



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



**UNITED NATIONS**  
**FOOD SYSTEMS**  
**SUMMIT 2021**

**United Nations Food Systems Summit 2021**  
**Scientific Group**  
<https://sc-fss2021.org/>

**Food Systems Summit Brief**  
**Prepared by Research Partners of the Scientific Group for the Food Systems Summit**  
**April 26, 2021**

# The Transition Steps Needed to Transform Our Food Systems

**by Patrick Webb, Derek J. Flynn, Niamh M. Kelly, and Sandy M. Thomas on behalf of the Global Panel on Agriculture and Food Systems for Nutrition**

## 1. Introduction

The United Nations (UN) Food Systems Summit and N4G meetings in 2021 reflect a growing international recognition that the policies that fed the world in the twentieth century are no longer fit for purpose. Urgent reform is essential to achieve the goal of universally accessible and affordable, healthy diets which are delivered by food systems that are environmentally, economically, and socially sustainable.

Today's food systems are asked to nourish the world's growing population in ways that do no harm to either human or

planetary health. However, the growing problems facing food systems now amount to a two-fold crisis. First, global progress in addressing malnutrition in all its forms (including undernutrition, obesity, and micronutrient deficiencies) and reducing diet-related diseases has stalled. Food systems are failing to provide affordable healthy diets for three billion people.<sup>1</sup> This affects their health, the mental and physical development of children, and the earning potential of those children throughout their lives. Those affected risk being locked into lifelong inequality. Second, food systems are in a spiral of decline with environmental systems:<sup>2</sup> they

are a major cause of worsening degradation of soil, water and air quality, biodiversity loss and climate change. And although food systems have generally responded to the challenges posed by COVID-19, the pandemic has highlighted just how fragile and precarious the world's food systems have become.

Without decisive action, the situation is set to worsen in the future due to a multitude of factors: population growth and climate change; increasing competition for land, water, and other natural resources; and emerging diseases, conflict, and economic volatility. The stakes could not be higher, not just for the health of the world's population, and the health of the planet, but also for the delivery of most of the Sustainable Development Goals (SDGs) such as those relating to hunger and nutrition, growth, equality, education, wellbeing, and sustainable cities and communities.<sup>3</sup>

Minor adjustments on the margins of today's food systems will be inadequate. All stakeholders involved in food systems, including government policymakers, donors, businesses, non-governmental organisations, and civil society, should be encouraged to adopt a much more radical approach. They need to rethink the ways in which food systems are currently managed, governed, and used, and at the most fundamental level they must decide what food systems need to deliver and how the performance of those systems is assessed. Reshaping food systems to respond simultaneously to nutritional, health, economic, and environmental challenges presents considerable challenges but also great opportunities for

actions which would yield considerable benefits to countries (see Box 1).

However, it is not enough merely to have a vision for future transformed food systems. Policymakers need to chart a way forward to achieve them through a practical and pragmatic plan for the specific transition steps<sup>i</sup> which need to be taken, and how they would be funded, implemented, and managed. Developing such a plan, and implementing it effectively, presents massive challenges which must cut through the complexity of food systems and competing priorities. It will need to navigate a path through powerful forces and vested interests which might favour the status quo and impede policy change. It must also be affordable at a time when countries are still grappling with the economic catastrophe of COVID-19. The transition needs to be viewed with realism, rather than being an abstract ideal. Against this background the following sections of this paper set out the steps of the transition process which need to be taken on the road to a fundamental transformation of food systems.

### 1.1 What the transition process needs to achieve

A series of steps must be urgently planned, discussed, financed, and enacted to allow the world's food systems to transition from their current sub-optimal state to one where they fully support the dietary patterns needed to maximise human and planetary health. The following are five key outcomes which broadly map onto the original UN Food Systems Summit Action Tracks and which could usefully be considered within the Summit's deliberations.

