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Sustainable food networks: chains of values and food transitions

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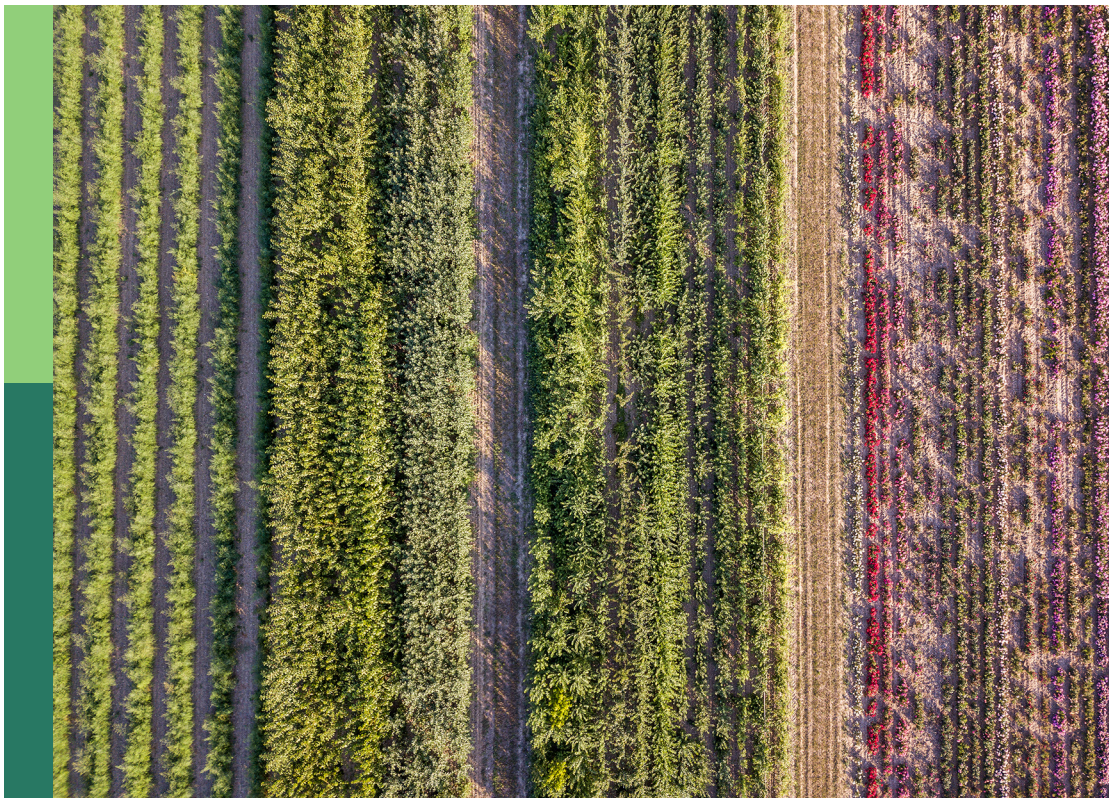

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Sustainable food networks: chains of values and food transitions

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Editorial: Sustainable food networks: chains of values and food transitions

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Editorial on the Research Topic
Sustainable food networks: chains of values and food transitions

Sustainable Food Networks (SFNs) are developing alternative value chain arrangements that drive agroecological transitions and reshape food systems in urban and rural territories. These networks challenge the hegemonic corporate food system by promoting localized, fair, and inclusive food supply models. However, despite their potential, they have received limited attention through the lens of economic geography and related interdisciplinary perspectives. Urban agriculture and agri-food systems, broadly defined to include interactions across peri-urban and rural territories, offer key contexts for the development of SFNs (Zimmerer et al., 2021).

This Research Topic addresses comprehensive research on SFNs with specific objectives: identifying various SFN initiatives across different territories, evaluating their spatial dimensions at the regional, national, and global scales, and assessing policies that can enhance the social, economic, and environmental sustainability of food value chains. The research questions guiding this Research Topic included: How are alternative values disseminated within SFNs? What critical elements enable these values to have a broader impact? What role do networks and public policies play in developing and expanding SFNs? How do territorial conditions influence the performance of SFNs? Additionally, the articles aim to understand how SFNs compete with hegemonic value chains and the potential role of bottom-up governance processes in supporting and strengthening these alternative networks.

This Research Topic includes two manuscripts that explored consumer engagement and values within SFNs. The study by Sanchez-Hernández examined "hybridization" in Spanish SFNs, finding that members' values of environmental protection, health, and local development legitimize the adoption of mainstream practices, fostering resilience but potentially limiting transformative potential. Lamarque et al. addressed the gap in understanding the values and symbolic incentives behind participation in sustainable food initiatives through a meta-ethnographic review, analyzing the social, political, personal, material, and ethical reasons for engagement from a constructivist lens, considering identity and social dynamics as core elements.

Three manuscripts studied the role of SFNs in scaling sustainable food. Savels et al. characterized Community Supported Agriculture in Flanders using the TAPE framework, revealing their advanced agroecological nature and positive sustainability outcomes, while noting challenges in animal integration and labor. Belletti et al. analyzed the governance of Tuscan Farmers' Markets, proposing a multi-level and hybrid model shaped by stakeholder interactions and offering a comparative framework. A third manuscript by Sanz-Cañada et al. explored Spanish agroecological cooperative supermarkets: their findings suggest noteworthy potential for efficient scaling of sustainable food through vertical network arrangements and horizontal membership strategies, emphasizing community bonds.

Lastly, a series of manuscripts explored the role of public policy and bottom-up governance processes in supporting SFNs. Pascual and Guerra revealed that while Spanish cities' food policies align with the Milan Pact, their ability to drive change is strongly influenced by local conditions and governance. Additionally, the study by López-García et al. identified significant obstacles for municipalities in the Madrid region, attempting to implement sustainable agri-food policies due to multi-level governance complexities and proposed a framework for improvement. Zerbian and López-García highlighted key challenges hindering collaboration among Alternative Food Networks under the agroecological urbanism umbrella, such as differing perspectives and limited resources. Finally, Anandhi et al. conceptualized food access for urban food system sustainability by examining the interactions between its five dimensions and the urban food environment, using spider web diagrams to illustrate community perception and objective realities.

In conclusion, the manuscripts included in this Research Topic all underscore the critical and evolving role of Sustainable Food Networks in reshaping food systems toward greater sustainability and equity. Research into hybridization reveals the complex interplay between alternative and mainstream practices, driven by deeply held values that prioritize environmental and community wellbeing, while also highlighting potential limitations in radical transformation. Analyses of scaling strategies across various SFN models—from CSAs emphasizing agroecological practices to Farmers' Markets navigating multi-level governance, and cooperative supermarkets leveraging network benefits—demonstrate the varied pathways and inherent challenges in expanding their impact. Moreover, the crucial influence of public policy and governance structures, often shaped by local contexts and facing multi-level complexities, emerges as a key determinant of SFN success. Finally, the conceptualization of food access as a multidimensional construct emphasizes the need for an embedded understanding of urban food environments to achieve genuine sustainability. All in all, fostering the growth and impact of SFNs will require a holistic approach that considers their values, scaling potential, supportive policy frameworks and cooperation between producers and consumers.

Author contributions

CY-O: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Resources, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. JS-H: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Resources, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. JS-C: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Resources, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing.

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The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Personal and community values behind sustainable food consumption: a meta-ethnography

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Various aspects of sustainable food consumption have been studied within the Social Sciences in the last years. Specifically, the analysis of motivations and determinants behind alternative economic practices has gained prominence in disciplines such as Sociology, Psychology, Economics and Marketing, seeking to understand, measure and calculate consumers' decision-making processes and actions through the application of cognitive theories and qualitative predictive models. Anthropology—more specifically through the practice of ethnography—, has also made significant contributions, mostly toward the analysis and description of contemporary cooperative experiences, both in rural and urban settings. However, within this field, few studies have focused on the underlying values, as well as the symbolic, emotional/affective, and identity-based incentives that exist behind the participation in sustainable, pro-environmental, organic, and fair-trade food initiatives. This kind of perspective might help in comprehending how different people or social groups conceptualize their habits and link them to certain representations or beliefs. At the same time, it can provide information about the way in which action-related values appear in discourse and become embodied, whether they are uniform, conflicting, precede practice or emerge as a post-personal reflection of those involved. Through a review, synthesis, and analysis of qualitative literature—meta-ethnography—this paper seeks to present an overview of available academic work on the social, political, personal, material, and ethical reasons associated with partaking in alternative food networks. The findings will be analyzed and discussed in relation to a constructivist perspective, as well as debates around identity, social distinction, and gender.

KEYWORDS

human values, alternative food networks, sustainable consumption, ethnography, cultural capital, qualitative research

1 Introduction

In recent years, academic literature has shown extensive interest in the personal and collective factors that influence sustainable food consumption. Mostly examined via economic and marketing analyses, the increasing forms of conscious consumerism in urban and rural settings have raised numerous questions among researchers and

entrepreneurs, mainly about their origin, their various forms of implementation, the business potential behind them and the cost-effectiveness of engaging in such practices.

A lot has been said about the environmental, economic, and social justice contributions of these forms of production and consumption, analyzing supply chains, the structure of food distribution networks, policy frameworks and governmental actions. Within these efforts, there has been a growing area of research on the social elements of food selection and preference, to explore how settings, different forms of capital, norms, and convenience—along with other things—impact individuals' decisions toward green, local, and organic products. The Social Sciences, particularly, have dedicated several efforts to understanding the link between needs, motivations, attitudes, and sustainable behavior, exploring these through different lenses.

Theories and models from experimental sociology and social psychology, for example, have been used to measure, predict, and comprehend people's choices and consumption patterns, like the Theory of Planned Behavior (Ajzen, 1991), the Norm Activation Model (Schwartz, 1977), the Attitude-Behavior-Context model (Stern, 2000) and the COM-B model for Behavior Change (Michie et al., 2011), among others. Such frameworks propose standardized connections between subjective and collective drives, beliefs, norms, opportunities, accumulated experiences, and consequences, to foresee but also to design potential changes in consumer's decision-making processes.

In the case of sustainable food research, this type of approach has become very popular in recent years, with numerous medium- and large-scale quantitative or mixed methods studies. Some examples are the work conducted in Belgium by Vermeir and Verbeke (2008), on perceived confidence and values when buying dairy products; Campbell-Arvai et al. (2014) experiment on pro-environmental food-related decisions of university students in the US, the study of Ran et al. (2022) about the informational factors that affect the capabilities, opportunities, and motivations of Swedish shoppers; or the Vietnamese enquiry of Le and Nguyen (2022) on social and individual norms explaining organic food purchase intention, among others.

Survey-based behavioral studies, however, are not without their limitations when it comes to encompassing the full complexity of the food phenomenon, as well as unfolding the cognitive-social processes that take place behind the decision-consumption cycle. Some of the criticisms that have been made in this regard mention the difficulty of correlating intention with behavior in a linear way, without considering the existence of temporal, contextual and pragmatic interferences (Sutton, 1998). Intentions may simply change, or the hypothetical categories used in the research questionnaires may not reflect what happens when an action is finally undertaken. Furthermore, predictions or measurements may simply diverge from actual performance, due to attitude-behavior gaps (Moraes et al., 2012; Testa et al., 2021). Other discussions have pointed out the low consideration of cultural factors in the models' design and application, followed by the risk of incompatibility between universalist projects and diverse populations' realities (Pasick et al., 2009).

In this context, the qualitative and sociocultural contributions of other fields such as anthropology become important in the study of sustainable food networks, giving access—through in-depth field research—to the motivational and behavioral complexities of the people involved in them (Murphy and McDonagh, 2016). The situated observation and up-close interaction of ethnographic methods, for example, can provide an additional layer of knowledge about social organizations; showing the connections—but also the distances—between *what is said* and *what is done*, or what is presented narratively in discourse (reported by participants) and the acts that may or may not be based on conscious reflection. Thus, the question would not only focus on the individual and group cognitive mechanisms that drive consumers toward organic, proximity and ecological choices but also on how these processes of election and involvement are marked by specific historical, structural, and socio-cultural components while showing the areas of conflict, contradiction and change that occur behind any human phenomenon.

Despite its significance, the anthropological production on this topic remains less visible than in other disciplines, making it necessary to explore, evaluate and bring to light those efforts that, from a narrative/observational perspective, reflect on the multiple experiences and social practices around sustainable consumption. This paper, therefore, aims to provide an overview of emerging academic work on the personal and shared values/principles/drives of alternative food networks (AFNs)[1] participants and customers, focusing particularly on primary studies conducted through a qualitative or ethnographic methodology. Other literature reviews addressing values and agroecological consumption have been published in recent years (Verain et al., 2012, 2016; Aertsens et al., 2019; Aguirre-Sánchez et al., 2021; Testa et al., 2021); however, there is still a gap on qualitative evidence.

2 Framework for understanding sustainable food consumption

2.1 Values and social practice

In recent years, sustainability studies have shown a growing interest in *values,* seeing them as core conceptual elements to be discussed and incorporated into research and intervention design (Horlings, 2015). Global initiatives, such as the one by the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES, 2022), for example, have pointed out the need to integrate different world views and values around nature and sustainability, to inform development-related decision-making and environmental policies. However, they have also argued that potential conflicts over these values (either by categorization or by responding to different cultural or institutional interests) can hinder their use as a tool for change (Pascual et al., 2017).

So far, the wide range of disciplines and viewpoints involved in such conceptual interest has led to numerous outlooks and little theoretical consensus on the matter (Horcea-Milcu et al., 2019). The main differences across academic efforts lie in knowledge systems and their ways of perceiving and studying values in the first place. The

1 Here, the term *alternative food networks* (AFNs) is used in a wide sense to refer to multiple forms of organization between producers, consumers, and other actors that represent alternatives to the more industrialized, standardized method of food supply (Renting et al., 2003). Common examples of AFNs are Farmers' Markets (FMs), Producer Cooperatives (PCs), Community Gardens (CGs), Solidarity Purchasing Groups (SPGs), Community Supported Agriculture projects (CSAs), and exchange groups, among others (Savarese et al., 2020).

ontological distinction is based mostly on the range between realist positions (i.e., there is a self-existent social world, distinguishable, persistent and external to the observer) and relativist/constructivist ones (i.e., human phenomena are constructed by social actors as part of their dynamic interactions) (Kenter et al., 2019; Rawluk et al., 2019). Each paradigm also implies certain methods to empirically research values, going from generalizable quantitative modeling/testing to qualitative context-dependent explorations, respectively.

For the purpose of this work, this section will mostly focus on some definitions and ancillary perspectives from the sociological and anthropological traditions, in an attempt to present their main contributions and reflections while emphasizing (and advocating on) the richness of their small-scale, culture-bound, situated and relational approach.

Throughout the 20th century, sociologists such as Emile Durkheim, Max Weber, and Talcott Parsons began to be interested in the ideological and material forces behind the human experience. In his exploration of collective conscience, for example, Durkheim (1960) understood morals, norms, and shared beliefs as behavioral touchstones, analyzing their role in shaping and maintaining the social structure, as well as in producing its cohesion. Weber (1968), on his part, argued that social action is oriented around four dimensions: *instrumental* (means-ends rationality), *affective* (related to emotions), *traditional* (linked to customs and habituation) and *of-values* (as detached from individual benefit and linked to binding external demands or requirements); with none of them occupying a dominant position or existing disconnected from the others. Parsons (1951, 1989), was the first to focus primarily on the notion of values, understanding them as normative concepts—moral beliefs/cultural ideas—with the capacity to justify people's actions and promote social order. According to the author, values had such an important function in the collective organization that their study would produce a unified theory of human behavior (Spates, 1983). Alongside his colleague Edward Shils, Parsons also claimed that values linked themselves to others, creating systems of limited variability through patterned and consistent behavior (Parsons and Shils, 1951). This laid the foundations for later universalist approaches such as those of Milton Rokeach (1973) and Shalom Schwartz (1994), who—seeing values as guiding life principles that order the decision-making and assessment of acts—developed their respective models to identify and classify them by their goal or motivation.

In anthropology, however, the interest in values developed less explicitly or comprehensively, as part of broader research on cultural systems and without occupying a prominent place. Authors such as Kluckhohn (1951) and Firth (1953) were some exceptions, who remained conceptually close to their sociologist colleagues by sharing the idea that the organized study of values could provide a rich frame of reference for the analysis of social behavior and its meaning. Kluckhohn included in his definition the realms of the individual and the collective, understanding values as "conceptions of the desirable" (1951, p. 395), i.e., social indications or precepts capable of influencing the decisions of people. Firth (1953), on his side, was interested in the systematic operations through which values were manifested, as well as in their role in the classification of actions and things according to cognitive and emotional criteria. Both authors, however, stressed the need for empirical research to understand the connections between social categories of this kind; always keeping in mind the particularities of each context (Barth, 1993).

As values are "abstract qualities attaching to verbal statements" (Belshaw, 1959, p. 556), it is essential to bear in mind that they are rationalizations about events and, as such, can be purposely shaped to appeal to the surrounding moral "landscape." A person can justify their actions not only in reference to their genuine motives but in terms of what they believe their interlocutor expects and approves of. Such creations also involve researchers, who observe behaviors or listen to what subjects express and describe them in their own terms. This means that, without sufficient care, it is possible to take what is said too literally or end up deductively forcing categories—of mainstream academic thought/culture, and the social sciences themselves—into human practices. In this way, uncritical and unreflective research can end up adopting normative, prescriptive and even ethnocentric tendencies, which assume that concepts and classifications around values are exclusively rational, natural, and absolute (Heinich, 2006). Such risks are not only increased in the case of the more positivist or realist traditions within the social sciences but also in the proliferation of quantitative research protocols, which lose sight—either out of pragmatism or omission—of the contextual dimension of values (Heinich, 2010).

Because of its links to qualitative fieldwork, contemporary anthropology proposes a more inductive approach, in which the research project must be immersed in the language of the society under study and understand it as an active, changing reality. Authors such as Frederick Barth (1993), point out that most efforts on values focus on operational schemes of classification and cognition, linked to *a priori* terminology. However, according to him, not every action has a cognitively clear purpose, and the application of integrative or totalizing assumptions can lead to reductionist results (Barth, 1993). The hierarchy of values and people's priorities are simply not always clear or evident. It is therefore essential to pay attention to the effects these elements produce and to the shifts, reversals and twists that lie behind the processes of thought. Ultimately, rich information also unfolds in the inconsistency, the negotiations and discrepancies between acts and ideas, as well as in the discontinuities between people, spaces, and times. This anthropological feature is fairly expressed by Marcus and Fischer (1986, p. 167) when they state that:

> For some, advocacy or assertion of values against a particular social reality *is* the primary purpose of cultural critique. However, as ethnographers for whom human variety is a principal interest and any subjects are fair game, we are acutely sensitive to the ambivalence, irony and contradictions in which values, and the opportunities for their realization, find expression in the everyday life of diverse social contexts. Thus, the statement and assertion of values are not the aim of ethnographic cultural critique; rather, the empirical exploration of the historical and cultural conditions for the articulation and implementation of different values is.

In summary, this kind of approach entails conceiving values as notions inextricably tied to experience rather than as transferable abstract entities; and not just as driving forces that direct activities but also as creations that arise from practice (Graebner, 2013). In other words, ethnographic and anthropological reflection considers values as elements that could explain and precede social action, and simultaneously as units capable of being modified and renegotiated from the action itself.

For the study of food behavior and sustainable consumption, such a perspective on values can contribute to situated knowledge by

approaching the way in which different cultural groups or communities conceive their habits and associate them with certain symbolic concepts/beliefs. At the same time, it can provide information about the way in which action-related values appear in discourse and become embodied, whether they are uniform, conflicting, precede practice or emerge as a post-personal reflection of those involved (including scholars). The reflexive component of anthropological and ethnographic inquiry can also serve to deconstruct the researchers' network of premises, categories, and tacit givens, critically assessing their potential impact on the reconstruction and interpretation of social phenomena. Lastly, this approach can help delve into the political aspects of food systems and sustainability, examining through value expression the power relations, economic structures and social dynamics that impact food production, distribution, and consumption. It could also reveal how values related to sustainability intersect with broader systems of power and inequalities, and how these factors shape individual and collective choices around food.

2.2 Additional perspectives: social difference, gender, identity

One theoretical approach that can enhance our understanding of sustainable behavior is that of Pierre Bourdieu regarding social differentiation by means of consumption. For this purpose, it is relevant to explore some of his most emblematic concepts, such as *symbolic capital* and *distinction*.

According to Bourdieu (1986), the position of individuals within a social field is established by three types of capital: social, cultural, and economic. These elements, once legitimized, can be translated into symbolic capital or collective recognition. Social capital is the set of actual or potential resources/benefits that come from possessing a durable network of personal ties and contacts. Cultural capital is derived from education, socialization, and personal history, and is embodied in the form of knowledge, skills, taste, and forms of expression. It is largely related to the possibilities offered by one's social class and context, as well as to economic capital. The latter refers to easily measurable material and financial belongings or assets and could be considered a basis for the other forms of capital (Bourdieu, 2001).

Distinction, on the other hand, is the notion through which Bourdieu explores the link between lifestyle, taste, and consumption as demarcating elements within society (Jenkins, 2002; Jacobsen and Hansen, 2021). According to the author, the different forms of capital allow social groups to consume things (culture, art, goods, food) in a specific manner to their class position, building reproductive discourses about what is desirable, correct and expected for that environment/hierarchical level (Bourdieu, 1984). Through distinctive symbols and ways of being/doing in society, people communicate their status and aspirations, while negotiating possible modifications and mobilities. In terms of the topic of this research, the interplay between all these elements can provide great insight into alternative food network participation, while examining the circumstances in which different motivations and values are evoked and ranked.

Another fundamental approach to analyzing sustainable consumption is one that also considers its study from a relational and gender-sensitive perspective. Undoubtedly, food and food-related practices have a strong gendered component, as these are still commonly linked to pre-established social roles and unequal distributions of labor (Federici, 2012; Gracia Arnaiz, 2014). In contemporary societies, for example, women's domestic work often involves choosing, buying, storing, preparing, and distributing food to the family, which generates an additional burden on other reproductive responsibilities held by this group (Lopez Mato et al., 2022). Such reality is intersected by conditions of class, race, and sexuality that deepen the inequalities derived from the heteropatriarchal normative order.

For that reason, the study of food systems and their forms of organization must actively examine power dynamics and embedded hierarchies within them, with a view to questioning and making visible the unfair distribution of roles and tasks, the differences in decision-making processes and the symbolic constructions around it. It should also look into how certain notions—such as sustainability—are constructed and by whom, as well as what kind of social schemes they conceive/reproduce. For this, decolonial and critical feminist approaches are relevant, as they call for a revision of hegemonic imaginaries and practices.

Finally, a third perspective can be introduced to sustainability research, to explore through discourse, action, and material/cultural preferences the link between consumption and identity creation/maintenance. Specifically, it is of interest to study the way in which social contexts influence the notion of *self* (self-categorization and identification) and the ideological, aesthetic, moral, and differentiation principles that emerge from belonging to a defined group (Stets and Burke, 2000). For the organic consumer, for example, food choices may reflect particular values and motivations (individual expression, self-improvement, self-care) or expectations, norms and roles attached to a certain lifestyle or social movement (e.g., ecologic, green), for which it is essential to exercise precise practices (Costa Pinto et al., 2016). In Giddens (1991) terms, everyday acts and the choices linked to them (food, clothes, relations, thoughts) are not only decisions about how to *act* but also about who to *be*.

3 Methodological notes

The assessment, synthesis, and analysis presented in this document correspond with Noblit and Hare (1988) framework for meta-ethnography. This reviewing approach seeks to generate new insights and understandings by integrating and comparing findings from multiple sources (Lee et al., 2015). It is a way of conducting research that allows for the development of overarching interpretations while examining the relationships and connections between identified concepts or themes in the literature.

The interpretivist underpinning of meta-ethnography involves recognizing and highlighting the subjective meanings that individuals produce about their experiences. This entails a chain of interpretations that runs from the primary research participants (who depict their own universe), through the researchers (who reread those narratives in the field), to the meta-ethnographers (who translate those findings in a new direction). Such an approach can be complemented by a constructivist view, that shares the recognition of socially constructed knowledge while highlighting the influence of cultural, historical, and social factors in shaping people's understanding of the world (Soundy and Heneghan, 2022). In the specific case of this research, our interest lies not only in the identification of values linked to sustainable food consumption but more than anything else, in the way in which these

values are identified, elaborated, and characterized by participants and researchers, seeing the interplay between these categories and other aspects of social reality.

According to Soundy and Heneghan (2022), conducting a qualitative literature review from a constructivist paradigm supports the use of a purposive search strategy, aimed at finding and selecting information-rich documents for an appropriate in-depth analysis. In this sense, a limited but carefully retrieved sample size intends to fulfil the objectives of overviewing the knowledge base, critically re-examining it and developing new concepts through creative comparison of results (Campbell et al., 2011; Harsh, 2011; Snyder, 2019).

In the case of this study, the sampling was the product of a purposeful but comprehensive search in multiple databases, such as Web of Science (Social Science Citation Index), ProQuest Central, Scopus and Google Scholar, using the keywords: *values*, *Alternative/Sustainable Food Networks*, *Alternative/Sustainable/Organic food consumption*, *qualitative research* and *ethnography*. These terms were handled in combination, by adding the Boolean operators "AND" and "OR." The selection of publications was based on the following inclusion criteria: (a) peer-reviewed academic work that explicitly explores the role of *values*—as a symbolic category—in sustainable food consumption, (b) qualitative/ethnographic work as the methodology for data collection and text production, (c) documents published in English in the last 25 years. Titles and abstracts of the initially retrieved documents were scanned for relevance by the authors of this paper, followed by a full-text examination of the preliminary set. Additional manuscripts were also included through iterative "snowballing" techniques. The final selection of articles was appraised for methodological quality and depth of analysis on values through collaborative discussion, establishing an *ad hoc* classification of the findings.

4 Findings

The literature search and the selection/evaluation criteria determined the inclusion of 14 academic articles in the final review (see Table 1). Of those studies, 10 specified the use of ethnographic methodology (participant observation, semi-structured and in-depth interviews, document review, online fieldwork or *nethnography*), while the others employed qualitative or mixed approaches such as surveys and secondary source analysis. Cases were drawn from various regions of the world, including Western, Northern and Southern Europe, North America, Australasia, and the Middle East.[2] Studied experiences and populations included producers, sellers and consumers of Farmers' Markets, organic shops, community-supported agriculture projects, food collective organizations as well as related online forums and families involved in this form of consumption.

4.1 Conceptualization and mapping of values

Throughout the documents analyzed, the notion of *values* appears to a greater or lesser extent, without presenting a very concrete definition. In most cases, this conceptual category seems to refer to shared social/cultural schemes, which—in line with sociological and anthropological perspectives—frame or even motivate human action. In this sense, values appear in the accounts of research subjects and researchers to offer significance (a rationale, a logic) to alternative food practices. Among the selected authors, only one of them elaborates on terminologies by talking about "value ideals" (Kallio, 2020, p. 1096), as variable structures of meaning that are deployed and negotiated according to context and practice. She even suggests thinking of values as verbs rather than nouns, to imply that they are not something that simply *exists* (or is possessed/given), but something that is *done* continuously through social action (performative character).

In inspecting and translating the findings into each other, we identified and organized a series of themes, as shown in Figure 1. This schematic representation corresponds to the second-degree interpretation of the examined texts, by means of which we attempted to construct a "map" of the values that—according to the reviewed authors—appear within the AFNs. Therefore, this diagram classifies the values into subsets and connects the categories to each other, pointing out their links and emphasizing the previously mentioned idea of interconnectedness and interdependence (i.e., value system). The subsequent sections and the final discussion will attempt to unpack these operational categories, deepen their meaning, and contrast them with the proposed theoretical framework.

4.1.1 Ethical/moral values

A recurring category within the analyzed alternative food networks corresponds to ethical/moral values, particularly those linked to collective responsibility and sustainability. This last concept, rather widespread and polysemic in nature, appeared in the selected ethnographies generally linked to three domains: environmental sustainability, economic sustainability, and social sustainability.

Environmental or ecosystem preservation values are one of the major discursive topics shared by both users and organizers of the AFNs. On both sides of the chain, people involved express their concern for the ecological footprint of the current global food system (Feenstra, 2002; Parkins and Craig, 2009; Grasseni, 2014), and advocate the use of responsible techniques and practices that follow natural cycles, are resource-efficient and comply with indications for organic and cruelty-free production (O'Kane and Wijaya, 2015; Savarese et al., 2020). Authors like Makatouni (2002), Schösler et al. (2013), and Salam et al. (2022), even delve into the emotional/affective aspects of ecological sustainability by showing how consumers perceive organic food as a future investment—to preserve the planet for next generations and protect their children from the long-term effects of pesticides and synthetic chemicals—; and a form of identity expression—through activism or a "life philosophy" of awareness and conscious connection with the natural environment—.

2 The fact that most of the retrieved literature corresponds to places from the Global North could possibly be a result of the English-only inclusion criteria of this review, which was selected for pragmatic reasons in relation to time and resource constraints. Additionally, other thematic and conceptual priorities or social actors (e.g., *food sovereignty*, *fairtrade*, *peasant movements*, *indigenous initiatives*, and *land struggles*) could be more prominent in the literature from developing regions. Despite this, we are aware that there are plenty of academic efforts on sustainable food practices and regional food communities across the globe, and the interest in the extended use of the concept of values requires further exploration in the future.

TABLE 1 Data corpus of meta-ethnography.

No.	Author(s)	Publication year	Location	Studied practices/ population	Research methods	Values
1	Feenstra	2002	USA (California)	Community food projects	Qualitative. Case study (Open-ended interviews and document revision)	Ethical (*social and environmental justice/equality/democracy*); Personal (*health, care*)
2	Makatouni	2002	UK	Organic food buyers (parents with children)	Mixed (laddering interviews)	Personal (health); Ethical (*environmental and social sustainability*)
3	Alkon	2008	USA (San Francisco)	Farmers' market (Managers, vendors, consumers)	Ethnography (Participant observation, in-depth interviews, surveys)	Political (anti-corporate, anti-capitalism, anti-racist); Personal (*health*); Ethical (*social and environmental sustainability*)
4	Parkins and Craig	2009	International	Slow-food forum "Terra Madre" (creators), Farmers' market (consumers)	Qualitative (Interviews, online forum analysis, surveys, participant observation)	Ethical (*environmental and social sustainability, trust*); Political (anti-globalization); Personal (emotions and affects); Social (*community*)
5	Hall	2011	England	Consumption practices of families	Ethnography (Observations, interviews)	Personal (*health, care*)
6	Schösler, de Boer and Boersema	2013	Netherlands (Amsterdam, Groningen)	Organic food store clients; Slow food organization	Qualitative (in-depth interviews)	Personal (*health; emotions and affects*); Ethical (*environmental*); Material/Symbolic of Food (*purity, locally grown, authenticity*)
7	Grasseni	2014	Italy	Solidarity Purchase Groups	Ethnographic observation, survey	Personal (health); Ethical (*solidarity and environmental responsibility*)
8	O'Kane and Wijaya	2015	Australia (Canberra)	Farmers' markets (farmers)	Ethnographic (Observation, in-depth interviews, document analysis)	Ethical (*environmental and social sustainability*); Social (*community, Social Capital, Trust*); Material/ Symbolic of Food (*freshness, authenticity*)
9	Grosglik	2016	Israel	Organic food consumers	Ethnographic (Observation, in-depth interviews, document analysis)	Personal (Health); Social (Cultural Capital)
10	Gómez Mestres and Lien	2017	Spain (Catalonia) and Norway	Food producers and consumers' cooperative networks	Ethnography and secondary sources	Ethical (S*ocial sustainability, reciprocity*); Political (anti-globalization); Social (*commonality*)
11	Pétursson	2018	Iceland	Organic store (founders/ staff and consumers)	Ethnography (participant observation, in-depth interviews)	Ethical (*environmental and social sustainability*); Political; Social (*commonality, distinction, trust*); Personal (*care, emotions*); Material/ Symbolic of Food (*purity, authenticity*)
12	Kallio	2020	Finland	Food collective organizations (Founders, coordinators, members)	Ethnography (Participant observation, in-depth interviews, social media discussions)	Material/Symbolic of Food; Social (*community*)
13	Savarese, Chamberlain and Graffgna	2020	New Zealand	Community-supported agriculture projects (farmers and members)	Focused ethnography (in-depth interviews, observations)	Social (*community*); Political (*against industrialized production*); Ethical (*environmental sustainability*)
14	Salam, Mulye and Rahman	2022	International	Organic Food Forum (Facebook page of consumers)	Nethnography (review of online posts and comments)	Ethical (*environmental and social sustainability*); Political; Personal (*health*); Material/Symbolic of Food (taste)

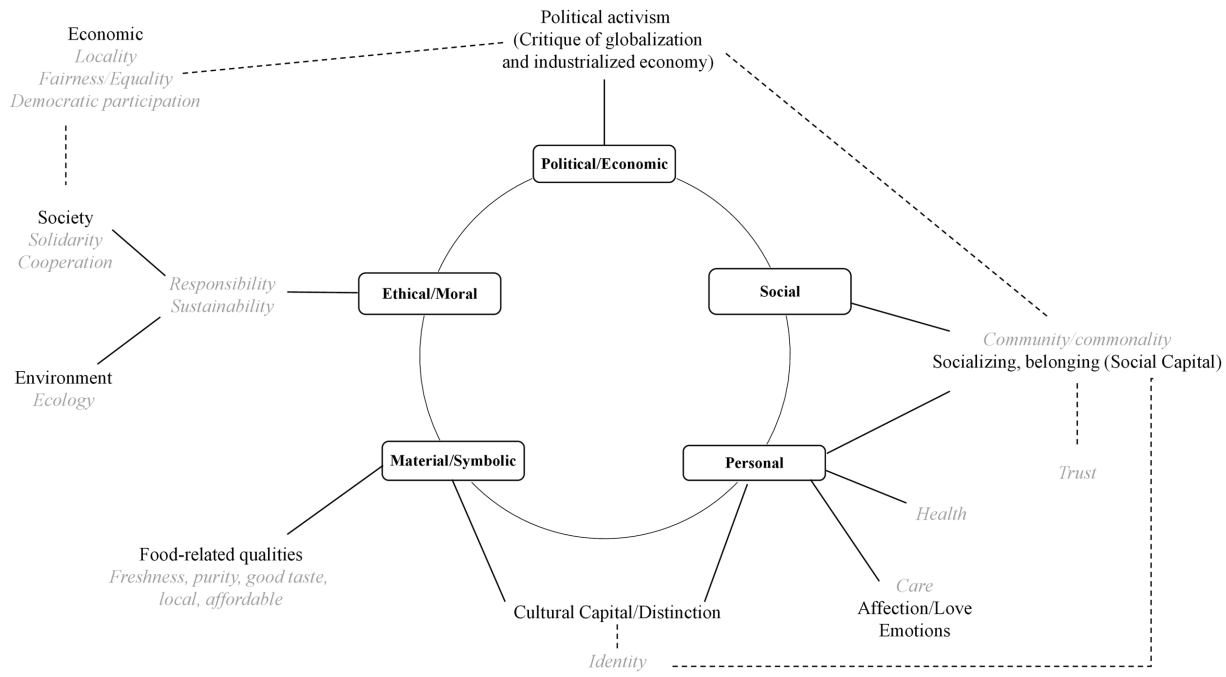

FIGURE 1
Meta-ethnography values scheme.

Meanwhile, the other two aspects of sustainability are closely linked, driven by principles of cooperation and social economy. On one side, promoters of alternative food consumption apply their environmental vision to the surrounding community context, encouraging and supporting a localized economy to favor small producers and entrepreneurs, who compete unfairly and unequally with large companies and distribution chains (Feenstra, 2002; Grasseni, 2014; Gómez Mestres and Lien, 2017). This is expressed in general narratives of *social change*, *social justice* (Alkon, 2008; Gómez Mestres and Lien, 2017), *fairness* (O'Kane and Wijaya, 2015) and *transparency* (Schösler et al., 2013); or in examples such as those of Alkon (2008), who analyses local production/consumption experiences in San Francisco as possibilities for equity and racial empowerment.

On the other hand, social motivations are also expressed in terms of building a sense of *neighborliness* and *mutuality*, through the mobilization of common efforts, by "taking care of each other," and through the principles of democracy, solidarity and redistribution, which seek to ensure that the benefits of a moral economy can also sustain community activities and organizations (Feenstra, 2002; Alkon, 2008; Grasseni, 2014; O'Kane and Wijaya, 2015; Gómez Mestres and Lien, 2017). In this sense—and based on what was postulated by Gibson-Graham (2003)—, Parkins and Craig (2009) speak of an *ethics of the local* and of daily life, which instead of simply representing an exacerbated or romanticized localism, recognizes the interconnected essence of the community and supports the need for affective and generosity ties within a specific place.

4.1.2 Political and economic drives

Linked to the previous elements, a new component appears in the retrieved scheme of values: one corresponding to the political-economic dimension of alternative food consumption. This usually encompasses criticism of the global productive system, as well as different tendencies of anti-capitalist, anti-corporatist, and anti-consumerist activism, that protest the homogenizing structures that endanger local food cultures and traditions.

Many authors identified explicit political motivations against the neoliberal system in the AFNs' organizers and participants, who condemned its constant search for monetary gain at the expense of social and environmental welfare (Alkon, 2008; Parkins and Craig, 2009; Savarese et al., 2020). Connectedly, some consumer sectors expressed their disapproval of the commercial expansion of genetically modified food, adding a health-related concern to their political stance (Grasseni, 2014; Pétursson, 2018). This translated, in certain cases, into a redefinition of alternative consumption spaces as *countercultural* places of active political participation and committed resistance against established power structures (Parkins and Craig, 2009; Gómez Mestres and Lien, 2017; Pétursson, 2018). In other cases, perhaps more moderate or without so much activist focus, the AFN partakers expressed their political intentions by claiming to carry out a morally responsible economic alternative, of a "more humane value framework" (Gómez Mestres and Lien, 2017, p. 629) and based on solidarity (Grasseni, 2014).

4.1.3 Socialization and commonality

Secondary analysis of the qualitative research identified a further set of values related to the social realm, specifically to the positive interactions that participating in AFNs can encompass. These findings highlight and elaborate on the atmosphere of conviviality and the deep social relations that emerge in unconventional spaces of food exchange. Such emphasis on socialization and on generating contexts of conscious interaction is contrasted with the anonymity and depersonalization of supermarkets, where the only purpose is the fast acquisition of goods (Pétursson, 2018). In contrast, for the surveyed

producers, organizers and consumers, the richness of the alternative experience is complemented by the "creation of community," and the consequent feeling of *belonging* to a special group of citizens and neighbors (Parkins and Craig, 2009; O'Kane and Wijaya, 2015; Pétursson, 2018). At the same time, these settings allow for the confluence of individuals from different backgrounds but similar mindsets, motivated by common interests, ideals, and values (Feenstra, 2002; Gómez Mestres and Lien, 2017; Kallio, 2020; Savarese et al., 2020).

The Social Capital of alternative food networks, then, becomes appreciated for its capacity to generate opportunities and projects (Feenstra, 2002), to provide spaces for knowledge exchange (O'Kane and Wijaya, 2015; Savarese et al., 2020) or long-term cooperation structures that go beyond the trading of food (Gómez Mestres and Lien, 2017). In this sense, some stakeholders refer to the importance of *trust* and *reciprocity* as core values, whether for carrying out fair economic transactions, distributing tasks, solving problems, ensuring the quality and safety of products, or even disseminating information about the health benefits of certain diets (Feenstra, 2002; O'Kane and Wijaya, 2015; Pétursson, 2018; Savarese et al., 2020).

4.1.4 Personal aspects

Despite the collective motivations and social values highlighted in the AFNs, there are several studies that also analyze underlying individualistic incentives and reflect on the personal reasons that lead people to opt for organic, local, or intermediary-free food.

The first subset within this section corresponds to the category of *health* and *wellbeing*, as a primary axis that sustains users in their practices and defines, according to Hall (2011), the corporeal nature of consumption. Following the ethnographic results, concern for health and disease prevention is one of the major determinants referred by consumers, shaping their food purchasing choices and often being put before other categories such as price, convenience, and sustainability (Makatouni, 2002; Hall, 2011; Grasseni, 2014; Grosglik, 2016; Pétursson, 2018). The weight of this value becomes so important that authors such as Makatouni (2002) and Hall (2011) analyze its adscription to the notions of *responsibility* and *moral action*: a commitment of consumers toward preserving themselves and their families from the dangers of a "bad" industrial diet (processed, impure, contaminated). In this sense, Schösler et al. (2013) suggest that food practices can even acquire religious or spiritual undertones, whether through the pursuit of a healthy, natural lifestyle or through disciplinary self-control against the temptations of mainstream consumerism. Therefore, the idea that "the body is a temple" resurfaces among different types of consumers and participants to explain their alternative food choices, reinforce a sense of duty, and justify the pre-eminence of selfish values (Salam et al., 2022).

Connected to the practices of health promotion and nutrition surveillance emerges a new subset of individual values, which are organized around the concept of *care* and the emotional responses that certain products elicit in consumers. Caring, a principle that is prominent in the domains of goodwill and social responsibility, is here expressed in people's attitudes toward themselves and family health, and in the voiced concerns—especially of parents—regarding food quality and safety for their children (Makatouni, 2002; Hall, 2011; Grosglik, 2016; Pétursson, 2018; Salam et al., 2022). Being vigilant about the origin/ingredients/production of the consumed goods displays a specific form of loving behavior and affective labor in the household (Hall, 2011; Pétursson, 2018). At the same time, the notion of *care* is employed to speak about the drive to protect/respect one's well-being and physical body by eating "clean" and green (Salam et al., 2022, p. 4877). In this sense, caring is an activity that displays both relational and personal benefits. On one hand, by taking care of others through organic food purchases, people ensure to safeguard the health and nutritional needs of those in their family. On the other hand, such caring behavior (toward the family or oneself) is accompanied by feelings of pride, self-fulfillment, and peer recognition (Pétursson, 2018).

Finally, the adoption of sustainable food practices and the pursuit of an alternative lifestyle can become elements of social distinction and self-enhancement for those who adopt them, especially in terms of possessing awareness and autonomy (Pétursson, 2018). Being an active part of local trade networks or purchasing products outside of extended supply chains implies separating from mainstream consumption in pursuit of other intangible benefits, transferring the moral values of collectivism and sustainability to all those involved. At the same time, prioritizing aspects such as health/self-care, demonstrating nutritional knowledge and expressing environmental consciousness through consumption represents a form of Cultural Capital, functional to the construction of certain contemporary cosmopolitan identities (Grosglik, 2016).

4.1.5 Material and symbolic values of food

The last subset within the map of values corresponds to the material and symbolic qualities that the participants of the alternative food networks attribute to the goods acquired there. Being able to obtain ingredients directly from farmers or with knowledge of their origin and production process (proximity, without additives or agrochemicals) is associated with notions of *naturalness*, *freshness*, *authenticity*, and *simplicity*, reinforced through sensory experiences (taste, smell, appearance), emotional responses (feeling better, with more energy) or the exercise of *trust* (in labels, in producers) (Parkins and Craig, 2009; O'Kane and Wijaya, 2015; Pétursson, 2018; Kallio, 2020).

Among all the concepts attributed to food, the notion of *purity* stands out, as examined in the ethnographies of Schösler et al. (2013), Pétursson (2018), and Kallio (2020), respectively. This idea is mainly used to characterize organic foods, which maintain an original "essence" when produced without significant alterations or interventions (chemicals, pesticides, or artificial fertilizers). Said essence is corroborated by the variety of shapes, colors, and textures of the products (e.g., vegetables), which differs from the uniform and consistent presentation of the supermarkets and regular stores. Purity, however, also poses a dual character, since—in addition to being a material value given to food—, it is an immaterial or symbolic value representing the *moral purity* of certain consumption choices (green, sustainable, healthy) and the search for a significant lifestyle, guided by modesty, sensitivity, and commitment to others (Schösler et al., 2013).

5 Discussion

Through the detailed analysis of qualitative research, we have been able to gain insight into the complexity of alternative consumption and, more specifically, into the multifaceted nature of the food

experience. Undoubtedly, food-related practices operate as a "vehicle" or mobilizing agent that enables a whole series of social and individual phenomena, which coexist and are negotiated in everyday choices regarding purchase, diet, locality, and people. Alongside the materiality of food—and its possibilities as consumable goods—we find political expressions, ideals about society, responsibilities (to the environment, the community, the family), ties and opportunities for the expression of moral values, personal drives, and identities. As Gómez Mestres and Lien (2017, p. 625) state, "food (…) is more than a commodity," for it unlocks a universe of culturally encoded (and non-necessarily nutritional) meanings (Barthes, 1994; Contreras and Gracia, 2005).

Ethical/moral discourses are a recurring element in contemporary cultural landscapes, in which increasingly high levels of political commitment are expected of consumer-citizens (Lewis and Potter, 2011). More and more frequently, we are urged to position on numerous matters through various operations ranging from participation in institutional spaces to marketplace activism (Jacobsen and Dulsrud, 2007; Echegaray, 2015). Hence, the acts of purchase, use and disposal of goods no longer denote just our origin, class, gender, or education, but also help us express our aspirational ideals about the world we want to inhabit and the people we want to be. This relates to the concept of "regimes of living" by Collier and Lakoff (2005, p. 22), where everyday experience is transformed into a constant ethical problematization of *how to live*, and moral reasoning is used to guide decisions and actions. Cultural practices of evaluation and validation—also known as *orders of worth* (Boltanski and Thévenot, 2006)— therefore define the shared vocabularies for good/bad, right/wrong, and desired/rejected that will be used to organize existence. In that sense, a moral rhetoric is used to produce, reproduce, and modify determined social orders, drawing the difference between "us" and "them," and establishing roles, obligations, and attitudes (Sassatelli, 2001, 2004; Dannenberg et al., 2012).

The revised ethnographic documents were consistent with the existing literature on the ethical values that alternative food embodies for those involved in it (Zanoli and Naspetti, 2001; Honkanen et al., 2006; Moisander, 2007; Baumann et al., 2017). Principles such as sustainability, equity, redistribution, environmental responsibility, democratic participation, and solidarity are referred to by users and creators of AFNs to describe the underlying philosophy of their consumption practices. The moral weight of these categories is expressed in a diverse range, that goes from concern—or willingness to get involved in causes that are important—to responsibility and a feeling of duty. Whatever the intensity of the narrative, it is noteworthy the way in which ordinary people take advantage of everyday events (such as buying and selling food) to give voice to criticisms about the dominant system, the conditions of the planet, or the social fabric. This necessarily entails a self-recognition of citizens as potential agents of change, capable of organizing collective structures to enhance their efforts. It will therefore remain to explore the degree of political engagement resulting from this acknowledgement and the available possibilities, both personal and structural, for exercising such agency.

