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Governance for the sustainability of the food system

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Abstract

In the current global context, characterized by climate crises, food insecurity, and persistent social inequalities, food system governance has become a strategic framework for advancing transitions towards sustainability and social justice. The objective of this study was to identify studies related to food system governance, investigating how authors have approached the topic worldwide, bringing theoretical and practical reflections on it. An integrative literature review was conducted by searching the Capes Journals platform using the keywords food system governance and sustainability in English and Portuguese, and 34 articles were found. These articles were grouped in order to identify the diversity of types of governance in the SA, theoretical and methodological perspectives, and movements/actors of change. Among the types, there are neoliberal market governance systems projected with incremental technologies and social governance systems based on rights, proposing more radical transformations. Theories such as the multilevel perspective have been proposed to analyze the transition to sustainability, and authors have gathered a set of criteria to methodologically analyze governance. Movements of change were analyzed based on their ideals, type/group of actors, problems, and strategies. There are few Brazilian studies, which indicates the importance of academia in providing more in-depth support for these discussions, providing policies and transformations that mitigate environmental crises.

Keywords: Sustainable development; public policies; territory; food sovereignty; climate change.

Governança para a sustentabilidade do sistema alimentar

Resumo

Em um cenário global marcado por crises climáticas, insegurança alimentar e desigualdades sociais, a governança dos sistemas alimentares emerge como eixo estratégico para a sustentabilidade e justiça social. O objetivo deste artigo foi identificar os estudos relativos a esta governança, averiguando como os autores têm abordado o tema no mundo trazendo reflexões teórico-práticas sobre o mesmo. Realizou-se revisão de literatura integrativa com busca na plataforma Periódicos Capes usando os unitermos governança do sistema alimentar e sustentabilidade em inglês e português, encontrando-se 34 artigos. Os mesmos foram agrupados de forma a identificar a diversidade de tipos de governança no SA, perspectivas teóricas, metodológicas, movimentos/atores de mudança. Dentre os tipos,

existem os sistemas de governança de mercados neoliberais projetando-se com tecnologias incrementais e os de governança social baseados em direitos, propondo transformações mais radicais. Teorias como a perspectiva multinível têm sido propostas para analisar a transição para a sustentabilidade e autores têm reunido um conjunto de critérios para analisar metodologicamente a governança. Movimentos de mudança foram analisados a partir de seus ideais, tipo/grupo de atores, problemáticas e estratégias. Verifica-se poucos estudos brasileiros, o que indica a importância da academia em subsidiar com mais densidade estas discussões, municiando políticas e transformações que mitiguem as crises ambientais.

Palavras chave: Desenvolvimento sustentável; políticas públicas; território; soberania alimentar; mudanças climáticas.

Gobernanza para la sostenibilidad del sistema

Resumen

En el actual contexto global, caracterizado por crisis climáticas, inseguridad alimentaria y persistentes desigualdades sociales, la gobernanza de los sistemas alimentarios se configura como un marco estratégico para impulsar transiciones hacia la sostenibilidad y la justicia social. El objetivo de este trabajo fue identificar estudios relacionados con la gobernanza del sistema alimentario, investigando cómo los autores han abordado el tema alrededor del mundo, aportando reflexiones teóricas y prácticas al respecto. Se realizó una revisión integradora de la literatura mediante búsqueda en la plataforma Capes Periodicals utilizando las palabras clave gobernanza y sostenibilidad del sistema alimentario en inglés y portugués, encontrando 34 artículos. Se agruparon con el fin de identificar la diversidad de tipos de gobernanza en Sudáfrica, perspectivas teóricas y metodológicas y movimientos/actores de cambio. Entre los tipos, están los sistemas de gobernanza de mercado neoliberal que se proyectan con tecnologías incrementales y los sistemas de gobernanza social basados en derechos, que proponen transformaciones más radicales. Se han propuesto teorías como la perspectiva multinivel para analizar la transición hacia la sostenibilidad y los autores han reunido un conjunto de criterios para analizar metodológicamente la gobernanza. Se analizaron los movimientos de cambio en función de sus ideales, tipo/grupo de actores, problemas y estrategias. Hay pocos estudios brasileños, lo que indica la importancia de la academia en brindar un apoyo más profundo a estas discusiones, proporcionando políticas y transformaciones que mitiguen las crisis ambientales.

Palabras clave: Desarrollo sostenible; políticas públicas; territorio; soberanía alimentaria; cambio climático.

Introduction

The food system (FS) has become a central focus of contemporary debates, bringing together diverse fields of knowledge and sectors of society. This growing attention stems not only from its economic implications but also from its wide-ranging effects on society and the environment.

