SYSTEMIC SOLUTIONS FOR HEALTHY FOOD SYSTEMS

A Guide to Government Action

GLOBAL ALLIANCE FOR THE FUTURE OF FOOD
2020

This *Guide to Government Action* is part of a suite of materials that presents how narratives, policies, and practices across the food-health nexus can be transformed to promote human, ecological, and animal health and well-being. It is the result of a stakeholder-led engagement process that gathered insights and feedback from a diverse array of individuals and organizations within and across many contexts, scales, cultures, and geographies. This document is supported by *Systemic Solutions for Healthy Food Systems: Approaches to Policy & Practice* — a diverse catalogue of global case studies that can be used to further inform the recommendations set out in this guide.

Users are also encouraged to read *Food Systems Transformation — Promoting Human, Ecological, & Animal Health & Well-being: A Shared Vision & Narrative*, which articulates a new vision and narrative for food systems that promote health.

Systemic Solutions for Healthy Food Systems: Approaches to Policy & Practice was commissioned from Tasting the Future by the Global Alliance for the Future of Food. Tasting the Future is a purpose-driven consultancy that aims to transform food systems so they are sustainable, healthy, equitable, and fair.

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INTRODUCTION

The COVID-19 pandemic has revealed the fragility of our food and health systems. Scientists agree that preserving intact ecosystems and tackling climate change reduces the prevalence of infectious diseases.[1, 2] COVID-19 has reinforced understanding of the interdependence of ecological, animal, and human health by revealing what happens when we break down the natural barriers between animal and human populations. The destruction of natural habitats, wildlife trade, and intensive livestock farming systems all increase the risk of diseases spreading to human populations. New zoonotic and infectious diseases such as Ebola, SARS, bird flu, and now the coronavirus COVID-19 are a symptom of this breakdown. COVID-19 has revealed the vulnerability of our food systems to shocks — panic buying, labour shortages, the health of food systems workers, the closure of informal markets, and growing food insecurity have impacted the most vulnerable populations.

Sustainable food systems play a critical role in creating and sustaining our health and well-being and that of the planet. It is time to put an integrated approach to human, ecological, and animal health and well-being at the heart of all policymaking, legislation, governance, investments, research, and practices.[3]

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As governments around the world implement a set of economic stimulus packages and policies that support recovery, we urge them to consider a suite of health-promoting measures that are central to sustainable, resilient, and equitable food systems. Our own work with actors from around the world highlights the urgency for governments, alongside others, to shift mindsets and the prevailing narrative that focuses on producing more food with less impact — what we call the productivist, "feed the world" narrative — to one that promotes and prioritizes human, ecological, and animal health and well-being.[4]

The Global Alliance for the Future of Food and Tasting the Future undertook a comprehensive literature review and stakeholder interviews, and used insights from our set of case studies — *Systemic Solutions for Healthy Food Systems: Approaches to Policy & Practice* — to inform this guide for government action.[5] Out of this process, a set of recommendations emerged that national governments can apply across geographies, cultures, and contexts in order to build resilience and improve food security outcomes. No one intervention will be sufficient on its own, and each must be adapted to the local context.

BACKGROUND

Profound changes in the way food is grown, processed, distributed, marketed, consumed, and disposed of over the last several decades have resulted in systems that create food insecurity, chronic disease, environmental degradation, biodiversity loss, diminished economic opportunity, and the erosion of Indigenous food cultures. Moreover, the impacts disproportionately affect the most vulnerable in our communities — impacts that are compounded by climate change, poverty, and inequality.

