Global Panel
on Agriculture
and Food Systems
for Nutrition

Improving diets in an era of food market transformation:

Challenges and opportunities for engagement between the public and private sectors

This brief seeks to stimulate governments and other stakeholders to help build strategies to incentivize the private sector to influence food systems in ways that will improve the food environment, and enable better dietary choices.

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ABOUT THE GLOBAL PANEL ON AGRICULTURE AND FOOD SYSTEMS FOR NUTRITION

The Global Panel is an independent group of influential experts with a commitment to tackling global challenges in food and nutrition security. It works to ensure that agriculture and food systems support access to nutritious foods at every stage of life.

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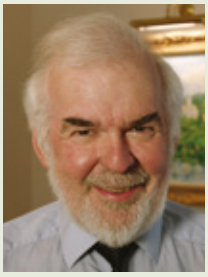

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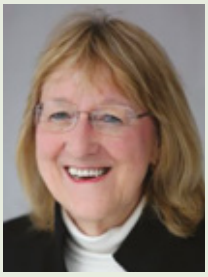

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Executive Summary

Diets are changing rapidly around the world. Leaders in almost all low- and middle-income countries (LMICs) today face a complex policy challenge – how to resolve persisting undernutrition and vitamin and mineral deficiencies while simultaneously preventing the global escalation of overweight and obesity. Urgent action is essential because healthy diets are key to addressing the growing health crisis. In fact, poor quality diets now threaten the successful achievement of the Sustainability Development Goals (SDGs).

Some LMIC governments are stepping up their efforts to improve diets for all. For example, by focusing on improving consumer knowledge and shaping demand through price and trade policies. But, there are very few successful examples where governments have harnessed the market power of private sector actors to achieve positive gains in nutrition. This is a huge missed opportunity which must be rectified.

Policymakers need to be realistic about their own limits in shaping consumer behaviour. Similarly, they need to be pragmatic in seeking to persuade industry partners to play a more active role in improving diets. The food industry already does much to meet the nutritional needs of a rapidly growing global population. However, its activities are typically focused on delivering individual food products, rather than on enhancing diets and larger food systems per se. There is profit in responding to current consumer demand for convenient, tasty, ultra-processed food products which do not contribute to a high-quality diet. Therefore, a policy focus is needed to encourage and enable firms to shift the balance of their activities in favour of products as well as fresh produce which are more nutritious, affordable and accessible to all.

The key is to establish a common understanding of the critical role of diet quality in nutrition. Circumstances should then inform two broad classes of action: incentives – so that companies have confidence in taking decisions and risks associated with sourcing and supplying nutritious foods and products; and enabling measures – so that the business environment works to encourage rather than inhibit innovative approaches.

Regulation is a powerful tool at the disposal of policymakers for influencing food and beverage companies, although policymakers need to be wary of potential negative side-effects. There are also opportunities and benefits for both public and private interests to move forward in partnership. Appropriate partnerships would enable firms to inform and help shape the design and implementation of policy actions. For this to take place, open dialogue is essential to building trust. In this brief, the Global Panel sets out six key questions which need to be addressed and resolved as part of any new partnership approach. They are intended to be used as a basis to promote dialogue aimed at achieving more ambitious and effective links between the public and the private sectors.

ENCOURAGING INVESTMENTS IN FOOD SECTOR SMEs

How can SMEs access loans to invest in food products which enhance dietary diversity and quality?

PROMOTING CONSUMER DEMAND FOR HEALTHY DIETS

How can consumer demand for high-quality diets and nutritious food products be created and promoted so that companies have confidence to invest and take risks in delivering more nutritious foods?

PUBLIC INCENTIVES FOR APPROPRIATE ACTION IN THE PRIVATE SECTOR

How should governments incentivize private companies to improve the quality of food products?

MANAGING RISKS – A ROLE FOR INSURANCE

How can risks associated with developing, producing and selling more nutritious foods be minimized?

BUILDING TRUST

How can governments ensure that engagement with for-profit companies to promote universal access to healthy diets is underpinned by core principles of transparency and accountability?

INFRASTRUCTURE

How can infrastructure planning be better geared toward reducing food losses and promoting year-round access to enhanced diets?


ACRYLIC
WALL PUTTY

1. Introduction

Diets are changing rapidly around the world. While some of these changes, such as improved supply and diversity of foods in low-income settings, have contributed to on-going global reductions in undernutrition, changes in terms of rising availability and falling relative costs of ultra-processed foods have simultaneously led to unhealthy dietary choices that are associated with overweight and obesity. Leaders in almost all low- and middle-income countries (LMICs) today face a complex policy challenge – how to resolve persisting undernutrition and vitamin and mineral deficiencies while simultaneously preventing the global escalation of overweight and obesity, which together signal a surging health crisis.

While governments in some LMICs are beginning to pay attention to these serious challenges, focusing on improving consumer knowledge and shaping demand through price and trade policies, there are still few successful examples where governments have harnessed the market power of private sector actors to achieve positive gains in nutrition. Diverse private sector actors (e.g. smallholder farmers, agribusiness, food and beverage manufacturers, food retailers, food service providers and industry and trade associations) shape global and local food systems in ways that have considerable potential to influence the availability, price, nutritional quality, desirability and demand for more healthy food choices.[1,2,3,4]

Diets in turn are shaped by the interactions of private sector investment strategies and public policy. The consumer makes the final choice about the set of products that makes up a diet but such choice is generally constrained – by knowledge, purchasing power, diversity of choice (availability), relative prices across foods, culture and tradition. Poor accessibility to markets, time poverty, and lack of safe storage and cooking facilities (for example, in poor urban households) are also important. In other words, while neither the public nor private sectors assume the role of delivering high-quality diets per se, both sectors influence what foods are supplied and marketed, and what food products are produced and retailed. It is therefore paramount that policymakers better define how and where the public sector needs to engage with private food companies to make it possible for all consumers to make choices that support healthier diets.

As a first step, policymakers will need a much deeper understanding of private sector capacities and a strategy for nudging enterprises across the food system toward a greater level of nutrition sensitivity. They will also need to provide the incentives that motivate the private sector to prioritize nutritional outcomes associated with investments in local and global food systems. In addition, policymakers must enact appropriate laws and regulations that protect consumers' interests in highly competitive marketplaces to ensure food safety, affordability, accurate information about nutritional quality and year-round availability of nutritious foods.[i] Effective public policies aimed at influencing consumer demand through public health campaigns and consumer education also have a critical role to play and are covered in Sections 4 and 5 below. The Global Panel's Consumer Behaviour brief also discusses this topic in details.[5]

This brief seeks to stimulate governments and other stakeholders to help build national and city-based strategies to engage and incentivize private sector actors to influence food systems in ways that will improve the food environment, and enable better dietary choices. Urgent action is needed at the interface of engagement between public and private stakeholders across the food system if the impending crisis of diet-related diseases is to be avoided and global nutrition goals are to be met in the coming decade. The private sector plays a dominant role in shaping diets and provisioning consumer choice through its activities in food transformation and food retail, and the brief therefore focuses on these two parts of the food system. It highlights emerging efforts which link public and private sector actions and highlights issues that stakeholders must consider if they are to improve the accessibility of high-quality of diets for all consumers in low- and middle-income countries.[ii]

1.1 Policy challenges of the dietary transition

Poor diets underpin all forms of malnutrition (undernutrition, micronutrient deficiencies, and overweight and obesity).[6] Many consumers worldwide still have diets lacking essential nutrients, which lead to forms of undernutrition such as child stunting, and vitamin and mineral deficiencies. In other sectors of society, consumers have unhealthy diets lacking in nutrient-rich foods (such as fruits, certain vegetables, whole grains and legumes), but high in ultra-processed convenience foods, which are associated with overweight and obesity, diet-related non-communicable diseases (NCDs), and undernutrition.[6] The key question is how to move to more diverse and healthy diets while keeping negative ingredients

i The Food Environment brief *Improving nutrition through enhanced food environments* analyses the legal, fiscal and regulatory aspects of product marketing and how to create enabling food environments for healthier food choices. Available at http://glopan.org/sites/default/files/FoodEnvironmentsBrief.pdf.

ii This brief does not discuss the role of small-scale farmers as private businesses. The significance of smallholder agriculture and food trade are discussed elsewhere in Global Panel publications. Food waste, food safety, and agribusiness are also covered in other Global Panel publications.

to a minimum. This kind of high-quality diet is currently inaccessible to most people in the world, especially in low-income settings.[7]

Diets based predominantly on starchy staples (such as maize, millet, sorghum, rice or cassava), continue to be prevalent in many low-income countries (LICs), particularly in Africa and South Asia. In Malawi, for example, average diets are heavily dependent on maize, which accounts for over 54% of daily caloric intake.[8] In another study, most women surveyed in six sub-Saharan African countries reported consumption of starchy staples, but less than half had consumed legumes and nuts, vitamin A-rich fruits and vegetables, dairy or eggs in the preceding day.[9] Dietary diversity is also very low in Bangladesh, where the share of calories from non-starchy staples in rural diets in 2011 was less than 30% in all but the wealthiest income group.[10] This heavy reliance on starchy staples is due primarily to low incomes, and lack of access to and availability of animal products, pulses and nuts, and fruit and vegetables.[11,5] These staples do not meet a population's total nutritional needs: a variety of foods is required. The consequences of lack of dietary diversity are clear. While the global burden of undernutrition has been gradually decreasing,[6] the latest data show the estimated number of chronically undernourished people rising from 777 million in 2015 to 815 million in 2016.[12] Child stunting continues to affect 155 million pre-school children (one in four children globally),[13] resulting in an increased risk of impaired cognitive ability, weakened performance at school and infection. Over 50 million children are wasted and face a higher risk of infection and mortality, while 2 billion people continue to suffer from micronutrient deficiencies.[14,15]

At the same time, dietary patterns are shifting in all parts of the world, characterized by a move away from traditional foods towards fats, sugars, and ultra-processed foods.[16,17] In other words, almost all societies are moving towards diets increasingly made up of highly refined food products which often include artificial ingredients.[7,18,19] The pace of this transition is fastest in middle-income countries, such as China, Mexico and Thailand but it is also taking place in rural areas of South Asia and sub-Saharan Africa.[20,1,2] Diets high in ultra-processed foods are associated with lack of essential vitamins and minerals, overweight and obesity as well as diet-related NCDs.[21,22,23] Obesity is no longer only a high-income country (HIC) problem. Overweight among children under five is prevalent across the globe, while adult obesity, particularly among women, continues to rise in all regions.[24,25] In 2016, almost half of all overweight children under five lived in Asia and one quarter lived in Africa.[13] According to the Global Burden of Disease Study, the risk that poor diets pose to mortality and morbidity is now greater than the risks of air pollution, alcohol, drug and tobacco use combined and amplifies the health consequences of diseases such as HIV/AIDS, malaria and measles.[26] This means that the health burden associated with all forms of malnutrition globally is growing rather than declining in the face of the rapid rise in diet-related chronic diseases, compounding the long-standing, crippling effects associated with undernutrition.

