Global Panel
on **Agriculture**
and **Food Systems**
for **Nutrition**

TECHNICAL BRIEF | November 2014

HOW CAN **AGRICULTURE** AND **FOOD SYSTEM POLICIES** IMPROVE **NUTRITION**?

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. The Global Panel is working to ensure that agriculture and food systems support access to nutritious foods at every stage of life.

RECOMMENDED CITATION: Global Panel on Agriculture and Food Systems for Nutrition. 2014. How can Agriculture and Food System Policies improve Nutrition? Technical Brief, London, UK: Global Panel on Agriculture and Food Systems for Nutrition.

ACKNOWLEDGEMENTS: This Technical Brief, and the accompanying Policy Summary, has been prepared by the Global Panel with the assistance of the Global Panel Secretariat and GMMB. We owe particular thanks to experts in agriculture, nutrition and health who participated in a workshop at the World Bank in February 2014, which generated most of the ideas presented in this document, and other experts who fed valuable information into this process.

FOREWORD

We are pleased to share with you this first Technical Brief from the Global Panel on Agriculture and Food Systems for Nutrition. The Global Panel was established in June 2013 at the Nutrition for Growth event in London. Our members operate together and in their personal capacities to guide and support decision-makers, particularly governments, to generate nutrition-enhancing agricultural and food policy and investment in low and middle income countries.

The limited access of poor people to a healthy diet lies at the root of multiple burdens of food-related diseases in low and middle income countries. Approximately 165 million children alive today will have their future potential stunted due to a chronic lack of food and nutrition. At the same time, low and middle income countries are experiencing widespread deficiencies in essential dietary vitamins and minerals, and a dramatic increase in non-communicable diseases (NCDs) caused in part by consumption of foods that are energy-dense yet low in essential vitamins and minerals, contributing to an increase in overweight and obesity. As a result, food-related NCDs including diabetes and cardiovascular disease are the most rapidly growing causes of death in these countries. Poor nutrition places a heavy constraint on national growth and development, and constitutes a global challenge that affects us all.

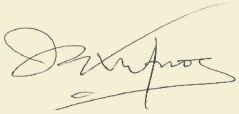
We believe that agriculture and food systems should contribute to ensuring that people have access to affordable, nutritious foods at every stage of life. Our objectives are to help generate and stimulate a stronger evidence base for how changes in agriculture and food systems can improve nutrition, and to use this knowledge to create a new understanding amongst decision-makers of the role and future potential of agriculture and food systems in achieving nutritional security. We want to help them to drive change by catalysing collaborative actions in agricultural and food systems that will improve diets and equitable nutrition outcomes for all, with special attention to the nutritional needs of women and children.

In this document, we show the breadth of policies relating to agriculture and food systems that influence nutritional outcomes for people and the opportunities to make these more nutrition-enhancing. For busy decision-makers, we have captured the main points of this document in a much shorter Policy Summary. These documents will form a platform for much of the future work of the Global Panel internationally and with governments.

We hope that you find this useful and will share its ideas with others.

Yours sincerely,

JOHN BEDDINGTON
Global Panel Co-Chair and former UK Government Chief Scientific Advisor



JOHN KUFUOR
Global Panel Co-Chair and former President of Ghana

INTRODUCTION

Governments the world over are focused as never before on the importance of linking agriculture and food markets with improved health and nutrition. Recent food price volatility, expected population and food demand growth, changing dietary patterns and the threat of climate change are all factors adding complexity to the challenge of achieving food and nutrition security. Moreover, production, marketing and consumption patterns are changing rapidly the world over, which requires a new understanding of the dynamic pathways that link producers to consumers. The dialogue around healthy food systems and healthy populations has to be reframed to take account of both intended and unintended consequences of policy actions and private sector investments. Addressing not just agricultural productivity but improvements throughout the food and healthcare system represent critical opportunities for reducing malnutrition.

Policy decisions affect many other parts of the food system, including agriculture, consumer knowledge and food choices. Thus, more attention needs to be paid to understanding and promoting policy actions that support nutrition-enhancing food systems as a whole. The question is how. Which policies and programmes work best in what contexts? While the evidence for appropriate health sector policies and services supporting nutrition is strong, the equivalent evidence regarding appropriate policy choices linking agriculture via food systems to consumer choices resulting in high quality diets remains weak.[1]

This Technical Brief lays out the rationale for placing higher policy priority on investments in agriculture and food chain developments for nutrition, including the generation of new evidence of what works best, and presents a conceptual framework to help build understanding of the various entry points for policy action across the food system. It represents the first in a series of technical briefs prepared by the Global Panel on Agriculture and Food Systems for Nutrition to disseminate information useful to inform policy, programme and investment to benefit nutrition, particularly among vulnerable mothers and children.

THE MULTIPLE BURDENS OF MALNUTRITION

Although some countries have made recent gains, malnutrition in its various forms remains widely present globally and the number of people affected stays stubbornly high. For example, more than 2 billion people suffer a serious lack of vitamins and minerals and more than 200 million children are stunted or wasted.[2] At the same time, 1.4 billion people are now overweight or obese, including in low and middle income countries. Just as with undernutrition, obesity is in part related to poor quality diets, as are food-related non-communicable diseases, such as diabetes and cardiovascular disease. The costs associated with child undernutrition alone are huge, averaging 8% of annual gross domestic product (GDP) across developing countries, with a range from 3% of GDP per annum in a country like Swaziland to more than 16% of GDP in Ethiopia.[3,4]

200 MILLION
children under the age of 5 are stunted or wasted due to undernutrition.

2 BILLION
people suffer physical and cognitive effects resulting from a lack of essential vitamins and minerals in their diets.