---

<sup>i</sup> In this paper, the term 'transition' refers to the process of changing from one state of a food system to another, and typically involves a number of

specific 'transition steps'. A 'transformed' food system refers to the end state of the transition process.

- Food systems need to move beyond addressing hunger to address all forms of malnutrition. They need to deliver universal access to healthy diets. This means addressing all forms of malnutrition, in part by ensuring improved diets for all. Yet there is a global shortfall in production of the range of nutrient-rich foods required to provide healthy diets for everyone. For example, only 34% of fruits and vegetables needed for everyone to access a healthy diet are produced.<sup>4</sup> Healthy diets are currently also unaffordable for three billion people worldwide.
- Consumer demand needs to be harnessed as a significant driver of change. Consumers must be able to make informed choices and be encouraged to select nutrient-rich food options, and to play their part in reducing waste. The latter is especially important in view of projected increases in the global population, combined with increasing stresses in environmental systems essential for food production such as land, soils, and water.
- Food systems must become fully environmentally sustainable, thereby operating within planetary boundaries. This is one of the three 'pillars' of the Sustainable Development Goals and is essential both for the future health of the planet, and the future viability of food systems to nourish the world. Policymakers need to adopt a perspective which considers the environmental footprint of all parts of food systems – from farm to fork. This perspective needs to encompass greenhouse gas emissions, as well as the effect of food systems on biodiversity loss, changing land use and deforestation, water use, and more besides. Substantial reduction in losses throughout the food chain, of foods and the nutrients they contain, needs to be a priority.
- The transition needs to be a 'just' rural and urban process so that it reduces inequality and inequities of all kinds, rather than increasing them. No one must be left behind.
- The transition needs to deliver transformed food systems capable of operating at two speeds: i.e. responding to immediate needs and short-term shocks, but also able to address the long-term restructuring of food systems needed to respond to climate change, population growth, and urbanisation. Governments have been too slow to act on climate change and biodiversity loss, despite warnings over many years. More recently, COVID-19 has exposed the profound fragility of food systems, and their potential to exacerbate instability and conflict – for example through food riots.

### **Box 1. The potential benefits of transformed food systems**

Sustainable,<sup>ii</sup> healthy diets that are accessible and affordable for all would help drive much needed progress across most of the Sustainable Development Goals. Potential benefits include:

- Elimination of a major cause of inequality for the three billion people who today cannot access a healthy diet.<sup>5,6</sup>
- A substantial reduction in levels of stunting, which in 2019 affected 144 million children under five years, and of wasting which affects 47 million pre-school children. This would lead to benefits in terms of cognitive development and educational attainment for children, and a more productive workforce.
- A substantial reduction in the prevalence of diet-related non-communicable diseases (NCDs). Without action, health costs linked to mortality and the health impacts of NCDs could reach US\$2.5 trillion per year globally by 2030.<sup>5</sup>
- A reduction of 41-74% in food system greenhouse gas emissions, while boosting resilience to climate shocks. This would also greatly contribute to addressing biodiversity loss. Agriculture is the largest contributor to the latter – the global annual loss of pollinating insects alone is estimated to cost US\$235-577 billion.<sup>6</sup>
- A substantial reduction in the economic drag presented by inadequate nutrition, which ranges from 2% to 3% of GDP in some countries and up to 11% of GDP in Africa and Asia each year. This would engender progress on poverty reduction, education, and equality.<sup>7</sup>

---

<sup>ii</sup> In this paper, the term “sustainable” in “sustainable, healthy diets” or “sustainable food systems” refers to environmental sustainability. It is used if the contribution of a place’s food system (which delivers locally produced but also imported and marketed foods) can be continued without undermining the ability of the natural environment

to function in the long term: that is, the system does not drive biodiversity loss, pollution, soil degradation, or climate change. It is acknowledged that other dimensions of sustainability are also important – notably economic and social sustainability, although detailed consideration of these is beyond the scope of this paper.

