





Sharpening our understanding of Food Systems

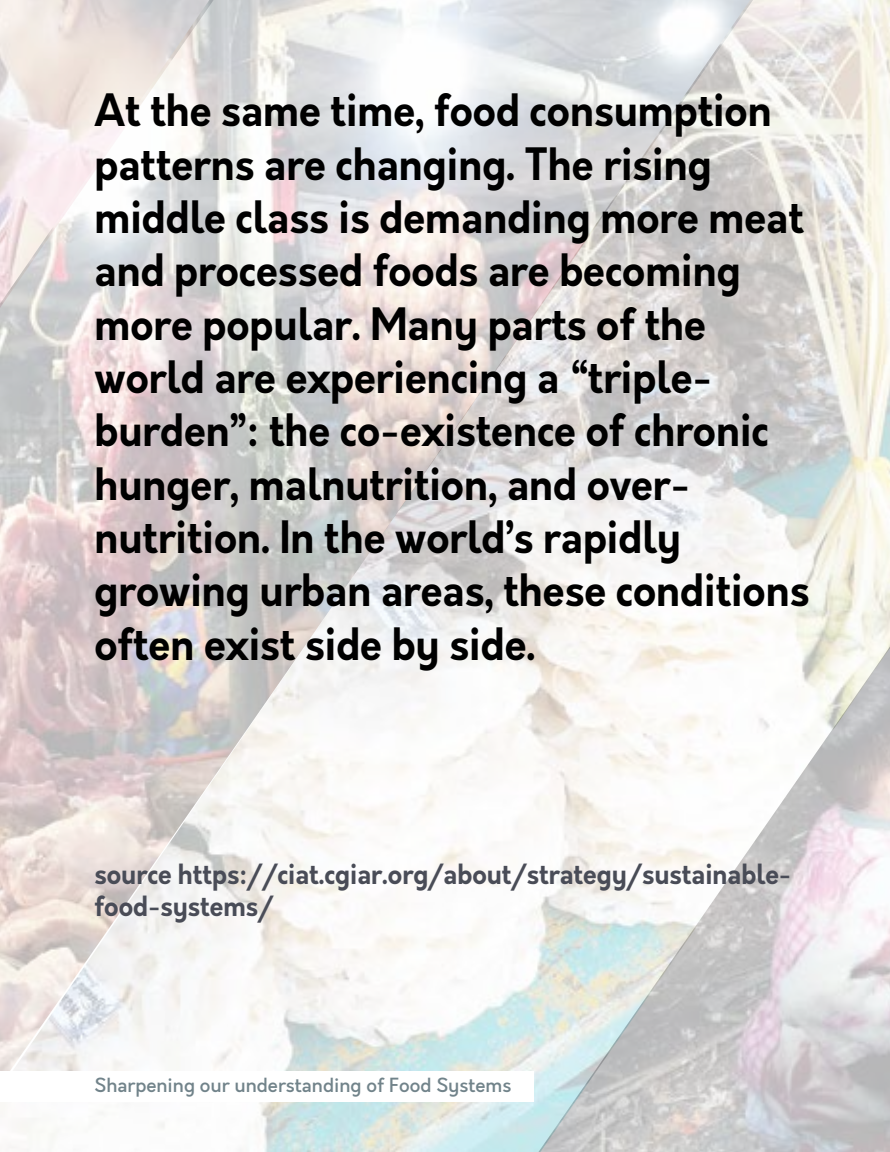
Assuring diets that are sustainable, healthy and inclusive.



This Primer on Food Systems provides basic elements to introduce the reader to key principles and concepts of Food Systems approaches. This is an introductory booklet relying on secondary sources of information. Full references are provided at the end of this primer.



The world has never produced or consumed so much food and yet these times are the most troubling moments in the history of food. Gains in productivity have come at an enormous environmental cost. Each year, more than 10 million hectares of agricultural land are lost to degradation, much of it due to industrial farming. Agro-chemicals have polluted rivers and aquifers. Agriculture and land-use change account for around one-third of all greenhouse gas emissions. In the last century alone, we've lost three-quarters of the world's agricultural biodiversity. If that wasn't bad enough, roughly one-third of all food produced goes to waste.



At the same time, food consumption patterns are changing. The rising middle class is demanding more meat and processed foods are becoming more popular. Many parts of the world are experiencing a “triple-burden”: the co-existence of chronic hunger, malnutrition, and over-nutrition. In the world’s rapidly growing urban areas, these conditions often exist side by side.

source <https://ciat.cgiar.org/about/strategy/sustainable-food-systems/>

Sustainable food systems are those food systems that aim to achieve food and nutrition security and healthy diets while limiting negative environmental impacts and improving socio-economic welfare.