The global community confronts three intertwined and interlinked crises that result from food systems not fit for its purpose:

- **Human health crisis:** A multitude of food-related health challenges, including unhealthy dietary patterns and rising malnutrition in all forms (i.e., the triple burden of obesity, undernutrition, and micronutrient deficiency); food insecurity; occupational hazards; environmental contamination; antimicrobial resistance; and contaminated, unsafe, and altered foods result in poor health outcomes and escalating healthcare costs.[6]
- **Ecological health crisis:** Land-use changes have had the largest relative negative impact on nature since 1970. Much of this change is driven primarily by the expansion of livestock production and is the single biggest environmental driver of new disease outbreaks.[7] Emissions associated with pre- and post-production activities in the global food system are estimated to be 21 to 37% of total net anthropogenic greenhouse gas (GHG) emissions.[8] Climate change, biodiversity loss and ecosystem damage, soil loss, soil and water pollution, and the loss of other scarce natural resources diminish ecological health and exacerbate the human health crisis.
- **Animal health crisis:** Approximately 70 billion animals are farmed for food worldwide every year (60% of all mammals on Earth),[9] the majority of which are produced under intensive livestock production systems with poor animal welfare standards.[10] These systems drive the increased use of antibiotics and are connected to the emergence of a range of zoonotic diseases,[11] diminishing animal health, exacerbating the human health crisis, and contributing to the ecological health crisis.[12]

The need for action to transform our food systems has never been more urgent. Key to this transformation is the need for governments to articulate new positive visions and narratives. Now is the time to move away from the old productivist, treating-ill-health model, which is only producing more food without consideration of other impacts, to a new inspiring and empowering narrative that promotes, nourishes, and regenerates health.

Governments have an opportunity and responsibility to lead the way and ensure this new narrative underpins public and private sector policies.

TAKING ACTION TO CREATE HEALTHIER FOOD SYSTEMS

Fundamental change to our industrial food system is possible when driven by actors across food systems working together: food producers, community groups, businesses, researchers, investors, civil society organizations, and governments. It is only when governments, working in partnership with these actors, focus on multiple social, cultural, and ecological determinants of health that the most significant systemic change can occur (see Figure 1).

