CHAPTER 1

Advancing Nutrition
Food System Policies and Actions for Healthy Diets

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Hunger, food insecurity, and unhealthy diets underpin many critical public health challenges, including all forms of malnutrition and diet-related noncommunicable diseases (NCDs). These health outcomes, in turn, have short- and long-term impacts on the well-being and productivity of human populations worldwide. A recent slowdown in progress in reducing hunger and undernutrition in low- and middle-income countries (LMICs) and a rapid increase in overweight and obesity worldwide, together with the challenges that climate change is imposing on food systems, have brought global attention to the urgent need to transform our food systems in ways that ensure sustainable healthy diets are achievable for everyone. Many countries now face a double burden of malnutrition – meaning that undernutrition and micronutrient deficiencies coexist with overweight and obesity, or diet-related NCDs, within individuals, households, and communities, and across the life course (Box 1).

Healthy diets provide the nutrients needed for an active, healthy life. They include a diversity of foods – fruits, vegetables, legumes, nuts, whole grains, and varying amounts of animal-source foods (ASFs). Healthy diets limit consumption of foods high in sugar, salt, and fat, and provide high concentrations of nutrients, fiber, and other protective elements. The foods that make up a healthy diet vary according to local food availability, cultural context, and individual preferences. Individual physiological characteristics, including age, physical activity, and conditions such as pregnancy or lactation, also determine nutrient requirements.

Today, less than half of the world's population consumes diverse diets that include enough fruits, vegetables, and other nutritious foods.[1] For many people, these nutrient-dense foods are unaffordable, not readily available, or not preferred for a variety of reasons. In LMICs, diets are rapidly evolving to include higher consumption of ultra-processed foods (UPFs), a shift that has resulted from changing livelihoods and lifestyles, as well as the increased availability and marketing of these less expensive foods. Overconsumption of ASFs also continues to grow in some regions of the world, though many vulnerable populations who could benefit from nutrient-dense ASFs cannot access or afford sufficient quantities of these foods.

Food systems are also recognized to have significant environmental and climate-related impacts. Agriculture and other food systems–related activities are estimated to contribute around one-third of global greenhouse gas emissions,[2]

BOX 1 MALNUTRITION AND DIET-RELATED NONCOMMUNICABLE DISEASES

Over the last several years, progress in addressing hunger and malnutrition has slowed as a result of compounding crises, including the COVID-19 pandemic, rising food prices, natural disasters, and ongoing conflicts around the world. Globally, the share of people facing hunger rose from 7.7 percent in 2014 to more than 9 percent in 2022, affecting between 691 and 783 million people.[a] Micronutrient deficiencies, often called "hidden hunger," affect more than half of children under five years old and two-thirds of adult women.[b] Millions of children under five remain affected by stunting (148.1 million) and wasting (45 million).[c]

At the same time, overweight and obesity and associated noncommunicable diseases (NCDs) are on the rise globally. As of 2022, 43 percent of adults were overweight, and 16 percent were living with obesity, more than double the rate 30 years ago.[d] Unhealthy diets are the leading risk factor for NCDs,[e] which are responsible for more than 73 percent of deaths globally.[f] The prevalence of diet-related NCDs, including cardiovascular disease, certain cancers, and type 2 diabetes, is increasing in many countries. Dietary improvements such as increasing fruit and vegetable intake can reduce NCD-related deaths by 20 percent.[g]

and they often negatively affect land quality, water use, and biodiversity. Thus, the environmental footprint of food production and dietary choices requires greater consideration. At the same time, climate change and natural resource degradation will impact our food supply and the nutritional content of crops, requiring greater attention to the development of agricultural technologies and infrastructure that can ensure the availability of nutritious foods necessary for healthy diets.