## 2.0 Planning the transition steps

Food systems are complex, dynamic, and comprise many different interacting subsystems, but food system policies often fail to recognise this. Too often a narrow approach is adopted which focuses on specific parts of the food system, for example when setting production targets for specific food commodities. The reality is that the diverse parts of food systems are in constant flux, with the many parts influencing each other in a web of relationships. Production, trade, food prices and consumer demand are notable examples. Policymakers need to think in terms of food systems as a whole and as interacting dynamic systems rather than individual isolated components in equilibrium.

The choice of initial transition steps should be informed by a comprehensive analysis of existing policies and private sector investments, to help identify priority outcomes (defined in holistic human and planetary dimensions), and barriers to change. A food system assessment of all public funding and institutional mandates can distinguish those which could be repurposed to help cover the costs of transition phase actions. Similarly, a review of existing food system functions, challenges and benefits would determine where best to target actions to increase the availability of nutrient-rich foods in particular, and to improve the efficiency of food value chains overall.

The complexity of food systems presents a challenge for policymakers trying to decide the first steps of the transition process. This is because of the myriad possible actions, policies and interventions. The following subsections outline how the necessary choices may be navigated.

### 2.1 New priorities and principles to guide transition choices

New metrics of ‘success’ in the process of food system transition are needed to frame and monitor policy decisions. For example, the failure to properly account for the value of human health and the natural environment in policy decisions relating to food systems is both a market failure and a widespread institutional failure. Unless addressed at the outset, this fundamental flaw will continue to distort or impede progress in food system transition.

More generally, decisions involved in planning the transition of food systems will require a new approach which should adhere to the following principles: at every stage of the transition ensure inequality does not increase, and that the poor are able to access and afford healthy diets; avoid closing off options for the future; invest in strengthening institutions and capacity building; ensure transparency to engender trust and ‘buy-in’; base decisions on evidence and transparent expectations; and establish feedback mechanisms for adjustment. This last point is particularly relevant to actions that may be under-explored in some contexts. Limited trials of different options with wide societal engagement and transparency of intent will help to start the transition process, and to inform subsequent wider rollouts.

A priority should be to ensure a ‘just’ transition where all classes of society benefit, and where inequality at all scales (international, national, and local) is reduced rather than increased. This is important since low- and middle-income countries (LMICs) are likely to be least able to resource the transition of their food systems, and the poor in any country will

be inadequately placed to cope with fluctuations in food prices which might occur during the process. Coordination between high-income countries (HICs), LMICs and the donor community will be needed to support transition agendas.

Policy decisions across government also need to be aligned with national food-based dietary guidelines (FBDGs). FBDGs are now available in roughly 100 countries across the world and are designed to inform consumer choice.<sup>8</sup> However, much greater use should be made of them to inform policy decisions in all relevant areas of government – from trade to infrastructure development, health and the environment. Without this common approach, different parts of government risk pulling in different directions, rather than working together towards a common agenda of food system transition. FBDGs also need to be reassessed and updated to reflect the latest science, and to embody issues of sustainability as well as dietary health.

## 2.2 Placing poor and marginalised people at the heart of the transition

The transition of food systems has the potential to address societal inequalities in several ways. By ensuring access to diets that are affordable, healthy and sustainable, it has immediate benefit for the three billion who cannot afford healthy diets today.<sup>1</sup> At a stroke, access to healthy diets for pregnant women and children will address the lifetime inequalities relating to health and mental development that malnutrition can cause. Consequential increases in productivity and lifetime earnings would further help to lift families out of poverty, thereby helping to open up wider opportunities.

A key challenge for policymakers, however, is to ensure that the transition reduces

inequality rather than increases it. At the country level, the latter is a real threat: LMICs are likely to be less able to resource the necessary transition steps, and so risk falling further behind HICs. For individual families, the poorest will be least able to afford nutrient-rich food alternatives if they are more expensive, and less able to cope with fluctuations in food prices that might occur as food systems change. The effects of the transition of jobs and livelihoods needs to be managed particularly carefully, recognising the vital importance of the food sector as a major source of employment for the poor across the world.

