

Article Id
AL04301

BRINGING A SUSTAINABLE FUTURE: EXPLORING THE CONCEPT AND FRAMEWORK OF FOOD SYSTEMS SUSTAINABILITY

Email

preeynari@gmail.com

Priyanka Aribam

Department of Agronomy, School of Natural Resource Management
(SNRM), College of Post Graduate Studies in Agricultural Sciences, CAU
(Imphal), Umiam, Meghalaya, India

The term "food systems" refers to the whole spectrum of participants and their interconnected value-adding activities in the production, gathering, processing, distribution, consumption, and disposal of food products derived from forestry, fisheries, and other parts of the wider natural, social, and economic environments in which they are embedded.

Interconnected: The relationships between actors along different functions of the food value chains in a food system, such as between farmers, aggregators, processors, or retailers, can be horizontal (such as farmer cooperatives) or vertical (ranging from spot market transactions to partnerships and contract farming mechanisms).

Value added: Value added can be gained or lost throughout any food system activity.

Five components of value added are

- A) Salaries and wages for employees and workers, respectively
- B) Profits for enterprise owners
- C) Tax revenues for government
- D) Consumer surplus – is the difference between what the consumer is willing to pay for the product and the actual market price paid for it.
- E) Externalities- are unintended (positive or negative) effects of an activity on the environment and society around it that are not compensated for.

Sustainable Food Systems (SFS)

A sustainable food system (SFS) is one that provides nutrition and food security for all while maintaining the economic, social and environmental foundations necessary to

provide nutrition and food security for future generations. This means that It has three main sustainabilities economic, social, and environmental. It is profitable overall, has wide-ranging benefits for society, and has a neutral or positive effect on the environment.

From an economic perspective, a food system is regarded as sustainable if every actor in the food system or provider of support services can sustain their operations in a profitable or financially feasible manner. All groups of stakeholders should profit from the activities, or create economic value-added, including workers' wages, governments' taxes, businesses' profits, and consumers' access to better food.

From a social perspective, a food system is regarded as sustainable if the economic value added is distributed fairly, accounting for marginalized groups based on factors such as age, gender, race, and so forth. Activities related to the food system must, at their core, support the advancement of significant socio-cultural outcomes, including health and nutrition, customs, working conditions, and animal welfare.

In terms of the environment, sustainability is defined as making sure that the activities of the food system have neutral or positive effects on the surrounding natural environment, while also taking into account the carbon footprint, water footprint, biodiversity, soil, water, animal, and plant health, food loss and waste, and toxicity.

A comprehensive assessment of sustainability in food systems must take into account potential trade-offs between sustainability dimensions, including resilience. This further suggests that resilient and shock-tolerant external food systems are necessary to bear external shocks like financial crises or extreme weather brought on by climate change. Resilience is the ability of a food system to keep producing and providing value despite sudden or gradual changes in supply or demand by recovering from unforeseen shocks, avoiding tipping points, and adapting to continuous change.

The three sustainability dimensions and resilience ought to be valued equally, according to theory. If win-win solutions can be found, in reality, trade-offs between the dimensions must be taken into account, which can result in win-lose solutions. When some components of sustainability are benefited while others have drawbacks, this is referred to as a trade-off. A win-win solution, on the other hand, is a circumstance in which sustainability is enhanced in every way. Another aspect of sustainability that requires consideration are the potential trade-offs associated with resilience.

An Analytical Framework: Food System Wheel

The Food System Wheel is an analytical framework that can be used to analyze food systems and their wider sustainability impacts. It arranges the components of a food system. FAO's primary objectives, which are to reduce poverty and increase food security and nutrition, are at the core of the food system wheel framework. The three facets of sustainability-economic, social, and environmental-are incorporated into the system's overall performance. The actions of various players or stakeholders in the food system (people-centric) influence this kind of performance. This behavior is reflected in the system's structure, which is made up of societal components, natural components, and a core system. The production, aggregation, processing, distribution, and consumption of food products-as well as the disposal of waste-are all included in the core system, as is a layer of services that facilitate this flow. These activities take place in both a natural and social setting.