Finding ways to address these complex, interlinked challenges will not be easy. Policymakers in sub-Saharan Africa, South Asia and Latin America are faced with the dual responsibility of resolving persistent undernutrition (including making more and better food available) while preventing the rise of overweight and obesity, and diet-related diseases. Solutions cannot be found in public sector actions alone as national policies are only one part of the puzzle. Food systems provide the nexus where policies, investment plans, regulations, free markets and consumer behaviour interface with each other. Experience shows, however, that aligning the interests and interventions of all the actors concerned is not without challenges.

In the public sector, national policies that influence food systems assume multiple forms with many (sometimes conflicting) goals. For example, agriculture or trade policies may have supply and income growth as primary targets, while health policies, national dietary guidelines and food safety regulations may have health risk reduction as their goals. In other words, governments rarely have a single unified policy agenda which cuts across the food system to achieve clearly defined outcomes at the consumer level. Similarly, the private sector represents a wide range of interests, capacities and investment approaches that generally seek profit from within the food system. Businesses from smallholder farmers to global food corporations engage in every segment of food value chains.

The food industry can support public health goals by facilitating the supply, marketing, processing and retail of a diversity of nutrient-rich foods at accessible prices. Alternatively, private sector companies can produce and advertise ultra-processed products at low prices that run counter to public health aims. The question is, can policymakers establish more productive dialogue and engagement with private sector stakeholders to improve diet quality in LMICs? The profit motive does not axiomatically run counter to the ambition of high-quality diets for all consumers, but the right mix of policy regulations and incentives will be needed. Companies typically operate in narrow market segments making it hard for them to judge how their own actions could affect outcomes elsewhere across the food environment. Many food companies would arguably do more to improve the accessibility of fresh produce or the desirability of less well-known meal ingredients if they had better access to business loans, if transport and market infrastructure were enhanced and if consumer demand was reshaped through improved knowledge. In each of these three areas, the private sector could respond to different dietary demands if public sector investments facilitated change. However, lack of technical capacity, lack of access to other inputs (e.g. technology, business services, food ingredients) and an unfavourable investment climate (weak property rights enforcement, import barriers, and burdensome regulations) often pose formidable barriers for many businesses to invest in nutritious foods.

Governments can influence interest rates on productive loans, improve infrastructure in ways that permit improved inter-seasonal access to certain perishable foods and build consumer knowledge through targeted public interest campaigns. The Second International Conference on Nutrition (ICN2) Framework for Action recommends numerous actions for governments to promote healthy diets through sustainable food systems, including the gradual reduction of unhealthy components (i.e. saturated fats, salt, sugar) from foods and beverages together with other regulatory instruments including marketing, publicity and labelling policies, as well as economic incentives and disincentives.[14] These initiatives should be accompanied by demand-side interventions which educate, encourage and enable consumers to improve their dietary choices. In turn, the private sector can assume the risks associated with new investments in the food sector. In all cases, improved diets require investments which will enhance the food environment in which consumers make choices – and these investments need to be coordinated between the public and private sectors.

1.2 Private sector roles in food markets

In most low-income contexts, the role of industry in the food sector is largely dominated by staple food production (supply) and retail (typically along short-chain routes). Enhancing the diet quality of consumers is rarely the goal of such industry actors. But could the private sector do more? The answer is yes. Evidence shows that weak links along the value chain may disrupt the flow of delivering high-quality diets in rural and urban areas.[27] A lack of processing, cold storage, transportation and energy supplies necessary for these functions can negatively affect value chains midstream. Poor infrastructure for transportation, storage and telecommunications can pose higher costs for businesses, particularly for smallholders and small- and medium-sized companies (SMEs) selling products in urban settings, making lower-income groups more vulnerable to cheaper ultra-processed foods which are not nutritious.[27] Improvements in value chains are therefore essential to guarantee healthier diets for all, but both private and public sectors are lagging behind on investment and accountability.

The food industry has long been criticized for its part in making food environments 'unhealthier'.[28,29] In HICs, and increasingly in middle- and low-income settings, multinational and domestic companies have been repeatedly admonished for fuelling the growing global epidemic of overweight, obesity and NCDs,[30,28] and undermining public health efforts, mainly through their power and influence over political and market processes.[19] One widely cited example is Brazil, where long-established, traditional food systems and dietary patterns are being destabilized by ultra-processed products made by multinational corporations (see more on this in Section 2 below).[3]

That said, the private sector has considerable potential to make food environments healthier.[18,31] In addition to shaping the production of wholesale and retail food, the private sector influences people's attitudes, perceptions and desires, as well as the affordability of key food items in local and global markets.[31] Through the products selected for retail, their pricing and their promotion, the role of business is core to patterns of food availability, access and consumer choice.

Importantly, in several countries, private sector entities have recently acknowledged that they can do more to support public health agendas.[32] For example, some are engaged in policy dialogues around the promotion of healthy diets, including product reformulation, the removal or reduction of certain ingredients (such as sodium, sugar and trans fats), and commitments to greater transparency on the nutritional characteristics of their portfolios of products (see Section 3 below).


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2. Private sector roles in shaping diets

2.1. Traditional and changing diets

As countries get wealthier, their inhabitants tend to increase their consumption of foods that are associated with high-quality diets. However, the consumption of foods that are associated with low-quality diets (i.e. processed meat, sugar-sweetened beverages, sodium and foods high in saturated fat, salt and free sugars) increases even more.[7,28] Meanwhile, diets lacking in diversity, key nutrients and safety remain the norm for most people in LMICs. National incomes generally do not grow evenly across populations, and consequently, poverty persists in many communities. The coexistence of undernutrition, and overweight and obesity (even in the same household or individual) are now prevalent in middle- income countries and incipient in many LICs.[33] This calls for careful policy attention to all forms of malnutrition, and for policymakers to avoid making the assumption that rising incomes equate with better diets and better nutrition.

The global consumption of foods and food products having low nutritional value has been growing in recent decades. This trend has now become apparent across LMICs. For example, between 2000 and 2013, sales of ultra-processed food and beverage products in all Latin American countries increased by 48%.[34] In Brazil, data from the Brazilian Household Budget Survey 2008-2009 show that the consumption of ultra-processed foods was directly associated with a high consumption of free sugars, saturated and trans fats and with a low consumption of protein, dietary fibre, and essential vitamins and minerals.[35]

This shift in dietary patterns, known as the 'nutrition transition', coincides with economic development, demographic transition[iii] and changes in energy expenditure (i.e. more sedentary lifestyles).[36,37,38] In recent decades, the nutrition transition has accelerated amongst LMICs, with a significant shift away from consumption of legumes and coarse grains to consumption of refined grains purchased at informal markets, modern supermarkets and convenience stores, which have penetrated urban Africa and Asia and most of the Middle-East and Latin America.[3]

Most food products consumed around the world are processed in some way, whether it be cheese or milk, bread or hummus.[16] Many forms of food processing[iv] are beneficial to nutrition, for example increasing the shelf-life of dairy products or the industrial fortification of wheat flour with iron and folic acid. By enabling extended storage, processed food contributes to both food security (providing access to sufficient, safe and nutritious food) and nutrition security (ensuring that food is of a quality to meet consumer needs).[39] However, evidence suggests that global food systems are becoming increasingly dominated by ultra-processed products which are not compatible with high-quality diets (see Box 1).[28,40] Ultra-processing results in palatable, cheap, ready-to-consume (convenient) food products which are characteristically energy-dense, fatty, sugary or salty, superficially attractive and generally obesogenic.[40] They include snacks, drinks, ready-meals and products created mostly or entirely from substances extracted from foods (rather than involving wholefoods) or derived from food constituents such as flavours, colours and other additives which imitate or intensify the sensory qualities of foods or culinary preparations made from minimally-processed foods.[41] Ultra-processed foods and sugar-laden beverages are found even in remote areas of Nepal and Ethiopia while a choice of vegetables, fruits and fish is not.[42]

Box 1. High-quality diets and ultra-processed foods

A range of criteria can be used to characterize high-quality diets and are summarized in the Global Panel's 2016 Foresight report.[6]

According to World Health Organization (WHO), 'healthy diets' should incorporate the following characteristics:[43]

- Start early in life – notably with breastfeeding.
- Balance intake and expenditure of energy (calories).
- Include fruit, vegetables, legumes, nuts and wholegrains.
- Include at least 400g of fruits or vegetables per day (excluding starchy roots such as cassava and potatoes).
- Limit fat to no more than 30% of total energy intake. There should also be a shift from saturated to unsaturated fats and towards the elimination of industrial trans fats.
- Limit free sugars to less than 10% of total energy intake – or less than 5% for additional health benefits.
- Limit salt to less than 5g per day – to reduce the incidence of hypertension, heart disease and stroke in adults.