From the perspective of ethical consumption, it should be emphasized that the relation between values and action is not merely one-sided and that social research in sustainability can provide further insights into the influence of context in moral development. As Hall (2011) stated in her work, it is relevant to focus on how a person's principles guide their conduct but also on how certain practices contribute to the forging of a value scheme. Contact with others, the circulation of ideas and identification with a group, can lead to the adoption of new consumption behaviors and the deployment of new goals and values associated with that (Lazaric et al., 2020). As Arce Salazar et al. (2013) state, social learning is fully present in consumption decisions, where through interaction with different social actors, people receive information and, consequently, revise their beliefs and preferences. This reinforces the already-mentioned idea that values are inseparable from experience (Graebner, 2013) and that viewing them only as *a priori* categories, preceding any human act, can result in reductionist interpretations of social reality.

Together with collective commitment, the reviewed documents also show how the moral aspects of consumption shift to the private sphere, where people assume an ethical responsibility of caring for themselves and their family members, and exercise it through gastronomic choices. The value of health is recognized in the related literature as a fundamental determinant of alternative food practices (Goetzke et al., 2014; Rahnama, 2017; Apaolaza et al., 2018; Kushwah et al., 2019), and was identified as one of the most prominent personal motivations in the selected ethnographies. Buying quality food (healthy, nutritious, safe) for the family diet is defined as an act of care and love toward children and partners, part of the moral obligations generated within the household.

Although the family is usually taken as the minimum unit in the analysis of consumption, it is relevant to highlight the clear gendered component in the distribution of this caring effort. As several authors have pointed out, despite some advancements in social structures and equality, the burden of moral labor remains unbalanced between men and women, leaving mostly mothers and wives in charge of domestic, care-related duties (Tronto, 1989; Friedman, 1995). Activities such as food evaluation, selection, procurement, and preparation, together with family health monitoring, management, and safeguarding, are typically female-led, and associated with an idea of *natural*, *maternal* disposition (Schafer and Schafer, 1989; Pezo Silva et al., 2004; Contreras and Gracia, 2005; Esteban, 2006). This gender aspect is not always recognized in the empirical research about AFNs, contributing to an already widespread invisibilization of women's unpaid labor and masking disparities in other areas of the organizational structures.

It is also worth remarking that the issue of care and ethics-based politics presents a double face or paradox when it comes to analyzing sustainable practices. On one hand, as pointed out by several ecofeminist authors, building social and environmental behaviors around caring relationships (i.e., sensitive, tender, affectionate—what could be considered a feminized ethics of care—) could be a possible solution to the selfish materialism and environmental degradation of (a male-centered) capitalism (Mies and Shiva, 1993; Davidson and Stratford, 2006; Nightingale, 2006). On the other hand, an uncritical reproduction of a care-related morality—based on hegemonic roles—perpetuates essentialist notions of gender and nature that are functional to structures of domination and unequal social orders. What appears as *caring*, *nurturing*, and *responsible* in the eyes of these schemes is accompanied by moral demands (i.e., "good wife," "good mother," "with feminine regard") that are deployed differentially across gender identities (Cairns et al., 2013).

According to Macgregor (2006), it is therefore problematic to reduce women's ethical-political lives to caregiving, because community/environmental participation requires more than just relationships of service and collaboration. At the same time,

maintaining reductionist views that put all women (and their potential for political activity) inside a unified category, without considering intersectional dimensions of experience based on class, ethnicity, age, religion, etc. into consideration, raises additional issues (Jackson, 1993). Social research on alternative consumption must therefore delve deeper into the position of women within these networks, as well as their role in environmental citizenship. At the same time, it is necessary to assess how moral rhetorics regarding family food are constructed and maintained (Goodman et al., 2010), and how they contribute (even inadvertently) to sustaining unequal care burdens through the persuasive power of a "maternal archetype" (Stearney, 1994). Finally, sociocultural critique can also be extended to the widespread use of the term "family" as a homogeneous organization, without delving into the multiplicity of experiences that such a category encompasses in modern societies. This compels academic efforts to consider role distribution not only as a gendered aspect but also in relation to other power dynamics within domestic (and extra-domestic) structures.

In relation to social values, multiple academic studies agree on consumers' interest in cultivating social relationships from their alternative purchase practices (Kingsley and Townsend, 2006; DesRivières et al., 2017; Zhao and Wise, 2019). The attributes emerging from the reviewed qualitative papers—commonality, association, trust—reflect AFN participants' aspiration for achieving new collective ties that could convert everyday economic transactions into relational (as well as material) rewards. In increasingly disconnected or isolating urban contexts, the search for proximity and belonging to a group of like-minded peers understandably becomes an attractive reason to approach this kind of projects (Frumkin, 2002; Zoll et al., 2018). Such purposive interactions and resulting local linkages address the social and emotional needs of those involved while enhancing well-being, strengthening the community fabric, and supporting the attachment to space. Parkins and Craig (2009, p. 90) refer to this as the "affective politics of food," which constitutes new ways of apprehending the world and transforming subjects and communities.

Processes of social differentiation and demarcation also arise from alternative food practices, community-building actions, and specific consumption groups. These aspects do not represent a major component within the overall value map but have been recognized in some of the ethnographic examples, and other scholarship, as relevant personal factors behind AFNs and organic food purchases (Costa et al., 2011; Johnston and Szabo, 2011; Elliott, 2013). This is generally noticeable in the narrative constructions about collective membership ("us" vs. "others"), and participants' self-perceptions as being different from mainstream culture (by caring for the environment, advocating for social justice or being conscious about the food given to children). Qualities attributed to the performed activities (sustainability, responsibility, commitment, solidarity, embeddedness) are therefore transferred to the people involved in them, as bearers of distinctive attributes with respect to other segments of the population.

In the case of local or organic food, for example, symbolic power is not only derived from the acquired goods but also from what is required to obtain them, involving a combination of cultural capital (knowledge, awareness), economic capital (as these products are generally more expensive than others) and social capital (links of participation and access). The time factor devoted to these projects, the degree of political involvement and the organization that this requires also contribute to strengthening the distinction value attainable in these cases. This can eventually lead to what authors such as Grosglik (2016, p. 735) call new expressions of "cultural cosmopolitanism," which correspond to fashionable tendencies that re-fetishize alternative goods to turn them into "ethical" or "local" merchandize. For others, the inclination toward sustainable consumption does not necessarily reflect a premeditated desire for status and display, but rather represents an expected response within certain social trajectories, specific to collective and individual histories (Elliott, 2013). In any of these scenarios, it is important to continue investigating the combination of personal/shared and conscious/unconscious motivations, to analyze their origin, their situated character, and the relationship that "green" consumption has with the social structure or the *habitus* of participants.

The topic of self-perception and group affiliation also raises the question about the processes of identity construction linked to consumption and the range of values involved between the individual and social dimensions of self. These aspects are constantly reinforced and negotiated through ideas, activities, discourses, and elections, which affirm to us and to others who we are (Giddens, 1991). Of course, the weight of material behavior on identity is not totalizing, since the shaping of it does not only respond to conscious decisions but to an interplay between contextual aspects, learning, structural possibilities, conventions, and routines (Warde, 1994; Wilska, 2002). However, it is of interest to see how alternative food practices and associated lifestyles are taken by people as expressions of themselves, and to what extent they attach identity meanings to their dietary choices. At the same time, it is essential to inquire into the circumstances that lead individuals to channel their identity needs into consumer culture, and to seek certain personal qualities—freedom, empowerment, contact with nature, social connection, responsibility—through commodities and participation (Soron, 2010). Social research should therefore continue to explore the interplay between distinction, green consumption, and identity, to strengthen the body of empirical knowledge on this topic and to discuss important questions about the conflict between collectively driven initiatives and the individualizing forces of the market (which, even in relation to sustainability still appeal to persons, not assemblies).

A final dimension that is worth highlighting within the data analysis relates to the inclusion of emotions/affects in the value system of the AFNs. Whether as a driving force to take care of others or as an emotional response derived from goods and the community, *sentimental value* appeared recurrently in several of the qualitative studies, showing a key component for participation and identification in sustainable initiatives. According to authors such as Murdoch and Miele (2004), Parkins and Craig (2009), Hall (2011), and Pétursson (2018), among others, participants load alternative food practices with affective-sentimental components, ranging from reminiscences of other times, sensory experiences, pleasure, love, joy, or appreciation for a "slow" temporality opposed to modern demands. This prompts us to pay more attention to a generally ignored element in the study of consumption motivations, that emerges as valuable in empirical, field-based research. Brosch and Steg (2021), even state that the question of sustainable commitment can lie in the emotional reactions elicited by certain experiences, as people look to repeat those situations or behaviors, they find positive or pleasing. Concurrently, emotions hold the capacity to form collectives, to connect individuals with others through the sharing of bodily and psychological

impressions (Ahmed, 2004). In this sense, we propose future explorations of this aspect in the framework of what Anderson and Smith (2001) or Davidson et al. (2016) call "emotional geographies," as points of intersection between embodied experiences of people and environments. This accounts for the articulation of the sensible realm with the pragmatic, situated one, to unveil the interactional aspect of "being," "feeling," and place (Davidson and Milligan, 2004). Additionally, it would be valuable to delve deeper into the junction between these affective landscapes and the previously mentioned ethical "regimes of living," to thoroughly inspect both the positive and negative outcomes of contact and dissociation between sentiment, morality, action and intention.

6 Final remarks

From what could be construed from the reviewed literature, value-based engagement in alternative food initiatives is a complex phenomenon that is far from being monocausal. Although ethical, political, social, personal, and material values have been operationally distinguished in the exploration of people's incentives, the evidence suggests that each of these categories exists in close correlation with the others and that both creators and participants of AFNs balance diverse, and even seemingly conflicting, principles (e.g., social vs. Altruistic motives).

The small number of ethnographic texts found during the process of data retrieval shows the need for further qualitative research on values behind sustainable consumption and AFNs, to access new levels of understanding of their socio-cultural and symbolic aspects. For example, additional enquiry is needed in relation to moral rhetorics, gender imbalances, social distinction, and emotions within these practices. In terms of geographical scope and breadth, it is also indispensable to direct our academic attention to the AFN initiatives and motivation-based experiences of other regions of the world apart from developed affluent ones. This calls for supplementary reflection on the differential values and value-construction processes of Eastern and Western societies, including the prescriptive/standardizing categories that emerge from the nuclear centers of knowledge production.

Overall, fieldwork-based and in-depth approaches such as ethnography can provide useful insights in relation to these topics while strengthening the contribution of disciplines such as anthropology and critical social sciences in food and sustainability studies. Moreover, this experiential and context-dependent focus can help avoid the risks of purely top-down and normative approaches in the development of interventions, informing prospective organizational initiatives, innovation programs, and policies from a culturally sensitive and reflective viewpoint. Other institutional areas that could benefit from qualitatively produced knowledge are those related to education, environment and public health, by providing them with useful information on communities' divergent priorities, conflicting meanings and internal power struggles that could be hampering planning and development efforts.

Author contributions

LM: Conceptualization, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing. T-MP: Conceptualization, Formal analysis, Methodology, Supervision, Writing – review & editing. M-GL: Conceptualization, Formal analysis, Investigation, Methodology, Supervision, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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References

Aertsens, J., Verbeke, W., Mondelaers, K., and Van Huylenbroeck, G. (2019). Personal determinants of organic food consumption: a review. *Br. Food J.* 111, 1140–1167. doi: 10.1108/00070700910992961

Aguirre-Sánchez, L., Roa-Díaz, Z., Gamba, M., Grisotto, G., Moreno, L. A., Mantilla-Uribe, B., et al. (2021). What influences the sustainable food consumption behaviours of university students? A systematic review. *Int. J. Public Health* 66:1604149. doi: 10.3389/ijph.2021.1604149

Ahmed, S. (2004). *The cultural politics of emotion*. New York: Routledge

Ajzen, I. (1991). The theory of planned behavior. *Organ. Behav. Hum. Decis. Process.* 50, 179–211. doi: 10.1016/0749-5978(91)90020-T

Alkon, A. H. (2008). From value to values: sustainable consumption at farmers markets. *Agric. Hum. Val.* 25, 487–498. doi: 10.1007/s10460-008-9136-y

Anderson, K., and Smith, S. J. (2001). Editorial: emotional geographies. *Trans. Inst. Br. Geogr.* 26, 7–10. doi: 10.1111/1475-5661.00002

Apaolaza, V., Hartmann, P., D'Souza, C., and López, C. M. (2018). Eat organic – feel good? The relationship between organic food consumption, health concern and subjective wellbeing. *Food Q. Pref.* 63, 51–62. doi: 10.1016/j.foodqual.2017.07.011

Arce Salazar, H., Oerlemans, L., and van Stroe-Biezen, S. (2013). Social influence on sustainable consumption: evidence from a behavioural experiment. *Int. J. Consu. Stud.* 37, 172–180. doi: 10.1111/j.1470-6431.2012.01110.x

Barth, F. (1993). "Are values real? The enigma of naturalism in the anthropological imputation of values" in *The origin of values*. eds. M. Hechter, L. Nadel and R. Michod (New York, NY: Aldine de Gruyter), 31–46.

Barthes, R. (1994) *The semiotic challenge*. Berkeley: University of California Press.

Baumann, S., Engman, A., Huddart-Kennedy, E., and Johnston, J. (2017). Organic vs. local: comparing individualist and collectivist motivations for "ethical" food consumption. *Can. Food Stud.* 4, 68–86. doi: 10.15353/cfs-rcea.v4i1.191

Belshaw, C. S. (1959). The identification of values in anthropology. *Am. J. Sociol.* 64, 555–562. doi: 10.1086/222588

Boltanski, L., and Thévenot, L. (2006) *On justification: economies of worth*. Princeton: Princeton University Press.

Bourdieu, P. (1984) *Distinction: a social critique of the judgement of taste*. Cambridge: Harvard University Press.

Bourdieu, P. (1986). "The forms of capital" in *Handbook of theory and research for the sociology of education*. ed. J. Richardson (New York, NY: Greenwood Press), 241–258.

Bourdieu, P. (2001) *Poder, derecho y clases sociales*. Bilbao: Desclée de Brouwer.

Brosch, T., and Steg, L. (2021). Leveraging emotion for sustainable action. *One Earth* 4, 1693–1703. doi: 10.1016/j.oneear.2021.11.006

Cairns, K., Johnston, J., and MacKendrick, N. (2013). Feeding the «organic child»: Mothering through ethical consumption. *J. Consum. Cult.* 13, 97–118. doi: 10.1177/1469540513480162

Campbell, R., Pound, P., Morgan, M., Daker-White, G., Britten, N., Pill, R., et al. (2011). Evaluating meta-ethnography: systematic analysis and synthesis of qualitative research. *Health Technol. Assess.* 15, 1–164. doi: 10.3310/hta15430

Campbell-Arvai, V., Arvai, J., and Kalof, L. (2014). Motivating sustainable food choices: the role of nudges, value orientation, and information provision. *Environ. Behav.* 46, 453–475. doi: 10.1177/0013916512469099

Collier, S., and Lakoff, A. (2005). "On regimes of living" in *Global assemblages: technology, politics, and ethics as anthropological problems*. eds. A. Ong and S. Collier (Oxford: Blackwell Publishing), 22–39.

Contreras, J., and Gracia, M. (2005) *Alimentación y cultura: perspectivas antropológicas*. Barcelona: Editorial Ariel.

Costa Pinto, D., Nique, W. M., Maurer Herter, M., and Borges, A. (2016). Green consumers and their identities: how identities change the motivation for green consumption. *Int. J. Consu. Stud.* 40, 742–753. doi: 10.1111/ijcs.12282

Costa, S., Zepeda, L., and Sirieix, L. (2011) Exploring the social value of organic food. 5th International Consumer Sciences Research Conference (ICSRC), Bonn, Germany, 18-20 July. Available at: https://hal.science/hal-01499049

Dannenberg, C. J., Hausman, B. L., Lawrence, H. Y., and Powell, K. M. (2012). The moral appeal of environmental discourses: the implication of ethical rhetorics. *Environ. Commun.* 6, 212–232. doi: 10.1080/17524032.2012.668856

Davidson, J., Bondi, L., and Smith, M. (eds) (2016) *Emotional geographies*. New York, NY: Routledge.

Davidson, J., and Milligan, C. (2004). Embodying emotion sensing space: introducing emotional geographies. *Soc. Cult. Geogr.* 5, 523–532. doi: 10.1080/1464936042000317677

Davidson, J. L., and Stratford, E. (2006) Economic globalization, sustainability, gender, and water. In Lahiri Dutt, K. (ed) *Fluid bonds: views on gender and water*. Calcutta: Stree Publishers, 29–47.

DesRivières, C. P., Chuenpagdee, R., and Mather, C. (2017). Reconnecting people, place, and nature: examining alternative food networks in Newfoundland's fisheries. *Agric. Food Secur.* 6:33. doi: 10.1186/s40066-017-0112-x

Durkheim, E. (1960) *The division of labour in society*. Glencoe: Free Press.

Echegaray, F. (2015). Voting at the marketplace. Political consumerism in Latin America. *Latin Am. Res. Rev.* 50, 176–199. doi: 10.1353/lar.2015.0032

Elliott, R. (2013). The taste for green: the possibilities and dynamics of status differentiation through "green" consumption. *Poetics* 41, 294–322. doi: 10.1016/j.poetic.2013.03.003

Esteban, M. L. (2006). El estudio de la salud y el género: las ventajas de un enfoque antropológico y feminista. *Salud Colectiva* 2, 9–20. doi: 10.18294/sc.2006.52

Federici, S. (2012) *Revolution at Point Zero. Housework, reproduction, and feminist struggle*. New York, NY: PM Press.

Feenstra, G. (2002). Creating space for sustainable food systems: lessons from the field. *Agric. Hum. Val.* 19, 99–106. doi: 10.1023/A:1016095421310

Firth, R. (1953). 231. The study of values by social anthropologists: the Marett Lecture, 1953. *Man* 53, 146–153. doi: 10.2307/2794180

Friedman, M. (1995) Beyond caring: the de-moralization of gender [1987]. In Held, V (ed.) *Justice and care: essential readings in feminist ethics*. Boulder: Westview Press 61–78.

Frumkin, H. (2002). Urban sprawl and public health. *Public Health Rep.* 117, 201–217. doi: 10.1093/phr/117.3.201

Giddens, A. (1991) *Modernity and Self-identity*. Stanford: Stanford University Press.

Gibson-Graham, J. K. (2003). An ethics of the local. *Rethinking Marxism, A Journal of Economics, Culture and Society*. 15, 49–74. doi: 10.1080/0893569032000063583

Goetzke, B., Nitzko, S., and Spiller, A. (2014). Consumption of organic and functional food. A matter of well-being and health? *Appetite* 77, 96–105. doi: 10.1016/j.appet.2014.02.012

Gómez Mestres, S., and Lien, M. E. (2017). Recovering food commons in post industrial europe: cooperation networks in organic food provisioning in Catalonia and Norway. *J. Agric. Environ. Ethics* 30, 625–643. doi: 10.1007/s10806-017-9691-6

Goodman, M. K., Maye, D., and Holloway, L. (2010). Ethical foodscapes? Premises, promises, and possibilities. *Environ. Plan.* 42, 1782–1796. doi: 10.1068/a43290

Gracia Arnaiz, M. (2014). Alimentacion, trabajo y género. De cocinas, cocineras y otras tareas domésticas. *Panor. Soc.* 19, 25–36.

Graebner, D. (2013). It is value that brings universes into being. *HAU* 3, 219–243. doi: 10.14318/hau3.2.012

Grasseni, C. (2014). Seeds of trust: Italy's Gruppi di acquisto solidale (solidarity purchase groups). *J. Polit. Ecol.* 21, 178–192. doi: 10.2458/v21i1.21131

Grosglik, R. (2016). Citizen-consumer revisited: the cultural meanings of organic food consumption in Israel. *J. Consum. Cult.* 17, 732–751. doi: 10.1177/1469540515623609

Hall, S. M. (2011). Exploring the "ethical everyday": an ethnography of the ethics of family consumption. *Geoforum* 42, 627–637. doi: 10.1016/j.geoforum.2011.06.009

Harsh, S. (2011). Purposeful sampling in qualitative research synthesis. *Qual. Res. J.* 11, 63–75. doi: 10.3316/QRJ1102063

Heinich, N. (2006). La sociologie à l'épreuve des valeurs. *Cahiers Int. Sociol.* 121, 287–315. doi: 10.3917/cis.121.0287

Heinich, N. (2010). Note sur les méthodes quantitatives en sociologie des valeurs. *Bull. Méthodol. Sociol.* 108, 5–13. doi: 10.1177/0759106310378467

Honkanen, P., Verplanken, B., and Olsen, S. O. (2006). Ethical values and motives driving organic food choice. *J. Consum. Behav.* 5, 420–430. doi: 10.1002/CB.190

Horcea-Milcu, A. I., Abson, D., Apetrei, C., Duse, I., Freeth, R., Riechers, M., et al. (2019). Values in transformational sustainability science: four perspectives for change. *Sustain. Sci.* 14, 1425–1437. doi: 10.1007/s11625-019-00656-1

Horlings, L. G. (2015). The inner dimension of sustainability: personal and cultural values. *Curr. Opin. Environ. Sustain.* 14, 163–169. doi: 10.1016/j.cosust.2015.06.006

IPBES (2022) in *Methodological assessment report on the diverse values and valuation of nature of the intergovernmental science-policy platform on biodiversity and ecosystem services*. eds. P. Balvanera, U. Pascual, M. Christie, B. Baptiste and D. González-Jiménez (Bonn: IPBES Secretariat)

Jackson, C. (1993). Doing what comes naturally? Women and environment in development. *World Dev.* 21, 1947–1963. doi: 10.1016/0305-750X(93)90068-K

Jacobsen, E., and Dulsrud, A. (2007). Will consumers save the world? The framing of political consumerism. *J. Agric. Environ. Ethics* 20, 469–482. doi: 10.1007/s10806-007-9043-z

Jacobsen, M. H., and Hansen, A. R. (2021). (Re)introducing embodied practical understanding to the sociology of sustainable consumption. *J. Consum. Cult.* 21, 747–763. doi: 10.1177/1469540519846213

Jenkins, R. (ed.) (2002) *Pierre Bourdieu*. London: Routledge.

Johnston, J., and Szabo, M. (2011). Reflexivity and the whole foods market consumer: the lived experience of shopping for change. *Agric. Hum. Val.* 28, 303–319. doi: 10.1007/s10460-010-9283-9

Kallio, G. (2020). A carrot isn't a carrot isn't a carrot: tracing value in alternative practices of food exchange. *Agric. Hum. Val.* 37, 1095–1109. doi: 10.1007/s10460-020-10113

Kenter, J., Raymond, C., van Riper, C., Azzopardi, E., Brear, M., Calcagni, F., et al. (2019). Loving the mess: navigating diversity and conflict in social values for sustainability. *Sustain. Sci.* 14, 1439–1461. doi: 10.1007/s11625-019-00726-4

Kingsley, J., and Townsend, M. (2006). 'Dig in' to social capital: community gardens as mechanisms for growing urban social connectedness. *Urb. Policy Res.* 24, 525–537. doi: 10.1080/08111140601035200

Kluckhohn, C. (1951). "Values and value orientations in the theory of action. An exploration in definition and classification" in *Toward a general theory of action*. eds. T. Parsons and E. Shils (Cambridge: Harvard University Press), 388–464.

Kushwah, S., Dhir, A., Sagar, M., and Gupta, B. (2019). Determinants of organic food consumption. A systematic literature review on motives and barriers. *Appetite* 143:104402. doi: 10.1016/j.appet.2019.104402

Lazaric, N., Le Guel, F., Belin, J., Oltra, V., Lavaud, S., and Douai, A. (2020). Determinants of sustainable consumption in France: the importance of social influence and environmental values. *J. Evol. Econ.* 30, 1337–1366. doi: 10.1007/s00191-019-00654-7

Le, M. H., and Nguyen, P. M. (2022). Integrating the theory of planned behavior and the norm activation model to investigate organic food purchase intention: evidence from Vietnam. *Sustainability* 14:816. doi: 10.3390/su14020816

Lee, R. P., Hart, R. I., Watson, R. M., and Rapley, T. (2015). Qualitative synthesis in practice: some pragmatics of meta-ethnography. *Qual. Res.* 15, 334–350. doi: 10.1177/1468794114524221

Lewis, T., and Potter, E. (eds.) (2011) *Ethical consumption: a critical introduction*. London: Routledge.

Lopez Mato, M., Acerbo, F. Y., and Lema, R. (2022). Roles de género en la distribución de tareas domésticas vinculadas a la alimentación. *Rev. Salud Públ.* 27, 88–103.

Macgregor, S. (2006) *Beyond mothering earth: ecological citizenship and the politics of care*. Vancouver: UBC Press.

Makatouni, A. (2002). What motivates consumers to buy organic food in the UK? Results from a qualitative study. *Br. Food J.* 104, 345–352. doi: 10.1108/00070700210425769

Marcus, G., and Fischer, M. (1986) *Anthropology as cultural critique. An experimental moment in the history of social sciences*. Chicago: University of Chicago Press.

Michie, S., van Stralen, M., and West, R. (2011). The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implement. Sci.* 6. doi: 10.1186/1748-5908-6-42

Mies, M., and Shiva, V. (1993) *Ecofeminism*. London: Zed Books.

Moisander, J. (2007). Motivational complexity of green consumerism. *Int. J. Consu. Stud.* 31, 404–409. doi: 10.1111/J.1470-6431.2007.00586.X

Moraes, C., Carrigan, M., and Szmigin, I. (2012). The coherence of inconsistencies: attitude–behaviour gaps and new consumption communities. *J. Market. Manag.* 28, 103–128. doi: 10.1080/0267257X.2011.615482

Murdoch, J., and Miele, M. (2004). "A new aesthetic of food? Relational reflexivity in the 'alternative' food movement" in *Qualities of food*. eds. M. Harvey, A. McMeekin and A. Warde (Manchester: Manchester University Press), 156–175.

Murphy, F., and McDonagh, P. (Eds.) (2016). *Envisioning sustainabilities: towards an anthropology of sustainability*. Cambridge: Cambridge Scholars Publishing.

Nightingale, A. (2006). The nature of gender: work, gender, and environment. *Environ. Plan. D* 24, 165–185. doi: 10.1068/d01k

Noblit, G. W., and Hare, R. D. (1988) *Meta-ethnography: synthesizing qualitative studies*. Newbury Park: SAGE.

O'Kane, G., and Wijaya, S. Y. (2015). Contribution of farmers' markets to more socially sustainable food systems: A pilot study of a farmers' market in the Australian capital territory (ACT), Australia. *Agroecol. Sustain. Food Syst.* 39, 1124–1153. doi: 10.1080/21683565.2015.1081858

Parkins, W., and Craig, G. (2009). Culture and the politics of alternative food networks. *Food Cult. Soc.* 12, 77–103. doi: 10.2752/155280109X368679

Parsons, T. (1951) *The social system*. New York, NY: The Free Press.

Parsons, T. (1989). A tentative outline of American values. *Theory Cult. Soc.* 6, 577–612. doi: 10.1177/026327689006004004

Parsons, T., and Shils, E. (1951) *Toward a general theory of action*. Cambridge: Harvard University Press.

Pascual, U., Balvanera, P., Díaz, S., Pataki, G., Roth, E., Stenseke, M., et al. (2017). Valuing nature's contributions to people: the IPBES approach. *Curr. Opin. Environ. Sustain.* 26–27, 7–16. doi: 10.1016/j.cosust.2016.12.006

Pasick, R. J., Burke, N. J., Barker, J. C., Joseph, G., Bird, J. A., Otero-Sabogal, R., et al. (2009). Behavioral theory in a diverse society: like a compass on Mars. *Health Educ. Beha.* 36, 11S–35S. doi: 10.1177/1090198109338917

Pétursson, J. (2018). Organic intimacy: emotional practices at an organic store. *Agric. Hum. Val.* 35, 581–594. doi: 10.1007/s10460-018-9851-y

Pezo Silva, M. C., de Souza Praça, N., and Costa Stefanelli, M. (2004). La mujer responsable de la salud de la familia: Constatando la universalidad cultural del cuidado. *Index Enfer.* 13, 13–17. doi: 10.4321/S1132-12962004000200003

Rahnama, H. (2017). Effect of consumption values on women's choice behavior toward organic foods: the case of organic yogurt in Iran. *J. Food Prod. Market.* 23, 144–166. doi: 10.1080/10454446.2017.1244790

Ran, Y., Nilsson Lewis, A., Dawkins, E., Grah, R., Vanhuyse, F., Engström, E., et al. (2022). Information as an enabler of sustainable food choices: a behavioural approach to understanding consumer decision-making. *Sustain. Prod. Consumpt.* 31, 642–656. doi: 10.1016/j.spc.2022.03.026

Rawluk, A., Ford, R., Anderson, N., and Williams, K. (2019). Exploring multiple dimensions of values and valuing: a conceptual framework for mapping and translating values for social-ecological research and practice. *Sustain. Sci.* 14, 1187–1200. doi: 10.1007/s11625-018-0639-1

Renting, H., Marsden, T. K., and Banks, J. (2003). Understanding alternative food networks: exploring the role of short food supply chains in rural development. *Environ. Plan.* 35, 393–411. doi: 10.1068/a3510

Rokeach, M. (1973) *The nature of human values*. New York, NY: The Free Press.

Salam, A., Mulye, R., and Rahman, K. (2022). Eating for the soul: a netnographic study of the ethical motives for organic food consumption. *Br. Food J.* 124, 4868–4887. doi: 10.1108/BFJ-07-2021-0833

Sassatelli, R. (2001). "Tamed hedonism: choice, desires and deviant pleasures" in *Ordinary consumption*. eds. A. Warde and J. Gronow (London: Routledge), 93–106.

Sassatelli, R. (2004). "The political morality of food: discourses, contestation and alternative consumption" in *Qualities of food*. eds. M. Harvey, A. McMeekin and A. Warde (Manchester: Manchester University Press), 176–191.

Savarese, M., Chamberlain, K., and Graffgna, G. (2020). Co-creating value in sustainable and alternative food networks: the case of community supported agriculture in New Zealand. *Sustainability* 12:1252. doi: 10.3390/SU12031252

Schafer, R. B., and Schafer, E. (1989). Relationship between gender and food roles in the family. *J. Nutr. Educ.* 21, 119–126. doi: 10.1016/S0022-3182(89)80094-9

Schösler, H., de Boer, J., and Boersema, J. (2013). the organic food philosophy: a qualitative exploration of the practices, values, and beliefs of Dutch organic consumers within a cultural-historical frame. *J. Agric. Environ. Ethics* 26, 439–460. doi: 10.1007/s10806-012-9392-0

Schwartz, S. H. (1977). Normative Influences on Altruism. *Adv. Exp. Soc. Psychol.* 10, 221–279. doi: 10.1016/S0065-2601(08)60358-5

Schwartz, S. H. (1994). "Beyond individualism/collectivism. New cultural dimensions of values" in *Individualism and collectivism: theory, method, and applications*. eds. U. Kim, H. Triandis, Ç. Kâğitçibaşi, S. Choi and G. Yoon (Thousand Oaks, CA: Sage Publications), 85–119.

Snyder, H. (2019). Literature review as a research methodology: an overview and guidelines. *J. Bus. Res.* 104, 333–339. doi: 10.1016/j.jbusres.2019.07.039

Soron, D. (2010). Sustainability, self-identity and the sociology of consumption. *Sustain. Dev.* 18, 172–181. doi: 10.1002/SD.457

Soundy, A., and Heneghan, N. R. (2022). Meta-ethnography. *Int. Rev. Sport Exer. Psychol.* 15, 266–286. doi: 10.1080/1750984X.2021.1966822

Spates, J. (1983). The sociology of values. *Annu. Rev. Sociol.* 9, 27–49. doi: 10.1146/annurev.so.09.080183.000331

Stearney, L. M. (1994). Feminism, ecofeminism, and the maternal archetype: motherhood as a feminine universal. *Commun. Q.* 42, 145–159. doi: 10.1080/01463379409369923

Stern, P. C. (2000). Toward a coherent theory of environmentally significant behavior. *J. Soc. Issues* 56, 407–424. doi: 10.1111/0022-4537.00175

Stets, J. E., and Burke, P. J. (2000). Identity theory and social identity theory. *Soc. Psychol. Q.* 63, 224–237. doi: 10.2307/2695870

Sutton, S. (1998). Predicting and explaining intentions and behavior: how well are we doing? *J. Appl. Soc. Psychol.* 28, 1317–1338. doi: 10.1111/j.1559-1816.1998.tb01679.x

Testa, F., Pretner, G., Iovino, R., Bianchi, G., Tessitore, S., and Iraldo, F. (2021). Drivers to green consumption: a systematic review. *Environ. Dev. Sustain.* 23, 4826–4880. doi: 10.1007/s10668-020-00844-5

Tronto, J. C. (1989). "Women and Caring: what can feminists learn about morality from caring" in *Gender/body/knowledge: feminist reconstruction of being and knowing*. eds. A. M. Jaggar and S. R. Bordo (New Brunswick: Rutgers University Press), 172–187.

Verain, M. C. D., Bartels, J., Dagevos, H., Sijtsema, S. J., Onwezen, M. C., and Antonides, G. (2012). Segments of sustainable food consumers: a literature review. *Int. J. Consu. Stud.* 36, 123–132. doi: 10.1111/j.1470-6431.2011.01082.x

Verain, M. C. D., Onwezen, M. C., Sijtsema, S. J., and Dagevos, H. (2016). The added value of sustainability motivations in understanding sustainable food choices. *Appl. Stud. Agribus. Comm.* 10, 67–76. doi: 10.19041/apstract/2016/2-3/8

Vermeir, I., and Verbeke, W. (2008). Sustainable food consumption among young adults in Belgium: theory of planned behaviour and the role of confidence and values. *Ecol. Econ.* 64, 542–553. doi: 10.1016/j.ecolecon.2007.03.007

Warde, A. (1994). Consumption, identity-formation and uncertainty. *Sociology* 28, 877–898. doi: 10.1177/0038038594028004005

Weber, M. (1968) *Economy and society: an outline of interpretive sociology*. New York, NY: Bedminster Press.

Wilska, T. (2002). Me—a consumer? Consumption, identities and lifestyles in Today's Finland. *Acta Sociol.* 45, 195–210. doi: 10.1080/00016990260257184

Zanoli, R., and Naspetti, S. (2001) Values and ethics in organic food consumption. 3rd EurSafe Congress on: "Food Safety, Food Quality and Food Ethics", Florence, Italy, 3–5 October.

Zhao, Y., and Wise, N. (2019). Evaluating the intersection between "green events" and sense of community at Liverpool's Lark Lane Farmers Market. *J. Comm. Psychol.* 47, 1118–1130. doi: 10.1002/jcop.22177

Zoll, F., Specht, K., Opitz, I., Siebert, R., Piorr, A., and Zasada, I. (2018). Individual choice or collective action? Exploring consumer motives for participating in alternative food networks. *Int. J. Consu. Stud.* 42, 101–110. doi: 10.1111/ijcs.12405

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Territory in urban food policies: the case of Spain

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Over the last few decades, cities have taken on an active role in the formulation of food policies in line with the transition toward local, sustainable food systems. These policies have been materialized through the formulation of systemic, holistic urban food strategies. By setting up spatial, relational and organizational proximity circuits, they aim to reconnect the places involved in the production and consumption of food within the territory. The objective is to do so by interaction between the networks of actors on the different geographical scales. This article analyzes the food policies of six Spanish cities that signed the Milan Urban Food Policy Pact. Barcelona, Madrid, Valencia, Vitoria, Valladolid and Zaragoza have fulfilled their promise by formulating food strategies that set out their commitment to the construction of new, urban food systems that reconsider, from a territorial perspective, the relationship between the city and food. Using a conceptual framework that spans two well-known theoretical systems (the local territorial systems (LoTS) and the sustainable food networks (SFN)); a systematic review of the documents generated in the formulation of the urban food policies is carried out. The territorial capital linked to food is examined; the systems of actors that make up the food strategies are identified; the models of governance that the said strategies deploy and their capacity for self-organization are typified; and the potential of the public agendas for encouraging the construction of localized alternatives and the territorial sustainability of the urban food systems are evaluated. The results suggest that the Spanish urban food strategies, although conceptually inspired by the principles of the Milan Pact, are still far from possessing similarly transformative capacities. Such capacities are directly linked to the characteristics of the place: the existence of relational goods connected to food, the attributes of the territorial food capital, the density of the social capital, and the culture of the territorial planning. Beyond the generic references to the commitment to food, it is the context that determines its personality and reach, the solidity of the food governance, and the political sustainability of the processes that one wishes to set up.

KEYWORDS

urban food policies, territorial food capital, food governance, social capital, territorial sustainability

1 Introduction

The change in environmental thinking that urban policies have undergone over the last few decades (Local Agenda 21, municipal environmental education strategies, local policies for mitigating climate change, municipal biodiversity plans, etc.) also include food, or rather, extend to interventions in the urban food chain systems. Without abandoning the social dimension (food safety), urban policies since 1990 have been

considering how to produce, access, consume and dispose of food; while also discussing how to intervene in each of these aspects (Mansfield and Mendes, 2013). The first municipal experiences incorporating this change of attitude were developed in Toronto (Canada) and Belo Horizonte (Brazil) in 1991 and in San Francisco (United States) in 1993. From then on, little by little, the change spread to other parts of the world. In Europe, food incorporated new dimensions related to the extension and promotion of urban and periurban agriculture; the development of alternative ways to access sustainable, healthy food; and the creation of a new territorial meaning for urban food systems (Mansfield and Mendes, 2013; Doernberg et al., 2019).

The depth of the formulation and development of urban food policies is diverse: partial or systematic and holistic approaches to the operational dimensions of urban food systems; isolated actions; singular projects of a demonstrative nature; or ordered, hierarchical and scheduled deployment. The most complex procedure for formalizing urban food policies is that of food strategies. Mansfield and Mendes (2013) define them as an official plan or road map that allows municipal authorities to integrate all the dimensions of urban food systems into a single administrative, political framework that includes food production (normally through references to urban agriculture), its processing, distribution and access, as well as the management of food waste (Mansfield and Mendes, 2013). At the same time, the strategies facilitate interaction between different urban policies, propitiate the appearance and integration of new ideas and allow needs that have gone undetected until that moment to be recognized. The strategies are therefore systematic political tools for connecting the various aspects of food and agriculture to other urban policies on a local scale: nutrition, health, economy, innovation, education, participation, social affairs, youth, urban planning, etc. (Doernberg et al., 2019).

Their holistic nature converts urban food strategies into a highly interesting object of study. By their very nature, we can recognize in them each city's conceptual approach to the major aspects concerning food and urban food systems, the extent of the agents involved in their elaboration, and the meaning and intentions of the political-administrative responses that each city council unfolds. At the same time, it is also reasonable to think that the properties of these three spheres (concepts, agents and responses) are influenced by the characteristics of the place and by the spaces created during the development of each strategy.

On the other hand, the comparative study of the urban food policies has been taken on by numerous works of research, whose main objective was to identify common traits from the perspective of transferable practices (Mansfield and Mendes, 2013; Sonnino and Spayde, 2014; Calori and Magarini, 2015; Sonnino, 2016). Very interesting contributions have come from the comparative analyses of the food strategies of the cities of North America and their potential for amplifying national efforts through the implementation of the Agenda 2030 and the SDG (Ilieva, 2017). Also worth noting are the similarities in terms of objectives and tools, the variations in the profile of the decisions taken by the local legislators of the cities that signed the Milan Pact when designing the said strategies (Candel, 2020), and the limitations in the capacity for integrating the challenges posed by the food system into urban policies, as well as the contrast between coercive and informative tools in the cities of The Netherlands (Sibbing et al., 2021) and Germany (Doernberg et al., 2019), or the role of the evaluations that direct the food planning and policy processes, based on the experiences of cities in North America and Europe (Coppo et al., 2017).

As for Spanish cities, the contributions to the food agenda worth noting reveal a bias toward the economic and productive aspects, as opposed to those of a greater social and ecological relevance; as well as for the identification of the spheres of significant governance that transcend the merely local scale and develop the food policies' potential for sustainability (López et al., 2018; López-García et al., 2020).

Nevertheless, one of the aspects that still remain partially unexplored in research is the capacity of these policies to promote the reconnection of the different components of the food system, considering all the elements that make up and define the territory. In this sense, it is important to remember that the concept of territorialization is closely associated to the food networks which aim to connect the places of production and consumption, as well as rebuilding the connection between rural and urban areas. These networks articulate new ways to coordinate the actors that participate in a close geographical area and aim to encourage a fair distribution of the economic value of the exchanges that take place within the food chain (Sonnino and Marsden, 2006; Feagan, 2007; Goodman et al., 2014; Mundler and Laughrea, 2016; Sanz-Cañada and Muchnik, 2016; Barbera et al., 2018; Carbone, 2018).

The notion of proximity is multidimensional and constitutes the foundation upon which the organization and functioning of these networks rests, irrespective of whether physical, relational or organizational proximity is being considered (Renting et al., 2003; Winter, 2003; Maye et al., 2007; Wiskerke, 2009; Praley et al., 2014; Dubois, 2018; Kallio, 2020; Safonte et al., 2021). On the other hand, the capitalist agro-industrial system is characterized by the territorial disconnection of a globalized value chain and is not based on location. In contrast with this paradigm, the practices of the alternative food geographies can be seen as a process of relocating the food system on the basis of reconstructing the relationships of proximity between the territorial actors. Thus, multidimensional proximity is a fruitful interpretative category for analyzing food systems from a geographical point of view. From this perspective, we refer to focusing on the local territorial systems (LoTS), which consider each place as a dynamic system of specific organizational, cognitive and relational territorial resources (Dematteis and Governa, 2005). In general, what this focus aims to highlight is that the local development associated with food is a territorial and not a sectorial phenomenon; one which is derived from acknowledging that the diverse components of the food system are connected by a space and that their transversality and integration are sources of new development (Tecco et al., 2017; Dansero and Pettenati, 2018).

As pointed out by Dematteis and Governa (2005), p. 39 the territory of the local system is a construction that is realized as a result of the collective actions of the agents concerning the materiality of the places; is rooted in the past in terms of values, knowledge, institutions, and behavior; while also anchoring the development processes to the territory. The interaction between agents and places (actors and territory) is built up through a complex process that involves diverse concepts: one of an administrative nature (the territory as a space of competencies); another linked to the natural sense of belonging inherent in places (the territory as heritage or inheritance from the past); and a third which is a constructivist concept of the territory, a

social construct that creates the local identity with respect to the collective actions of the agents (the project-territory).

This interaction is studied in order to find the presence of prior conditions in the form of territorial capital that favors the construction of a local food system. This construction is not a process that can be reproduced in any context or under any conditions whatsoever; it can, however, find fertile ground for mobilizing the local network of actors; identify the potentials and limitations; and define a path through often conflicting, sometimes convergent, interests, but ones that are really present in a particular territory (Camagni, 2008; Camagni and Capello, 2013; Dansero and Pettenati, 2018).

The territory occupies center stage, since the capacity of the actors to mobilize resources in the interests of a process of change depends upon it. Thus, the history and background of the territories play a crucial role (Alberio and Moralli, 2021). In this sense, the presence and active role in bringing together public and private subjects that have produced transformative projects aimed at achieving an environmentally sustainable food model is a clue toward tracing a first geography of the territorial action that, together with the interventions of governance, constitute an indication of the capacity for local self-organization.

In addition to environmental sustainability, it is also necessary to consider the reproduction of all the components of the territorial capital, within which political sustainability acquires particular relevance (Magnaghi, 2000). The inclusive capacity of the diverse actors in the decision-making, the territorial system's degree of autonomy from the competence and financial points of view, as well as the capacity for self-organization on a local level and coordination on a supra-local level, will condition the system's political sustainability (Dematteis and Governa, 2005).

Urban food policies possess an undeniable territorial dimension linked to the very nature of the object upon which they intervene and with the spatial categories to which they have recourse. Local and nearby are notions upon which the paradigm of sustainable food is built (Fenstra, 1997; Born and Purcell, 2006; Feagan, 2007; Dansero and Pettenati, 2018); while different scales and diverse ways of understanding space converge when thinking about food and nutrition. As for nutrition, there are scales of minimums related to the physical and social fact, as well as others with a wider range of characteristics from the spheres in which the production, distribution and consumption of food take place (Tecco et al., 2017). At the same time, the properties of the food space can be understood as the distance covered by the food from its place of production to its place of consumption (Mundier and Rumpus, 2012; Timpanaro et al., 2018); as the direction and intensity of the flow of material and energy that is activated by food (Hedberg, 2020); as the area of supply from which food is obtained (Peters et al., 2009; Galzki et al., 2017; Zasada et al., 2019; Miller and Mann, 2020); or as the sphere bounded by the relations that coalesce around the food systems (Goodman, 2015; Blay-Palmer et al., 2018).

If food strategies constitute the greatest degree of formalization of urban food policies, it would seem pertinent to analyze how they transform such spatial notions as local and nearby into useful spatial categories for understanding the urban food systems and the political and administrative intervention in each of the analyzed cities (Table 1). Harvey (2006) proposed categorizing the nature of the space in three dimensions: absolute, relative and relational. The first is that of the bounded space which, among others, defines the territorial nature of the administration and sets boundaries to the spheres in which it can intervene. The second, that of the relative space, is formulated with respect to the fact that it is being relativized and who is observing it; while the third, the relational, is that category in which the space only exists within those processes that define it. Following the proposal of Tecco et al. (2017), although it suggests new, useful pairings for the territorial understanding of food strategies; we believe that its absolute dimension is to be found in the territory upon which they legally operate. The relative aspect can be found in the diverse geometries involved in the definition of the possible food catchment areas of the studied cities; while the relational aspect is encouraged by the reference system and links upon which the relocation of the urban food system is built. In other words, the first is the perfectly defined normative space for administrative intervention and is therefore subject to how efficient its execution is; the second corresponds to that in which, from the sustainable food point of view, a dynamic flow of food supply is established; while the third and last is the spatial framework created by the very fact of the food itself.

TABLE 1 Analytical framework (source: authors).

Properties of the food space
Territorial capital linked to food
- Natural capital and agricultural heritage - Accumulated capital
- Social capital and capacity for local self-organization
Territorial sustainability
- Territorial capital for food production
- Short marketing channels, proximity networks and relational capital
Political sustainability
- Tools of food governance

Based upon this theoretical framework, which looks at the food system in its territorial dimension, our hypothesis is that an accurate identification of the urban territorial capital and an adequate definition of the territorial sustainability mechanisms would provide consistency to food strategies. The objective of this article is to analyze the strategies of Spanish cities when applying a conceptual framework that straddles two recognized theoretical systems (LoTS and SFN) as the lens through which to see the interpretation of the different focuses and the significance of the public policies in contributing to the recent debates concerning urban food policies.

The research questions aim to understand: How food policies define the properties of the urban food space; how the city's territorial capital can be identified so as to be able to construct a local food system; what the properties of the local system of agents are that shape food strategies; and how the tools of governance can be organized in order to strengthen sustainable food networks.