Layers of Food System Wheel

It suggests a four-layer (04) structure. The core system consists of the first two layers, which comprise:

- 1) **Core actors:** Food products flow through this innermost layer, which carries out a variety of functions (production, aggregation, processing, distribution and consumption, including waste disposal)
- 2) **Support providers:** They make the activities and the flow of the product easier.
- 3) **Societal elements:** Infrastructure, institutions, organizations, and sociocultural components are all included.
- 4) **Natural environment and its various elements:** It is made up of ecosystems, climate, water, air, and soils. This layer takes into account how the environment affects the food chain.

Structure-Conduct-Performance (S-C-P) Paradigm

The theories that support the Food System Wheel, which aids in understanding the dynamics and feedback loops in food systems, are known as the Structure-Conduct-Performance (S-C-P) paradigm.

Structure: The food system's structure is dynamic and influenced by a wide range of complicated and varied trends, including population growth, urbanization, and climate

change, as well as forces like innovation and technological advancement, policy changes, and more.

Conduct: Actors are motivated by the structure, which also shapes their abilities, which in turn dictates how they behave. Additionally, players in the food system are dependent on one another and have the power to influence one another's motivations and levels of action.

Performance: The interconnected behaviour of all system actors determines the overall performance of the food system when expressed in terms of sustainability. Businesses, farms, and consumers, for example, can all have an impact on the functioning of the food system and bring about change. The actors' behaviour and the system's structure will be influenced by this kind of performance, which will then produce either positive or negative feedback (behaviour change within dynamic food systems).

There are two objectives here for a development agency like FAO. In order to orient actors toward behavior that results in observed system performance, it is first necessary to understand how the structure influences and creates incentives for their capacities. Secondly, to assist in the development of positive feedback loops (conduct to conduct, or performance to conduct) that produce a self-sustaining process of sustainable performance improvement.

SFS Development Paradigm

As engines of growth, sustainable food systems (SFS) produce value-added that consists of five elements.

1. salaries to workers;
2. a return on assets (profits) to entrepreneurs and asset owners;
3. tax revenues to the government;
4. benefits to consumers; and
5. impacts on the socio-cultural and natural environment.

Four feedback loops that are directly related to poverty, hunger, and nutrition and have an impact on economic, social, and environmental sustainability are started by this value addition. These are the four feedback loops:

- (1) an **investment** loop, driven by savings and profits that are reinvested;
- (2) a **multiplier** loop, motivated by the expenditure of higher worker income;

(3) a **progress** loop, motivated by public spending on the natural and sociocultural environments; and

(4) an **externalities** loop, motivated by effects on the environment, the economy, and society both inside and outside of the larger food system.

The food system will be more sustainable (and vice versa) if there are more positive feedback loops than negative ones.

Poverty reduction will be realized when livelihoods are enhanced as a result of higher earnings, salaries, or social support. Food security is increased when this is combined with an enhanced food supply. Better foods, increased food security, and an environment that is more conducive to promoting healthy eating all work together to produce better nutritional results. Providing catalytic support is the aim of development practitioners and policy makers. A transformative change of food systems can be promoted to assist nations in achieving the Sustainable Development goals by adopting a facilitation approach to foster positive feedback loops for both behaviour change and value creation.

Conclusion

- Sustainable food systems represent a multifaceted and evolving framework that aims to address the environmental, social and economic challenges associated with food production and consumption.
- By prioritizing sustainability, equity and resilience, Sustainable Food Systems offer a pathway to a healthier, more just and environmentally friendly food future.
- It is a concept that requires ongoing commitment and action from individuals, communities, governments and industries to achieve its goals and create a more sustainable and equitable food system.

References

- eLearning FAO. (2020). Food and Agriculture Organization of the United Nations. <https://elearning.fao.org/> . Accessed 3rd November 2023.
- Ingram, J. (2011). A food systems approach to researching food security and its interactions with global environmental change. *Food Security*, 3(4): 417-431.
- International Panel of Experts on Sustainable Food Systems (IPES). (2015) The new science of sustainable food systems: Overcoming barriers to food system reform.