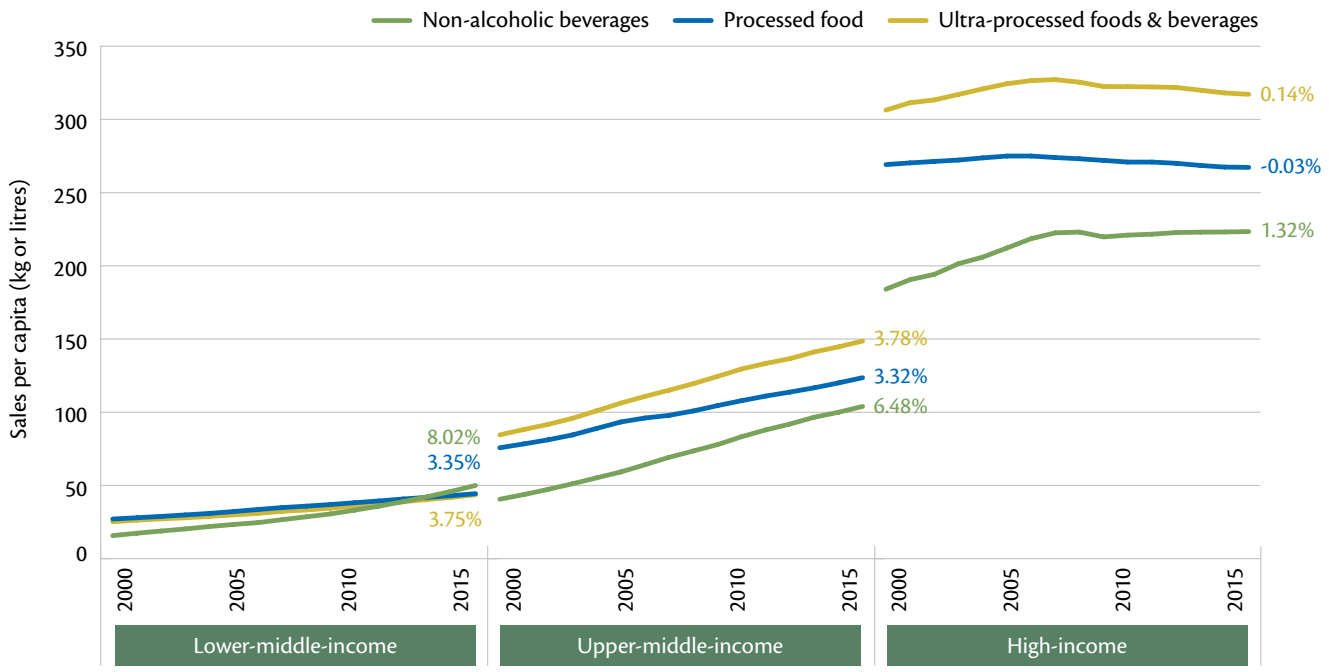
The consumption of ultra-processed foods should be limited and kept to a minimum since they typically contain little or no nutritious wholefoods, and are fatty, salty or sugary and depleted in dietary fibre, protein, various micronutrients and other bioactive compounds.

Data from 79 high- and middle-income countries show that ultra-processed products dominate the food supply of HICs, and that their consumption is now rapidly increasing in middle-income settings.[40] This increase in consumption of ultra-processed foods is related to the rapid growth of private investment in food manufacturing, retailing and fast food service capacity, globally and locally.[40] Seventy five percent of world food sales comprise processed and ultra-processed foods, with the largest manufacturers controlling more than one third of the global food market.[28]

iii Demographic transition refers to the transition from high birth and death rates to lower birth and death rates as a country or region develops from a pre-industrial to an industrialized economic system (Available at: http://populationeducation.org/content/what-demographic-transition-model).

iv For example, the alterations of foods from the state in which they are harvested or raised to better preserve them and feed consumers (Weaver et al. 2014).

Figure 1. Trends in per capita sales volumes of non-alcoholic beverages, processed foods and ultra-processed foods by country income group, 2000–15, with 15-year average growth rates shown



Source: Global Panel Foresight report (2016), based on data from Baker (2016)

Figure 1 shows that while sales of ultra-processed foods in HICs have levelled off in recent years (although per capita volumes remain high), sales have grown rapidly in lower-middle-income countries and upper-middle-income countries, and are catching up with the HICs. For example, in 2000, sales of ultra-processed foods and beverages in the upper-middle-income countries were one-third of those in the HICs. Fifteen years later, they were more than half.[6] In lower-income countries, many snacks are still in the form of fresh food, but with rising incomes and increasing urbanization, they are gradually being replaced with processed and ultra-processed products, many of which offer convenience at low-cost.[44,45,46]

A recent study of food-marketing practices concluded that food advertising in HICs has been directed towards driving access to cheaper, bigger and tastier calorie-dense food.[47] One global review of 151 studies on whether food prices are a barrier to the adoption of higher-quality diets by lower-income groups concluded that energy-dense foods (refined grains, added sugars and fats) are cheaper per calorie than nutrient-dense foods, and that lower-quality diets are therefore generally cheaper.[48] However, although global in its outlook, this review largely focused on HICs because of the general lack of studies on the affordability of nutritionally adequate diets in LMICs. Another study, which assessed fruit and vegetable consumption in 18 countries drawn from a range of income groups found that the consumption of fruit and vegetables was generally low, particularly in LICs, and that this trend was mainly associated with lack of affordability.[49] The study called for a change in policies worldwide to enhance the availability and affordability of fruits and vegetables.

Recent evidence from Guatemala showed that an increase in the share of highly and partially processed foods from total food expenditure significantly increased the likelihood of overweight/obesity, and could be taken as one of the most important risk factors for the growing overweight/obesity problem in the country.[50] A study in Kenya, which has the fastest supermarket growth in sub-Saharan Africa, also found that the purchase of highly and ultra-processed foods from supermarkets significantly affected consumers' nutritional outcomes, leading to an increase in adult body mass index (BMI) of 0.64 kg/m2.[51] Dietary patterns in Tanzania, South Africa, and peri-urban and rural Uganda are also changing with traditional diets being replaced by a 'processed diet pattern' associated with obesity and characterized by high intakes of salad dressing, cold cuts and sweets.[52]

While once thought of as diseases of HICs, diet-related NCDs are now the leading cause of death in lower-middle-income countries.[53] In LICs, currently nearly 30% of NCD-related deaths occur under the age of 60, whereas in HICs the proportion is only 13%.[54] Low- and middle-income countries together contribute to 70% of all NCD-related global mortality.[55,56] Most are experiencing a poorly managed nutrition transition which is associated with an epidemic of diet-related NCDs, coinciding with persisting 'diseases of poverty' linked to undernutrition.[36,37,40] This concurrence of different forms of malnutrition requires that policies and actions address them simultaneously, a key element of which concerns improvements to diet quality.[42]

3. Private sector roles across the food system

The private sector is involved in all segments of the food system (see Figure 2), which encompasses agricultural production, harvesting, processing and packaging, food transformation, marketing and consumer access. It also plays a major role in influencing both the food environment and consumer preferences. In each of these domains, businesses can have both positive and negative effect on improving diet quality. The private sector's dominant role in shaping diets and provisioning consumer choice in the two key sub-systems of food transformation and food retail is the focus of this brief.

While food-related private-sector enterprises are often referred to collectively as 'the food industry', they encompass agribusiness, food and beverage manufacturers, food retailers, including supermarkets, food service providers, and industry trade associations.[57] Food wholesalers, food distributors (including importers and exporters), and the advertising and marketing industry, are also influential. Low- and middle-income countries vary widely in the mix of their food related businesses which range from multinational companies, national companies, and SMEs.

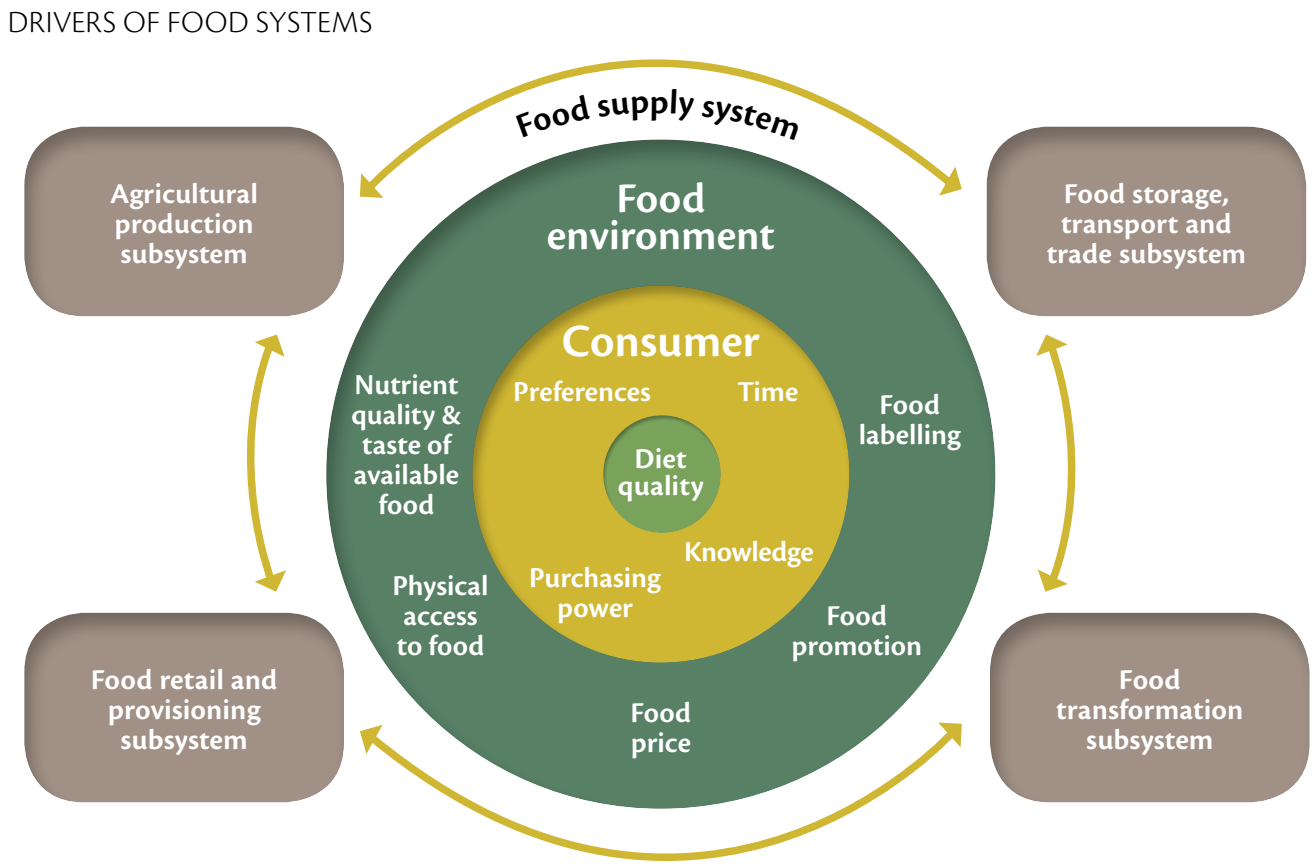
3.1. Food transformation

The private sector plays a leading role in food transformation which includes product processing (e.g. drying and freezing), reformulation and packaging. It encompasses a wide range of businesses such as dairies, abattoirs, meat cutting plants, mills, fruit and vegetable preparation and packing, and meal manufacturers. The private sector also plays a role in biofortification[v] which has the potential to complement programmes that add micronutrients to foods during processing.[58]