Among these effects, Swinburn *et al.* (2019) highlight what they term the global syndemic, composed of three interrelated pandemics that permeate the food system: the

pandemic of malnutrition and hunger, the pandemic of obesity, and the pandemic of climate change. Leeuwis *et al.* (2021), when defending the need for transformations in the FS, reflect that the "emergent properties" (or the trade-off between positive and negative synergies) of current configurations do not leave much of society satisfied. In other words, instead of desirable properties such as healthy nutrition, food security, wealth distribution, and environmental sustainability, the food system continues to generate malnutrition, food insecurity, poverty, and environmental degradation. Hospes and Brons (2017) identify the main weaknesses of the FS as nutritional and health risks, food insecurity, environmental change, biodiversity loss, the urbanization process, the erosion of power among consumers and small producers, and the disregard for human rights and social well-being.

Although the literature on FS is prolific, studies addressing its governance—and even its very definition—remain relatively scarce. In their literature review, Hospes and Brons (2017) found eleven different definitions of FS. Despite differences, most definitions converge on the notion that food systems encompass the set of activities ranging from production to consumption. Only four mentioned the institutions related to food or the governance of activities within the food chain. Among these, only one described the actors involved: producers, fishers, industries, labor, governments, buyers (retailers, brands, manufacturers, traders), communities, and consumers.

In 2018, the FAO defined food systems as encompassing the full range of actors and their interlinked value-adding activities involved in the production, processing, distribution, consumption, and disposal of food products originating from agriculture, forestry, or fisheries, the food industries, and the broader economic, social, and natural environments in which they are embedded. Production, in this framework, involves not only farming communities but also pre-production actors, such as input industries, including those that produce fertilizers and seeds. The range of actors mentioned above would also include those from science, technology, and innovation, who are only partially integrated into the food system. Another relevant set of actors related to value chains are public and private organizations responsible for ensuring quality and safety.

In the same publication, FAO (2018) also defines what would constitute a sustainable food system (SFS). Such a system would provide food security and nutrition for all in ways that do not compromise the economic, social, and environmental bases that generate food security and nutrition for future generations. This means that: a) it would be profitable in all its dimensions (economic sustainability); b) it would provide broad benefits to society (social sustainability); and c) It would have a positive or neutral impact on the natural environment (environmental sustainability).

The challenge, therefore, is to transform food systems into sustainable ones. As early as 2013, Lang and Barling (2013) proposed that food and nutrition should serve as the central intellectual rationale for (re)shaping the food system for all people. The question they posed was: What would agriculture and food supply chains look like if they were based on human physiological/nutritional needs and if policymakers sought a better alignment among global food systems, ecosystems, and sustainable food security? In the same year, Garnett (2013) raised the following challenges: how can food production be made more sustainable and resilient while simultaneously feeding a growing population? What can be done to address the problem of food system sustainability? In summary, how have food systems been designed to deal with global climate change while at the same time providing food security, environmental security, and social well-being?

Against this backdrop, the issues addressed in this article relate to what has been studied thus far regarding food system governance and what approaches and perspectives are available for confronting present and future problems on the path toward an SFS. Accordingly, the objective is to identify studies related to the governance of the food system, examining how authors have approached the topic globally and in Brazil, and to present theoretical and practical reflections on the matter.

This article is structured as follows: after this introduction, the methodology is explained. The subsequent section, which focuses on food system governance, is subdivided into parts: beginning with a brief conceptualization of the term as it appears in the literature, followed by an explanation of the most prominent approaches (neoliberal market governance systems and rights-based social governance of food systems). Subsequently, theoretical and methodological perspectives for evaluating sustainable governance are examined, followed by a discussion of ongoing changes and the final considerations.

Methodology

This integrative literature review was conducted between October and December 2024 using the *Periódicos Capes* database. Regarding the search strategy, an initial, more sensitive search was performed using the uniterm food system governance, applying the following filters: the exact term appearing in any field of the texts, publication period between 2015 and 2025, and peer-reviewed articles. This search yielded 82 articles and 6 literature reviews. Subsequently, for a more specific search, the term *sustainability* was added, using the same filters except for the publication period (left open to identify when this type of literature began to appear). This search resulted in only 28 articles and five reviews.

From the first group (food system governance), 28 articles were selected, excluding those that focused exclusively on the reality of a specific country or group of countries, as well as editorials. Notably, two articles addressed Brazil and were retained. Among the excluded studies, 14 examined cases from African countries and 13 from European countries, with only five from other Latin American countries (1 from Mexico, 1 from Nicaragua, 2 from Costa Rica, and 1 from Colombia). The remainder covered a diverse range of other contexts.

From the second group (food system governance and sustainability), 17 articles were selected, using the same exclusion criteria as before. In this group, the largest number of excluded articles focused on Australia (5) and Europe (4). Considering that, among the 17 articles found in the second search, 11 were duplicates and only 6 did not appear in the first stage due to the relaxation of the time filter, a total of 34 studies were included (28 + 6).

The selected articles were organized to identify the concepts, the diversity of governance types within the food system, theoretical and methodological perspectives, and movements/actors of change. Within this latter group, four subcategories were identified: ideals, driving actors/social participation, challenges, and strategies.

