating nutrition into community asset creation programs to improve diet- and nutrition-related behaviors. Through close collaboration with national research institutes, the study also sought to build local capacity to assess and monitor the impact of nutrition-sensitive programming.

Building on lessons from this work, WFP and IFPRI expanded their collaboration to address urban nutrition challenges in Bangladesh, the Philippines, and Sri Lanka in 2023 and 2024. Opportunities to deepen these efforts include joint advocacy with national governments to support investments in nutrition-relevant implementation research. Lessons from Sri Lanka could bolster advocacy for greater government investment in generating evidence on nutrition-sensitive social protection, agriculture, and school nutrition, as well as other sectoral action.

(Margolies et al. 2022; Ruel et al. 2018; Sharma et al. 2021). Some studies also reported impacts on child health outcomes (such as reductions in common morbidity symptoms) and on maternal health and well-being, nutrition knowledge, and empowerment. Larger benefits were observed in programs that incorporated high-quality health and nutrition social behavior change communication and well-designed women's empowerment sensitization activities. However, impacts on child anthropometric indicators (such as stunting, wasting, and underweight) and micronutrient status were observed only in programs that also included water, sanitation, and hygiene (WASH) interventions to prevent or reduce infections, and/or distributed micronutrient supplements to complement low-quality diets commonly found in areas with limited availability or access to nutrient-rich foods (Ruel et al. 2018; Sharma et al. 2021).

This stronger body of evidence provided key insights into the strengths and limitations of NSA to improve nutrition. It showed that NSA programs, as generally designed, are well suited to addressing some of the underlying determinants of malnutrition (such as household food security, diversity in food consumption, diet quality, and women's empowerment) but are not sufficient to achieve child growth impacts. Based on this evidence, researchers recommended focusing on diets, rather than child anthropometry, as the main achievable goal of NSA programs (Leroy et al. 2020).

The well-documented operational challenges of implementing high-quality multisectoral and multifaceted NSA programs present an additional consideration for shifting to diets as a key outcome of NSA (Leroy et al. 2008; Leroy and Frongillo 2007; Ruel and Alderman 2013; Webb-Girard et al. 2012). Box 12.2 highlights IFPRI's engagement with different sectors in research and action to improve all nutrition outcomes. Achieving impacts on child anthropometry and micronutrient status by adding WASH and micronutrient supplement distribution to all NSA programs would be unrealistic, as it could render programs overly complex and challenging to implement. A related operational question is whether program components provided by different sectors (such as health, water and sanitation, agriculture, and women's empowerment) should be integrated or co-located (Di Prima et al. 2022; Ruel et al. 2018; Sharma et al. 2021). The World Bank's proposed approach—to plan multisectorally and implement sectorally—has not been tested (World Bank 2013), though it holds potential for reducing the complexity, implementation challenges, and cost of NSA programs while also ensuring synergies in impacts. Shifting the focus of NSA programs to improve household and individual food security and diet outcomes, however, is a more realistic and operationally achievable goal.

BOX 12.2 Evaluating nutrition-sensitive multisectoral programs: What works, how, and at what cost

IFPRI's mission is to provide research-based policy solutions that sustainably reduce poverty and end hunger and malnutrition. Ending malnutrition will require not only achieving improvements in food security and diets but also improving—and ultimately preventing—suboptimal nutrition outcomes such as micronutrient deficiencies, wasting, stunting, and overweight and obesity. Multisectoral solutions are critical, but these are challenging to evaluate. IFPRI collaborates with partners to co-design and evaluate multisectoral programs, recognizing the need for rigorous evidence on which programs work, how they function, and their relative cost-effectiveness. The Institute's approach to comprehensive evaluation helps identify not only the impact of these programs, but also barriers, catalysts, and in some cases, cost-effectiveness.

IFPRI's pioneering work in evaluating social protection programs is highlighted in Chapter 11. The Institute's comprehensive evaluations of large-scale programs such as the United States Agency for International Development's Preventing Malnutrition in Children Under 2 Approach (PM2A) and the Alive & Thrive (A&T) Initiative have provided critical evidence about how food assistance programs and behavior change communication (BCC) approaches can be designed to improve diets, nutrition, and well-being (Alive & Thrive 2025; FANTA 2025).

Findings from the PM2A studies in Burundi and Guatemala, for example, provided critical evidence on how the prevention of stunting, wasting, and anemia and improvement of child development outcomes are affected by the timing, duration, and composition of food assistance packages, coupled with health systems strengthening and BCC (Leroy et al. 2016b, 2018, 2021; Olney et al. 2018, 2019). Accompanying studies on cost-effectiveness also highlighted how program timing, duration, and transfer composition are critical to achieving beneficial nutrition outcomes (Heckert et al. 2020).