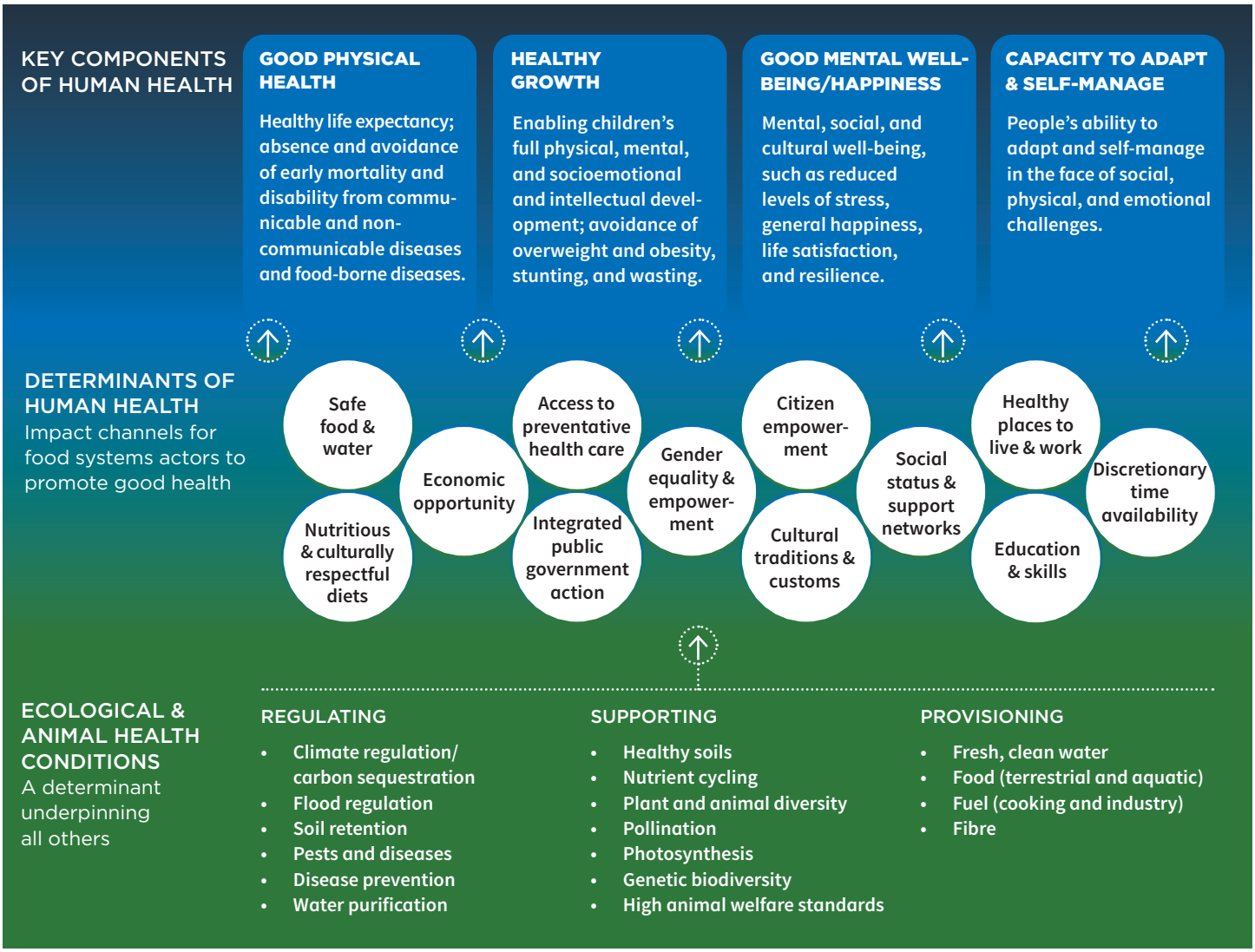

FIGURE 1. Human, ecological, and animal health determinants underpin human health outcomes

Addressing the key determinants of healthier food systems will enable national and local governments to deliver on commitments made under multiple international agreements,[13] including many of the 17 Sustainable Development Goals (SDGs), the Paris Agreement on Climate Change, and the U.N. Decade for Action on Nutrition.[14]

We have produced a set of case studies, *Systemic Solutions for Healthy Food Systems: Approaches to Policy & Practice*,[15] which highlights and demonstrates the need for government leadership — at local and national levels. In particular, we highlight the following lessons:

- Governments that have a vision and engage multiple actors in strategies to tackle the key determinants of health tend to have the most significant impact.
- Government champions play an important role to tackle the socio-economic determinants of good health by focusing on poverty, inequality, and social exclusion.
- Policies that support regenerative and agroecological agricultural practices are crucial to human, ecological, and animal health and well-being.
- Governments must engage and involve citizens in the policy process to ensure policies are locally and culturally relevant and are tailored to local and regional conditions.
- Policies must be integrated and link the full value chain from production to consumption — with healthy, sustainable, and culturally appropriate diets at the centre.
- Partnership and collaboration with a range of actors is crucial to delivering long-lasting and systemic impact.

All actors have a role to play in food systems transformation for health, including farmers, the private sector, civil society, researchers, and citizens, *but governments in particular play a crucial role and need to demonstrate leadership*. There is a need for: 1) dialogue and action; 2) coordination across multiple sectors and departments that do not ordinarily work together; and 3) a strategic focus on systemic solutions and more integrated, multifaceted, and holistic policy opportunities to support sustainable change.

Governments have an opportunity to act, using a range of "levers of change" to shape our food systems through policy and practice:

1. **Vision & leadership:** Food systems visions, supported by a portfolio of goals, targets, and strategies that promote health and well-being.
2. **Governance:** Integrated and participatory approaches to establishing food policy and setting the rules, laws, and standards.
3. **Fiscal influences:** Financial incentives/disincentives that influence certain choices/actions and that, in turn, influence all aspects of food systems and their impact on health at a population level.
4. **Knowledge & education:** Policies and practices that inform, educate, promote, and empower decision-makers and citizens about the interrelationship between food and health.
5. **Research & innovation:** Policies and investments that influence the focus and application of research and innovation to the food systems.
6. **Collaboration:** Cross-sector and interdisciplinary collaboration at local, national, and international scales to ensure the appropriate food systems links are forged.

