Food and Agriculture Organization of the United Nations

European Commission

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FOOD SYSTEMS AT RISK

NEW TRENDS AND CHALLENGES

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Published by
the Food and Agriculture Organization of the United Nations
and
Le Centre de Coopération Internationale en Recherche Agronomique pour le Développement
and
the European Commission

Rome, 2019

Citation:

Dury, S., Bendjebbar, P., Hainzelin, E., Giordano, T. and Bricas, N., eds. 2019. *Food Systems at risk: new trends and challenges.* Rome, Montpellier, Brussels, FAO, CIRAD and European Commission. DOI: 10.19182/agritrop/00080

ISBN 978-2-87614-751-5 (CIRAD)

ISBN 978-92-5-131732-7 (FAO)

CHAPTER 1.1

THE SCOPE OF THE ANALYSIS: FOOD SYSTEMS

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SUMMARY

This chapter presents the framework used in this report. Food systems generate not only food but also environmental and socio-economical outcomes.

Food is much more than a means to meet nutritional needs

Food is essential in all societies. Gathering, hunting, fishing and agriculture have always been activities that provide the majority of the rural population's livelihood. With job diversification and urbanisation, these activities have also become important sources of income, alongside the food processing and marketing that has developed to feed cities. But food functions are not limited to meeting biological needs, even though this is a fundamental one. Food is the first means of social interaction through meal sharing. It is a creative and artistic activity that gives pleasure through cooking and gastronomy, and again through meal sharing. Food is a fundamental way of building and displaying one's identity. It passes through the body, which gives it a special symbolic status (Fischler, 1998). Finally, food is a way of connecting humans to their environment. To produce food, humans transform the landscape and interact with plants, animals and microbes. Although the hierarchy between food functions depends on the society in question, all of them, including food-insecure ones, are concerned about the origins of their food and its sensory and symbolic quality. This means that food does not deal only with nutrition and health but also with well-being and the way human beings live together and interact with their environment.

Food systems approach: a way to take into account all activities, from production to consumption and their outcomes

Since the dawn of humanity, food systems have changed profoundly. From mainly domestic activities organised inside the household, food production, processing and consumption, and even cooking, have become commercial and specialised activities. Post-harvest activities make it possible to stabilise products in order to store and transport them long distances, to extract their useful parts, to facilitate their use by incorporating services, to improve their nutritional, organoleptic or sanitary quality, and to make them available as close as possible to consumers, especially when they move away from production areas. The ways societies process and, even more so, cook products are expressions of their culture. The importance of post-harvest activities is growing with urbanisation and the development of market economies in rural areas. Today, all these activities generate added value, jobs and incomes in both rural and urban areas. The food sector is currently the world's largest economic sector in terms of employment, with more than 2 billion people working in it. In Low-Income (LI) and Lower Middle-Income (LMI)

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countries, agriculture represented 68 percent and 39 percent of employment respectively in 2016 (ILOSTAT, 2019). In these countries, food processing, catering, transportation and distribution represent a growing share of employment in services and industry. For example, in Eastern and Southern African countries, agriculture represents 91 percent of employment in the food sector while in Brazil, agriculture represents 49 percent, food services 26 percent and food processing 25 percent of food jobs (Townsend *et al.*, 2017).

The increasing importance of post-harvest, processing and marketing activities in job and income creation, their role in feeding non-farmers, in nutrition and health, in the consumption of energy and resources, in loss and waste, in biodiversity and pollution issues etc. have led to the scope being extended beyond agricultural production to entire food systems.

By food systems, we first mean the chains of market and non-market activities and actors connecting food production, aggregation, transportation and storage, processing and catering, distribution, preparation and consumption, waste and resources management, as well as agro-input suppliers (seeds, fertilisers, packaging etc.) and the associated regulatory institutions and activities (adapted from Pothukuchi and Kaufman, 2000; FAO, 2018a) (*cf.* Figure 1). While these activities and actors are inter-connected by the circulation of food, each of them can be considered as sub-systems with specific interactions with other activities and actors that are not part of agriculture or food (Pothukuchi and Kaufman, 2000). Each sub-system evolves in its own way, with some more industrialised than others, and general drivers may have an influence on some sub-systems but less so on others.