Sustainable food systems are therefore protective and respectful of biodiversity and ecosystems, as well as human well-being and social equity. As such, they provide culturally acceptable, economically fair, affordable, nutritionally adequate, safe, and healthy foods in a way that balances agro-ecosystem integrity and social welfare.

(CIAT Definition of Sustainable Food Systems)

Globally, one person in three is malnourished today and one in two could be malnourished by 2030 if nothing is done. All forms of malnutrition are the result of poor diets, inadequate knowledge and resources, and unhealthy environments, all of which have underlying causes.

Source: HLPE, 2017



The food supply chain from farm to fork is the central part of the food system. The food system is influenced by different drivers (political, social and cultural, environmental, etc.).

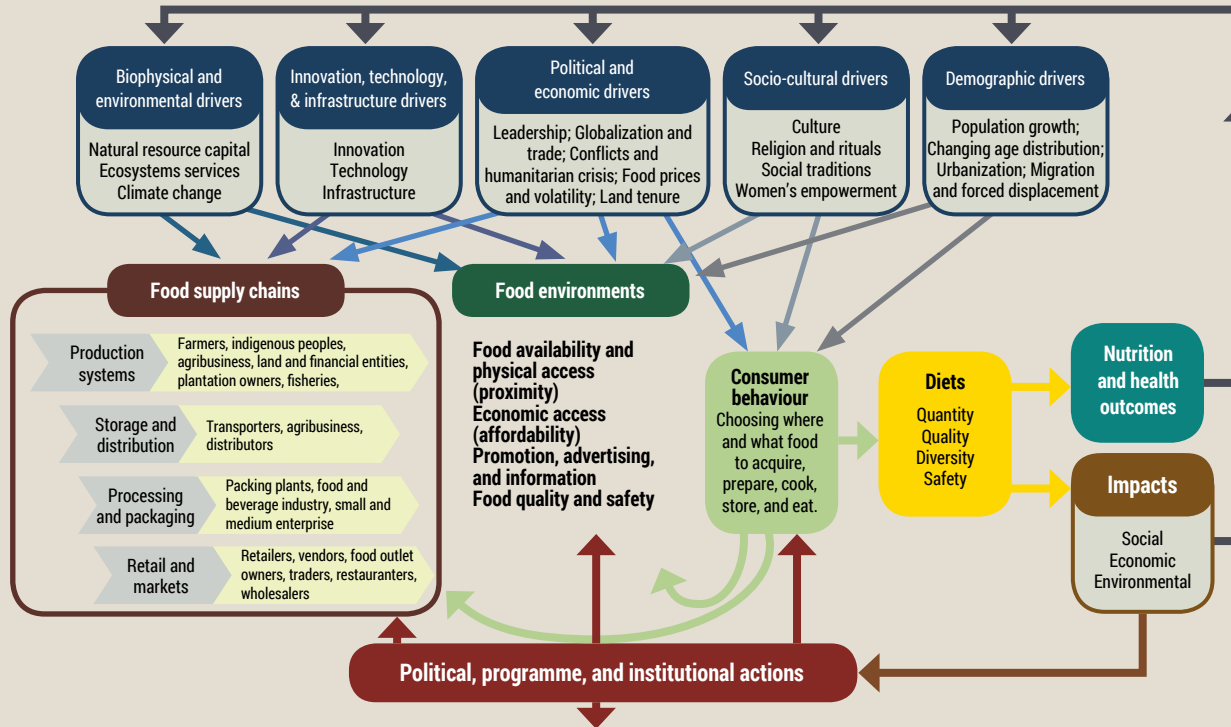


A food system gathers all the elements (environment, people, inputs, processes, infrastructures, institutions, etc.) and activities that relate to the production, processing, distribution, preparation and consumption of food, and the outputs of these activities, including socio-economic and environmental outcomes. (HLPE, 2014a, 2017)



Conceptual framework of Food Systems for diet and nutrition.

Food Systems are central to diets and human health



Sustainable Development Goals



Source: Haddad, 2017; HLPE, 2017

(Original diagram enhanced for better clarity)

Food systems involve all the actions and actors involved in getting food to your plate. So, it goes from 'farm to fork' or from 'soil to plate' or from 'chopstick to rice bowl'. But even before the soil and after the plate, there are many elements involved such as production inputs (seed varieties, breeds, fertilizers, water, etc.) and consumption left and turnovers (waste, excreta) (CIAT-Vietnam, 2018).



A food system is composed of several linked components that interact with each other. These include food supply chains, food environments, consumer behavior, diets, and drivers. Thus, a wide variety of Food Systems and food environments can exist or co-exist at the local, national, regional, and global levels (HLPE, 2017).