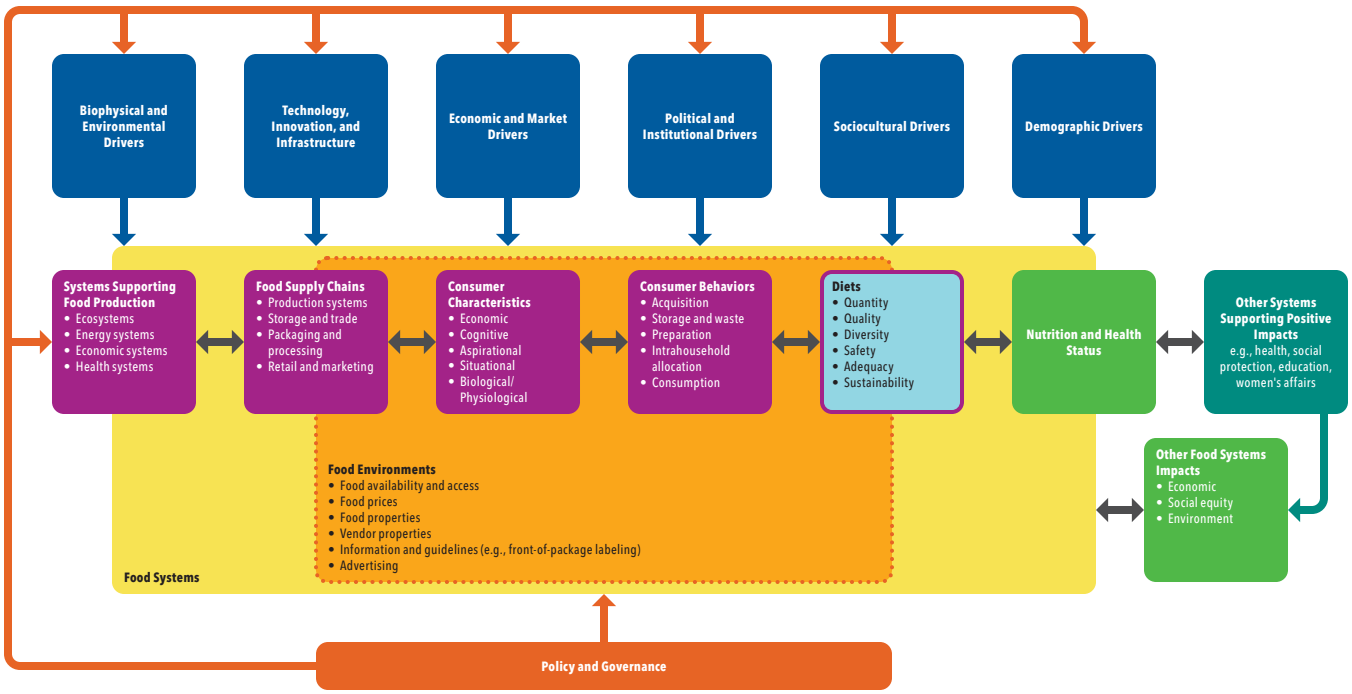
Amid these complex, interconnected challenges, the global focus on how to leverage food systems for nutrition has shifted toward sustainable healthy diets that promote well-being for both people and the planet. *Sustainable healthy diets* promote all dimensions of an individual's health and well-being, and are accessible, affordable, safe, and equitable while being culturally acceptable and causing low environmental pressure and impact.[3] Ensuring all of these characteristics is only possible if diets are considered within the wider context of the whole food system, from the farm to the consumer, and its links with numerous other sectors, from education to infrastructure.

A CONSUMER-FOCUSED FOOD SYSTEMS FRAMEWORK FOR SUSTAINABLE HEALTHY DIETS

The High Level Panel of Experts on Food Security and Nutrition[4] (HLPE), the science–policy interface of the United Nations Committee on World Food Security, has developed a food systems framework to provide a holistic, multisectoral understanding of food systems that places healthy diets as one of the key goals of food systems transformation, along with economic growth, social equity, and environmental sustainability. In an adaptation of the HLPE framework (Figure 1), we highlight the centrality of consumers, their behaviors, and their food environments, as well as food supply chains, in determining diets, and show that the quality, quantity, diversity, safety, and adequacy of diets are key drivers of nutrition and health outcomes.