As highlighted in Section 2, most foods consumed today are processed in some form. Many kinds of processing can help preserve nutrients and make foods more available and accessible to low-income groups. For example, appropriate packaging can extend shelf-life, making foods available to more people for longer. Flash-freezing or drying can protect nutrients in foods and make them available at lower cost than perishable foods. The sections below consider private sector roles in food processing, fortification, product reformulation and product development, as well as food retail.

v Biofortification is the process of improving the nutritional quality of food crops through agronomic practices, conventional plant breeding, or modern biotechnology. See the Global Panel's policy brief on this topic. Available at http://glopan.org/sites/default/files/document-files/Biofortification_Policy_Brief_FINAL.pdf.

Figure 2: Conceptual framework for the links between diet quality and food systems



Source: Global Panel (2016), Food systems and diets: Facing the challenges of the 21st century.

3.1.1 Food processing

A nutritious diet is needed throughout the year to maintain good nutrition and health. However, availability and affordability of micronutrient-rich foods, particularly fruits and vegetables, present one of the greatest challenges in many LMICs.[59] Fresh foods are perishable and seasonal, and often require lengthy transport and storage to get to food retail outlets. These factors have an impact on both supply and demand of nutritious foods and contribute to price volatility, which disproportionately affects lower-income consumers.[60]

Food processing, such as refrigeration, freezing, fermentation, pickling, canning, drying and pasteurization, provides important opportunities for preserving foods, converting inedible into edible foods and transforming difficult-to-prepare foods into nutritious and convenient forms. These methods can also help to increase food availability, extend seasonality through the 'hunger gap' in many LICs and make food safer to eat.[6] However, some forms of processing can lead to very high densities of salt, added sugar and saturated fats and these products, when not consumed in small amounts, will undermine diet quality.[6]

Food processing companies – composed of small-scale to multinational enterprises – drive the agro-food industry in many LMICs. Considering the high incidence of post-harvest losses in these countries,[61] these companies have a vital role in turning primary agricultural products into consumable commodities. In South Africa, the agro-processing sector is key for creation of sustainable jobs and enterprises, and contributes about 10% of the gross domestic product (GDP).[62] In India, it is also one of the largest sectors and employs around 18% of the country's industrial work force.[59]

There are many opportunities for this sector to play a bigger role in enhancing diets through forms of processing which improve the availability and quality of nutritious foods. According to the FAO, strengthening the capacity of smallholders and small entrepreneurs, particularly women, to store, preserve, process and package foods can help secure a year-round food supply which improves nutrition and income generation.[59] For example, extending indigenous methods of food preservation (i.e. fermentation of cereals, fruits, legumes, meat, fish and milk; drying and soaking) mainly practiced by women[63] into SMEs can be an important way of improving food and nutrition security in LMICs and, through export markets, increase the global demand for local products (see Box 2).

Box 2. Extending indigenous methods of food preservation

The Trinidad and Tobago Agri-business Association

The Trinidad and Tobago Agri-business Association (TTABA) is a 'For Development Company' established in May 2006 by private sector agri-business stakeholders with government support to accelerate national economic and social development through the sustainable expansion of the agri-business sector. To promote traditional Caribbean food habits and transform indigenous food preparation and cooking processes to meet the needs of urban consumers, the TTABA processes tropical roots (and other fruits and vegetables) into frozen, cubed, packaged and branded products. The TTABA has been able to contract with local producers and incentivize the consumption of traditional foods.[64]

Green Growth 4 Africa

Preserving spontaneously fermented local foods (i.e. food produced by the activity of microorganisms) in the West African diet helps to ensure food security, alleviate poverty and develop local businesses. The Green Growth 4 Africa is a project established in 2014 and financed by the Danish development agency Danida which aims to turn the traditional West African food sector into a driver of sustainable growth by improving production methods through use of starter cultures, upgrading all parts of the food value chain and implementing new business models.[65] The project has established bio-banks in Ghana, Burkina Faso and Benin, developed technologies for production and distribution of starter cultures to SMEs, created new market opportunities through scaling up from household to semi-industrial production and processes specific indigenous foods to fulfil the needs of an urbanized population.[66]

The use of improved technologies for drying, such as solar dryers, is becoming more common in African countries. This method allows produce (i.e. leafy green leaves of cassava, sweet potato, papaya and pumpkin) to retain higher quantities of vitamins than through traditional sun drying. These driers can also be valuable in preserving surpluses of other nutritious foods, particularly vegetables and fruits.[67] Azuri Health Ltd, for example, was established in Kenya in 2010, and is one of the largest suppliers of dried fruits (pineapples, passion fruit, mangoes, bananas and coconuts) in East Africa. It aims to provide alternative healthy snacks for the growing population and reduce post-harvest losses for farmers.[68]

Entrepreneurs in SMEs who want to invest in food processing technologies that would strengthen local food systems, and make nutritious foods more available and affordable to consumers, face several barriers. For example, small- and medium-sized fisheries and aquaculture enterprises responsible for fish processing in lower-income countries often struggle to market their products as demand increases, to meet food safety and quality standards, and to gain access to credit and to market information.[69] Public-private partnerships (PPPs) can be a useful approach for improving supply chain management and making micronutrient-rich foods more available and affordable in lower-income settings. One example of how these barriers have been overcome through successful PPPs in Vietnam is shown in Box 3.

Box 3. Public-private partnership (PPP) for fish processing in Vietnam[69]

The An Giang Fisheries Association started to produce organic catfish (Pangasius) in Vietnam with the help of a PPP between the German Technical Cooperation Agency (GTZ), the non-governmental organisation (NGO) Naturland and the private German fish-importing company Binca Fisch GmbH. The private sector partners and GTZ shared both risks and costs, with the private partner responsible for implementing and managing the project. This PPP has led to higher fish quality, with production and processing which meet European standards.

It has also increased export opportunities, reduced rejection rates at international borders and expanded the market. Meeting the requirements of the European Union's biggest retailers has helped retain market share. The project built capacity by transferring knowledge on organic production methods to other local producers and processors, and by raising awareness of pollution and food safety issues.

3.1.2 Promoting new product development and product reformulation

Product development

There are many examples of product development with specific nutritional goals. Multinational corporations and SMEs operating across the formal and informal sectors of sub-Saharan Africa and South Asia are increasing their efforts to market nutrient-dense foods to low-income populations.[70] Also, Ready-to-Use-Therapeutic Foods (RUTF), are being used as a home-based treatment (as opposed to traditional medical facility-based) for severe acute malnutrition.[71] RUTFs are energy dense, micronutrient-enhanced pastes used in therapeutic feeding which a number of companies are now producing. Local production of RUTF paste is already under way in Burkina Faso, Dominican Republic, Ethiopia (see Box 4), France, Haiti, India, Kenya, Madagascar, Malawi, Niger, Sierra Leone, South Africa, Sudan and Tanzania.[72]

To minimize the risk of using aflatoxins-contaminated groundnuts, however, most food manufacturing companies producing RUTF do not use local products. Progress needs to be made in food safety standards so that locally produced groundnuts can be used for manufacturing these products.

Box 4. Production of RUTFs in Ethiopia[73]

Hilina Enriched Food PLC is a leading food manufacturing company based in Ethiopia. The company was established in 1998 by an Ethiopian entrepreneur in partnership with the French Group Nutriset in 2006. The Company produces high-quality nutritional and fortified foods for both institutional and commercial markets in Ethiopia and the East Africa region. The company's product portfolio mainly comprises Plumpy'nut (RUTF), Sheba Peanut Butter, Sheba Peanut Splits[vi] and Tafo Iodized Salt. Hilina Enriched Foods has a significant production capacity in Ethiopia, where there are relatively high levels of undernutrition and micronutrient deficiencies. With 253 employees (2014) and a network of local suppliers, Hilina plays an important role in the local economy and the country's food security.

vi Recent evidence shows that processed products from peanuts may contain aflatoxins, which are harmful to child health. See also more on this in the Global Panel Food Safety Policy brief.

The Grameen Danone Foods Ltd (GDFL) in Bangladesh, a social enterprise established as a joint venture between Groupe Danone and Grameen Enterprises, is also a potentially good example of how business can play a bigger role in enhancing consumption of nutritious foods in lower-income settings as part of broader-based initiatives directed at reducing micronutrient deficiencies.[27] This enterprise manufactures and distributes two fortified yogurt products to poor consumers, predominantly in rural areas of Bangladesh. The flagship product, Shokti+, is a fresh probiotic yogurt that is packaged in 60g plastic pots and sold for US$0.12. Another product, Shokti Pocket, is ultra-heat-treated yogurt sold for US$ 0.07. Both products are fortified with 30% of the recommended daily amount (RDA) of zinc, iodine, iron and vitamin A. Low-income communities close to the processing facility are targeted for distribution to ensure consistent availability and to limit costs. The employment of women within these communities to deliver the product direct to consumers also aims to minimize the time and effort required to access the product on a continuous basis. However, it should be noted that these products are not yet commercially sustainable.

