

Food systems and diets:

Facing the challenges of the 21st century

This report includes important recommendations and advice for leaders at the most senior levels in countries and international organizations. It is also of direct relevance to all policy makers, decision makers, professionals, business people, experts and researchers with interests in food systems and diets. Many of these individuals will be directly concerned with the production, processing, trade, regulation, supply and safety of food. However, others may work in wider areas of policy and business, for example relating to: public health and well-being, mental health development, education, economic development, urbanization, globalization and demography.

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Global Panel members:



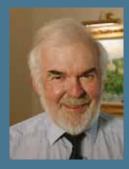
John Kufuor, (Co-Chair) Former President of Ghana



Sir John Beddington, (Co-Chair) Former UK Government Chief Scientific Adviser



Akinwumi Adesina,President, African
Development Bank (AfDB)



Tom Arnold, Director General, Institute of International and European Affairs (IIEA)



José Graziano da Silva, Director General, Food and Agriculture Organization of the United Nations (FAO)



Agnes Kalibata, President, Alliance for a Green Revolution in Africa (AGRA)



Rachel Kyte, Special Representative of the UN Secretary General for Sustainable Energy; and CEO of Sustainable Energy for All (SE4All)



Maurício Antônio Lopes, President, Brazilian Agricultural Research Corporation (Embrapa)



Rhoda Peace Tumusiime, Commissioner for Rural Economy and Agriculture, African Union Commission



Srinath Reddy, President, Public Health Foundation of India



Emmy Simmons, Board Member, Partnership to Cut Hunger and Poverty in Africa/AGree

Preface

The Global Panel on Agriculture and Food Systems for Nutrition commissioned this Foresight report in 2015 to take a close look at the extent to which food systems are delivering healthy diets today and to assess whether they are fit for the future.

While the focus has been on low- and middle-income countries, the findings constitute a stark warning for all countries. Despite past progress, approximately 3 billion people across the globe now have low-quality diets. Nearly a quarter of all children under five years of age are stunted, more than 2 billion people have insufficient micronutrients and the incidence of overweight and obesity is growing in every region. As a result, many economies are seriously underperforming, and diet-related chronic diseases are placing ever-greater demands on health care systems. Moreover, the situation is set to worsen dramatically over the next 20 years as powerful drivers of change such as population growth, climate change and urbanization converge on food systems.

This report shows that unless policy makers act decisively to control overweight, obesity and diet-related disease and accelerate efforts to reduce undernutrition, all countries will pay a heavy price in terms of mortality, physical health, mental well-being, economic losses and degradation of the environment. The stark message to world leaders is that only a response on the scale and commitment used to tackle HIV/AIDS and malaria will be sufficient to meet the challenge, particularly in low- and middle-income countries. It is also essential that the public and private sectors work together to achieve this.

This report shows how these considerable challenges can be addressed. In particular, food systems need to be harnessed so that they nourish rather than merely feed people. This alone will open up countless opportunities for interventions that decision makers can tailor to specific situations. The report also sets out clear priorities for action at national and international levels, as well as detailed advice and guidance, which will be of practical and immediate use to decision makers.

On behalf of the Global Panel, we would like to take this opportunity to express our sincere thanks to the Bill & Melinda Gates Foundation, and the UK Department for International Development who together have funded this groundbreaking study. We would also like to thank the group of leading experts, chaired by Professor Lawrence Haddad, who undertook much of the work and drafted this report, the many other experts and policy makers from across the world who contributed, and the team at the Global Panel Secretariat who managed the entire process.

John Kufuor (Co-Chair)

Former President of Ghana

Sir John Beddington

(Co-Chair)

Former UK Government Chief Scientific Adviser

Foreword

Malnutrition has for too long been a neglected issue. Yet it is a problem that affects one in three people worldwide. Today, 159 million children are stunted, 50 million are wasted and more than 2 billion people are overweight or obese. But in 2015 for the first time in history, through the Global Goals, the world has committed to ending malnutrition in all its forms. As the 2016 *Global Nutrition Report* makes clear, tackling malnutrition is one of the largest challenges facing all countries. Malnutrition comes in many guises: stunting, wasting, deficiencies of essential vitamins and minerals, and obesity. Reaching the ambitious target of ending malnutrition is only achievable if world leaders can ensure agriculture and food systems policies strengthen nutrition outcomes.