If the transition of food systems is to reduce inequality, then policymakers must commit to specific actions both at international and national levels:

- Disruption to trade in general, and through protectionism in particular, must be avoided. Trade is a vital tool to minimise food prices, and to maintain food security, particularly at times of stress and price volatility.
- Governments need to promote growth that is specifically inclusive and pro-poor. This is a vital component in a strategy to address affordability.
- Donors need to specifically focus their attention on protecting the poor from price fluctuations that may occur during the transition.

Planning the transition of their food systems is likely to be a particular challenge for those LMICs which are heavily resource constrained. It is suggested that governments in LMICs should give particular consideration to the following:

- Repurposing existing expenditure across government, recognising that sustainable healthy diets can contribute to multiple policy agendas, including health, economic growth, and education.
- Giving particular focus to actions that are, to first order, cost neutral – for example rebalancing production (terrestrial and aquatic food systems of all kinds) subsidies and research, taxes and regulation. Influencing consumer dietary choices is potentially low cost but has considerable potential to drive change throughout food systems.
- Leveraging the considerable resources of the private sector by forging a partnership to work together on a common agenda.
- Focusing attention on actions that simultaneously produce multiple wins.
- Using reviews to prioritise where to focus actions within food systems, and using the best science, evidence, and modelling to help choose the most cost-effective actions.

### 2.3 Tackling trade-offs and compromises head on

The need to resolve competing policy and investment priorities operates at many scales and contexts. It is a daily reality in

governments when resources are constrained and actions need to be prioritised; in private companies when making investment choices on product portfolios or retail strategies; and in households when making day-to-day food-purchase choices.<sup>9-11</sup>

Policymakers seeking to transition food systems need to think through how to navigate difficult trade-offs which may lie entirely within the food system, but equally, may involve wider areas of policy. Examples include: how to balance resource expenditure between education, stimulating economic growth, and investing specifically in food systems; how to allocate scarce resources between addressing different forms of malnutrition which may affect a population simultaneously including undernutrition, micronutrient deficiencies, or overweight and obesity; how to strike a balance between investing in agriculture and fisheries versus other sectors in rural communities; and how to balance avoiding coronavirus-led debt default in the short-term with investing in food system transition to achieve longer-term health and economic benefits.

Trade-offs may usefully be approached through: mapping out existing policies in relation to new goals and likely trade-offs; developing a clear understanding of the costs and benefits of alternative actions; transparently defining who pays and benefits from alternative strategies; taking a longer-term perspective; and ensuring affordability as a priority.<sup>1,12</sup>

### 2.4 Ensuring that the transition process is appropriately resourced

The transition of food systems will inevitably incur costs before the benefits can be realised. These costs will likely manifest in all domains of the system, from

production, through to trade, food processing, retail, and consumption. It is therefore necessary that the distribution and impacts of these costs are identified, understood, and managed effectively. Put simply, it is essential to have clarity from the outset about how the transition steps would be resourced. This will be doubly important, not just to ensure that reform can move beyond political aspiration, but also so that the transition does not further widen the gap between HICs and LMICs. Much can be achieved by repurposing (see Section 4) or refocusing existing resources (for example shifting subsidies and realigning taxes and incentives), and through negotiating more equitable trade agreements. Identifying actions that produce multiple benefits (win-wins) may also help. However, the following non-governmental also need to be considered:

- **Incentivise the private sector to realign its resources to help support national agendas of delivering healthier diets and to do so sustainably.** The public sector cannot deliver transformed food systems on its own; it needs to work in partnership with the private sector. However, many commercial actors too often act in ways that are not conducive to health or to the sustainability of food systems. This is incompatible with the necessary transition agenda and needs to change. It is important for governments to incentivise businesses to make a much wider range of nutrient-rich foods affordable to the entirety of 'bottom of the pyramid' families. More generally, a comprehensive framework for food-industry engagement needs to be established.
- **Establish a dedicated Global Financing Facility for a food systems transition.** Such a facility would mobilise multilateral resources to support and incentivise increased allocations of domestic resources towards making food systems more resilient and diets both more sustainable and healthier. A particular priority for such a facility would be to assist LMICs in their transition, recognising the severe financial constraints in which many operate. It also has the potential to catalyse reform where there is a mismatch between the actors who need to resource change, and those who stand to benefit.
- **Realign donor policies towards supporting actions which promote the achievement of both human health and planetary goals.** A particular priority should be the protection of the poor during the transition by refocusing social protection policies so that the poor will be able to cope with fluctuations in the availability and price of foods which may occur during this time.

### 3.0 Incentivising and supporting actions

Given the diverse benefits that would result from achieving sustainable, healthy diets for all, the limited actions taken by countries across the world in recent decades<sup>2</sup> represent a huge, missed opportunity. The reasons for this are many and varied but include insufficient policy focus by governments on improving diet quality and nutrient-rich foods (as opposed to the provision of staples).

A further issue concerns the private sector. Despite playing a major role in feeding the world, the private sector too often develops and promotes foods that are not conducive to healthy diets, or which rely on food production systems that over-exploit natural resources. The benefits accrue mainly to private sector stakeholders while the costs (population-wide ill health, ecological degradation, etc.) are mainly borne by the public sector and wider society. That mismatch has impeded progress in the past and must be addressed as part of the transition.

Many factors also affect the pace of change. Global food systems involve powerful business interests with considerable investment in the status quo: revenues of the global food system are estimated to reach US\$8 trillion in 2021.<sup>13,14</sup> The implementation of policy change may also be constrained by limited resources, particularly in LMICs, and especially in a post-COVID-19 world. Major shifts in policy may incur political risks, and decision makers typically assign more weight to these compared with risks associated with maintaining the status quo.<sup>7</sup> And at the level of the consumer, dietary choices may be heavily conditioned by evolving cultural or religious norms.<sup>15,16</sup> However, three systemic issues stand out within the policy environment. Addressing these at the outset of the transition is essential.

### 3.1 The misalignment between the complexity and interconnectedness of food and environmental systems, and how they are managed today

Policy actions on food, health, agriculture and fisheries, and climate are typically managed in isolation - an organisational approach which is inherently unsuited to managing complex food systems. The need for 'joined up' policy is a cliché but remains

widely relevant. This important issue can be addressed through a combination of measures: training and sensitisation of policy leads in all relevant sectors to the urgency of the transition; leadership at the highest levels in government; convincing relevant policymakers across government of the critical importance of sustainable, healthy diets to their respective policy agendas; embedding these objectives into their own plans and strategies so that all parts of government drive change within a common transition agenda; and establishing targets for actions which improve food system functions in ways that deliver multiple benefits simultaneously.

### 3.2 Inadequacies in science and evidence for policy development

Trusted, high-quality science and evidence are essential to give policymakers the confidence to take the bold decisions which are required. There is a need to: address major gaps in the evidence base, particularly in LMICs where evidence of 'what works' is often limited; establish a common science base that is recognised as independent, widely trusted, and freely available to all countries; and to develop consensus around contentious areas of policy.

The idea for a creation of an IPCC-like organisation for sustainable food systems (an 'International Panel for Food System Science', or IPFSS) has been mooted in recent years and offers one way to help deliver the necessary improvements. This idea is now gathering support from major stakeholders.

An important role of the IPFSS would be to engender trust in the science and evidence in two distinct communities. In the case of policymakers, it would engender confidence and provide support in justifying difficult or controversial

decisions. But trust in the underlying science is equally critical for citizens who, through their individual and collective food choices, can exert considerable influence throughout the food system.<sup>2</sup> Misinformation circulating on the internet and social media concerning climate change, and now vaccinations, all illustrate how false information can dangerously mislead consumers.