Product reformulation

Food manufacturers often reformulate products in response to changes in the prices of raw ingredients, or availability of usual supplies, to add new flavours to product lines, or because of government or consumer demands for reduced sugar, salt or fat. Reformulating with entirely different ingredients while still maintaining product taste, texture, appearance, safety and shelf life (while keeping costs and prices competitive) can be a major task. However, reformulating and creating new products is time-intensive and costly but it can, in some settings, provide a good opportunity to improve the nutritional value of processed foods. To be successful, reformulation has to work from a policy and health perspective (e.g. removing trans fats, lowering sodium) and from a business and consumer demand perspective. Examples of countries that have adopted policies on reformulation are discussed in the Global Panel's brief on *Improving Nutrition through Enhanced Food Environments.*[11]

Many product reformulation efforts to date have focused on reducing the salt content of processed foods, which is arguably the most straightforward reformulation option.[74] More complex, nutrition-sensitive reformulation efforts, however, are more likely to be successful if they are part of a wider strategic effort across the food supply chain.

Appropriate formulation or reformulation has the potential to improve diet quality without requiring consumers to avoid free sugars, which are present in 68% of all processed foods.[75] But to reformulate at scale, the food and beverage industry needs incentives either from consumer demand for healthier, lower-sugar products or from government action. These incentives could include change in government policies, such as putting in place national salt or sugar reduction strategies, working with the food industry to negotiate commitments, agreeing voluntary targets for specific product categories, or establishing mandatory limits.[76] Examples of successful product reformulation are primarily from HICs.[11] In breakfast cereals, for instance, between 2001 and 2008, French manufacturers voluntarily reduced sugar by 10%. In Argentina, the government adopted a law in 2013 on mandatory maximum levels of sodium permitted in meat products, soups, seasoning mixes, bread and starch products, and tinned foods.[76] This led to a rapid response from the food industry and between 2011 and 2015, national average daily salt intake fell by 2 grams per day, from 11.2 to 9.2 grams.[77]

Multinational as well as domestic food and beverage companies can reformulate products to increase 'healthy' components such as fibre and reduce less healthy ones, for example saturated fat and sodium. There are also opportunities to invest in new product development of more nutritious foods which can be promoted through public messaging, promotion of better use of food-based dietary guidelines and marketing strategies.[11,5]

Governments can play an important role in providing the necessary guidance and expertise to support product reformulation (see Box 5). A mix of government- and industry-led initiatives has been implemented in several countries, mainly in high- and middle-income countries, to guide reformulation of food products[78] and different approaches have been used to define reformulation targets for manufacturers such as mandatory limits on level of salt, fat and trans fat in food products.[75] For example, nutrient profiling allows several nutrients to be considered simultaneously with the aim of producing reformulated products with a higher overall nutritional quality.[79]

Box 5. Public sector engagement with the private sector: the Scottish Food and Drink Federation (SFDF)'s Reformulation Programme[80]

The Scottish Food and Drink Federation (SFDF)'s Reformulation Programme is a free government service providing small to medium-sized food manufacturing businesses in Scotland with tailored advice to help them reduce the energy content (through lowering levels of fat or free sugars) as well as the salt content of their products. Funded by the Scottish Government, the service helps businesses which typically do not have significant, if any, 'new product-development resource' or reformulation experience. Updating food product composition is one way that manufacturers are helping consumers to lower their energy intake and consumption of fat, sugars and salt to improve public health. Between 2011 and 2014 SFDF's Reformulation Programme supported around 50 producers across Scotland which led to some significant reductions in salt, saturated fat and caloric content of their products.[81]

3.1.3 Supporting commercial food fortification

Around two billion of people worldwide are deficient in essential micronutrients such as iron and vitamin A.[6] Food fortification is a powerful way to address this issue and takes many forms which include vitamin A-fortified cooking oil, soy sauce with added iron, and flour enriched with iron, zinc, folate and B vitamins. According to the World Bank, "probably no other technology available today offers as large an opportunity to improve lives and accelerate development at such low cost and in such a short time".[82] Several large and small-scale food fortification initiatives have been established (see Box 6) but progress is not proceeding at the scale and pace required.[83]

Box 6. Examples of food fortification in West Africa, Kenya and China

The Fortify West Africa (FWA)[86] initiative is a public-private partnership which aims to reach 70% coverage of vitamin A fortified cooking oil and 70% coverage of wheat flour fortified with iron, zinc, folic acid and B vitamins in the region. National alliances between government ministries of health, commerce, industry and finance, United Nations agencies, NGOs, domestic food industries, food importers and local research organisations have four functions:

- developing national standards and directives on mandatory fortification;
- building capacity for cooking oil and wheat flour milling industries to implement fortification, and for regulatory agencies to monitor compliance;
- developing and implementing social marketing campaigns on branding fortified foods;
- supporting public sector enforcement of standards and quality assurance systems.

As of 2011, approximately 55 million people in West Africa were consuming fortified wheat and the same number were consuming fortified vegetable oil.

Matungu Community Development Charity (MDCC), Kenya[87]

MCDC, supported by the Global Alliance for Improved Nutrition (GAIN) Marketplace for Nutritious Foods, worked with around 100 farmers on a market development programme to produce amaranth (seeds rich in dietary fibre and protein) and orange fleshed sweet potatoes, which are rich in Vitamin A. MCDC commits to buy all the output from participating farmers and uses the produce to make fortified flour. It distributes the fortified flour to local shops, as well as to local hospitals and schools. It is marketed in small packets to make it more affordable to those on low incomes. MCDC is considering developing a cooperative model to help it expand.

Ying Bang Bao[88]

A powdered complementary non-commercial food supplement (CFS) called Ying Yang Bao (YYB) was developed and distributed in China by Biomate, a private company with a nationwide distribution network in grocery stores. YYB contains nine nutrients based on those likely to be missing in a Chinese child's diet and includes full fat soy flour (which adds essential fatty acids and protein). A small-scale study (2001–2004) first provided the product free to children 4-12 months of age. Among those who received YYB, anaemia dropped by 45% in 6 months and after 6 years the group still had significantly higher IQs than the comparison group.

Staple food fortification was recently ranked among the top three international development priorities by the by Copenhagen Consensus Centre[84] which calculated that the annual cost of increasing iodized salt access to reach 80% of the population of South Asia and sub-Saharan Africa would be just 5 cents per person treated, or $19 million in total.[84] The benefits were calculated to be worth as much as $570 million in health-care savings and increased productivity.[84] The 2015 Food Fortification Summit held in Tanzania concluded that unless the availability and consumption of fortified foods in countries can be rapidly scaled up, the attainment of some of the Sustainable Development Goals (SDGs) – specifically SDGs 2, 3, 4 and 8 – will not be possible.[85]

Despite reaching millions of people and legislation for mandatory staple food fortification being in place in over 80 countries, micronutrient deficiencies continue to be a particular problem in many LMICs. One issue is that when companies pass the cost of fortification on to consumers, fortified foods can become inaccessible to poor consumers, who are generally more exposed to vitamin and mineral deficiencies.[89] Even when countries introduce legal requirements to fortify food, as for example in Tanzania in 2012,[90,91] they can be difficult to enforce. The poorest are most likely to buy their flour from small-scale distributors, who are generally not listed in government records and cannot therefore be monitored to ensure they are adding micronutrients to their products.[92] These distributors often lack the capacity to implement and comply with these regulations. Another challenge concerns food fraud in that consumers are unable to check whether food is fortified which can adversely affect demand.

There are therefore two important conditions which need to be met to expand and sustain food-fortification efforts to reach the most vulnerable populations. The first is mandatory regulation in high-burden countries, aimed at making fortification widely available. One important reason for mandatory regulation is that it creates a level playing field for businesses and increases their incentive to fortify, unlike voluntary fortification. Globally, 87 countries have legislation to mandate fortification of at least one industrially milled cereal grain.[93] This is the kind of certainty companies need to commit to fortification. An effective regulatory framework sets out what foods and condiments to fortify, sets fortification standards to achieve public-health outcomes and ensures quality control and compliance. However, while mandatory regulation is important, it is equally important to recognize the difficulties this will impose on small enterprises, which are least able to bear these costs and comply with the registration and certification process.

The second condition is that an effective quality assurance/control (QA/QC) system, which involves the food producers, is in place. This is critical to maintain the quality of fortified foods as they are released in the marketplace. The system should include testing of ingredients, monitoring of the production process and testing of the final product for national producers of salt, flours and cooking oil, as well as producers of fortificants. It is also important that policymakers select foods for fortification carefully, since overconsumption of salt, sugar and cooking oil are associated with negative health effects.