TRADITIONAL FOOD SYSTEMS

Consumers rely on minimally processed seasonal foods, collected or produced for self-consumption or sold mainly through informal markets. Food supply chains are often short and local. Food environments are usually limited to one's own production and informal markets (daily or weekly) and may be far from communities. (HLPE,2017)



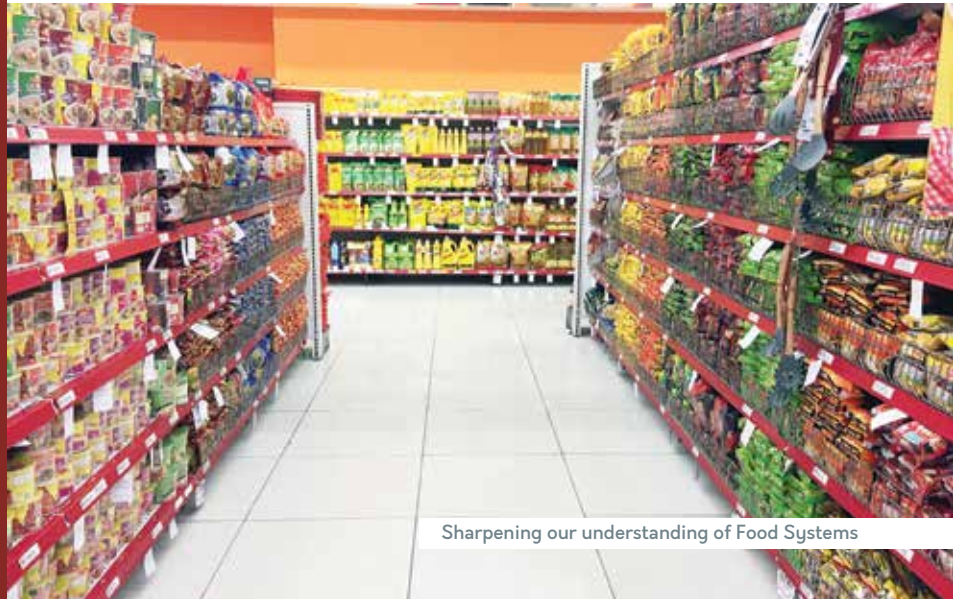
MIXED FOOD SYSTEMS

Food producers and consumers rely on both formal and informal markets. Highly-processed and packaged foods are more accessible physically and economically while nutrient-rich foods are more expensive. Frequent branding and advertising accompany everyday activities. Most consumers have little or no access to food-based dietary guidelines. Food safety and quality standards exist, but may not always be followed by producers. (HLPE, 2017)



MODERN FOOD SYSTEMS

Characterized by more diverse food options all year long, and by processing and packaging to extend food's shelf life. These systems include both formal and easily accessible markets in high-income areas. Consumers have access to detailed information on food labels, store shelves, and menus and food is highly promoted. Food safety is monitored and enforced, and storage and transport infrastructures (including cold chain) are generally prevalent and reliable. (HLPE, 2017)



In an ideal world, we want a food system to deliver positive social, economic, and environmental impacts. Food system research, should be designed to understand synergies and trade offs between these dimensions (CIAT-Vietnam, 2018)



Sustainable food systems should supply healthy and nutritious food, contribute to preserving the natural environment and biodiversity, and provide profitable and inclusive business opportunities for diverse food supply chain actors ranging from family farmers to market vendors. (CIAT-Vietnam, 2018)



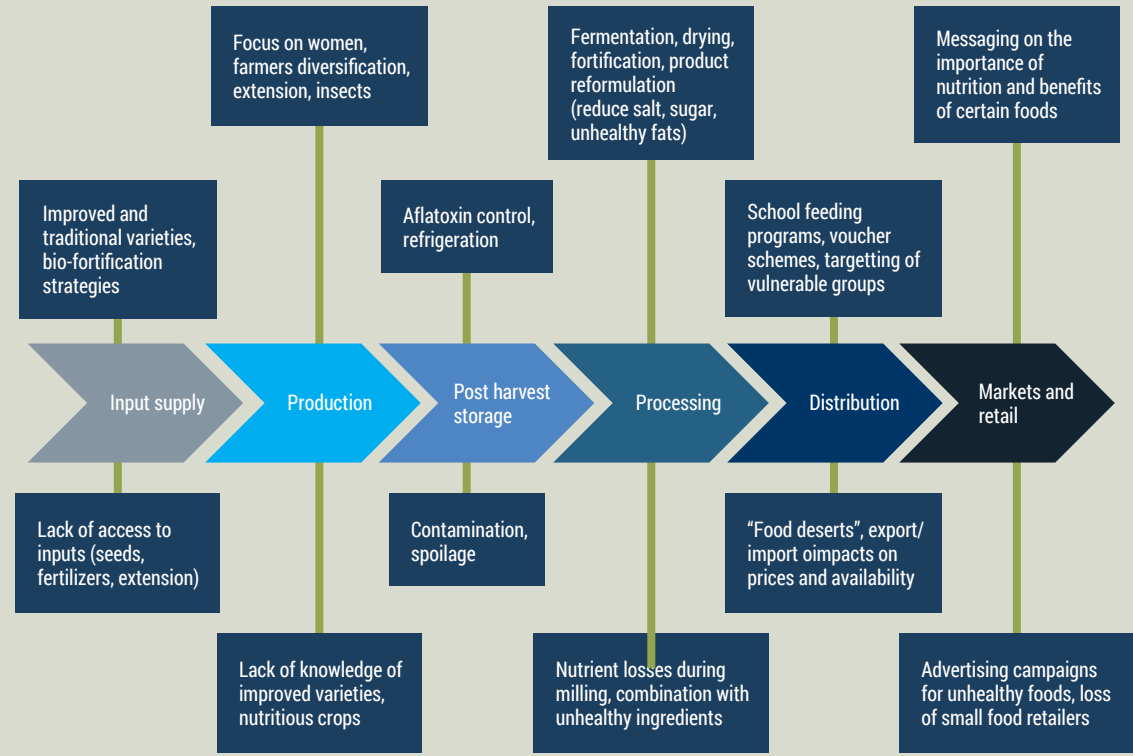
Healthy and nutritious food systems provide all the essential nutrients a human needs. It involves eating diverse food groups in the right quantity and quality and in moderation of potentially unhealthy food items. (CIAT-Vietnam, 2018)