### 3.3 Metrics for monitoring, tracking, and adjusting the transition process

Effectively measuring what policymakers and businesses manage is key to identifying what works and what is most cost-effective, as well as for supporting transparency and accountability.<sup>17</sup> As such, the transition steps in food system reform must be carefully based on appropriate evidence where it is available,<sup>18</sup> and should promote making evidence available where it is not.<sup>2</sup> For example, it remains difficult to compare diets (what people actually eat) across geographies and over time. This gap in appropriate measurement and monitoring continues to impair the prospect of reaching a global consensus on what elements should be included to define healthy or high-quality diets, and how to ensure planetary sustainability of the food systems that underpin them.

What is urgently needed is open-access portals for data not just on diets, but on all elements of food system functions, including information access, market prices, and the nature and quality of food environments, all of which are needed in forms that can be effectively linked with global trade and climate change models to better inform policy choices.

## 4.0 Who needs to act: priorities for transitioning food systems to protect human and planetary health

The transition of food systems requires global leadership with a long-term focus and the delivery of a coherent set of commitments and actions that place both peoples' and the planet's health at the centre. For the next decade, the structure of the Sustainable Development Goals will help to provide a coherent framework for action. Global leadership, such as that expected to emerge more fully from the UN Food Systems Summit, will help to provide the continuity needed as well as mechanisms for periodic reassessment and reorientation.

Global leadership must, however, be supplemented with and supported by national, regional, and local level initiatives which bring together public, private, and civil society actors around the priorities that are most urgent, feasible, and essential for food system transformation. The Global Panel's recent Foresight report sets out detailed recommendations for different classes of stakeholder, and different parts of the food system, recognising that such actions will usually need to be tailored to individual circumstances. However, the following priorities are generally applicable:

### ***International:***

1. **Leaders and decision makers should capitalise upon upcoming global fora to agree to new commitments for making food systems more resilient and diets that are healthy and sustainable.** Both the Nutrition for Growth (N4G) Summit and the United

Nations Food Systems Summit are important opportunities to explore the creation of a dedicated Global Financing Facility for food systems transformation and to secure national endorsements for change, including much improved capacity for research and evidence to better support policy decisions. A new vision for sustainable food systems delivering healthy diets for all must be supported through the best science and evidence of what works as informed by practical evidence.

2. **Policymakers must build on existing global development targets (such as the SDGs and the Paris Agreement on Climate Change) so they embody the goal of sustainable, healthy diets for everyone as a shared objective.** These targets need to recognise the central importance of sustainable, healthy diets as a key enabler for progress on diverse agendas, for example relating to inequality, economic growth, climate change, environmental degradation, and livelihoods and job creation.

**Governments:**

3. **Food systems and the policies which govern them need to be people-centred.** This means ensuring that healthy diets are available to all people irrespective of class, religion, gender and age. It means recognising the vital role that food systems play in providing livelihoods for countless millions, particularly for poor and marginalised groups. And it means ensuring that policymakers understand and recognise the central importance of healthy diets

for physical and mental development, as a foundation for health, prosperity and wellbeing.

4. **Policymakers in relevant government departments must address planetary and dietary challenges simultaneously because they are fundamentally interlinked.** The approach to date, where these issues were tackled piecemeal and in silos, simply will not work.
5. **Governments in countries at all stages of development must resolve policy distortions which could fundamentally impede change – or even drive food systems in the wrong direction.** Examples include: taxation and regulation, subsidies, and food-related research and development. The aim is to give much greater weight to the importance of nutrient-rich foods and to better support measures which further support both human and planetary health simultaneously.
6. **Relevant ministries (e.g. agriculture, fisheries, health, transport infrastructure, environment) need to work together to implement policies to realign production systems so that they support healthy diets in sustainable ways.** Food systems today do not produce enough nutrient-rich foods to meet today's needs, let alone projected demand over coming decades, nor are they producing most foods sustainably. Narrow targets relating to productivity need to be replaced with broader measures valuing efficiency and sustainability.