RECOMMENDATIONS

We set out 14 recommendations to governments, using the above levers of change and lessons from organizations around the world, to build healthy food systems. Under each of the recommendations that follow we provide an illustrative insight from the case studies set out in the supporting document, *Systemic Solutions for Healthy Food Systems: Approaches to Policy & Practice*.

VISION & LEADERSHIP RECOMMENDATIONS

1. **Take an integrated and inclusive approach to ensure that policies relating to food, food safety and quality, environment, trade, and agriculture and nutrition promote human, ecological, and animal health and well-being.** This means aligning mutually reinforcing policies across all sectors that span traditional departmental responsibilties within government. It means removing the silos that can exist between agriculture, environment, water, health, climate, trade, finance, international development, employment, education, and social welfare (protection). Gathering and translating evidence of lived experience of food-related problems can help make food policy more effective and equitable in addressing major food systems challenges. ("Lived experience" refers to a representation of the experiences and choices of a given person, and the knowledge that they gain from these experiences and choices.)

CASE STUDY INSIGHT

IMPROVING FOOD SECURITY & RESILIENCE IN BELO HORIZONTE, BRAZIL

This initiative shows that city-level vision and leadership, combined with an integrated and inclusive approach focused on determinants of health, can significantly reduce hunger and malnutrition while influencing national policies.

2. **Set health-based goals and robust targets for human, ecological, and animal health and well-being.** Robust targets for good human, ecological, and animal health and well-being need to be aligned with the allocation of public investment and support for international frameworks and commitments. These commitments include the U.N. Decade of Action on Nutrition (2016 to 2025),[16] the Sustainable Development Goals (SDGs),[17] the Paris Agreement on Climate Change, and the One Health approach.[18] This requires identifying a suite of quantitative and qualitative indicators, identifying appropriate metrics and data sets, and seeking insights from those groups, populations, and communities most impacted by public policies.

CASE STUDY INSIGHT

ALLEVIATING FOOD INSECURITY THROUGH FOOD WASTE LAWS IN FRANCE

The French government–inspired National Pact Against Food Waste set the goal of cutting food waste in half by 2025 (from 2012 baseline). It uses a number of fiscal incentives/disincentives to address food insecurity, recognizing the links and opportunities to address human and ecological health.

GOVERNANCE-BASED RECOMMENDATIONS

3. **Assess all existing food-health policies and implement mandatory health impact assessment for all future policymaking to ensure all policies deliver on multiple health outcomes.** There is a need for governments to conduct cross-ministry, cross-sector, and cross-silo impact evaluations to ensure positive health outcomes for people, animals, and ecosystems, focusing on the full range of determinants of health that can be influenced through a variety of health, food, and other pathways. Focus needs to be given to reducing health inequalities while reflecting local realities and priorities. These need to be underpinned by national-, regional-, and local-level health and nutrition plans and accountable public reporting of progress.

CASE STUDY INSIGHT

CUTTING CHRONIC DISEASES THROUGH CONSUMER INFORMATION LAWS IN CHILE

Recognizing growing health inequalities, the Chilean government explored a range of policies across governments that would address these inequalities, particularly with regard to children. Marketing, food environments, and a range of fiscal policies were implemented.

4. **Use multiple policies to create enabling food environments, ensuring citizens have access to affordable, culturally relevant, and healthy foods where they live.** Planning and economic development policies should enable citizens to grow, purchase, prepare, and cook a diverse range of healthy foods, including fresh produce, within any given food environment. A coherent approach is required across planning, zoning schemes, regulations, and by-laws to promote the emergence of healthy food environments. This should include restricting the marketing and sales of ultra-processed foods that are high in calories and with minimal nutritional value.

CASE STUDY INSIGHT

REVIVING TRADITIONAL DALIT COMMUNITY FOODS TO IMPROVE NUTRITION IN SOUTH INDIA

This initiative shows that appropriately adapting government policies to local community needs, including health needs, is important for providing valuable lessons that can potentially inform design of effective governmental strategies for improving health.