ENHANCE NUTRITION SENSITIVITY OF THE FOOD SYSTEMS
 There are many opportunities to maximize nutrition inputs and reduce nutrition losses along the food supply chain.

Exit and entry points along the nutrition value chain.

Maximize nutrition "entering" the food supply chain



Maximize nutrition "exiting" the food supply chain

(Original diagram enhanced for better clarity)

Source: Fanzo et al. (2017b)

A food system can affect health and nutrition. Food supply chains can increase the nutritional value of food by increasing access to macronutrients and micronutrients through biofortification, food fortification or improved storage of perishable foods to decrease increasing incidence of diet-related non-communicable diseases (NCDs). The nutritional value of food can also diminish along the food supply chain (HLPE, 2017).



Food production and the food system are important in ensuring that sufficient nutritious and safe food are available for protection against malnutrition and noncommunicable diseases (HLPE, 2017).



Population growth and changing age distribution, urbanization, migration, and forced displacement have driven radical changes in food systems and diets in the past decades and will remain major drivers in the future. (HLPE, 2017)



In the face of growing globalization, urbanization, and income growth, people are experiencing new food environments, expanding their food choices, and diversifying their dietary patterns in both positive and negative directions (HLPE, 2017). Food commodities are moving across international borders at unprecedented levels and are changing food consumption patterns all over the world (Denning & Fanzo, 2016).



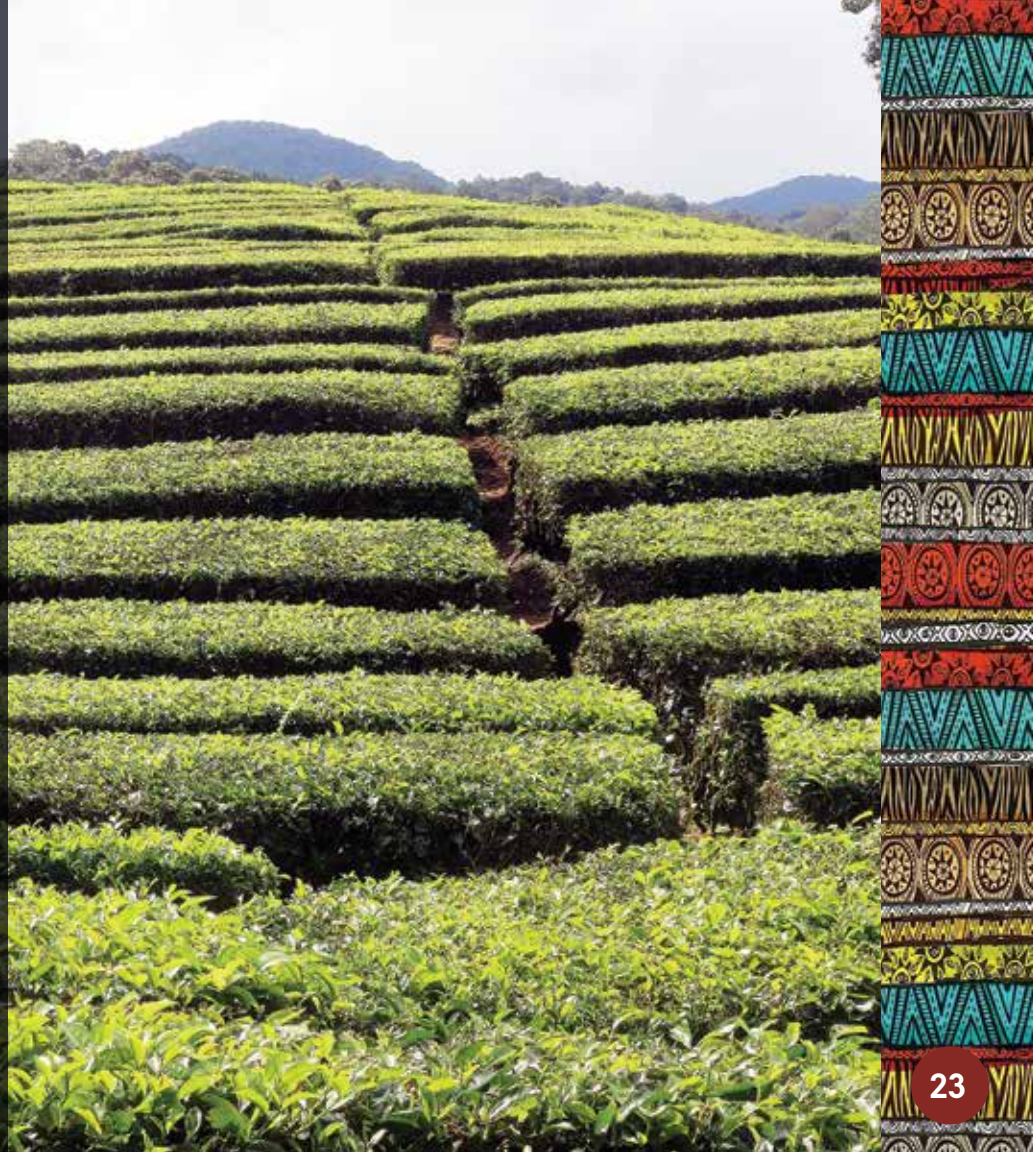
Consumers face many barriers to healthy eating, and the way that they interact with food is affected not only by their own beliefs and decisions but also by the people in their lives, their community, and the environment and culture they live in. (HLPE, 2017)