7. **Relevant government departments need to prioritise building the resilience of food systems, as COVID-19 has highlighted their current deficiencies and vulnerabilities.**<sup>iii</sup> A broad approach is required which addresses: the causes of lack of resilience within food systems, the root causes of the threats, and mitigation measures which may be needed during times of stress.
8. **Governments in all countries should creatively target actions which can create multiple ‘wins’ across health and sustainability.** Opportunities need to be sought throughout food systems – from farm to fork. Major projects in sub-Saharan Africa and China have already shown that this is possible, creating substantial and lasting benefits in terms of jobs, equality, and the development and prosperity of individuals and regions.<sup>19–22</sup> Technology innovations across food systems from production through processing, storage, and retail hold considerable promise.

***Donors:***

9. **Donor agencies must support LMICs to ensure that the transition of food systems is socially and ethically just.** They have an important role to play to ensure that the poorest are protected during and after a period of food system transition.

***Companies operating in the food system:***

10. **Major trans-national businesses and local SMEs must work closely with governments on more clearly articulated common agendas to deliver sustainable, healthy diets.** A comprehensive framework for food industry engagement is needed: it is essential that the public and private sectors work together on common agendas and share the costs of implementing them. The private sector must spell out specific, measurable responsibilities for improving diet quality and the sustainability of food systems and be willingly held accountable.

***Civil society:***

11. **Civil society advocacy groups and citizens need to play their part. The former have a major role in leveraging change in businesses operating across food systems and holding policymakers to account, and the latter have considerable influence to drive change through their purchasing power.** However, shifts in demand in favour of sustainable, healthy diets will need encouragement and empowerment through information from trusted sources.

---

<sup>iii</sup> The Global Panel is producing a separate science paper on the relationship between food systems

and the COVID-19 pandemic, and the implications for building resilience.

## References

1. FAO, IFAD, UNICED, WFP W. The State of Food Security and Nutrition in the World: Transforming Food Systems for Affordable Healthy Diets. Rome, Italy; 2020.
2. Global Panel on Agriculture and Food Systems for Nutrition. Future Food Systems: For people, our planet, and prosperity. London, UK; 2020.
3. Global Panel on Agriculture and Food Systems for Nutrition. Healthy diets for all: A key to meeting the SDGs. Policy Brief No. 10. London, UK; 2017.
4. KC KB, Dias GM, Veeramani A, Swanton CJ, Fraser D, Steinke D, et al. When too much isn't enough: Does current food production meet global nutritional needs? PLoS One. 2018.13(10).
5. Bommer C, Sagalova V, Heesemann E, Manne-Goehler J, Atun R, Bärnighausen T, et al. Global Economic Burden of Diabetes in Adults: Projections From 2015 to 2030. Diabetes Care. 2018.41(5):963–70.
6. IPBES. Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. Population and Development Review. Bonn, Germany; 2019.
7. The World Bank and Nutrition. 2019; Available from: <https://www.worldbank.org/en/topic/nutrition/overview>
8. FAO. Home | Food-based dietary guidelines | Food and Agriculture Organization of the United Nations. Available from: <http://www.fao.org/nutrition/education/food-dietary-guidelines/en/>
9. Global Panel on Agriculture and Food Systems for Nutrition. Rethinking Trade Policies to Support Healthier Diets. Policy Brief. London, UK; 2020.
10. Webb P. Medium- to Long-Run Implications of High Food Prices for Global Nutrition. J Nutr. 2010.140(1):143S-147S. Available from: <https://doi.org/10.3945/jn.109.110536>
11. Global Panel on Agriculture and Food Systems for Nutrition. Urban diets and nutrition: Trends, challenges and opportunities for policy action. Vol. 9. London, UK; 2017.
12. Herforth A, Bai Y, Venkat A, Mahrt K, Ebel A, Masters WA. Cost and affordability of healthy diets across countries. Technical Background Paper for SOFI 2020: The State of Food Security and Nutrition in the World, 2020. 2020.
13. Statista. Food - Worldwide | Statista Market Forecast. 2020; Available from: <https://www.statista.com/outlook/cmo/food/worldwide>
14. Van Nieuwkoop M. Do the costs of the global food system outweigh its monetary value? World Bank. 2019; Available from: <https://blogs.worldbank.org/voices/do-costs-global-food-system-outweigh-its-monetary-value>
15. Monterrosa EC, Frongillo EA, Drewnowski A, de Pee S, Vandevijvere S. Sociocultural Influences on Food Choices