1.4 BILLION
people are overweight or obese.

THESE NUTRITION CHALLENGES POSE A DIRECT THREAT TO THE ASPIRATIONS OF THE NEXT GENERATION.

FOOD SYSTEMS ARE EVOLVING RAPIDLY

We define food systems as *the production, marketing, transformation and purchase of food, and the consumer practices, resources and institutions involved in these processes.* The elements of such systems have been evolving rapidly over the past few decades, as storage, processing and marketing technologies have transformed basic agricultural commodities into a greater variety of more processed food and non-food products aimed at specific markets and consumers. Along with innovations in production and food transformation, trade patterns have shifted as supply chains have spread around the world, increasing the stability and affordability of food for many, while integrating many more consumers into complex value chain-driven markets. This continuing transformation of food systems has arguably had both positive and negative impacts on consumer choice and resulting nutrition everywhere. The expanded range of choices challenges consumers to make informed selections of foods that not only respond to taste and convenience preferences and budget constraints, but also provide required levels of nutrition.

To ensure that national agriculture and food policies support optimal nutrition outcomes, governments must look beyond the provision of incentives for the production of staple crops towards governance of a complex, market-driven system that, while rooted in local markets, must recognise the interests of the private sector and a variety of consumer preferences which are becoming increasingly urban-based. Policies that shape national food systems must also take into account the trade environment, the potential for development of an agribusiness industry to add value and employment locally, governance of the wholesale/retail segments of the value chain, and the overall affordability of food to key groups of consumers, including the most nutritionally vulnerable.

Food systems are changing rapidly around the world. Interactions among production systems, markets, consumer demand, and retail systems are dynamic. A much improved understanding is needed of how various policy interventions might affect (positively or negatively) the quality and quantity of foods reaching local food environments.

Malnutrition in its many forms does not result just from a lack of food. There are many contributing factors, including health, care practices and education. But the food choices that people are able to make determine the quality of diets that are key to good nutrition.

Food choices are framed by the local context of food availability, accessibility, affordability and appeal.

MAPPING POLICIES TO THE FOOD SYSTEM

The relationships of the four major domains of food systems, which determine diet quality, are illustrated in Figure 1. In this schema, all major manifestations of malnutrition relate to the quantity and quality of an individual's diet, which here serves as a proxy for nutrition. The paths by which agriculture has impacts on nutrition pass through one or more of these domains. Individually and collectively, these domains present windows of opportunity for policymakers to influence the nature of food environments and whether or not they are supportive of improved diet quality. What dietary patterns actually look like is framed by choices (food demand) made within the food environment, which can be characterised as a dynamic space in which a range of food options open up to consumers based on food availability, accessibility, affordability, and appeal. In other words, food demand is influenced not only by consumer purchasing power but also by taste, convenience (in procuring and/or preparing foods), and knowledge. The food environment represents the context in which the following elements interact:

AGRICULTURAL PRODUCTION

including agricultural activities that apply resources of many kinds to the business of generating food and non-food commodities, or to the harvesting of uncultivated field and forest products, that may be consumed at home or channelled through the farm gate;

MARKETS AND TRADE SYSTEMS

that take products from the farm gate through various long or short channels towards the consumer;

CONSUMER PURCHASING POWER

and hence demand for a variety of foods is based on sales of own produce and income from labour or renting of productive assets, as well as all forms of non-farm income and transfers;

FOOD TRANSFORMATION AND CONSUMER DEMAND

through which foods are processed to varying degrees and presented to the consumer; this domain includes micronutrient fortification, labelling and regulation for safety and quality.