Food system governance

Kennedy and Liljeblad (2017) define governance as the **establishment of rules**, **practices**, and **processes** that **structure flows of power and control** within the food system, from production and harvesting to consumption and waste management. Berry (2019) considers food governance to be understood as the “architecture of food systems.” According to Guthman (2007), understanding food system governance necessitates an examination of the actors, their relationships, and how these dynamics influence the system.

According to Clancy (2014), governance resonates across different scenarios, but two are of greater importance: first, the relevance and effectiveness of organizational structures that can be employed and developed in efforts to shape **policies**; and second, the governance of **supply chains**. Clancy also highlights the multiple **levels of governance**—global, national, regional, local, and corporate—and thus the intricate complexity of this system, in dialogue with the geographical perspective of the subject.

In this regard, Yap (2022) points to the relations among the state, space, and territory as a means to explore new directions and opportunities for research and practice in food system governance. For the author, food systems encompass a multitude of relationships, processes, and networks that exist simultaneously within (horizontally) and across nested levels from the local to the global (vertically)—which have multiplied through

globalization processes over the past 40 years, creating different food systems. Yap argues that such synthetic framings can be highly productive, insofar as jurisdictional-institutional territories provide functional structures for engagement with public policy, and because each new framing of the food system—each new level and territory—brings with it new spatialities of overlapping relations and potentials for change.

Nevertheless, Oosterver (2007) emphasizes that global food governance has undergone significant transformation in recent years, shifting from a model dominated by conventional characteristics to one where innovative forms of global food governance have gained importance.

The literature also includes studies that seek to better understand how such governance has been unfolding, differing in their approaches to the subject (Arthur *et al.*, 2022; Garnett *et al.*, 2013; Hospes; Brons, 2017; Leeuwis *et al.*, 2021; Oñederra-Aramendi *et al.*, 2023; Tschersich; Kok, 2022; Bui *et al.*, 2019). The following discussion will address these perspectives, bringing in additional studies to enrich and engage with each argument.

Arthur *et al.* argue that, at the broadest level, two governance approaches are commonly debated: neoliberal market governance systems and rights-based social governance of food systems. This division broadly corresponds to what currently exists as the dominant food system, which produces adverse side effects, as already exemplified, but which also seeks incremental sustainable strategies on the one hand. On the other hand, there are more radical attempts at transforming the system, reshaped through differentiated forms of governance. Both constitute what the literature has commonly referred to as the transition toward sustainability.

Neoliberal market food system governance for sustainability

Food system governance under the neoliberal model resonates with Tudge (2005), who argues that the prevailing algorithm is economic—essentially a form of capitalism based on monetarism (everything is considered to have a price) and the supposedly free market operating on a global scale. According to the author, the mantra adopted in the case of agriculture is: “Agriculture is a business like any other,” which translates into the need to generate maximum profit in the shortest possible time. In this sense, three main requirements exist for maximizing profit. The first requirement is to maximize business volume; the second, to add value; and the third, to minimize costs. Modern agriculture, therefore, is designed to make as much money as possible for an ever-decreasing number of companies. The models are essentially capitalist, centralized economies controlled by governments that are often obsolete.

According to Arthur *et al.* (2022), market-oriented food system governance is largely consumer-driven and propelled by global conglomerates and/or multinational corporate power, implementing market mechanisms as tools to achieve food system change. To demonstrate the concentration of the global market, Hendrickson *et al.* (2020) present data on upstream industries. They point out that only four different corporate conglomerates are responsible for producing 65% of agrochemicals, 58% of animal pharmaceuticals, 50% of seeds, 45% of agricultural equipment, and 33% of synthetic fertilizers worldwide.

In the United States, Hendrickson *et al.* (2020) demonstrate that the processing industry is also highly concentrated. In the United States, Hendrickson *et al.* To illustrate with major examples, four different companies are responsible for 80% of soybean processing, 73% of beef, 67% of pork, and 54% of poultry. Food retail is likewise characterized by high levels of concentration, with large retail chains sharing the market and competing primarily based on price. Thus, the food sector has witnessed the rise of giant corporations that control significant proportions of retail sales, as well as the emergence of internationally operated companies. The scale of these retailers places them among the largest firms in their countries of origin (for example, Tesco in the United Kingdom, the Metro Group in Germany, and Wal-Mart in the United States).

In analyzing the governance of this type of food system, attention is drawn to the issue of power, as large retail chains and supermarkets exert enormous market dominance over agricultural producers and processors (Oosterveer; Sonnenfeld, 2012). Hendrickson *et al.* (2020) emphasize that the distribution of power within the food system lies in the capacity to decide which foods are produced, how, where, and by whom, as well as who may eat—and what they may eat. This should be the primary concern, given the negative impacts of these decisions on farmers, workers, communities, and ecology. In the literature review by Hospes & Brons (2017), which included studies on global food regimes and the global food system, governance is essentially driven by the private sector, with the most emphasized issue being unequal power relations.