There is a moral imperative to eliminate malnutrition. Undernutrition contributes to 45% of the 16,000 children under the age of five who die every day. The impacts extend well beyond health: stunted children who survive are permanently disadvantaged, perform worse at school and are robbed of future earnings that could support them and their families. But eliminating malnutrition is also an economic imperative. The costs of undernutrition in terms of lost national productivity are significant, with between 3% and 16% of GDP lost annually in Africa and Asia. The good news is that we know that the economic returns from investing in nutrition are high – GBP 16 generated for every pound invested. Boosting nutrition can boost growth.

This Foresight report from the Global Panel on Agriculture and Food Systems for Nutrition on the future of diets provides fresh insights into changes in diets across the world. It highlights the impact of major drivers of change in dietary patterns, including population growth, rising incomes, urbanization and globalization. The report complements the 2016 Global Nutrition Report in delivering strong evidence to underpin policy change. The data presented here focus on the challenges that decision makers face when attempting to integrate nutrition within current food systems and agricultural policies. It sets out ways to approach these challenges so that policies are shaped in a way that delivers healthy, safe and nutritious diets for all.

The Global Panel on Agriculture and Food Systems for Nutrition was first launched by the former UK Secretary of State for International Development at the 2013 Nutrition for Growth Summit. It has proven invaluable for championing the role of agriculture and food systems in preventing malnutrition. The Panel and its work – including this report – are an important contribution to the UK Government's commitment to improve the nutrition of 50 million people by 2020.

Ridding the world of malnutrition will require sustained investment, drive and energy. It will also require innovative solutions that work to tackle both undernutrition and the rising burden of obesity afflicting almost all countries around the world. I urge nutrition and agriculture leaders in governments, business and civil society to act on the Foresight report findings.

James Wharton MP

Times Whaton

Parliamentary Under-Secretary of State
Department for International Development

Executive summary



The world is facing a nutrition crisis: approximately three billion people from every one of the world's 193 countries have low-quality diets. Over the next 20 years, multiple forms of malnutrition will pose increasingly serious threats to global health. Population growth combined with climate change will place increasing stress on food systems, particularly in Africa and Asia where there will be an additional two billion people by 2050. At the same time, rapidly increasing urbanization, particularly in these two regions, will affect hunger and nutrition in complex ways – both positively and negatively.

Unless policy makers apply the brakes on overweight, obesity and related disease and accelerate efforts to reduce undernutrition, everyone will pay a heavy price: death, disease, economic losses and degradation of the environment. A response, equivalent to that marshalled to tackle HIV/AIDS, malaria and smoking is needed to meet these challenges.

Around the world, coordinated action needs to be accompanied by fundamental shifts in our understanding and in our policy

Food systems need to be repositioned from just supplying food to providing high-quality diets for all

actions. Much more emphasis must be given to positioning agricultural growth as a way to improve diet quality, rather than merely delivering sufficient calories. Food systems need to be repositioned from just supplying food to providing high-quality diets for all. This will require policy initiatives far beyond agriculture to encompass trade, the environment, and health, which harness the power of the private sector and empower consumers to demand better diets.

This report is a call to action for world leaders and their governments. Leadership and commitment will be essential in driving forward the decisions set out in this report and in delivering the necessary priority actions to reshape the global food system.

1. Key findings

1.1 A growing nutritional crisis

The world has made substantial progress in reducing hunger and undernutrition in the past 25 years. Global rates of hunger have fallen and now affect around one in ten people¹ and the percentage of children who are chronically undernourished has declined to around one in four.² Such progress means less suffering, lower mortality rates and improved life chances for hundreds of millions of families and their children.