2 Defining the objective of the study, materials and methods

The study is based on the cases of six Spanish cities that signed the Milan Pact on Urban Food Policies. Barcelona, Madrid, Valencia, Vitoria, Valladolid and Zaragoza materialized this pact by drawing up food strategies which explicitly set out their

TABLE 2 Basic data concerning the analyzed cities (source: authors).

City	Population (2022)[1]		Signed Milan pact	Approved food strategy	Party of city council
	Municipality	Municipality + Metropolitan Area			
Madrid[2]	3,280,782	6,088,164	2015	2018	Ahora Madrid
				2022	Partido Popular
Barcelona	1,636,193	3,304,275	2015	2022	Barcelona en Comú
Valencia	792,492	1,570,785	2015	2018	Coalició Compromís
Zaragoza	673,010	783,123	2015	2019	Zaragoza en Común
Valladolid	295,639	410,287	2018	2019	Partido Socialista Obrero Español + Valladolid Toma la Palabra
Vitoria	253,672	287,612	2017	2017	Euzko Alderdi Jeltzalea/Partido Nacionalista Vasco

1. Instituto Nacional de Estadística (Institute of National Statistics).
2. The change in the municipal government of Madrid has substituted the Food Strategy 2018–2020 with a new food agenda for the period 2022–2025.

commitment to the construction of new urban food systems that reconsider, from a territorial perspective, the relationship between the city and food.

The six cities are a representative sample of Spain's urban system. At the apex, we have Madrid and Barcelona, the two largest cities with the greatest metropolitan areas; Valencia and Zaragoza correspond to the first level of major regional cities; while the cities of Valladolid and Vitoria are representative of the second level of cities within a regional sphere. Barcelona and Valencia are also the neuralgic centers of the Mediterranean axis and are fully immersed in expansive dynamics. Zaragoza is the major articulation hub of the River Ebro axis which reaches the city of Vitoria; while Valladolid enjoys a strategic position on one of the principal axes of north-west Spain (Table 2).

In terms of food self-sufficiency, these cities are large centers of consumption that demonstrate a very limited capacity for supplying their citizens with food from nearby. Urban development pressure accelerated strong competition for rural land, fragmented the rural, periurban and urban spaces, and caused a great loss of agricultural land to residential, industrial and tertiary uses, as well as to the development of large communication infrastructures. The potential for the ability of these cities to provide their own food needs registers its lowest levels in Madrid and Barcelona, where the agricultural productive fabric is practically inexistent. In Valencia and Zaragoza, despite the strong reduction in agricultural land, farming is still the predominant space around most of the towns and villages, including the urban areas, and is an inseparable part of the identity and culture of each city. In Valladolid and Vitoria, the cultivated land converted to urban use is also extensive. However, within the residual nature of the agricultural sector, the cultivation of cereals predominates, as well as irrigated crops and small-scale gardens close to the rivers (Figure 1).

In this context, the urban food policies, promoted by the local governments, arise as an opportunity to offer a framework for action in order to set down the foundations for a transition to a more sustainable and healthier local agro-food environment. The design of the urban food strategies has been built up through a participative process of deliberation among the actors related to the local food system. It has been developed through the political cycle of the 'councils for change' (*ayuntamientos del cambio*) that have a progressive orientation and were fostered by the demonstrations of citizens in May 2015 (Mérida and Tellería, 2021).[1] It capitalizes on prior networks and experiences of associative movements and social organizations that work for the territory's food sovereignty, with different degrees of articulation in each city, while also trying to place agro-ecological culture in the center of urban life.

The urban food policies of the Spanish cities adopt the strategic framework for action of the Milan Pact, made up of six working axes with their respective commitments and objectives related to food governance, nutrition and healthy diets, social and economic equality, food production, supply and distribution, and the reduction in food waste.

The first phase of the research was dedicated to defining the unit of analysis made up of documents generated during the process of preparing the food strategies. They are classified in three types. (1) Studies prior to the approval of the food strategy: urban food metabolism, agricultural potential of the cities, and diagnosis of the urban food system. (2) Executive and political documents: urban food strategy, municipal plan of action, follow-up reports, institutional declarations and certificates of incorporation of the food councils. (3) Documents linked to the participative processes: materials and minutes of meetings between the agents involved and of the citizens' participative workshops (Table 3).

In the second phase, a systematic review of the documents was carried out through the selection of the content segments and their classification into the following categories: the properties of the food space, the forms of the territorial capital, the local system of actors, and the predicted mechanisms for improving the political and territorial sustainability (Tables 1, 4). An individual register of these categories was created for each city.

The third phase focuses on the comparative analysis of the registered units classified in one of the categories in order to systematize the compared observation and identify common patterns and regularities of the different cases; recognizing the significance of

1 In the case of Vitoria, the elaboration of the strategy has not been identified as originating from the 'councils for change', but through a municipal corporation that has historically been open to environmental and territorial questions in the design of its public policies.

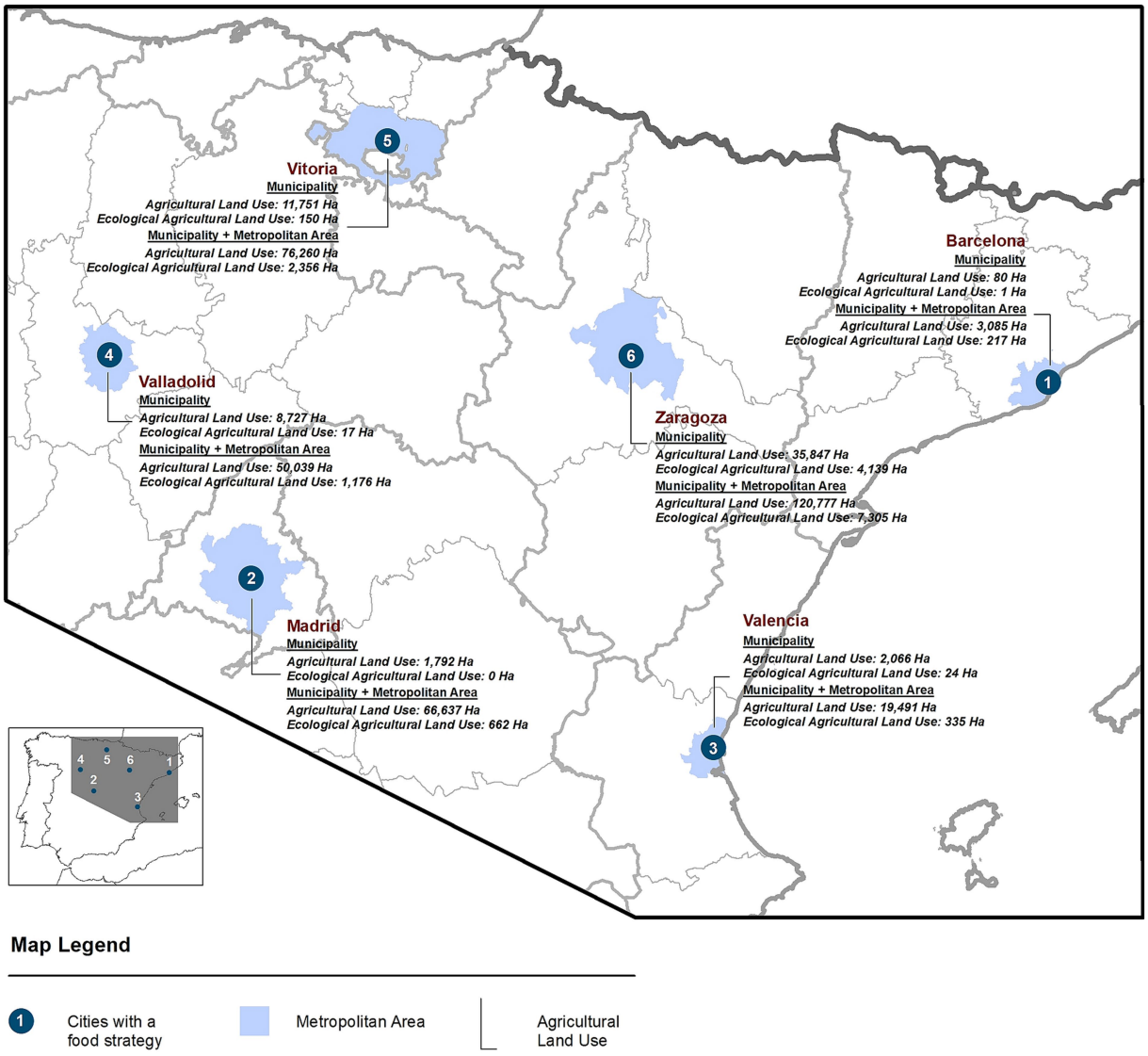

FIGURE 1
Location of the cities with a food strategy (source: INE. Agrarian Census of Spain, 2021).

each city's trajectory concerning the qualities of the prior territorial capital and the local system of actors related to food; and verifying the differences in the narratives that shape the urban food policies, in both their focus and the type of initiatives undertaken to improve or reinforce the territorial sustainability of the food strategies.

3 Results

3.1 On the properties of the food space

The normative space appears to be contained, given the operative nature of these documents, in all the strategies: it is the administrative limit of the city, the territory of the municipal administration itself. The second, however, does not appear in all the documents. Only two, those of Vitoria and Zaragoza, explicitly incorporate it; while it can be inferred somehow in Barcelona and Valencia; and is apparently absent in the cases of Madrid and Valladolid. Vitoria and Zaragoza propose spheres that pass the municipal boundary, although they differ in their geometry and in the metrics used to define the size. Vitoria, through the definition of what is understood by local, considers a supply territory with a radius of approximately 100 km; while in Zaragoza, this figure is reduced to 20 km, coinciding with what is understood to be the vegetable gardens of Zaragoza ('La Huerta'). Nevertheless, in this last case, the figure of 20 km is defined through a participative process integrated into the formation of the strategy, which directly links to a mental system of spaces and distances formulated in measureable terms. Even so, what is interesting about both cases is the fact that, even though both spaces are expressed as a distance, the metrics used for the calculation are different. In Vitoria, the result is obtained taking into account an ample repertory of foods; while in Zaragoza, 'La Huerta' only includes the supply of fruit and vegetables. What is more, in the case of Vitoria, it is assumed that the supply space can change over time, as the development of the strategy advances and the eating habits of the city's population change (Table 5).

TABLE 3 Numbers and typology of documents and units of analysis (source: authors).

Unit of analysis		City					
		Barcelona	Madrid	Valencia	Valladolid	Vitoria	Zaragoza
Prior Diagnoses	Study of food metabolism (5)	2			1	2	
	Study of agricultural potential (4)				2	2	
	Diagnosis of the food system (4)	1			1	1	1
Executive documents	Food strategy (8)	1	2	2	1	1	1
	Municipal Plan of Action (5)	1	1	1		2	
Documents of participative processes & tools of governance	Follow-up reports (2)	2					
	Minutes of Food Councils (21)			6			15
	Documents of participative processes (51)	9	4	4	28	5	1

TABLE 4 Link between the units of analysis and the analytical framework (source: authors).

		Analytical framework LoTS			Properties of the food space
		Territorial capital	Territorial sustainability	Political sustainability	
Food strategies	Prior diagnoses	X			X
	Executive documents	X	X	X	X
	Documentation of the participative processes and tools of governance	X	X		X

TABLE 5 Properties of the food space (source: authors).

City	Dimensions of the food space according to each food strategy category		
	Absolute (normative space)	Relative (supply space)	Relational (factual food space)
Barcelona	Municipality	Metropolitan area	Exceeds the metropolitan area
Madrid	Municipality	Metropolitan area	No references
Valencia	Municipality	Metropolitan area	Equivalent to the metropolitan area, linking it to the historic system of the 'Albufera' and the 'Horta' of Valencia
Valladolid	Municipality	Metropolitan area	No references
Vitoria	Municipality	100 Km	Equivalent to the relative
Zaragoza	Municipality	20 Km	Equivalent to the relative, with special reference to the identification with the 'Huerta' of Zaragoza

In Barcelona and Valencia, the references to the space occupied by the vegetable garden are less specific. As such, this space is not specified in the texts, although it can be deduced that, for Barcelona, it is associated with the products that come from the metropolitan area and the agricultural areas it contains; while in Valencia, the same supply is limited to two spaces historically linked to the city, spaces that define it from an agricultural and food point of view: the 'Horta' and the 'Albufera'.

As for the relational space, this possesses a density and depth modulated in each city by the extent of the relations created by the urban food system with a sustainable profile. The expression of this spatial category appears through the scrutiny of those people linked to the urban food system. However, in Vitoria and Valladolid, the documentation does not provide sufficient information in this sense, and the strategies conceive food as relationally extensive spaces in which the food transcends its physical materiality to acquire multiple values as a consequence of the different spheres in which it is present, its capacity to connect them, and the diverse meanings it can evoke. From this perspective, the relational space of healthy, sustainable food set out in the food strategies is a complex space inhabited by the same relations that are linked to the fact that the food must be produced (agriculture and animal husbandry) and transformed (agro-food industry). They are relations that possess an exchange value (commercial distribution) and multiple values connected to use that include the mercantile (restaurants, hotels, catering), the social (social economy, NGOs, social movements), and the territorial (environmental organizations, territorial culture, defense of agricultural land, etc).

If the notion of local conditions the scope of the absolute, relative and relational spaces of the food strategies, it is worth asking how these spatial categories coexist with those other categories whose profiles do not include the control of proximity; that is, what scale of

judgment is established in the documents between local and global, between the local and global food systems. In this case, the intermediation would mainly seem to be established by the type of product. The spatial categories linked to the local are reserved for the supply of fruit and vegetables, and occasionally fish, as happens in Barcelona and Valencia; while the global spaces supply the rest of the food. Thus, the strategies consider the city to be a continuous, hybrid space, as far as food is concerned, in which different categories and experiences linked to food coexist.

3.2 The prior territorial capital linked to food

The focus of the territorial capital contains qualities that allow us to analyze the many attributes of the territory and the complex relations that make up an intrinsic part of its essence and the basis of its reproduction. The territorial capital is defined as the system of territorial assets of an economic, cultural, social and environmental nature that guarantee the potential for development in certain places (Zonneveld and Waterhout, 2005; Perucca, 2014). Apart from the generic resources common to other places, the specific resources, naturally differentiated, are incorporated in a stable way through slow and complex historical processes and are difficult to reproduce in a different environment, because they are strongly rooted in the territory (Camagni, 2008). The specific resources are a fundamental element for understanding the territory as a social construct and they are identified with those linked to the natural capital, the accumulated material capital (not reproducible in the medium term), and the heritage as a cultural reference and legacy (Dematteis and Governa, 2005). The immaterial heritage and other intangible elements, such as the local culture, are also specific resources; that is, the community's shared values and identity, upon which the specialized knowledge and the interactive nature of the networks that make up the social capital are based.

An additional but unavoidable aspect of the social capital are the relational assets, understood as those that can be produced and used only through the relations that connect to the subjects committed to it, i.e., the producers themselves. Their relevance lies in the fact that they operate on the basis of the principles of reciprocity and horizontal associative procedures (Storper, 1997; Capello and Faggian, 2005; Donati, 2018). They are derived from the formation of interconnecting networks, are incorporated into the local cognitive capital, and in turn strengthen the conditions under which a territory develops, since their resources and actors possess an interdependent way of functioning and are, to some extent, subjective elements related to the narratives, the sense of belonging, and the image and perception of the territory. Following Raffestin (2012), the relational system is as important as the material sphere, if not more so, because the territory is the result of the production of the actors and, in this sense, the relation more than the space is the conceptual core of the territory.

Therefore, territorial capital is a concept that is both relational and functional (Dematteis and Governa, 2005) and is made up of the components that express the territorial capacities that drive the construction process of a localized, sustainable food system. The density of social capital is also related to forms of territorial governance that imply the participation in public decisions of the local agents involved in a climate of reciprocal trust and shared responsibility. The territory's institutional strength is a factor that, in principle, can favor the advance of the development processes and the attainment of the local policy goals (Cheshire et al., 2015). Following Farinós (2008), territorial governance is a significant element in achieving political territorial goals through the creation of a shared vision based on the identification of the territorial capital. In this sense, the evaluation of the territorial capital is a fundamental factor in the emergence of an effective governance of the urban food systems, placing a value on the regulatory capacity of each territory and the local resources, thus transforming them into available resources to reach the goals of the city's food policies.

From this point of view, the analysis of the documents of the urban food strategies examines how the design of these policies incorporates the identification of the key elements of the territorial capital, as knowledge of them contributes to the activation of the forms of collective intelligence needed to carry out the decision-making processes (Safonte et al., 2021).

3.2.1 Natural capital and agrarian heritage

The systematic review of the documents generated in the phases prior to the elaboration of the urban food policy directives reveals the preoccupation with understanding the workings of the flows that model the food metabolism of the urban areas (Tables 1, 4). At least three of the cities (Barcelona, Valladolid and Vitoria) have diagnostic studies that include the evolution in food consumption, the entry flows to the system, the buying habits, the influence of the food distribution channels, the exit flows (trash and food waste), as well as the environmental impact in the form of the carbon, water and territorial footprints of the current food model. Alongside the abovementioned cities, we can add Valencia, Madrid and Zaragoza when the diagnosis focuses on the system's agrological capacity and the potential for urban food self-sufficiency (Table 6).

The abovementioned studies show a strong decline in agricultural land caused by the expansion of the cities, the reduction in the number of farms, and the massive abandonment of land that has given rise to a weakened, disjointed and aged agricultural sector with serious problems of generational replacement. The threat of the provision of new urban infrastructures on agricultural land raises the risk of more rural abandonment processes even higher.

The notion of natural capital is linked to the recognition of the patrimonial value of the traditional ecosystems that must support the transition toward a sustainable, local food system. Thus, faced with the pressure from urban uses that endanger the possibility of maintaining, protecting and recuperating the agricultural activities, the strategies of Valencia, Zaragoza, Barcelona and Valladolid pose, as their priority, the activation of processes that can encourage and accompany a sustainable management of the ecosystems with a high productive value that have, historically, supplied food to these cities.

In Valencia, the 'Horta', the 'Albufera' and its rice fields, the fishing port and its coastal area are all identified as strategic material heritage. In the immaterial agro-food heritage, the knowledge of those persons dedicated to agriculture and fishing, as well as their traditional forms of management, are considered to be strategic.

In Zaragoza, the urban and periurban agricultural activity also maintains strong local roots. Thus, the construction of localized alternatives focuses on recuperating the productive capacity of 'La Huerta' and the nearby rural environment, advancing toward sustainable productive models with an agro-environmental focus.

TABLE 6 Natural capital and agrarian heritage (source: authors).

City	Existence of prior diagnoses		Recognition of the value of the agrarian heritage	
	Food metabolism	Territory's agro-environmental capacity	Material	Immaterial
Barcelona	X		X	
Madrid		X		
Valencia		X	X	X
Valladolid	X		X	
Vitoria	X			
Zaragoza		X	X	X

Between 2013 and 2016, Zaragoza's city council developed the 'LIFE Huertas km0' project, which was a demonstrative experiment to recuperate the vegetable gardens as a generative space of economic, environmental, social and cultural wealth for the city. These efforts can be perceived as very positive although, in the opinion of the actors involved in the participative process, they can also lead people to believe in an unrealistic recuperation of the agricultural socioeconomic fabric, taking into account the fact that the municipality has lost most of its irrigated vegetable garden over the last few decades; while the supply of food to the city comes from places ever farther away. Nevertheless, the municipal agrarian tradition has generated a rich environmental, productive, cultural and landscape setting that has allowed a part of the municipal territory to enjoy some form of official protection, including traditional infrastructures and elements of interest for the heritage, such as the network of irrigation channels, paths, mills, towers, traditional housing and local horticultural varieties that enable the protection of the cultural, agrarian and food heritage, both material and immaterial, to be reinforced, as well as encouraging the awareness boosting processes of its value for the citizens.

In Barcelona, the loss of agricultural land has drastically reduced the supply of fresh food to the metropolitan area. In this urban region, the identification as being of great value includes such spaces as the Agrarian Park of the Baix Llobregat, the Gallegos Area of Natural Interest, the Agricultural Park of Sabadell, the Rural Park of Montserrat, the Agrarian Space of Pla de Palou in Granollers, the Natural Protected Space of the Mountains of Ordal, and the Protected Natural Space of the Maresme Coast. The continuity of these spaces is supposedly guaranteed, as are improvements to the protection of agricultural land and promoting ecological production systems. The strategy of Barcelona also warns of the reduction in traditional fishing activities, in which sustainable fishing techniques are becoming a minority. It also contains references to the intrinsic patrimonial value of the diversity of the food supply, the production of local varieties, the distribution of singular products, and the local gastronomy.

In Valladolid, the strategy identifies the traditional agricultural landscape characteristic of the river valleys where urban pressure has brought about the decadence of agriculture and significantly damaged the agricultural resources of spaces with important productive and cultural values. The recuperation of the periurban agriculture to satisfy Valladolid's food needs and to conserve the patrimonial landscape values involves an intervention aimed at ordering the agrarian activities and developing a productive model preferably based on agro-ecology.

Thus, in general terms, the documents concerning food policies draw attention to the loss of agricultural land and support the principles that inspire the recognition and preservation of the agricultural heritage, convinced of the fact that the maintenance of cultural agrarian practices, and their link to a sustainable development model, can be an important tool in the fight against the unsustainable utilization of the natural capital and environmental deterioration.

3.2.2 The accumulated capital: sustainable food networks, infrastructures and channels of distribution

In the food strategy documents of the analyzed cities, allusions can be found to the potentials and weaknesses of the food networks on a territorial basis prior to the formulation of the public policies, as well as numerous references to the available infrastructures and facilities for promoting the construction of new distribution channels for products of proximity. Both can be identified as accumulated capital (Table 7).

As for the sustainable food networks, their value as territorial capital derives from the existence of small, local producers and associative forms of consumption; as well as in the belief that, if they are quantitatively reduced, then they are qualitatively significant because, above and beyond the market, they are differentiated forms of territorial capital within the urban area.

It must be said, however, that the progressive increase in these initiatives and citizens' growing awareness of a more sustainable consumption result in an environment where several diverse problems converge. The small agricultural initiatives with an agro-ecological focus face numerous difficulties to reach medium term economic viability, such as the low professionalization of the agricultural activity, the scarce social valuation of the figure of the producer, the barriers to finding a way to incorporate more sustainable practices into the conventional agricultural sector, and the obstacles to advances in the coordination of the small-scale productive sector, and to articulate the different actors in the territory, both from a horizontal (to the interior of the links in the food chain) and a vertical (between the different links in the chain) perspective.

As for the distribution channels, the accumulated capital feeds upon the public infrastructures of the conventional wholesale distribution; on the network of municipal markets, the existence of a relatively dense fabric of proximity retail establishments (with an unequal presence in cities and quarters), as well as the prior existence of producers' markets and direct sales initiatives in the fruit and vegetable farms.

TABLE 7 Accumulated territorial capital (source: authors).

City	Wholesale channels		Retail channels		Informal food networks
	Specific	General	Markets	Proximity commerce	
Barcelona	X	X	X	X	X
Madrid		X	X	X	X
Valencia		X	X	X	X
Valladolid		X		X	X
Vitoria		X	X		X
Zaragoza		X	X	X	X

As for wholesale distribution, Barcelona has a Biomarket, which facilitates access to the logistic infrastructures for the small, local operators selling proximity products. The other cities stress, precisely, the absence of logistics systems adapted to those channels and the availability of large, conventional wholesale distribution installations in order to provide specific spaces in them for this function.

On the retail distribution scale, the municipal markets represent an ideal territorial capital for promoting the construction of proximity circuits. In Madrid, two municipal spaces allow the permanent, direct sale of ecological and proximity products: the Municipal Market of Vallehermoso (Chamberí) which directly distributes products coming from a radius of 120 kilometers around the city and the Agro-ecological Market of San Fernando (Lavapiés), which accepts producers from the Autonomous Community of Madrid; and other producers' markets promoted by local organizations in Arganzuela, Malasaña, Fuencarral, etc.

In Barcelona, besides some municipal markets that distribute local, fresh produce, worth noting is the network of 'Pagés Markets', supported by local entities that promote food sovereignty and with municipal aid. In Vitoria, the neighborhood markets have local roots to some extent and the 'Earth Market', managed by agrarian organizations, encourages direct contact between the producers and consumers. In Zaragoza, the main retail outlet for local and ecological food is the 'Agro-ecological Market', which has demonstrated a great potential for revitalizing the local commerce of ecological produce.

Despite the fact that citizens have more information and better knowledge concerning the consumption of local and ecological produce, it must be said that the use of the existing infrastructures and facilities should be accompanied by strategies to make agro-ecological produce better known and more visible, not only in the municipal markets, but also in the network of retail establishments that need to offer something different from the large chains of distribution.

3.2.3 Social capital and the capacity for local self-organization: systems and coalitions of actors

As already stated, one of the most relevant elements of territorial capital in the formulation of robust public policies is the social capital, defined as the set of norms and values that regulate interaction between persons, institutions and the networks of relations established between the different actors (Camagni, 2003; Capello and Faggian, 2005). As with urban food strategies, the territorial sustainability of projects that aim to set up locally-based productive systems is supported, among other factors, by the capacity for self-organization of the said actors (Dematteis and Governa, 2005). In other words, following the reflections of Raffestin (1986), p. 149 the capacity of the agents to produce food territory starting from the previously analyzed spatial categories and introducing logical innovations in the places related to healthy, sustainable food.

In this case, the capacity for local self-organization becomes explicit in the food strategies through a varied set of registers: the executive documentation, the materials that recount the design and development of the processes involved, and those that describe the results of the mechanisms of governance put into operation (Tables 1, 4). The information includes the list of agents participating in the food strategy, the intensity of their commitment, the interests they represent, the opinions stated and their degree of alignment with the objectives of this public policy.

The strategies can be understood from this perspective as hybrid aggregations in which systems and coalitions of actors coexist (Table 8). That is, directories of agents connected by different values, intensity, duration and antiquity, in which it is possible to distinguish between agents with a prior shared trajectory (the systems of actors) and others joined together in an *ad hoc* manner at a particular point in time during the formalization or development of the food strategy (the coalitions of actors). In the case of Spain, both repertories are present.

Thus, it is possible to identify prior routines derived from the experience set down in cooperation agreements, spaces for citizen participation, or other forms of territorial governance. The consistency and density of the networks is greater in the cities that have a longer history of participative production of sustainable territorial development policies and which also have a strong, dense institutional framework with respect to an alternative agro-food system. In this sense, the communal public space promoted by the City Council of Barcelona, Agròpolis, is an eloquent example. Agròpolis consists of the civil society, the economic fabric, the universities, and the municipal administration, united by the will to transform Barcelona's agro-ecological food system; so it took the decision to provide its experience and link its work axes to the challenges of the city's food strategy.

Madrid represents a singular case in this sense, as the first food policy document (2018–2020) was drawn up using the experience of the Madrid Agro-ecological platform. This was a space to articulate the different collectives and actors in order to plan agro-ecological transition processes and to propose alternatives for both production and consumption, in accordance with the objectives of food sovereignty. However, the political change in the city council gave rise to a modification in the public agenda and the drawing up

TABLE 8 Social capital of food (source: authors).

	Systems of actors	Coalitions of actors
Barcelona	Agròpolis Strategy to boost the food policy 2016–2019	X
Madrid	Madrid Agro-ecological	X
Valencia	Integral Plan of Action to Promote Agricultural and Territorial Activity Municipal Agriculture (2016) Charter for Food Sovereignty (2014)	X
Vitoria	Vitoria-Gasteiz Manifesto for a sustainable agro-food system (2014) Green Capital (2010)	X
Valladolid		X
Zaragoza	LIFE Huertas km 0 Project 'La Huerta de Zaragoza' Brand Commission on Food Sovereignty (Agenda 21 Local)	X

TABLE 9 Food social capital: coalitions of actors (source: authors).

City	Administration		Functions		Spatial categories of the agents	
	Local	Supra-local	Formal collectives	Individual agents + informal collectives	Local	Supra-local
Barcelona	X	X	X	X	X	X
Madrid	X		X		X	
Valencia	X		X		X	
Valladolid	X		X	X	X	
Vitoria	X	X	X	X	X	
Zaragoza	X		X		x	

of a new food strategy (2022–2025) that focuses on food safety in line with the Sustainable Development Objectives of the Agenda 2030.

The food strategy of Valencia is also based on learning from such previous actions as the Integral Plan of Action to Promote Municipal Activity and the Agricultural Territory (2016), the Charter for Food Sovereignty (2014), and the Charter of the Principles for Social and Economic Solidarity (2015). In Zaragoza, the relational capital built up around sustainable food took place within the framework of the 'LIFE Huertas km 0' project, starting with a participative process that gave rise to the brand name 'Huerta de Zaragoza' and the Food Sovereignty Commission of the Local Agenda 21. The food strategy of Vitoria arose from the base of the system itself, driven by the most committed actors, using the directives expressed in the Vitoria-Gasteiz Manifesto for a sustainable agro-food system (2014). It was also nurtured through the political experience for urban and territorial sustainability, with the title 'Green Capital' (2010).

For the food strategies, these experiences facilitate the incorporation of people who have already, to some extent, built up a collective identity around food sustainability. Nevertheless, the union of systems and coalitions of actors occurred at different moments during the food strategies process. This also provided a temporal dimension to the hybrid nature of the participative space created. For its elaboration, the administrations frequently relied on persons, institutions and social movements clearly committed to the different dimensions of sustainable food; while circumstantial agents were included in its development that gradually came to be aligned with the objectives and actions of the food strategies.

The spatial categories contained in the food strategies reveal the existence of layers of agents operating on different scales or that, belonging to different scales, feel impelled to work in food spaces defined by the local and the nearby (Born and Purcell, 2006). Spain's urban food strategies generally aim to address a coherent catalog of agents with the functional and organizational complexity of the urban food system and the spatial categories with which they work. Except for the case of Valladolid, where the agents seem to be more closely related to a certain discursive affinity than to extending the food space suggested in the documentation of their strategy, the other cities' actors relate directly with the semantic fields of healthy food and the different scales in which they are expressed. Even so, it is possible to recognize some differences that can be systematized into three large categories: the extent of the presence of the administration; the functions of the food system represented in the strategies; and the presence or not of agents who operate in the mentioned spatial categories of each one (Table 9).

In the first case, the institutional representation is usually confined to the strategy's promoting agent; that is, the technical and political personnel of the administration behind each document. It rarely surpasses this sphere in any significant way. In fact, the strategies of Barcelona and Vitoria, perhaps linked to the culture of territorial planning in which both cities are immersed, are notable for the representation reserved for other administrations, whether they

be local (nearby councils, metropolitan, regional or provincial organisms, such as the Basque or Catalan governments). In the remaining cities, such an extension is not the norm. On the contrary, the presence of other administrations does not usually include the entire range of the scale of the political-administrative competences concerning food in its different dimensions; neither does it include, therefore, any effort to allow other administrations to redefine, in local terms, the competences they develop or the interventions they implement.

The catalog of agents that intervene in the food strategies can be compared to the different functions articulating the urban food system. That is, what the reiterated references in the academic literature to the co-production of the public food policies based on its multi-agent character really mean in practice. In this sense, the principal functions that are built into the food system find a voice in the elaboration of the strategies (production, transformation, marketing, consumption), as well as most of the meanings it contains (health, vulnerability, experience, territory, safety, etc.). However, not all the cities handle both diversities in the same way. In general, the strategies are constructed through formal representative models (easier to incorporate in the work of the public administrations), in which the vision of a certain sector or activity is provided by institutions with a high degree of organizational formality (associations, trade unions, business groups, etc.), trusting that this will serve as the support for transferring the opinions of a wide base to the process of drawing up and developing the strategies. Barcelona, Valladolid and Vitoria rely on individual actors to incorporate knowledge of proximity related to the conditions in which the agrarian activity immediately surrounding the city takes place; or, as is the case of Barcelona, in the capacity to generate opinions concerning healthy and sustainable food.

Independently of the collective or singular nature of the representation, a certain shift in the participation of agents in each city can be observed. In Zaragoza and Valencia, the weight of the different links in the food chain and the importance of the initiatives of civil society can be perceived. This dominates in the case of Madrid, especially those with a greater welfare profile, perhaps linked to the food safety of vulnerable collectives. In Valladolid and Vitoria, the presence of persons directly linked to the municipal administration is significant. Lastly, Barcelona stands out for the variety of agents represented.

Finally, it would seem opportune to compare the catalog of agents with the spatial categories that the strategies work with. From this point of view, the relational space defined in them comprehensively surpasses that of the political-administrative intervention of each city council (the normative space) and, although the cities are aware of this fact, they also demonstrate certain difficulties in incorporating agents from this space, particularly in those functions directly related to food production and supply.

As with other aspects, in this case, it is also possible to recognize some differences. The relative spaces in the strategies of Madrid, Vitoria and Zaragoza are, respectively, the metropolitan area, a space with a radius of 100 km around the city and one of 20 km that coincides with the existence of the vegetable garden. Nevertheless, the origin of the agents who participate in them does not surpass the municipal limit. In the case of Barcelona, there does not seem to be such an intense decoupling. The normative space is the municipal space, but there are constant references to processes that take place in the context of the metropolitan area and to resources for food that are shared within it (agrarian parks, distribution structures, etc.). The agents that participate in the strategy of Barcelona, perhaps better than in any other case, respond to the different meanings of food and to the concrete territory in which these meanings are generated.

3.3 Enhancing the territorial sustainability of the food strategies

In order to verify whether the food policies contain mechanisms to reproduce and enrich the territorial capital, we now analyze the potential of the public agendas for favoring territorial sustainability, defined as the autonomous capacity to maintain and enhance the territorial capital in a dual sense: to mobilize and transform the specific resources of the territory into values, and to incorporate new value in the form of incrementing the territorial capital (Dematteis and Governa, 2005).

3.3.1 The territorial capital for food production

A first consideration to take into account is the idea that rethinking the planning of the central role of cultivating agro-ecological food to feed an urban region represents one of the most difficult challenges for the food policy, because the reality is that there is a general lack of available land and adequate infrastructures. In this sense, "agro-ecological urbanism" makes the structural dependence on land for food production a question of concern and political debate. This is because, faced with the logical speculation over land, it aims to promote non-extractive practices to protect the land and to encourage new means of agricultural life focused on real communities and places (Tornaghi and Dehaene, 2020). For this reason, the path that leads to the construction of local food systems involves promoting initiatives that facilitate access to land in a collective process that provides local producers with resources to nourish and reproduce a sustainable territorial capital in the long term.

In order to slow down the generalized tendency to expand urban uses onto agricultural land and thus propitiate the increase in agro-ecological land, the narratives that act as a framework for urban food policies propose a range of actions that can have a widespread conceptual reach, all aimed at promoting the increase in the productive capacity managed sustainably, either within the cities themselves or in the surroundings. The foreseeable measures include legal protection for agrarian spaces as being essential for the conservation of the agro-biodiversity, access to public lands through the transformation of municipal plots for urban allotments or kitchen gardens, the creation of land banks, assistance for new producers, or the supra-municipal planning of productive agro-ecological spaces (Table 10).

In general terms, the set of cities analyzed generically posits the determination to adopt protective measures for agricultural lands bounded by the urban area. This can increase the land for cultivation through municipal programs to encourage agro-ecological horticulture and to develop projects that facilitate the professional incorporation of new persons to the agricultural activity through assistance in the form of technical agricultural assessment and entrepreneurship. One of the key questions identified is access to the land for the vocational initiatives in ecological farming. In this sense, in their policies, Valencia, Vitoria and Valladolid formulate the

TABLE 10 Territorial capital for sustainable food production (source: authors).

City	Protection for agrarian land	Land banks	Urban kitchen gardens	Conventional agriculture reconversion	Agrarian lands on a supra-municipal scale
Barcelona	X		X		X
Madrid	X		X		
Valencia	X	X	X		X
Valladolid	X	X	X		
Vitoria	X	X	X		
Zaragoza	X		X	X	

creation of municipal land banks to make agricultural land available to new agro-ecological producers on public lands.

Regardless of the difficulties involved in developing this kind of initiative, the local scale of urban horticulture and land banks is still far from the real proximity food production and supply needed to cover the urban demand, even partially. Inter-municipal articulation and cooperation for the construction of food systems focused on the food basins is essential (Mouléry et al., 2022; Vicente-Vicente et al., 2022). However, most of the cities analyzed in this research lack effective figures of territorial and administrative coordination with their surrounding municipalities. This limits the possibilities of building sustainable, local food systems and explains the vagueness in the statements that refer to the actions to promote and expand the agro-ecological productive activities, giving them a greater scale. For instance, Madrid foresees that at least 500 hectares could be destined for ecological agriculture, although the concrete measures needed to achieve this are not established. Somewhat more specifically, the strategy of Zaragoza identifies support for the conventional agricultural sector and its progressive conversion to agro-ecological models, the strengthening of the vegetable garden network, and the creation of agrarian parks in the city and the surroundings as a priority line of action.

Nevertheless, the design of localized food alternatives requires the deconstruction of the rural–urban dichotomy as a first step toward creating equitable and inclusive food systems (Vaarst et al., 2018). Establishing supra-municipal agreements with different spatial configurations must form part of a consistent agenda with its own context through the coordination of multiple actors in both rural and urban areas. In this sense, only the cities that have institutional structures for metropolitan planning, or legal instruments to protect agrarian land, can formally propound actions focusing on the revitalization of the professional agrarian holdings of the periurban setting, or on the creation, within its sphere of influence, of agrarian parks with formats adapted to the local reality. Such is the case of the Territorial Plan of Action for the Management and Revitalization of the 'Horta' of Valencia,[2] which establishes the prevalence of agricultural activity over other uses, defines the legal use of the lands, and contemplates a collection of measures to protect and recuperate the environmental, landscape and cultural values, in order to integrate a green infrastructure on a supra-municipal scale, and to encourage good practices in traditional, sustainable and ecological agriculture.

Where the supra-local perspective is most evident is in the food policy of Barcelona, starting from the commitment of the Metropolitan Area of Barcelona (MAB) to the Food Charter of the Metropolitan Region of Barcelona and to the project Barcelona World Capital of Sustainable Food 2021. The MAB has a Plan of Action for Sustainable Food that constitutes the first instrument of transversal coordination, with a global focus on the food system.

3.3.2 Short marketing channels, proximity networks and relational capital

The construction of territorial capital for proximity food production can be increased through actions to diversify the short distribution channels, or the revitalization of those already existing. It is a question of shortening the food chain and providing balance for the distribution of value between the different links in the chain. However, it also aims to favor spatial proximity so as to foment interactions between the actors that participate in the network and to establish cooperative links for the territorial projects that aim to create new relationships between urban and rural areas (Dansero and Pettenati, 2018; Chiffoleau and Dourian, 2020).

Taking into account the importance of the physical space in which the networks are developed, the food strategies designed by the cities share actions to promote markets for direct sales, such as the Agro-ecological Market of Zaragoza, the Eco-market of Valladolid, the Basaldea project of Vitoria, or the numerous open-air markets in the different quarters of Barcelona, Madrid and Valencia (Table 11).

These non-permanent markets are not only places to buy and sell food or places of spatial proximity between producers and consumers, but also meeting places and places for exchanges between those who live in the same quarter of the city, or even among the producers themselves. Besides shortening the food chain, the proximity of the network goes beyond the reduction in the distance between production and consumption to generate rural–urban proximity food circuits that involve different categories of actors and multiple forms of creating territory (Lanzi et al., 2021). The relational process of buying in the markets generates and enriches the social capital of a community action rooted in the sense of belonging to a collective movement, or adherence to specific values and lifestyles (Alberio and Moralli, 2021). Buying food becomes a political action and, from the relational perspective, the social value that arises from the interactive reflexivity of these links reinforces the cognitive proximity between the actors. The connections are multiple; among others, producers who share the same vision of food production, the transfer of knowledge to the small-scale farmers who find it difficult to access information, or awareness of the reciprocal impacts between consumers and producers (Donati, 2018; Vaarst et al., 2018).

2 Planned in the Law 5/2018, of 6th March, concerning the 'Horta' of Valencia.

TABLE 11 Relational capital (source: authors).

City	Markets of (agro) ecological producers	Storage centers	Collective workers	Sustainable public purchases	Practice/learning communities
Barcelona	X	X		X	X
Madrid	X			X	X
Valencia	X	X		X	
Valladolid	X	X	X	X	
Vitoria	X		X	X	X
Zaragoza	X	X	X	X	X

Together with the measures aimed at boosting this kind of market, the political documents pose the need to diversify the distribution channels so as to expand and facilitate multimodal access to fresh food, thus encouraging the establishment of links with different actors in order to strengthen the local food systems. Among them we can note the commerce of proximity, the municipal or neighborhood markets that have an ample network of nearby distribution points, although often weakened by competition from the large chains of distribution, and the changes in buying habits and models of consumption. The six cities propound developing actions oriented toward these objectives, as well as establishing cooperative links between sustainable producers, the local hostelry sector, and social associations committed to the networks. Public purchases to provide nursery schools, social dining rooms and health centers for the municipal network are also prioritized; while also encouraging good practices and making them more visible in the form of healthy nutrition and responsible consumption.

Aside from other difficulties related to the limits of the municipal competences or the need to adapt regulations and norms, the reproduction of this territorial capital has to face the fundamental challenge of scale. A small, fragmented supply has to accommodate this potentially growing demand (markets, hospitality sector, retail commerce, hospitals, schools, etc.); as well as offering a varied range of products, maintaining a regular supply, and generating trust and safety along all the links in the chain. The response of the urban food policies is to design formulas for concentrating the foreseeable supply through the conditioning of specific spaces in the form of food-hubs in the logistic installations of the conventional wholesale distribution. In order to understand the demand more effectively and to better manage the short circuits, Zaragoza, Valladolid, Barcelona and Valencia conceived projects, started by and with the participation of the city councils, in their wholesale infrastructures. In Madrid, these actions took the form of promoting and setting up logistic warehouses and last mile spaces, including a pilot project for sustainable distribution in the Market of Barceló and the design of a distributed system of urban logistic microcenters. In a complementary manner, some cities also programmed the municipal spaces to house local, small-scale agro-industrial projects (Madrid) and multiproduct, workers' collectives (Valladolid, Zaragoza, Vitoria).

These food-hubs constitute innovative organizational agreements to create networks, through aggregated scaling, that allow the producers to combine their products so as to be able to gain access to wider markets, face the growing demand from individual consumers, or groups of consumers, for local products (scale-out) and from wholesale buyers to achieve wider systemic impacts (scale-up). The resulting territorial capital increases the complexity of the local networks and gives rise to new proximity networks among the actors who wish to increase their effectiveness through coordinated logistical actions. What the articulation of these forms of horizontal coordination is looking for is not only the distribution of food, but also the construction of social connections to distribute shared value through the aggregation of products from independent actors without diluting their identity (Berti and Mulligan, 2016).

Additionally, the narratives that make up the urban food strategies stress the crucial role of the construction of communities of practice (CoPs), collective learning and the creation of specific knowledge to articulate the configuration of contextualized food systems. Unlike the large-scale, conventional food system, uncoupled and lacking in direct interaction, the local food system, anchored in proximity circuits, has the potential to stimulate the formation of feedback loops of resources and the collective awareness of the actors in the network, nurturing the social capital and the relational assets generated. In order to reinforce these processes, the strategies propose institutional support and the revitalization of experimental spaces concerning food and agro-ecological production. The practical, learning communities linked to the neighborhoods and the district food hubs planned in Madrid, the 'Huerta de Zaragoza' brand, or the agro-ecological incubators planned in Barcelona and Vitoria, are significant examples of these actions.

3.4 Political sustainability and tools for food governance

The re-territorialization of the urban food systems provides new layers of meaning to food governance. Moragues-Faus et al. (2017) define it as all the forms of government developed by different actors to guide, direct or control achieving food safety, to which López-García and González de Molina (2020) add their operative dimension as the coproduction of public policies, together with the civil society and the articulation of city and country. Coulson and Sonnino (2018) include the relational character of governance, understood as the meaning acquired by the political, economic and spatial context, so as to be able to understand the possibility of producing systemic changes in food. In its most recent formulation, urban food governance appears as a complex product that must be managed according to the political and contractual meanings acquired by the time (understood as the context and the possible future), place, relations, diversity and power (Moragues-Faus et al., 2023).

From this perspective, it is necessary to understand whether the mechanisms of citizen participation, in the terms set out by Uphoff (1998) and Jenkins-Smith and Sabatier (1993), contribute to the

creation of social and territorial food capital, and to the construction of organizing systems and useful values for all the agents who participate in the elaboration and development of the food strategies.

From a practical point of view, Candel and Pereira (2017), Young et al. (2022) and Moragues-Faus et al. (2023) analyze the practical utility of the different tools and solutions for food governance; while López-García et al. (2020), p. 9 propose that the study of urban food governance should be carried out taking note of the existence of measures for multi-actor, inter-sectorial and multi-level coordination in the administration, community activation, commitment to city networks, and the existence of monitoring and evaluation frameworks. In other words, the democratic qualities of the public policy that are set up; the existence of administrative coordination mechanisms, the forms and tools for monitoring and reviewing the strategies, and lastly, the participation in local authority networks.

The schemes of governance proposed by the six cities are relatively similar; although their components may have different names. As pointed out in the section dedicated to the agents integrated in the strategies, their participation has been channeled through open processes of different magnitudes, diversity and complexity. The follow-up is usually done through the technical assistance that is in charge of revitalizing the food strategy, accompanied by a reduced number of agents representative of the food system, divided into two groups: a driving group and a follow-up group. Finally, there is a more ample space, usually called a food council, although there are other terms, such as 'city agreement' (Barcelona) or 'city forum' (Madrid).

At the same time, all the cities considered it convenient to create a system of indicators in order to evaluate, in line with what is desirable in the development of public policies, if the acts and products foreseen in each food strategy had the desired effects and whether it is necessary, therefore, to correct any deviations that may have occurred. From a practical point of view, the proposed evaluation methods mostly used what is called the experimental attitude (Ogando and Miranda, 2002); that is, to discover if there are direct, stable coincidental relations between the contents of the public policy (as foreseen in the strategies) and the effects observed in the cities. The metrics used, in the Spanish case inspired by the proposal developed by the Milan Pact on Urban Food Policies, the RUAF Foundation and the FAO (Carey and Dubbeling, 2017; FAO, 2018), stress the need to grasp the dynamics occurring between the processes related to food systems, nutrition, health, social change and impacts, and the social and territorial impacts (Beddington et al., 2012; Tilman and Clark, 2014; Allen et al., 2016).