FISCAL-BASED RECOMMENDATIONS

5. **Reorient public subsidies related to food systems to ensure public money is used for public goods, including food systems that incentivize the production and consumption of nutritious, sustainable, and healthy foods.** This includes a shift toward diversified cropping/livestock and agroecological and regenerative agricultural systems, and investing in programs that ensure sustainable healthy diets are available, accessible, affordable, and safe. There should be greater investment in indigenous crops that are locally resilient, nutritious, and have the potential to deliver more financial, social, and environmental value to smallholder farmers.

CASE STUDY INSIGHT

ACCELERATING A SHIFT TOWARD ORGANIC AGRICULTURE IN GERMANY

Germany set a target for 20% of its agricultural land to be organically farmed by 2030 using a series of financial incentives and a comprehensive 5-point strategy with 24 action areas aimed at accelerating the transition to organic farming.

CASE STUDY INSIGHT

IMPROVING SOILS & HEALTH THROUGH COMMUNITY-SUPPORTED AGRICULTURE IN CHINA

This initiative used a pioneering approach to expand access to food-growing spaces and local produce for urban dwellers, featuring regenerative and agroecological systems that improve soils, water quality, biodiversity, and human health. The Chinese government recently promised a renewed focus on green and agroecological agriculture.

6. **Facilitate the affordability of health-promoting foods and healthy diets, especially for poor households and vulnerable groups.** This includes social protection programs such as vouchers, cash, school feeding, or food supplement programs. Governments should classify food as a "public good" and make investments in public infrastructure and social safety-net payments and other support to ensure access to good nutrition for all.

CASE STUDY INSIGHT

BOOSTING VEGETABLE CONSUMPTION THROUGH CROSS-SECTOR ACTION IN THE U.K.

This initiative convened public institutions, producers, retailers, food service, trade bodies, and chefs to help make vegetables appealing, affordable, and accessible. It focuses on addressing affordability for poor and vulnerable households through instruments such as government food vouchers and retailers committing to affordable vegetable offerings.

7. **Assess the health and food safety implications of international trade agreements and policies.** Policy instruments that reduce the price of natural, nutrient-rich foods, improve animal welfare standards, and regenerate ecosystems must be a priority. Providing the trade policy incentives that enable shorter supply chains, and prioritizing the procurement of foods with high sustainability and animal welfare standards, will boost local economies, build resilience, and reconnect food producers to consumers.

CASE STUDY INSIGHT

REVIVING TRADITIONAL DALIT COMMUNITY FOODS TO IMPROVE NUTRITION IN SOUTH INDIA

India's national Public Distribution System (PDS) — one of the world's largest social safety nets, which provides subsidized grains to people living in poverty to prevent food insecurity and hunger — is being adapted by the Dalit community in order to produce a greater proportion of highly nutrient-rich and culturally appropriate traditional grains.

8. **Support local supply chains, informal markets, and micro-, small-, and medium-size enterprises (MSMEs)** in all countries and particularly in low- and middle-income countries where the informal sector contributes over 80% of all food. This, together with connecting smallholders to new supply chains, can lead to more resilient supply chains, especially in the face of global food crises. Governments should improve access to credit/finance, especially for women-led initiatives, create enabling environments, and invest in technical assistance to develop investment-ready projects. Governments should focus on developing localized and sustainable forms of production and consumption, with a focus on healthy and nutritious foods, including fruit and vegetables, legumes, nuts, and pulses.

CASE STUDY INSIGHT

IMPROVING FOOD SAFETY IN INFORMAL SETTLEMENTS IN NAIROBI, KENYA

This community-led approach is improving the food environments of informal food markets producing fresh produce for urban populations by focusing on food safety and including improved water provision, sanitation and lighting, communal storage, and refrigeration facilities.