By prioritizing diets as a critical entry point for tackling all forms of malnutrition and diet-related NCDs, this framework allows us to consider the wide range of possible policies and actions to meet realistic, measurable goals for food systems transformation (Chapter 2). It also highlights the need for food systems actors to coordinate with other systems to address many of the underlying determinants of malnutrition, such as health, social protection, education, and women's empowerment. Multiple solutions have the

FIGURE 1 A consumer-focused food systems framework for sustainable healthy diets



Source: Adapted from High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, *Food Security and Nutrition: Building a Global Narrative Towards 2030* (Rome: 2020).

potential to propel a shift toward sustainable healthy diets, including demand-side approaches that promote changes in consumer behavior; measures to make healthy diets more affordable; fiscal policies that promote healthy foods over less healthy options; and other changes in food environments, such as marketing and retail strategies. On the supply side, increasing the availability and lowering the costs of foods that contribute to healthy diets is essential.

In the thematic chapters and regional sections of this report, IFPRI researchers and colleagues review what we know about approaches across the food system to address desirability, affordability, accessibility, and availability constraints to achieving sustainable healthy diets and the challenges and opportunities we will face going forward. No single intervention can accomplish the change we need: to achieve sustainable healthy diets, meaningful actions must be interlinked and supported by good governance.

ADDRESSING DEMAND, AFFORDABILITY, AND FOOD ENVIRONMENTS

Shifting demand toward healthier diets will require consumer-level changes in preferences and improved understanding of healthy diets, access to affordable nutritious foods, and improvements in food environments. Efforts to address these challenges must start with better assessment of the drivers of food choice, including consumer preferences, affordability, intrahousehold dynamics, market conditions, and entry points for government policies. In turn, increasing demand for healthier foods can potentially increase production and lower costs for these foods, but these systemic impacts of population-wide dietary shifts remain to be studied.

SUPPORTING HEALTHIER FOOD CHOICES

Individual food choices and consumer behavior directly shape diets, even in low-income settings where choices are limited by poverty, high prices, and constraints to availability (Chapter 3). Creating demand for healthy diets requires shifting both personal and collective preferences toward nutritious foods.[5] Actions designed to strengthen demand for healthy and sustainable diets must be context specific. They should build on relevant patterns and trends in cultural, social, economic, and food environments and consider the supply-side constraints to healthy choices.

Several approaches are promising. National food-based dietary guidelines offer practical guidance on specific food groups, nutrients, and diets appropriate to a specific country-level context. These guidelines can help consumers make healthy food choices, and provide the basis for public education, labeling and advertising policies, and food production priorities. To date, more than 100 countries have developed these guidelines,[6] but many do not meet all the requirements of a healthy diet, and some LMICs still have no national guidelines.

Social and behavior change (SBC) interventions use technical, social, and information platforms to provide education and behavioral models that support healthier diets.[7] As stand-alone interventions, SBC efforts have had mixed results, and evidence is limited on SBC efforts to reduce the consumption of unhealthy foods in LMICs. However, adding SBC as a complement to other nutrition and diet-related programs is essential to increase the effectiveness of various multisectoral interventions that aim to generate demand for healthy diets by addressing supply constraints that limit food choice, such as availability and affordability.[8] These include nutrition-sensitive agriculture programs, such as home gardening programs,[9] and social protection programs that provide in-kind or cash transfers, which can improve dietary diversity and intake of micronutrient-rich foods, especially among women and children.[10]

The design and targeting of SBC must take gender into consideration, as empowering women and increasing household access to nutritious food can also improve the diets of young children, who are especially vulnerable to malnutrition and poor development outcomes (Box 2).

BOX 2 GENDER AND DIETS

For healthy diets to provide lifelong benefits, they must become a part of individual and household eating patterns over the life course. Nutrition plays a critical role in ensuring optimal development during the first 1,000 days of a child's life – from conception to the second birthday – and beyond. Adolescent girls and women face special nutritional needs related to their growth and development, reproductive status, and health. Women's diets and nutrition matter not only to their own health and well-being, but also to that of their children.