Finally, one of the characteristics that define the new food governance is translocalism (Sonnino, 2017). This term defines the flow of knowledge, learning and practices that, starting from a particular city, spread to other locations, thus allowing the construction or reinforcement of sustainable food systems (Blay-Palmer et al., 2016; Sonnino, 2017). The most common form of translocalism is the creation of new relational identities through participation in the networks (Sonnino et al., 2016). The documentation of Spain's urban food strategies show how the municipal administrations participate in a common repertory of channels of diffusion and reproduction of knowledge concerning sustainable food systems. All the cities have signed the Milan Pact on Urban Food Policies and, with the exception of Vitoria, have also officially joined the Network of Municipalities for Agro-ecology, an association of local Spanish entities, similar in its objectives to the Sustainable Food Cities Network in The United Kingdom. The association states its goals as "the generation of a dynamic between Spain's cities in order to build up local food systems" from a sustainable, resilient and inclusive perspective (Statutes of the Cities for Agro-ecology, art. 5.1).[3] The open work dynamic within this network, organized around annual meetings, work groups, and with the support of a technical secretary, facilitates a fluid contact between all the participating cities, exchanging experiences, looking at practices and in joint discussions.

To these two translocal channels, specifically focused on food sustainability, two more can be added that have a complementary value. Barcelona, Madrid, Valencia, Valladolid and Zaragoza participate in the network Eurocities, an initiative under the umbrella of the European Commission. Its generic objective is to ensure a good quality of life in Europe's cities. Part of its work includes urban food systems. At the same time, Valencia and Valladolid receive flows of information through their participation in the Intervegas Pact, a Spanish platform made up of persons, associations and public administrations that promotes the protection and revitalization of the most fertile agricultural lands and the periurban agrarian space. Madrid possesses a set of agreements with the FAO, and Zaragoza participates in the network of cities in the Global Covenant of Mayors for Climate and Energy.

This account of the initiatives underlines, in this case, the idea of translocalism in the new urban food governance. However, it should be asked whether this same principle extends to the actors who participate, either partly or totally, in the strategies. That is, if the vector of translocalism refers solely to the administration, with its filters and conditioning policies, or whether spaces with a more open, diverse profile, without necessarily the same degree of formality, also contribute.

4 Discussion and conclusions

Food strategies possess an undeniable territorial dimension that can be analyzed by applying a conceptual framework that spans two well-known theoretical systems, LoTS and RAS. We understand that this territorial dimension is directly linked to the objective of setting up local systems that revolve around proximity food, upon which a great part of access to sustainable and healthy food relies. In fact, the main effort of the strategies is in this sense: to mobilize and coordinate natural and social productive resources within the logic of the alternative food systems.

We agree with Tecco et al. (2017) in the utility of the LoTS model for its application to studying urban food policies. In fact, we consider that this model facilitates an understanding of the food strategies by proposing the networks of agents who operate in a particular territory and the territory itself, understood simultaneously as a historic

3 The Spanish cities that signed the Milan Pact are Barcelona (2015), Bilbao (2015), Madrid (2015), Málaga (2015), Rivas Vaciamadrid (2015), Valencia (2015), Zaragoza (2015), Denia (2017), Fuenlabrada (2017), Godella (2017), Granollers (2017), San Sebastián (2017), Vitoria (2017), Valladolid (2018), Cádiz (2021) and Sevilla (2021).

construction and as a model for the local resources to use, as the primary objects of the study. From this perspective, *a priori* and beyond the generic references to the commitment to food, it is the context which determines the extent, solidity and sustainability of the processes to be set up.

All the strategies transmit an understanding of space, whether it be in its absolute, relative or relational dimension. The metric translation of each one entails a problem. If the municipal administrations are aware that the processes they aim to encourage surpass the sphere of their competences, and that the relative and relational spaces they are working with also exceed their territory; it is reasonable to think that the strength of the strategies is reinforced if they are able to introduce mechanisms that allow some kind of operational connection between the said spaces. In this sense, Spain's food strategies are not excessively robust. They rely on a generic appeal to cooperation between administrations for managing the overflow of competences from working with the food question; while the connection between spaces is only relatively present in those cities that are used to working on planning processes with supra-municipal, mainly metropolitan, coordination.

The analysis of the documents reveals that the territorial capital linked to food is identified with unequal consistency. The diagnostic studies deal in depth with the complexity of the urban metabolism and the agrological capacities of the cities. However, the main results are not transferred to the strategy documents, although there does exist the recognition of the weakness of the cities' natural capital due to the expansion of the urban uses. Allusions are also made concerning the urgency of defining the adequate political processes to control or reverse this tendency, in addition to starting up environmental restoration policies and the sustainable management of ecosystems with a high productive and heritage value that historically provided food to these cities. Nevertheless, the documents do not contain specific measures in line with the need to counter the unsustainability of the natural capital; nor do they define the resources that have to be mobilized to protect or recuperate productive agrarian spaces.

The food strategies examined show a precise definition of the accumulated territorial capital. They identify the city's existing food networks based on the territory and they define the available facilities for promoting the construction of new distribution channels for proximity products. Furthermore, an accurate diagnosis of the strengths and weaknesses of the specific urban-based territorial resources can be observed. Outstanding among the strengths are the progressive increase in agro-ecological initiatives and the existence of innovative, quantitative, reduced, but qualitatively significant, alternative food networks. The added value of the ecological products in social and environmental terms and the values of trust and transparency in the short proximity circuits constitute a strengthening factor in the process of constructing sustainable food systems that favor local agriculture. The appreciation of local products is also favored by the factors of identity and culture. The weaknesses, however, can be seen, in particular, in the difficulties that agro-ecological initiatives face to achieve economic viability in the medium term, the barriers that more sustainable practices face to entering the conventional agricultural sector and the weakness of the stable structures for coordination between the different food movements. In this sense, it can be expected that the food policies should contribute to reinforcing the articulation of local actors, both from a horizontal perspective (to the interior of the links in the food chain) and a vertical perspective (between the different links in the chain).

As pointed out by Alberio and Moralli (2021), the trajectory of the territories plays a crucial role in the creation and self-organization of the social capital. This trajectory is, in some cases, in line with many plans of the food strategies (continuity in a productive fabric, permanence of a functional vegetable garden space, administrations in which the development of participative public policies is normalized, etc.…); however, in other cases, this tradition does not exist or has ceased to be functional. In this latter case, food strategies, such as that of Valladolid, have serious difficulties in their development, which are perhaps not well gaged in the documents on which they are based. In fact, the different documents used in this work show how the interactions of social capital increase and the sustainability of the processes set up by the strategies are enriched in favorable contexts, known for the presence of a dense food territory in which a large part of the meanings and dimensions of sustainable, healthy, alternative food appear and interact.

As for the expected actions to promote the territorial sustainability of the food system, we can observe some formulations that lack accuracy. The mechanisms for constructing the territorial capital to produce sustainable proximity food are limited to the normative spaces of the projects. The introduction of the food perspective in urban planning is necessary in order to advance in the construction of food facilities and funding. However, there are hardly any few definitions of the incorporation of the criteria for food sovereignty in the urban and territorial plans displayed in the municipal sphere; nor are there territorial planning tools that guarantee the security and permanence of the municipal agricultural lands.

The strategies mention the holistic focus of the policies, but this is not translated into concrete actions that really integrate the diverse dimensions of sustainable territorial planning in order to deal with the challenges inherent in food. The coherence of the policies and the integration of the food strategies in wider plans are fundamental elements in the design of robust, local alternatives that can reinforce the urban–rural links and favor the reconnection of the food chain in the spheres of production, distribution and consumption. However, the lack of regular collaborative dynamics and spaces, the diversity of interests, and the differences in competences between the public administrations make the articulation of the scales (local, metropolitan, and regional) more difficult. This is also the case with the coordination of the actors in the food system, considering the interdependencies and the possibility of developing agro-food initiatives with an integral vision. In this sense, it is fundamental to provide a solid mechanism for coordination that can articulate the competences that are being distributed between the diverse administrative authorities in order to ensure the political sustainability and operational effectiveness of the food agendas.

Finally, the strategies are elaborated and developed using a similar range of governance tools for all the studied cities. They are also similar, on the other hand, to those used in other places (Doernberg et al., 2019). They all take advantage of participative processes with a similar conception and development that, although it may seem excessive to qualify them from bottom up, it is true that they respond to open models of administration, in line with previous experiences that surpass the representative model, to delve into procedures that aim to provide a greater democratic and social legitimacy to the maximum exponent of urban public policies concerning food.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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References

Alberio, M., and Moralli, M. (2021). Social innovation in alternative food networks. The role of co-producers in Campi Aperti. *J. Rural. Stud.* 82, 447–457. doi: 10.1016/j.jrurstud.2020.10.007

Allen, S., Brauw, G., and Gelli, A. (2016). *Harnessing value chains to improve food systems. 2016 global policy report*. Washington, DC: International Food Policy Research Institute, pp. 48–55.

Barbera, F., Dagnes, J., and Di Monaco, R. (2018). "Consumers' quality conventions in alternative, conventional, and high-end food chains" in *Alternative food networks. An interdisciplinary assessment*. eds. A. Corsi, F. Barbera and E. Dansero (Cham: Palgrave-MacMillan), 87–117.

Beddington, J., Asaduzzaman, M., Clark, M., Fernández, A., Guillour, M., Jahn, M., et al. (2012). *Achieving food security in the fase of climate change: Final report from the commission on sustainable agriculture and climate change*. CGIAR Research programo n Climate Change, Agriculture and Food Security (CCAFS), Copenhague.

Berti, G., and Mulligan, C. (2016). Competitiveness of small farms and innovative food supply chains: the role of food hubs in creating sustainable regional and local food systems. *Sustainability (Switzerland)* 8:616. doi: 10.3390/su8070616

Blay-Palmer, A., Santini, G., Dubbeling, M., Renting, H., Taguchi, M., and Giordano, T. (2018). Validating the City region food system approach: enacting inclusive transformational City region food systems. *Sustain. For.* 10:1680. doi: 10.3390/su10051680

Blay-Palmer, A., Sonnino, R., and Custot, J. (2016). A food politics of the posible? Growing sustainable fodd systems through networks of knoweledge. *Agric. Hum. Values* 33, 27–43. doi: 10.1007/s10460-015-9592-0

Born, B., and Purcell, M. (2006). Avoiding the local trap: scale and food systems in planning research. *J. Plan. Educ. Res.* 26, 195–207. doi: 10.1177/0739456X06291389

Calori, A., and Magarini, A. (2015). *Food and the cities. Politiche alimentari per città sostenibili*. Milano, Edizioni Ambiente.

Camagni, R. (2003). Incertidumbre, capital social y desarrollo local: enseñanzas para una gobernabilidad sostenible del territorio. *J. Reg. Res. Investig. Reg.* 2, 31–57.

Camagni, R. (2008). "Regional competitiveness: towards a concept of territorial capital" in *Modelling regional scenarios for the enlarged Europe: European competitiveness and global strategies*. eds. R. Capello, R. Camagni, B. Chizzolini and U. Fratesi (Berlin: Springer Science and Business Media), 33–48.

Camagni, R., and Capello, R. (2013). Regional competitiveness and territorial capital: a conceptual approach and empirical evidence from the European Union. *Reg. Stud.* 47, 1383–1402. doi: 10.1080/00343404.2012.681640

Candel, J. (2020). What's on the menu? A global assessment of MUFPP signatory cities' food strategies. *Agroecol. Sustain. Food Syst.* 44, 919–946. doi: 10.1080/21683565.2019.1648357

Candel, J., and Pereira, L. (2017). Towards integrated food policy: Main challenges and steps ahead. *Environ Sci Policy* 73, 89–92. doi: 10.1016/j.envsci.2017.04.010

Capello, R., and Faggian, A. (2005). Collective learning and relational capital in local innovation processes. *Reg. Stud.* 39, 75–87. doi: 10.1080/0034340052000320851

Carbone, A. (2018). Foods and places: comparing different supply chains. *Agriculture* 8:6. doi: 10.3390/agriculture8010006

Carey, J., and Dubbeling, M. (2017). *City region food system Indicator framework*. Leusden: RUAF Foundation.

Cheshire, L., Esparcia, J., and Shucksmith, M. (2015). Community resilience, social capital and territorial governance. *AGER* 18, 7–38. doi: 10.4422/ager.2015.08

Chiffoleau, Y., and Dourian, T. (2020). Sustainable food supply chains: is shortening the answer? A literature review for a research and innovation agenda. *Sustain. For.* 12:9831. doi: 10.3390/su12239831

Coppo, G., Stempfle, S., and Reho, M. (2017). Urban food strategies and plans: considerations on the assessment construction. *City Territ. Archit.* 4:8. doi: 10.1186/s40410-017-0064-2

Coulson, H., and Sonnino, R. (2018). Re-scaling the politics of food: placed-based urban food gobernance in the UK. *Geoforum* 98, 170–179. doi: 10.1016/j.geoforum.2018.11.010

Dansero, E., and Pettenati, G. (2018). "Reterritorialization, proximity, and urban food planning: research perspectives on AFNs" in *Alternative food networks. An interdisciplinary assessment*. eds. A. Corsi, F. Barbera and E. Dansero (Cham: Palgrave-MacMillan)

Dematteis, G., and Governa, F. (2005). Territorio y territorialidad en el desarrollo local. La contribución del modelo SLoT. *Bol. Asoc. Geógr. Esp.* 39, 31–58.

Doernberg, A., Horn, P., Zasada, I., and Piorr, A. (2019). Urban food policies in German city regions: an overview of key players and policy instruments. *Food Policy* 89:101782. doi: 10.1016/j.foodpol.2019.101782

Donati, P. (2018). Capital social, relaciones sociales y bienes públicos: ¿qué conexiones? Recerca. *Rev. Pens. Anàl.* 23, 169–192. doi: 10.6035/Recerca.2018.23.8

Dubois, A. (2018). Nurturing proximities in an emerging food landscape. *J. Rural. Stud.* 57, 1–12. doi: 10.1016/j.jrurstud.2017.10.005

FAO. (2018). *Monitoring framework*. Milan, Italy: Milan Urban Food Policy Pact.

Farinós, J. (2008). Gobernanza territorial para el desarrollo sostenible: estado de la 1085 cuestión y agenda. *Boletín de la AGE*, 46, 11–32.

Feagan, R. (2007). The place of food: mapping out the 'local' in local food systems. *Prog. Hum. Geogr.* 31, 23–42. doi: 10.1177/03091325070735

Fenstra, G. (1997). Local food systems and sustainable communities. *Am. J. Altern. Agric.* 12, 28–36. doi: 10.1017/S0889189300007165

Galzki, J., Mulla, D., and Meier, E. (2017). Mapping potential Foodsheds using regionalized consumer Expenditute data for southeastern Minnesota. *J. Agric. Food Syst. Community Dev.* 7, 1–16. doi: 10.5304/jafscd.2017.073.013

Goodman, M. K. (2015). Food geographies I: relational foodscapes and the bussy-ness of being more than food. *Prog. Hum. Geogr.* 40, 257–266. doi: 10.1177/0309132515570192

Goodman, D., Dupuis, E. M., and Goodman, M. K. (2014). *Alternative food networks. Knowledge, practice, and politics. 2nd Edn.* New York: Routledge.

Harvey, D. (2006). *"Space as a keyword", in a critical reader, D*. Harvey, Oxford: Blackwell Publishing Ltd., pp. 70–93.

Hedberg, R. (2020). Coming out of the Foodshed: phosphorus cycles and the many scales of local food. *Anal. Am. Assoc. Geogr.* 110, 684–704. doi: 10.1080/24694452.2019.1630248

Ilieva, R. (2017). Urban food systems strategies: a promising tool for implementing the SDGs in practice. *Sustain. For.* 9:1707. doi: 10.3390/su9101707

Jenkins-Smith, H., and Sabatier, P. (1993). "The study of public policy processes" in *The Nation's health*. eds. C. Estes and P. Lee (Sudbury: Jones and Barlett), 135–142.

Kallio, G. (2020). A carrot isn't a carrot isn't a carrot: tracing value in alternative practices of food exchange. *Agric. Hum. Values* 37, 1095–1109. doi: 10.1007/s10460-020-10113-w

Lanzi, F., Noel, J., and Maréchal, K. (2021). *Analyse des stratégies territoriales multi-niveaux au sein du «Collectif 5C», un réseau wallon de coopératives alimentaires*. Belgeo [En ligne], 2 2021, mis en ligne le 11 juin 2021.

López, D., Alonso, N., and Herrera, P. M. (2018). *Políticas alimentarias urbanas para la sostenibilidad. Análisis de experiencias en el Estado español, en un contexto internacional*. Fundación Entretantos. Available at: https://www.municipiosagroeco.red//wp-content/uploads/2018/04/PoliticasAlimentariasUrbanasParaLaSostenibilidad_Informe_v4.pdf.

López-García, D., Alonso-Leal, N., García-García, V., Molero-Cortés, J., García-Fernández, J., Arroyo-Escudero, L., et al. (2020). Ámbitos de gobernanza en las políticas alimentarias urbanas: una mirada operativa. *Estud. Geogr.* 81:e051. doi: 10.3989/estgeogr.202065.065

López-García, D., and González de Molina, M. (2020). "Co-producing agro-food policies for urban environments: toward agroecology-based local Agri-food systems" in *Urban agroecology: Interdisciplinary research and future directions*. eds. M. Egerer and H. Cohen (Boca Ratón: CRC Press), 189–208.

Magnaghi, A. (2000). *Il Progetto locale*. Torino: Bollati Boringhieri.

Mansfield, B., and Mendes, W. (2013). Municipal food strategies and integrated approaches to urban agriculture: exploring three cases from the global north. *Int. Plan. Stud.* 18, 37–60. doi: 10.1080/13563475.2013.750942

Maye, D., Holloway, L., and Kneafsey, M. (2007). *Alternative food geographies. Representation and practice*. Bingley: Emeral Group, Howard House, Wagon Lane.

Mérida, J., and Tellería, I. (2021). ¿Una nueva forma de hacer política? Modos de gobernanza participativa y «Ayuntamientos del Cambio» en España (2015-2019). *Gestión Anál. Polít. Públicas* 26, 92–110. doi: 10.24965/gapp.i26.10841

Miller, S., and Mann, J. (2020). Measuring the importance of local food in the Chicago Foodshed. *J. Agric. Food Syst. Community Dev.* 9, 1–122. doi: 10.5304/jafscd.2020.092.008

Moragues-Faus, A., Clark, J., Battersby, J., and Davies, A. (2023). *Routdledge handbook of urban food governance*. London: Routdledge.

Moragues-Faus, A., Sonnino, R., and Marsden, T. (2017). Exploring European food system vulnerabilities: towards integrated food security governance. *Environ. Sci. Pol.* 75, 184–215. doi: 10.1016/j.envsci.2017.05.015

Mouléry, M., Sanz Sanz, E., Debolini, M., Napoléone, C., Josselin, D., Mabire, L., et al. (2022). Self-sufficiency assessment: defining the Foodshed spatial signature of supply chains for beef in Avignon, France. *Agriculture* 12:419. doi: 10.3390/agriculture12030419

Mundier, P., and Rumpus, L. (2012). La route des paniers. Rèflexions sur l'efficacité ènergètique d'une forme de distribution alimentaire en circuits courts. *Cahiers Geogr. Quebec* 56, 225–241. doi: 10.7202/1012220ar

Mundler, P., and Laughrea, S. (2016). The contributions of short food supply chains to territorial development: a study of three Quebec territories. *J. Rural. Stud.* 45, 218–229. doi: 10.1016/j.jrurstud.2016.04.001

Ogando, O., and Miranda, B. (2002). *La evaluación de las políticas públicas: aspectos metodológicos y estudio de casos*. In: VII Seminario sobre gestión pública local. Evaluación y control de políticas públicas. Indicadores de gestión. Gijón: Ayuntamiento de Gijón.

Perucca, G. (2014). The role of territorial Capital in Local Economic Growth: evidence from Italy. *Eur. Plan. Stud.* 22, 537–562. doi: 10.1080/09654313.2013.771626

Peters, C., Bills, N., Lembo, A., Wilkins, J., and Fick, G. (2009). Mapping potential foodsheds in New York state: a spatial model for evaluating the capacity to localize food production. *Renew. Agric. Food Syst.* 24, 72–84. doi: 10.1017/S1742170508002457

Praley, C., Chazoule, C., Delfosse, C., and Mundler, P. (2014). Les circuits de proximité, cadre d'analyse de la relocalisation des circuits alimentaires. *Géogr. Écon. Soc.* 16, 455–478. doi: 10.3166/ges.16.455-478

Raffestin, C. (1986). Territorialité: Concept our Paradigme de la géographie sociale? *Geogr. Helv.* 41, 91–96. doi: 10.5194/gh-41-91-1986

Raffestin, C. (2012). Space, territory and territoriality. *Environ. Plan. D Soc. Space* 30, 121–141. doi: 10.1068/d2131

Renting, H., Marsden, T. K., and Banks, J. (2003). Understanding alternative food networks: exploring the role of short food supply chains in rural development. *Environ Plan A* 35, 393–411. doi: 10.1068/a3510

Safonte, G. F., Bellia, C., and Columba, P. (2021). Commoning of territorial heritage and tools of participated sustainability for the production and enhancement of agro-environmental public goods. *Agric. Food Econ.* 9:10. doi: 10.1186/s40100-021-00180-w

Sanz-Cañada, J., and Muchnik, J. (2016). Geographies of origin and proximity: approaches to local agro-food systems. *Cult. Hist. Digit. J.* 5:e002. doi: 10.3989/chdj.2016.002

Sibbing, L., Candel, J., and Termeer, K. (2021). A comparative assessment of local municipal food policy integration in the Netherlands. *Int. Plan. Stud.* 26, 56–69. doi: 10.1080/13563475.2019.1674642

Sonnino, R. (2016). The new geography of food security: exploring the potential of urban food strategies. *Geogr. J.* 182, 190–200. doi: 10.1111/geoj.12129

Sonnino, R. (2017). The cultural dynamics of urban food governance. *City Cult. Soc.* 16, 12–17. doi: 10.1016/j.ccs.2017.11.001

Sonnino, R., and Marsden, T. (2006). Beyond the divide: rethinking relationships between alternative and conventional food networks in Europe. *J. Econ. Geogr.* 6, 181–199. doi: 10.1093/jeg/lbi006

Sonnino, R., Marsden, T., and Moragues-Faus, A. (2016). Relationalities and convergence in food security narratives. Towards a place-based approach. *Trans. Inst. Br. Geogr.* 41, 477–489. doi: 10.1111/tran.12137

Sonnino, R., and Spayde, J. (2014). "The new frontier? Urban strategies for food security and sustainability" in *Sustainable food systems: Building a new paradigm*. eds. T. Marsden and A. Morley (London: Earthscan), 186–205.

Storper, M. (1997). Le economie locali come beni relazionali. *Sviluppo Locale, IV* 5, 5–42.

Tecco, N., Bagliani, M., Dansero, E., and Peano, C. (2017). Toward the local territorial food system: spaces of analysis and action. *Bollett. Della Soc. Geogr. Ital. Roma* 10, 20–38. doi: 10.13128/bsgi.v10i1-2.492

Tilman, D., and Clark, M. (2014). Global diets link environmental sustainability and human health. *Nature* 515, 518–522. doi: 10.1038/nature13959

Timpanaro, G., Foti, V., Scuderi, A., Schippa, G., and Branca, F. (2018). New food supply chain systems base don a proximity model: the case o fan alternative food network in the Catania urban area. *Acta Hortic.* 1215, 213–218. doi: 10.17660/ActaHortic.2018.1215.39

Tornaghi, C., and Dehaene, M. (2020). The prefigurative power of urban political agroecology: rethinking the urbanisms of agroecological transitions for food system transformation. *Agroecol. Sustain. Food Syst.* 44, 594–610. doi: 10.1080/21683565.2019.1680593

Uphoff, N. (1998). Learning about and for participation: from theoretical and empirical studies to practical experience, and back to theory. *Can. J. Dev. Stud.* 19, 439–460. doi: 10.1080/02255189.1998.9669764

Vaarst, M., Escudero, A., Chappell, M., Brinkley, C., Nijbroek, R., Arraes, N., et al. (2018). Exploring the concept of agroecological food systems in a city-region context. *Agroecol. Sustain. Food Syst.* 42, 686–711. doi: 10.1080/21683565.2017.1365321

Vicente-Vicente, J., Quintas-Soriano, C., and López-Rodríguez, M. D. (2022). A transformative (r)evolution of the research on agriculture through fostering human-nature connectedness–a special issue editorial. *Agriculture* 12:522. doi: 10.3390/agriculture12040522

Winter, M. (2003). Geographies of food: agro-food geographies making reconnections. *Prog. Hum. Geogr.* 27, 505–513. doi: 10.1191/0309132503ph446pr

Wiskerke, J. S. C. (2009). On places lost and places regained: reflections on the alternative food geography and sustainable regional development. *Int. Plan. Stud.* 14, 369–387. doi: 10.1080/13563471003642803

Young, L., Baker, L., and Stahlbrand, L. (2022). "Urban food systems and the importance of food policy councils. The Toronto perspective" in *Critical perspective in food studies*. eds. M. Koç, J. Sumner and A. Winson (Ontario: Oxford University Press), 319–333.

Zasada, I., Schmutz, U., Wascher, D., Kneafsey, M., Corsi, S., Mazzocchi, C., et al. (2019). Food beyond the city -analyzing foodsheds and self-sufficiency for different food systems scenarios in European metropolitan regions. *City Cult. Soc.* 16, 25–35. doi: 10.1016/j.ccs.2017.06.002

Zonneveld, W., and Waterhout, B. (2005). Visions on territorial cohesion. *Town Plan. Rev.* 76, 15–27. doi: 10.3828/tpr.76.1.2

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Navigating agroecological urbanism: examining linkages and interdependencies within alternative food networks

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In pursuing agroecological urbanism – a strategic endeavor to dismantle disempowering structures within urban food systems through cultivating mutual interdependencies – alternative food networks (AFNs) emerge as pivotal catalysts for transformative change. Indeed, there are increasing arguments for AFNs working on diverse issues to pool resources and address food system challenges from multiple perspectives under a common frame. However, a pressing need exists for greater clarity on tensions and challenges in establishing a network of AFNs within a shared framework, such as that fostered by agroecological urbanism. This study explores impediments to organizing AFNs into transformative networks, drawing insights from two diverse urban contexts – Preston, England, and Vitoria-Gasteiz, Basque Country – using a case study methodology comprising online semi-structured interviews and participant observation. Our findings underscore three primary barriers to this process: divergent conceptualizations of food questions, education and awareness-raising as a limited convergence point, and constrained resources. Such barriers generate a practical divorce between social and environmental goals in the experiences analyzed. Central to this division is also the pivotal question of the subject of justice – whether AFNs advocate primarily for urban citizens' interests or prioritize peri-urban and rural farmers' concerns. The analysis highlights the need to develop inclusive socio-ecological narratives within the overarching framework of agroecological urbanism as a critical step in fostering collaborative coalitions among AFNs that move beyond individualized change. Building these coalitions would depend on funding availability for long-term strategic collaborative efforts, emphasizing the crucial role of public authorities in such processes.

KEYWORDS

agroecology, sustainable food networks, alternative food networks, food sovereignty, agroecological urbanism

1 Introduction

Multiple terms are used to refer to alternative food efforts, albeit referring to a set of heterogenous initiatives: local food initiatives (LFIs), local food systems (LFSs), sustainable food networks (SFNs), alternative agri-food networks (AAFN), alternative food initiatives (AFIs), community food initiatives, sustainable food networks (SFNs) and other permutations

(Feagan, 2007). However, usually, the term alternative food networks (AFNs) is preferred in the literature. The term AFNs was introduced in the late 1990s by scholars to broadly embrace newly emerging practices that included a variety of actors, such as producers and consumers, and embodied alternative supply chains to the dominant industrial model of food supply (Murdoch et al., 2000). Since then, the label AFNs has been widely used in the literature to refer to a vast array of initiatives that differ from the conventional food system in one way or another.

AFNs seek to reconfigure the power relations between food system actors, bring nature into food-related concerns, and provide new avenues to address social and economic challenges under a more embedded notion of locality (Forssell and Lankoski, 2015). In particular, the alternative character of AFNs revolves around promoting values beyond profit maximization and industrial logic through market and non-market strategies incorporating some degree of ecological and ethical values within their motivations, local and sustainable food, and cooperation between food system actors (idem). Examples include farmers' markets, box schemes, labels of origin, Fairtrade, and other short food supply chain mechanisms (Misleh, 2022). More recently, a new dimension of AFNs has been identified that integrates a more substantial citizen and participation component under collective relocalization initiatives, such as consumer groups, solidarity purchasing groups, community growing schemes, and various other not-for-profit organizations that support farmers, promote food literacy, or increase healthy food access in marginalized communities (Alkon and Mares, 2012; Vitiello et al., 2015; Brinkley, 2017). As such, AFNs are argued to relocalize different dimensions of food, including spatial, informational, governance, and ownership (Mount, 2012).

The proliferation of studies about AFNs has generated many debates as scholars have started to unpack the dynamics of these practices beyond their attributed potentials and new permutations of the phenomenon materialized as a reaction to new societal challenges. As a result, critical scholars have fostered the notion that AFNs are influenced by different power and decision-making processes and interdependencies at multiple scales that constrain what they can do to transform food systems (DuPuis and Goodman, 2005; Goodman et al., 2012). As AFNs do not exist in an isolated vacuum, their potential for transformative change has been argued to be highly mediated by broader market-based and conventional food system power relations embedded within a broader neoliberal context (McClintock, 2014).[1] These dynamics render a heterogeneous landscape of AFNs with diverse, and at times contrasting, motivations, which do not always conform to values of reciprocity, trust, community, and environmental and social sustainability usually related to them (Carlisle, 2015). According to previous literature, some AFNs can potentially depoliticize food and social justice because they focus on consumer choice, market-based solutions, and personal responsibility (Levkoe, 2011; Mares and Alkon, 2011).

To account for the complexity and hybridity of AFNs, a strand of the literature has introduced a more relational understanding of AFNs (Misleh, 2022), also advanced in this paper. In this view, AFNs are conceptualized as an "array of relationships, rationales, and social values" (Sarmiento, 2017, p. 488). This perspective focuses on the processes through which alternative values are developed and translated (Goodman et al., 2012). It admits that AFNs might never be perfect but can be improved by working with others. Indeed, AFNs do not act in isolation, nor are they absent from interactions with diverse dynamics in their territories, including interconnections with other organizations and AFNs. As a result, there is an increasing argument for alliances between AFNs working on diverse issues to pool resources and address food system challenges from multiple perspectives (Holt-Giménez and Altieri, 2013; Blay-Palmer et al., 2016). It is argued that this can lead to mainstreaming alternative values across AFNs, contributing to more inclusive place-making processes and counteracting the current limitations of some AFNs to move past values usually attached to the conventional food system (Holt-Giménez and Shattuck, 2011; Levkoe, 2014). This has led to various studies highlighting the challenges of building coherence among AFNs (Bauermeister, 2016). Previous literature highlights that diverse visions of social change and derived different discourses and strategies attached to transforming food systems hinder the development of alliances between AFNs (Di Masso and Zografos, 2015). Other studies demonstrate that AFNs need to navigate differences in power and influence via resource exchange, which influences the priorities advanced by the collection of AFNs within a place (Sbicca et al., 2019; Zerbian et al., 2022).

However, there remains a pressing need for enhanced clarity regarding the precise requisites for establishing a network of AFNs within a shared framework that transcends ideological and value-based disparities. This endeavor must also effectively address the multifaceted challenges that AFNs encounter and whether, in this context, inter-organizational alignment is even an objective of AFNs. While ideological cohesion stands as a crucial factor for driving comprehensive, transformative change, its presence alone does not guarantee the seamless alignment of AFNs' efforts toward it. Numerous intricate dynamics come into play, including resource imbalances and external influences, as noted by McClintock (2014). Moreover, a pivotal question lingers: Will the alignment of AFNs genuinely lead to more profound transformative outcomes?

A critical concept that has recently emerged in the context of urban studies is agroecological urbanism. Agroecological urbanism stems from urban planning and design scholarship intending to develop food-enabling cities through agroecological transitions (Deh-Tor, 2021; López-García and de Molina, 2021). Agroecological transitions refer to fundamental changes at various levels across the food system and in social, economic, cultural, ecological, and political dimensions (Duru et al., 2015; Ollivier et al., 2018; Sachet et al., 2021). Significantly, agroecological urbanism recognizes agroecology not only as a movement, science, or individual practice but as a "package" of value-based practices, such as AFNs, that aim to address environmental and social justice, acknowledge cultural diversity, and promote horizontal governance models (Deh-Tor, 2017). In essence, agroecological urbanism fosters the construction of a collective alternative journey that strategically organizes mutual interdependencies of the food system to dismantle disempowering and oppressive structures. This paradigm, as expounded by Tornaghi

1 Neoliberalism is defined here as the "theory of political economic practices that proposes that human well-being can best be advanced by liberating individual entrepreneurial freedoms and skills within an institutional framework characterized by strong private property rights, free markets, and free trade" (Harvey, 2005, p. 2).

and Dehaene (2020), encompasses knowledge exchange to build intersectional solidarities and new subjectivities, active community participation, the integration of agroecology into public policy formulation, a reevaluation of land management models, and the cultivation of a new valuing system that follows a multi-species ethics of care (Tornaghi and Dehaene, 2020; Vandermaelen et al., 2022). Grounded in political agroecology and food sovereignty (Resler and Hagolani-Albov, 2021), agroecological urbanism acts as a political tool to build the ground for how food questions are collectively negotiated within the construction and assemblage of cities as collective structures.

Within this ongoing narrative, agroecological urbanism brings about the collective organization of AFNs as a pivotal catalyst for food systems change. The *urban* character of AFNs' interrelationships – rarely explicitly acknowledged in the literature – is particularly important in this context. Cities are thus viewed as spaces to promote place-based solidarities, whereby AFNs' collective organization becomes a linchpin that propels urban restructuring. Significantly, agroecological urbanism delineates a complex web of interconnected AFNs and other urban actors, intricately weaving interactions and overlaps that nurture the agroecological transition process. Agroecological urbanism envisions these interactions as fostering mutual interdependencies, whereby a collective consciousness is developed around the multiple, intersecting injustices of food systems, thus leading to the reassessment of individual and joint practices to recognize social group differences (Tormos, 2017). In this context, multi-actor networks can be powerful for agroecological transitions by re-framing local development projects and creating new alliances that challenge previous visions of social change (Vaarst et al., 2018; López-García et al., 2019; Resler and Hagolani-Albov, 2021). This entails reflecting on urban actors' roles, particularly marginalized voices like agroecology-oriented farmers and initiatives that aim to address food insecurity, in driving holistic and inclusive urban agroecological transitions (López-García et al., 2020; Simon-Rojo, 2021).

This study examines the challenges for developing interconnected networks of AFNs that align with constructing the place-based mutual interdependencies fostered by agroecological urbanism. In doing so, it emphasizes the contingent and complex nature of the transformative collective potential of AFNs, focusing on the relationships and processes, often political and contested, surrounding their interactions. To attain this goal, an analysis is conducted to understand how and why AFNs in Preston, England, United Kingdom (UK), and Vitoria-Gasteiz, Basque Country, Spain, establish connections and how these limit collective approaches. The following sections introduce the study's methodology, describe the selected case studies, and present the study's findings. Section five discusses the results in the context of agroecological urbanism, including how AFNs' dynamics would need to be reconfigured for just agroecological transitions.

2 Materials and methods

The research adopted a qualitative case study methodology in the form of a collective case study approach. Collective case studies analyze several cases to form a collective understanding of a phenomenon (Stake, 1995). In doing so, this research examines why networks of AFNs within a place take place, the conditions that affect their dynamics, and the consequences of these processes. Preston and Vitoria-Gasteiz were selected as cases because they represent two distinct urban contexts, exhibiting distinct approaches to addressing food-related issues and sustainability concerns within their unique socio-economic and political contexts.

In the last decade, Preston, the administrative center of Lancashire, England, has been affected by post-industrial decline and increased public austerity. It is within England's 20% most deprived local authority areas (Steer Economic Development, 2019). This has led to a community wealth building strategy proposed by Preston's City Council (PCC), often termed the "Preston Model" (CLES, 2017, 2019). Preston sits in the middle of the Lancashire agricultural hub, engaging in various food production activities, including livestock, dairy farming, field vegetables and crops. Vitoria-Gasteiz is the Basque Country's *de-facto* capital, one of the wealthiest regions in Spain that holds relative economic and political autonomy, where the Basque identity is acknowledged as separate, with its own native language: Euskera – Basque. Vitoria-Gasteiz is ranked as one of the best Spanish cities to live and has obtained the titles of European Green Capital 2012 and Global Green City Award in 2019. It is in the Basque province of Álava-Araba, where the agricultural sector is mainly dedicated to large-scale cereal, beet, vineyards, and potato production. In this context, Vitoria-Gasteiz City Council (VCC) places a stronger emphasis on the development of sustainable food systems in the city, exemplified by the implementation of a municipal food plan in 2017 (Zerbian et al., 2022).

This research used multiple sources of evidence and data collection methods to gain an in-depth understanding about the studied areas and enhance the study's credibility. Data collection methods included semi-structured interviews (26 in Preston and 21 in Vitoria-Gasteiz) and participant observation (4 occasions in Preston and 3 in Vitoria-Gasteiz). Table 1 provides more information on the data collected for each city, which was collected from June 2020 to July 2021.

Interviews were semi-structured to allow for a guided and dynamic investigation of research themes by merging structure with flexibility (Ritchie and Lewis, 2003). Overall, interviews aimed to gather insights into the barriers and facilitators of the different collaborations that AFNs might undertake in each city. For this,

TABLE 1 Data collection.

Type of data	Source	Preston	Vitoria-Gasteiz
Online semi-structured interviews	Representatives of AFNs	20	17
	Local food experts: academics, activists, and policymakers	6	4
Total		26	21
Participant observation	Farm walks	0	1
	Social mobilization and awareness-raising events	0	2
	Collective network meetings	4	0
Total		4	3

interviews were conducted with representatives of AFNs and local food experts, using purposive sampling to identify and select potential interviewees (Atkinson and Flint, 2011; Patton, 2018). Interviews with representatives of AFNs covered the activities of AFNs, including their mission and motivation; contextual influences on their activities; relationships with other AFNs and the strength of these connections; and questions to induce self-reflection and considerations for the future. This provided a general picture of *individual* AFNs' motivations and barriers to collaboration from the perspective of AFNs' representatives. In order to contrast these insights with a more critical account of the collective organization of AFNs in each case, interviews with local food experts were also conducted (see Table 1). Local food experts were people who had extensive knowledge about each city's diverse landscape of AFNs (Patton, 2018). This included people working within the studied cases during a prolonged period, such as academic researchers, activists, and policymakers who had been involved in developing and articulating synergies between AFNs. As such, local food experts were able to provide in-depth insights into the complexity of the AFN landscape in each city, as well as contextual background to current AFNs' interactions, helping explain identified tensions between the analyzed AFNs. Given face-to-face restrictions during data collection due to the Covid-19 pandemic, all interviews were conducted remotely.

Participant observation was undertaken during fieldwork and depending on the availability and recurrence of selected events to supplement the interviews (Laurier, 2010). Opportunities for participant observation were prioritized to be present in situations in which AFNs' interactions would take place (Flick, 2014), such as collective network meetings, events, or farm walks open to the public and with a specific focus on presenting new methods to other organizations or people. For this study, the role of "observer-as-participant" was adopted (Grigsby, 2019). Accordingly, participation was explicitly conducted to achieve the aim of collecting data. Moreover, group members were aware of the observation of activities; observations were overt (Corbetta, 2003). Similar to the case of interviews, participant observation was held remotely in Preston due to public health safety concerns concerning the Covid-19 pandemic. This meant that participation was held mainly in virtual spaces that organizations had set up to continue to carry out collective operations. Given the fewer restrictions during data collection in the Basque Country, conducting in-person participant observation in this case was possible, following social distancing and face mask guidelines.

Four meetings were attended as part of the fieldwork in Preston. One meeting was facilitated by PCC, which gathered organizations to discuss improving food access in the city. The other three were part of the revival of Preston's Food Partnership, a cross-sector group that aimed to discuss Preston's challenges concerning food and propose possible solutions. In Vitoria-Gasteiz, participant observation was undertaken in three events: a farm walk organized by a public institute focusing on innovative technological strategies for agriculture within the region to showcase new organic production methods in which farmers from several AFNs in Vitoria-Gasteiz participated, a social mobilization where various AFNs based in Vitoria-Gasteiz gathered to protest the construction of a macro tomato greenhouse in a nearby town, and an agroecological fair held at the local university where several AFNs presented their work. Data during these events was recorded through detailed field notes, including detailed descriptions, analytic notes, and subjective reflections of the observations (Ritchie et al., 2014). Field notes expressed the deepening of knowledge of AFNs' interactions in each case, emerging sensibilities, evolving substantive concerns, and potential theoretical insights (Emerson et al., 2011).

All gathered data was analyzed and interpreted using inductive thematic analysis (Braun et al., 2019). Inductive thematic analysis is a data-driven method used to identify, analyze, and report patterns, referred to as themes, identified in collected data without trying to fit it into a pre-existing coding frame (Braun and Clarke, 2006). Transcribed interviews and fieldnotes were analyzed in QSR NVivo data management program following this process. To ensure confidentiality and anonymity, generic descriptors will be used to refer to the AFNs identified in this study and for verbatim quotes in the results section.

The entire data set was initially coded to identify AFNs' individual approaches, and barriers and facilitators for synergies within each case. To search for cross-case themes in the collected data, a system of categories and subcategories – or second cycle codes – was developed to organize initial codes, following Bazeley's (2013) taxonomic approach. Themes were then developed by analyzing relationships between these categories and subcategories using QSR NVivo queries, comparing the coded text under each of them. A memo describing and interpreting each potential theme was developed. This helped refine the themes while allowing for cross-checking and identifying potential repetition and synergies. The results of this study are presented using three cross-case themes identified through this process: divergent conceptualizations of food questions, education and awareness-raising as a limited convergence point, and constrained resources. The discussion then focuses on crucial insights gained by identifying common patterns across these themes in both cities regarding constructing the place-based mutual interdependencies imagined by agroecological urbanism via AFNs' interconnections. As seen in Section 5, reading across the themes and cases led to identifying a common dynamic across the cities: the collective organization of AFNs into two sub-systems with limited interaction.

3 Introducing the context and landscape of AFNs in each case

To avoid a deterministic reading of AFNs and their relationships, this study followed a relational understanding of how they produce alternative practices, emphasizing the role of networks and diverse market, state, and civil society institutions affecting their transformative potential (Misleh, 2022). AFNs' collective potential is thus inseparable from other systems and processes involved in a city's food system. This broadens the understanding of what initiatives are involved in producing alternatives, which becomes a critical question in searching for possibilities for agroecological urbanism. It explicitly emphasises diversity and inclusivity in building collaborative efforts.

This was especially relevant when deciding how to identify AFNs and whether this included initiatives typically on the outskirts of AFN research, particularly those addressing hunger or emergency food concerns. Prior research has shown that these initiatives can play new roles in building alternative practices by collaborating with local farmers to serve low-income communities, promoting food growing skills among their beneficiaries, and establishing programs for gleaning, gardening, and collective farming (Alkon and Mares, 2012;

Vitiello et al., 2015; Brinkley, 2017). Following a relational view of AFNs, these initiatives also compose the landscape of AFNs as a function of their interrelationships with more "typical" AFNs. As this study focused on the collective potential and interactions between AFNs, these initiatives were also treated as part of the diversity of AFNs within the cases when they displayed patterns of inter-organizational collaborations that denoted relocalization and sustainability values. A detailed description of the landscape of AFNs in each case is introduced next.

3.1 Preston

Preston, a non-metropolitan district with city status, has a population size of around 150,000 inhabitants (Office for National Statistics, 2022). It is recognized for its innovative economic development strategy, the "Preston Model", fostering a favorable environment for economic growth. From 2014 to 2017, its unemployment rate was reduced by almost 50% (Manley, 2018). Serving as the administrative center of Lancashire, the city boasts a robust service sector, supported by institutions like the University of Central Lancashire (UCLan) and the Royal Preston Hospital (Lockey and Glover, 2019). However, Preston still falters on several socio-economic indicators. Although with no current robust data on food insecurity, recent reports point to almost 20% of childhood food insecurity within the city (Bhattacharya and Shepherd, 2020). Previous research indicates that the issue of ensuring healthy food access and affordability is particularly present in deprived wards (Caraher et al., 2010). Indeed, the city suffers from entrenched spatial inequalities, particularly concerning higher levels of deprivation in the central and southern parts of the city (Lancashire County Council, 2019).

The challenging socio-economic landscape of Preston has prompted collaborative efforts to address food insecurity (Zerbian et al., 2022). In response to holiday hunger,[2] PCC facilitated the implementation of Holiday Hunger Markets, with some now running as community supermarkets by various faith-based organizations and community centers to redistribute surplus and donated food throughout the year. These markets are part of a broader network of organizations tackling food insecurity, including food banks,[3] community pantries, and soup kitchens. Several of these initiatives, often with limited involvement from food banks, collaborate with community gardens and allotments to boost local food accessibility in deprived areas and provide cooking and growing workshops. Most community gardens are organized under a network of local environmental and food growing projects, and are fundamentally conceived to foster social cohesion and overall wellbeing to support deprived communities.

Contrary to the burgeoning landscape of AFNs focusing on food access and food growing, "typical" AFNs fostering short food supply chains are marginal. Two AFNs offering local vegetable and fruit box schemes were identified that had previously been active in the city. However, these initiatives no longer existed at the time of the study. Their previous representatives were still interviewed for the research to provide a perspective on the challenges of AFNs in the city. One of the banner active AFNs promoting local food is the Preston Market, an indoor and outdoor municipal market that includes a diversity of local food retailers, which underwent an initial refurbishment between 2017 and 2018 as part of the installment of the "Preston Model". Besides this space, there is one monthly local farmers' market in the city run by volunteers and connected to a local church. Although AFNs selling and distributing sustainable food are largely absent, the city has seen the emergence of social enterprises promoting sustainable food systems. One such enterprise, led by university students, specializes in sustainable and healthy cooking workshops. Another is a café and community hub that advocates for local, ethical, and quality food, providing training programs and supporting healthy, local cooking for families while collaborating with local retailers and producers.

Some local producers sell their produce in Preston through outlets like the Preston Market and local retailers, and supply the mentioned social enterprise. Additionally, while not selling directly in the city, other local, sustainable producers within the region had been involved with Preston's AFN landscape through informal connections. Those included in the study had been part of discussions to construct joint projects with one of the social enterprises, such as developing a network of food hubs that would allow farmers to sell produce directly to people in Preston.

3.2 Vitoria-Gasteiz

Vitoria-Gasteiz is ranked among the 50 wealthiest cities and ten cities with lowest unemployment in Spain (INE, 2020). Despite the relatively prosperous state of Vitoria-Gasteiz, 7.7% of the population was living in real poverty (material deprivation) in 2020 (Gobierno Vasco, 2021a). This is higher than the average figures in the Basque Country (5.6%), but lower than Spanish national figures (21%) (EAPN, 2020). This could be related to the city's history of well-planned growth (Beatly, 2012), backed by strong environmental, health, and social urban planning strategies, and the Basque Country's robust social welfare system that targets socio-economic exclusion (Gobierno Vasco, 2021b). The city has also had a relatively steady growth in population over the years, reaching approximately 250,000 people. Notably, migration has increasingly gained weight in the city's demographics, with the non-Spanish population accounting for 10.5% (Vitoria-Gasteiz, 2020).