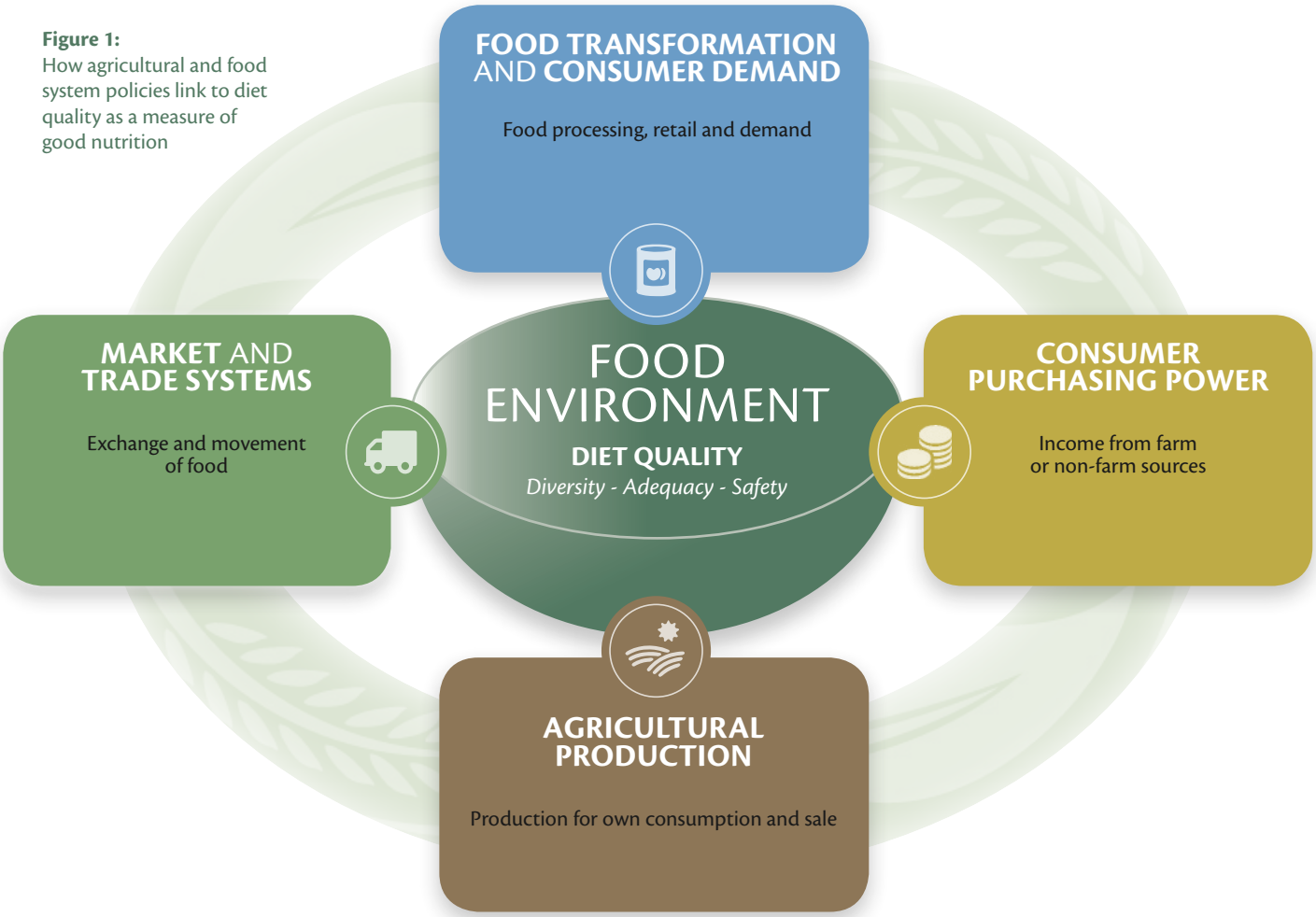


Figure 1:
How agricultural and food system policies link to diet quality as a measure of good nutrition

Policies play a critical role in determining how these interacting elements of the food system shape local food environments, and hence the diet quality options for consumers. For smallholders who consume their own produce, the food environment is largely determined by what they produce or trade locally. For households that do not produce food, the food environment is supplied by markets through food chains running from producer to consumer. Food chains may be short, including local "wet markets" which deal with fresh products, or long, where production is far from consumption. Thus, the quantity and quality of commodities in food chains, and what is done with them at various points between production and consumption, is critical to enhancing access to nutritious foods in both rural and urban areas. It is important to note that the introduction into these food chains of cheap but unhealthy foods, such as processed foods high in saturated fats, salts or sugars, can impact the food environment for all consumers, including the undernourished or currently healthy.

For each of the system elements shown in Figure 1, there are multiple policies or programme interventions that can influence nutrition in various ways. The food environment is where products of many kinds, quality, price and appeal represent the portfolio of choices characterising dietary patterns. These patterns are not static. Dietary trends are changing rapidly across the world, in part as a result of changes in income levels, migration, urbanisation, and innovations in food science and technology, as well as the globalisation of wholesale and retail businesses. But the food environment can also be positively or negatively affected by policies, regulations and investments, some of which aim explicitly to address nutrition concerns.

Public policies governing the operations of national food systems map to specific segments of the system, for example, research on enhanced breeding of certain crops, resource use regulations, processing standards, the wholesale/retail business environment, and consumer behaviours. Improving the "nutrition sensitivity" of policies therefore requires consideration of the pathways by which each policy could affect the quantity or quality of nutrients available and/or accessed by consumers (or possibly specific groups of consumers judged to be nutritionally-vulnerable) as well as how policies may interact.

Here we illustrate briefly how this mapping of policies to various segments of the food system with regard to potential impacts on nutrition might work. These policy examples, which do not represent a comprehensive list, suggest how positive or negative impacts can occur in relation to nutrition.

POLICIES INFLUENCING AGRICULTURAL PRODUCTION

Agricultural production provides inputs to commodity markets, processing and retail environments, to determine what people choose to eat as a result of options framed by the local food environment. Policies that support productivity growth in agriculture, and enhance profitability of agricultural investment, affect the food environment for both producer and consumer. However, while farming systems function relatively well in many countries, most food systems around the world are currently hard-pressed to meet the food and nutrition requirements of millions of vulnerable people. As a result, the challenge for governments is to implement policies that promote not only improved productivity, but also ensure food quality and safety along the value chain, diversity of products entering the market, and affordable prices for nutrient-rich foods. A range of interventions in the agriculture production domain have potential to make it more nutrition-sensitive than in the past.

Public research policies and priorities have generally focused research investment on increasing yields of existing staples (cereal grains, roots, tubers) or of highly profitable agricultural commodities that generate significant producer income (e.g. coffee). Increasing productivity of staple crops has reduced their price in the market, making them more available and affordable to consumers. Specific nutrient rich commodities, such as animal products, vegetables and fruit, remain relatively highly priced so that their consumption is strongly correlated with income. Policies that encourage research on improving productivity and quality of these nutrient rich commodities may encourage their increased production and reduce their price in the food environment, making them more available and affordable, and diversifying the food environment. This will be most effective in concert with changes in the marketing environment including transport and cold chains, as these commodities are often perishable. Plant breeding research that improves the levels of nutrients in cereals and other staple crops, often called biofortification, has potential to complement this diversification of production, particularly in poor households which subsist largely on inexpensive staples. For example, Mozambique was an early adopter of new vitamin A-rich orange flesh sweet potato varieties, which national researchers adapted to local pest environments and growing conditions.[5] Policies that encourage this kind of research innovation can benefit both producers and consumers.