Given the dynamic nature of the food system and in light of pressures arising from climate change as well as concerns around health and nutrition, changes have been observed in how these models have adapted to new demands. According to Lang and Barling (2013), new corporate analyses have emphasized that business survival will depend on the supply of food, water, energy, transportation, and waste management, raising questions of choice and resurrecting the dreaded term “rationing.” New alliances among transnational manufacturers have been formed, pooling analyses and generating new practices and processes of standardization that are independent of government intervention.

Various corporations have made commitments to reduce, for instance, water use and carbon emissions.

Practical examples include Barilla, the world's largest pasta manufacturer, which has supported a nutrition center committed to sustainable diets, producing the widely cited double pyramid approach (Lang; Mason, 2018). Unilever launched its Sustainable Living Plan in 2010 with three goals: to help improve the health of over one billion people, to halve the environmental impact of its products, and to source all its agricultural materials sustainably (Buttriss, 2013). Other cases are reported by Lang and Mason (2018), such as PepsiCo's Performance with Purpose strategy (2009), which encompassed four areas including environmental sustainability; Marks & Spencer's Plan A (2007), with 100 commitments to be achieved by 2012 (later extended to 180 by 2015), aiming to become the world's most sustainable retailer; Sainsbury's 20 by 20 Sustainability Plan, which set twenty targets to help customers make nutritional, sustainable, and ethical choices; and McDonald's sustainability goals for 2011–2012, which included actions from the Global Conference on Sustainable Beef, adopting energy-efficient equipment and technology in restaurants, and increasing energy awareness and education throughout the system (Lang; Mason, 2018).

There are also strands of thought that rely on solutions from technology. These include lab-grown meat, nanotechnology, industrial-scale insect production, robotics, new generations of synthetic biology, genetics, and nutrigenomics, as well as other innovation-driven approaches. However, Miranda *et al.* (2021) highlight the governance costs associated with sustainability-oriented innovations, which may explain why their diffusion is often slower.

Nevertheless, this set of initiatives—including climate-smart production methods and precision agriculture—has been referred to by the High Level Panel of Experts (HLPE) of the UN Committee on World Food Security as Sustainable Intensification, which would contribute primarily to yield and stability. However, according to the HLPE, these initiatives do not address the social, cultural, and political dimensions of transitions to sustainability, including issues of power and governance. Another term applied to this type of adaptation of the system to climate change is *business as usual*, which continues to reflect a reductionist and conservative vision of the food system.

Governance of sustainable or rights-based food systems

Other models of food systems have been advanced as a strong critique of the governance model described above, proposing radical transformations rather than merely incremental and technological changes. In a literature review conducted by

Oñederra-Aramendi *et al.* (2023), the authors observed that by 2021, the body of literature analyzing the governance of Alternative Food Systems (AFS) had increased and had been interpreted in different ways by different scholars. They identified the coexistence of multiple approaches that have been mutually reinforcing, such as adaptive governance, multilevel governance, and reflexive governance. In adaptive governance, actors self-organize within a flexible network to adapt to unforeseen challenges, developing skills that promote resilience and enable them to face uncertainties. Multilevel governance, in turn, recognizes the interactions occurring across different levels, but at the expense of transaction costs incurred by the attempt to coordinate the multiple actors involved. Ultimately, reflexive governance emphasizes the importance of dialogue, collective action, and collaboration in resolving social dilemmas. These authors summarize two theoretical governance frameworks: alternative networks, related to reflexive governance; and, more frequently at present, urban networks, associated with multilevel and adaptive governance.

In the study by Arthur *et al.* (2022), the reference to a rights-based governance system highlights a special focus on smallholders/family farmers and vulnerable groups, emphasizing the inclusive development of food citizenship. The authors identify five types of theoretical governance frameworks for this type of food system: alternative food networks, food bioregions/watersheds, short food supply chains, urban regional food systems, and rural–urban linkages. In the review by Hospes and Brons (2017), the desirable properties of a food system are: having adaptive capacity and resilience, being local/localized, being alternative, and considering food as a human right. The authors cite four types of food system governance found in the literature, including food regimes (Mcmichael, 2009; Friedman, 1987; Friedmann; Mcmichael, 1989) and private governance (which aligns with what we have referred to as neoliberal market governance described above). Additionally, they discuss food policies, urban governance, and multilevel governance.

Expanding on each of the types of governance cited by these authors, we begin with the most frequently mentioned: **alternative networks**. Arthur *et al.* describe these as green markets, community gardens, community-supported agriculture, community farms, organic products, farmers' markets, farm-gate sales, specialty retailers, online grocery stores, box schemes, farm shops, and direct sales to restaurants and specialty shops. These initiatives are developed and driven by grassroots movements with the support of non-governmental organizations (NGOs), environmentalists, community leaders, and food activists who are critical of the dominant agri-food system. Based on concepts such as localism, quality, and trust (Goodman, 2002), these networks aim to re-spatialize and re-socialize the production, distribution, and consumption of food, turning "food from nowhere" into "food from somewhere" (Campbell, 2009). According to Campbell (2009), NGOs, mobilized consumer

groups, peasant movements, and retailers catering to elite segments of society seek to reconnect food with place and identity through new governance instruments, including food audits, commodity traceability, eco-certifications, and labeling schemes. Together, these instruments serve to communicate the ecological and social consequences of distant interactions within the food system, essentially “re-embedding” dispersed transnational food systems in specific places and cultures.