Similar to the rest of the Basque Country, Vitoria-Gasteiz differentiates itself from the rest of Spain in terms of culture. For example, the Basque language, Euskera, is one of the oldest languages in Europe, and to date, there is no evidence of common linguistic origins with other languages (Urla, 2012). The Basques, due to their distinct ethnic identity and historical experiences, maintain a strong sense of nationalism (Ruiz, 2004). In 1959, ETA (Basque Homeland and Freedom) was founded in opposition to the Franco dictatorship, leading to a violent nationalist and pro-Basque-independence campaign (Hamilton, 2007). Although

2 Holiday hunger in England refers to the experience of food insecurity by some children, particularly from low-income families, that do not receive school meals during holiday periods.

3 Food banks in the UK are not-for-profit and charitable initiatives that distributes emergency food parcels to people in need.

ETA dissolved in 2018 (Zernova, 2019), attempts to maintain a Basque identity continue, albeit in non-violent forms, such as actively promoting the Basque language and culture (Urla, 2012; Naylor, 2019).

Protecting the Basque identity and economic development is intimately tied to food. Several AFNs actively promote artisanal, local, and traditional small-scale food consumption and production (Zerbian et al., 2022); many with an explicit agroecological focus. The city hosts three weekly municipal markets where local farmers sell horticultural products and artisanal foods and a regular indoor market with a section dedicated to organic produce. One of the biggest AFNs that foster short food supply chains is an online food retailer that delivers weekly organic boxes around the city, aiming to source from producers as close to the city as possible.

Compared to Preston, Vitoria-Gasteiz is situated within a municipality, also named Vitoria-Gasteiz, which encompasses 40% farmland (UAGA, 2011). This has translated into many AFNs in Vitoria-Gasteiz having strong urban–rural ties, especially those from civil society. Two city-based organic farmers' associations[4] provide representation and technical support for organic farmers in the province, with one managing a consumer group. Other associations include one promoting regional gastronomy in collaboration with local producers, an organic consumption group running a community organic store for its members, and a Fairtrade and responsible consumption network. The city is also the main headquarters of the Basque Regional Seed Network, a civil society organization dedicated to preserving native seeds. At the same time, the City Council has implemented a municipal project to provide access to peri-urban land to new local organic producers. Most producers in this project sell locally either through box schemes or in municipal markets, and prioritize agroecological food production practices.

Other civil society organizations in the city actively promote food growing by managing municipal organic gardens (charities and community development associations) and self-managed community gardens (neighborhood associations). Moreover, a solidarity urban agriculture initiative – the Agricultural Program for Employability – provides practical training for agricultural employment, enhancing employability skills for individuals at risk of social exclusion, such as migrant communities. Despite low levels of overall food insecurity (3.7%) (Gobierno Vasco, 2021a), the city maintains a robust emergency food provision system led by VCC and Banco de Alimentos of Álava-Araba, a regionwide organization facilitating food surplus redistribution by connecting food companies and charities or associations. Local farmers actively contribute to the Banco de Alimentos of Álava-Araba.

4 Association in Spain refers to a legal entity formed by a group of individuals or organizations who come together with a common purpose, whether it is for social, cultural, recreational, or any other lawful objectives. Associations are usually non-profit and, thus, a crucial part of various aspects of civil society.

4 Results

4.1 Divergent conceptualizations of food questions

4.1.1 Preston

The prevalent sentiment among AFNs in Preston underscores the urgency of addressing food (in) security, commonly denoted by interviewees as "food poverty". This concern takes center stage in the agendas of numerous AFNs in Preston, exemplified by initiatives like Holiday Hunger Markets, community pantries, and soup kitchens, hereafter referred to food access-oriented AFNs. Interviewees from these AFNs perceived food poverty as a nuanced issue beyond mere financial constraints on food access, often intertwining food access initiatives with broader socio-economic inclusion efforts. While food access-oriented AFNs frequently collaborate with AFNs focusing on local food growing, such as community gardens and allotments, the promotion of local and sustainable food was frequently regarded during interviews as peripheral to their core activities:

> "We don't operate in quite the same way I know others operate with the having access to local food and sourcing only… We don't operate like that because it's very difficult, because the food that comes to us, the sources, we don't have that. It's not a luxury, but we don't have that […] fundamentally really, it's about reducing food waste, reducing food poverty, getting people involved, which can then help them do that cycle of self-worth, self-confidence in training and bringing people round." (Community pantry – Preston)

Significantly, food access-oriented AFNs mainly regarded their role in constructing sustainable food systems by reducing food waste. On the other hand, a smaller proportion of interviewees from AFNs, particularly local farmers and retailers, emphasized the need to change current food supply chains, highlighting the role of a "cheap" food environment constructed by the conventional food system:

> "The way it would work is if food was more expensive. I realize that that would have implications, but a lot of it is down to society's values. In my opinion. Society… Doesn't really value food that much or a lot of it. OK, when I talk about society… sweeping statements, but a lot of people don't value the food that they eat. They really don't care. As long as it's convenient, as long as it's affordable and cheap." (Local producer – Preston)

This perspective strongly highlights the need for value changes in consumer attitudes to address the detrimental effects of current food supply chains. Moreover, many representatives of these AFNs advocated for food relocalization and short food supply chains as a crucial strategy to increase value for local producers and thus address their marginalization in current food systems. Within this context, food access-oriented AFNs were perceived as perpetuating issues in current food systems and fostering dependency instead of empowerment. In these instances, food access-oriented AFNs were usually discussed in the context of broader food banking models and, thus, perceived as part of that system rather than relevant actors in changing food systems.

However, food-access oriented AFNs Preston proved very diverse, with many distinguishing themselves from traditional food banks by aiming for an inclusive and empowering approach. For example, Holiday Hunger Markets operate on a pay-as-you-feel basis, and community pantries function as community supermarkets with a nominal entry fee, enabling customers to choose their items—services accessible to all community members. Most of these activities are used by these AFNs as an avenue to promote participation in additional services like mental health support or housing advice and, thus, address socio-economic exclusion. Additionally, many of these AFNs offer beneficiaries opportunities, such as participating in food growing projects and cooking workshops, reflecting a multifaceted approach to addressing food insecurity.

This dynamic results in a division between AFNs, with interactions mainly revolving around the redistribution and donation of food from local farms and retailers to food access-oriented AFNs. This division is also engrained even within the same organization. For example, the local church that runs the monthly local farmers' market also holds a Holiday Hunger Market. However, when discussing the synergies between these two initiatives, the representative of the local farmers' market mentioned that they were separate projects with separate objectives and, thus, with no interactions. The situation is further complicated by the alignment of AFNs with common visions, particularly in their perception of food relocalization and sustainable food as a priority. This has led to the formation of two distinct, albeit informal, alliances at the time of data collection. One focused on addressing food poverty, including community pantries, Holiday Hunger Markets, food banks, and the local environmental and growing projects network. The other was more strongly dedicated to promoting local and sustainable food. It was led by a social enterprise that worked closely with local food producers and retailers to develop joint projects for sustainable food systems in the future. Although the social enterprise of this latter alliance had been trying to combine the agenda of ensuring equitable food access and sustainable food systems through food relocalization, such as the development of a solidarity scheme providing people with vouchers to buy in local shops, the role of predominantly food access-oriented AFNs in this context was seen as marginal.

4.1.2 Vitoria-Gasteiz

In contrast to the situation in Preston, the landscape of Vitoria-Gasteiz's AFNs exhibits a stronger emphasis on sustainable, locally sourced food, prioritizing a transformative shift toward traditional production systems. Within this landscape of AFNs, a subset of AFNs with a pronounced focus on agroecological transitions, henceforth referred to as agroecology-oriented AFNs, have coalesced into an informal "sustainable food movement", as articulated by interviewees. This informal movement actively engages in joint projects and more politically oriented events, such as collective demonstrations advocating for agroecology-based food systems and organic farming. Notably, they advocate for family farms, known as "baserris" in the Basque language, and local, traditional foods as crucial components of agroecology-oriented approaches, often perceived as elevating quality standards and minimizing reliance on industrial methods. Interviewees frequently linked this commitment to a robust sense of pride in the Basque identity, where local food serves as a cornerstone of the culture:

> "Here in the Basque Country, we are so from the Earth, we are so proud of being Basque that when we add the Basque flag [ikurriña] to any product […] the best potatoes are ours…". (Local food expert 3 – Vitoria-Gasteiz).

Compared to Preston, organizations in Vitoria-Gasteiz concentrating on food access, such as community pantries or soup kitchens, demonstrated limited engagement with urban food growing and local food projects and even less so with those emphasizing sustainable food practices. As a result, their role in shaping the AFN landscape was relatively restricted. Nonetheless, notable distinctions were still identified among AFNs in Vitoria-Gasteiz that engaged in food relocalization. Certain AFNs prioritize socio-economic inclusion and community development for urban residents more prominently rather than advocating for changes in agricultural systems to foster environmental sustainability, a hallmark of their agroecology-oriented counterparts.

AFNs with an identified pronounced focus on socio-economic inclusion were typically overseen by charities or community organizations with broader community development objectives that run urban agriculture initiatives and community gardens while following certain organic food production methods. When discussing similarities and possibilities of collaboration with agroecology-oriented AFNs, interviewees from AFNs focusing on socio-economic inclusion perceived that their overall activities were not interrelated with agroecology and organic food. For them, food growing served as a means to enhance employability and community integration, fostering practical, social, and soft skills applicable to future job opportunities and creating inclusive spaces for social cohesion. As such, they highlighted stark differences with agroecology-oriented AFNs concerning the end-purpose for which food is grown – for economic/environmental or social purposes:

> "It has nothing to do to produce to sell than to produce as is our case. Our goal is not the sale […] We can be very in favor of that […] of ecological exchanges […] But it has nothing to do with it." (Community garden – Vitoria-Gasteiz)

> "And we continue to maintain contact, being two collectives that intersect – they in terms of nutrition and moving toward a more ecological perspective, and we more focused on social integration. So, we meet on occasion, but our objectives are two different goals. They would hardly embrace our motto, and our slogan is that tomatoes can rot, but people cannot." (Agricultural Program for Employability – Vitoria-Gasteiz)

The divergent overarching goals of promoting agroecology-based food systems or addressing socio-economic inclusion are also present in AFNs with seemingly similar structures, such as organic community gardens. While community gardens overseen by charities or community development associations do not strongly advocate for agroecology or organic production as a means for social change —viewing it more as a practical aspect of their work—self-organized community gardens, managed by neighborhood associations, actively endorse agroecology as a means of increasing the right to food and grow whilst simultaneously addressing environmental sustainability issues.

This dichotomy significantly limited interactions between agroecology-oriented AFNs and those emphasizing socio-economic inclusion, resulting in primarily occasional and informal exchanges. Interactions were not actively sought but emerged organically due to shared activities, such as growing organic food, leading to invitations to similar events or shared spaces. For example, the Agricultural Program for Employability and producers associated with one of the organic farmers' associations sold produce in the same municipal market, but their overall projects did not interact.

4.2 Education and awareness-raising as a limited convergence point

4.2.1 Preston

Preston's socio-economic disparities drive many efforts and available funding toward initiatives countering derived negative impacts, including social isolation and material deprivation. This is translated into a shared priority across AFNs – despite the conceptual differences discussed before – to develop people's capabilities by providing people with resources, be it skills or information, as a form of empowerment and community development:

> "So, once they have those skills and knowledge then that's something that can be built upon, and the more sort of sustainable Preston will become. They [AFNs] are upskilling people. They might be unemployed people, they might not have achieved very, highly academically, uhm or educationally, and so they can now learn skills that are transferable, which they can then use, you know, in… Jobs in other organizations or volunteering elsewhere, or even setting up their own initiatives as well, which complement the work as well." (Local food expert 3 – Preston)

This priority is translated into many AFNs utilizing food as a vehicle for social change. For instance, one of the social enterprises working on sustainable food systems aims to improve employability skills through food-related certifications such as food hygiene. At the same time, several AFNs focus on providing cooking workshops and food-growing opportunities for citizens to build transferable skills and change food consumption habits beyond processed foods bought at supermarkets. Both of the identified social enterprises working on sustainable food systems also used these opportunities to raise awareness about broader environmental sustainability issues, such as reducing food waste or the environmental impacts of food consumption.

The emphasis on food education and cultivating individuals' transferable skills through food constitutes a crucial element in fostering collaborations across AFNs. For instance, the "grow-to-cook" initiative, facilitated by the network of local environmental and food growing projects in previous years, developed strategic partnerships with community centers that manage community gardens and primary schools. Its operational framework encompassed the delivery of food-growing sessions by the network of environmental and food growing projects, subsequently integrated into cooking workshops facilitated, at times, by another AFN, thus optimizing the utilization of available resources. As Preston includes various culturally diverse communities, interviewees highlighted the need to be culturally sensitive in these projects, such as encouraging the use of recipes related to participants' cultural backgrounds.

However, the success of these collaborative initiatives often hinged on available resources, such as time and volunteer availability, leading to inconsistency; an issue further discussed in the following theme. In addition, questions during interviews regarding long-term collaborations for broader citywide impact revealed a relative unawareness of each other's initiatives, particularly between food access-oriented AFNs and those promoting local and sustainable food. Moreover, when considered, devising collaborations were usually discussed in operational and practical terms:

> "Uhm… I think some might be growing a little bit of food, but I don't think that's really what they do anymore. There aren't really very many food projects, or I'm not really aware of any other food projects in Preston. But there are organizations that have a bit of a food agenda. I had a meeting this morning, so we were talking about how we could join forces and I've said look, you know we got online courses that you could use. It is on our YouTube; you can use it. Let's try to look at things and work together, so that's great we have started that conversation now…" (Social enterprise – Preston)

This perspective highlights a disconnect among AFNs that could engage in complementary activities due to the unfamiliarity with each other's efforts. For example, the social enterprise of the above quotation provides cooking workshops. Yet, they were rarely involved in the previous example of "cook-to-grow" sessions led by the network of environmental and food growing projects.

4.2.2 Vitoria-Gasteiz

A common concern among interviewees in Vitoria-Gasteiz was the decline of Vitoria-Gasteiz's food culture over the years. Nevertheless, respondents still recognized Vitoria-Gasteiz as a city with a relatively mature environmental consciousness. Environmental awareness in the city is a starting point for the work of many AFNs, harnessing the preoccupation of civil society around sustainability to tap into other issues related to promoting local and organic food consumption:

> "Let's talk about responsible consumption for yourself that is healthy for you but seeks a balance with your environmental and social surroundings. I mean, if you buy from local producers, you are ensuring that those local producers can live in their town, maintain the landscape, and there can be good people engaging in economic activities in the villages." (Organic farmers' association – Vitoria-Gasteiz)

Awareness campaigns promoting consumer change are thus deeply ingrained in AFNs' activities. For instance, AFNs involved in short food supply chains, such as the online food retailer delivering weekly organic boxes or the organic store run by the organic consumption association, regularly disseminate information to their members through websites and communication channels, emphasizing the significance of relocalizing the city's food system.

While some of these awareness-building efforts are inherent to AFNs' daily operations, most are also explicitly focused on targeted programs for city residents. These efforts encompass local food tastings,

farm visits, occasional organic and local markets, talks on food or seed sovereignty and agroecology open to the public, and cooking workshops. Funding for these activities often comes from the VCC or the Environmental Studies Centre (CEA), a public autonomous municipal body associated with the City Council. This financial support also enables AFNs, focusing on practical project implementation, such as self-organized community gardens, to incorporate cultural elements into their work, including courses, talks, summer cinema, or theater events addressing topics such as the relevance of organic agriculture and food sovereignty.

This sentiment is a foundational element for numerous collaborative activities to address the imperative to transform consumption patterns through organized talks and conferences involving two or more AFNs, many also publicly funded. A notable instance is the annual Food Civic Encounter (Encuentro Cívico Alimentario) or a university-backed agroecological fair featuring diverse sessions, workshops, and talks by AFNs. The organizing committee usually comprises multiple AFNs, emphasizing a collective effort. The specific emphasis on consumption in these events is intricately tied to its perceived potential for transformative change and political agency:

> "Let's understand the right to food or any type of responsible consumption in which we have the capacity for decision-making, or we should have it, in which.. not only political, but also personal, which is also political, right? Well, then, understanding the work toward transformative consumption under the umbrella of conscious and transformative consumption, well, that's how we work with them, you know." (Organic consumption association – Vitoria-Gasteiz)

Nevertheless, awareness-raising for consumer change proved to be a conflicting middle-point between agroecology-oriented AFNs and AFNs with an identified pronounced focus on socio-economic inclusion. AFNs with a stronger emphasis on socio-economic inclusion noted that this focus was somewhat restricted to middle-class, affluent citizens, as many collective events emphasized the consumption of organic or local "gourmet" food:

> "Here, when it comes to food, someone should ask why there is a boom in the fruit trade controlled by two migrant populations, primarily the Pakistani and Moroccan communities […] people are buying what they can afford for their meals, making choices within a certain range […] Vitoria is a city of 300,000 inhabitants, with many belonging to the middle-lower middle class." (Agricultural Program for Employability – Vitoria-Gasteiz).

From the perspective of agroecology-oriented AFNs, products under these schemes are not necessarily expensive if bought in "alternative" spaces and based on seasonality. However, delving deeper into who could access these schemes, interviewees from agroecology-oriented AFNs acknowledged that inequalities in food access were almost absent from discussions and, at times, usually referred to a problem of developing countries rather than local realities. Indeed, more disadvantaged communities, such as migrants, including Latin Americans, Muslims, Africans, were not actively present in the agroecological "scene" of Vitoria-Gasteiz observed during fieldwork, such as in the university-backed agroecological fair.

4.3 Constrained resources

4.3.1 Preston

Most AFNs in Preston are operated by not-for-profit organizations, primarily relying on volunteers and external public and private funding. This organizational structure is not exclusive to food access-oriented AFNs. Community gardens are similarly managed by community charities, local volunteers, or as part of community projects. Both social enterprises working on sustainable food mentioned operating under strict resource limitations, as their profit-generating activities did not suffice to fund their social objectives. Consequently, they actively searched for external funding and volunteers to support and execute specific projects. Although established as social enterprises, the two identified inactive AFNs offering local vegetable and fruit box schemes also mentioned being largely dependent on voluntary work – one of the predominant reasons for their closure.

Interviewees highlighted that the limitations imposed by finite resources, encompassing workforce, time, and funding, stemming from the predominantly voluntary and charity-based landscape, pose significant challenges to their ability to engage in collaborative efforts with others:

> "I have a full-time job in the church. I have so much time that I can give, and I think how much time should I give to this? I have so many other roles and expectations upon me. So, that is true for me and for everybody else as a volunteer." (Holiday Hunger Market – Preston)

The concern of balancing work and volunteer roles reflects the disadvantaged position of these types of initiatives in building inter-organizational connections in a broader context of the UK's broader political-economic austerity and welfare reform, where there has been an increased reliance on voluntary sector groups to meet local needs. However, funding opportunities, such as government grants and donations, are limited. This leads to a competitive and challenging environment for AFNs, in which they must focus more on ensuring individual financial viability:

> "So, they do have their own aims and they do have their own targets that they have to meet for their funding priorities. And like I said, they know each other, so there isn't really a barrier there as far as not knowing or not being aware before each other is doing […] the overall goal, which is kind of sustainability and food sovereignty kind of comes secondary to individual goals of each organization, which is to try and get this many participants involved or to try and make this much money so that the business can keep going." (Local food expert 3)

This situation also partially elucidates why collaborations between AFNs from the two identified informal alliances – one emphasizing local and sustainable food and the other addressing food access – often overlooked cooperative ventures. As some AFNs within the alliances share similar activities, such as delivering cooking sessions, they also cater to similar funding and opportunities to harness more resources.

Scarce resources also hindered AFNs concentrating on short food supply chains from expanding their engagement with the majority of AFNs in Preston beyond food donations. Local food retailers and farms highlighted the challenge of surviving in a competitive

landscape dominated by supermarkets and industrialized farms, imposing limitations on collaborative endeavors. For example, one local producer explained why developing the network of food hubs in collaboration with one of social enterprises was an ongoing challenge:

> "Yeah, it's supply and demand, isn't it? We've got a load of pumpkins at the moment. Could they use them? Can they give us the price for them? To buy them, to make it worth our while transporting them to or not. Probably not. And specially if they are getting food donated to them, you know." (Local producer – Preston)

Two situations were identified that could break this cycle of limited resources, leading to prioritizing individual needs and neglecting collaborations: funding bids stressing the need for inter-organizational collaboration or when collaborations offered an opportunity to expand reach and enhance effectiveness. Nevertheless, within intermittent funding primarily focused on short projects, most interactions remained one-time occurrences. Routine connections focused on practical aspects, such as sharing resources like recipes, videos, or surplus food. As such, interviewees highlighted the need for an individual or organization, usually PCC, to commit time to fostering long-term alliances with more strategic objectives.

4.3.2 Vitoria-Gasteiz

The closer rural orientation of several AFNs, particularly agroecology-oriented AFNs, translated into interviewees recurrently mentioning the negative effects of the organization of the regional agricultural system on small-scale farmers. In particular, the dominance of the corporate food system and the regional (Basque) food industry was mentioned as a crucial concern due to its strong influence on farm policies. In this context, interviewees from agroecology-oriented AFNs indicated the presence of informal alliances that span across political and technical realms, including regional and local governments, the regional farmers' union, and conventional farmers' cooperatives:

> "[…] I believe that we must allocate more resources to the agricultural sector and promote the local product and whatever you want. But it is a machinery that is in motion and when the machinery, both the institutional machinery and that of all the sectoral organizations, […] do not see this as meeting their interests, it is difficult to put them later in a common interest…" (Local producer – Vitoria-Gasteiz)

These informal alliances showcase the weight of the agri-food industry in public policies, leading to increased embeddedness of economic and efficiency-driven narratives among resource holders. As these informal alliances prioritize conventional food supply chains and production systems, small agricultural holdings must adapt to their rules as a condition to accessing public and private funding and resources, limiting potential alternatives for adopting organic production methods:

> "After many years of looking at it, I believe that in my project of making organic cheese that had to close the final decision was mine, but with all the obstacles we encountered along the way, I have the feeling that they were even political, that someone was pulling strings to prevent anyone from leaving the system and showing that it's possible […] it's the system itself, politically speaking too, there are political interests that dictate that you have to give your raw materials, your grain, to the cooperative because that cooperative has to be maintained" (Local food expert 3 – Vitoria-Gasteiz)

For representatives of AFNs with a focus on socio-economic inclusion, such as community gardens run by charities or community development associations, the main challenges revolved around the static and bureaucratic structure of the City Council when trying to introduce alternative initiatives to address Vitoria-Gasteiz' societal concerns:

> "The difficulties are institutional, what is normalized, I mean, structured under rules. The requirements when you must function not as life asks for it, but as the system asks for it." (Community garden – Vitoria-Gasteiz)

Adapting to the structural rules of public administrations is then a concern that runs across AFNs. This is related to the fact that many AFNs in the city directly rely on them to function, for example, via an external contract to provide technical services for farmers in the case of farmers' associations or support socio-economic inclusion by managing municipal organic gardens in the case of several charities or community development associations. While this created a more stable environment for AFNs than those in Preston regarding resources, interviewees mentioned a potential limitation in their ability to counteract policies because it could potentially lead to decreased funding.

While differing from the drivers influencing AFNs in Preston, the current disparate landscape in Vitoria-Gasteiz also translated to a recurrent mention by interviewees of challenges regarding resource limitations, especially concerning staffing and time allocation. Many AFNs operate with part-time staff members who primarily focus on ensuring the organization meets its objectives of funded projects and public contracts. Consequently, interviewees mentioned that collaborative activities often necessitate additional effort and predominantly rely on voluntary commitments when no funding is available for joint projects. Interviewees also mentioned that because many AFNs have similar focuses concerning supporting local farmers and enhancing local food production, there is a reluctance to collaborate due to them competing for the same public funding opportunities, such as the case of the Agricultural Program for Employability, the two city-based organic farmers' associations and the association promoting regional gastronomy in collaboration with local producers. These dynamics resulted in AFNs aligning more closely with those sharing similar values, especially whether agroecological transitions was used as a guiding framework for actions. This contributed to the distinction between agroecology-oriented AFNs that regularly interact and those emphasizing socio-economic inclusion with limited engagement in these shared spaces.

5 Addressing the divergences of AFNs for building mutual interdependencies

The examination of the cases points to three interlinked barriers to building an interconnected network of AFNs underpinned by the mutual interdependencies imagined by agroecological urbanism: divergent conceptualizations of food questions, education and awareness-raising as a limited convergence point, and constrained resources. Despite contextual differences, a dynamic arising from these barriers in both cases is the organization of AFNs into two sub-systems with limited interaction. The first sub-system consists of *access-oriented* AFNs, including food access-oriented AFNs in Preston and those focusing on socio-economic inclusion in Vitoria-Gasteiz. The second sub-system comprises *supply-oriented* AFNs, including agroecology-oriented AFNs in Vitoria-Gasteiz and those promoting sustainable and local food in Preston. The implications of this separation are discussed under three main points: *the practical divorce among urban social justice and environmental and agrarian goals; the role of restrictive narratives; and the need for inclusive socio-ecological narratives.*

5.1 The practical divorce among urban social justice and environmental and agrarian goals

The results of this study point at two underlying dynamics that influence the collective organization of AFNs into the supply-oriented and access-oriented blocks identified: (i) the expected end-result of using food as a means for social change; and (ii) the subject of justice through which AFNs frame their activities (see Table 2). The division of the empirical examples of AFNs found in our cases into these sub-systems offers a binary approach that could oversimplify the characteristics of AFNs. However, such a binary approach proved useful in representing the actual dynamics between AFNs we found and helped analyze AFNs' collective organization through agroecological urbanism.

Regarding the expected end-result of using food as a means for social change, differences in social and environmental goals provide the first backbone of the identified sub-systems. In both cases, most supply-oriented AFNs usually referred to food education as a vector to change consumption habits to develop sustainable food supply chains and achieve environmental sustainability. On the other hand, access-oriented AFNs referred to food-related activities such as food growing and education as a means to address underlying causes of food insecurity and socio-economic exclusion by increasing access to skills, capabilities, and spaces for community development and empowerment.

This separation of the purpose of food between access-oriented and supply-oriented AFNs reflects how a systemic and multidimensional conceptualization of food challenges is predominantly lacking in practice within AFNs. Notably, in both instances, access-oriented AFNs perceived food security and socio-economic inclusion as distinct objectives from environmental sustainability. At the same time, supply-oriented AFNs saw food security and socio-economic inclusion aims as distant. In Vitoria-Gasteiz, this translated into the formation of an informal "sustainable food movement" composed of agroecology-oriented AFNs which recurringly develop joint projects for awareness-raising events, emphasizing the need to support organic or local food producers in the context of agroecology-based food systems. However, integrating this focus with those AFNs focusing on socio-economic inclusion, such as the Agricultural Program for Employability or community gardens run by charities and community development associations, proved difficult due to a perception of having separate purposes. Similarly, in Preston, several AFNs promoting sustainable and local food had limited interactions with food access-oriented AFNs, such as community pantries, as they were seen as not fitting within the broader development of sustainable food systems. This was the case even though AFNs engaged in similar activities in some cases, such as delivering cooking sessions for enhanced community empowerment or even when AFNs were hosted at the same organization.

Such a practical divorce between social and environmental sustainability aims represents a significant contradiction regarding the term's original meaning and its further development for constructing sustainable food systems envisioned by agroecological urbanism in practice (Lang and Barling, 2012). It signals that a framework for advancing sustainable food security – ensuring physical, social, and economic access to nutritious and culturally appropriate food considering the economic, social, and environmental aspects of food systems (HLPE, 2017) – is lacking amongst AFNs. This issue has been a significant point of discussion in the literature on AFNs, whereby AFNs linked with environmental sustainability aims are argued to fall short in addressing social justice (Mares and Alkon, 2011). Nevertheless, the results highlight that social justice concerns can be present in AFNs with stronger environmental goals, albeit oriented

TABLE 2 Access-oriented vs. supply-oriented AFN sub-systems.

Sub-system	Expected end-result of using food as a means for social change	Subject of justice	Example AFNs found in the cases
Access-oriented	Socio-economic inclusion Food security	Urban citizens	Community gardens run by charities and community development associations – Preston and Vitoria-Gasteiz Food access-oriented AFNs, such as Holiday Hunger Markets and community pantries – Preston
Supply-oriented	Environmental sustainability Sustainable food supply chains	Rural and peri-urban farmers	Agroecology-oriented AFNs, such as organic consumption groups and organic farmers' association – Vitoria-Gasteiz AFNs promoting local and sustainable food, including farmers' markets, local retailers and farmers – Preston

toward rural development and changing agricultural systems. In both cities, supply-oriented AFNs commonly discuss social justice in the context of mitigating the marginalization of small-scale farmers in peri-urban and rural areas due to entrenched conventional food system dynamics. For instance, agroecology-oriented AFNs in Vitoria-Gasteiz underscore the active involvement of small-scale farmers in collaborative projects, emphasizing fair price negotiations and transparency to foster a more equitable and sustainable agricultural landscape. Similarly, in Preston, AFNs promoting sustainable and local food perceived short food supply chains as empowering small-scale farmers, providing increased value and enhancing their visibility as vital actors in food systems.

Consequently, the dichotomy within AFNs found in both cities also hinges on the central question of *for whom* justice is sought. Thus, the subject of justice – urban citizens or rural and peri-urban farmers – serves as the second crux of the separation of AFNs found in this study. In Vitoria-Gasteiz and Preston, most supply-oriented AFNs, even if based in the city and catering mainly to urban consumers, such as farmers' markets or organic consumer groups, tended to prioritize addressing rural challenges. On the other hand, access-oriented AFNs primarily focused on urban social justice by prioritizing food security or socio-economic inclusion in cities without reflecting on how this related to agrarian questions, imagining urban issues as separate from agricultural systems and rural development.

5.2 The role of restrictive narratives

The separation between rural-oriented and urban-oriented efforts for food systems change has been discussed theoretically in the context of agroecological urbanism (González De Molina and Lopez-Garcia, 2021). Significantly, agroecological urbanism calls for aligning these efforts under the banner of agroecology and food sovereignty. This mirrors previous calls to align AFNs at the conceptual level under a common goal or "master frame" with a unifying message (Lang and Barling, 2012; Bhattacharya and Shepherd, 2020). However, a closer look at the practical division between access-oriented and supply-oriented AFNs found in this study calls for an explicit consideration of how uncritically using certain narratives and discourses might inherently lead to divisions amongst AFNs, particularly regarding how agroecology, sustainability, or local food are framed in practice.

In Vitoria-Gasteiz, supply-oriented AFNs' framing of urban citizens' role and the right to food within food systems change reveals a key dynamic shaping AFNs' collective organization. Agroecology-oriented AFNs emphasized achieving the right to food through political consumption. In this view, urban citizens are imagined in consumer terms, which, through adopting new values, can support agroecological transitions and, thus, the financial viability of small-scale farmers. This predominantly economic discourse regarding urban citizens has led to access-oriented AFNs in Vitoria-Gasteiz perceiving agroecology as misaligned with broader social goals due to affordability issues and its primary focus on changing food supply chains. This raises the question of whether positioning agroecology as the common goal that drives coalitions of AFNs in cities is the most effective approach, as discourses attached to it by AFNs in practice may not serve as a point to discuss mutual interdependencies of diverse issues of injustice. As highlighted by Tornaghi and Dehaene (Tornaghi and Dehaene, 2020), this narrowly conceives the city as a mere consumption hub, overlooking urbanization processes that actively create urban inequalities. This consideration is crucial for the ongoing development of agroecological urbanism, as it implies that, despite the intended pursuit of social justice for all in agroecological transitions (Levidow et al., 2014; Anderson et al., 2019), restrictive narratives based on the economic framing of urban citizens may inadvertently exclude these issues.

In Preston, although not to the same degree as in Vitoria-Gasteiz, supply-oriented AFN also discussed urban citizens under a restrictive economic narrative. Significantly, they emphasized changing the culture of "cheap food" consumption as a crucial priority, often referring to the lack of society's awareness of the "true cost" of food. However, this view undermines the fact that the predominance of this consumption pattern is also a function of the vast socio-economic inequalities permeating the city, limiting many urban citizens' participation in fostering sustainable food systems. Similar to Vitoria-Gasteiz, access-oriented AFNs in Preston saw themselves as not having a role in sustainable and local food spaces due to the perceived misalignment of this approach with urban socio-economic inequalities. In these cases, this misalignment was often related to the perception of higher prices of organic and local food, which was seen as contradictory with the priority to alleviate food insecurity. This concurs with previous studies that have identified socio-economic barriers to the participation of low-income communities in sustainable or local food consumption (Hodgins and Fraser, 2018).

A crucial point that arises for agroecological urbanism is that such a situation risks alienating AFNs already contributing to agroecological transitions and sustainable food systems without necessarily adopting this language or presenting it as a focal point for their activities. This phenomenon has been termed "quiet food sovereignty" in the context of food sovereignty (Visser et al., 2015) or "latent" potential for food systems change (Kneafsey et al., 2017). Many access-oriented AFNs run organic and local urban agriculture and food growing projects in Vitoria-Gasteiz and Preston. Despite not explicitly embracing broader political goals for restructuring food systems, these AFNs effectively address multiple gaps present in supply-oriented AFNs, particularly emphasizing aspects of urban social justice. The exclusion of these AFNs hinders opportunities to develop inclusive narratives surrounding local and sustainable food and agroecology that recognize social group differences as a function of the multiple intersecting injustices permeating food systems (Vandermaelen et al., 2022). Significantly, this impedes supply-oriented AFNs from expanding and *"urbanizing"* their discourses on food systems change while impeding access-oriented AFNs from broadening their framing of food systems as also integrating socio-economic inequalities and community development issues and not merely food supply chains.

5.3 The need for inclusive socio-ecological narratives and more resources

Examining the challenges for constructing place-based mutual interdependencies amongst AFNs, such as those advocated by

agroecological urbanism, raises an essential question regarding what narratives are needed to support this process. The comparative analysis of Preston and Vitoria-Gasteiz highlights a need to develop inclusive socio-ecological narratives that simultaneously recognize environmental sustainability and social goals that can also bridge the rural–urban divide in AFNs' focuses. Embracing a more assertive agroecological urbanism approach could help drive AFNs toward this process as it emphasizes the construction of collective knowledge and mutual learning, highlighting a collective responsibility for changing food systems (Gómez-Benito and Lozano, 2014; Tornaghi and Dehaene, 2020). This is viewed as creating a collective consciousness based on the multiple, intersecting injustices of food systems, which serve as a meeting point to discuss food system challenges. Applying such an approach within AFNs would mean recognizing their responsibilities and obligations as part of a collective pathway of food systems change, including the consideration of the rights of others beyond those affected by their actions. It would also require positioning AFNs' individual roles concerning other AFNs, addressing underlying food system issues according to their circumstances, and fostering critical assessments of their individual and collective actions. Given the challenges discussed here, an agroecological urbanism approach would need to acknowledge how AFNs frame their objectives and activities and whether agroecology serves as a meeting or breaking point in building AFNs' coalitions.

Nevertheless, for AFNs to engage in such a process would mean addressing the prevailing resource constraints that currently shape the organization of AFNs, which remains a crucial concern in the literature (Levkoe, 2015). In both Preston and Vitoria-Gasteiz, constrained resources and limited capacity were identified as barriers to creating associations between AFNs. Significantly, the comparison between Preston and Vitoria-Gasteiz showcases that having a voluntary-led approach and reliance on project-based funding in AFNs increases a feeling of competition rather than cooperation, further accentuating the division of AFNs. In agreement with previous literature, the cases illustrate that these dynamics are associated with the difficulties of AFNs in working within the constraints of conventional food system logics and market-driven priorities across different governance levels (Guthman, 2008; Alkon and Mares, 2012). In other words, as AFNs function within a neoliberal context, there might be limited capacities to work out infrastructures to build integrated strategies. AFNs' collective organization is subject to socio-institutional environments that favor restructuring food systems' power dynamics and governance.

In this regard, there is evidence in Vitoria-Gasteiz and Preston of the potential role of public grants in helping address this barrier by fostering inter-organizational collaboration through specific projects, highlighting public authorities as crucial actors for fostering agroecological urbanism in the context of AFNs. However, the findings showcase that available funding usually promotes the proliferation of short-term collaborative projects, which often tend to prioritize organizational benefits, rendering their impacts, at a minimum, contradictory and limited (Marsden et al., 2018). In this context, a considerable portion of the collaborative strategic work in both Vitoria-Gasteiz and Preston, which previous research recognizes as crucial for developing common narratives (Allen, 2014), relies on voluntary willingness influenced by the capacity of AFNs. This emphasizes the importance of deviating from making resources available for numerous short-term pilot projects toward fostering sustained cross-sectorial, long-term collaborations.

6 Conclusion

This paper analyzed the challenges for developing interconnected networks of AFNs underpinned by mutual interdependencies advocated by agroecological urbanism. The analysis of the findings highlighted the contingent and contested nature of AFNs' interactions, permeated by resource imbalances, divergent motivations, and limited actions for transformative change. These challenges were identified as being reinforced by the embeddedness of AFNs within a neoliberal context in which market-driven priorities and conventional food systems' logics remain dominant. In discussing these dynamics, it was underscored that AFNs organize into two subsystems in the analyzed cases: access-oriented initiatives (including those promoting socio-economic inclusion and food security) and supply-oriented efforts (including those promoting agroecology or the relocalization of food systems). Such division is underpinned by a practical divorce of urban social justice from agrarian and environmental goals, whereby the subject of justice – urban citizens or peri-urban and rural farmers becomes a central locus of dissent.

Overall, there is thus a need to strengthen AFNs by applying an agroecological urbanism approach regarding the values at stake and the activities that might comprehensively emerge from such values. Such a widening of the scope and aims of AFNs might be constructed in two complementary ways. On one side, the discourse surrounding agroecology, sustainable and local food would need to be augmented within some AFNs to include issues of urban social justice to avoid inadvertently excluding certain relevant actors from the discussion. On the other hand, the discourse surrounding food security and urban social justice within certain AFNs would need to recognize how environmental sustainability fits into this approach to advance toward a framework of sustainable food security.

The findings presented in this paper highlight the importance of developing inclusive socio-ecological narratives within the overarching framework of agroecological urbanism as a critical step in this process. In particular, the results point to fostering mutual interdependencies among AFNs that move beyond siloed approaches and a focus on individualized change. This would encourage collective responsibility and consciousness among AFNs, fostering awareness of the intersecting place-based injustices of food systems. For this, a comprehensive understanding of the systemic landscape of AFNs in each locality is required, acknowledging convergence, divergence, and contestation points, including how agroecology fits in each context. However, the current challenging landscape in which AFNs operate, filled with issues of limited capacity and resources, means that explicit measures for addressing these barriers are needed to support this process. Building AFNs' coalitions under this framework would depend on making resources available for long-term strategic collaborative efforts, whereby the findings underscore the crucial role of public authorities in such processes.

These insights underscore at least three different ways in which local public policies can stimulate positive AFNs' interdependencies along an agroecological urbanism approach. First, implementing comprehensive approaches to food policies and multi-actor food governance spaces under an explicit plural sustainability framing that includes social, environmental, and economic justice could enable the

integration of different actors – consumers, farmers, and others – and topics along the food supply chain, such as supply and access. Second, discussing food questions of such policies within broader urbanization dynamics and policies could help recognize how inequalities and environmental unsustainability in cities are expressly framed by their urban condition, shedding light on intersecting injustices and thus building mutual solidarities. Finally, place-based and user-oriented policies that make available resources that strengthen the social infrastructure of AFNs would be essential to address the perverse effects that AFNs' resource constraints induce on their collective organization through precariousness and competition. Particular focus should be placed on avoiding the dynamics of clientelism, co-optation, and externalization of public services to AFNs, as these can perpetuate the distancing between AFNs' efforts.

Finally, our research opens upon an emergent field of study on the actual forms that AFNs may adopt to advance toward sustainable food security, addressing social and environmental sustainability issues around food comprehensively. Further research should address issues such as food prices and affordability, the role of the public authorities, what socio-ecological narratives might enable AFNs to promote sustainable food security, and whether agroecological urbanism does indeed promote this process. Our findings also prompt further reflection on the continued use of the term AFNs to refer to a heterogeneous landscape of initiatives that practice food relocalization and local/organic food production and distribution. Many AFNs' motivations might depart from the normative conceptualization of AFNs as aiming to provide alternatives to or challenge conventional food supply chains.

Data availability statement

The datasets presented in this article are not readily available because Datasets are in the form of interview transcripts. Due to possible identification of those that were interviewed for the study through the information discussed during interviews, transcripts cannot be shared even if in raw, anonymized form. Requests to access the datasets should be directed to tanya.zerbian@cchs.csic.es.

Ethics statement

The study was approved by the University of Central Lancashire's Business, Arts, Humanities and Social Science (BAHSS) Ethics Committee. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

TZ: Conceptualization, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing. DL-G: Writing – original draft, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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References

Alkon, A. H., and Mares, T. M. (2012). Food sovereignty in US food movements: radical visions and neoliberal constraints. *Agric. Human Values* 29, 347–359. doi: 10.1007/s10460-012-9356-z

Allen, P. (2014). "Divergence and convergence in alternative agrifood movements: seeking a path forward in Constanc" in *Alternative Agrifood movements: Patterns of convergence and divergence*. D. H. Constance, M. C. Renard and M. G. Rivera-Ferre (eds.). Bingley: Emerald Group Publishing Limited.

Anderson, C. R., Maughan, C., and Pimbert, M. P. (2019). Transformative agroecology learning in Europe: building consciousness, skills and collective capacity for food sovereignty. *Agric. Human Values.* 36, 531–547. doi: 10.1007/s10460-018-9894-0

Atkinson, R., and Flint, J. (2011). "Snowball sampling" in *The SAGE encyclopedia of social science research methods*. M. Lewis-Beck, A. Bryman and T. Futing Liao (eds.). Thousand Oaks, CA: Sage Publications, Inc.

Ayuntamiento Vitoria-Gasteiz (2020). *Asunto: Informe 2020 para el proyecto Vitoria-Gasteiz Green Deal.* Available at: https://www.vitoria-gasteiz.org/docs/wb021/contenidosEstaticos/adjuntos/es/01/55/90155.pdf

Bauermeister, M. R. (2016). Social capital and collective identity in the local food movement. *Int. J. Agric. Sustain.* 14, 123–141. doi: 10.1080/14735903.2015.1042189

Bazeley, P. (2013). *Qualitative Data Analysis. Practical Strategies*. London, UK: SAGE.

Beatly, T. (2012). *Green cities of Europe. Global lessons on green urbanism*. Washington, D.C.: Island Press.

Bhattacharya, A., and Shepherd, J. (2020). Measuring and mitigating child hunger in the UK. Available at: https://www.smf.co.uk/wp-content/uploads/2020/12/Measuring-mitigating-child-hunger-Dec-20.pdf

Blay-Palmer, A., Sonnino, R., and Custot, J. (2016). A food politics of the possible? Growing sustainable food systems through networks of knowledge. *Agric. Human Values* 33, 27–43. doi: 10.1007/s10460-015-9592-0

Braun, V., and Clarke, V. (2006). Using thematic analysis in psychology. *Qual. Res. Psychol.* 3, 77–101. doi: 10.1191/1478088706qp063oa

Braun, V., Clarke, V., Hayfield, N., and Terry, G. (2019). "Thematic Analysis," in *Handbook of research methods in health social sciences*. P. Liamputtong (ed.). (Singapore: Springer).

Brinkley, C. (2017). Visualizing the social and geographical embeddedness of local food systems. *J. Rural Stud.* 54, 314–325. doi: 10.1016/j.jrurstud.2017.06.023

Caraher, M., Lloyd, S., Lawton, J., Singh, G., Horsley, K., and Mussa, F. (2010). A tale of two cities: a study of access to food, lessons for public health practice. *Health Educ. J.* 69, 200–210. doi: 10.1177/0017896910364834

Carlisle, L. (2015). Audits and agrarianism: the moral economy of an alternative food network. *Elementa* 3, 1–16. doi: 10.12952/journal.elementa.000066

CLES (2017). *Community wealth building through anchor institutions*. Manchester: Centre for Local Economic Strategies.

CLES (2019). *How we built community wealth in Preston: Achievements and lessons*. Manchester: Centre for Local Economic Strategies.

Corbetta, P. (2003). *Social research: Theory, methods and techniques*. London: SAGE Publications.

Deh-Tor, C. M. (2017). From agriculture in the City to an Agroecological urbanism. *Urban Agric. Magaz.* 33, 8–10. Available at: https://edepot.wur.nl/448771

Deh-Tor, C. M. (2021). "Food as an urban question, and the foundations of a reproductive, agroecological, urbanism", in *Resourcing an agroecological urbanism political, transformational and territorial dimensionsan agroecological urbanism political, transformational and territorial dimensions*. C. Tornaghi and M. Dehaene (eds.). London: Routledge.

Di Masso, M., and Zografos, C. (2015). Constructing food sovereignty in Catalonia: different narratives for transformative action. *Agric Human Values.* 32, 183–198. doi: 10.1007/s10460-014-9528-0

DuPuis, E. M., and Goodman, D. (2005). Should we go "home" to eat?: toward a reflexive politics of localism. *J. Rural Stud.* 21, 359–371. doi: 10.1016/j.jrurstud.2005.05.011

Duru, M., Therond, O., and Fares, M. (2015). Designing agroecological transitions; a review. *Agron. Sustain. Dev.* 35, 1237–1257. doi: 10.1007/s13593-015-0318-x

EAPN. (2020). *El Estado de la Pobreza. Seguimiento del Indicador de Pobreza y Exclusión Social en España*. Available at: https://www.eapn.es/estadodepobreza/ARCHIVO/documentos/informe-AROPE-2021-resumen-ejecutivo.pdf

Emerson, R. M., Fretz, R. I., and Shaw, L. L. (2011). *Writing ethnographic Fieldnotes*. Chilago, IL: The University of Chicago Press, Ltd.

Feagan, R. (2007). The place of food: mapping out the 'local' in local food systems. *Prog. Hum. Geogr.* 31, 23–42. doi: 10.1177/0309132507073527

Flick, U. (2014). *An introduction to Qualitative research*. London: SAGE Publications Ltd.

Forssell, S., and Lankoski, L. (2015). The sustainability promise of alternative food networks: an examination through "alternative" characteristics. *Agric. Human Values* 32, 63–75. doi: 10.1007/s10460-014-9516-4

Gobierno Vasco. (2021a). *Encuesta de pobreza y desigualdades sociales 2020. Comunidad autónoma de Euskadi*. Available at: https://www.euskadi.eus/documentacion/2024/informe-del-modulo-epds-pobreza-de-la-encuesta-de-necesidades-sociales-2022/web01-s2enple/es/

Gobierno Vasco (2021b). *Comunidad autónoma de Euskadi. Encuesta de pobreza y desigualdades sociales 2020*. Vitoria-Gasteiz: Gobierno Vasco.