Yet women and their children suffer the greatest burden of malnutrition, with millions affected by micronutrient deficiencies and undernutrition.[a] The causes of malnutrition are multifactorial, but include suboptimal diets, food insecurity, health status, social and gender relations, and education, among others. Social norms, gender dynamics, and roles within households can limit access to healthy diets, although their influence varies across contexts. Even as women around the world have entered the workforce and spend more time outside the home, they continue to bear a tremendous care burden, including daily meal preparation for their families.

Empowering women can contribute to restructuring the social environment so that they have the resources to better care for themselves and their families, including being able to demand healthier foods. Nutrition-sensitive agriculture programs, social protection, and biofortified or fortified foods have also proven effective in improving dietary diversity and consumption of micronutrient-rich foods, as well as nutrition outcomes, among women and children.[b] Moving forward, understanding the combined impacts of women's time and workload constraints and intrafamilial dynamics around food will be essential to identifying practical solutions to ensure healthy diets for families around the world.

ADDRESSING THE HIGH COSTS OF HEALTHY DIETS

Affordability is a major constraint to healthy diets in LMICs (Chapter 4). The cost of a healthy diet is a relatively new metric that involves measuring people's access to a range of safe and nutritious foods. This cost is defined as the least expensive combination of locally available items, including fruits, vegetables, and other nutrient-dense foods that align with food-based dietary guidelines. Several such metrics exist to determine diet costs, but they all indicate that healthy diets are unaffordable for at least 2 billion and perhaps more than 3 billion people, many of them in South Asia and Africa.[11] Better understanding of the scale and scope of the affordability problem will require national and subnational monitoring of healthy diet affordability, including of food prices and wages.

Unaffordability is the combined result of poverty and the relatively high cost of nutrient-dense foods, as compared to calorie-dense staple foods. The cost of a healthy diet far exceeds the income of many of the world's poor, with more than 84 percent of the population in low-income countries and almost 68 percent in lower-middle-income countries considered "diet poor."[12] Existing social protection measures in these countries barely begin to meet this tremendous need.[13] Poor infrastructure and logistics make storage and transport of perishable products difficult, and agricultural policies and consumer subsidies that support staple crops have kept prices for those foods relatively low. Given the scale of the problem, it would cost at least $1.3 trillion per year to provide the world's diet poor with enough cash to afford healthy diets. Solving the problem thus demands multiple investments.

Healthy diets can be made more affordable by accelerating pro-poor economic growth to catalyze more equitable growth and increase incomes. Across countries, there is also evidence that well-targeted social protection programs can reduce diet poverty;[14] projections show that a 2 percent increase in spending on these programs in LMICs could reduce the number of diet poor by almost 100 million. In addition, realigning agricultural policies toward nutrient-dense foods and scaling up investment in transport, infrastructure, and logistics could reduce the relative price of these foods and increase their availability. However, addressing the

BOX 3 ULTRA-PROCESSED FOODS

Ultra-processed foods (UPFs) are industrially formulated products that are energy dense and contain added sugars, oils and fats, salt, colors, flavors, emulsifiers, and other additives. Examples include sugar-sweetened beverages, ice cream, sausages, instant noodles, and packaged snacks.

Availability and consumption of UPFs have expanded rapidly everywhere, in wealthy and poor areas, and rural and urban areas alike.[a] These products are easy to prepare and convenient to eat away from home, have a long shelf life, and are hyperpalatable.

These foods contribute to diet-related noncommunicable diseases by leading to overconsumption of energy, saturated fats, sugar, and salt, and by replacing more nutritious foods. In some settings, the displacement of nutrients by these foods may contribute to children's poor diets and undernutrition. Emerging evidence suggests that the food industry's pervasive marketing of these products, often targeted to children and adolescents, and the pressure food and beverage companies apply to limit regulation, labeling, and standards contribute substantially to consumer preferences for these products and their growing share in diets.

problems of incomes and relative costs may not be sufficient to improve diets because of dietary preferences for more calorie-dense and nutrient-poor foods. Nutrition-sensitive social protection and nutrition education, as well as changes in food environments, will need to be scaled up to increase demand for healthy foods.