Another group of authors has explored the concept of **short food supply chains** (Marsden, 2000) or **short marketing circuits** (Chaffotte; Chiffoleau, 2007), which are part of the discourse on alternative food networks. Short food supply chains may operate in parallel with dominant food chains, serving different—though sometimes overlapping—segments of the population. These channels of producer–consumer engagement are conceptually designed to recreate relations of proximity for so-called local development and to counter the competitive dominance of the global food system. By reducing the number of intermediaries in the food system, geographical distances are shortened. However, the primary goal is to bring producers and consumers closer together in terms of their social and economic relationships.

In turn, a **bioregional** paradigm, according to Arthur *et al.* (2022), seeks to reconnect people with other living systems, emphasizing that beyond cities, towns, or villages, humans live among watersheds, foodsheds, fibersheds, and food systems, with the potential to remake the structural ties among these different systems. To achieve these ideals, various community actors, citizens, and government agencies would mobilize in support of ecologically sensitive farming practices under the aegis of bioregionalism (Arthur *et al.*, 2022). Within this logic, by assessing the food needs of a specific population in the context of its current food sources, better strategies for food supply could be developed—either by increasing local production or by diversifying food sources.

As for the discussions concerning **urban regional food systems, rural–urban linkages, and urban governance** mentioned by Arthur *et al.* (2022), Ospes and Brons (2017), Oñederra-Aramendi *et al.* (2023), Haysom (2015) the centrality of urbanization in contemporary society becomes evident. Arthur *et al.* (2022) argue that urban regions encompass not only megacities and their nearby rural areas but also small and medium-sized towns that connect remote smallholders and their products to urban markets. In the case of rural–urban linkages, Arthur *et al.* (2022) contend that without supporting rural communities, urban populations cannot make the necessary transitions to more equitable, economically viable, and resource-efficient patterns of production and consumption. Strengthening rural–urban linkages would thus promote urban resilience for a stable food supply, particularly during extreme weather events and naturally triggered disasters. Urban

governance in these cases would be characterized by collaborative efforts among citizens, civil society organizations, and municipal governments in building such systems.

These types of food systems correspond to the form of governance described by Hospes and Brons (2017) as multilevel, which considers that the displacement of power and control from the state can occur in three directions: (1) upward, to international actors and organizations; (2) downward, to regions, cities, and communities; and (3) outward, to civil society and non-state actors.

All of these food system formats and governance arrangements have their own fragilities and weaknesses (some of which will be discussed below), as reflected in the extensive literature on the discussion of localism and its pitfalls (Born; Purcell, 2006; Leach *et al.*, 2010; Kirwan; Maye, 2013).

Theoretical and methodological perspectives for thinking the transition to sustainability

If the idea is that food systems should become sustainable and that governance is crucial for understanding these transition processes, some authors have sought to study such changes. One way of conceptualizing transformations in the food system is suggested by Leeuwis *et al.* (2021), who propose analyzing six characteristics of a system to offer insights into how to change it, based on the Multilevel Perspective (MLP) theory. The first characteristic refers to the consequences or outcomes of this system, which the authors call emergent properties. The second is the interaction among people and the benefits they receive; the third is that there is diversity among food systems; the fourth is that there is also diversity among actors and their interests; the fifth considers that a food system is dynamic and self-organizing; and the sixth is that it is stable and resilient.

Considering these characteristics, system change would occur, through the lens of the MLP, as a result of the dynamics of interaction among niche, regime, and landscape. The socio-technical regime is constructed by multiple interrelated domains—such as politics, industry, technology, markets, science, and culture—that provide the system with a structure that renders it highly stable. The Multi-Level Perspective (MLP) assumes that transformation occurs when regime dimensions are reconfigured. For this to happen, niche innovations and landscape pressures are decisive. The authors summarize that transformations depend on the following factors: (a) whether niches exist and/or are ready; (b) whether the interaction between niche and regime is cooperative or antagonistic; and (c) whether landscape pressures on the system are sudden or gradual. In this sense, they argue that system transformations are nonlinear, long-term, and multi-actor processes that are not readily subject to planning and control, and are associated with processes of self-organization.

Nevertheless, while acknowledging the difficulty of changing the dominant food system, they elaborate and recommend seven governance strategies for policymakers: (1) create and support variation; (2) capture and support existing diversity; (3) provide temporary protection for niche-level initiatives; (4) analyze trends and develop a vision of the landscape; (5) promote landscape-level pressures and actively destabilize the regime; (6) identify plausible leverage points; and (7) invest in coalition building, collaborative research, and media presence. Similar strategies were proposed by Bers *et al.* (2019), including paying greater attention to the conditions and preconditions associated with historical food system transformations and focusing research on how transitions can be supported by institutions that facilitate collective action and stakeholder agency.