Gómez-Benito, C., and Lozano, C. (2014). Constructing food citizenship: theoretical premises and social practices. *Ital. Sociol. Rev.* 4, 135–156,

González De Molina, M., and Lopez-Garcia, D. (2021). Principles for designing agroecology-based local (territorial) Agri-food systems: a critical revision. *Agroecol. Sustain. Food Syst.* 45, 1050–1082. doi: 10.1080/21683565.2021.1913690

Goodman, D., DuPuis, E. M., and Goodman, M. K. (2012). *Alternative food networks*. London: Routledge.

Grigsby, K. R. (2019). "Participant observation studies" in *The handbook of social work research methods*. B. A. Thyer (ed.). London: SAGE Publications, Inc.

Guthman, J. (2008). Neoliberalism and the making of food politics in California. *Geoforum* 39, 1171–1183. doi: 10.1016/j.geoforum.2006.09.002

Hamilton, C. (2007). The Gender Politics of Political Violence: Women Armed Activists in ETA. *Feminist Review*. 86, 132–148. doi: 10.1057/palgrave.fr.9400338

Harvey, D. (2005). *A brief history of neoliberalism*. New York, USA: Oxford University Press.

HLPE. (2017). Nutrition and food systems. *A report by the High Level Panel of Experts on Food Security and Nutrition*. Rome: Committee on World Food Security (CFS).

Hodgins, K. J., and Fraser, E. D. G. (2018). We are a business, not a social service agency barriers to widening access for low-income shoppers in alternative food market spaces. *Agric Human Values* 35, 149–162. doi: 10.1007/s10460-017-9811-y

Holt-Giménez, E., and Altieri, M. A. (2013). Agroecology, food sovereignty, and the new green revolution. *Agroecol. Sustain. Food Syst.* 37, 90–102,

Holt-Giménez, E., and Shattuck, A. (2011). Food crises, food regimes and food movements: rumblings of reform or tides of transformation? *J. Peasant Stud.* 38, 109–144. doi: 10.1080/03066150.2010.538578

INE. (2020). Indicadores Urbanos. Available at: https://www.ine.es/jaxiT3/Tabla.htm?t=51315

Kneafsey, M., Owen, L., Bos, E., Broughton, K., and Lennartsson, M. (2017). Capacity building for food justice in England: the contribution of charity-led community food initiatives. *Local Environ.* 22, 621–634. doi: 10.1080/13549839.2016.1245717

Lancashire County Council. (2019). *The English Indices of Deprivation, 2019 – key findings for the Lancashire-12 and Lancashire-14 areas*. Available at: https://www.lancashire.gov.uk/media/913361/deprivation2019.pdf

Lang, T., and Barling, D. (2012). Food security and food sustainability: reformulating the debate. *Geogr. J.* 178, 313–326. doi: 10.1111/j.1475-4959.2012.00480.x

Laurier, E. (2010). "Participant observation" in *Key methods in Geograph*. N. Clifford, S. French and G. Valentine. (eds.). *2nd* ed London: SAGE Publications.

Levidow, L., Pimbert, M., and Vanloqueren, G. (2014). Agroecological research: conforming—or transforming the dominant agro-food regime? *Agroecol. Sustain. Food Syst.* 38, 1127–1155. doi: 10.1080/21683565.2014.951459

Levkoe, C. Z. (2011). Towards a transformative food politics. *Local Environ.* 16, 687–705. doi: 10.1080/13549839.2011.592182

Levkoe, C. Z. (2014). The food movement in Canada: a social movement network perspective. *J. Peasant Stud.* 41, 385–403. doi: 10.1080/03066150.2014.910766

Levkoe, C. Z. (2015). Strategies for forging and sustaining social movement networks: a case study of provincial food networking organizations in Canada. *Geoforum* 58, 174–183. doi: 10.1016/j.geoforum.2014.11.013

Lockey, A., and Glover, B. (2019). *The "Preston model" and the new municipalism*. London: Demos.

López-García, D., Calvet-Mir, L., Di Masso, M., and Espluga, J. (2019). Multi-actor networks and innovation niches: university training for local Agroecological Dynamization. *Agric. Hum. Values* 36, 567–579. doi: 10.1007/s10460-018-9863-7

López-García, D., and de Molina, M. G. (2021). An Operational Approach to Agroecology-Based Local Agri-Food Systems. *Sustainability*. 13:8443. doi: 10.3390/su13158443

López-García, D., García-García, V., Sampedro-Ortega, Y., Pomar-León, A., Tendero-Acin, G., Sastre-Morató, A., et al. (2020). Exploring the contradictions of scaling: action plans for agroecological transition in metropolitan environments. *Agroecol. Sustain. Food Syst.* 44, 467–489. doi: 10.1080/21683565.2019.1649783

Manley, J. (2018). *Preston changed its fortunes with 'Corbynomics' – Now other cities are doing the same*. Available at: https://theconversation.com/preston-changed-its-fortunes-with-corbynomics-now-other-cities-are-doing-the-same-106293

Mares, T. M., and Alkon, A. H. (2011). Mapping the Food Movement: Addressing Inequality and Neoliberalism. *Environ. Soc.* 2, 68–86.

Marsden, T., Hebinck, P., and Mathijs, E. (2018). Re-building food systems: embedding assemblages, infrastructures and reflexive governance for food systems transformations in Europe. *Food Secur.* 10, 1301–1309. doi: 10.1007/s12571-018-0870-8

McClintock, N. (2014). Radical, reformist, and garden-variety neoliberal: coming to terms with urban agriculture's contradictions. *Local Environ.* 19, 147–171. doi: 10.1080/13549839.2012.752797

Misleh, D. (2022). Moving beyond the impasse in geographies of 'alternative' food networks. *Prog. Hum. Geogr.* 46, 1028–1046. doi: 10.1177/03091325221095835

Mount, P. (2012). Growing local food: scale and local food systems governance. *Agric Human Values.* 29, 107–121. doi: 10.1007/s10460-011-9331-0

Murdoch, J., Marsden, T., and Banks, J. (2000). Quality, nature, and embeddedness: some theoretical considerations in the context of the food sector. *Econ. Geogr.* 76, 107–125. doi: 10.1111/j.1944-8287.2000.tb00136.x

Naylor, L. (2019). Food sovereignty in place: Cuba and Spain. *Agric Human Values.* 36, 705–717. doi: 10.1007/s10460-019-09938-x

Office for National Statistics. (2022). *How the population changed in Preston:* Census 2021. Available at: https://www.ons.gov.uk/visualisations/censuspopulationchange/E07000123/

Ollivier, G., Magda, D., Mazé, A., Plumecocq, G., and Lamine, C. (2018). What can sustainability transition frameworks teach us? An ontological and empirical analysis. *Ecol. Soc.* 23:5. doi: 10.5751/ES-09952-230205

Patton, M. Q. (2018). "Expert sampling" in *The SAGE encyclopedia of educational research, measurement, and evaluation*. B. B. Frey (ed.). Thousand Oaks, CA: SAGE Publications, Inc.

Resler, M. L., and Hagolani-Albov, S. E. (2021). Augmenting agroecological urbanism: the intersection of food sovereignty and food democracy. *Agroecol. Sustain. Food Syst.* 45, 320–343. doi: 10.1080/21683565.2020.1811829

Ritchie, J., and Lewis, R. (2003). *Qualitative research practice. A Guide for Social Science Students and Researchers*. London: SAGE Publications Ltd.

Ritchie, J., Lewis, J., Nicholls, C. M., and Ormston, R. (2014). *Qualitative research practice: a guide for social science students and researchers*. London: SAGE Publications, Inc.

Ruiz, D. M. (2004). *Ethnicity and violence: The case of radical Basque nationalism. PhD thesis. London School of Economics and Political Science*. Available at: http://etheses.lse.ac.uk/id/eprint/2522

Sachet, E., Mertz, O., Le Coq, J. F., Cruz-Garcia, G. S., Francesconi, W., Bonin, M., et al. (2021). Agroecological transitions: A systematic review of research approaches and prospects for participatory action methods. *Front. Sustain. Food Syst.* 5:709401. doi: 10.3389/fsufs.2021.709401

Sarmiento, E. R. (2017). Synergies in alternative food network research: embodiment, diverse economies, and more-than-human food geographies. *Agric. Hum. Val.* 34, 485–497. doi: 10.1007/s10460-016-9753-9

Sbicca, J., Luxton, I., Hale, J., and Roeser, K. (2019). Collaborative concession in food movement networks: the uneven relations of resource mobilization. *Sustainability (Switzerland)*. 11:2881. doi: 10.3390/su11102881

Simon-Rojo, M. (2021). Powering transformative practices against food poverty with urban planning. *Urban Agric. Reg. Food Syst.* 6:e20021. doi: 10.1002/uar2.20021

Stake, R. E. (1995). *The art of case study research*. Thousand Oaks, CA: Sage Publications, Inc.

Steer Economic Development. (2019). DRAFT: Lancashire local industrial strategy: evidence base. Available at: https://lancashirelep.co.uk/wp-content/uploads/2019/09/Lancashire-LIS-Evidence-Base-DRAFT-v3.8-part-1.pdf

Tormos, F. (2017). Intersectional solidarity. *Polit Groups Identities* 5, 707–720. doi: 10.1080/21565503.2017.1385494

Tornaghi, C., and Dehaene, M. (2020). The prefigurative power of urban political agroecology: rethinking the urbanisms of agroecological transitions for food system transformation. *Agroecol. Sustain. Food Syst.* 44, 594–610. doi: 10.1080/21683565.2019.1680593

UAGA. (2011). *Estudio de caracterización y propuesta de alternativas de desarrollo del sector agrario y del medio rural en el municipio de Vitoria-Gasteiz, en clave de sostenibilidad*. Vitoria-Gasteiz: Ayuntamiento Vitoria-Gasteiz.

Urla, J. (2012). *Reclaiming Basque: Language, nation, and cultural activism*. Nevada: University of Nevada Press.

Vaarst, M., Escudero, A. G., Chappell, M. J., Brinkley, C., Nijbroek, R., Arraes, N. A. M., et al. (2018). Exploring the concept of agroecological food systems in a city-region context. *Agroecol. Sustain. Food Syst.* 42, 686–711. doi: 10.1080/21683565.2017.1365321

Vandermaelen, H., Dehaene, M., Tornaghi, C., Vanempten, E., and Verhoeve, A. (2022). Public land for urban food policy? A critical data-analysis of public land transactions in the Ghent city region (Belgium). *Eur. Plan. Stud.* 31, 1693–1714. doi: 10.1080/09654313.2022.2097860

Visser, O., Mamonova, N., Spoor, M., and Nikulin, A. (2015). 'Quiet food sovereignty' as food sovereignty without a movement? Insights from post-socialist Russia. *Globalizations* 12, 513–528. doi: 10.1080/14747731.2015.1005968

Vitiello, D., Grisso, J. A., Whiteside, K. L., and Fischman, R. (2015). From commodity surplus to food justice: food banks and local agriculture in the United States. *Agric. Human Values* 32, 419–430. doi: 10.1007/s10460-014-9563-x

Zerbian, T., Adams, M., Dooris, M., and Pool, U. (2022). The role of local authorities in shaping local food systems. *Sustain. For.* 14:12004. doi: 10.3390/su141912004

Zernova, M. (2019). Restorative justice in the aftermath of politically-motivated violence: the Basque experience. *Crit. Stud. Terror.* 12, 649–672. doi: 10.1080/17539153.2019.1595922

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Are agroecological cooperative supermarkets an alternative for scaling sustainable food?

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The paper attempts to investigate the capacity of agroecological cooperative supermarkets in Spain to promote scaling of food products by means of a double perspective. We first employ a vertical scaling approach to analyze the issues affecting the governance and collective organization of the Cooperative Supermarket Network (CSN), set up in May 2022 and comprising eleven Spanish supermarkets. Secondly, we employ a perspective of horizontal scaling to investigate the potential for increased numbers of members, as well as the geographic and sociodemographic variables at play which limit the abovementioned scaling: to this end we use the case study of the cooperative supermarket La Osa, opened in Madrid in December 2020. We adopt a methodology based on participatory action research throughout the years 2022 and 2023, in which the research team was involved in the real processes of creation and development of the CSN or of La Osa. The study confirms the hypothesis that agroecological cooperative supermarkets constitute a formula for efficient retail distribution for scaling sustainable food in Spain. As opposed to the first-generation options for responsible consumption, these supermarkets appear to contribute to generating significant economies of scale and scope. In terms of vertical scaling, joint provision of services, as well as the gaining of political influence in society, constitute the main advantages in relation to the functioning of the CSN. While the recruitment of new members has heretofore been considered a priority in horizontal scaling, particular emphasis should also be placed on loyalty strategies targeting existing members.

KEYWORDS

cooperative supermarkets, scaling, sustainable food, agroecology, participatory action research, alternative food networks

1 Introduction

According to Sage et al. (2021), in the last few years a second generation of alternative food networks (AFNs) has been appearing. These attempt to address the shortcomings of the first generation of AFNs (consumer groups, producers' markets or community supported agriculture) with regard to scaling. The fact that these small-sized initiatives generally do not suffice to completely fill families' shopping baskets undermines the respective initiatives aimed at increasing consumption of agroecological food products and, in general terms, of sustainably produced and distributed foodstuffs. Consequently, the real impact of first-generation initiatives has been slight in relation to the ecological transition or to social change.

The initiatives integrating the second generation of AFNs are much more complex with regard to their socio-productive model, number of references, the infrastructure they require and their structure of governance (Rocas-Royo, 2021). Producers' cooperatives dedicated to logistics and wholesale distribution (food hubs), as well as consumers' co-ops involved in retail distribution in the shape of cooperative and participatory supermarkets, constitute two of the principal formulae of the new institutionality (Sanz-Cañada et al., 2023). They have arisen in an attempt to overcome the barriers facing the scaling of sustainable food production and consumption.

The international literature addresses the different systems of scaling of agroecology and sustainable food (Moore et al., 2015; Rosset and Altieri, 2017; Mier y Terán et al., 2018; Nicholls and Altieri, 2018; Ferguson et al., 2019). Hence, vertical scaling (or scaling up) refers to the radius of action of agroecology reaching the institutions in the broader sense of the term, as well as influencing public policies, as compared with a situation involving dispersed small initiatives wielding no institutional or political influence. This modality seeks to promote systemic transformations at the policy level, involving the introduction of urban food policies aiming at developing sustainable food systems or a ban on the greenwashing tactics used by major supermarket chains; it also attempts to establish governmental incentives for non-profit grocery outlets.

In second place, agroecology's horizontal scaling (scaling out) refers to an increase in the number of producers and consumers in a group, cooperative or territory, or to the spatial dissemination of the model. Strategies related to scaling out are characterized as the capability of an organization to replicate a given social innovation across diverse communities, thereby broadening its impact and involving a tendency toward massification. This strategy underscores the importance of increasing the geographic or demographic scale, for example, related to the propagation of agro-food networks within various city districts or the augmentation of their membership base.

In their examination of systemic social innovation, Moore et al. (2015) propose three pivotal strategies for scaling, adding to these the concept of scaling deep, such as the strategies aimed at promoting shifts in societal values and cultural norms, and improving interpersonal relationships. These strategies constitute an attempt to create a significant cultural and behavioral shift, and to encourage consumers to adopt a more conscientious stance on the consumption of local, fresh, seasonal, and ecological products; they also strive to make society aware of the importance of advocating food democracy at both local and regional scale.

The objective of this second generation of AFNs is to push sustainable food beyond a segment of activist consumers, reaching a significant percentage of total agro-food production and consumption. Scaling deep strategies become especially pertinent within a context in which attributes based upon appreciation of local produce, territorial rootedness, health or respect for the environment play a role in the eating habits of increasingly bigger segments of the population (Forssell and Lankoski, 2015; Aufrère et al., 2019). One indicator of the emergence of sustainable food involves the growing tendency in Spain to consume food bearing ecological certification from 2012 to 2022: expenditure on organic food showed an increase of 187%, compared with an 8.9% growth of total spending on food (household and extra-domestic) (MAPA, 2021, 2023). Nonetheless, in 2022 in Spain ecological consumption only accounted for 2.4% of food consumption volume and 3.4% of its value.

This growing tendency, however, of people to consume food products presenting attributes linked to the environment or to the local context is being exploited by the Big Retailers, who are increasingly employing greenwashing commercial techniques: currently, 45.3% of organic food products are increasingly being marketed through self-service establishments belonging to the Big Retail Sector (MAPA, 2023). Conversely, the absence of capillary and professionalized logistics and distribution networks within the scope of AFNs hinders accessibility by consumers to these outlets.

Sanz-Cañada and Yacamán-Ochoa (2022) point out that one of the principal stumbling blocks hindering scaling of agroecology in Spain involves the total lack of commercial logistics or distribution specific to AFNs, because producers generally address logistics and distribution in an atomized and non-professionalized manner. Cooperative action is the only option with regard to collectively dealing with physical (logistics) and commercial distribution issues (Yacamán-Ochoa et al., 2020); this is a vital task with regard to generating collective action synergies and to reaching a certain degree of economies of scale and scope of these activities (De Roest et al., 2018).

The present paper makes particular reference to agroecological cooperative supermarkets, in relation to which the literature is lacking[1], from a vision that analyses them as formulae for the new institutionalization of sustainable food. These are associative consumer initiatives in which the members of the cooperative, dedicated to the retailing of agroecological and sustainable foodstuffs, avail of a physical shop with long opening hours and days; moreover, they dedicate all or a large part of the business to the sale of organic products, which are as local as is possible. These supermarkets are characterized by adopting a participatory and ascending model of governance in which many decisions are taken in assemblies and in thematic commissions.

The paper attempts to investigate the capacity of cooperative supermarkets in Spain to promote scaling-up of food products by means of a double perspective of vertical and horizontal scaling. The research question is whether agroecological cooperative supermarkets constitute a formula for efficient retail distribution for scaling sustainable food in Spain, optimizing the economies of scale and scope at the commercial level.

Firstly, we analyze, from a perspective of vertical scaling, the issues affecting the governance and collective organization of the Network of Cooperative Supermarkets (*Red de Supermercados Cooperativos*, Section 4.1), set up in May 2022 and currently comprising eleven supermarkets. Secondly, we will employ a perspective of horizontal scaling to investigate the potential for increased numbers of members, as well as the geographic and sociodemographic variables at play which limit the abovementioned scaling; to this end we will employ the case

1 An extensive search provided the following results: Jochnowitz, 2001; Hingley et al., 2011; Aufrère et al., 2019; Gauthier et al., 2019; Giacchè and Retière, 2019; Dee Povitz, 2020; Hispacoop, 2020; Rocas-Royo, 2021; Grassart, 2023.

study of the cooperative supermarket *La Osa*, opened in Madrid in December 2020 (Section 4.2). Lastly, Sections 5 and 6, related to discussion of results and conclusions, provide a debate on the impact of agroecological cooperative supermarkets and their organizations in the vertical and horizontal scaling of sustainable food.

2 Theorical framework: agroecological cooperative supermarkets and scaling of sustainable food

The scientific literature has analyzed and debated the characteristics of the dominant model of food production and marketing at global scale, known as the Big Retail model (Moati, 2001; Sanz-Cañada, 2002; Daumas, 2006). The economic and contractual predominance of the global distribution chains defines a competitive strategy that subjects the prices and commercial profit margins of the different phases of the agro-food chain to strong downward pressure. Although it might seem paradoxical, this also indirectly affects the food chains, which precisely are characterized by representing an alternative to the conventional model.

The alternative food sector therefore needs to adapt strategies that provide a sufficient volume of different food references which are intended to attain economies of scale and scope in order to ensure fair prices and a range of products that can fill the shopping basket in one single establishment. Accessibility to outlets and consumer prices are the two main factors hindering the growth of sustainable food consumer segments. Consequently, there is a need to promote cooperative strategies aimed at optimizing logistics and marketing costs, on one hand, and on the other, to facilitate accessibility both of producers to the exchange or sale centers and of consumers to the retail outlets.

Creating agroecological cooperative supermarkets can help to mitigate these limiting factors. They are not profit-making organizations, and their principal objective is to make quality agroecological food as accessible as possible. One must be a member in order to obtain products in these centers, or at least in some, to pay lower prices. Members contribute small amounts of money to the company capital of the cooperative (in some of them, only at the start, but in others, a monthly fee is paid) and monthly work (a small number of hours per member).

This kind of supermarket, specifically known as "participatory", obliges members to put in a certain number of hours of work per month in the shop. Although these supermarkets also hire full-time professionals, payroll costs are considerably reduced as a result of these hours worked by the members in tasks such as storage, inventory, cash desk, weighing fruit and vegetables or cleaning, among others.

A common element to be found in the bibliography on agroecological cooperative supermarkets involves the existence of an ascending governance in the taking of the cooperatives' strategic decisions (Hingley et al., 2011; Aufrère et al., 2019; Giacchè and Retière, 2019), a fact that fits well in the mindset of the agroecological movements. In this sense, the aim is to forge close ties between members, thus promoting the sense of belonging to a community, which is further reinforced by the work done by the members in the participatory supermarkets. Hingley et al. (2011) point out that the goal of these cooperative supermarkets should entail linking business networks with social networks, by means of both political participation and community networks.

Grassart (2023) identifies the origin of agroecological cooperative supermarkets as a contemporary adaptation of the two conventional models of food consumption that predominated at different times of the XX century: consumption cooperatives in which there was no real shop opening on a daily basis and with limited opening hours, and self-service shops belonging to the Big Retail model. Unlike the latter ones, second-generation cooperative supermarkets incorporate the political, transformational dimension characterizing agroecological initiatives; additionally, they are becoming consolidated as an alternative, in relation both to the conventional supermarkets and to other types of first-generation alternative food networks (Giacchè and Retière, 2019).

Economies of scale are vital with regard to supplying cooperative supermarkets, compared with the first-generation options: optimizing transaction costs and concentrating the point of sale make sustainable food to be more accessible and affordable to a larger number of people. Cooperative supermarkets constitute an efficient formula for establishing a "fair price" (Aufrère et al., 2019) through strategies aimed at increasing both the number of members and the unitary expenditure per member.

Furthermore, from the perspective of the economies of scope, cooperative supermarkets constitute a realistic option with regard to providing food products presenting values (Lusk and Briggeman, 2009; Lamarque et al., 2023). Thus, compared with the first-generation AFNs, such as consumer groups, these supermarkets enable families to do all their weekly shopping in the same shop, rather than just some of it, due to the large number and diversity of references of food, personal hygiene and household cleaning products on sale. Availing of a wide range of ecological and local products in one single establishment at fair prices enables a family to significantly increase its consumption of value-based food. This is particularly important at the present time, because the lack of time and accessibility is commonplace amongst many responsible consumers, especially in the big cities.

In a context of growing awareness of sustainable food and the consumption thereof, self-service shops should become the future of the scaling of commercial distribution formulae chosen mainly by consumers from the alternative food sector, as currently occurs within the scope of the conventional food system. According to Spain's Food Consumption Panel in 2022, supermarkets, hypermarkets and discount shops represented 76% of the total volume of food purchases in households (MAPA, 2023).

The pioneering reference of this model of consumer and participatory cooperativism is the supermarket Park Slope Food Coop, which opened in 1973 in Brooklyn (New York), closely linked to consumer-based political activism and as a hub for activist engagement (Jochnowitz, 2001; Gauthier et al., 2019; Dee Povitz, 2020). More recently, the model started to reach Europe. In 2016 La Louve opened up in París and in 2018, Bees Coop in Brussels and Camilla in Bologna. In recent years, new cooperative supermarkets

TABLE 1 Diagram of the methodology employed in the research paper.

Name of the source and year	Types of variables and concepts addressed	Type of source	Table, figure or text
1. VERTICAL SCALING: THE COOPERATIVE SUPERMARKET NETWORK (CSN)			
1.a) Characterisation of the supermarkets belonging to the CSN			
Survey of the CSN supermarkets (2023)	Size (no de members, references and people on payroll), legal form, form of access to purchases, requirements to become a member, and whether or not they only sell organic products	Primary source: interviews of CSN supermarkets' managers	Table 2; Figure 1
Survey: What are the needs of your supermarket? (2023)	Challenges: management of suppliers and stocks, communication and marketing, governance, financial and administrative management, information technologies, etc.	Red de Supermercados Cooperativos (2023), based upon interviews of CSN supermarkets' managers	Figure 2
1.b) Participatory Action Research:			
SWOT matrix on the present and future of cooperative supermarkets in Spain (2023)	Strengths, weaknesses, opportunities, and threats	Primary source: workshop of supermarket representatives with the participation of the research team	Table 3
Round table on cooperative supermarkets in Spain in the *IX International Agroecology Congress* (2023)	Types of advantages of the functioning of the Cooperative Supermarket Network	Primary source: round table with representatives of supermarkets, technical secretary of the CSN and the research team	Text
Strategic Plan of the Cooperative Supermarket Network (2023)	Objectives: common collective identity and intelligence, shared services, model of governance and financial sustainability	Tandem Social and Red de Supermercados Cooperativos (2023). Participation of the research team in workshops and meetings	Table 4
2. HORIZONTAL SCALING: THE COOPERATIVE SUPERMARKET LA OSA (MADRID)			
Socioeconomic, demographic and ideology of the members (2022)	Sociodemographic characteristics, reasons for joining the project, mobility to get to the supermarket, monthly expenditure and degree of satisfaction of the members with the functioning of the supermarket	Primary source: survey of members of the supermarket La Osa	Figures 3–5
Geographical radius within which to focus our attempt to capture members, from an accessibility point of view (2022)	Distance from the home to the supermarket, frequency of purchase and monthly expenditure	Primary source: real anonymized data on members provided by La Osa	Tables 5–7; Figure 6
Barriers against increased numbers of members and strategies for capturing members	Potential market of the supermarket in its area of influence. Target public, motivation and hinderances with regard to becoming a member of a cooperative supermarket	La Osa Coop (2023) and Vinyals i Ros (2023), based upon consumer surveys of La Osa and of CSN supermarkets	Text; data

Source: own elaboration.

have appeared in many cities in France, Switzerland, Belgium and Italy (Giacchè and Retière, 2019), among other countries. In Spain, several establishments have been created since the end of the 2010s. Previously, there had existed some agroecological cooperative supermarkets, which date back, in some cases, to the end of the 1990s (see Section 4).

3 Materials and methods

The methodological approach of this article appraises the two variants of sustainable food scaling: vertical scaling, relating to the *Cooperative Supermarket Network* (CSN) in Spain, and horizontal scaling, corresponding to the case study of a cooperative supermarket in Madrid, *La Osa*[2]. We adopted a method based on participatory action research, in which the research team was involved in the processes of creation, promotion or development of the CSN or of La Osa. Throughout 2022 and 2023, we combined primary data gathered from direct observations and participatory events (work groups, workshops, meetings and assemblies) with secondary sources from surveys and reports commissioned by the CSN or by La Osa. Methodological details, including variables and primary or secondary data are outlined in Table 1.

3.1 Vertical scaling: the Cooperative Supermarket Network

The CSN facilitates resource sharing and collective strategies among Spain's cooperative supermarkets to promote agroecological consumption and a sustainable, equitable and democratic food

2 https://laosa.coop/

model. As of 2023, the CSN comprised 11 supermarkets with 17 shops across 14 municipalities, serving over 11,000 consumers in different regions of the country, and generating over 10 million € in revenue[3].

In 2023 we conducted interviews with the managers of the 11 supermarkets[4] (Table 1), who answered questions about the main variables characterizing the cooperatives (Table 2; Figure 1, Section 4.1). At the same time, the CSN itself interviewed the managers (Red de Supermercados Cooperativos, 2023), in order to define and prioritize the main challenges facing cooperative supermarkets (Figure 2, Section 4.1).

The creation process of the CSN began in the first half of 2022. The foundational assembly (I Congress) took place in Zaragoza in May 2022. The nine participating supermarkets discussed the legal formulae, the mission and vision, the values, the statutes and the internal regulations. Among the results of this first stage, we have selected the SWOT matrix presented in Table 3 (Section 4.1.1.1). In the following months, the CSN focused on launching thematic working groups, which constitute a key axis of the network's functioning. The CSN participated in numerous dissemination and training events, as well as in scientific congresses. For this paper we selected the results of a round table coordinated by the research team in the IX International Agroecology Congress, held in Seville in January 2023. The CSN Strategic Plan was drawn up from April until the end of 2023 (Tandem Social and Red de Supermercados Cooperativos, 2023). A diagnosis was first made of the situation (April–June) by means of individualized interviews with the supermarkets and several virtual collective meetings. The II State CSN Congress, held in Madrid in 2023, was dedicated to defining the strategic lines of the Plan. The consultancy company Tandem Social drew up a draft of the Plan in which five objectives were defined and subdivided into sixteen strategic lines. Finally, the supermarkets categorized these lines as being high, medium or low, or not a priority (Table 4, Section 4.1.1.3)[5].

3.2 Horizontal scaling: the cooperative supermarket La Osa

La Osa, opened in December 2020, is Madrid city's sole agroecological cooperative supermarket. A total surface area of 800 m^2 (400 m^2 for the sales area) is operated by its members, who must work 3-h shifts every 4 weeks. Only members and people associated with these (five per member) can purchase products, which include food (70% organic), but also household cleaning and personal hygiene products.

Horizontal scaling of La Osa would not only increase the number of members, but also the monthly spending of the current ones. The cooperative currently has high fixed costs intended to finance the debt incurred (700,000€) due to the investments in fixed capital for setting up the supermarket (cameras, shelves, dispensers, lifts, furniture, etc.). The active members (who work shifts and can purchase) total around 710, although the estimates were a lot higher prior to the opening of the supermarket Furthermore, the average expenditure per member in 2022 was 99.30€ a month, which is quite low in relation to an optimal situation in which all members of La Osa did their weekly shopping therein.

There are much fewer active members than total members (1,400). Some of the reasons for this large difference between total and active members are the following: some shareholders join out of empathy and solidarity with the project, but live far away, even in other regions; others are relatives of an active member; in other cases, they have stopped working the obligatory shifts and their status as buyers is therefore withdrawn.

Our objective involves identifying the geographic and sociodemographic variables limiting the recruitment of new members, in a context of horizontal scaling. To this end, we employed two primary sources. In the first place, we examined the sociodemographic, economic and ideological profile of the members in an attempt to define the segments of consumers to whom the communication strategy should be addressed. The research team conducted an on-line survey in 2022 with the supermarket members; of a statistical population of 710 people, 363 members answered. The questions were mostly closed-interval ones (Figures 3–5, Section 4.2.1).

Secondly, we attempted to establish the radius of action to focus our efforts to recruit from a perspective of urban accessibility. We obtained anonymized information on members' households, spending and purchasing frequency (year 2022). In order to ensure members' anonymity, the data on location were spatially aggregated on a continuous mesh of regular hexagons with a 300 m diameter (Figure 6, Section 4.2.2). This tessellation proves to be a better solution than using administrative units, because it helps to mitigate the problem of the modifiable spatial unit (Condeço-Melhorado et al., 2020).

We analyzed the spatial distribution of members within the municipality of Madrid, and calculated the distances and times from members' homes to supermarket, attempting to establish correlations between these variables, on one hand, and purchasing frequencies and monthly spending, on the other. To this end we performed an exploratory analysis, establishing a series of distance intervals (0.5 km) and driving time (5 min), based upon an analysis of the supermarket's commercial area. The network employed for this calculation was the one available for the ArcGIS Pro Network Analyst (Tables 5–7, Section 4.2.2).

Additionally, to perform a comparative analysis of the results obtained through the primary sources, we employed two studies of particular relevance based on surveys to analyze the reasons why consumers join a cooperative supermarket or the barriers existing in this regard: a survey commissioned by La Osa conducted with 393 people (members and non-members) intended to establish the potential market of the shop (La Osa Coop, 2023); and a study conducted by Vinyals i Ros (2023) on a group of 1,142 consumers belonging to eight supermarkets of the CSN, intended

3 Funding, both from the Carasso Foundation and the Spanish government's EU-funded Recovery, Transformation and Resilience Plan (PERTE), proved to be crucial to finance the CSN, as it covered, among other expenses, two years' salary for the technical secretary.

4 After the CSN had been set up with new supermarkets, these were joined in the Network by BioAlai, de Vitoria and Som Alimentació, from Valencia, in 2023.

5 This Strategic Plan also contemplates deploying the lines with their respective schedules and funding plan, a whole series of recommendations and a contingency plan.

to establish the most effective campaign to increase the number of cooperative' members.

4 Results

4.1 The Cooperative Supermarket Network

One of the CSN's priority objectives involves representing the collective interests of the supermarkets, increasing their visibility at different geographical scales and disseminating this model in society. Moreover, the CSN promotes inter-cooperation among the member supermarkets, enhancing their degree of professionalism, particularly in terms of management and of adopting information technologies. Its governance structure comprises a Governing Body, an assembly (which meets at least once a year), a technical secretary, and several work groups that meet on a fairly regular basis: purchases, communication, information technologies for supermarket management, subsidies (for obtaining financial resources), and a coordination group.

As for the mindsets of cooperative supermarket owners, they can all be said to be clearly committed to promoting sustainable food, agroecology and food sovereignty. Supermarkets websites reflect the following values: links between producers and consumers, the principles of a social and solidarity-based economy, prioritizing local products, reducing the ecological footprint, fair food prices, democratic decision making, or ensuring the economic viability of farming and artisanal agro-industries.

Table 2 and Figure 1 present a series of differential characteristics of the supermarkets belonging to the CSN. The dates on which these were set up in Spain vary from 1991 to 2022. The latest wave, corresponding to those set up as from 2018, is based upon the Park Slope Food Coop (New York) model of participatory supermarket and on that of La Louve (Paris), where members are obliged to participate in work shifts in the supermarket. These cooperative supermarkets are dispersed through the country, but they are all situated in different-sized cities. All these supermarkets require an initial contribution from the members to the company capital as a condition for joining: this ranges from 50 to 180€. A feature differentiating these supermarkets from conventional ones is that all or most of the references are certified as organic: the minimum percentage corresponds to La Osa (70%), but most of these supermarkets only sell organic food.

There is a high degree of variability in the number of members in the supermarkets and in the people on the payroll: Landare stands out due to possessing two shops, 3,600 members and 29 people on the payroll; BioAlai has 1,600 members, 11 people on the payroll and one shop; at the other end of the spectrum is Biolíbere, with only 180 members, one shop and one worker on the payroll. The figures concerning Landare and BioAlai are explained by the fact that they are pioneer in Spain (1991 and 1993, respectively) and because they are located in regions (Navarra and Basque Country) presenting strong rootedness in the social and solidarity economy.

The number of references of these supermarkets ranges from 900 to over 3,000: four of them (Landare, Almocafre, La Osa and BioAlai) have over 2,500, a figure that indicates considerable variety, compared to consumer groups or other alternative food networks; however, a conventional supermarket offers between 5,000 and 10,000 references.

The predominant legal formula is the consumer cooperative, but only two supermarkets are consumers' associations (similar to cooperatives, but with fewer legal requirements). These supermarkets are non-profit-making companies whose business model prioritizes participation, democratic decision making, transparency and social responsibility. They all avail of a Governing Body, which serves to manage the cooperative, and a general assembly, which is the organ taking strategic decisions and which is accountable to the members. The participatory work is also specified in the commissions and work groups that address themes such as purchases, communication, economy, governance, gender, information technologies or measures for reducing environmental impact (sale of products in bulk, reducing the plastic used in packaging, etc.).

Transparency in gross margin policy is a crucial feature that characterizes the model of CSN supermarkets: they have only one or a very small number of fixed margins (2–3) on all products, which is around 20–25%. The supermarkets opened in 2018, which broadly follow the model of the La Louve supermarket in Paris, are particularly committed to this strategy, which aims for a single margin. They reject the margin compensation policy used by the large-scale retail sector for reasons of fairness in the value chain.

Other characteristics that best differentiate the model of organization of the cooperative supermarkets belonging to the CSN are: (i) the modality of access to purchases in the supermarket; (ii) the existence (or not) of compulsory work shifts each month; (iii) the existence (or not) of monthly or annual fees to be paid by members. In the first place, in four of the supermarkets, only the members and the people associated with these can purchase, whereas in the seven remaining ones, everyone can buy products, whether a member or not: members can shop at lower prices, which ranges from a 5 to a 20% discount. In the second place, the shifts are obligatory in three supermarkets and not in seven of them, but the members pay a fee in the latter ones; finally, one supermarket (Som Alimentació) permits members to choose whether they pay a fee or work a shift.

Figure 2 analyses *current challenges* of cooperative supermarkets. Most of them highlight the need for more members, in order to scale, due to the need to address the high fixed costs through a bigger sales volume: "achieving financial sustainability" and "increasing the number of members" provided seven positive answers. It should also be pointed out that six supermarkets responded positively to the challenge "increasing the amount of work done by members in the cooperative (both voluntary and obligatory)", in order to reach organizational sustainability.

On a second plane, the cooperative supermarkets prioritize the challenges relating to professionalization, above all with regard to the management of references and to ERP (enterprise resource planning) by means of information technologies: "improving management with ERP," "improving management of purchases and sales," "improving accounts and administration management," and "improving training of hired staff" elicit five positive answers. It should be kept in mind that the cooperative supermarkets are burdened with huge transaction costs in relation to suppliers, stocks and references. Scaling through a strategy of joint purchasing by the CSN supermarkets could help to address this issue.

TABLE 2 Differential characteristics of the CSN cooperative supermarkets.

SUPERMARKET: name, location and year it was set up	No of shops	Legal formula	No of people on payroll	Initial contribution of members to company capital	Contribution of members through fees or work in the cooperative	Access to purchasing	Percentage of certified organic references	No of references
Landare, Pamplona-Iruña, 1991	2	Consumers' association	29	100€	2 h work annually or annual fee of 20€	Members only	100%	>3,000
BioAlai, Vitoria-Gasteiz, 1993	1	Consumers' association	11	180€	2,h work annually or annual fee of 30€	Members only	100%	>2,500
Almocafre, Córdoba, 2000	2	Consumers' cooperative	7	76€	36€	Any consumer; members: 5% discount	100%	3,000
La Ortiga, Sevilla, 2001	2	Consumers' cooperative	5	71€	30€	Any consumer; members: 10% discount	100%	1,500
Árbore, Vigo, 2001	1	Consumers' cooperative	5	90€	72€	Any consumer; members: 8–18% discount	100%	1,100
Biolíbere, Getafe, 2012	1	Consumers' cooperative	1	50€	2 h monthly work or monthly fee of 40€	Any consumer; members: 7% discount	100%	900
BioTrèmol, Alicante, Castalla, Yecla and S. Vicent Raspeig, 2013	4	Consumers' cooperative	11	100€	Monthly fee of 6€ (72€ annually) and 4 h of annual voluntary work*	Any consumer; members: 20% discount	100%	1,100
Som Alimentació, València, 2018	1	Consumers' cooperative	3	50€	4 h monthly work or monthly fee of 8€ (96€ annually)	Any consumer; members: 20% discount	80%	1,000
A Vecinal, Zaragoza, 2019	1	Consumers' cooperative	3	150€	2 h monthly work	Any consumer Voluntary members: 15% discount General members: 5% discount.	80%	>1,000
La Osa, Madrid, 2020	1	Consumers' cooperative	4	100€	3 h monthly work	Members only	70%	3,000
Food Coop BCN, Barcelona, 2022	1	Consumers' cooperative	4	90€	3 h monthly work	Members only	90%	1,000

*BioTrèmol also possesses a category of activist members who contribute 1,000€ to the cooperative as initial capital and work 4 h weekly in the cooperative. Source: own elaboration.

10.3389/fsufs.2024.1395819

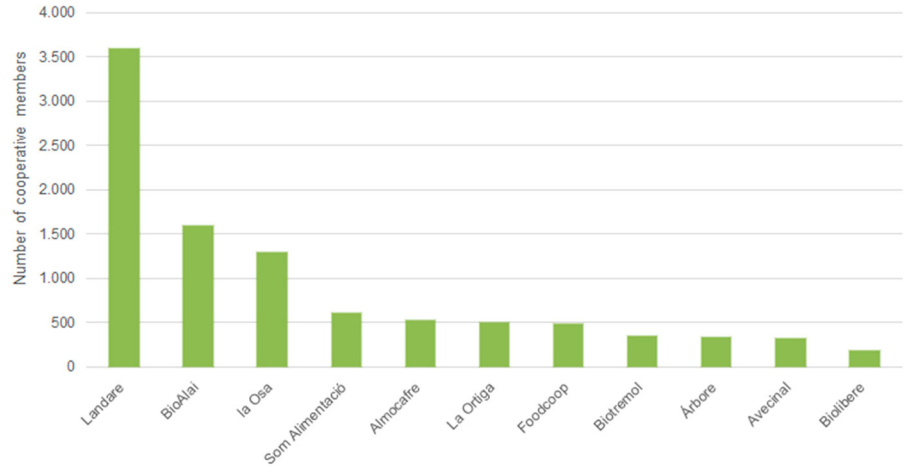

FIGURE 1
Number of members of the CSN cooperative supermarkets (2023). Source: own elaboration.

FIGURE 2
What are currently the main challenges facing your supermarket? Source: Red de Supermercados Cooperativos (2023).

Other challenges, such as setting up an on-line shop or increasing the number of staff hired, might appear to be a priority, but the supermarkets do not highlight them. It is also worth mentioning that although social justice is an objective of cooperative supermarkets, it is so difficult to achieve profitability that, in the absence of high impact public policies, there is little chance of implementing initiatives aimed at bringing disadvantaged social groups into supermarkets.

4.1.1 Participatory action research

4.1.1.1 SWOT analysis

Table 3, based upon the results of a workshop held at the CSN foundational Congress, provides the following results relating to a SWOT analysis of the cooperative supermarkets in Spain. The cooperative supermarkets indicate that they suffer numerous *weaknesses* in terms of economies of scale and scope in relation to supply (De Roest et al., 2018). This contrast with the Big Retail Sector, which optimally manages a huge number of references, merging cutting edge information technologies with a highly advanced logistics structure. The limited financial capacity and poor economic viability of these supermarkets means that they have serious problems with regard to running communication campaigns, implementing other marketing strategies and adopting information technologies in a truly professionalized manner. To this end they necessarily must increase their volume of billing, whether through increased numbers of members or greater expenditure per unit of current members. The lack of real support from public policies, especially certain regional governments, also constitutes a weakness in the initial stages following the creation of the supermarket. Participants in the workshop also considered as a weakness the fact that the socioeconomic profile of potential members mainly involves segments of the population with a high level of education and an activist profile, because this limits the potential social base and hinders recruitment of new members. It was also pointed out that the voluntary and compulsory shifts

TABLE 3 SWOT analysis of the activity of cooperative supermarkets in Spain (2022).

Weaknesses	Threats
• Limited financial capacity. • Little economic viability: a small number of members with low expenditure per unit. • Strong dependence on financial resources from private institutions. • Socioeconomic profile of members limited mainly to medium- and high-income segments of the population, involving activists with a high level of education. • High employee turnover (shifts worked by members).	• Intense competition from the Big Retail sector, including strong contractual pressure to lower prices and commercial margins. • Strong political lobby involving big agro-food enterprises in Brussels. • Greenwashing strategies employed by the big chains of conventional supermarkets.
Strengths	**Opportunities**
• Social innovation as a business model: common property, commitment and members' participation in the cooperative, and development of strong community ties among members. • They avail of a wide range of organic, local, artisanal and healthy food. • The fact that members work in the supermarket and that these are non-profit-making organizations, means that prices of products can be lowered; furthermore, empowerment is promoted and management is transparent.	• Potential growth and spatial dissemination of cooperative supermarkets in Spain. • Tendency toward higher consumption of organic and local foods in Spain. • A general desire among increasingly larger segments of society to promote a transformation in the food systems. • Strong movement behind the social and solidarity economy in Spain.

Source: own elaboration.

worked by the members implies a high job turnover, which can sometimes jeopardize efficiency.

Secondly, the fierce competition in prices and costs from the Big Retailers poses a serious *threat*, because this gives rise to a clearly unequal competitiveness, due to the fact that the big commercial chains represent an oligopoly, and therefore have a strong influence on regulations and policies. On the contrary, cooperative supermarkets attempt to obtain fair prices for their producers; they accept the pricing established by the sovereign decisions of producers, and they apply profit margins that reward their commercial function. Additionally, greenwashing and localwashing strategies by the big conventional supermarket chains can coopt a large part of the increased demand for organic and local food products that have helped to create the alternative networks.

The main *strength* of the model of cooperative supermarkets is precisely the fact that they constitute a social innovation based upon principles of the social and solidarity economy, on bottom up governance and on the development of strong community ties among members. The criteria influencing producers supplying the supermarkets depend upon certain values framed within the scope of Agroecology: values-based food should constitute the main axis of cooperative supermarkets' strategies for differentiation and marketing mix. Furthermore, compared to other options such as consumer groups, the shops avail of a wide range of organic, local, seasonal, artisanal and healthy food products. Other strengths that offset the unequal competitiveness in prices and costs of the cooperative supermarkets in relation to the Big Retailers are, on one hand, the voluntary and compulsory shifts worked by cooperative members and, on the other, the fact that the cooperatives are non-profit organizations. In addition, members' participation in the cooperative generate empowerment of them.

As for *opportunities*, these cooperative supermarkets have a good potential for billing and geographic expansion, due to the continuously growing demand for organic foodstuffs in Spain in the last decade and to the increasing taste of consumers for local produce. Likewise, increasing numbers of consumers are criticizing the predominant conventional food model. All these factors constitute a necessary condition for scaling the sustainable food system, provided that the Big Retail sector does not absorb the lion's share of the increased demand for organic and local food. Additionally, we also consider as an opportunity the strong support for model of cooperative supermarkets in Spain by REAS, which is the network of networks of the social and solidarity economy.

4.1.1.2 Advantages of networking for cooperative supermarkets

During the IX International Agroecology Congress in Seville in January 2023, the research team organized a round table featuring the CSN's technical secretary and representatives from four network supermarkets. The discussion focused on two main questions: (i) the primary challenges for the survival of cooperative supermarket models; (ii) the benefits of supermarkets functioning as a network, especially within the CSN. Below is a summary of the debate.

Firstly, cooperative supermarkets need political influence to shape legislation in order to support their model, focusing on bulk product sales, reusable packaging management, and other aspects of the circular economy. This is crucial to counteract the greenwashing conducted by Big Retailers.

Secondly, the round table agreed on the vital importance of establishing alliances with agroecological suppliers' logistic centers to boost supply capabilities. Collaborating with food hubs not only secures a more efficient supply of fresh local products, but also strengthens network relationships with key suppliers, improving economies of scale and scope in the supply of supermarkets.

Thirdly, adopting and sharing technological tools, such as the Odoo management system, was proposed as a way to enhance collective purchasing, stock and information management, accounting and business activities and online sales This leads to more efficient management and cost reductions.