and Implications for Sustainable Healthy Diets. *Food Nutr Bull.* 2020.41. Available from:

<https://doi.org/10.1177/0379572120975874>

16. Alonso S, Aderu S, Bekele TH, Bishaw Z, Brouwer ID, Brown LR, et al. Background paper. Transforming Ethiopian Food Systems: Better diet quality, prosperity, and sustainability in a changing climate. 2021.

17. The World Bank. World Development Report 2021: Data for Better Lives. A World Bank Flagship Report. Washington, DC; 2021.

18. International Food Policy Research Institute. 2021 Global Food Policy Report: Transforming Food Systems after COVID-19. Washington, DC; 2021.

19. Fu B, Liu Y, Lü Y, He C, Zeng Y, Wu B. Assessing the soil erosion control service of ecosystems change in the Loess Plateau of China. *Ecol Complex.* 2011.8(4):284–93.

20. Lü Y, Fu B, Feng X, Zeng Y, Liu Y, Chang R, et al. A Policy-Driven Large Scale Ecological Restoration: Quantifying Ecosystem Services Changes in the Loess Plateau of China. *PLoS One.* 2012.7(2).

21. Deng X. Restoration and Development of the Degraded Loess Plateau, China. 2014. 215–231 p.

22. Goffner D, Sinare H, Gordon LJ. The Great Green Wall for the Sahara and the Sahel Initiative as an opportunity to enhance resilience in Sahelian landscapes and livelihoods. *Reg Environ Chang.* 2019.19(5):1417–28.

**Food Systems Summit Briefs** are prepared by researchers of Partners of the Scientific Group for the United Nations Food Systems Summit. They are made available under the responsibility of the authors. The views presented may not be attributed to the Scientific Group or to the partner organisations with which the authors are affiliated.

***Authors (on behalf of the Global Panel on Agriculture and Food Systems for Nutrition)***

**Patrick Webb** – Professor, Tufts University; Technical Adviser to the Global Panel

**Derek J. Flynn** – Consultant to the Global Panel

**Niamh M. Kelly** – Policy Research Officer at the Global Panel

**Sandy M. Thomas** – Director of the Global Panel Secretariat

***Members of the Global Panel on Agriculture and Food Systems for Nutrition***

**John Beddington** – Former UK Chief Scientific Adviser, Senior Adviser to the Oxford Martin School and Professor of Natural Resource Management at Oxford University

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

**Akinwumi Adesina** – President of the African Development Bank

**Celso Moretti** – President, Brazilian Agricultural Research Corporation (Embrapa)

**Emmy Simmons** – Senior Adviser, Non-resident, to the Center for Strategic and International Studies Global Food Security Project

**Rachel Kyte** – Dean of The Fletcher School at Tufts University

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

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

**Shenggen Fan** – Chair Professor of China Agricultural University

**K. Srinath Reddy** – President, Public Health Foundation of India

**Qu Dongyu** – Director-General, Food and Agriculture Organization of the United Nations (FAO)

For further information about the Scientific Group,  
visit <https://sc-fss2021.org> or  
contact [info@sc-fss2021.org](mailto:info@sc-fss2021.org)

 [@sc\\_fss2021](https://twitter.com/sc_fss2021)