IMPROVING FOOD ENVIRONMENTS

The food environment is the context in which people choose what to eat, where to buy those foods, and where, when, and how to eat (Chapter 5). In LMICs, these dynamic environments are undergoing dramatic changes due to urbanization, rural transformation, and associated shifts in consumer preferences. Unfortunately, food environments increasingly cater to, and even fuel, the growing preference for UPFs (Box 3). These foods are now available from all types of food vendors, including informal and online vendors as well as traditional retailers. In LMICs, the availability and affordability of fresh foods is affected by long supply chains, seasonal variability, and limited infrastructure. These factors, along with food handling practices that can reduce food safety, all affect demand.

Food marketing – across all settings and forms of media – primarily promotes less healthy food options, and is often targeted to children and adolescents. While evidence on the impact of advertising to these age groups is limited for LMICs, studies from high-income countries suggest that exposure to traditional and digital promotional material shapes young people's food preferences, choices, and diets.

Policy interventions to make food environments more conducive to healthy eating include providing information and incentives to consumers, such as labeling foods high in fat, salt, and sugar, and fiscal measures to nudge consumers toward healthier diets, such as taxes on sugar-sweetened beverages. Mandatory labeling and taxes on unhealthy products have had positive results in the Americas, providing a model that could be expanded to other regions. Other interventions, such as limiting the promotion of UPFs to children, show promise, but industry pushback has been strong, and implementation has been slow. More study is also needed on interventions that aim to change what products are offered or how they are positioned in retail settings. In addition, new approaches must address the emerging threats and opportunities created by the growing digital food environment. Further study of policy and actions to promote access to and demand for nutrient-dense foods will be essential to promoting a shift toward healthy diets.

IMPROVING THE AVAILABILITY OF HEALTHY AND SUSTAINABLE FOODS

There are multiple pathways to improving the availability of healthy and sustainable foods that can contribute to making them affordable, accessible, and desirable for consumers. These include leveraging food crops for better nutrition, ensuring the availability of sustainably produced ASFs, and strengthening value chains and markets (Box 4), as well as promoting food safety for nutritious foods.

LEVERAGING FOOD CROPS FOR BETTER NUTRITION

In combination with interventions to increase desirability, accessibility, and affordability, increasing the year-round availability of nutritious plant-based foods will be essential to making sustainable healthy diets attainable (Chapter 6). Crops that deliver energy and high concentrations of vitamins, minerals, phytochemicals, and dietary fiber – fruits, vegetables, and whole grain and nutrient-enriched staples – are among the principal components of healthy diets.[15] Yet consumption and access to these foods is inadequate among many poor and at-risk populations, and global availability is too low to support adequate consumption. Moreover, the nutritional quality and availability of foods eaten in LMICs are projected to deteriorate because of climate change and unsustainable resource use.[16]

Several strategies can increase the availability of nutritious plant-based foods. Investments in crop diversity, such as introducing new species or intercropping, can increase the year-round availability of diverse foods. In addition, "orphan crops" – locally produced crops that have been neglected in breeding programs or underused – can be promoted to fill nutritional gaps.[17] Whole grains can also be promoted, instead of more processed grains, to increase nutrient intake. Yet, the ultimate impact on diets will depend on the interplay with food environments and consumer demand.

Food fortification and biofortification of staple crops are also well-established strategies for addressing micronutrient deficiencies. They can offer an equitable and affordable means of delivering nutrients, especially to vulnerable populations. In many households, women and children consume staple foods every day but have little access to more nutritious foods, so fortification can be critical in providing essential nutrients for these populations.[18] Biofortification enhances the micronutrient density of widely consumed staple crops and can be readily integrated into existing cropping systems to address deficiencies. In addition, large-scale fortification of staple foods during postharvest processing, especially when mandated by law, can reduce micronutrient deficiencies and has been implemented in many countries, with particularly positive results for adults.[19]

THE ROLE OF ANIMAL-SOURCE FOODS

Small quantities of ASFs – meat, fish, dairy, and eggs – can contribute substantially to diet quality and health (Chapter 7).[20] While global ASF consumption has been rising sharply in recent decades, this increase masks major differences across regions and even within countries. While consumption in high-income countries is often excessive,[21] other populations would benefit from greater consumption of ASFs. These foods play a particularly important role in meeting higher nutritional needs in early childhood, adolescence, pregnancy and lactation, and old age. For these groups especially, ASFs are an excellent source of high-quality protein and bioavailable micronutrients that can be difficult or impossible to obtain from plant-based foods.[22] However, ASFs are unaffordable for many of the populations who would most benefit from consuming them.