Consumer behavior geared towards healthy and sustainable eating choices can be influenced by providing consumers with useful information (e.g. mass media campaigns, social and behaviour change communication, social protection programmes and food-based dietary guidelines) and better skills (e.g. empowering consumers, especially women, to be nutrition champions of healthy diets) (HLPE, 2017)



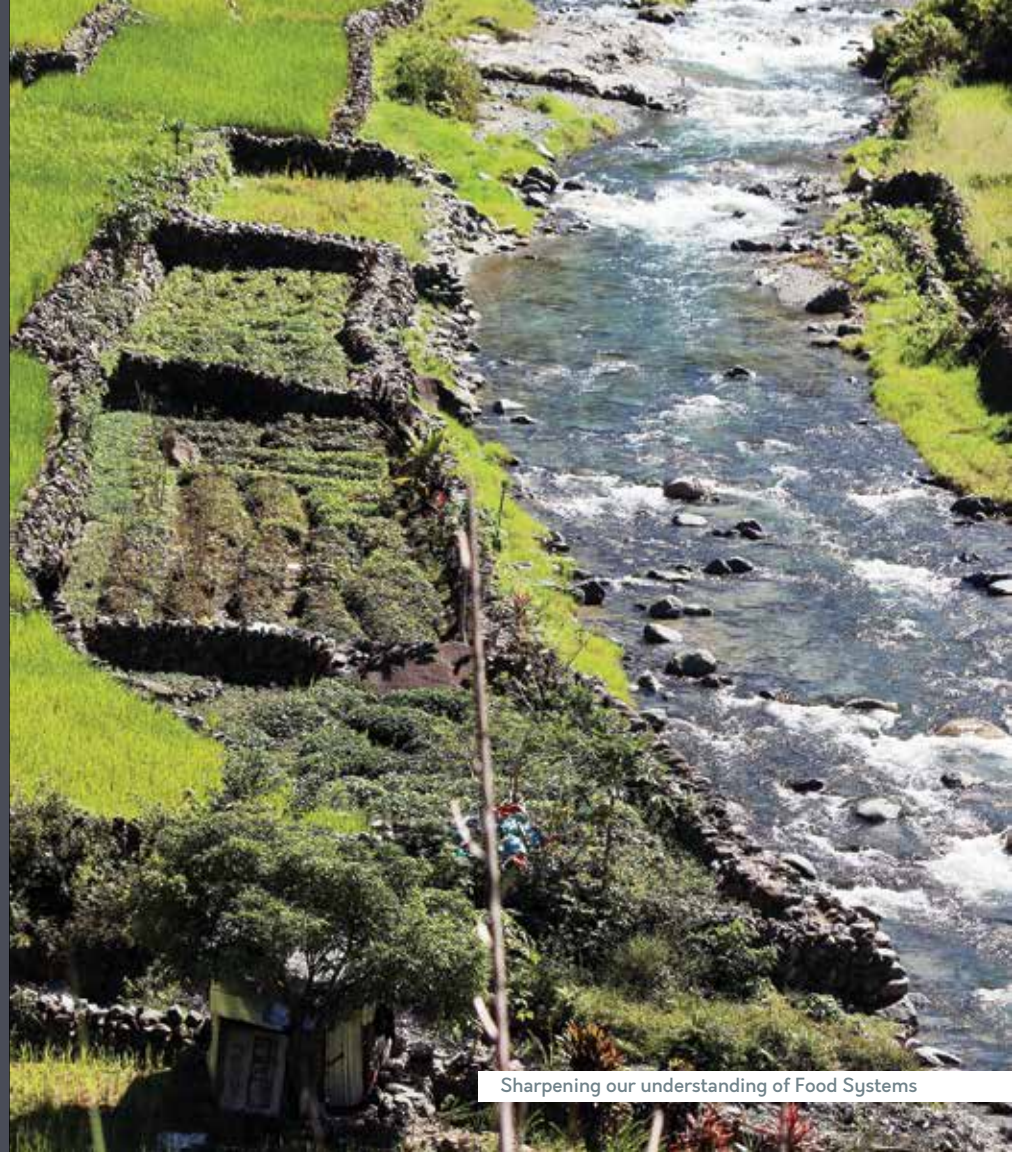
Food systems should have smaller environmental and carbon footprints. Climate change is modifying the environment in which agriculture operates by bringing about changes in temperature, precipitation, and weather volatility. It is already having significant negative impacts on food system resilience and is expected to decrease yields even more in the coming decades, just as the world requires quality yields (including nutrition density) to meet future food needs. (IFPRI, 2016)