However, despite these gains, malnutrition in all its forms currently affects one in three people worldwide, far beyond the 795 million who experience hunger on a daily basis. And the situation is rapidly getting worse. Over the next 20 years, multiple forms of malnutrition will pose increasingly serious challenges to policy makers:

- Today, the prevalence rates of overweight, obesity and diet-related chronic diseases such as diabetes and hypertension are increasing in every region and most rapidly in low- and middle-income countries. In sub-Saharan African men, the growth rate of overweight and obesity now exceeds that for underweight. For South Asian women, the prevalence of overweight and obesity is almost the same as the prevalence of underweight. In China, the combined rate of overweight and obese adults is projected to rise to over 50% by 2030.
- Nearly a quarter of all children aged under five years
 of age today are stunted, with diminished physical and
 mental capacities. Less than a third of all young infants
 in 60 low- and middle-income countries are meeting the
 minimum dietary diversity standards needed for growth.
 And undernourished mothers are having babies who will
 be left with life-long impairments.

More than 2 billion people lack vital micronutrients (e.g., iron, zinc, vitamin A) which affects their health and life expectancy.
 For example, in low- and middle-income countries, over half of the young women and adolescent girls surveyed are not meeting their micronutrient needs. By 2050, the estimated impact of elevated carbon dioxide on the zinc content of grains, tubers and legumes, could place 138 million people at new risk of zinc deficiency – with 48 million in India alone.

The proportion of the world that is suffering from diet-related malnutrition is increasing. It now stands at just over 1 in 3. This ratio will move towards 1 in 2, if current trends continue

Looking to the future, if the direction of current policies remains the same, (i.e. business as usual) then estimates suggest that by 2030, the number of overweight and obese people will have increased from 1.33 billion in 2005 to 3.28 billion, around one third of the projected global population. This is a major concern as no country to date has successfully reversed growth in obesity once it has been allowed to develop. At the same time, there will still be 653 million calorie-deficient people (down from 795 million in 2015). Most of the reductions in calorie insufficiency will come from Asia, while Africa will see a levelling off. But if nothing is done, Asia and Africa will still be grappling with significant levels of undernutrition in 14 years' time.

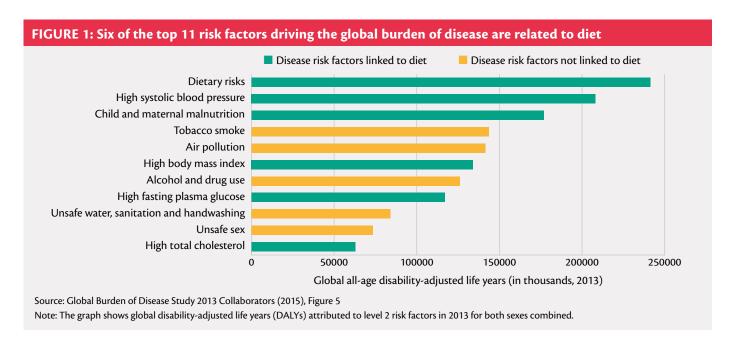
Together, these facts offer up a formidable warning to policy makers. Immediate and decisive action is needed to address the challenges that they pose to avert the profound consequences for the health of populations, health care costs and economic growth.







¹Food and Agriculture Organization of The United Nations (FAO), International Fund for Agricultural Development (IFAD) & World Food Programme (WFP). 2015. Achieving zero hunger: The critical role of investments in social protection and agriculture. Rome. FAO. ²International Food Policy Research Institute (IFPRI) 2016. Global Nutrition report 2016: From promise to impact: Ending malnutrition by 2030. Washington, DC: IFPRI.



1.2 Malnutrition represents the number one risk factor in the global burden of disease

The impacts of malnutrition are huge. An estimated 45% of deaths under age five are linked to undernutrition and suboptimal breastfeeding alone is responsible for almost 12% of total deaths³, mostly in low-income countries. Malnutrition has many causes and a low-quality diet is one of them.

Malnutrition associated with diets that are not nutritious or safe represents the number one risk factor in the global burden of disease. These low-quality diets contain insufficient calories, vitamins and minerals or contain too many calories, saturated fats, salt and sugar. The risk that poor diets pose to mortality and morbidity is now greater than the combined risks of unsafe sex, alcohol, drug and tobacco use (see Fig.1).

Poor nutrition amplifies the health consequences of diseases such as HIV/AIDS, malaria and measles. In economic terms, across Africa and Asia, the estimated impact of undernutrition on gross domestic product (GDP) is 11% every year — more than the annual economic downturn caused by the global financial crisis of 2008–10.