KNOWLEDGE- & EDUCATION-BASED RECOMMENDATIONS

9. **Develop culturally appropriate, sustainable, and health-promoting food-based sustainable dietary guidelines (FBSDGs) and ensure public food procurement standards align with these, promoting safe, healthy, sustainable, and nutritious foods within and around public institutions, including schools and healthcare facilities (hospitals, medical centres, care centres, prisons, social protection programs, etc.).** National governments should reflect human, animal, and ecological health within their FBSDGs and with specific recommendations focusing on adequate consumption of fresh fruits, vegetables, wholegrains, legumes, nuts, etc. FBSDGs should discourage the consumption of ultra-processed foods high in unhealthy fat, sugars, and salt/sodium. Livestock products should be sourced using the highest animal welfare standards.

CASE STUDY INSIGHT

DRIVING DEMAND FOR ORGANIC FOOD THROUGH PROCUREMENT RULES IN COPENHAGEN, DENMARK

Copenhagen harnesses the power of municipal spending to drive increases in local, organic, and agroecological agriculture by setting mandatory targets in schools and other institutions combined with local sourcing policies.

10. **Recognize the importance of ecological, food, and health literacy in influencing citizen behaviours and reconnecting people with food.** A range of social, cultural, and ecological determinants influence people's motivation and ability to access affordable, healthy, nutritious, sustainable, and culturally appropriate foods.[19] Governments should promote food literacy with an emphasis on cultural heritage, culinary skills, nutrition and health education, and the linkages between the ecosystem, food, and health (for example, through preventative healthcare programs, school curriculum, and the provision of facilities/services that support food growing and cooking in schools and communities).

CASE STUDY INSIGHT

IMPROVING NUTRITION IN RWANDA

Education and food and nutrition literacy is a core focus for Gardens for Health International (GHI) — addressing agricultural practices, health, nutrition, and practical food skills. GHI works with government-run community health clinics as access points to reach mothers who are malnourished.

RESEARCH- & INNOVATION-BASED RECOMMENDATIONS

11. **Food systems research and innovation should focus on research for public good.** Public research and innovation agendas for food and agriculture must be redefined to promote public goods, including health outcomes, shaped by and designed to serve a wider range of actors — citizens, farmers, fishers, Indigenous populations, and those with traditional knowledge. Specific focus should be on the delivery of natural, nutrient-dense foods, diverse crops/livestock species, agroecological and regenerative agriculture, circular practices, and high animal welfare husbandry that improves health. There is a need to support co-created research and innovation through participatory approaches that bridge food-health systems.

CASE STUDY INSIGHT

CUTTING AFLATOXIN FOOD CONTAMINATION IN AFRICA

This initiative, coordinated by the Partnership for Aflotoxin Control, reduces cancers, cuts food waste and loss, and improves livelihoods through improved farming and storage practices.

12. **The precautionary principle must be at the heart of the health research and innovation agenda.** Governments need to manage complexities across the food and health systems, weigh the collective evidence on risk factors, and act accordingly to protect health. Where research and innovation is proposed and scientifically plausible hazards are identified but the risk of them occurring cannot be quantified, the precautionary principle should be applied: research and innovation must prove that no harm to health will be done as a result.

CASE STUDY INSIGHT

ACCELERATING A SHIFT TOWARD ORGANIC AGRICULTURE IN GERMANY

Germany is accelerating a shift to organic production as a way of mitigating environmental and health risks and promoting health.

COLLABORATION-BASED RECOMMENDATIONS

13. **Promote and encourage dialogue, collaboration, and action among all actors directly and indirectly involved and impacted in and by food systems.** This includes farmers; businesses; local producers; trade unions; the health sector; food, citizens, and civil society organizations; academia; and investors.

CASE STUDY INSIGHT

SUPPORTING BETTER LIVELIHOODS & NUTRITION THROUGH SCIENCE-BASED FISHERIES MANAGEMENT

This initiative shows that collaboration between different government agencies, communities, and fishers, with a focus on enforcement, is key to protecting marine resources and encouraging sustainable fishing practices.