Enforcement of fortification compliance is essential to get universal impact. This means that trade and food labelling should be predictable and consistent across borders to justify the necessary investments. This is currently not the case for many countries. The Global Fortification Data Exchange (GFDx) is a new analysis and visualization tool for food fortification data, designed to allow donors, implementers, governments, private sector and research institutions to access the latest available fortification data for all countries.[94] The Fortification Assessment Coverage Toolkit (FACT) developed by GAIN in 2013, can assess fortification programme coverage and utilization data can help identify programme barriers and estimate the potential for impact.[95]

3.2 Enabling a diversity of accessible retail outlets

Industrialization, advances in the food industry (production and creation of new processed foods), and the rapid expansion of supermarkets worldwide have increased the availability of a variety of processed foods at relatively low costs in high-income, and increasingly, in many middle-income countries. For instance, supermarkets in middle-income countries, especially in Latin America,[96] have evolved from providing high-price luxury food items to supplying mass-produced cheap and processed foods.[97] In response, the consumption patterns of households have shown a significant shift from staple and unprocessed foods to processed foods, many of which are energy-dense and highly or ultra-processed. Analyses of household food expenditure surveys in Brazil show that the contribution of processed and ultra-processed products to dietary energy has risen from 20.3% in 1987 to 32.1% in 2009 in households located in urban areas.[98]

Some studies have documented the rapid increase in modern retail markets in Latin America and Asia.[99] Consequently, the food value chain in these regions is increasingly influenced by retailers and major packaged food and beverage companies.[99,100,101] In HICs such as the USA, the retail sector and agribusinesses have already created full vertical integration of the food value chain.[102] Despite the expansion of modern supermarkets in some LICs, foods that are important sources of micronutrients continue to be accessed primarily through traditional markets and retail outlets.[103,104] In Mexico, Central America and Southeast Asia, the supermarket share is 10%–50% of the retail market while in sub-Saharan Africa (outside South Africa) and South Asia the share is less than 10%.[105] In India, supermarkets would have to grow at rates of 20% for 20 years to reach just 20% of market share.[106]

In Kenya, Zambia and Nicaragua over 90% of all fruits and vegetables are purchased in traditional retail outlets.[103] Even in middle-income countries with higher modern supermarket penetration, for example in Thailand and Mexico, the traditional retail outlet share was 63.2% and 72.5%, in 2006 and 2007, respectively. Animal source foods are disproportionately accessed by LMICs households through traditional markets.[107] In Ethiopia, 90% of households (across all income groups) buy their beef through a local butcher in a wet market. Evidence from Kenya (camel milk, meat), Bangladesh (meat, dairy), Vietnam (pork), Ethiopia (beef, raw milk) indicates that traditional retail outlets remain the primary access point for fresh meat, especially for low-income households.[103,108,109]

Although supermarkets in LMICs offer frozen, preserved or packaged items which offer convenience, any benefits from

increased micronutrient intake associated with these opportunities for dietary diversity, are unlikely to reach the majority of consumers in these countries.[103,110] While there is a paucity of recent surveys of the food retail sector in many LMICs, particularly in Africa, recent evidence suggests that supermarkets provide access mostly to urban, higher-income households.[111] In Zambia and Kenya, for example, modern supermarkets primarily supply to households in the top 20% of income distribution.[109,111] The diverse product assortment offered by these retailers was found to be too costly for most households in both countries. The available evidence suggests that lower-income households in many LICs, for example, do buy processed and packaged foods in supermarkets, but not fresh produce, dairy and meats.[112] Large amounts of ultra-processed foods (in particular sweet, sugary and/or salty packaged snacks) already make their way into local markets in remote rural areas of LICs. In some cases, these products are purchased from urban supermarkets which provide an informal wholesaler function.

3.2.1 Strengthening the informal food market and retail sector

Informal (or 'traditional') traders, marketing agents and retailers are an important part of food systems in much of the world. These intermediaries bridge the gap between (largely rural) food producers and (increasingly urban) consumers. They create supply chains and markets, anticipate and absorb market risks, identify opportunities for expansion of markets and often engage in artisanal processing to add value to the raw commodities offered by producers.

In cities throughout LMICs, the informal sector plays a central role in making food more accessible to the urban poor and is an important source of non-agricultural employment.[113] Despite the growing supermarket penetration in some low- and middle-income areas, the urban poor are highly dependent on food from the informal sector.

The reasons for this dependence include:

- Spatial accessibility (street traders tend to gravitate towards areas with high foot traffic, such as rail terminals, bus stations and taxi ranks);
- Competitive prices;
- Breaking bulk (informal traders often sell smaller quantities of product which makes this an attractive option for households with low and inconsistent incomes, and limited storage and refrigeration space);
- Proximity to schools (informal food traders often locate close to schools to sell to school children during their breaks).[113]

Street foods are usually economical, socially and culturally acceptable food items or meals which save time in food preparation for many adults working long hours.[114] They make a significant contribution to consumer energy and protein intake and are easily accessible. Selling street foods provides an important source of income to many people who would otherwise not find employment.[115]

The importance of informal food retail as an economic activity is evident from a recent study of the street vending population in West African cities. This ranges in size from 13% (Dakar) to 24% (Lomé) of those engaged in non-agricultural informal employment (including services and manufacturing) (see Table 1). Street vending also accounts for a large share of women's informal employment (as high as 35% in Lomé and 28% in Bamako).[116]

Despite their ubiquity, and the valued services they provide, the role of these informal intermediaries is often underestimated in public policy dialogues. Although the role of informal food traders and street food vendors in providing affordable and accessible meals for low-income households is well known, it is seldom quantified.[117] One review of 23 studies (mostly conducted in Africa) found that the daily energy intake from street foods was 13%-50% in adults and 13%-40% in children.[115] The review also found that street foods significantly contribute to daily protein intake, and often provide 50% of the recommended daily allowance (RDA).

Table 1. Percentage of informal traders and street vendors in total non-agricultural informal employment in West Africa

City	Informal traders			Street vendors		
	Total %	Men %	Women %	Total %	Men %	Women %
Bamako	48.3	32.6	64.9	19.9	12.0	28.2
Lomé	44.6	20.8	62.7	24.0	9.6	35.0
Cotonou	43.8	19.7	61.6	18.8	7.9	26.9
Ouaga-Dogou	42.9	37.0	50.1	16.7	17.1	16.3
Abidjan	40.5	23.1	56.6	16.0	8.2	23.3
Antana-narivo	33.5	31.6	35.3	15.3	13.2	17.3
Dakar	32.1	20.0	46.6	13.0	9.4	17.3
Niamey	31.9	28.8	36.7	13.5	12.9	14.4

Source: Skinner & Haysom (2016).

Box 7. 'Makati Vendors Programme of the City' (Philippines)[124]

Despite being the economic centre of the country, Makati (500,000 inhabitants) has a very high level of unemployment. The 'Makati Vendors Programme of the City', which was started in 1992, involves 760 street vendors, most of whom are women. They sell their cooked food, which is based on local products (rice and vegetables), in the vicinity of schools, bus stops and stations. The programme aims to provide the urban poor of Makati with an alternative source of income. Apart from supporting the creation and management of micro-enterprises, and strengthening links with others active in the local economy, the programme encourages cleanliness and hygiene at point of sale. The vendors are made aware of sanitary regulations and are penalized for failing to comply (e.g. when not wearing the proper clothing). The programme has provided participants with uniform market stalls and allotted them a vending space. The vendors have been able to improve their standard of living and no longer fear being detained because they are now recognized by local authorities.

Recent studies illustrate the diversity of street foods. In Haiti, for example, 146 different street foods were identified in Port-au-Prince, of which cereals and grains accounted for 28%, fruit for 18.5%, and sugars and syrups for 16.4%.[118] In Abeokuta, the largest city of Ogun State in southwest Nigeria, 50% of meat and fish, 60% of legumes and an estimated 42–66% of all major food groups consumed came from street foods.[119] However in Nairobi, in low-income areas, more than half (53%) of the mobile street food services sold foods of only one group[120] and in a study from Cameroon, 36% of vendors sold only carbohydrate options.[121]

In many LICs, governments have adopted a restrictive approach to the informal food sector which focuses on regulation and control,[122] and ignores the role that it plays in providing food security for low-income households. Public health concerns are often used to justify the removal of informal traders. It is commonly believed, for example, that supermarket food is safer than informal market food. However, in case studies of milk in India, Kenya, and Tanzania, as well as meat in Vietnam and Kenya, the food sold in the formal sector was found to be no better (and sometimes worse) at meeting standards than food sold in the informal sector.[105] Further, reviews of the toxicology of South African street foods have found that street food vendors in South Africa are capable of producing relatively safe foods with low bacterial counts.[123]

There are examples, such as the case of pasteurized milk sold by informal traders, of government actions which have resulted in positive outcomes both for informal traders and consumers, while enforcing certain quality standards (see Box 7). In Kenya and India, initiatives to train milk traders and provide an enabling environment were effective, economically attractive, scalable and sustainable.[105] Currently, an estimated 6.5 million consumers benefit from safer milk sold by trained and certified traders in the two countries. As it is often difficult or impossible for lone traders to achieve these standards, they could be met through, for example, the formation of informal trader cooperatives.

The contribution of the informal private sector to healthy diets can be strengthened by:

- Encouraging the formation of groups and associations of informal operators and/or reinforcing those already in place;
- Sustaining meaningful dialogue with representatives who should be invited to participate in the formulation of the programmes of action which affect them;
- Facilitating reporting by informal vendors and other operatives of illegal practices among police officers and market authorities (through, for example, a 'complaints' window) and by ensuring that such violations are actively pursued; and
- Providing adequate infrastructure (i.e. storage and cooling facilities) and investing in capacity building to minimize food safety risks and health issues.[125]

Evidence suggests that training informal value chain participants can be effective.[105] A meta-analysis of interventions to train food handlers found those trained had around 30% improvement in knowledge over controls and 70% improvement in practices.[126] It is important to note that government investments and interventions to improve informal market infrastructure (i.e. adequate water and sanitation, regular refuse collection and provision of sheds and storage facilities) are also decisive factors in the improvement of food safety, coping with pervasive environmental hazards and ensuring inclusiveness of the informal sector. [127]

4. More effective public-private engagement for improving diets and nutrition

Diets evolve over time and are influenced by many factors and complex interactions. Income, food prices (which will affect the availability and affordability of nutritious foods), individual preferences and beliefs, cultural traditions, as well as geographical, environmental, social and economic factors, all interact in a complex manner to shape individual dietary patterns.[5] Therefore, promoting a healthy food environment, including food systems which promote a diversified and healthy diet, requires involvement across multiple sectors and stakeholders, encompassing the public and private sector.

A number of calls to action have been made where positive outcomes on healthy diets will require greater involvement and action from the food industry.[28] It is important for the public sector to lead in promoting and facilitating healthy diets via setting standards, signalling appropriate practices and enabling business environments. The private sector must be incentivized to ensure that nutrient-rich, safe and affordable foods and food products become accessible in all market settings. In all cases, accountability and transparency of action must be greatly enhanced, and the role of healthy diets in addressing all forms of malnutrition needs to be more explicit in all public sector actions.

Achieving the global World Health Assembly (WHA) goal of reducing premature mortality from NCDs by 25% by 2025, and the SDG target of reducing by one third premature mortality from NCDs (target 3.4),[128] will require a massive scale-up of concerted action to reduce consumption of ultra-processed food and drink products and increase intake of nutritious foods. (see Box 8).[129] The Global Panel's recent brief on the Sustainable Development Goals (SDGs) emphasized how providing high-quality diets for all is critically important for the successful delivery of most of the SDGs.[55] Similarly, resolving the burdens of maternal and child undernutrition (also 'Global targets 2025' endorsed by the WHA in 2012),[130] will mean increasing nutrient-rich foods in the diets of all consumers, including in low-income settings.