1.3 Food systems are not delivering healthy diets

Today's food systems are too focused on food quantity and not enough on quality. They are not helping consumers to make healthy and affordable food choices consistent with optimal nutrition outcomes. In fact, the trend is in the opposite direction. The multiple forms of malnutrition will not diminish unless policy makers and private sector business leaders work together to reshape food systems in ways that will advance the goal of healthier diets for all.

The risk that poor diets pose to mortality and morbidity is now greater than the combined risks of unsafe sex, alcohol, drug and tobacco use

Over recent decades, agricultural productivity has risen, food trade has increased and the once ever-present threat of famine has receded in most parts of the world. This means many people have better diets than before. But the rate of increase of intake of foods that undermine diet quality has been increasing even faster. For example, in 2000, sales of ultra-processed foods and beverages in the upper-middle-income countries were one-third of those in the high-income countries. Fifteen years later, they were more than half. So while there have been dietary improvements, the net result is still low-quality diets.

As this report shows, rising incomes alone will not improve the quality of people's diets. As incomes increase, food scarcity diminishes but the cost of many nutritious foods remains high and the ability to purchase foods that do not support high-quality diets increases. Currently, income growth is a double-edged sword when it comes to improving diets.

1.4 The importance of a food system approach

Policy makers need to ensure that all parts of food systems work together to deliver high-quality diets (see Box 1). This means thinking well beyond agriculture to also consider the many processes and activities involved in food production, processing, storage, transportation, trade, transformation and retailing.

³Black, R.E., Victora, C.G., Walker, S. P., Bhutta, Z.A., Christian, P., De Onis, M., Ezzati, M., Grantham-Mcgregor, S., Katz, J., Martorell, R. & Uauy, R. 2013. Maternal and child undernutrition and overweight in low-income and middle-income countries. The Lancet, 382, 427-51.

In the longer term, food systems will be subject to major stresses... Population growth, climate change and increased competition for natural resources are notable examples

This amounts to a change in mindset and a fundamental shift in approach. Whatever progress is made towards food security, unless foods reach people in a form that is nutritious and affordable, the problem of poor quality diets will not be solved.

Food systems are changing rapidly with important consequences for changing diets. The food chains that supply consumers are growing longer, with global trade increasing the distance between production and consumption, as well as the diversity of foods available to consumers. Value and power in food systems is shifting towards the middle of these food chains, with agricultural produce becoming ingredients for processed products. Decisions by large agri-businesses, manufacturers and retailers are playing a growing role, relative to the public sector, in the availability, affordability, safety and desirability of foods. Policy makers need to ensure that food system changes like these contribute to, and do not detract from, high-quality diets.

The bottom line is that food systems are failing us. Those who would benefit from consuming more animal source foods, fruits, vegetables and pulses often find them unaffordable. Others who need to reduce their consumption of red meat may be unable to switch to other sources of flesh-based food such as fish.

In the longer term, food systems will be subject to major stresses resulting from important external influences

(see Box 2). Population growth, climate change and increased competition for natural resources are notable examples. But others such as income growth, urbanization and globalization of diets are likely to have mixed effects – with both positive and negative consequences for diets. It is essential that policy makers think through the consequences of all of these drivers of change for their own food systems.

The good news is that there are many ways in which policy makers can reshape food systems. Extending policy action beyond agriculture to the entire food system opens up many opportunities to improve the consumer's ability to access food that is safe, nutritious and affordable. The full Foresight report provides detailed guidance on the many options available to policy makers to allow them to act now on their own food systems, to help address diet quality-driven malnutrition crises in their countries.

Box 1: What is a high-quality diet?

While there is no universal 'diet quality index', there is general agreement on what a healthy or high-quality diet should include, i.e. a diversity of foods that are safe and provide levels of energy appropriate to age, sex, disease status and physical activity as well as essential micronutrients. The World Health Organization's (WHO) definition of a healthy diet emphasizes the importance of starting healthy eating habits in early life (notably through breastfeeding) and limiting the intake of free sugars and salt. It advises people to eat plenty of fruits and vegetables, wholegrains, fibre, nuts and seeds, while limiting free sugars, sugary snacks and beverages, processed meats and salt, and replacing saturated and industrial trans fats with unsaturated fats.