SUSTAINABLE INTENSIFICATION DONE IN AN ENVIRONMENTALLY RESPONSIBLE MANNER

Sustainable intensification of agricultural production is essential to meet the demands of growing population for food and better nutrition, and reduce damages on natural resources from greenhouse gas emissions, water and air pollution, biodiversity loss, deforestation, desertification, and land degradation (FCRN, 2015; Denning & Fanzo, 2016).



Environmentally sustainable food systems are characterized by limited food loss and waste, low carbon emissions, water use efficiency, agrobiodiversity conservation, and optimal use of existing resources in line with their carrying capacity (CIAT-Vietnam, 2018). Short supply chains and circular economies can be more environmentally sustainable (HLPE, 2017)




There are also uncertainties how climate change will impact future food productivity. Food systems need to adapt to climate change and significantly contribute to its mitigation (HLPE, 2017). Climate-Smart Agriculture (CSA) is essential for managing landscapes in order to achieve increased productivity, enhanced resilience, and reduced greenhouse gas emissions.



Climate-Smart Food Systems goes beyond CSA to incorporate dietary choices, food losses and waste, processing and packaging, and transport infrastructure. (Denning & Fanzo, 2016)





There is a clear challenge for humanity to learn how to operate within the environmental limits of our planet and to maintain or restore resilience of ecosystems (Alders et al., 2018)



SOCIAL INCLUSIVENESS IN SUSTAINABLE FOOD SYSTEMS

Socially inclusive food systems provide income and equitable livelihood opportunities involved in the food systems ranging from farmers, fisherman, processors, and wholesalers to retailers.



We need to make sure that opportunities and economic growth reach the poor and marginalized people by maximizing the potential of commercially viable smallholder farms and empowering women and youth. These groups often face constrained access to assets and markets and are at risk of exclusion from increasingly complex food value chains. (IFPRI, 2016)



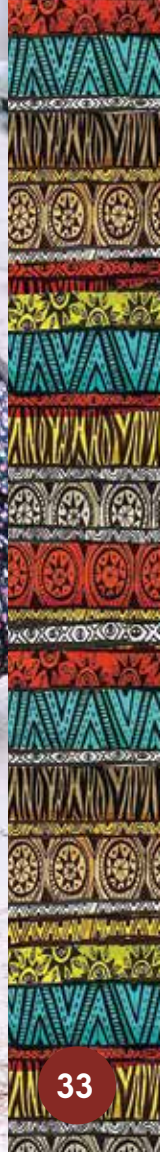
Climate Resilient Agriculture has provided new pathways for addressing poverty and marginalization, including providing new opportunities to economically empower women.