In fourth place, there is a need to increase the economies of scale in the supply system by enabling collective buying by the CSN. Although geographic dispersion of supermarkets limits the advantages that might exist, these joint purchases have already started with non-local products like tropical fruits, bananas from the Canary Isles, cleaning products and cosmetics, etc. Creating a common supplier database is crucial for this initiative.

In addition, a proposal was made for the development of a collective brand involving producers and supermarkets to certify that the shared agroecology-based values had been respected regarding product origin and socio-environmental commitment in production processes. Campaigns focusing on these values through

communication and marketing content were also recommended. Additionally, proposals included actions to develop specialized training programmes in sustainable food trade, a cloud-based virtual space with training resources, and an incubator for cooperative supermarkets providing integral support during the establishment and initial stages.

4.1.1.3 Strategic Plan of the Cooperative Supermarket Network

The Strategic Plan represents a significant milestone in our participatory research. Within the dynamization process of the consultancy company Tandem Social, five objectives were defined and subdivided into sixteen strategic lines. The supermarkets classified each of these lines into four categories (Table 4): seven high-priority ones, five medium-priority, three low-priority, and one considered to be non-priority.

A key limitation for advancing strategic lines involves the workload of the technical secretariat. In the short term, high-priority lines will be promoted, followed by medium-priority ones in the medium term. Joint provision of services drives the CSN's creation and its commissions and work groups. Thus, supermarkets prioritize defining and developing a joint purchasing strategy, as well as incorporating management information technologies (3.1, 3.2 and 3.5). Surprisingly, the adoption of joint communication strategies is seen as a medium-level priority (3.3 and 3.4). Given the significance of financial sustainability for the continuity of CSN, funding strategies (4.1 and 4.3) constitute a high-priority. Creating a collective identity based upon mutual supermarket is also deemed to be crucial (1.2 and 2.1).

4.2 La Osa cooperative supermarket

4.2.1 Sociodemographic profile, purchases, and motivations of the members

To implement horizontal scaling strategies focusing on increasing the number of members, the supermarket's target public is crucial, as this influences the potential demand for value-based food products. Analysis of the survey reveals that the majority of the interviewees possess quite a high educational level, with 90% possessing a university degree and 10% having completed secondary education. Moreover, 60% are women and 40% are men. Most members are mainly in their thirties, forties or fifties (Figure 3), comprising 80.9% of the total. Family units with one or two members are predominant, making up 62.8% of the cooperative members.

Figure 4 shows that La Osa cooperative members are highly aware of sociopolitical aspects in the agro-food chain, prioritizing

TABLE 4 Prioritization of strategic lines of the Cooperative Supermarket Network.

Strategic lines	Priority
1. Constructing the collective identity of the Network based on the essence and values of the supermarkets it comprises	
1.1 Based on the vision and mission of the Network, sharing and elaborating the project, principles and values of the Network	1
1.2 Improving education, knowledge and cohesion among the supermarkets of the Network	3
1.3 Establishing a common narration for the transmission of the value-based proposal	1
1.4 Working on the political influence of the supermarkets	1
2. Constructing collective intelligence making use of the experiences and best practices developed by the supermarkets in order to strengthen them and/or to replicate the model	
2.1 Stimulating exchange of experiences and knowhow among the supermarkets belonging to the Network	3
2.2 Promoting the systematization of the process in which the supermarkets are interested in working in a similar manner	2
3. Promoting shared services among the supermarkets for their professionalization and sustainability	
3.1 Defining a strategy of joint purchases among the supermarkets of the Network	3
3.2 Developing a strategy of joint purchases	3
3.3 Developing training itineraries in order to provide support and training for the teams based upon communication strategies	2
3.4 Providing communication consulting services that are transferrable to the realities of each supermarket	2
3.5 Homogenizing processes and technological tools among the different supermarkets	3
3.6 Valuing new services or projects	0
4. Providing tools and resources to contribute to the economic viability of the projects, both of all the supermarkets and of the network	
4.1 Identifying funding opportunities for the development of Network services and projects	3
4.2 Identifying funding opportunities for the cooperative supermarkets—at individual level—with the assistance of the technical secretary	2
4.3 Defining the funding strategy for the maintenance of the Network structure	3
5. Studying in greater depth the model of democratic governance within the Network	
5.1 Reflecting upon the model of governance to be developed as the Network	2

0, non-priority; 1, low-priority; 2, medium-priority; 3, high-priority.
Source: Tandem Social and Red de Supermercados Cooperativos (2023).

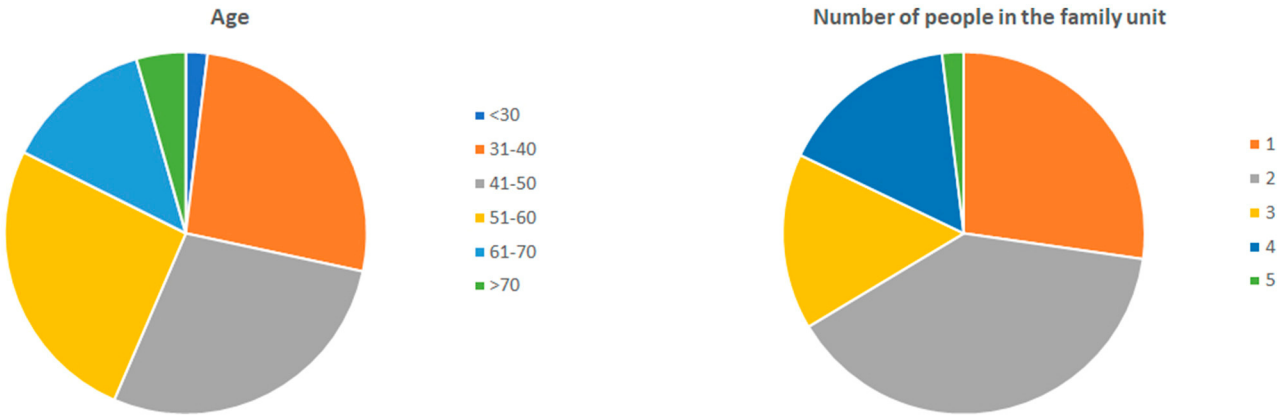

FIGURE 3
Distribution of members of La Osa supermarket according to age groups and number of people in the family unit. Source: Survey of members of the cooperative supermarket La Osa (2022).

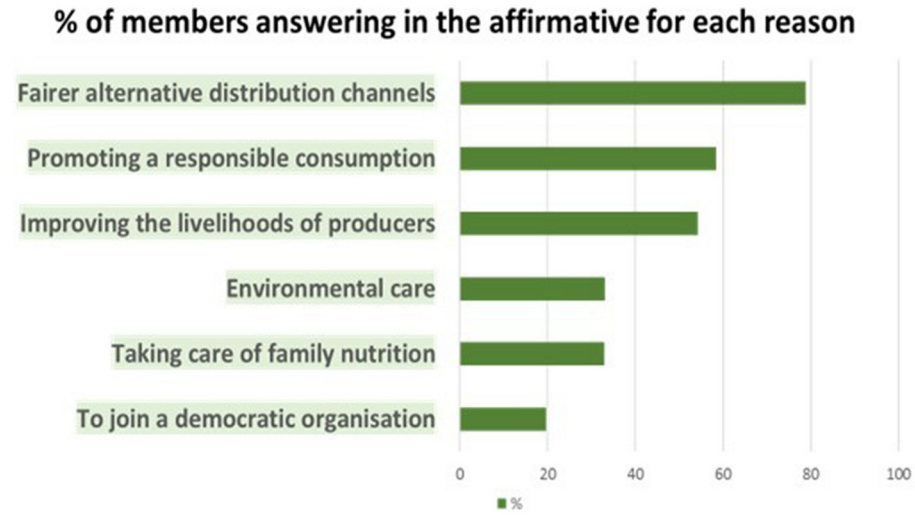

FIGURE 4
Reasons for becoming members of the cooperative The interviewees were requested to choose, through non-exclusive answers, three of the preselected reasons. Source: Survey of members of the cooperative supermarket La Osa (2022).

fair distribution channels and responsible consumption; they prioritize these aspects above any generic questions referring to the environment or health-related ones. Specifically, 78.9% participate in order to strengthen fairer distribution channels, 58.4% to promote responsible consumption, and 54.3% to improve producers' livelihoods. Moreover, 58.1% are involved in other agroecology-related organizations or associations.

These results reflect an activist profile and basically coincide with those obtained by Sanz-Cañada et al. (2018), in a study on consumer groups in the Lavapiés neighborhood in Madrid, and by the La Osa Coop (2023), in a study on a very large sample of the supermarket's consumers.

The latter source reveals that 78% of interviewees joined La Osa to align their purchases with their values. Over 60% of the members were motivated both by buying organic and local products and by the goal of social transformation of the agro-food system. Members present fit a consumer profile of empowered activists, "involving social awareness, and seeking and valuing quality and products that generate a low level of environmental impact".

Vinyals i Ros (2023), on interviewing a sample consisting of members of eight supermarkets belonging to the CSN, also identified a strong demand for value-based food products. High percentages of interviewees cited reasons for participation such as the sale of organic products (74.6%), of local food (63.9%), promoting social transformation (60%), responsible consumption (62.3%), or healthy food products (57.5%). Of less importance for these activist consumers were price (14.6%) or variety of products (13.9%).

When analyzing the distribution of the interviewees into three groups, according to total expenditure on food (Figure 5), 45.7% spend <20% of their family budget in the supermarket, a figure that rises to 64.8% if expenditure is below 40%. Despite a high degree of

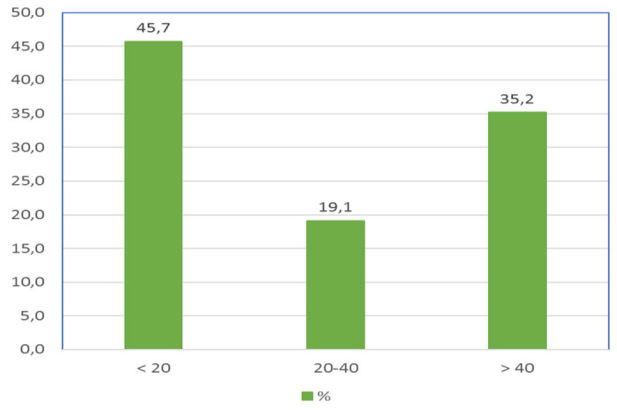

FIGURE 5
Percentage of members according to proportion of family expenditure on food in the La Osa supermarket. Source: Survey of members of the cooperative supermarket La Osa (2022).

satisfaction with the supermarket's functioning and product quality, most members do not spend a significant proportion of their family budget to La Osa.

We detected a high degree of satisfaction among interviewees regarding purchases and supermarket functioning. Using a scale from 1 to 7 (7 being the highest), 92.6% expressed a high degree of satisfaction (categories 5–7), 90.3% were satisfied with rapport and kindness among members, and 83.5% were content with the treatment provided by the consumer office. Additionally, 74.9% rated La Osa's variety and quality as being high or very high (5–7).

Members were also asked about their means of transport to do the shopping: 25.6% walk, 42.2% go by car, 21.9% by public transport, and a minority of consumers go by bicycle or motorcycle. That is to say, one fourth of the consumers do their shopping within the commercial area of influence that is equivalent to 15 min walking distance.

Lastly, the interviewees were asked about their satisfaction with the compulsory work shifts. Initially viewed as an empowerment tool and an element for project identification, 71.1% said they enjoyed the shifts (very much or quite a lot) on a scale from 1 to 5, whereas only 5.8% dislike them a little, or really dislike them. Moreover, regarding the regulations facilitating participation and ensuring commitment in the shifts, 64.1% answer positively, whilst 2.2% had a negative opinion.

4.2.2 Barriers to horizontal scaling: distance from members' homes to the supermarket

Both Vinyals i Ros (2023) and La Osa Coop (2023) surveyed consumers regarding the main obstacles to joining a cooperative supermarket: the first source surveyed consumers from the all of the CSN supermarkets, whereas the latter one asked people belonging or close to the supermarket La Osa (both members and non-members). Distance from the home to the supermarket emerged as a significant factor in both studies, with 64 and 81% of respondents citing it as an impediment, respectively. Furthermore, both studies coincide in identifying other important barriers: higher food prices (70 and 63%, respectively), lack of project awareness (64 and 57%), and specifically for La Osa, a lack of time to work the shifts (55%).

Analyzing the distance from the home to the supermarket as the principal barrier to increasing membership, there is a need to establish the supermarket's commercial influence area and the profile of potential consumers, in order to plan a suitable campaign to recruit members. Using data from La Osa's 2022 membership, we created a tessellation and aggregated data on numbers of members, total number of annual purchases, and total annual expenditure (Figure 6). The graph reveals a general decrease in the all three variables on increasing the distance from the home. One spatial exception to this pattern can be observed: an area to the south of the supermarket, in the vicinity of the Malasaña and Chueca neighborhoods, shows higher values for these variables. This area corresponds to the previous location of the shop selling organic food product (named *2decológico*), which preceded and led the creation of La Osa in 2020.

We also analyzed the degree of correlation between the distance from the home to La Osa, in real distance and driving time, and, respectively, number of members, monthly spending and purchasing frequency (Table 5). Results show that the further away the home is from the shop, logically, there will be fewer members, with regard both to distance ($r = -0.87$) and in particular, to time ($r = -0.98$). The purchasing frequency of members is greater when they reside closer to the supermarket, which can clearly be seen when expressed in driving time ($r = -0.93$). Monthly spending, however, is relatively independent from distance from the home ($r = -0.02$ in distance and 0.13 in time): although it might seem paradoxical, the monthly spending per member is statistically independent from the distance variable: the predominant behavior of the activist consumer of La Osa indicates that members who live further away from the shop purchase less frequently than those living closer, but they spend more per visit.

Additionally, we analyzed per purchase frequency intervals the number of members and average distance from the supermarket (Table 6). We observed that the lower the purchase frequency interval, the shorter is the average distance from members' houses to La Osa. Nonetheless, the lowest interval (1–12 purchases) corresponds to a frequency of fewer than 13 purchases, which reflects the number of compulsory shifts worked each year by the members of the cooperative: 41% purchasing with this frequency. This infrequent shopping pattern has negative economic implications for the cooperative's viability. Moreover, only 11% of members shop at least once a week, which corresponds to the interval of over 50 yearly purchases.

Finally, we studied the number of members and distance from the supermarket according to intervals of monthly expenditure in the supermarket (Table 7). Interestingly, we found no significant differences in average distances across different expenditure intervals, suggesting a statistical independence between monthly spending and distance. However, only 22.5% of members spend over 150 euros a month in La Osa: this is an amount deemed necessary to cover operational and financial costs. The average monthly spending per member is 99€, with 45% of the members spending 50€ or less every month. Many members' spending falls short of covering operational costs, a fact that jeopardizes the profitability of the project.

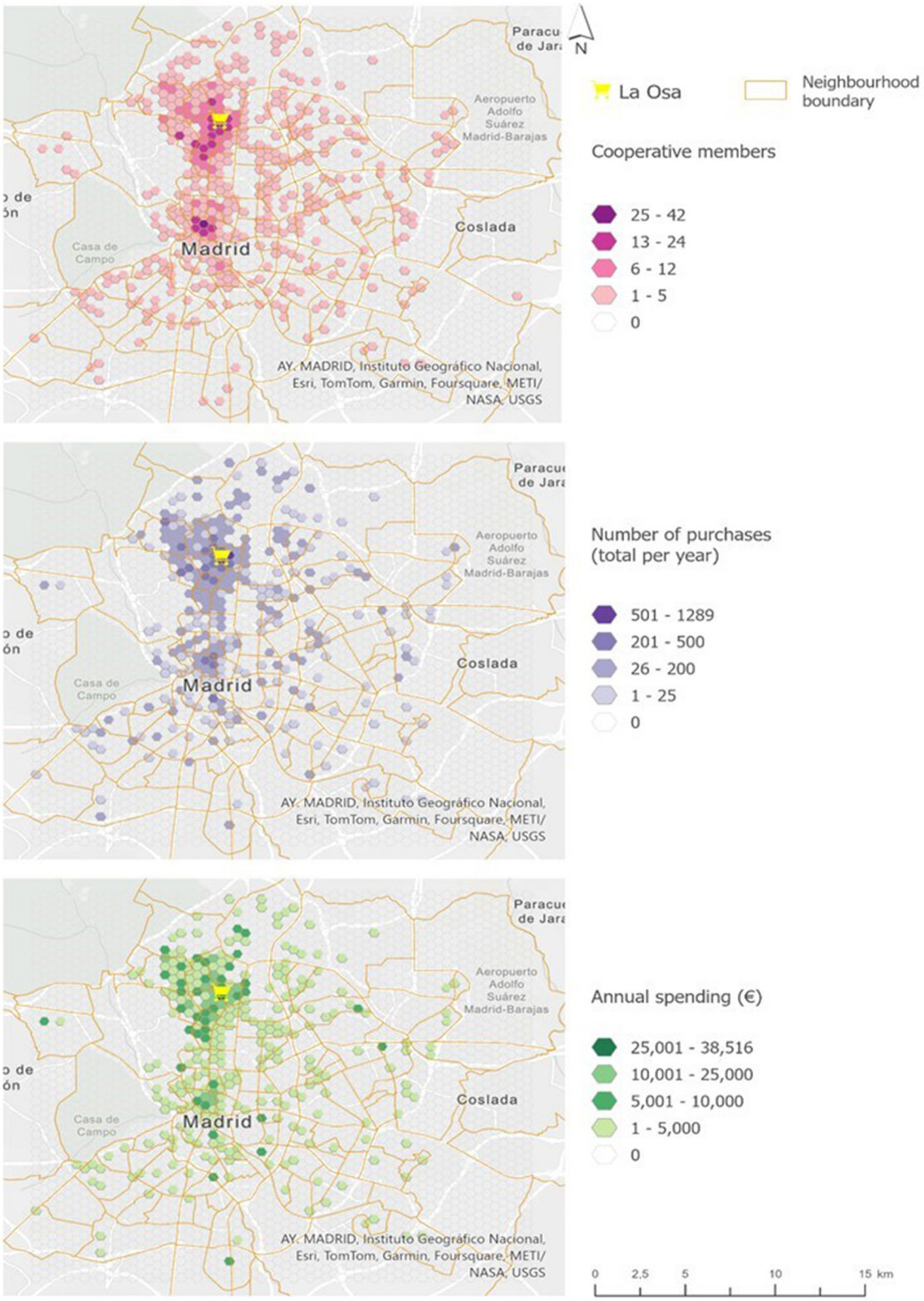

FIGURE 6
Spatial distribution of the homes of the supermarket members, of their purchasing frequency and of their annual expenditure in La Osa. Source: Anonymized database of the members of the cooperative supermarket La Osa; own elaboration (2022).

TABLE 5 Correlation coefficient between distance from the home to the supermarket and the variables spatial distribution of the home, expenditure and frequency of members' purchases.

	No of members	Monthly spending per member*	Number of purchases per member and month*
Distance	−0.87	−0.02	−0.61
Driving time	−0.98	0.13	−0.93

*Both variables correspond to monthly averages for 2022.
Source: Anonymized database of the members of the cooperative supermarket La Osa; own elaboration (2022).

TABLE 6 Number of members and distance from the supermarket according to intervals of annual purchasing frequency.

Frequency: No of purchases per year	Number of members	% of members	Average distance from La Osa (km)
1–12	295	41.30	4.42
13–25	187	25.55	4.12
26–50	173	23.63	3.56
>50	77	10.52	2.18
TOTAL	732	100	3.90

Average number of purchases per year: 28.8.
Source: Anonymized database of the members of the cooperative supermarket La Osa; own elaboration (2022).

TABLE 7 Number of members and distance from the supermarket according to monthly expenditure intervals.

Monthly spending per member (€)	Number of members	% of members	Average distance from La Osa (km)
≤50	332	45.36	4.07
51–100	141	19.26	3.84
101–150	94	12.84	3.79
151–250	89	12.16	3.53
251–400	62	8.47	3.79
>400	14	1.91	4.11
TOTAL	732	100	3.90

Average monthly spending per member: 99€.
Source: Anonymized database of the members of the cooperative supermarket La Osa; own elaboration (2022).

5 Discussion

The present research reveals that cooperative supermarkets face various challenges associated with vertical scaling within the CSN. The joint provision of services emerges as a key advantage in the operation of the CSN. In particular, we highlight the importance of transitioning toward a common central purchasing office, sharing and developing technological tools, and enhancing collective promotion and communication efforts. Another priority goal of the CSN is to gain political influence in society for both promoting responsible consumption and engaging public administrations in order to develop policies that reward public goods inherent to this kind of consumption.

Our study has shown that a consumer segment based upon the values associated with responsible consumption predominates in the Spain's agroecological cooperative supermarkets. As for horizontal scaling, one of the main aims of the cooperative supermarkets set up during the last decade in Spain involves recruiting a greater number of members in order to achieve economies of scale in supply and marketing. In our case study of La Osa supermarket, one of the most pressing issues involves paying off the debt resulting from investments in fixed capital in order to set up the supermarket[6].

In addition, we analyzed the socio-economic profile of La Osa's potential members in order to profile target consumers for these supermarkets and to identify the barriers preventing new members from joining: it falls within the segments of the population with medium and high-level incomes, a high level of education, and an activist profile, all of which limits the potential social base. These consumers prioritize attenuating environmental impacts, improving animal welfare and promoting social justice. According to Piracci et al. (2023), they are known as *sustainability-focused consumers*: they demonstrate a profound understanding of the sustainability-related challenges agro-food systems are facing, from a political and holistic point of view, and are often engaged in volunteerism within social, ecological, and political organizations.

The empowered activist consumers can generally be said to prevail in La Osa. Empirical research has revealed that this typology of consumer presents high levels of satisfaction with the work shifts, with the functioning of the supermarket and with the personal relationships with other members of the cooperative La Osa. We have verified that, once activist members join the cooperative, they do not necessarily spend less due to being further away from the shop; rather, although they shop less frequently, they tend to spend more on each visit.

Thus, a shop is better situated when it is closer to city center neighborhoods, as these predominantly present the abovementioned profile. These areas of Madrid, however, are usually undergoing gentrification, which raises land prices, and consequently, rents are usually sky-high, beyond the reach of the cooperative supermarkets: this required locating the supermarket in a working-class neighborhood (La Ventilla) in the city's expansion area, where becoming a member of a cooperative is not always commonplace. It is therefore difficult to find more activist consumers within the commercial area of influence—a 15-min walk from the supermarket. This typology of consumer should be sought in a wider area of the city, albeit in an isochronic area—up to a 20-min drive from the supermarket.

A second type of consumer segment, which Piracci et al. (2023) classify as *naturalness and health driven consumers*, corresponds to non-activist consumers[7], basically concerned with their health and

6 A new strategy was recently introduced by La Osa in an attempt to increase their sales turnover: this allows each member to have up to five associates who are not required to work shifts or pay any amount to the cooperative's company capital.

7 The third and last typology of consumers characterized by Piracci et al. (2023) is the so-called private benefit seekers, referring to the consumer who

exhibit environmental awareness in a less political or social version than the sustainability-focused consumers: in their consumption they prioritize values such as those relating to naturalness, healthiness and seasonality. For them, the distance from home to the supermarket, the perception of prices and the compulsory work shifts necessary for the functioning of these participatory supermarkets can constitute a barrier to joining the cooperatives. In the investigation conducted on La Osa, a distance over than 1–1.5 km from home to the shop becomes an impediment to shopping. This is reinforced by the following facts: on the one hand, consumer preference for proximity shopping is very high in Spain, due to the dense distribution of commercial outlets, and, on the other hand, because large retailers increasingly market organic and local products. The aforementioned circumstances could dissuade non-activist consumers from walking over 15 min from their home to the shop.

In other matters, we have discovered that a significant number of members make a monthly purchase that is far below the necessary threshold of 150€ a month. Consequently, although recruitment of new members has heretofore been considered a priority, particular emphasis should also be placed on loyalty strategies directed toward current members. Of the many strategies existing in this sense, we can highlight the need to continue promoting and improving internal communications, a more visually attractive shop, emphasis on the emotional factors linking consumers with producers and with agricultural landscapes, or showing the lower prices of specific products both on the networks and in the shop.

6 Conclusions

Firstly, we verify the hypothesis put forward in the Introduction. The different strategies for achieving horizontal scaling (increasing the number of members) and vertical scaling (networking) used by the agroecological cooperative supermarkets constitute valid tools, as well as an efficient retail formula with regard to scaling sustainable food products in Spain. As opposed to the first-generation options for responsible consumption, these second-generation alternative food networks (Sage et al., 2021) appear to contribute to generating significant economies of scale and scope. This is a result of concentrating a large number of consumers in one sales point where they can do all their shopping for value-based products at affordable prices.

Secondly, the implementation of strategies for improving the vertical scaling of agroecological cooperative supermarkets through the development of a national network, such as the CSN, constitutes a social innovation based on the principles of agroecology and of the social and solidarity economy. The goal of the CSN does not only involve consolidating the networking of existing agroecological cooperative supermarkets, but also intends to replicate the model in other territories, municipalities and neighborhoods. We have observed that, in turn, most CSN supermarkets claim that their principal challenge involves promoting horizontal scaling in order to achieve financial sustainability by offsetting distributing costs by means of a higher sales turnover. Due to the limited financial capacity and the difficult economic viability of the supermarkets, other challenges, such as the professionalization of management or the adoption of information technologies, also very much depend upon a sufficient scale in sales turnover.

Considering the typology of potential consumers who can adhere a cooperative supermarket, combined strategies aiming at attracting not only sustainable-focused consumers but also those driven by naturalness and health-related issues. Once the segment of empowered activist consumers residing in an isochronous zone (up to 20 min drive) from the supermarket La Osa has become relatively saturated, it is necessary to focus on strategies for attracting the segment of naturalness and health-driven consumers. Nonetheless, the sociodemographic characteristics of the neighborhood where the supermarket is located make it difficult to attract the latter typology of consumers as new members in the commercial area of influence (a 15-min walk).

Consequently, there is a need to consolidate the emerging process of developing the CSN, which is only just starting out, in order to obtain significant synergies deriving from the vertical scaling process. However, development and consolidation of these agroecological cooperative supermarkets in Spain involve embryonic horizontal scaling strategies; these highlight the need not only to recruit new members, but also to focus specifically on loyalty strategies among existing members.

Whatever may be the case, the essence of these recruitment and loyalty campaigns should place especial emphasis on scaling deep strategies (Moore et al., 2015) based upon the transmission of positive emotions associated with the values of sustainable food products, which differ from the organic and local products sold in conventional supermarkets. Several distinctive features of the cooperative supermarket model merit emphasis, notably its foundational values: community engagement, member empowerment, a sense of belonging to the cooperative, fair prices, establishment of emotional connections with producers, and the contribution this model makes to the ecological and social transition of the agro-food system.

Finally, the limitation of our study involves its exclusive focus on cooperative members and agroecological supermarkets, which may cause bias in relation to broader consumer engagement and horizontal scaling strategies. Future research involving the perspectives of non-members will likely enhance our understanding and help to develop more inclusive scaling strategies.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Author contributions

JS-C: Conceptualization, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Supervision, Validation, Visualization, Writing – original

shows few ethical or environmental values, choosing products for their price, quality or appearance or for health-related reasons. This type of consumer would be the least likely to join an agroecological cooperative supermarket.

draft, Writing – review & editing. CY-O: Conceptualization, Investigation, Methodology, Visualization, Writing – original draft. RP-C: Conceptualization, Formal analysis, Methodology, Visualization, Writing – original draft.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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References

Aufrère, L., Eynaud, P., Gauthier, O., and Vercher, C. (2019). Entreprendre en commun(s). Une étude du processus de création d'un supermarché coopératif et participatif. *Revue française Gestion* 279, 83–96. doi: 10.3166/rfg.2019.00332

Condeço-Melhorado, A., Mohino, I., Moya-Gómez, B., and García-Palomares, J. C. (2020). The Rio Olympic Games: a look into city dynamics through the lens of Twitter data. *Sustainability*12:7003. doi: 10.3390/su12177003

Daumas, J. C. (2006). Consommation de masse et grande distribution: une révolution permanente (1957-2005). *Vingtième siècle Revue d'Histoire* 91, 57–76. doi: 10.3917/ving.091.76

De Roest, K., Ferrari, P., and Knickel, K. (2018). Specialisation and economies of scale or diversification and economies of scope? Assessing different agricultural development pathways. *J. Rural Stud.* 59, 222–231. doi: 10.1016/j.jrurstud.2017.04.013

Dee Povitz, L. (2020). Nourishing progressive ideals in dark ages: boycotts at the Park Slope Food Coop in the 1970s. *Soc. Hist.* 53, 373–398. doi: 10.1353/his.2020.0018

Ferguson, B. F., Aldasoro Maya, M., Giraldo, O., Mier, M., Giménez Cacho, T., Morales, H., et al. (2019). Special issue editorial: what do you mean by agroecological scaling? *Agroecol. Sustain. Food Syst.* 43, 722–723. doi: 10.1080/21683565.2019.1630908

Forssell, S., and Lankoski, L. (2015). The sustainability promise of alternative food networks: an examination through "alternative" characteristics. *Agric. Hum. Values* 32, 63–75. doi: 10.1007/s10460-014-9516-4

Gauthier, O., Léglise, L., Ouahab, A., Lanciano, É., and Dufays, F. (2019). *Food Coop 2016 - Tom Boothe, Vol. 22*. M@n@gement, 671–702. Available online at: https://management-aims.com/index.php/mgmt/article/view/4261 (accessed March 26, 2024).

Giacchè, G., and Retière, M. (2019). The "promise of difference" of cooperative supermarkets: making quality products accessible through democratic sustainable food chains. *Rev. Desenvolvimento Regional* 24, 35–48. doi: 10.17058/redes.v24i3.14002

Grassart, C. (2023). Les supermarchés coopératifs et participatifs, un modèle socio-productif émergeant? *Revue Régul.* 34:22518. doi: 10.4000/regulation.22518

Hingley, M., Mikkola, M., Canavari, M., and Asioli, D. (2011). Local and sustainable food supply: the role of European retail consumer co-operatives. *Int. J. Food Syst. Dyn.* 2, 340–356. doi: 10.22004/ag.econ.121953

Hispacoop, AAVV (2020). *Un nuevo modelo de cooperativismo de consumo. Cuadernos de las cooperativas de consumidores*. Madrid: Hispacoop, 29. Available online at: https://hispacoop.es/wp-content/uploads/2021/04/Cuadernos-29-comprimido.pdf (accessed January 15, 2024).

Jochnowitz, E. (2001). Edible activism: food, commerce, and the moral order at the Park Slope Food Coop. *Gastronomica* 1, 56–63. doi: 10.1525/gfc.2001.1.4.56

La Osa Coop (2023). *Estudio de Mercado*. Mimeo: La Osa Coop and Red de Supermercados Cooperativos.

Lamarque, M., Tomé-Martín, P., and Moro-Gutiérrez, L. (2023). Personal and community values behind sustainable food consumption: a meta-ethnography. *Front. Sustain. Food Syst.* 7:12192887. doi: 10.3389/fsufs.2023.1292887

Lusk, J. L., and Briggeman, B. C. (2009). Food values. *Am. J. Agric. Econ.* 91, 184–196. doi: 10.1111/j.1467-8276.2008.01175.x

MAPA (2021). *Análisis de la caracterización y proyección de la producción ecológica en España en 2020*. Madrid: Ministerio de Agricultura, Pesca y Alimentación. Available online at: https://www.mapa.gob.es/es/alimentacion/temas/produccion-eco/informecaracterizacionecologicos2020-nipodef_tcm30-583131.PDF (accessed February 05, 2024).

MAPA (2023). *Informe del Consumo Alimentario en España 2022*. Madrid: Ministerio de Agricultura, Pesca y Alimentación. Available online at: https://www.mapa.gob.es/es/alimentacion/temas/consumo-tendencias/informe-consumo-2022-baja-res_tcm30-655390.pdf (accessed February 5, 2024).

Mier y Terán, M., Giraldo, O. F., Aldasoroa, M., Morales, H., Ferguson, B. G., Rosset, P., et al. (2018). Bringing agroecology to scale: key drivers and emblematic cases. *Agroecol. Sustain. Food Syst.* 42, 637–665. doi: 10.1080/21683565.2018.1443313

Moati, P. (2001). *L'avenir de la grande distribution*. Paris: Odile Jacob.

Moore, M. L., Riddell, D., and Vocisano, D. (2015). Scaling out, scaling up, scaling deep: strategies of non-profits in advancing systemic social innovation. *J. Corp. Citizenship* 58, 67–84. doi: 10.9774/GLEAF.4700.2015.ju.00009

Nicholls, C. I., and Altieri, M. A. (2018). Pathways for the amplification of agroecology. *Agroecol. Sustain. Food Syst.* 42, 1170–1193. doi: 10.1080/21683565.2018.1499578

Piracci, G., Casini, L., Contini, C., Stancu, C. M., and Lähteenmäki,L. (2023). Identifying key attributes in sustainable food choices: an analysis using the food values framework. *J. Clean. Prod.* 416:137924. doi: 10.1016/j.jclepro.2023.137924

Red de Supermercados Cooperativos (2023). *Encuesta ¿'Qué necesidades tiene tu supermercado?* Mimeo.

Rocas-Royo, M. (2021). The Blockchain was not: the case of four cooperative agroecological supermarkets. *Front. Blockchain* 4:624810. doi: 10.3389/fbloc.2021.624810

Rosset, P. M., and Altieri, M. A. (2017). *Agroecology: Science and Politics*. Rugby: Practical Action Publishing.

Sage, C., Kropp, C., and Antoni-Komar, I. (2021). "Grassroots initiatives in food system transformation: the role of food movements in the second 'Great Transformation'," in *Food System Transformations. Social Movements, Local Economies, Collaborative Networks*, ed. C. Kropp, I. Antoni-Komar, and C. Sage (London; New York, NY: Routledge), 1–19.

Sanz-Cañada, J. (2002). "El Sistema Agroalimentario Español. Estrategias competitivas frente a un modelo de demanda en un contexto de mercados imperfectos," in *Agricultura y sociedad en el cambio de siglo*, eds. C. Gómez Benito, and J. J. González Rodríguez (Madrid: Mc Graw Hill), 143–179.

Sanz-Cañada, J., Belletti, G., and Lagoma, C. (2018). Politics and territorial governance of food consumer groups in the district of Lavapiés, Madrid. *AGER J. Depopul. Rural Dev. Stud.* 25, 65–97. doi: 10.4422/ager.2018.16

Sanz-Cañada, J., Sánchez-Hernández, J. L., and López-García, D. (2023). Reflecting on the concept of local agroecological food systems. *Land* 12:1147. doi: 10.3390/land12061147

Sanz-Cañada, J., and Yacamán-Ochoa, C. (2022). "Innovación y alimentación sostenible. Políticas y modelos cooperativos de logística y comercialización," in *La España rural: retos y oportunidades de futuro*, ed. E. Moyano Estrada (Almería: Fundación Cajamar, serie Mediterráneo Económico), 333–346. Availabe online at: https://publicacionescajamar.es/wp-content/uploads/2022/03/me-35-innovacion-y-alimentacion-sostenible.pdf (accessed January 10, 2024).

Tandem Social and Red de Supermercados Cooperativos (2023). *Plan Estratégico de la Red de Supermercados Cooperativos 2024-2026*. Mimeo: Red de Supermercados Cooperativos.

Vinyals i Ros, A. (2023). *Investigación*. Mimeo: Red de Supermercados Cooperativos.

Yacamán-Ochoa, C., Matarán Ruiz, A., Mata Olmo, R., Macías Figueroa, Á., and Torres Rodríguez, A. (2020). Peri-urban organic agriculture and short food supply chains as drivers for strengthening city/region food systems. Two case studies in Andalusia, Spain. *Land* 9:177. doi: 10.3390/land9060177

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Multilevel governance in farmers' markets: a stakeholder analysis in Tuscany

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Farmers' Markets (FMs) have gained relevance in recent years as increasingly acknowledged to be critical to turn to more equitable food systems, easing agroecological transition, and preserving biocultural heritage. However, the issue of the forms of social and institutional coordination needed to create, organize, manage and promote FMs is a recent topic in the literature, and their governance is still poorly considered. Based on a set of case studies in Tuscany, Italy, this paper intends to contribute to filling this gap by analysing the forms of governance and the role of different stakeholders. The hypothesis is that FMs are social constructions that respond to processes of social and institutional innovation through direct exchanges between producers, consumers and other stakeholders, articulated at both local and non-local level. The aim of the paper is to explore the interactions between stakeholders and the corresponding forms of multi-level governance that emerge. The method for testing the hypotheses is qualitative, through semi-structured interviews to FMs managers and conversations with producers and other stakeholders, conducted between May and August 2022 in Tuscany. The research was complemented by consultation of indirect sources, such as FMs websites and social networks. The results are summarized in the elaboration of a three-dimensional and territorially embedded governance model. The first dimension refers to the management of internal relations between stakeholders within the FM. The second corresponds to the activation of dialogue, negotiation, and agreement with the municipality and other local authorities, and with local farmers' unions. The third type corresponds to vertical flows between the FMs and extraterritorial bodies, i.e., regional government, regional and national farmers' unions and other stakeholder associations. It is important to note that at FMs level, processes of hybridization between the different types of governance are established. The article contributes to the analysis of FMs as economic and social constructions and may be useful for establishing comparative frameworks around institutional and collective action dimensions, multi-actor and multilevel studies of governance.

KEYWORDS

farmers' markets, multilevel governance, stakeholder analysis, Tuscany, localized agri-food systems, short food supply chains

1 Introduction

Farmers' Markets (FMs) have attracted the attention of scholars, social movements promoting the right to food, activists, food producers, consumers, and policy makers, especially since the 2000s. FMs are characterized by the involvement of a plurality of farmers (and sometimes other producers, such as small-scale artisanal agri-food processors) who offer directly to consumers, on a regular basis and in a coordinated way, food products grown or bred (and eventually processed) close to the place where the market is held. FMs are often advocated to encourage and promote the values of fair trade, healthy and locally produced food, sustainable production practices, small producers, and solidarity between urban and rural communities. According to some scholars, the geographic and relational proximity in FMs exert positive effects on the economy and the environment. On the one hand, they promote fair trade by eliminating or reducing intermediaries (Hinrichs, 2000; Jarosz, 2008; Belletti and Marescotti, 2013). In addition, they can promote agroecological transition, thus favouring more sustainable food production and consumption models able to respond to future emergent challenges and reconciling economic viability and fairness, social wellbeing and equity and environmental care (Di Iacovo et al., 2014; Rover et al., 2017; Petropoulou et al., 2022; Coelho de Souza et al., 2023), as well as the protection of biocultural heritage (Belletti et al., 2022).

FMs are part of short food supply-chains (SFSCs) arrangements, which have given rise to the formation of alternative food networks claiming new forms of production, consumption and lifestyles (Marsden et al., 2000). As part of these networks, FMs are a manifestation of economic, social and institutional innovation that have spread mainly in Western Europe, the United States, Canada, and Japan, as well as in other countries in Asia, Eastern Europe, Latin America and the Caribbean over the last two decades (Enthoven and Van den Broeck, 2021; Davies et al., 2022; Hyland and Macken-Walsh, 2022).

According to Kebir and Torre (2014), the innovation in SFSCs can be analysed as collective action translated into civic initiatives with that aim to boost geographic and organizational proximity based on the quality of territorial assets. Similarly, Martens et al. (2023) analyse the role of innovative forms of collaboration in the sustainable transformation of local agrifood systems, under the lens of geographic, social, organizational, institutional and cognitive proximity. Geographical proximity refers to the physical distance in localized systems articulating rural and urban flows in a specific territory. Social proximity refers to the closeness and intensity of relationships between the actors in the supply chain, and is based on values such as recognition, trust, solidarity, and reciprocity. Organizational proximity regards the dimension and structure of collective action in the supply chain. Institutional proximity concerns formal and informal norms and rules in local collective initiatives (see also Loconto et al., 2016) while cognitive proximity concerns the knowledge background of the actors involved.

The issue of governance emerges as a central aspect in SFSCs, to coherently organize, manage and boost the different kinds of proximity relationships between the actors. It is through governance that interactions between the various stakeholders take place and innovation processes are generated and managed. In particular, governance in FMs refers to the set of rules, structures, and processes that guide and regulate their birth and operation. It involves strategic management and decision-making mechanisms, organizational structures, and policies that determine how the FM is managed, ensuring fairness, transparency, and efficiency in its functioning. The analysis of SFSCs governance, and particularly FMs, should not only take into account their internal dimension related to planning, organization and management, but also the relationships between the FMs and the external environment, both at local and extra-local level. Stakeholders analysis as value creation and strategy formulation (Brugha and Varvasovszky, 2000; Freeman et al., 2008) at these different territorial scales is a fundamental task to understand how forms of coordination are built in the FMs.

Despite its importance in organizing proximity relations between stakeholders and actors in SFSCs, the issue of governance has been little explored in literature. With this paper we try to contribute to fill this gap by investigating how interactions in FMs between producers, consumers and other stakeholders—at internal, local and extra-local level—are shaped and organized through multi-level governance processes.

Who are the actors and other stakeholders that contribute to the creation, consolidation and management of FMs and what is their role and their interactions? What are the relevant aspects of the governance of FMs? Which governance arrangements and models emerge? These are the research questions that this article aims to answer by examining a set of case studies in the region of Tuscany, Italy, where FMs have a long tradition. The hypothesis from which we start is that FMs are social constructions that correspond to multi-level processes of social and institutional innovation generated by stakeholders. These processes lead to the construction of vertical, horizontal and hybrid forms of decision-making and strategies in each of the markets, involving both producers, consumers and other stakeholders at local and extra-local levels. The aim of this paper is to analyse the multilevel governance processes characterizing FMs, in order to uncover how the different typologies of FMs regulate their internal functioning, decision-making and relations between the actors involved, which kind of relations they entertain with external local and extra-local stakeholders, and how the different governance levels interact with each other and influence the FM itself.

The paper is organized as follows. The next section presents the conceptual model as a result of literature review. After presenting in Section 3 the materials and the methods used, Section 4 presents in detail the results of the interviews and fieldwork. In Section 5, the discussion and validation of the hypothesis are addressed. The conclusions consider the relevance of this study and some potential future lines of research and policy implications.

2 Literature review and conceptual model

Governance has been defined as an umbrella concept (Porras, 2016), which implies a lack of precision in the subject. In order to avoid the common mistake of taking the definition of governance for granted, we will briefly recall some features of this concept in the literature on FMs and in the broader field of studies on Localized Agri-Food Systems (LAFS) of which FMs are often an expression, in order to draw out the elements useful for the construction of the conceptual model. LAFS are a type of organization of agrifood activities, in which territorial dynamics play a decisive role in terms of the coordination between stakeholders and the development of production activities (Muchnik, 2006).

The concept of governance has developed in several stages. In its origins, it was linked to the crisis of bureaucratic governments in the face of the emergence of society's actions. For public administration, this concept was a recognition of decentralization and the emergence of civil society (Kooiman, 1993) and governance by inter-institutional

TABLE 1 Recent literature on the governance of FMs.

Author/s (year)	Contribution
Atkočiuniene et al. (2022)	"The role and functions of stakeholders in the development of local agri-food systems and the particularities of the Lithuanian case" An analysis of Lithuanian pilot areas (districts) in order to supplement the knowledge about the role and functions of stakeholders in the development of LFS, including the development of local markets for local food producers (short food supply chain).
Manser (2022)	"Systematizing authenticity and codifying values: The role of values, standards, and governance at farmers markets" From the study of 87 FMs in Oregon, the author finds that the predominant standards of these circuits are geographic proximity, economics and community-oriented values. Equity, health, and sustainability are less present, which impacts the regulation of markets, and the vision of "good food."
Pasquier Merino et al. (2022)	"Alternative Food Networks, Social Capital, and Public Policy in Mexico City" The paper analyses the processes of social construction and dynamization of the initiatives of AFNs in Mexico City. It identifies the promoters of the initiatives, their responsibilities, and their role in the dynamization of FMs. Results show that social and cultural capital are fundamental components in understanding the interest of AFNs to strengthen collective action.
Hatipoglu and Inelmen (2020)	"Effective management and governance of Slow Food's Earth Markets as a driver of sustainable consumption and production" The paper addresses the role of market governance under the Slow Food philosophy at international level. It uses a mixed research methodology collecting data in 14 countries with surveys in 52 markets and qualitative follow up studies in 11 markets. The study implements a holistic approach to relate farmers' markets with SDGs.
Betz and Farmer (2016)	"Farmers' market governance and its role on consumer motives and outcomes" The paper studied participation in farmers' markets considering demographic data, values for local foods, motivations for attending farmers' markets and outcomes of the involvement. It analyses forms of governance in FMs and satisfaction in quality of service, and their impact on type of consumers and consumers' decisions.
Gantla and Lev (2015)	"Farmers' Market or Farmers Market? Examining How Market Ownership Influences Conduct and Performance" The paper distinguishes between Farmers' Markets and Farmers Markets. The former category is owned and managed by the farmers themselves, while the latter are owned and managed by private companies or large associations. Market ownership types include distinct values and challenges associated with them.

Source: authors' own elaboration.

and self-organized networks (Rhodes, 1997). For other scholars, this concept means coordination and cohesion among multiple actors, including institutional ones, with different purposes and objectives (Pierre and Peters, 2000). For still others, governance is the way of governing to achieve the common objectives of actors with different purposes in increasingly complex societies (Kooiman, 2003) and with decision-making centers adapted to the characteristics of local economies (Ostrom, 2014).

The evolution of governance as the management of local resources, as well as its role in the expression of solidarity economies based on trust, has been transcendental for studies of territorial governance conceived as the construction of multilevel agreements and institutions. In the literature on localized agri-food systems, the themes of multilevel coordination between stakeholders, democratic participation and accountability at the local level, social capital building and agroecology emerge from the governance perspective (Torres Salcido and Sanz Cañada, 2018; Sanz-Cañada et al., 2023). According to the literature on localized agri-food systems, the innovation of FMs is based on three fundamental axes: (1) the embeddedness of food (Hinrichs, 2000; Sonnino, 2007; Brinkley, 2017) and the relationships between producers and consumers (Chiffoleau, 2009); (2) the collective strategies aiming at valorising origin products, and the related effects on territorial development (Vandecandelaere et al., 2010), and (3) the recognition of food as a relevant driver in the agenda, design and implementation of public policies (Sage, 2003; Troccoli et al., 2021).

For the purposes of this paper, governance is interpreted as a multilevel territorial management process whose aim is to align different stakeholders around shared values and a project, and to build collaborative practices, norms, and agreements between them. This process is multilevel because it involves the micro level (here corresponding to the single FM), the meso level (corresponding to the territory where the FM operates) and the macro level (involving extraterritorial dimensions and actors). Public management bodies act as additional stakeholders, aiming at regulation, promotion and support, including through financial support plans and programs. The objective of governance is to contribute to the construction of capacities and to creation of economic and social value in an inclusive manner based on shared values and goals. The morphology of governance varies according to the specific historical and social circumstances: top-down, bottom-up and hybridization in decision making (Dunsire, 1993; Kooiman, 2003).