The A&T Initiative's impact evaluations highlighted the importance of multichannel interventions for increasing exclusive breastfeeding in Bangladesh and Viet Nam, as well as improving child development outcomes in Bangladesh (Frongillo et al. 2017; Menon et al. 2016; Nguyen et al. 2016). Subsequent studies led by IFPRI through the A&T Initiative include research on the impact of strengthening nutrition services during antenatal care to improve antenatal visit attendance and maternal nutrition practices in Burkina Faso (Kim et al. 2023) and the use of school-based programs to improve adolescent nutrition in Ethiopia. IFPRI has also contributed to understanding the impact of school meal programs on nutritional status and other outcomes (Adelman et al. 2019; Chakrabarti et al. 2021; Kazianga et al. 2014).

Future directions

Food systems

In recent years, there has been growing attention to the need to transform food systems to improve diets, planetary health, and livelihoods (UN 2023). Such a transformation must address barriers to improving the healthiness of diets by increasing the desirability, affordability, accessibility, and availability of nutritious foods—a challenge that will also require tackling food environments replete with unhealthy foods (IFPRI 2024). While the potential of transformation is promising, the process is complex and unpredictable, beset by competing demands and the need to carefully consider trade-offs around nutrition and health, the environment, gender equity, and economic growth (IFPRI 2024). Eating a more planet-friendly diet that includes significantly less animal-source food (ASF), for instance, can lead to substantial deficits in micronutrient adequacy (Kazianaga et al. 2014; Kim et al. 2023), especially for the most nutritionally vulnerable populations, such as women of reproductive age, adolescents, and young children in low- and middle-income countries (LMICs) (Beal 2024; Leonard et al. 2024).

Despite the growing focus on food systems transformation, evidence is needed to demonstrate that systemwide interventions are feasible and effective means of improving diets and nutrition. The work of designing, implementing, and evaluating food systems interventions presents several methodological challenges (Neufeld et al. 2024), including the complexity of designing approaches to address multiple forms of malnutrition and simultaneously changing various food system components in a given geographical space. The interconnectivity of different food system components presents another challenge, as changes at any level could have both positive and negative effects. These competing effects can have wide-ranging implications for diets, income, and other relevant outcomes, as well as the broader interests of public and private sector stakeholders.

Through the new CGIAR Science Programs, including the Better Diets and Nutrition (BDN) Science Program, IFPRI will continue building the evidence needed to improve diets through food systems transformation. For example, the CGIAR Research Initiative on Fruit and Vegetables for Sustainable Healthy Diets has co-designed end-to-end approaches to increase the intake of fruits and vegetables in Sri Lanka and Tanzania; the effectiveness of these approaches for increasing dietary intake and vegetable production is currently being evaluated (Bliznashka et al. 2023). The BDN Science Program will continue these efforts, expanding them to include aquatic foods

and ASFs. These approaches aim to simultaneously improve the desirability, affordability, accessibility, and availability of healthy foods.

A significant challenge, however, involves the need to isolate the impact of intervention outcomes from external factors and document "general equilibrium" effects that extend throughout the system. Traditional methods, in which participants are randomly assigned to a treatment or a control group, can offer insights into what is possible across a set of interventions, but these are unlikely to capture systemwide effects. Alternative evaluation methods thus need further development (Neufeld et al. 2024). In addition, modeling techniques to predict the systemwide impacts of policy changes need to be refined to more accurately capture nutrition outcomes, such as the healthiness of diets and population-level prevalence of micronutrient deficiencies and overweight and obesity.

Food environments

The last 15 years have seen growing attention to food environments—the places where people interact with and access food as part of the wider food system (Turner et al. 2018). Food environments are undergoing dramatic changes in LMICs, which are giving rise to several challenges, including the ubiquity and extensive marketing of UPFs; the limited accessibility and affordability of nutritious fresh foods such as fruits, vegetables, and ASF, and the need to ensure the safety of these foods; and the growing importance of the digital food environment. Within this digital environment, primarily unhealthy foods are being marketed and advertised through social media, a new avenue that is difficult to monitor or regulate (Fretes et al. 2024).