Incorporation of ASFs into sustainable healthy diets requires consideration of their substantial environmental impacts, including greenhouse gas emissions, land and water use, and biodiversity loss. However, environmental impacts vary greatly among ASF products and production systems. In mixed crop–livestock systems, which are common among smallholders, there can be productive synergies between crop and livestock production, such as use of manure as fertilizer.[23]

BOX 4 TRADE AND MARKET SYSTEMS LINK FOOD AVAILABILITY AND CONSUMPTION

In today's world, major commodities move around the world in diverse ways and forms, often traveling long distances from point of production to point of consumption. Global, regional, and local trade play a strong role in shaping the availability and prices of food all around the world, with important implications for diets and nutrition. Globally, there is greater incentive to trade agricultural commodities and food products that have a longer shelf life and stability over long distances, such as ultra-processed foods (UPFs). Fruits and vegetables and other perishable products are also traded across borders and are often sourced from developing countries, but higher transport costs put these out of reach of poor consumers. Prices for perishable healthy foods are also determined at a more local level, as these commodities often cannot be cost-effectively transported within countries, due to infrastructure and other value chain constraints, such as insufficient cold storage. Improving the affordability and accessibility of perishable nutrient-dense foods will require scaling up investments in transportation, infrastructure, and logistics for domestic and international trade, as well as diversifying and increasing the supply of these foods through technologies for agricultural production, processing, and marketing (see Chapters 4 and 6).

IFPRI research has focused on the impacts of trade shocks as well as other types of shocks at the national or local level, which can drive up the price of all foods and make healthier food choices even more unaffordable.[a] While export restrictions are not addressed in this report, IFPRI has pointed in particular to the damaging impact of these restrictions on agricultural products. To date, these restrictions are not being disciplined by the World Trade Organization's rules in a meaningful way, driving up the price of food.[b]

More broadly, evidence is increasingly showing that the food that is consumed, even by the rural poor, is often sourced primarily from markets.[c] This is true especially in the Americas, most of South Asia, and Southeast Asia. The functioning of market systems, including the value chains that bring produce and animal-source foods to the food environments of consumers, has profound impacts on the availability, accessibility, and affordability of these nutrient-dense perishable foods. Most notably, lack of infrastructure for transport, storage, and marketing of food and for food safety reduces access to and affordability of these foods. Market systems also influence the largely unregulated availability of UPFs around the world (see Chapter 5). Strengthening the ability of market systems to support better diets and nutrition by offering sustainable, healthy, and convenient foods must be a major priority.

In many LMICs, ASF consumption will need to increase, particularly in infants and young children. With so many people unable to afford a healthy diet, improving consumption will require a combination of greater farm productivity and market efficiency to reduce prices, as well as an increase in household incomes. Food safety for these perishable products will also need to be addressed, especially in the informal markets that serve many LMIC consumers.[24] In other regions, excess ASF consumption will need to decrease to reduce both diet-related NCDs and environmental impacts. Together, these shifts could benefit human health and lead to a more equitable distribution of ASFs produced within sustainable limits.

GOVERNANCE FOR BETTER DIETS AND NUTRITION

Enabling environments for better diets and nutrition must include attention to leadership, governance, and political economy, including the interplay of diverse actors with an interest in shaping food systems outcomes for the future. Sound governance is essential for implementing the broad range of policy interventions required to improve diet quality and nutrition (Chapter 8).[25] Bundling these different policy options is often the most effective approach, but is not always feasible when state capacity is low. A state's capacity includes its administrative capacity, namely its ability to develop policy, impose regulations, and deliver

public services, all of which depend on sufficient technical staff, current data, coordination mechanisms, reach, and impartiality.[26] Capacity also includes the state's ability to raise taxes and mobilize funds for food system investments.[27]