Input subsidies may be commodity neutral, but they are often linked to the promotion of certain foods, such as maize in Malawi supported by seed and fertiliser subsidies during the 2000s, or of cash crops, such as cotton in Mali.[6] While such policies can be important for supporting the local agricultural sector – securing foreign exchange through commodity exports, contributing to national food supplies and generating rural employment – the impact on nutrition can be tangential, non-existent or even negative if the local food environment is not supplied with foods of high nutritional value and information that supports enhanced dietary choice. Initiatives that reduce transaction costs for farm-level adoption of a more diverse set of higher quality and more nutritious crops are potentially useful, such as the local distribution in countries like Afghanistan and Nigeria of vouchers to allow farmers to obtain certain kinds of seeds or fertilisers through market channels.[7]

Agricultural extension systems, neglected for many decades, have become key elements of change in regions of low farm productivity. The greatest successes have been seen where conventional top-down systems focused on delivery of technology have evolved into decentralised farmer-led advisory services focused on meeting market demand. Countries such as Uganda and Sri Lanka have made important strides in promoting public-private models of extension that emphasise training and management skills for farmers, not simply uptake of new varieties of seeds.[8] A key policy opportunity here is to promote cross-sectoral training and "common messaging" on the links between food and nutrition by frontline extension agents from multiple sectors, as undertaken in countries like Bangladesh and Liberia.[9] Extension programmes that promote crop diversification as part of integrated pest management and/or climate change adaptation strategies also present opportunities for promoting dietary diversification.

Resource access is fundamental to productive agriculture, and an area that in itself can be nutrition-enhancing by ensuring that marginalised and vulnerable smallholders (especially women) are able to invest in improved production. Nutrition outcomes are not only influenced by the content of food policies but also to whom they are directed and who they benefit. Bolivia's government, for example, implemented legal provisions in the mid-2000s to allow increased access to land for indigenous communities and smallholder farmers, and then recognised the right of indigenous farmers to organise themselves into smallholder organisations which enabled them greater resource access rights and improved the tenure status and investment potential of previously food insecure households.[8] Madagascar's government is following

Improved nutritional outcomes require that local production of a diverse variety of nutritious foods, including fruits and vegetables, be supported by government commitments. This will assure that all citizens have adequate access to available food, largely through market-based food systems, but also through the information or education that enables them to make healthy food choices.

suit.[10] The increased security of tenure afforded by such policies is important, especially if coupled with improved rights of women in accessing productive resources and the inputs needed for productive agriculture. However, their access to resources, including land and credit, is less than that of male farmers, and policies that improve this access could have considerable nutritional dividends.

POLICIES INFLUENCING **THE MARKET AND TRADE SYSTEMS**

Closely linked to agricultural production policies are those that facilitate trade in and marketing of products that populate the food environment from which consumers make their choices. Public and private sector policies are both critical here. Rural and urban consumers all depend on local informal markets, but also increasingly on more elaborate formal markets that are characterised by rapidly growing supermarket engagement with producers, vertical and horizontal integration of value chain industries, and "long food chains" that carry food long distances. There are four broad areas of policy in the market and trade systems domain that can affect nutrition.

Restrictive **agricultural trade policies** have long been blamed for hampering productivity growth, keeping consumer food prices high and entrenching poverty in countries that are blocked from exporting their products. The political push for a global agreement on trade of agriculture products through the World Trade Organization was based on arguments that import and export tariffs and quotas impede effective markets for food. But little attention has been paid to the potential positive or negative nutritional implications of trade policy. Trade policies can have a substantial impact on the food environment and on diet quality. Policies that influence the cost and efficiency of internal and cross-border movement of goods impact on access to nutritious foods, including the imposition of barriers to trade (implicit taxation or non-tariff barriers) that raise transportation costs and hence prices. Food price shocks can now have global reach, and the ways in which governments react to price volatility via engagement with or restrictions to cross-border trade can have huge ramifications for poor consumers. Nutritious animal-based food, vegetable and fruit products are frequently subject to trade restrictions, framed in terms of phyto-sanitary and health reasons, which need to be explored from a nutrition-sensitive perspective. Trade policies that encourage the importation of unhealthy foods may have negative nutritional effects, and government actions which seek to reduce imports of unhealthy foods may be confounded by international trade agreements.

Infrastructure policies influence the movement, storage and marketing of foods, and have an important role to play in more perishable (but often nutrient-rich) foods, such as certain fruits and vegetables or fresh animal products.

Relevant policies are those that affect transport, electrification and storage, and trade and taxation.