Box 2: Long-term drivers of the nutrition crisis

Food system policies must be developed which are resilient to future long-term threats and uncertainties – examples of these are listed below. Action is needed now since some policies and initiatives may take many years or decades to take full effect, e.g. restructuring food systems, investing in infrastructure and influencing consumer attitudes.

Changes in the size and age distribution of populations

Population growth rates are decelerating as declining birth rates catch up with declining mortality rates. But global food systems will need to provide high-quality diets to more than 2 billion additional people by 2050. Over a billion will be in Africa. A particular effort is needed to improve diets of infants and young children to support their cognitive development and to enable them to capitalize on work opportunities. This will also require a focus on improving the nutrition of adolescent girls and women of child-bearing age.

Climate change

By 2050, there could be over half a million net additional deaths from diet-related causes compared to a scenario with no climate change – most would occur in low- and middle-income countries. Both direct and indirect effects (e.g. due to a rise in energy costs) need to be considered when developing climate smart policies.

Rapid urbanization

Urban populations are growing most rapidly in Africa and Asia. Urban dwelling is associated with less undernutrition than rural populations but more diet-related obesity and chronic disease and greater risks from food price volatility. While the urban poor experience low-quality diets and food

safety risks, they have potentially good access to fresh produce and micronutrient fortified products. The challenge is to find ways of strengthening the positive links between urbanization and diet quality while maintaining its ability to help reduce hunger and undernutrition

Income growth

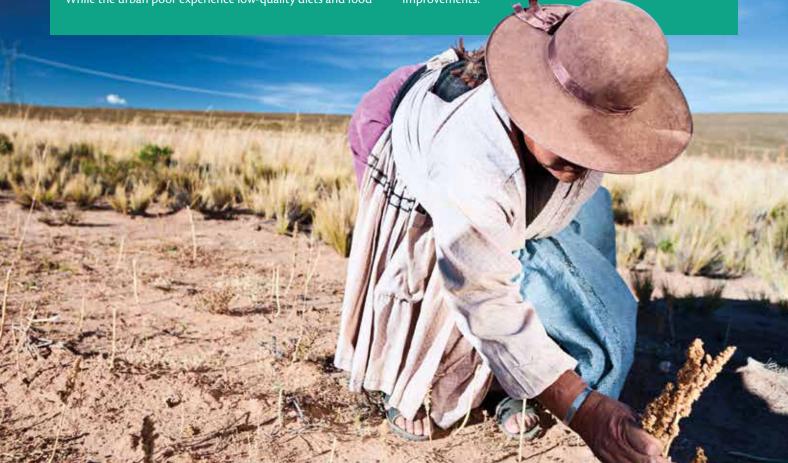
Countries cannot expect to 'grow' their way out of poor diet quality and address the multiple forms of malnutrition. While income growth among low-income consumers will help to reduce undernutrition, it will also create substantial new problems relating to overweight and obesity and associated non-communicable diseases (NCDs).

Globalization of diets

Diets, even in the poorest countries, are increasingly affected by the growing global nature of food trade and trade-related industries. Globalization can act to increase resilience by allowing deficits in one region to be met by others but it can also decrease resilience by propagating systemic shocks. But globalization may also have helped to drive the obesity epidemic by making it easier for consumers to make low-quality diet choices.

Competition for natural resources

This will increasingly constrain food production, but could also stimulate technical progress. Overall, it could drive diets in unpredictable and highly context-specific ways. The growing consensus on the need to price scarce resources, such as water and carbon storage should provide strong incentives both to increase efficiency of resource use and generate technical improvements.



2. A call to action

2.1 Nutrition – a new global priority

Agriculture and food systems must deliver much more than food - they need to fulfil their potential to underpin the health and well-being of populations. At a fundamental level, consumers are making food choices that are not consistent with good nutrition, health and well-being. And public policies or private sector actions are not adequately aligning food systems toward the goal of improving nutrition.