Substantial state capacity and positive political incentives are critical to meeting administrative needs for policy implementation and managing trade-offs across nutrition goals and other objectives. Government engagement with food companies and other interest groups, which may either oppose or support government goals, is likewise shaped by state capacity and political incentives. Where powerful actors lack incentives to support policy implementation, policies are more likely to be contested. Along with the government and private sector, citizen engagement and grassroots movements can also play a transformative role in improving diets and nutrition. This engagement is most likely to flourish when governments are committed to ensuring civic space for such movements.[28]

Governance can be strengthened in multiple ways. To ensure that policies for diets and nutrition are sustainable and scalable, policy analysis can be expanded to include an assessment of governance capacity. Governance constraints that limit capacity and ability to navigate industry influence should be identified and addressed. In addition, governments should provide an enabling environment for citizen agency through policy transparency and government accountability, and for growth of successful grassroots movements that can support better diets and nutrition. In complex and ever-moving governance conditions, it is clear that leadership for better diets and nutrition must coexist in diverse sectors and be effectively deployed toward diverse positive outcomes.

CHALLENGES AND OPPORTUNITIES

A food systems approach for sustainable healthy diets offers many promising opportunities, but also entails a set of difficult challenges (Chapter 2). Success will require a truly multisectoral approach that tackles the need for sustainable healthy diets from multiple directions and with "multi-duty" tools that address different forms of malnutrition and consider the wide range of factors that shape diets and their contributions to nutrition and health outcomes.

Achieving optimal consumption of diverse food groups to support healthy diets in various contexts and populations will also require a range of context-specific policies and initiatives that focus on demand, food environments, and supply. While fruits and vegetables are universally recognized as essential to healthy diets, low consumption of these healthy foods is a global problem. The relatively high prices of nutritious plant-based foods, as well as ASFs, must be addressed to improve diets for low- and middle-income households. In addition, at all income levels, consumer knowledge, intrahousehold dynamics, and tastes and preferences must be addressed to build demand for healthy food options.

A critical challenge lies in managing the actions of diverse stakeholders and inherent conflicts of interest. Numerous trade-offs will need to be identified and negotiated, not only between interest groups, but also across critical development goals for well-being and sustainability. Although healthy diets are generally perceived to be more environmentally sustainable than unhealthy diets, the footprint of food systems is large,[29] and there are likely to be trade-offs between optimal diets and sustainability goals.

Finally, despite emerging efforts to improve data on food systems, publicly available information remains sorely lacking on what populations eat, where food is sourced from, drivers of people's consumption choices, characteristics of food environments and markets, and composition of food supplies. Well-tested methods, tools, and indicators as well as increased data collection are needed to analyze and monitor complex food systems and their different components, including their environmental impacts. Improving the available evidence base can support LMICs in diagnosing diet and nutrition challenges and drivers, testing and scaling solutions, and monitoring progress. Urgent efforts are needed to support governments and other actors at all levels — from global to local — in using data and evidence to guide national

nutrition plans, identify effective entry points for improving diets, set goals for their own food systems transformation efforts, and navigate trade-offs and conflicts of interest along the way.

Achieving sustainable healthy diets will require substantial investments in high-impact food systems actions, with a keen focus on addressing dietary gaps and enabling populations to build healthy dietary patterns sustainably and equitably. Global commitments to nutrition are strong, but the world is not moving fast enough to deploy effective strategies and financing, or to establish financing and accountability mechanisms to meet Sustainable Development Goal 2, which targets malnutrition.[30] Meeting this goal will be no small feat, but evidence is emerging from numerous creative efforts.[31] In our dynamic world, it is crucial that we continue to build the evidence base needed to strengthen these ongoing efforts. We must identify successes, but we must also identify failures – fast – because there is little time to lose, especially for those who are most vulnerable to the combined impacts of climate change and social inequalities. In the chapters that follow, we explore the recent evidence on what works and what does not, the challenges we face, and opportunities for transforming food systems to ensure sustainable healthy diets for everyone.