Agribusiness policy is crucial in market development. Policies and investments in market improvements work best when the actions of industry and business support effective price signals, allowing farm and other businesses to respond to demand.[11] In local market (short) value chains, policies that support quality enhancement, food safety and profitability of small and medium sized enterprises can pay important dividends to consumers through low prices and enhanced food quality. In Haiti, for example, the post-earthquake Agribusiness Recovery programme seeks to strengthen the capacity of agribusinesses through better value chain coordination, logistics, marketing and processing, and to increase the value of agricultural exports – a key to generating income for farmers, traders and the government alike, which led to more diversity of foods appearing in rural as well as urban markets (drawn by growing effective demand).[10] Similarly, Nigeria's most recent agriculture policy (Agricultural Transformation Agenda) was framed to create a more conducive environment in which private sector investments in agriculture (production of nutritious non-staples as well as staples) could be stimulated and supported, as well as rationalising the tiers of government so that they better support private sector agricultural growth.[12]

POLICIES INFLUENCING **CONSUMER PURCHASING POWER**

Effective demand for food is determined by a host of policies and macro-environmental conditions that determine real wages rates, income distribution/inequality across the population, labour conditions and productivity, income taxes, and prices for essential goods other than food. But there are nutrition-sensitive policies linked to income growth and its use that can be highlighted.

In recent decades, much effort to reduce poverty has been focused on rural communities where global poverty is greatest, and on the potential of agricultural development to improve livelihoods. It has become widely accepted that improving smallholder productivity can contribute to nutrition through two pathways, through the consumption of nutritious foods produced by the household, and through farm and off-farm income that permits purchase of healthy foods and access to relevant health care and education. This means that policies in the agricultural production domain that encourage production of healthy foods may contribute also to consumer purchasing power for rural populations which are particularly threatened by undernutrition. Crop insurance schemes that protect against food price volatility risks or extreme climatic events may also contribute to farmers' security of income and access to nutrition.

At a national level, other income-related policies can have a substantial impact on nutritional outcomes for all consumers.

Food price policies can take many forms, including consumer subsidies or price ceilings for certain categories of foods which promote their consumption. Indonesia, for example, seeks to maintain a stable (predictable) price for rice and other foods through legislated authority that empowers the Food Security Council to coordinate food security policies and programmes to achieve this (and other) ends.[8] India's Supreme Court-supported legislation (the 2013 Right to Food Act) provides food price subsidies for roughly one third of the country's nutritionally-vulnerable population and access to free hot meals for children up to 14 years of age.[13] Food price polices can also be used to restrict the consumption of foods deemed to be unhealthy, through imposing taxes that increase the prices or bans which restrict access to target products at any price (such as bans on transfats implemented in many industrialised countries).

Specific programmes which subsidise foods for key target groups, including women and children, may have particular nutritional impact.

School feeding (or food-for-education) programmes represent a commonly-used policy intervention that cuts across many parts of the food system by seeking not only to educate and acculturate children, but potentially also to improve the diets of school aged children (or meet specific nutrient gaps in target populations where the diet at home is of low or variable quality) and generate new food demand. They represent just one example of an institutional mechanism aimed at promoting nutrition via interventions that have multiple goals. Where meals provided through educational institutions are tied to a local supply of foods (as in Ghana and Brazil's home grown school meals initiatives) this can stimulate the production of nutritious foods locally, thereby linking supply incentives with a clearly articulated demand. For example, Brazil's Food Purchase Programme (known as *Programa de Aquisição de Alimentos*) represents an institutional market strategy that allows states, municipalities and federal facilities to purchase food from family farms and donate them to social assistance institutions, such as schools, community kitchens and food banks.[10]

In Africa, the concept of Home Grown School Feeding was adopted by the New Partnership for Africa's Development (NEPAD) as a flagship activity that explicitly links agriculture with education and nutrition.

Safety nets and social protection policies can play an important role in improving nutrition, both in promoting healthy food choices and in protecting consumption during times of crisis. These include cash transfer and voucher schemes (including conditional cash transfer programmes which were first shown to be effective in Mexico) which encourage the purchase and consumption of key foods and/or require participation in health or educational services and programmes, which themselves indirectly support enhanced nutrition outcomes.[14] For example, the government of Brazil has focused not only on enhancing the productivity of small farms but on simultaneously addressing immediate needs through social protection programmes that included regular and predictable cash transfers, and also direct food purchases. The country's *Family Farming Food Procurement Programme*, launched in 2003 as part of Zero Hunger, is an intervention that guarantees a market for almost 200,000 family farmers; federal budgetary allocations to the programme increased tenfold between 2003 and 2013. Such links between social protection and measures to support smallholders characterise Brazil's policy-mix approach to broader social welfare goals.[10]

POLICIES INFLUENCING FOOD TRANSFORMATION AND CONSUMER DEMAND

Policies in the food processing and retail sectors affect the food environment in many ways.

Fortification policies represent direct nutrient-enhancement of the food system through vitamin and mineral fortification (mandatory or voluntary) of various food "vehicles" that include flours, cooking oils and margarine, salt, or processed and packaged foods. Micronutrient fortification (such as mandatory salt iodisation or flour fortification with iron and folic acid) is an area that can still be expanded and where public-private interaction is necessary to set appropriate technical standards, establish mechanisms for monitoring and enforcement, and the assessment of appropriate levels and content of fortification so that needs are met at a price-point that does not impinge on profitability. Sustaining effective fortification of food vehicles that reach large numbers of vulnerable consumers cannot be taken for granted; in other words, initiating such activities through appropriate policies is important, but continuous monitoring of compliance and coverage is also required. New ways to process and package nutrient-dense but affordable complementary (infant) foods can also play a role in enhancing the nutrients available to the