Evidence on the effectiveness of food environment interventions is limited. Mandatory front-of-package labeling and taxes on select unhealthy foods and beverages have been shown to reduce consumption of unhealthy products, but more evidence is needed on the impacts on total diet or nutrition outcomes.[5] The United Kingdom's 5 A Day campaign, which promotes the daily consumption of five portions of fruits and vegetables, was shown to increase consumption of these food groups by around half a portion per day (Castiglione and Mazzocchi 2019). In collaboration with other CGIAR Centers and in-country partners, IFPRI is engaged in research on food environments in LMICs. Future work will focus on how best to describe, qualify, and analyze

5 On front-of package labeling, see Beal (2024); Bliznashka et al. (2023); Leonard et al. (2024); and Neufeld et al. (2024). On taxes, see Andreyeva et al. (2022); Caro et al. (2018); Cawley et al. (2019); Colchero et al. (2017); and Taillie et al. (2017).

complex food environments and to identify which food environment interventions work best, in which contexts, and at what cost. Interventions being considered for evaluation include policies and actions to improve the availability, desirability, and affordability of healthy foods, including perishable fruits and vegetables and ASFs; information and behavior change campaigns to promote sustainable healthy foods and diets; retail-level interventions such as product placement; restrictions on the marketing of unhealthy foods to vulnerable groups, such as children; and policies for regulation of the digital food environment, which is currently limited by the absence of valid metrics for monitoring (Fretes et al. 2024).

Private sector

The private sector and public–private partnerships (PPPs) are essential to achieve the scalable and sustainable changes needed in food systems to address barriers to consumption of healthy diets. However, guardrails must be put in place to ensure that contributions from the private sector are positive (Kraak et al. 2012). Doing so must include a closer examination of the role of multistakeholder initiatives and platforms intended to support food systems transformation. Multinational corporations with a focus on food, agriculture, and health have tremendous market, financial, and, increasingly, political power in global food systems (van den Akker et al. 2024). The well-established negative influence of many products and practices—including the marketing of breastmilk substitutes (Anttila-Hughes et al. 2018; Rollins et al. 2023) and the saturation of food environments with heavily marketed, hyperpalatable, and unhealthy UPFs—calls for strong regulation, enhanced systems of accountability, and careful consideration for any future engagement.

Many private sector actors, including small and medium enterprises (SMEs), have the capacity, knowledge, and motivation to drive positive change, as shown by the example of large-scale food fortification (Garrett 2018). As resources continue to be constrained, PPPs that adhere to shared pro-nutrition principles are critical to achieving scalable and sustainable solutions. To garner the sustained involvement of the private sector, actions are needed to make safe, sustainable, and healthy diets profitable for actors across the food system, as well as making them affordable and desirable for consumers. This could be achieved by increasing the availability, accessibility, affordability, and desirability of perishable nutrient-rich foods: promising solutions include innovations in crop breeding, production, and postharvest processes, as well as leveraging marketing expertise from the private sector to increase the desirability of foods such as fruits and vegetables and to sustain support for fortification of staple foods.

Alternative proteins

Alternative proteins derived from plants, microorganisms, insects, and cultivated proteins are drawing greater attention due to the environmental footprint of these foods, which is considerably lower than that of ASF (Bryant 2022). Reducing production costs, increasing consumer acceptance, and understanding the nutritional effects of adding alternative proteins to diets in LMICs require additional research (Mukherji et al. n.d.). Given that micronutrient deficiencies in these regions are highly prevalent, further research is also needed to understand whether these products provide similar amounts of bioavailable micronutrients as ASF.

Beyond the focus on diets and the food system

The recent focus on food systems and food environments risks shifting attention away from sectors such as health, social protection, and education that play a critical role in improving nutrition outcomes. Improvements in food systems are essential but insufficient to lead to better nutrition outcomes, as they cannot address underlying determinants such as limited purchasing power and poor health. In addition, food systems may cease to operate in situations of conflict, natural disasters, or weather shocks. These breakdowns can lead to humanitarian crises and problems of acute malnutrition, which need to be addressed through other sectors. IFPRI will continue its work on identifying effective and affordable interventions through comprehensive evaluations of programs implemented by different sectors (Leroy et al. 2016a). These studies will pay particular attention to how to address poor-quality implementation and limited coverage, which constrain the impact of these interventions (Quisumbing et al. 2020; Warren et al. 2020). Implementation research will include a focus on equity and the empowerment of women (Njuki et al. 2023), youth, and Indigenous populations as critical actors in evolving food systems.

Overall, we need to generate evidence of what works and how, while also identifying how this evidence can be best used for positive program and policy changes. This will require new approaches to capacity sharing and policy research, as well as engagement, to ensure that the evidence being generated is demand driven and can be used to inform the global evidence base and address context-specific needs.

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