However, the long path that high-income countries have taken to try and manage rising obesity rates has not succeeded. That same path is not an inevitable one for low- and middle-income countries. There are alternatives, provided the right choices are made now and throughout the food system. The challenge for policy makers in low- and middle-income countries is to find more direct and less damaging dietary pathways from where their diets are today, to where they need and want to be. South Korea is a good example of a country that has gone from low- to middle- to high-income levels in the past 30 years in a way that has supported the supply of relatively accessible and affordable high-quality diets. It is no coincidence that this country has implemented many food system policies that aim to promote health.

At a global level, stakeholders need to prioritize the improvement of nutrition - and the consumption of the healthy diets that promote it. While the Sustainable Development Goals have put ending hunger, achieving food security and improving nutrition, and promoting sustainable agriculture, high on the global agenda, the 2016-2025 UN Decade of Action for Nutrition provides many potential opportunities to place the improvement of diet quality through food systems at the centre of global action.

The international community needs to step up and accord the goal of healthy diets to all and extend the same level of focus and commitment that it gave to addressing HIV/ AIDS, malaria and smoking. This will require stakeholders from governments, civil society, the media, business and research to work together to make improving dietary quality a sustained political priority.

At the national level, governments and private sector actors need to work together to focus on aligning individual food systems with the goal of attaining healthy diets and improved nutritional outcomes. This will require, amongst other actions, creating incentives for private sector actors throughout the food system so that they can make decisions more favourable to the adoption of higher quality diets.

It will be critical for governments to look across both food system objectives and broader goals and constraints including the need to build sustainability into the country's agricultural

system, conserving limited water supplies and promoting longterm management of soils, forests and biodiversity. In particular, careful consideration needs to be given to the relationships between diets that are high quality from a nutritional perspective and their potential impacts on the environment. These are more complex than popularly assumed and are likely to differ considerably in different contexts.

Effective evidence-based policy making should be supported by the use of appropriate analytical tools. The following figure sets out six sequential steps that policy makers need to work through. The full report provides detailed guidance for each step, together with advice concerning promising policy actions to improve diets. These relate to the various parts of the food system, from production to storage, transport, trade, transformation and retailing.

FIGURE 2: Six steps to identify policy actions to achieve healthy diets

STEP ONE: Set a clear diet quality objective What is/are the diet quality gap/s that need to be addressed and who does it affect?

STEP TWO: Engage with communities to exlore perceptions of causes of the diet gap

What might be responsible for the diet gap from the perspective of the consumer? Availability? Affordability? Appeal? Or factors outside the food system?

STEP THREE: Review the role of food systems If and what elements of food systems are responsible for the diet gaps from the local to the global level?

STEP FOUR: Identify actions for food systems solutions What are available options in the food system for addressing the diet gaps?

STEP FIVE: Align actions to create coherence What further actions are needed to align these options across the food system?

STEP SIX: Leverage actions for sustainability How can these actions also be leveraged to

2.2 Specific priorities for action

Policy makers and other key decision makers need to work throughout the food system to effect diet change. The full report provides guidance together with advice on promising evidence-based policy actions to improve diets.

While most actions will depend heavily on local contexts, the following are universally applicable:

- Focus food and agriculture policies on securing diet quality for infants and young children. These are woefully inadequate in many countries. Improved policy choices are needed which recognize the centrality of high-quality diets for the youngest.
- Improve adolescent girl and adult women's diet quality as a priority in all policy making that shapes food systems. Women are particularly vulnerable to the health impacts of low-quality diets because of their higher nutrition requirements and because of their disempowerment in some cultures.
- 3 Ensure that food-based dietary guidelines (FBDGs) guide policy decisions to reshape food systems. FBDGs are largely absent in low-income countries (present only in 2 out of 31) and limited in lower middle-income countries (12 out of 51). They are needed to inform and to influence food policies around the world.
- 4 Animal source foods (e.g. dairy, eggs, fish and meat) provide important nutrients. Policy support for these foods should be pragmatically evidence-based rather than driven by ideology. Infants, children, adolescents and women of reproductive age living in low-income contexts will find it extremely hard to meet nutrient requirements in the absence of these foods. At the same time, some groups in low-income contexts are consuming levels of these foods in excess of recommended levels.
- Make fruits, vegetables, pulses, nuts and seeds much more available, more affordable and safe for all consumers. They offer considerable benefits in terms of diet quality. There are opportunities throughout the food system to overcome supply-side barriers to make them available, affordable and appealing. Public policy can also incentivize greater investment in the infrastructure required to produce, store and transport these foods.
- Make policies which regulate product formulation, labelling, advertising, promotion and taxes a high **priority.** These are needed to create disincentives for companies to allocate resources to forms of processing that undermine diet quality. Policies to educate consumers of the adverse health effects of consuming these products more than occasionally are also needed.