Food is an important part of culture. Food systems and food environments are consistently shaping cultures and traditions and vice versa. The food environment around us is altering how we make food choices and how we access, prepare and consume food. (HLPE, 2017)



Gender relationships and norms are among the most significant drivers of food environments and diets. Women can influence the household diet and, as primary caregivers, have influence on children's nutritional status. (HLPE, 2017)



Global, national, and local food systems must be supported by well-functioning markets, partnerships with food supply chains, and an environment that allows food-system entrepreneurs to promote long-term, market-based solutions. (San, 2016)



To be truly sustainable, food systems must operate within environmentally sustainable limits and at the same time, must also provide for basic human needs for nutrition, employment, health, and more. (FCRN, 2015)



Four Core Aspirations for the World's Food Systems

1. Inclusive: ensuring economic and social inclusion for all food system actors, including smallholder farms, women and youth (WEF, 2017). Socially inclusive food systems provide income and equitable livelihood opportunities for households involved in the food systems ranging from farmers, fisherman, processors, wholesalers to retailers. (CIAT-Vietnam, 2018)

2. Sustainable: minimizing negative environmental impacts, conserving scarce natural resources and strengthening resiliency against future shocks (WEF, 2017). It should supply healthy and nutritious food, contribute to preserving the natural environment and biodiversity, and provide profitable and inclusive business opportunities for diverse food supply chain actors ranging from family farmers to market vendors. (CIAT-Vietnam, 2018)

3. Efficient: producing adequate quantities of food for global needs while minimizing loss and waste (WEF, 2017). This is characterized by limited food loss and waste, low carbon emissions, water use efficiency, (agro)biodiversity conservation and optimal use of existing resources in line with their carrying capacity. Short supply chains and circular economies can be more environmentally sustainable. (CIAT-Vietnam, 2018)

4. Nutritious and Healthy: Providing and promoting consumption of diverse nutritious and safe foods for a healthy diet (WEF, 2017). Healthy and nutritious food systems provide all the essential nutrients that humans need. It involves eating diverse food groups, in the right quantity and quality, and moderation (CIAT-Vietnam, 2018)



World Economic Forum. Shaping the Future of Global Food Systems: A Scenarios Analysis, January 2017

(Original diagram enhanced for better clarity)

Outcome: Our Four Scenarios

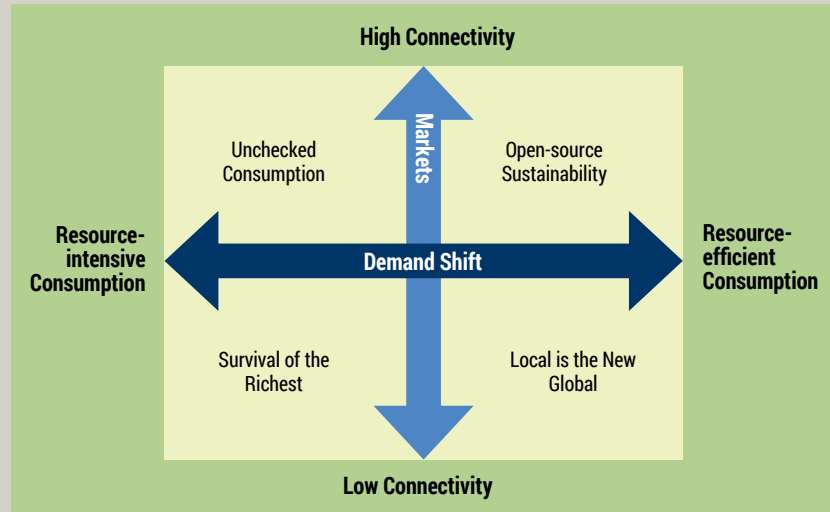
Pairing the two uncertainties: Demand Shift and Market Connectivity, the matrix reveals four scenarios for the future of global food systems:

1. Survival of the Richest: In a world of resource-intensive consumption and disconnected markets, there is a sluggish global economy and a stark division between the “haves” and “have-nots”.

2. Unchecked Consumption: With strong market connectivity and resource-intensive consumption, this is a world of high GDP growth with high environmental cost.

3. Open-source Sustainability: A future linking highly connected markets and resource-efficient consumption has increased international cooperation and innovation but may leave some behind.

4. Local is the New Global: In a world of fragmented local markets with resource-efficient consumption, resource-rich countries focus on local foods whereas import-dependent regions become hunger hotspots.