An example of an article employing this perspective is Medaets *et al.* (2020), which aimed to understand, through the lens of the MLP, how the transition of the Brazilian agricultural production system toward sustainability is occurring, by examining the case of organic certification programs. According to the authors, the transition of the Brazilian agri-food system toward sustainability is related to the emergence of two different types of sustainable agriculture in Brazil: (1) good agricultural practices, as an incremental adaptation of the principles of the Green Revolution; and (2) organic production, as a divergent pathway toward sustainability. They consider that the former reinforces the existing technological trajectory and a pattern of incremental change toward sustainable intensification. By contrast, organic production has advanced through a consolidated political arena but has lost strength due to internal tensions within the niche and weak linkages with other levels (niche and landscape).

Another perspective for rethinking the food system is proposed by Garnett (2013). For this author, solutions depend heavily on how the problem is conceptualized, and broadly speaking, three main perspectives on the problems and their interactions are emerging. The first emphasizes the negative consequences of food production. From this framing, it is necessary to address these impacts by developing agricultural and post-harvest supply chain approaches that cause less harm and achieve higher yields. The second highlights **consumption patterns** that drive high-impact food production, such as meat and dairy; therefore, the pathway forward is to seek changes in these patterns. The third approach concerns **inequality**, or the coexistence of excess with insufficiency, which characterizes both the environmental damage caused by production and the health problems associated with consumption, thereby advocating for a more equitable food system. The author discusses how each of these entry points has been addressed in the literature and how they have been approached.

From a methodological standpoint, articles demonstrate some possibilities for supporting research with practical ways of measuring food system governance. Delaney *et al.* examined methodological indicators used in the literature. The authors divided their findings into five major categories: agency (leadership, resilience, etc.); contextual factors (laws, country size, resources, etc.); democracy (accountability, corruption, etc.); institutional structure (networks, cross-scale interactions, polycentricity, etc.); and performance (effectiveness, use of knowledge and science, outcomes, etc.). The study identified a concentration of indicators in food production at local to national levels, with less literature investigating how food governance affects the distribution and consumption of food. Many institutional structure indicators were found, while indicators capturing social agency and cross-scale dynamics were moderately represented, and critical perspectives on governance were absent.

Marshall *et al.* (2021) present the website (https://foodsystemsdashboard.org/) as a tool that compiles more than 200 indicators from over 40 data sources on food systems, aiming to facilitate food system analysis and geographical comparisons under the adage that "what cannot be measured cannot be governed."

In the study by Hubeau *et al.* (2017), the authors developed and applied an analytical framework that enables reflective assessment and cross-case analysis of multi-actor governance networks, based on business and learning evaluation criteria. In the experiments conducted, 13 key factors were developed to assess the success of collaboration, namely: asset specificity, control intensity, risk sharing, relevance of identity, duration of relationships, trust, power, allocation of decision rights, frequency of interaction, information exchange, quality of communication, expected social gains, and motivation. According to the authors, this tool can be used by both researchers and policymakers to evaluate, design, and reflect on the sustainability of food systems.

Landert *et al.* (2017) sought to develop a set of indicators to assess the governance of urban food systems. Their framework included criteria of good governance, environmental integrity, economic resilience, and social well-being, which were collected through primary and secondary data.

Movements of change for FS transformation

Another group of studies in the literature focused on changes in the food system arising from contestatory movements and from relationships built through constellations of social actors. It is important to consider that the COVID-19 pandemic exposed many of the existing social and economic inequalities in societies, bringing to light the various ways in

which specific groups and communities face complex and persistent injustices, pointing to the need for innovative governance of the food system (Wilson; Tasala, 2024; Kumareswaran; Jayasinghe, 2022). In this section, the articles addressing movements of change are grouped into four categories: ideals, driving actors/social participation, challenges, and strategies.

With respect to **ideals**, studies by Bui *et al.* (2019) and Tschersich and Kok (2022) discuss issues of ethics, democracy, and justice. In the first study, the authors emphasize that food ethics must be systemic in order to drive sustainability transitions, meaning that there must be a systemic understanding of sustainability problems and perspectives, including social justice. They argue that governance arrangements should involve not only organizations representing various agri-food and non-agricultural actors but also actors who advocate ethical values and represent the interests of the excluded and marginalized (such as family farmers, for instance), thereby encouraging the adoption of such systemic ethics by established actors.

Tschersich and Kok (2022) and Huttunen *et al.* (2022) contend that the concept of justice requires going beyond mere considerations of distributive justice and must include participatory and representative dimensions within a food system (Huttunen *et al.*, 2022, use the terms recognitional and procedural justice). Thus, Tschersich and Kok (2022) argue that three paradigm shifts are necessary to overcome current unsustainable dynamics and democratize the FS: (1) from specialized (scientific) understandings to pluralist knowledge forms (such as tacit, traditional, and Indigenous); (2) from economic materialism (profit) to post-growth strategies (social well-being); and (3) from anthropocentrism (e.g., disconnection of production and consumption) to reconnecting human–nature relations (linking consumption and production, humans and non-humans).