14. **Support and commit to international action frameworks that will be crucial for action on sustainable and healthy food systems.** 2021 will be a critical year where governments will need to work with the global community to advance action under the U.N. Framework Convention on Climate Change, a new action framework for the U.N. Convention on Biological Diversity, the U.N. Decade for Ecosystem Restoration, the U.N. Decade for Action on Nutrition, and the U.N. Food Systems Summit.[20]

CASE STUDY INSIGHT

Many of our case studies demonstrate local actions that deliver on national and international commitments. They also demonstrate how local actions can inform and shape global processes.

SUMMARY OF RECOMMENDATIONS & CASE STUDIES

The case study insights flagged in this guide are drawn from the supporting document *Systemic Solutions for Healthy Food Systems: Approaches to Policy & Practice*. In the table that follows we assess how each example supports at least 4 and as many as 11 of the recommendations.

For detailed analysis per case study, see *Systemic Solutions for Healthy Food Systems: Approaches to Policy & Practice*.

RECOMMENDATIONS → / NAME OF CASE STUDY ↓	1	2	3	4	5	6	7	8	9	10	11	12	13	14
ACCELERATING A SHIFT TOWARD ORGANIC AGRICULTURE IN GERMANY					✓			✓			✓	✓		
ALLEVIATING FOOD INSECURITY THROUGH FOOD WASTE LAWS IN FRANCE		✓		✓		✓				✓			✓	✓
BOOSTING VEGETABLE CONSUMPTION THROUGH CROSS-SECTOR ACTION IN THE U.K.	✓	✓				✓			✓	✓	✓	✓	✓	✓
CUTTING AFLATOXIN FOOD CONTAMINATION IN AFRICA					✓		✓				✓	✓		
CUTTING CHRONIC DISEASES THROUGH CONSUMER INFORMATION LAWS IN CHILE		✓	✓	✓		✓			✓	✓	✓	✓	✓	✓
DRIVING DEMAND FOR ORGANIC FOOD THROUGH PROCUREMENT RULES IN COPENHAGEN, DENMARK		✓		✓	✓			✓	✓	✓		✓	✓	
HARNESSING THE PURCHASING POWER FOR HEALTH IN THE U.S.		✓				✓		✓	✓				✓	
IMPROVING FOOD SAFETY IN INFORMAL SETTLEMENTS IN NAIROBI, KENYA	✓	✓				✓			✓	✓	✓	✓	✓	✓
IMPROVING FOOD SECURITY & RESILIENCE IN BELO HORIZONTE, BRAZIL	✓		✓			✓		✓	✓	✓		✓	✓	✓
IMPROVING NUTRITION IN RWANDA	✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
IMPROVING SOILS & HEALTH THROUGH COMMUNITY-SUPPORTED AGRICULTURE IN CHINA	✓			✓	✓			✓		✓	✓	✓	✓	✓
REVIVING TRADITIONAL DALIT COMMUNITY FOODS TO IMPROVE NUTRITION IN SOUTH INDIA	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SUPPORTING BETTER LIVELIHOODS & NUTRITION THROUGH SCIENCE-BASED FISHERIES MANAGEMENT						✓			✓			✓	✓	✓

FURTHER INFORMATION

For further information, please contact Patty Fong at patty@futureoffood.org.

The Global Alliance for the Future of Food, supported by Tasting the Future, is developing several assets to work in tandem with this guide for government action. These include:

1. *Food System Transformation — Promoting Human, Ecological, & Animal Health & Well-Being: A Shared Vision & Narrative;*
2. *Systemic Solutions for Healthy Food Systems: Approaches to Policy & Practice*; and
3. A toolkit for use by the health sector (expected 2021).

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ENDNOTES

1 Keesing, F., *et al.,* "Impacts of biodiversity on the emergence and transmission of infectious diseases." *Nature* 468, 647–52 (2010). Accessed 2 July 2020. https://doi.org/10.1038/nature09575.

2 Vaughn, A., "How Deadly Disease Outbreaks Could Worsen as the Climate Changes." *New Scientist,* 15 October 2019. Accessed 2 July 2020. www.newscientist.com/article/2219981-how-deadly-disease-outbreaks-could-worsen-as-the-climatechanges/.