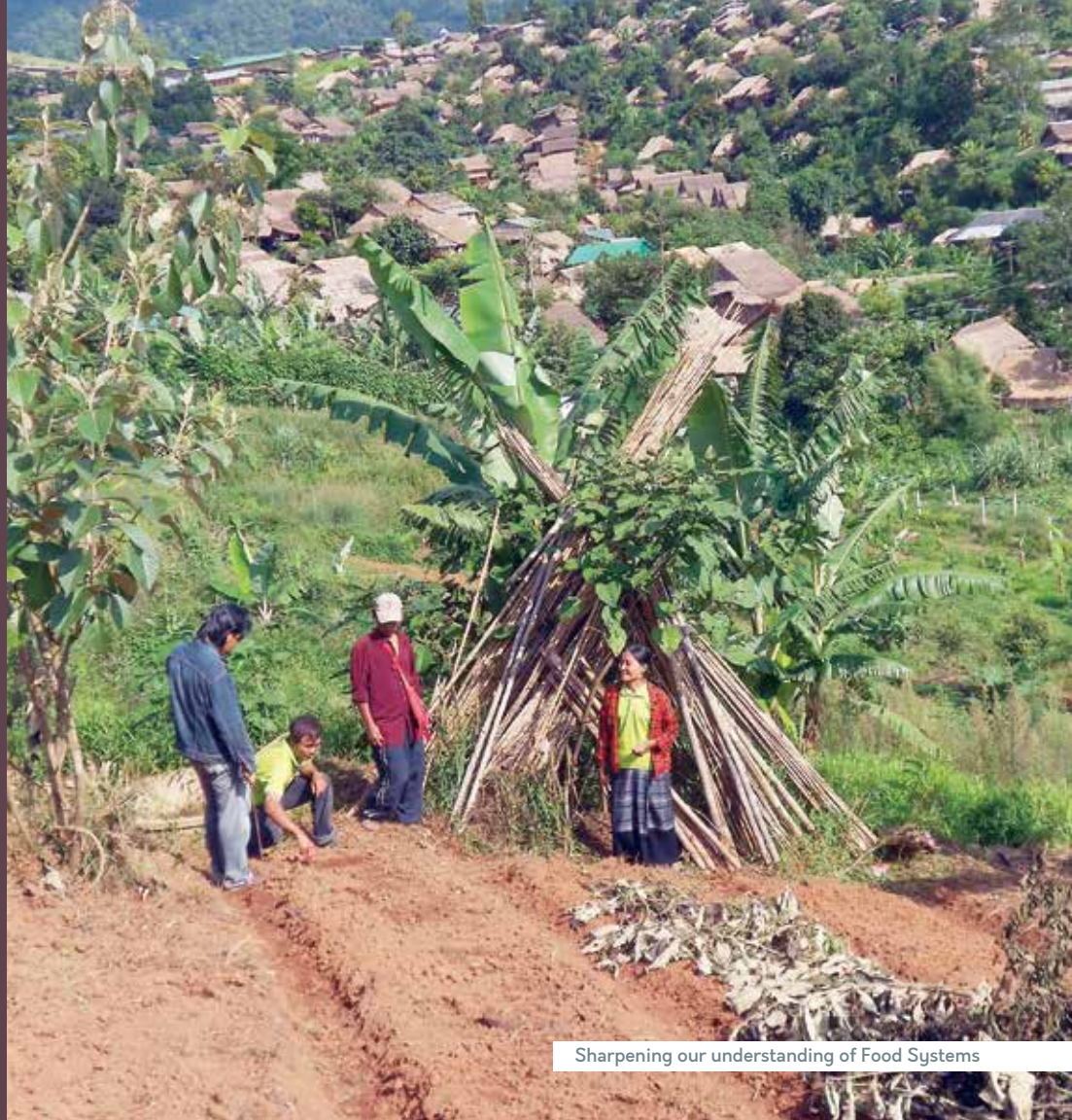


The Scenarios: Four Potential Future Worlds

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(Original diagram enhanced for better clarity)

The adoption of the Sustainable Development Goals (SDGs) by all nations will provide a powerful framework that will guide decision-making on policies and budgets by governments, private sector, and civil society to 2030. These goals hold the potential to set the global food system on a more sustainable path. (Denning & Fanzo, 2016).



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About IIRR

The International Institute of Rural Reconstruction (IIRR) based in Silang Cavite, Philippines has a six decade-long history of supporting smallholder farmers through participatory and community-based approaches to agriculture and rural development. Its work in the seventies relied on farmer-centered extension approaches when it pioneered the farmer scholar approach (now mainstreamed in the Philippines as the Barangay Nutrition Scholar Program). In the mid-eighties, IIRR introduced the concept of Regenerative Agriculture, which focuses on integrated farming systems with strong elements of agroecology and agrobiodiversity. It partnered with the Department of Environment and Natural Resources (DENR) in national initiatives documenting the agency's agroforestry and sustainable livelihood activities. IIRR has also been involved in the School Gardening program since 1985 and, more recently, expanded and formalized its partnership with the Department of Education to enhance the integration of school gardens, school feeding, and nutrition education. IIRR is a strategic partner of the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFs) and has helped develop the concept of Climate-Smart Villages in the Philippines. IIRR has led the design and conduct of four strategic workshops supporting the establishment of Climate Resilient Villages under the Department of Agriculture's Systems Wide Climate Change Office. More recently, it has undertaken a partnership with the CIAT Regional Office in Vietnam to collaborate on Food Systems in the Philippines. This partnership with CIAT and relevant government agencies, civil society organizations, the private sector, and investors is expected to provide a broader framework for delivering a broader agenda for research and development efforts.

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