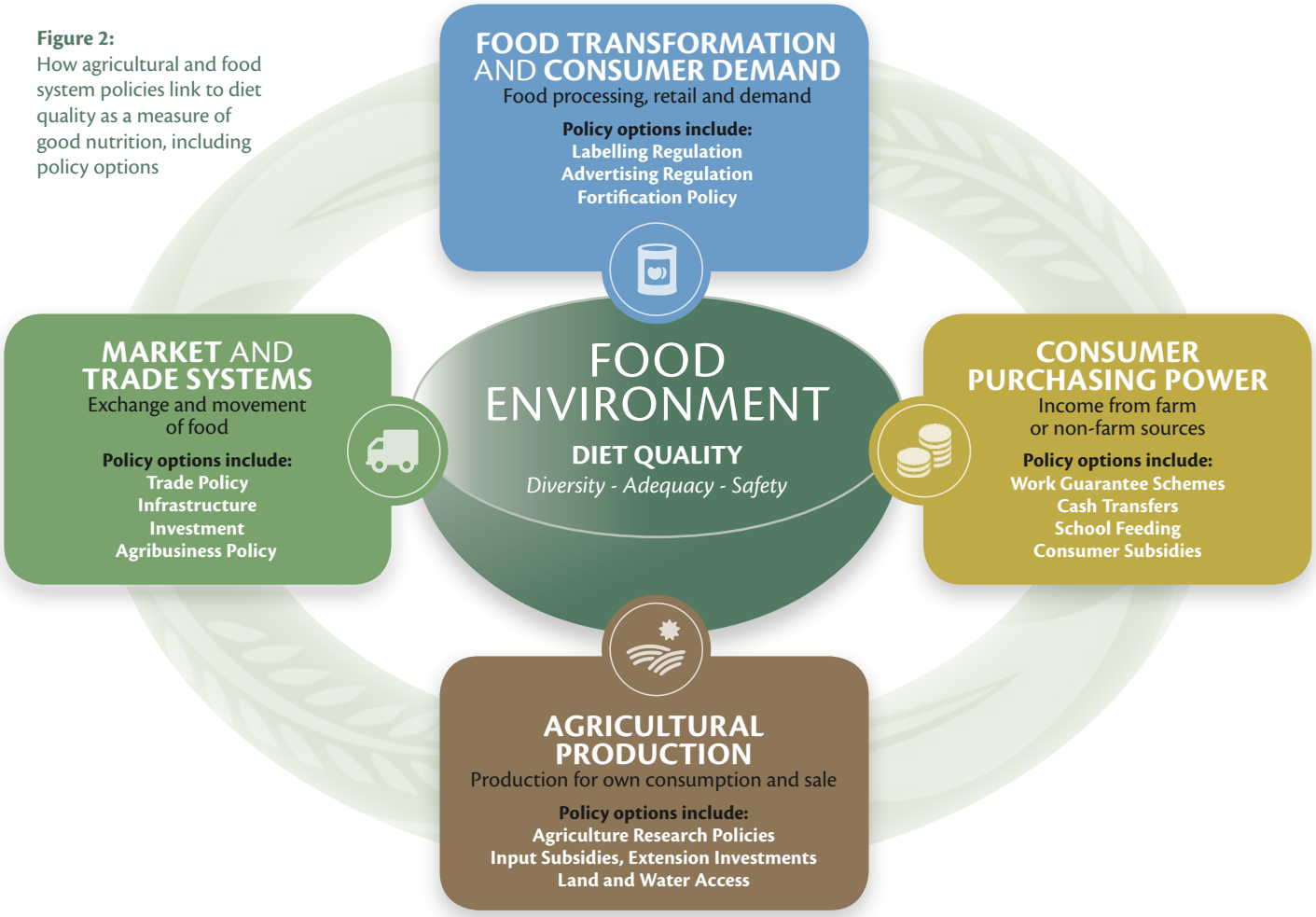


Figure 2:
How agricultural and food system policies link to diet quality as a measure of good nutrition, including policy options

local food environment. Many countries have the capacity to produce these foods cost-efficiently from local crops, but continue to rely on imported products.

Consumer information policy is a critical area both for creating demand for (and thus stimulating production, processing and retail of) nutritious foods, and for ensuring that food in the household is optimally prepared, distributed and consumed so as to meet individuals' nutritional needs. Consumer education can take the form of product information, such as legislated labelling of all packaged products or fresh foods at point of purchase, media campaigns or educational initiatives aimed at raising awareness about food links to nutrition through public programmes (such as the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) in the United States), and formal inclusion of nutrition in school curricula (aimed at enhancing informed dietary choices). Enhancing knowledge around food choices, meal planning (food interactions), and nutrient-sensitive food preparation (processing and cooking) can all be important when seeking to position consumers as active participants in, or "shapers" of food systems. Policies can also promote greater consumer demand for, and access to, fresh and/or nutrient dense products (e.g. by retail tax incentives that encourage produce-friendly outlets in urban fresh food deserts).

Advertising legislation is increasingly called for by consumer and public health groups seeking to have better oversight of consumer exposure to products deemed unhealthy in themselves (such as high sodium/high fat content products), or in contravention of international standards, such as the international code of marketing of breast-milk substitutes.[15]

Food quality and safety standards are important to improve the accessibility of nutritious but safe foods – not only those intended for trade and export. Much attention is currently directed to naturally occurring moulds in the food supply that result from poor on-farm management of crops and/or sub-optimal drying and storage. Food contaminated with such toxins can contribute to child undernutrition and poor health. Because low income communities source much of their food from informal local markets, the effect of quality and safety standards may be complex and policies need to be designed carefully. Policies on food labelling can inform consumers about the nutritional value of foods. Restriction can be placed on food sales and advertising to vulnerable groups, such as children. However, safety standards may have unintentional negative effects on nutrition. For instance, informal markets for milk are important to delivery of this nutritious food to children in Africa, and policies that enforce milk pasteurisation may reduce that supply if not carefully designed.[16] In other words, safety is an important consideration for all consumers, and for all foods. Appropriate regulations must be backed up by effective monitoring, transparent standards and remediation of inadequate industry controls to protect consumer safety.