Failure to take decisive actions now will lead to very serious health and economic impacts for all in society, but especially for women, infants and young children. These impacts will reverberate throughout the life cycle and across generations

- **Improve accountability at all levels.** Governments committed to reshaping food systems toward healthy diets need to set targets and publish transparent scorecards of their results. Private sector actors should acknowledge their far-reaching roles in defining food environments - and the nutritional quality of foods and other products that they promote to consumers. Civil society organizations need to monitor the performance of others.
- 8 Break down barriers associated with the longstanding division of jurisdictional responsibilities within many governments - between agriculture, health, social protection and commerce. These can fundamentally impede integrated action across food systems, inhibit the effective allocation of resources and create barriers that inhibit access to data.
- Institutionalize high-quality diets through public sector purchasing power. Food provided in schools, hospitals, across the armed forces and in the prison system should be of the highest dietary benefit to the diet, consumer. This approach has the potential to shape the norms around foods that contribute to high-quality diets and incentivize suppliers and contractors to align their value chains accordingly.
- Refocus agriculture research investments globally to support healthy diets and good nutrition (see Box 3). Global and national public research organizations (and their funders) must rebalance their priorities to reflect a priority focus on high-quality diets. Much more investment in research on fruits and vegetables, animal source foods, legumes, nuts and seeds is urgently required. Better national-level and subnational data are needed on consumer food prices, food safety, food loss and waste. The Access to Nutrition Index that assesses the conduct and performance of companies should be strengthened at the country level.

Box 3: Research priorities



Research on food, agriculture and nutrition must be refocused on achievement of healthy diets

The international and national agricultural research communities should play a strong leadership role in promoting research that addresses productivity, profitability, sustainability and nutritional goals at the same time. A 'high-quality diet' lens must guide a rebalancing of funding allocations across the food system.

Metrics for diet quality and the food system need to be modernised

They are also needed to enable policy makers to monitor the implications of dietary choices for the future of the environment.

More and better data

• Effort is urgently needed to substantially improve the quantity and quality of dietary data. Few national governments collect the data required to inform decision makers about what people actually eat and the UN has

no functioning global dietary database. Recent efforts to gather data such as the Global Dietary Database (GDD) and the Global Individual Food consumption data Tool (GIFT), being developed by the Food and Agricultural Organization of the United Nations (FAO) and the World Health Organization (WHO), should be built upon.

• Many other indicators for the food system also need to be collected, for example on food quality and safety to help policy makers understand the links between food systems and actual nutritional outcomes.

More and better evaluation

Policy makers need to be able to assess the effect that specific interventions and policy actions have on diet quality and to determine how they could be improved. For example, recent work to track changes in the purchases of sugarsweetened beverages in Mexico following imposition of a new tax, sheds important light on consumer choices in a changing food environment.

This report highlights the very serious challenges facing policy makers today and in the future. Already, approximately 3 billion people on the planet - from every country - have low-quality diets.

But this report also shows that current trends do not have to persist if the right actions are taken now and in the coming decades. Better diets are possible. Ensuring that all people eat healthily is a moral and economic imperative. This will require focused, determined and sustained action from policy makers working in partnership with the private sector in complex and rapidly changing environments. With so much at stake, we all share a responsibility to find solutions that work for everyone.

There are many public policy opportunities to act on in the food system beyond agriculture to improve the consumer's ability to access food that is safe, nutritious and affordable.

This report shows that current trends do not have to persist if the right actions are taken now and in the coming decades. Better diets are possible



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Download the full Foresight report and executive summary here: www.glopan.org/foresight

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