3 This also aligns with a variety of similar approaches taken by other organizations; for example, "One Health," an approach to designing and implementing programs, policies, legislation, and research, in which multiple sectors communicate and work together to achieve better public health outcomes. Accessed 2 July 2020. www.who.int/news-room/q-a-detail/one-health.

4 See Global Alliance for the Future of Food, *Food Systems Transformation: Promoting Human, Ecological, & Animal Health & Well-being.* n.p.: Global Alliance for the Future of Food, July 2020. This document articulates a new vision and narrative for food systems that promotes health.

5 Global Alliance for the Future of Food, *Systemic Solutions for Healthy Food Systems: Approaches to Policy & Practice*. n.p.: Global Alliance for the Future of Food, October 2020.

6 IPES-Food, *Unravelling the Food-Health Nexus: Addressing Practices, Political Economy, & Power Relations to Build Healthier Food Systems*. n.p.: Global Alliance for the Future of Food and IPES-Food, 2017.

7 World Health Organization, "WHO Manifesto for a Healthy Recovery from COVID-19." Accessed 11 August 2020. https://www.who.int/news-room/feature-stories/detail/who-manifesto-for-a-healthy-recovery-from-covid-19.

8 See www.ipcc.ch/srccl/chapter/summary-for-policymakers/ (accessed 2 July 2020).

9 See www.pnas.org/content/115/25/6506 (accessed 2 July 2020).

10 "Welfare" is a broad term that includes the many elements that contribute to an animal's quality of life, including those referred to in the "five freedoms" listed here: www.oie.int/en/animal-welfare/animal-welfare-at-aglance/.

11 Using antibiotics in animals may raise the risk of transmitting drug-resistant bacteria to humans either by direct infection or by transferring resistance genes from agriculture into human pathogens.

12 Microorganisms transmitted from vertebrate animals (wildlife and livestock farming systems) to humans account for an estimated 60% of human pathogens. The rise in intensive livestock production systems increases the risk of exposure to dangerous food-borne pathogens. See www.ncbi.nlm.nih.gov/pmc/articles/PMC3666729/ (accessed 2 July 2020).

13 New policies and practices need to be culturally sensitive and systematically designed to address multiple determinants of good human, ecological, and animal health. These consist of a range of factors that influence the health status of individuals or populations at every stage of life. They include enough nutritious, safe food; healthy places to live and work (including healthy food environments); economic opportunity; and vibrant social and cultural connections, among others. For further information, refer to: Global Alliance for the Future of Food, *Food Systems Transformation: Promoting Human, Ecological, & Animal Health & Well-being.* n.p.: Global Alliance for the Future of Food, July 2020.

14 See www.un.org/nutrition/ (accessed 2 July 2020).

15 Global Alliance for the Future of Food, *Systemic Solutions for Healthy Food Systems: Approaches to Policy & Practice*. n.p.: Global Alliance for the Future of Food, October 2020.

16 See www.who.int/news-room/q-a-detail/one-health.

17 See www.unscn.org/en/topics/un-decade-of-action-on-nutrition.

18 See https://sustainabledevelopment.un.org/?menu=1300.

19 Global Alliance for the Future of Food, *Food Systems Transformation: Promoting Human, Ecological, & Animal Health & Well-being.* n.p.: Global Alliance for the Future of Food, July 2020.

20 See www.un.org/sustainabledevelopment/food-systems-summit-2021/.

ABOUT THE GLOBAL ALLIANCE FOR THE FUTURE OF FOOD

The Global Alliance for the Future of Food is a strategic alliance of philanthropic foundations working together and with others to transform global food systems now and for future generations. We believe in the urgency of transforming global food systems, and in the power of working together and with others to effect positive change. Food systems reform requires new and better solutions at all scales through a systems-level approach and deep collaboration among philanthropy, researchers, grassroots movements, the private sector, farmers and food systems workers, Indigenous Peoples, government, and policymakers.

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