Huttune *et al.* (2022) analyze the types of justice and how they occur in alternative food networks, food sovereignty movements, and food policy councils. The authors argue that inclusion is enabled through new modes of participation, involving practical engagement and self-organized participation, which encompass elements of empowerment and learning, as well as resistance and the capacity to form radically alternative visions of the future. In other words, it is necessary to open spaces for traditionally marginalized voices. In this sense, the study by Wilson and Tasala (2024) demonstrates, through research with food system workers, that this is not so straightforward. For them, real progress in addressing the injustices faced by farm and food workers will require more than individual awareness and sympathy. Building the capacity for collective organization, as well as organizational literacy around the structures of oppression that shape and are shaped by food systems, are two important considerations for advancing this work.

The second group of articles highlights the **actors and social participation** that play important roles in these movements of change. Kang *et al.,* through a literature review, sought to understand aspects of local food system governance and identified six main groups of actors involved in these processes: producers, retailers, consumers, government organizations, nonprofit organizations, and private organizations. Another recent literature review by Affre *et al.* (2024) on practices of social participation in local food system governance (LFS) summarized five types of mechanisms: (1) food governance committees/councils bringing together citizens and local government members; (2) working groups gathering small numbers of specialists on specific issues; (3) participation in workshops; (4) citizens' assemblies and forums; and (5) participation in action research.

In their article, Hammelman *et al.* (2019) argue, based on case analyses, that food policy councils, civil society organizations, and academia can serve as anchoring institutions to respond to food crises at multiple scales through integrated food system governance. These networks aim to build coalitions, promote healthy food retail practices, and ensure fair labor practices and accountability in supply chains. This would occur through ongoing partnerships between academics and civil society, building actor networks and fostering dialogue on regional and national food policies.

The third dimension concerns the problematic issues and the challenges faced by these movements, which were the most prevalent in the articles. The first issue relates to the reach of these sustainable food systems (SFS). It has been argued that while the local scale is essential for the early stages of development and diffusion of sustainability-related policies and innovations, systemic or higher-level adoption remains limited. In response to this critique, it has been noted that local and territorial efforts to address unsustainable or unjust practices are not intended to replace policy change at higher scales, but rather to complement it in ways that can produce concrete outcomes in the local arena while also advocating for change at broader levels.

The case studied by Zollet and Maharjan (2021) highlights this dynamic, analyzing an anti-pesticide movement that demanded stricter municipal regulation of pesticide use. The authors report results showing how grassroots mobilization played a key role in reforming municipal pesticide regulations and slowing the spread of intensive agriculture locally, drawing attention to the framings used to garner support from public opinion and local administrators. Although such regulation was adopted by a sufficient number of municipalities to ensure substantial territorial coverage, thus going beyond the scale of each municipality, the lack of agreement on a shared vision at the provincial level ultimately became a barrier to broader territorial adoption of pesticide regulations.

Kang *et al.* also describe the initial conditions shaped by factors that discourage or facilitate cooperation among actors at the beginning of a specific collaborative process. In this topic, they identify issues such as resource or capacity constraints, (dis)incentives for producers and consumers to participate in local networks, and the trust or distrust among actors. They note that in this literature, leadership is not explicitly explored, but some studies show the initiating actor. Regarding outcomes, the authors argue that there are still gaps in their measurement.

Building on this study, Lu and Carter (2023) investigate the collaborative governance of these local systems and point to the lack of legitimacy and recognition they have in relation to public authorities, as well as the divergence of goals across different jurisdictions and the absence of regional leadership. The authors also highlight the low investment that local systems receive compared with the heavy subsidies given to commodified food products. Furthermore, the high prices of fresh and organic food exclude those with limited income and, inadvertently, create systems that are accessible only to the elite. Such realities pose a problem for their legitimization as a social good.

Regarding leadership or the role of public administration, Emas and Jones (2021) found, for instance, that local government officials in metropolitan regions of two U.S. states had little conceptual knowledge of a LFS and little specific knowledge of the existing characteristics of the food system in their individual communities. Despite this general lack of knowledge, both food producers and the respondents themselves believed that local government should play a role in advocating for food policy and food system governance in their communities.

Another point highlighted by Papaoikonomou and Ginieis (2016) refers to the heterogeneity of LFSs, demonstrating that they are built and governed to serve different purposes depending on the context in which they are found. The authors compared two such systems—one of responsible consumer cooperatives and another of community-supported agriculture—finding three types of narratives and practices: sharing, negotiation, and utilization. One example that highlights these differences is risk sharing, a fundamental principle of community-supported agriculture, where consumers pay farmers in advance. For instance, in cases where, due to extreme weather conditions, farmers lose most of their production, consumers receive no products, even though they have already paid for them. At the same time, however, this helps farmers to continue farming in subsequent years. The authors note that members of the responsible consumer cooperatives reported no similar experiences.