Where production fails or access to markets is constrained, social protection (or social safety net) policies are essential to ensuring food and nutrition security. It is important to recognise the complex interactions among the various elements that make up an entire food system, not just a focus on production.

INTEGRATING POLICIES FOR IMPROVED NUTRITION

No single policy on its own can improve nutrition. A consumer facing policy which promotes consumption of nutritious foods will be more successful if an agricultural policy has encouraged production, marketing or import of those foods, thereby enhancing accessibility and price. Helping smallholders produce nutritious foods may improve their own food environment, but it could do more if infrastructure were available to link more effectively with food transformation and retail industries that add value to foods through fortification or enhanced storage and protection.

But policies do not formulate themselves. The goal of coherent integrated policies working across sectors to support enhanced food systems and consumption requires emphasis on institutional and human capacity building. It is difficult for sound policies to be designed and enacted in the absence of strong regulatory agencies, extension systems, academic institutions, public sector research organisations, and government bodies able to analyse and respond to defined needs. The food transformation and consumer demand and the market and trade domains also depend to a lesser or greater extent (depending on country context) on effective public investments and on public-private interactions. What is more, good data are needed on the actual nutrition impacts of various actions across the food system.

It is clear from the examples of policies presented above that agriculture and food policies can have not only positive but unintended negative nutritional consequences. For instance, farm policies that focus only on the supply of high-energy staple foods may lower the price of those foods relative to more expensive vegetables, pulses, fruit and animal based foods, making it more difficult for more people to achieve healthy diets. But even when nutritious foods are affordable, investments are often needed to support consumer education that promotes appropriate choices by the consumer.

Thus, with an eye towards improving nutrition, policymakers need to consider not only new nutrition-enhancing policies but also to revisit existing agricultural and food policies to see how they might be improved. This is particularly true for countries facing the double burden of diet-related disease, to ensure that policies are having positive impacts not only on reducing undernutrition but also preventing obesity as well as non-communicable disease risks. A detailed mapping of national policies against the framework proposed in Figure 1 would be a first step in this direction. Reinforcing, removing or enacting new policies in a concerted fashion is essential to ensuring that all domains of the food system are adequately addressed rather than just one part or another.

Unfortunately, the empirical evidence needed to inform an integrated approach to defining coherence among policies across the entire food system is weak. While guiding principles are important, governments need to generate such evidence and share best practices.[17] As far as agricultural policies are concerned there have been too few which aim deliberately at improving nutritional outcomes of women and children, and even fewer that have documented impacts on nutrition. There should be an emphasis on increasing availability and affordability of nutritious, non-staple foods, through research to improve the productivity and nutritional quality of crops and livestock products. This can involve greater public as well as private research investment, and better extension services and farmer support, as well as improved infrastructure for storage and distribution of these more perishable products, and price incentives that stimulate their production. The focus of past decades on raising productivity of a few staples was not inherently misplaced, but it must now be nuanced with appropriate attention to quality of diets as a whole.

Policy interventions in the market and trade domain have been sparsely studied in relation to food systems in low and middle income countries. There is a need for more critical emphasis on this "missing middle" of the policy space between agricultural policies and consumer policies. Many kinds of policies intervene along the multiple pathways from farm-gate to consumer. Nutrition-enhancing policies entail working not only across various sub-sectors related to food and agriculture (crop production (including horticulture), livestock, fisheries, natural resource management, value chain development, and more), but also ensuring coherence, and seeking synergies, with other sectoral policies related to nutrition, including health (e.g. food safety and consumer education), education (e.g. school feeding and nutrition education in schools), and social affairs (e.g. social protection).

CONCLUSION

Food systems are changing and so must the dialogue on policy actions that influence them. The traditional ways of looking at agricultural productivity as the solution to food security are no longer tenable. More food is needed, but so much more than that is necessary to ensure healthy food systems and healthy people. The interactions among policies, public and private investments and business and consumer choices relating to food are complex. Changes in one part of the food chain or in one domain of the food system can have ramifications across the system as a whole. In today's world, attention has to be paid to the net impacts of instruments on more than one facet of nutrition at a time; that is, policy actions must be wary of the potential for encouraging obesity while seeking to reduce undernutrition, and vice versa. We must better understand these connections and identify optimal ways to intervene to make each policy and each component of the food system more nutrition-friendly.

To achieve this, governments must move away from siloed policy thinking focused on just one or other part of the system at a time, and from one-size-fits all legislative or programmatic solutions. As with all good policies, a mix of policy instruments using varied entry points is likely to have greater nutrition impact than one action affecting one domain alone. To the extent possible, policy choices should be evidence-based, cost-effective, and have adequate political support if they are to be sustained. Without waiting for perfect knowledge, innovations are possible and certain elements of "what works" are known. But the range of policy instruments needed to work as a coherent whole focused on high quality diets is broad and complex. There is therefore a need for a better understanding of governance responsibilities along each link of the food chain, and for identifying opportunities for incentivising nutrition-enhancing interventions around food storage, processing, quality control, standard-setting, distribution and marketing. Governments must also promote appropriate investment in the data generation and analysis functions of national authorities (including human and institutional capacity development) on which the collection and analysis of important information relies.