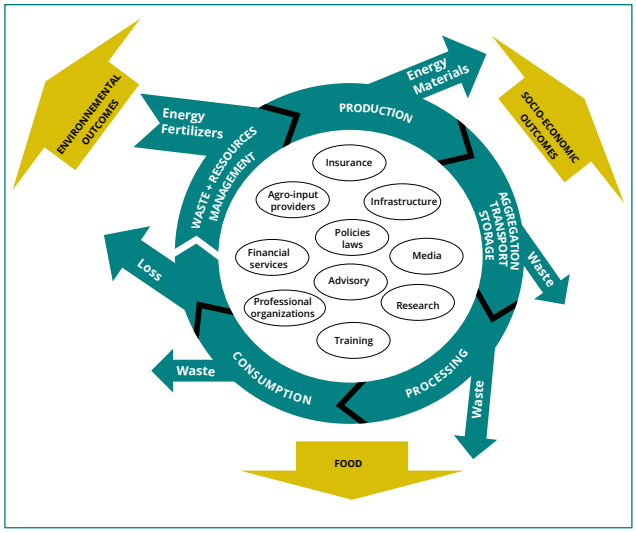

Figure 1: *Food systems and their outcomes. Source: Author.*

Taking a systems approach is more complex but it means we can take into account the interactions, influences and feedback between different activities, actors and institutions. Each sub-system includes actors whose sole purpose is not only food. Food systems do not cover all agricultural activities and some of its products are part of a larger bioeconomy: agriculture produces not only food but also energy (firewood and charcoal, draught animals and oils), materials (timber, straw, wood, latex, fibre and leather). Fertilisers can be provided by biomass (straw, leaves and animal manure) or chemicals and mining (chemical nitrogen phosphates and potash). Transportation, energy and consumption apply not only to food. Changes in these sub-systems have an influence on food systems.

A huge diversity of food systems

As a combination of numerous crops, multiple transformation processes, cooking and gastronomic cultures, levels of capital, technology etc., food systems are incredibly diverse. This diversity has been fashioned throughout the ages by human innovations, to take the best advantage of the locally available resources and products and better cope with local constraints. They are also constantly evolving and open to the incorporation of exotic products or experiences. Extending the notion of food systems, we can say that human microbiota have also been shaped by this diversity. Nothing is static in food systems: there are strong dynamics at work in an innovative context, resulting in an ever-evolving mixture of different models of production, processing, distribution, consumption and waste management.

One way of developing agriculture, widely used in industrialised countries and promoted in developing countries, has been based on specialisation, mechanisation and the massive use of non-renewable energy sources (coal and oil) and fertilisers (chemical nitrogen and mining phosphates) and chemical solutions (pesticides) in place of biomass cycles (Daviron and Allaire, 2019). In the post-harvest sector, large-scale processing and mass production, commoditisation and globalisation of trade and large-scale distribution (supermarkets) have developed.

This development model saw an unprecedented improvement in productivity which translated into a large increase in food availability and better access (through economic growth and lower food prices). However, this 'industrialised agriculture' comes with environmental damage (pollution, resource depletion, biodiversity erosion and climate change) and social costs (inequities in accessing healthy diets and in income generation and sustainable livelihoods, and non-communicable diseases) that question the desirability of its spread around the globe.

Awareness of these effects has led several authors to pay attention to the outcomes of food system activities (Ingram, 2011; van Berkum, Dengerink and Ruben, 2018). Food systems do not provide only food but also jobs, income, infrastructure, skills (socio-economic outcomes) and ecological services (environmental outcomes) (*cf.* Figure 1). This means that food systems can make a significant contribution not only to food and nutrition security, but also to inclusive development and a viable environment for fighting climate change.

Food systems are strategic for inclusive development

Since Amartya Sen's contribution, food security has long been recognised as a matter of access to the means to produce or buy food and not just a matter of producing enough (Sen, 1982). This is even more crucial now as the planet produces significantly more food than is nutritionally required. Food abundance alone does not guarantee food security. One of the main drivers behind the food security we observe today is a lack of access to food, either through the ability to produce enough food to cover all food needs, or physical access to food, or enough resources or money to purchase food. While food systems are therefore strategic in contributing to food security through the jobs and income sources they represent, the ways in which this development takes place have a strong influence on social inclusion. With the commodification of post-harvest activities, power relations and income distribution between men and women are changing more-or-less equitably (Enete, Nweke and Tollens, 2004; Harriss-White, 2005). Conditions of access to land and means of production are also an important determinant of inequalities in access to food.

The choice in industrialisation between capital-intensive and labour-intensive companies determines the speed of job creation. The regulation of competition between actors, within value chains, or between big and small companies, the conditions for applying product standards, the organisation of access to training, advice, credit etc., all affect income inequalities, or even the integration or marginalisation of certain activities. The ways traditional and indigenous food knowledge are considered (or not) in research and intellectual property policies may threaten food diversity and food cultures. In the absence of regulation, the modernisation of forms of food distribution, with the development of supermarkets and now electronic commerce, can result in the marginalisation of the poorest people's access to quality food.

In countries where food activities account for the bulk of employment and income sources, the approach taken to developing food systems is therefore crucial in promoting more inclusive development.

Food systems are strategic to building a viable environment and fighting climate change

The way people have organised their food systems has profoundly shaped their environment: the ways in which they have cleared or included forests in their agricultural production system, whether production has been specialised or not, how they have employed renewable or fossil energy resources, closed or unclosed nutrient cycles, whether animals are used for food or not etc. have fashioned landscapes and changed biodiversity. Some development models are found to have environmental impacts so significant that they threaten its equilibrium. The pollution food systems cause or their contributions to climate change have an impact not only where these production approaches are used, but all over the world. However, the negative environmental effects we have highlighted also reveal that other production methods can have positive effects, by recycling as much as possible the materials produced, creating biodiversity and capturing carbon (Frison and IPES-Food, 2016; Mason and Lang, 2017). Food systems therefore have an important positive contribution to make in building a sustainable environment and combating climate change.