Del Valle, *et al.* (2022) emphasize food governance in the transformation of food systems to ensure better access to sustainable diets (that is, diets that protect health, food

cultures, and the natural environment). According to the authors, for this to occur, it is important to consider both the level of governance and the outcomes being discussed. From a national-level perspective, policy coherence is described as a means by which different public institutions can contribute to achieving access to sustainable diets. From a local-level perspective, community-supported activities and the incorporation of local knowledge are also described as ways to improve access to sustainable diets. However, these authors agree with Díaz-Méndez and Lozano-Cabedo (2020), who emphasize that the development of healthy and sustainable diets for all requires consensus among the different actors in the agri-food system. However, achieving this goal is not easy within a governance structure characterized by complexity, asymmetry, and conflicts among these actors.

To illustrate, the authors point out that neither businesses nor governments have considered these movements as a critical response to the global food system, let alone as a tool for promoting healthy and sustainable diets tailored to the socioeconomic and cultural characteristics of different regions or local areas. Instead, businesses and governments continue to view them as ideological and elitist pathways that cannot compete with the dominant system, failing to recognize the potential contributions of these citizen movements to promoting healthy and sustainable diets.

These authors already engage with the final category of this section, namely the **strategies** to be pursued. They stress that the role of scientists in the agri-food system is fundamental. In the case of sustainable and healthy diets, many dimensions converge, which means that it would be beneficial to establish multidisciplinary working groups to address the challenge holistically. Moreover, these actors (academia) would play a decisive role in mediating the building of bridges among other actors across the agri-food system and in establishing consensual courses of action regarding sustainable and healthy diets.

In this sense, learning processes within alternative food networks have also been advocated as strategies to strengthen ties between production and consumption and as intrinsic to the governance of SFS. Popławska (2020) argues that these processes deserve further analysis, particularly in the case of networks that have so far received less attention, such as farmers' markets or urban gardens. For the author, contesting and developing knowledge, as well as the right to be informed, are of fundamental importance in this context. At the same time, the defense of food sovereignty can support the expansion of cooperative and agroecological models. The idea is to strengthen bottom-up learning strategies and informal education processes in the field of agroecology, through sustainable farming practices and their recognized transformative potential. Finally, Kang *et al.* (2022) aim to understand the interactions and key factors that contribute to the success of these food

systems, highlighting that face-to-face dialogue, trust, commitment, shared understanding, and positive outcomes all have a positive influence.

Closing remarks

From this overview of studies, it is evident that the international literature has addressed the theme of food system governance with increasing commitment in recent years, indicating that various actors with diverse strategies have pursued the transition to a SFS. Understanding what underlies the governance of each system—their power relations, outcomes, and consequences—is a criterion for moving beyond superficial analyses of what should be proposed and built in the name of sustainability.

Food systems that prioritize equity, justice, ethics, and sustainability have proliferated worldwide, often emerging from social movements that mobilize previously excluded actors. However, they still face difficulties in expanding beyond the local or regional level and in gaining recognition and legitimacy as SFS, with the potential to become more impactful and capable of challenging the dominant model.

In light of these difficulties, and considering both the seriousness of the moment and the speed of climate change and its effects on food systems, it is necessary to reflect on the role of the State, science, and technology in accelerating responses. Food policies were not highlighted in this article; however, the State has been called upon to mediate tensions among different sectors and demands, and to direct/lead processes that culminate in protecting the most vulnerable populations from environmental, economic, and social impacts. Bringing together the best that each governance proposal has to offer in order to mitigate these effects would constitute the desired policies at this time. For this purpose, intersectoral food policies, built from the bottom up with an emphasis on territories and grounded in sustainable systems, should be prioritized.

Studies have emphasized the role of academia in driving changes in education, research/innovation, and extension. To this end, revisiting approaches, fostering interdisciplinarity, and strengthening social engagement in policies, while not losing the accumulated knowledge already built, represents a way to balance and reinforce pathways that can converge toward the common good. In this regard, in Brazil, there are still few studies on this subject, pointing to an important gap that needs to be further investigated to support policies at all levels.

The limitations of this research stem mainly from the thematic and methodological boundaries adopted in the integrative review. This delimitation, necessary to ensure focus and analytical depth, restricted the scope of the investigation and may have excluded

relevant works published with other terminologies or related approaches. Finally, the heterogeneity of methodological designs among the included articles imposed challenges for the critical synthesis of results, requiring additional caution in analysis and interpretation to avoid biased comparisons or conclusions with limited generalizability.

Future research is thus essential to build on this study, deepening elements that remain open, such as the operationalization of analytical categories, a more detailed examination of different levels and forms of governance, the inclusion of diverse methodological approaches, and the question of food policies. In this way, the present work positions itself as an initial and integrative step, which points to foundations and trends but requires further investigation to be complemented, thereby contributing to the strengthening and expansion of knowledge on governance in food systems.

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