Box 8. WHO's Global Strategy on Diet, Physical Activity and Health[131]

The World Health Organization (WHO) Global Strategy on Diet, Physical Activity and Health contains recommendations for the food industry to address chronic disease. They include:

- Promoting healthy diets and physical activity in accordance with national guidelines and international standards, and the overall aims of the Global Strategy;
- Limiting the levels of saturated fats, trans fats, free sugars and salt in existing products; continuing to develop and provide affordable, healthy and nutritious choices to consumers;
- Providing consumers with adequate and understandable product and nutrition information, practicing responsible marketing that supports the Strategy, particularly with regard to the promotion and marketing of certain foods to children;
- Issuing clear and consistent food labels and evidence-based health claims that will help consumers to make informed and healthy choices with respect to the nutritional value of foods, and providing information on food composition to national authorities.

The WHO recommendations aimed at the private sector were laid out in the 2011 Lancet Obesity Series.[132] They called for the private sector to use all available strategies to support public health efforts to create healthier food systems and to support efforts to monitor progress by the sharing of relevant data. In response, some companies and industry bodies have acknowledged the important role they can play to support healthy food environments.[133] However, national agricultural subsidy systems in many countries favour the production of staple crops, oils and sugar, thus distorting the costs of raw materials and leaving the private sector little incentive to produce nutritious foods. This contradiction necessitates a realignment of incentives across the food system so industries can respond to appropriate priorities set by policy in terms of dietary outcomes.

Governments have an important role in promoting healthy food environments which enable people to adopt and maintain healthy dietary practices.[11,134] In LMICs, morbidity and mortality are directly related to nutrient deficiencies and inadequate consumption, while in many HICs, the public sector has begun to promote the consumption of nutritious foods at the same time as reducing the amount of energy in the diet.[135] There is evidence that some people welcome even restrictive interventions if they help them make healthier choices and create environments conducive to healthy living.[135]

Public sector interventions fall into two categories. One is a recourse to regulation, for example, to restrict the marketing and advertising of less nutritious foods, and the sugar and salt content in food and beverage products. Largely in response to the introduction of new regulations in a number of countries, the food industry has begun to tackle nutrition- and health-associated challenges in two complementary ways: (i) by removing or replacing unhealthy ingredients (based on both national and international recommendations) such as trans fats, salt and added sugar; (ii) by incorporating 'health-promoting ingredients' and bio-active compounds in new products, for example vitamins, 'healthier' fats, plant extracts, fibres, flavonoids, probiotics and prebiotics.[135] The other category, which can be successfully combined with regulation, is by creating conditions in which more nutritious choices are easier to make, for example through nutrition education, nutrition labelling and Food Based Dietary Guidelines (FBDG).[11]

Private-sector commitments have typically been framed by self-regulation and voluntary codes of practice, often as part of corporate social responsibility initiatives.[136] However, in common with many LMICs government-set standards which are not always monitored and enforced, outcomes are generally weak and uncertain in the absence of independent monitoring and compliance programmes. This is particularly the case for changing marketing practices which influence the food purchases and diets of children and adolescents.[11] The Access to Nutrition Index (ATNI),[137] which aims to achieve widespread recognition as a public accountability tool, recently found that most food and beverages companies performed poorly across a range of indicators relating to the food environment (see Box 9). Some of the positive steps taken by a number of companies include global public commitments to address food reformulation, consumer information, responsible marketing, promotion of healthy lifestyles and involvement in public-private partnerships.[138] These voluntary approaches have delivered some progress in a small number of areas, such as reducing dietary salt in some countries[139] and restricting a small amount of advertising.[140]

Box 9. The Access to Nutrition Index

The Access to Nutrition Index (ATNI) is a monitoring initiative that evaluates global food and beverage manufacturers on their nutrition-related commitments, disclosure practices, and performance related to obesity and undernutrition. ATNI uses a broad set of indicators on corporate governance, product portfolios, accessibility of products, marketing practices, support for healthy lifestyles, food labelling and health claims, and stakeholder engagement, to score companies on a scale of zero to ten. The initial assessment of the largest 25 global food and beverage manufacturers in 2013, found that most companies were rated poorly (scored less than 5 out of 10) and that there was substantial scope for companies to improve food environments.[141] A second assessment was made in 2016.[142] Both assessments found that company practices lack transparency and often do not reflect their nutrition commitments and policies.[133]

5. Moving forward: key challenges

Opportunities exist for deeper public and private sector engagement to improve food environments in all countries. The 2013 Lancet series on Maternal and Child Nutrition concluded that the failure to engage was a "missed opportunity" for improving diets, and that the troubled history between actors from both sectors had made it "more difficult for the private sector to be a major contributor".[143] However, the current situation does not have to persist if appropriate actions are taken now and in the coming decades.

Better diets are possible. Ensuring that everyone eats healthily is key to all aspects of social and economic development. This will require focused, determined and sustained action from policymakers working in partnership with the private sector. Governments and private sector stakeholders should engage in high-level dialogues aimed at realigning national food systems with the goal of attaining healthy diets and promoting a common understanding of how each side can contribute to that agenda. This means widening policy approaches to ensure all parts of those systems are well-functioning and work together to deliver safe and healthy diets for all, which address all forms of malnutrition.

However, whilst there is a growing recognition within the global policy community of the urgent need to improve nutrition through ensuring healthy diets, a key challenge will be to persuade the food industry to engage in that policy objective. The food industry's activities are typically focused on delivering individual food products, rather than on enhancing diets and larger food systems per se. Also, notwithstanding the commercial benefits of social responsibility surrounding nutritious foods, there is profit in responding to current consumer demand for convenient, tasty, ultra-processed food products which do not contribute to a high-quality diet.

All of this means that policymakers need to be realistic about their own limits in shaping consumer behaviour. Similarly, they need to be pragmatic in seeking to persuade

> The private sector is in the spot light for its critical role in addressing malnutrition in all its forms. This is a unique opportunity for governments to create the right conditions for change.
>
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industry partners to play a more active role in improving diets. In particular, a policy focus is needed to encourage and enable firms to shift the balance of their activities in favour of products as well as fresh produce which are more nutritious, affordable and accessible to all.

Regulation remains a powerful tool at the disposal of policymakers for influencing food and beverage companies, although policymakers need to be wary of the potential negative effects of regulations that are hard to enforce or costly to comply with.[153] For example, regulatory measures can be widely applied to encourage the reformulation of food products to reduce the content of salt, fats (i.e. saturated fats and trans fats) and free sugars. It can also help restrict the marketing of foods and non-alcoholic beverages to children. There is also scope for adopting regulatory instruments relating to food labelling policies, as well as economic disincentives (i.e. taxation) of less nutritious foods. New regulation may not always be unwelcomed by businesses. At an industry workshop conducted on behalf of the Global Panel in 2016, a number of companies emphasized their desire to improve the nutritional profile of some of their food products, by for instance reducing salt content. However, they also noted that it is often difficult to implement such changes in the absence of regulation when their competitors are free to maintain high salt levels in competing products.

Nevertheless, given the growing momentum around the drive towards healthy diets and better nutrition, there are clear benefits for food and beverage companies to engage in partnerships with the public sector and position themselves on the inside of the change process. This approach would provide them with opportunities to inform and help shape the design and implementation of policy actions. It would also enable companies to anticipate change in demand and position their businesses accordingly.

As a first step, both sectors need to establish a common understanding of the critical role of diet quality in nutrition and to identify priority challenges which need to be addressed. The options for addressing these challenges fall into two broad categories: i) incentives – so that companies have confidence in taking decisions and risks associated with sourcing and supplying nutritious foods and products; and ii) enabling measures – so that the business environment works to encourage rather than inhibit innovative approaches.

At the outset, it will also be important for both parties to look for win-wins which address the many competing agendas of the food sector; for example relating to jobs, growth, environmental sustainability, social responsibility, as well as nutrition. Identifying common ground will help to accelerate action and progress. Specific priorities and actions need to be informed by the many complex constraints that inhibit businesses from investing in nutritious foods. For example, these may relate to lack of technical capacity, weak business-to-business linkages and poor access to market information.

The Global Panel sets out six key questions below which need to be addressed and resolved as part of any new partnership approach to address all forms of malnutrition in LMICs. While much will depend on individual circumstances, it is hoped that these questions will help inform new and ongoing work to build much more ambitious and effective links between the public and the private sectors.

1. Encouraging investments in food sector SMEs

A general consensus has emerged around the key role that SMEs can and should have in improving diet quality and nutrition,[59] reducing poverty[59] and achieving the Sustainable Development Goals (SDGs).[144] However, the lack of access to credit or sector-specific loans remains a problem for many SMEs in LMICs to invest, for example, in micronutrient-rich foods which promote healthier diets and good nutrition for all.

How can SMEs access loans to invest in food products which enhance dietary diversity and quality?

Country-specific strategies that boost access to finance for SMEs, such as government-backed credit and risk guarantees, especially amongst women, are important public interventions to improve diets, create jobs and promote economic development.[145] A good example of a Public-Private Partnership (PPP) arrangement in financial services is the *Global Commercial Microfinance Consortium*, which promotes private sector investments in LMICs. This consortium is a PPP of governments and international banking institutions supported by USAID funding and credit guarantees, and managed by Deutsche Bank.[146] The *Africa SME Programme*,[147] designed and funded by the African Development Bank (AfDB) in partnership with the governments of Denmark and Spain, also supports African local financial institutions with long-term liquidity (i.e. lines of credit) and with technical assistance to be able to provide relevant financing to local SMEs and to build larger and good quality SME loan portfolios. It is also important that investments, from donors or other businesses, address the lack of technical expertise and guidance which prevent many SMEs from realizing their potential.