Three objectives for food systems

During the twentieth century, the aim of food systems was to increase food production and it could be argued that this has been spectacular. However, it has come with a heavy cost in terms of negative externalities: the increase in social inequalities and environmental degradation. This explains why the international community set itself Sustainable Development Goals (SDGs) in 2015; food systems can contribute to these goals well beyond the sole objective of eradicating hunger. Fourteen important contributions of these systems can be identified out of the 17 SDGs (Caron *et al.*, 2018; FAO, 2017, 2018b) and these can be grouped into three main goals: (a) food security and improved nutrition; (b) inclusive development; and (c) the creation of a sustainable environment and the fight against climate change (*cf.* Figure 1 and Figure 2). These three goals are interrelated: food and nutritional security cannot be achieved without combating impoverishment and reducing the effects of environmental degradation. ●

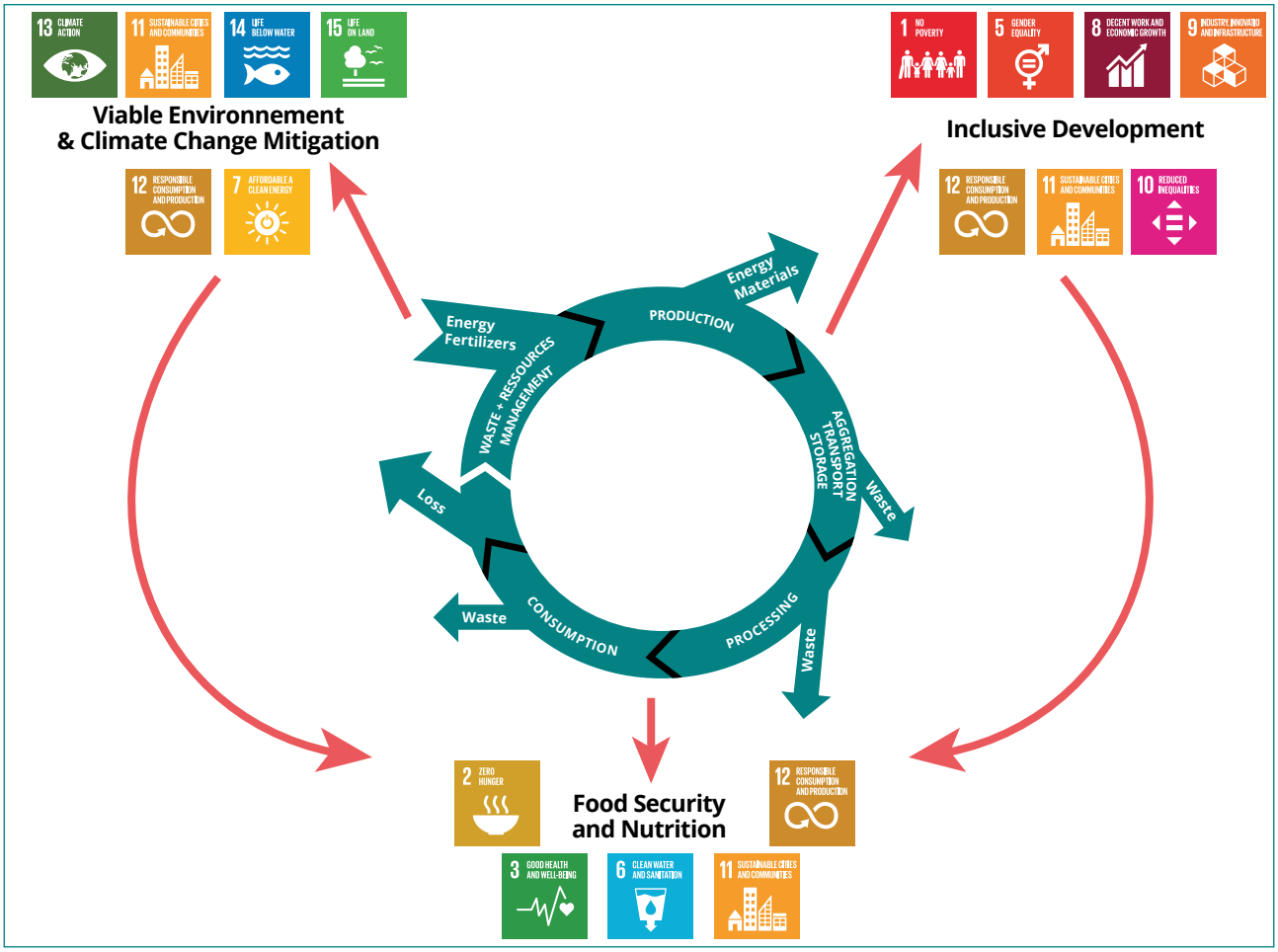

Figure 2: *Food systems and the SDGs. Source: Author.*

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