

What is the food system?

The food system

The term ‘food system’ refers to all of the interconnected components (e.g., activities, people, inputs) required to feed people. These components include production, processing, transport, distribution, marketing, consumption, and management of waste. The interactions and feedback between these components and socioeconomic and biophysical drivers make for a dynamic system and result in a range of social, environmental, and economic outcomes¹.

Why take a systems perspective

Viewing the entire food system helps to inform solutions to a growing set of challenges, including sustainability, equity, and nutritional challenges that have not been adequately addressed by focusing on the system’s individual components.

Interconnected components

The food system comprises multiple interconnected components that include people and institutions, and the environments in which they operate (figure 1).

Food systems include:

- **Production** - the growing and harvesting of food using the natural resource base, which makes food systems unique. Farmers, fishers, and agricultural workers are involved in production.
- **Processing** - the processing, packaging, storage or transforming of food. These industries can be located locally, or globally via trade, involving people with manufacturing, logistics and marketing expertise.
- **Transport** - the movement of food from one place to another. This occurs at multiple stages of the food system. Transport can involve people trading food internationally, transporting food within domestic markets and consumers transporting food home from retail outlets.
- **Distribution** - the domestic and international wholesaling and retailing of food as well as local markets, including farmers, selling directly to consumers. This generates jobs in exporting and importing businesses, wholesale markets, and retail food outlets.
- **Marketing** - the dynamic process of accumulating, advertising, and selling a mix of foods attractive to consumers. People involved in this component of the system have expertise in logistics, contracting and marketing.

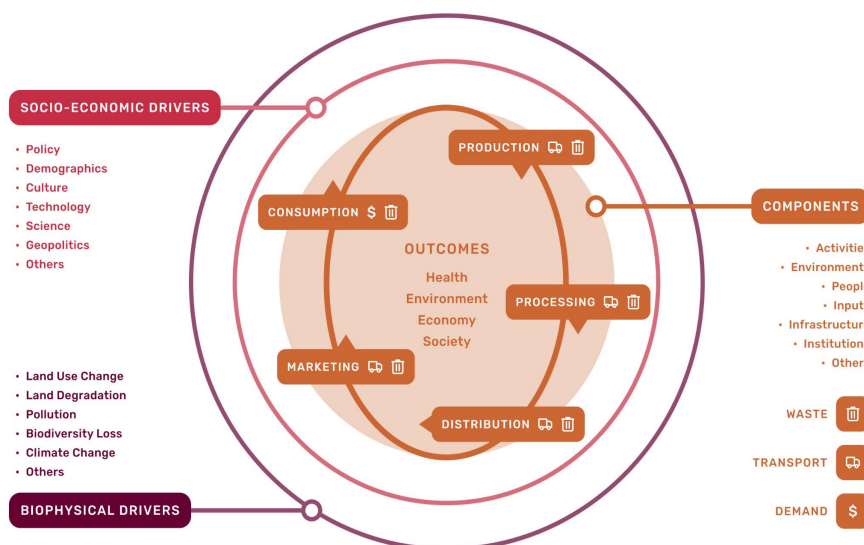


Figure 1 The food system showing individual components (e.g., production), outcomes and drivers.

- **Consumption** - the acquisition, preparation, cooking, and eating of food. Everyone is involved in consuming food. Consumer demand for food influences production and the rest of the food system.
- **Waste** - includes food loss and food waste. Food loss can occur in the production, processing, storage, and distribution components of the system. Food waste refers to food that is fit for consumption but is discarded by retail outlets or consumers.

Outcomes

The food system has multiple intended and unintended outcomes, some of which can arise from surprising interactions between food system components.

Outcomes of the food system are often categorised to include:

- **Health** - nutrition and food security
- **Society** - culture, livelihoods and employment
- **Environment** - soil health, erosion, biodiversity loss, greenhouse gas emissions, pollution, food loss and waste
- **Economy** - production, trade and wealth accumulation.

Outcomes are often interrelated. For example, an individual's health, based on the food they are consuming, can impact the economy, through their capacity to work to generate income.

Outcomes can be positive or negative. For example, food provides us with nutrition that can lead to good health and longevity. However, overnutrition increases the risks of serious diet-related chronic diseases such as type 2 diabetes and cardiovascular disease².

Drivers

The food system is affected by multiple socioeconomic and biophysical drivers¹. These drivers can enable or constrain the functioning and outcomes of the food system. As drivers change over time, they can require an adaptation of food system goals and functional capability necessary to meet those goals.

Some drivers are interconnected and when combined can have surprising impacts on the food system. For example, intensification and homogenisation of agriculture can lead to general degradation of soils and biodiversity loss³.

Other drivers interact with food system outcomes. For example, urbanisation and related changes to lifestyle can increase the demand for highly processed food, which can result in poor health outcomes⁴.

Socioeconomic drivers include:

- **Policies** including regulation, taxes and subsidies that can be applied to components of the food system
- **Demographics** including population growth and urbanisation
- **Socioeconomics** including market opportunities, consumer wealth and income distribution
- **Culture** including social norms and values, knowledge, and preferences
- **Technology and science** including technological and institutional innovation, research and development, and education
- **Geopolitics** including changes to trade rules, political instability, and globalisation
- **Skills and education** referring to the availability of a trained workforce willing to work in the food system at wages consistent with profitable and sustainable businesses.

Biophysical drivers include a range of factors that interact to affect the productivity of the food system, especially (but not only) via agriculture:

- **Land use change and land degradation** including loss of soil fertility and health
- **Pollution** including pollution of air, land and water
- **Biodiversity loss** resulting from habitat destruction or pollution
- **Climate change** resulting from increased greenhouse gas emissions that increase the likelihood of natural disasters, sea level change, and ocean acidification.

Food System Horizons – Catalysing a sustainable, nutritious, and equitable food system future foodsystemhorizons.org

Food System Horizons is a collaborative initiative between The University of Queensland and CSIRO.

1. Béné, C. et al. Understanding food systems drivers: A critical review of the literature. *Glob. Food Sec.* **23**, 149–159 (2019).
2. Willett, W. et al. Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. *Lancet* **393**, 447–492 (2019).
3. Chappell, M. J. & LaValle, L. A. Food security and biodiversity: can we have both? An agroecological analysis. *Agric. Human Values* **28**, 3–26 (2009).
4. Popkin, B. M. The nutrition transition and obesity in the developing world. *J. Nutr.* **131**, 871S–873S (2001).

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