The Global Panel aims to offer effective guidance to decision-makers, particularly governments, on how best to move towards nutrition-enhancing agricultural and food policies and investments. Engagement of a wide range of stakeholders is needed to encourage aligned efforts and synergy of actions that ultimately link the four main elements making up the food system, enhance the choices available within local food environments, and support consumer choices that result in high quality diets and nutrition for all. In the coming years, the Global Panel will help generate relevant evidence called for by many policymakers, support wide dissemination of findings, and catalyse best practice.

In the face of rapid global change, the need for evidence-based actions is more evident than ever. It is urgent that new and updated policy actions address the needs of nutritionally vulnerable people by making high quality diets the norm and not a luxury. The world of food and agriculture is changing rapidly. Our collective commitment to the right kinds of actions must keep pace with this change if global food systems are to make a meaningful contribution to sustainable human development.

REFERENCES

1. UNICEF. 2014. UNICEF. 2014. *The State of the World's Children 2014 In Numbers: Revealing disparities, advancing children's rights.* New York, N.Y.: UNICEF.

2. Ruel M., H. Alderman, and the Maternal and Child Nutrition Study Group. 2013. Nutrition-sensitive interventions and programmes: how can they help to accelerate progress in improving maternal and child nutrition? *Lancet*, http://dx.doi.org/10.1016/S0140-6736(13)60843-0

3. Horton S and Steckel R. 2013. Global economic losses attributable to malnutrition 1990–2000 and projections to 2050. In, Lombard B, ed. *How much have global problems cost the world? A scorecard from 1900 to 2050*. Cambridge, UK: Cambridge University Press.

4. African Union Commission, NEPAD Planning and Coordinating Agency, UN Economic Commission for Africa (UNECA), and UN World Food Programme. 2014. *The Cost of Hunger in Africa: Social and Economic Impact of Child Undernutrition in Egypt, Ethiopia, Swaziland and Uganda*. Addis Ababa, Ethiopia: UNECA.

5. de Brauw A, Eozenou P, Gilligan D, Hotz C, Kumar N, Loechl C, McNiven S, Meenakshi J, and Moursi M. 2010. *The Impact of the HarvestPlus Reaching End Users Orange-Fleshed Sweet Potato Project in Mozambique and Uganda*. Washington D.C.: The International Food Policy Research Institute.

6. Webb P. 2011. *Achieving Food and Nutrition Security: Lessons Learned from the Integrated Food Security Programme, Mulanje, Malawi.* Feinstein International Center. Policy Paper. Boston, MA: Tufts University/GIZ.

7. Gregory D and Roy A. 2012. *Fertilizer & Food Security: IFDC Voucher Program for Farm Inputs*. http://agrilinks.org/sites/default/files/resource/files/IFDC%20Voucher%20Paper.pdf

8. Swanson B. 2008. *Global Review of Good Agricultural Extension and Advisory Service Practices*. Rome, Italy: Food and Agriculture Organization of the United Nations.

9. Du, L. 2014. *Leveraging Agriculture for Nutritional Impact through the Feed the Future Initiative: Landscape Analysis of Activities across 19 Focus Countries.* Arlington, VA: USAID/Strengthening Partnerships, Results, and Innovations in Nutrition Globally Project.

10. FAO, IFAD and WFP. 2014. *The State of Food Insecurity in the World 2014: Strengthening the enabling environment for food security and nutrition.* Rome, Italy: Food and Agriculture Organization of the United Nations.

11. Diao X, Diaz-Bonilla E and Robinson S. 2003. *How Much Does it Hurt? The Impact of Agricultural Trade Policies on Developing Countries*. Washington, D.C.: International Food Policy Research Institute.

12. Adesina, A. 2012. Agricultural Transformation Agenda: Repositioning agriculture to drive Nigeria's economy. Federal Ministry of Agriculture and Rural Development, Nigeria. http://www.emrc.be/documents/document/20121205120841-agri2012-special_session-tony_bello-min_agric_nigeria.pdf

13. Government of India. 2013. The National Food Security Bill 2013 [which became the Right to Food Act]. New Delhi, India. http://tehelka.com/wp-content/uploads/2013/03/National-Food-Security-Bill-2013.pdf

14. Benderly B. 2012. *Mexico's Model Conditional Cash Transfer (CCT) Program for Fighting Poverty*. Results Based Financing Feature: Mexico3, D.C.: World Bank. www.rbfhealth.org/

15. World Health Organization. 1981. *International Code of Marketing of Breast-milk Substitutes*. Geneva, Switzerland: WHO.

16. Roesel, K. and D. Grace (Eds) (2014). Food Safety and Informal Markets: Animal Products in Sub-Saharan Africa. Routledge, London

17. Food and Agriculture Organization of the United Nations. 2013. *Synthesis of Guiding Principles on Agriculture Programming for Nutrition.* Rome, Italy.

The multiple burdens on health created today for low and middle income countries by food-related nutrition problems include not only persistent undernutrition and stunting, but also widespread vitamin and mineral deficiencies and 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:

AGRICULTURAL PRODUCTION
MARKETS AND **TRADE SYSTEMS**
CONSUMER PURCHASING POWER
FOOD TRANSFORMATION AND **CONSUMER DEMAND**

In each of these domains, there is a range of policies that can have enormous influence on nutritional outcomes. In this technical brief, we explain how these policies can influence nutrition, 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.

W glopan.org @Glo_PAN

Jointly funded by

UKaid
from the British people

BILL & MELINDA GATES foundation

Global Panel
on **Agriculture**
and **Food Systems**
for **Nutrition**