2. Promoting consumer demand for healthy diets

Today's food systems are not helping consumers – especially the poorest ones – to make better food choices consistent with optimal nutrition outcomes. A lack of diverse, nutritious foods remains a key contributor to poor nutrition. For many consumers in LMICs, nutritious foods such as fruits, vegetables, dairy and fish are unavailable or unaffordable. Consequently, too many consumers make food choices that are inconsistent with their own good nutrition, health and wellbeing. This must change.

How can consumer demand for high-quality diets and nutritious food products be created and promoted so that companies have confidence to invest and take risks in delivering more nutritious foods?

Both public and private sectors need to step up and work together to find ways to increase access to affordable, high-quality diets and to enable consumers to make more nutritious food choices. This is key to reducing healthcare costs and improving productivity.[5,154] A GAIN project in Mozambique, for example, is piloting vouchers for distribution of complementary nutritious foods produced by local SMEs through health centres and the community, as well as via direct sales through retailers, in partnership with Population Services International and Save the Children.[148] Small entrepreneurs are generally closer to consumers and can grow their market by being more creative and flexible, and offering more convenience and better services (i.e. home-delivery services to mothers living in rural areas or urban informal settlements).

Communication can also be a useful tool to increase knowledge and shift attitudes and cultural norms to produce changes in consumption behaviour.[149] Options for the public sector, sometimes collaborating with private sector, to influence consumer demand have been discussed in previous Global Panel's briefs[5,11] and include: the development and promotion of FBDG; developing school feeding programmes which encourage children to adopt a healthy diet; encouraging culinary skills in schools and communities; supporting point of sale information through food labelling that ensures accurate, standardized information on nutrient contents in food in line with the Codex Alimentarius Commission guidelines; and nutrition and dietary counselling at primary health care facilities.

3. Public incentives for appropriate action in the private sector

Governments often operate in isolation from the realities of what private food companies actually sell. Since informal markets and supermarkets are a major source of processed foods in low-income settings, and they are likely to expand in the future, they should be encouraged to play an active role in redirecting the 'nutrition transition' towards healthier diets.[50]

How should governments incentivize private companies to improve the quality of food products?

Price incentives implemented by governments could be used to counterbalance people's poor eating habits. For example, a cap-and-trade system, with "credits" calculated according to nutritional and other characteristics of foods, could make nutritious food available at reasonable prices, and less nutritious foods available at higher prices. Governments can implement incentives and voluntary programmes which promote healthy choices with regard to food options.

4. Managing risks – a role for insurance

There are a number of potential risks for companies wishing to invest in R&D or retail of nutritious foods. These risks can be associated with a failure to generate sufficient demand; macroeconomic risks including fluctuations in economic conditions and commodity prices, interest and exchange rates; political risks such as changes in government; policy risks entailing regulatory changes, as well as technology and operational risks. While it might be easier for larger companies

in the private sector to get access to finance, this will only be available where the operating cash flows of the company are expected to provide a return on investment (i.e. the cost has to be borne either by the customers or the government through subsidies, etc.).

How can risks associated with developing, producing and selling more nutritious foods be minimized?

There is no unlimited risk bearing – private companies (and their lenders) will be cautious about accepting major risks beyond their control and will expect returns on their investment sooner rather than later. To encourage investment, suitable insurance products need to be designed and made available. This will be especially important for SMEs in LMICs which have a very limited ability to bear risk.

5. Building trust

Trust is an important ingredient of a successful relationship between public and private sector stakeholders, and between consumers and retailers. It can reduce risk-related costs, and improve and sustain loyalty to brands. Building trust can be a crucial channel to ensure greater accountability for companies and governments, reduce tensions and monitor impacts. Transparency can be a business-creating incentive for companies given the importance in the food and nutrition sectors of consumer awareness and information on quality. These are key elements for creating and increasing the demand for (nutritious) food that the suppliers/ companies need to match to their supply.[150]

How can governments ensure that engagement with for-profit companies to promote universal access to healthy diets is underpinned by core principles of transparency and accountability?

Currently, there is a significant lack of trust and transparency relating to food sector operations.[143,151,152] The Access to Nutrition Index (see Section 4) monitors this for major food and beverage companies but additional mechanisms are needed which can cover other actors in the food system, such as farmers, entrepreneurs and local companies. There is also a need for better data collection. It will also be important to develop indicators of the outcomes of government efforts to create enabling environments which promote nutritious foods and which track businesses who want contribute to driving better affordability and accessibility to healthy diets.

6. Infrastructure

One of the major constraints to higher quality diets is unreliable, or lack of, supporting infrastructure, such as remote roads, electrical and water-grid networks. In LICs, where food loss is a major issue, investing in better infrastructure, particularly cooling and storage facilities, is paramount.

How can infrastructure planning be better geared toward reducing food losses and promoting year-round access to enhanced diets?

Recognizing that public funds for such projects may be limited in many countries, governments should encourage private investment and PPPs. This requires building an overall enabling business environment for investment.

Conclusions

Meeting the complex policy challenge of the triple burden of malnutrition will require much greater commitment and action from almost all governments in LMICs. The nutrition crisis is already imposing huge health burdens across the developing and developed world, but as yet few countries are on track to meet the global goals upon which delivery of sustainable healthy diets and much else depends. The UN Decade of Action on Nutrition has the potential to drive nutrition much higher up the global policy agenda but its success will depend not only on the engagement of governments and the private sector, but also, crucially, engagement between them.

The evidence presented in this brief suggests that the private sector, governments and individual consumers all have key roles to play in making healthy diets available and affordable for all. While much of the problem arises in the private domains of business and consumer choice, the 'costs' associated with poor diets are mainly born by society and public health budgets. This is why partnerships among governments, the food industry and consumers are essential going forward. It will be more profitable for industry and more cost-effective for governments to work together towards enabling better diets than to be in conflict over what must become common goals. It is imperative that both sides find ways to work together at a new and much more ambitious level. There has to be mutual respect and trust between consumers and retailers (to supply nutritious foods at affordable prices), between consumers and governments (who hold responsibility for consumer protection and education), and between governments and retailers. There also needs to be widespread recognition that innovative products and practices across the food system need to be promoted through profit, risk-management, incentives and a level playing field.

There is growing global convergence in dietary patterns. As incomes rise LMICs, more nutritious food is being consumed around the world, but more ultra-processed foods are also being consumed, rising to unprecedented levels. It is crucial therefore that governments, donors, the private sector and international organisations see poor diets as a critically important distributional issue that deserves the same attention as other facets of the distribution of income or wellbeing. The health burden associated with poor diets already affects one in three of the global population. The prospect of this rising to one in two in the decades ahead shows that policymakers and the private sector cannot afford inaction.

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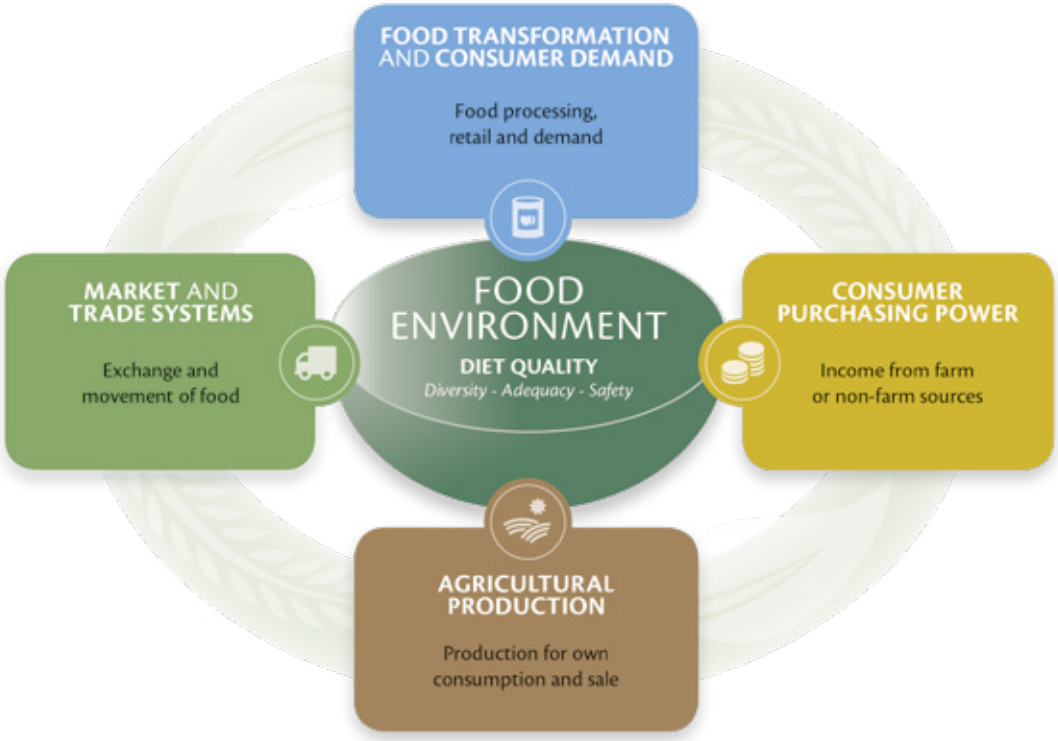
How can Agriculture and Food System Policies Improve Nutrition?

The multiple burdens on health in low – and middle-income countries due to food-related nutrition problems include not only persistent undernutrition and stunting but also widespread vitamin and mineral deficiencies and a growing prevalence of overweight, obesity and non-communicable diseases. These different forms of malnutrition limit people's opportunity to live healthy and productive lives, and impede the growth of economies and whole societies.

The food environment from which consumers should be able to create healthy diets is influenced by four domains of economic activity:



In each of these domains, there is a range of policies that can have enormous influence on nutritional outcomes. In the Global Panel's first Technical Brief, we explain how these policies can influence nutrition, both positively and negatively. We make an argument for an integrated approach, drawing on policies from across these domains, and the need for more empirical evidence to identify successful approaches.

Find out more here: Glopan.org/nutrition

Although the private sector is involved in all segments of the food system, this policy brief focuses predominantly on the role it plays in shaping diets and provisioning consumer choice through its activities in food transformation and food retail.

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