However, despite its importance, interest by both scholars and policy makers on the role of stakeholders in the governance of FMs is relatively recent. In Table 1, we report some of the very few existing publications specifically dealing with FMs governance and/or management[1] and their main contribution.

The literature review highlights the plurality of stakeholders involved with different title and roles, and with different perspectives and interests, in the activation processes of FMs and in their management. Figure 1 shows the multilevel governance model adopted in our research, which is inspired by polycentric forms of governance (Ostrom, 2014) and highlights three different scales. At the FM internal scale, the activation starts from the need of local

1 These publications are the result of a search in the Scopus and Web Of Sciences (WOS) databases through a combination of the following keywords: Farmers Markets, Governance, Management.

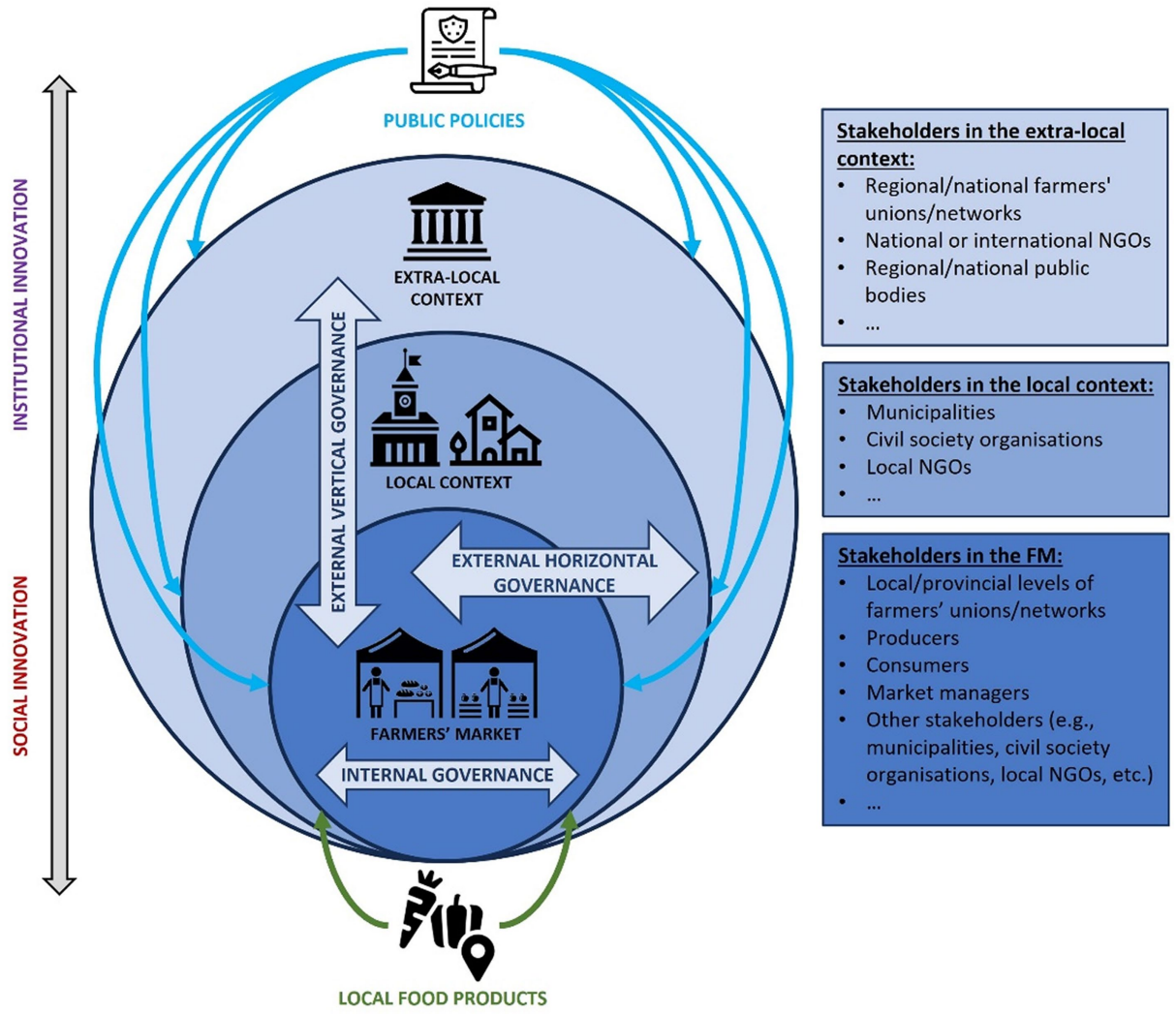

FIGURE 1
Multilevel governance in farmers' markets. Source: author's elaboration.

farmers and the availability of local products suitable for direct sale, coupled to the existence of a local demand for these products. Farmers, and sometimes other stakeholders' categories (consumers, local public bodies, non-governmental organizations), act to organize and give governance to the market, defining the identity of the market and a set of rules concerning, e.g., access, frequency, types of production and producers. The external horizontal scale of governance reflects the construction and management of horizontal forms of decision making and territorial integration in the local territorial context, both public and private ones. This model extends into a third scale of governance, the external vertical, connecting the "local" to regional, national and international (including European Union) levels, when relevant. The regulations and programs respond to a vertical decision-making scheme due to the formulation of public policies. However, this model does not exclude hybridizations originating from the adaptation of rules and regulations to territorial contexts. The application of standards, laws, regulations, and quality certification follows bottom-up and top-down decision-making processes at the three levels of governance. In this way, a localized system is articulated with stakeholders internal to the market and integrated into the territory and extraterritorial stakeholders at regional, national, or multinational levels.

In accordance with what has been said so far, the research focuses on the role of stakeholders in the construction of multilevel governance from a territorial perspective.

3 Materials and methods

Tuscany is a region located in Central Italy, of great importance for its biocultural heritage and the civic and institutional networks also related to rurality, agriculture and food that have fostered the growth of FMs. For several years, the government of the Region of Tuscany has also promoted the spread of FMs through promotional activities and the granting of financial incentives, as have some Municipalities.

The spread and activity of FMs is remarkable in all the provinces of Tuscany. According to a specific census carried out by the Region

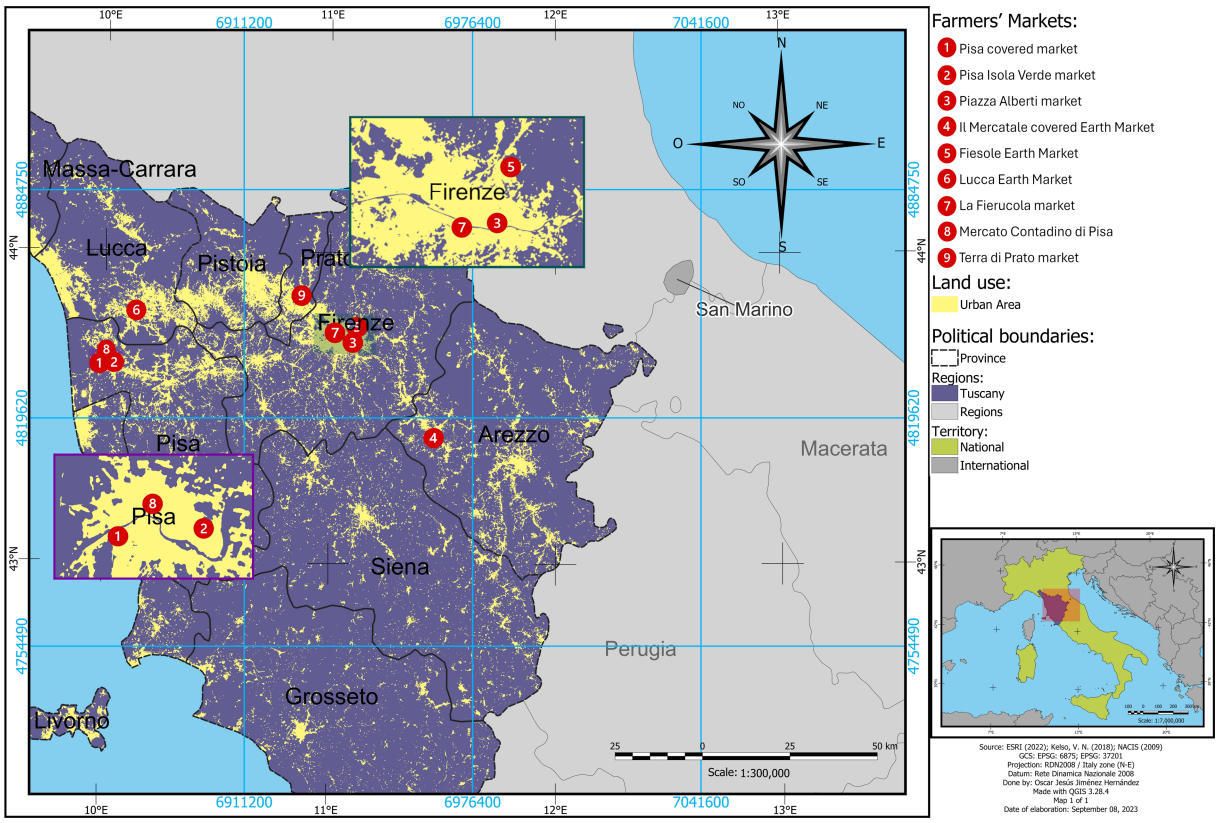

FIGURE 2
Location of the famers' markets analysed. Source: author's elaboration.

of Tuscany,[2] 155 FMs were active throughout Tuscany in 2019, for a population of approximately 3.73 million inhabitants. The vast majority of these FMs (145) are held on a regular basis, mostly weekly. Following the pandemic, the number of FMs in Tuscany has increased. Many of them are promoted by the two main national Farmers' Unions, the Coltivatori Diretti (Coldiretti) through the *Campagna Amica* ("Friendly Countryside") network, and the Confederazione Italiana Agricoltori (CIA), through the *Spesa in Campagna* ("Shopping in the Countryside") network, and by Slow Food, which promotes the *Mercati della Terra* ("Earth Markets") network. On the other hand, there is a number of FMs initiatives supported by local NGOs, groups of producers and/or consumers, and municipalities—or a combination of them.

The direct sources for this research come from nine interviews with FM managers and one interview with the head of a regional FM network (CIA Spesa in Campagna), all conducted between May and August 2022. In addition, we conducted interviews with farmers and other vendors (small artisans) during our visits, for a number of 22 in total, which allowed a broader view of the functioning and objectives of each market. Figure 2 shows the geographical distribution of the FMs where the interviews were conducted, which cover the northern part of the Tuscany.

The nine FMs of the sample cover a range of different situations in terms of location, date of creation, frequency of the market, number of producers involved, and types of products marketed (Table 2). Most of them belong to some nation-wide network, namely farmers' union (Coldiretti and CIA) or the Slow Food movement, while others are set up as independent markets.

Situated in five provinces of Tuscany, the nine FMs are located in different urban contexts, some being in the very center of cities, while others in more suburban districts. Consequently, the type of consumers is also different, with a greater presence of tourists in FMs located in the historical centers of art cities (Florence, Pisa, Lucca).

Concerning the specific physical space in which the markets are installed, which depends on critical issues and arrangements between the various private and public stakeholders involved, most of the FMs analysed are held in public open spaces, some other occupy public covered or closed spaces, and only one of them (Pisa Isola Verde market) benefits from the spaces of a civil society cultural association.

Most of the markets in the sample are already well-established since at least 5 years, while two of them are more historical markets (La Fierucola and Mercato Contadino di Pisa), and two others are very recent markets (Fiesole Earth Market and Piazza Alberti market).

Concerning the frequency of the markets, the majority of them are held weekly, except for a few of them which are held with a lower frequency (once or twice a month) and one of them which is open daily (Il Mercatale covered Earth Market). On average, these FMs are composed of 10–20 producers, with the exception of three bigger

2 See https://www.regione.toscana.it/-/i-mercati-degli-agricoltori-in-toscana

TABLE 2 Main characteristics of the nine FMs in the sample.

Nr	Market	Network membership	Town	Location	Year of creation	Frequency	Number of producers	Type of products marketed
1	Pisa covered market	Coldiretti— *Campagna Amica Foundation*	Pisa	Suburbs	2009	Weekly	15 approx.	Agrifood products, including fish and processed products
2	Pisa Isola Verde market	CIA—*La Spesa in Campagna*	Pisa	Suburbs	2014	Weekly	10 approx.	Agrifood products, including fish and processed products
3	Piazza Alberti market	CIA—*La Spesa in Campagna*	Florence	City center	2021	Weekly	11 approx.	Agrifood products, including processed products
4	Il Mercatale covered Earth Market	Slow food	Montevarchi (Arezzo)	City center	2008	Daily	70 approx.	Agrifood products, including processed products
5	Fiesole Earth Market	Slow food	Fiesole (Florence)	City center	2022	Once a month	20 approx.	Organic agrifood products (certified and non-certified[a])
6	Lucca Earth Market	Slow food	Lucca	Very city center	2018	Weekly	10 approx	Organic agrifood products, including processed products (certified)
7	La Fierucola market	Independent	Florence	Very city center	1984	Twice a month	80 approx.	Agrifood vegetarian products, including processed products; artisanal non-food products
8	Mercato Contadino di Pisa	Independent	Pisa	City center	Late 1980s	Twice a month	20 approx.	Organic agrifood products (certified and non-certified), including processed products; local artisanal non-food products
9	Terra di Prato market	Independent	Prato	City center	2009	Weekly	45–55 approx.	Agrifood products, including processed products

Source: authors' own elaboration.

[a]In this paper, with "non-certified organic products" we intend products that are produced without the use of chemical inputs (self-declared by famers) but did not undergo a third-party certification process.

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markets having 50–80 producers (Il Mercatale, La Fierucola, Terra di Prato), but sometimes producers' participation varies according to products' availability during the different seasons. With regard to marketed products, in the most of the FMs analysed, producers directly offer both fresh products (mainly fruit and vegetables, more rarely meat and fish) and processed products (bread, cheese, jams and preserves, olive oil and honey), while a few markets also see the participation of local non-food artisanal producers.

The analysis of the interviews was complemented by indirect sources: (1) information and statistics available on the websites of Coldiretti—*Campagna Amica*, of CIA—Spesa in Campagna, and Slow Food – Mercati della Terra, or directly provided by the persons responsible of the FM and organizations; (2) Facebook of the FMs and other social media; (3) the regulations of each FM; and (4) dissemination materials collected during our visits to the markets.

The research follows a case study methodology. According to Yin (1994), this is a legitimate methodological strategy: (a) to study contexts in which the researcher has no control over the events he/she is confronted with; (b) to analyse emergent phenomena of social life; and (c) to answer questions about *how* and *who*. Although it is particular in nature, the results can move from description to generalization (Giménez and Heau Lambert, 2014). The case study may aim to learn about local management models and institutions in order to compare experiences in common resource management (Poteete et al., 2010). The analysis of the information is inductive because of its interest in grounding the method through the analytical construction of the categories from the bottom up (upward) (Bryant and Charmaz, 2007). In this sense, the case can be complemented with stakeholder analysis to assess the inclusion of stakeholders in strategies, decision-making mechanisms and in the definition of the future of organizations (Brugha and Varvasovszky, 2000).

The methodological strategy followed for the research consisted of several steps:

1. First, based on the literature and previous experience, an operational concept of FM governance was defined according to the multilevel model discussed in Figure 1. The formulation of the questionnaire aimed at obtaining information by means of semi-directed questions in the following sections: activation process, characteristics, stakeholders involved and relationships, internal organization and management, financing, consumer characteristics and future perspectives.
2. Secondly, the interview was designed to be conducted specifically with stakeholders who have a vision that integrates market knowledge and interactions with other territorial levels. Therefore, the subjects interviewed were FM coordinators and regional managers. The sample of interviewees was selected purposively by combining the knowledge and relationship networks of researchers following a snowball technique. With regard to the dynamics of the interviews, the subjects were encouraged to openly express their opinions and emotions (Valles Martínez, 2002). For this reason, the interviewees were asked to deepen their answers, but always within the framework of the previously designed questions.
3. The interviews were recorded and transcribed for their subsequent analysis by means of a codification of the interviewees' discourses based on the themes emerged in the literature review and defined in the conceptual framework, and information were then systematised in the comparison tables reported in Section 4 (Tables 3–5).
4. The interview in each of the markets provided the opportunity to carry out a non-participant observation exercise and to talk to some producers individually. Their insights were very helpful in obtaining a complementary point of view to that of the market managers.

4 Results

This section presents the main, organizational and governance characteristics of the nine FMs object of our study,[3] as resulting from desk analysis, interviews and direct observation. After a description of the genesis and evolution of the sample FMs and the values orienting them, we analyse these FMs as regulated spaces, identifying what and how FMs regulate, and finally we directly address internal and external governance issues.

4.1 The social construction of FMs: genesis and evolution

The results of the interviews highlight how FMs originate from different categories of stakeholders oriented by a variety of values and motivations, and how they undergo different evolution pathways over time.

In a number of cases the initiator belongs to the agriculture world, pushed by the motivation of opening a marketing space especially for small farmers. In three out of the nine cases, FMs were activated within Farmers' Unions FMs' networks. CIA and Coldiretti both originated in the post-World War II years as Farmers' Unions. Although of different political-ideological orientation (CIA more left wing, Coldiretti more center), both Unions have the mission of defending the interests of small family farmers and representing them in the political arena. Both Unions developed a dense territorial network of technical, economic and fiscal assistance centers for farmers, and in the last 20 years have launched initiatives to strengthen a more direct connection of farmers with consumers and society at large. The creation of a national network of FMs is functional not only to help member farmers to directly market their products, but also to give greater social visibility to the claims of farmers and agriculture.

According to its website,[4] Coldiretti has the largest direct sales network in the world, with more than 10,000 marketing points including FMs, agritourism and processing businesses. In 2008 Coldiretti created the *Campagna Amica Foundation* to promote a network of FMs *Campagna Amica* "zero miles," conceived as a meeting place between farmers and city dwellers. The aim of this initiative is to express the value and dignity of Italian agriculture by highlighting its role in the care of the environment, territory and traditions, in facilitating fairness in food chains and access to food at a fair price of fresh and quality products. Similarly, CIA launched the *La Spesa in*

3 See Supplementary Annex for a detailed description of the main characteristics, genesis and evolution of the sample FMs.

4 https://www.coldiretti.it/ and https://www.campagnamica.it/

TABLE 3 Regulation in FMs.

Market	Type of regulation	Producers' access requirements	Products requirements	Pricing of products	Control mechanisms
Pisa covered market	National regulation of Coldiretti *Campagna Amica*, adapted to local specificities	Members of Coldiretti and *Campagna Amica* network	Only producers' own products; local products (max. Distance 70 km); some non-regional products (e.g., parmesan and citrus fruit)	Agreed max. Price for fruit and vegetables with producers every 15–30 days, based on products' seasonality; price check and sanctions by *Campagna Amica*	Market control and on farm inspections by Coldiretti territorial control body. Periodic farm visits by local technicians and annual agronomic control by Coldiretti national association; origin check by a third-party certification body
Pisa Isola Verde market	National regulation of CIA *La Spesa in Campagna*.	Members of CIA and *La Spesa in Campagna* network	Limits of prevalence on the origin of the products. Producers' cooperatives and consortia can only sell the products of their members	No. Reliance on producers' sensitivity.	Random control visits at the market and on farm by representatives of the CIA Control Commission.
Piazza Alberti market	National regulation of CIA *La Spesa in Campagna*.	Members of CIA *La Spesa in Campagna* network; approval by the CIA market manager and ultimately by CIA Toscana.	Only seasonal and regional products. Producers' own products must be prevalent, integrated only by regional products and from other CIA members.	Free price setting.	Random control visits at the market and on farm by representatives of the CIA Control Commission.
Il Mercatale covered Earth Market	Slow Food Earth Markets national guidelines + market internal regulation (general and specific for each product category)	Members of Slow Food; regional producers with few exceptions for specific products; approval by market Producers' Committee; producers' participation in market share capital and management costs.	Only producers' own fresh products; external raw materials for processed products allowed; external processing allowed. Specific regulation for each product category.	Market price must be equal to the on-farm price; market check to avoid excessive imbalances between similar products or excessive price fluctuations.	Market and on farm controls and inspections by the Control Committee. Sanctions regulations.
Fiesole Earth Market	Slow Food Earth Markets national guidelines	Members of Slow Food and/or of the Organic District; organic producers (certified or non-certified); regional producers; approval by the board of directors of the market.	Only producers' own and organic products (certified or non-certified).	Free price setting, according to a fairness principle.	Yearly farm visits by Slow Food territorial committees and visits by the board of directors of the Organic District.
Lucca Earth Market	Slow Food Earth Markets national guidelines and National regulation of CIA *La Spesa in Campagna*.	Members of CIA *La Spesa in Campagna* or Slow Food networks; only organic producers (certified).	Only producers' own organic products (certified).	Free price setting, according to a fairness principle.	Generally informal visits by Slow Food technicians. The organic is already certified by third parties
La Fierucola market	Market internal regulation; charter of values	Also non-food producers; approval by the market board of directors.	Only vegetarian products; only producers' own products.	Free price setting subject to Association's checks and producers' peer monitoring (fair and non-excessive prices).	Producers' public self-control of products and production processes displayed on the stall. On farm visits by the board of directors with specialised technicians.

(Continued)

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TABLE 3 (Continued)

Market	Type of regulation	Producers' access requirements	Products requirements	Pricing of products	Control mechanisms
Mercato Contadino di Pisa	Market internal regulation	Also non-food producers; approval by the market board of directors.	Organic and biodynamic products (certified or non-certified); only producers' own products; processed products allowed only from farm-sourced raw materials (with some exceptions).	Free price setting.	Desire to promote participatory guarantee. Producers exercise self-control, according to their specialty and periodically the committee visits the farms,
Terra di Prato market	Market internal regulation approved by the municipality	Local producers, preferably from Prato province or Tuscany region; producers from other regions for specific products. Approval by the market Association, according to a ranking rewarding localness, certifications, specific products, etc.	Preference for certified products (organic, PDO, PGI, etc.) and local traditional products. Producers can also sell other firms' products, declaring it and without damaging other producers.	Free price setting.	Controls on the respect of the market regulation by the Control Commission; on farm visits and controls by the Association's representatives and technicians.

Source: authors' own elaboration.

Campagna[5] initiative with the aim of promoting the territory, short chains, and food quality. This initiative favours direct relations between farmers and consumers through the creation of collective selling points, mainly FMs. *La Spesa in Campagna* is made up of five thousand small agricultural enterprises that must comply with the CIA's rules and participate in the organization through their representatives.

In other FMs consumers (in associative form or through representative organizations) promote the creation of FMs, motivated by a search for higher quality produce but also by a desire to forge alliances with the world of farming. Three out of our nine analysed FMs are part of Slow Food – *Mercati della Terra* network. Slow Food is today an international non-governmental organization founded in Italy in the 1980s by activists who demanded the right of everyone to have access to healthy, fair, and clean food, claiming the importance of valuing farmers as custodians of territories, biodiversity, and local traditions.[6] To this aim Slow Food launched in 2004 the *Mercati della terra* ("Earth Markets") project with the purposes of opening a space for small-scale farmers engaged in agroecological methods and in preservation of local agrobiodiversity and traditional foods normally excluded from conventional marketing channels, and also to giving urban consumers access to local seasonal products, produced with respect for the environment and for workers' rights. Slow Food conceives the *Mercati della Terra* not only as selling points, but also as places for promoting dialogue between producers and consumers and encouraging community development also through the exchange of knowledge and taste education.

Less frequent is the case where the initiative for the creation of FMs comes from public institutions, with the desire to improve relations between the city and countryside, favouring citizens' access to local products and at the same time to trying to preserve a small peri-urban agriculture. The analysis highlights as in a number of cases the activation of FMs appears as a top-down process, with a key central stakeholder (usually a producers' or consumers' association) willing to set up a specific marketing project. This project includes the identification of the physical space, the support to the emergence of a group of producers interested and able to participate regularly in the FM and their selection according to specific criteria, the definition of the business model of the FM encompassing the FM marketing strategy and access to the economic and material resources needed to set up the market and give it an identity, by means of stalls (gazebi), signs and homogeneous marketing images. That is the case, for instance, of the three FMs belonging to the Coldiretti *Campagna Amica* and CIA *La Spesa in Campagna* networks, which were born from the impulse of the local (provincial or regional) departments of these two national-wide farmers' associations, and still continue to function under their regulation and technical management. A similar process was followed also by the Lucca market, which currently adheres to the Slow Food system but was born as a CIA *La Spesa in Campagna* market.

In other cases, such as for instance Il Mercatale covered Earth Market and Terra di Prato market, the FM originates from a

5 https://www.cia.it and http://www.laspesaincampagna.it/

6 https://www.fondazioneslowfood.com/it/cosa-facciamo/mercati-della-terra-slow-food/

TABLE 4 Horizontal and vertical governance.

Market	Relationships with regional/national networks	Relationships with the municipality	Relationships with local civil society organizations
Pisa covered market	With Coldiretti and CIA *Campagna Amica* regional and local associations	The municipality provides facilities for occupancy of the premises on the basis of an agreement	No relevant relationships
Pisa Isola Verde market	CIA local association and *La Spesa in Campagna* association.	No relevant relationships	Market takes place in a private space owned by a local association. Tasting events in collaboration with the association
Piazza Alberti market	CIA local association and *La Spesa in Campagna* association.	Grant of the public space (paid)	No relevant relationships
Il Mercatale covered Earth Market	Slow Food national association. Slow Food Colli Superiori del Valdarno is a member of the market firms' network contract. The market foundation was supported also by Cia, Coldiretti and Confagricoltura.	The market facilities are owned by the municipality. The market was founded within a public project of the Montevarchi municipality, supported by the Region	They organize events, seminars and workshops together with other civil society organizations.
Fiesole Earth Market	Slow Food national and Slow Food Firenze.	The municipality grants the public space at an agreed lower price	They organize events, seminars and workshops together with other civil society organizations.
Lucca Earth Market	Slow Food national and Slow Food Lucca and CIA Toscana Nord and *La Spesa in Campagna* national association	The municipality grants public space upon payment of a fee to the producer, and establishes the maximum number of producer stations	Sometimes implementation of initiatives in agreement with local restaurants and companies (e.g., tastings)
La Fierucola market	No relevant relationships	Grant of the public space. Dialogue and consultation with the Florence Municipality and the Superintendence of Fine Arts.	Interaction with many other local civil society associations working and campaigning in the field of agroecology, rural development and alternative localized agrifood systems, organizing joint events, seminars and workshops.
Mercato Contadino di Pisa	No relevant relationships	Facilities to occupy public space. Request and payment for public land every two months. Defined strategies of dialogue with the municipality.	Relations with associations selling fair trade products, which can participate in the market.
Terra di Prato market	Provincial representatives of Coldiretti, CIA and Confagricoltura are part of coordination and control commissions of the market.	The municipality supported the foundation of the market and directly managed the market. Nowadays it grants the public space.	No relevant relationships

Source: authors' own elaboration.

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TABLE 5 Internal organizational characteristics of FM.

Market	Reference organization	Coordination body	Decision making	Role of producers	Role of consumers	Role of other stakeholders
Pisa covered market	Coldiretti *Campagna Amica Foundation*	Board of Directors of the cooperative (established *ad hoc* to manage bureaucratic and economic aspects) made up of some producers elected by the Assembly of the cooperative.	The market manager and the Board of Directors	Producers are members of the cooperative.	No.	No.
Pisa Isola Verde market	Cia Etruria *La Spesa in Campagna*	No specific coordination body.	Decisions are made by CIA Etruria, consulting producers through the market manager.	Producers are consulted by CIA during decision-making.	No.	No.
Piazza Alberti market	Cia Toscana Centro *La Spesa in Campagna*	No specific coordination body.	Decisions are made by CIA Toscana Centro, consulting producers through the market manager.	Producers are consulted by CIA during decision-making.	No.	No.
Il Mercatale covered Earth Market	Firms' network contract	Board of Directors composed of 5 members elected by the Producers' Assembly	Producers' Assembly and Board of Directors.	All producers are part of the Assembly, and a delegation is part of the Board of Directors.	No.	The *Margherita* + Cooperative managing the daily functioning of the market is part of the firms' network contract.
Fiesole Earth Market	Fiesole Organic District Association and Slow Food Firenze	Board of Directors and Assembly of the Organic District Association.	Decisions are made by the Board of Directors and agreed by the Assembly of the Organic District.	They are part of the Slow Food community and are consulted during the decision-making process.	No.	The municipality and other civil society organizations are members of the Fiesole Organic District Association.
Lucca Earth Market	CIA Toscana Nord *La Spesa in Campagna* and Slow Food Lucca	Producers' Assembly.	Decisions are made by the Produces' Assembly and the CIA market manager and approved by CIA Toscana Nord.	They are part of the Produces' Assembly and of Slow Food Lucca.	No.	No.
La Fierucola market	"La Fierucola" association	Board of Directors composed of some producers and other non-producers (founders, intellectuals, civil society representatives) members	Decisions are made by the Board of Directors.	A group of producers is part of the Board of Directors.	No.	No.
Mercato Contadino di Pisa	"Mercato Contadino Pisa" association	Produces' Assembly. Board of Directors composed of 3 producers.	Decisions are made by the Board of Directors.	Producers are part of the Assembly and the Board of Directors	No.	No.
Terra di Prato market	"Mercato Terra di Prato" association	Producers' Assembly. Board of directors composed of 5 producers.	Decisions are made by the Board of directors. Coordination commission and control commission composed of some producers, members of the municipality and members of CIA, Coldiretti and Confagricoltura.	Producers are part of the Board of Directors and the Assembly of the association.	No.	The municipality approves the market internal regulation and is part of the coordination and control commissions.

Source: authors' own elaboration.

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centralized public initiative, usually by the local municipality together with some other local institution and/or national organizations (e.g., the regional administration, the farmers' unions or Slow Food), but then emancipates and evolves with time into a more independent market managed by the producers themselves grouped in a formalized association or network, but still benefiting from some support by the originating local municipality or national organization.

Conversely to the previous situation, Fiesole Slow Food market originates from already existing local independent groups of producers or associations, and then decides to join established nation-wide networks. Lastly, the more independent FMs arise from a bottom-up process driven by self-organised local groups of actors (usually producers but also consumers and/or civil society representatives) grouped in a very simple form of association, and still continue to function under their regulations and technical management. That is the case of La Fierucola in Florence and Mercato Contadino di Pisa.

4.2 FMs as a regulated space

The aim of this part of the study is to analyse the rules that govern the functioning of markets by answering the following main questions: are there rules? To what extent are they formalized? What aspects are regulated? What is the process by which the rules are defined?

The analysis showed that regulations can concern many different aspects, mainly producers' access requirements (e.g., food/non-food producers, producers' provenance, farmers and/or processors, etc.), the quality parameters that the products must comply with (e.g., only organic, raw, processed, etc.), price determination (e.g., free setting, agreed, price caps, etc.), and related control mechanisms (Table 3). Regulations can be more or less formal, bottom up or top-down (defined at more general level, e.g., by farmers unions).

As far as the characteristics of producers and products required to participate in the market and the approval mechanisms through which requirements are assessed are concerned, we pointed out that in the FMs belonging to three nation-wide networks, producers' membership in the network is an essential requisite, whereas in the independent FMs sometimes producers need to be affiliated with the association managing the market and sometimes the affiliation is not required. An interesting case is the Lucca Earth Market, which is part of both *La Spesa in Campagna* and the Earth Markets' networks and is therefore managed by CIA Toscana Nord with the collaboration of Slow Food Lucca, with producers being members of both networks.

Most of the FMs analysed allow the participation of only farmers (not processors nor retailers), which anyway can also sell a part of processed products, such as in Il Mercatale Earth Market, where both external processing of farmers' own raw materials and internal processing of external raw materials are allowed. In some cases, producers are allowed also to sell others' products, provided that these products are still local, clearly signalled to consumers and do not damage other producers (Terra di Prato), still originate from producers that are members of the same network/association (CIA Piazza Alberti), or from the same producers' consortium/cooperative (Pisa Isola Verde). Some FMs also allow non-food producers (La Fierucola and Mercato Contadino di Pisa), while some others restrict participation only to organic producers and products, certified (Lucca Earth Market) and non-certified (Mercato Contadino di Pisa and Fiesole Earth Market). Last, all FMs privilege local producers, usually restricting to or preferring the participation of Tuscan producers, with some exceptions in some cases for specific non-regional producers (e.g., Parmigiano cheese or citrus fruit producers, which cannot be produced in Tuscany). In the case of Terra di Prato, it is interesting to highlight that access to new members is granted according to a real ranking of requests which rewards producers based on localness, certifications (PGI, PDO, organic, etc.) and specificities of products, which tend to favour very local producers offering niche and traditional products. In CIA and Coldiretti FMs, producers and products' requirements are usually approved by the market manager and, ultimately, the local levels of the networks, whereas in Slow Food and independent FMs new requests are assessed by the management board of the market, which usually involves or at least consults former producers.

Regulations also define the participation of producers in the FM's management cost, usually fixing a participation fee for each market day that can vary according to the market and to the number or the length of each producers' market stalls. Sometimes, producers also have to pay an annual membership fee to the market reference organization. The fees are used to pay the market costs (e.g., public space, electricity, etc.) and sometimes the reference associations' administrative and management costs. An interesting case is Il Mercatale, where producers joining the firms' network contract (see paragraph 4.4) pay a one-time fee to join the market share capital and in addition participate in the market management costs.

In some cases, regulations also concern the prices that can be applied at the market, setting maximum prices agreed between producers (Pisa covered market), imposing to maintain the same prices applied during on-farm sales (Il Mercatale) or making simple reference to fairness principles, to avoid excessive prices and imbalances between similar products (Slow Food markets, La Fierucola, Pisa Isola Verde). In such cases, price checks are carried out formally by the market management board or the market management association, and informally through producers' peer-to-peer monitoring.

The provenance and the other products' characteristics declared by producers are usually checked periodically or randomly both at the market or during on-farm visits, sometimes internally by representatives of the market management board or by specific control commissions appointed by the market association/network, others externally by technicians or certification bodies. In some cases, self-control and collective peer-to-peer monitoring mechanisms are encouraged (La Fierucola, Mercato Contadino di Pisa), although proper forms of participatory guarantee systems are not present.

4.3 External horizontal governance and vertical governance

The governance of FMs is characterized as a multilevel process, as shown in the conceptual framework in Figure 1, which includes an internal level within the FM, a level of external horizontal relations between the market and the local context, and a level of external vertical relations between the market and the extra-local context (regional, national, and international).

This section analyses the forms of external horizontal (territorial) and vertical governance established in FMs (Table 4). As it results

from the processes of FMs genesis and rules definition, various stakeholders can influence its functioning in different ways. At the territorial horizontal level, FMs have external relationships with the municipality and with civil society organizations, whereas at the vertical level, FMs interact with the regional or national levels of the associations or networks to which they belong.

FMs belonging to the three nation-wide networks have strong relationships with the correspondent national organizations and often adopt their national regulations or guidelines for their own internal functioning. Furthermore, FMs also adopt the operating format, business model and image (e.g., logos and slogans) provided by the networks they belong to, and eventually conform to their own identity.

However, it is interesting to note that the very structure of these networks involves multi-level governance processes, since it is often the local provincial levels, more than the national ones, that directly interact with the organization of the FMs. A particular case is the Lucca Earth Market which belongs to two networks at the same time, the CIA and Slow Food ones, and thus interact with the provincial levels of both organizations. On the other hand, the external relations in independent FMs tend to be more horizontally developed and locally projected, as their associations are set up specifically to manage the market and do not have a multi-level structure.

Table 4 shows how, at the local horizontal level, the presence of relationships with civil society organizations depend on the relational networks developed by territorial dynamizers and promoters (Ton et al., 2014), namely actors able to facilitate processes of sustainable territorial valorisation based on cultural heritage, biodiversity and origin products, through the activation of social and physical capital and resources of a territory (Belletti et al., 2022). Such networks lead to the involvement of volunteerism, the construction of territorial relations, which often allow FMs to organize cultural and knowledge-sharing events (workshops, seminars, etc.) to promote products, practices and values linked to the market itself (organic agriculture, ethical and sustainable food production and consumption, quality products valorisation, etc.). That is the case of Slow Food markets and some independent markets which, thanks to their set of territorial relations, carry on a promotional and cultural role, besides their market functions. Another interesting case is the Pisa Isola Verde market, which benefits from the relationship with a local civil society organization, to hold the market in their physical spaces.

Concerning the external relation with the municipality, for some FMs it is related only to the concession, and in some cases the rent, of public space and the related services (such as supply of water and electricity and cleaning of sales areas), as in the case of FMs belonging to the Farmers' Unions networks. Belonging to these networks can also facilitate the relationship of FMs with municipal administrations; in fact, CIA and Coldiretti tend to manage these relationships in a centralized manner through their local officials, also by virtue of their contractual power. Instead, more independent markets, as well as markets supported by Slow Food, tend to develop more intense relations and dialogues with the municipality, which sometimes directly have supported the process of their formation. For instance, Il Mercatale and Terra di Prato were both activated within a municipal project publicly funded by the Tuscany Region. As we will see in the next paragraph, sometimes these relations are even more close, and the municipality is directly involved in the internal governance processes of the FMs.

4.4 The internal organization and governance

The internal organization of FMs is influenced by the horizontal and vertical governance relations analysed in the previous paragraph, but then each FM develops its internal governance arrangements (Table 5).

FMs belonging to national-wide networks have not a market-specific reference body (i.e., a body that legally represents the FM), whereas independent markets set up a specific association to internally manage the market and interact with other external actors. It is interesting to notice how Slow Food markets are in a hybrid situation. Indeed, besides belonging to the Slow Food network, the Lucca market also belongs to the CIA network, the Fiesole market was activated and is internally managed by the Fiesole Organic District Association, and Il Mercatale set up a firms' network contract which includes the local Slow Food itself and the social cooperative which manages the market daily functioning.

In most FMs, usually the market operational functioning is supported and supervised by a market manager designated from the reference organization, while decisions are made by a market coordination body, which sometimes also includes some representatives of producers and is usually elected by a larger assembly gathering all the producers. Instead, FMs directly depending on the farmers' unions, usually do not have a specific coordination body, and decisions are made by the provincial level of the reference organization, consulting producers through the intermediation of the market manager. Two interesting cases are the Pisa covered market and La Fierucola. The former, besides belonging to the Coldiretti *Campagna Amica* network, established a producers' cooperative to manage the market, whose coordination body collaborates with Coldiretti representatives in the decision-making process. The latter, instead, includes in its coordination body, together with producers, also local intellectuals and civil society representatives, which took part in the initial activation of the market.

The involvement of the municipality in the internal governance model happens in Fiesole Market and Terra di Prato, where the municipality is a member of the reference organizations managing the markets, making decisions, and in the Prato case, approving the market regulation. This governance arrangement facilitates relations between the FM and local authorities.

Last, concerning the role of consumers in the internal governance, this is something more theoretical than practical, as many of the interviewees referred to it as an ideal aim more than a real ongoing practice. In the Mercato Contadino di Pisa and Lucca Earth Market, the idea of activating a participatory guarantee system actively involving consumers is being discussed, but at the moment this is still not practised, mainly for costs-related issues in terms of time and money. In Il Mercatale, an attempt to integrate consumers into the steering committee was done but failed due to arised conflicts with producers. The representative person of CIA Toscana says that the participation of associations and consumers in a price observatory is allowed, but not in the CIA decision-making bodies. In all the other markets, even if sometimes producers invite consumers to visit their farms, there are no real formal and ongoing efforts to involve them in the market internal governance processes. In general, interviewees give little importance to consumer participation either in quality certification or as members of steering committees.

5 Discussion

5.1 FMs as socially constructed spaces

Our analysis confirms that FMs are not just physical places but first and foremost socially constructed spaces (Smithers et al., 2008; Manser, 2022), whose creation involves the identification, sharing and management of economic and social practices, relations, knowledge and values.

The types of actors involved in FMs that we have identified in the empirical analysis are many and diverse: producers and their associations and syndicates, consumers and their associations, citizens and non-governmental organizations, local public administrations (municipalities). However, as might be expected, farmers and their representative organizations play the most important role. On the other side, while the literature has considered the role of consumers as fundamental for the development of FMs, both as co-creators (Sacchi et al., 2022) and co-managers (Betz and Farmer, 2016), our sample shows instead a very little participation of consumers in the design of FMs, in the strategic planning, and in decision-making. However, citizens are not just mere consumers but stakeholders interested in the environment and sustainability and play an important role in influencing the qualification of products sold, in the definition of some of their characteristics and in the recognition of producers (Muchnik, 2006; Sanz-Cañada et al., 2018; Giacchè and Retière, 2019; Lovatto et al., 2021). Aware of this, some market managers, such as that of the *Lucca Earth market*, have shown interest in introducing participatory guarantee systems as tools for achieving a higher involvement of consumers in the dynamics of the market, although so far without much success.

5.2 Internal regulation and governance

Our findings support recent literature on FM governance (Betz and Farmer, 2016), according to which the type of actors that gives rise to the FM strongly determines its strategic positioning, which is largely achieved through internal regulation. Through regulation, FMs actors define and share a set of more or less formalized standards and internal rules, in order to align both the supply of products with shared conceptions of product quality, and the behaviour of participating producers with shared conceptions of farming, as to achieve an internal qualification of the market and to limit internal unfair competition. This is not only an issue of marketing, at least for certain types of FMs, but it also expresses the need to affirm producers' identity and values, in line with Manser's statement: "Farmers market's standards and regulations are used to demarcate and draw discursive boundaries around what products and vendors are, and are not, considered authentic and legitimate" (Manser, 2022, p. 156).

Internal qualification is the basis for external qualification, that is the definition of a specific identity of the FM itself, manifested and promoted towards the outside world (consumers, citizens, society at large), in order to differentiate the FM, its products and its "alternativeness" with respect to other more conventional products, markets and distribution channels.

Regulations of the investigated FMs display different characteristics. First of all, the level of formalization of the rules is varied. Written regulations do not always exist in the cases examined, and they are not always easily accessible to consumers or third parties. The content of the regulations also varies. A key aspect is usually the criteria for selecting vendors: the typology of vendors is normally set (i.e., only farmers or only organic farmers), but rarely the regulation outlines the process for vendor application and evaluation, and potential expulsion if they fail to comply with the market rules. Regulations also establish rules that vendors, customers, and other stakeholders must follow, including guidelines on product quality, booth setup and behaviour within the market, while the price level—or the way prices are set—is rarely regulated.

Compliance with internal standards and regulations and conflict resolution mechanisms emerge from our research as an essential part of the internal governance. Indeed, FMs may encounter disputes or conflicts between vendors, customers, or other stakeholders, and governance outlines the procedures for conflict resolution, which may involve mediation, arbitration, or other mechanisms. One of the most critical aspects is to ensure that the vendor produces what sells and does not act as an intermediary. The way to guarantee the origin of products depends on the type of external governance. Thus, for FMs associated with large farmers' unions, the visit to the plots and the supervision of agronomists within the market, as well as the information displayed by the producer herself, are the appropriate mechanisms to guarantee local, healthy, fresh, and seasonal products, thus maintaining consumers' confidence. In the case of other types of FMs, Slow Food affiliates base their control on the organization's own references and territorial networks, but also on the self-control exercised by producers. This can be the best mechanism to override free riders, as for example in case of conflicts between certified organic producers and non-certified agroecological producers. In this case, the mediation and decision-making capacity of the managers is fundamental to maintain the market objectives. As one FM coordinator says, attention must be paid to rumours among producers and consumers. In this respect, networks between different FMs also count. For instance, in the Mercato Contadino Pisa they had the case of some honey sellers who were also in the Fierucola, but when their plot was visited, it was found that they had no production, so they were expelled from both FMs.

Empirical findings show how regulation can be more or less formal and comprehensive, but also collectively agreed or top down prescribed, and originate from stakeholders' interaction at different governance levels.

5.3 Governance and FM origin and evolution

FM governance processes are influenced by the type of internal rules of each FM. At the same time, the analysis of FMs highlight that the characteristics of internal regulation are the result of vertical and horizontal governance processes.

The way in which the FM is created and its connection with extra-local networks significantly shape both internal and external governance models, both vertically and horizontally. Our analysis has allowed for a number of FMs types to be identified. A first major division is between FMs linked to national networks and "independent" ones. The latter include FMs promoted directly by public authorities and others promoted by spontaneous groups of farmers and local associations.

The first FMs arose from bottom-up processes as pioneering initiatives with an ideological orientation aimed at promoting modes of production and consumption alternative to the dominant models of industrialized agriculture and mass and globalized consumption.

This implied a qualification of the market based not only on proximity between the place of production and consumption, but also on production methods (e.g., organic low chemical inputs, artisanal, etc.) and a focus on local breeds and varieties and traditional products. This qualification took place, and still takes place, not so much through formal and codified rules, but rather, based on prior sharing of values and mutual knowledge between producers (and/or consumers) who activated the initiative. The action of non-farmers actors (intellectuals, associations carrying a broad interest such as the environmentalist ones) has been relevant in the history of the Fierucola and the Mercato Contadino di Pisa, inspired by the preservation of organic or biodynamic farming and the links with the local area not only in terms of physical distance, but also of recovery of traditional varieties, breeds and ways of processing. The building of this legacy and prestige of the founders had effects on the definition of their strategies of dialogue with municipalities and on the construction of solidarity economies. In short, the presence of a cohesive group of producers and/or consumers precedes the creation of the FM. The implications for governance are obvious: models of proximity, based on consolidated horizontal relations and direct knowledge, which frequently involve the more or less formalized participation of other stakeholders in the territory or neighbourhood. With the time passing, and with the growth of their success and thus of the number of participants, some of these initiatives formalized their rules more, leading to written regulations (e.g., Fierucola). Today, independent FMs show to develop their own internal regulation, agreed within the market between producers and sometimes other stakeholders, as part of the association managing the market. On the contrary, in FMs originating from a public initiative, as Terra di Prato market, the internal regulation drawn by the FM producers' association must be then approved by the municipality.

5.4 Role of national networks

In recent times, affiliation to regional and nation-wide networks (i.e., Coldiretti *Campagna Amica*, Cia *La Spesa in Campagna* and Slow Food *Earth Markets*) is one of the most evident phenomenon in the field of FMs. The entry into play of the large national organizations representing farmers (CIA and Coldiretti), and then of consumers' organizations (Slow Food), had several implications. First, it helped FMs to transform into a mass phenomenon, now known and accessible to many consumers and farmers. However, the founding values of FMs have changed somewhat: while physical and organizational proximity remains the key factor, more attention has been given to protecting the income of small producers and the convenience for consumers, the search for the fair price, and the freshness of products (Mengoni et al., 2024).

The most relevant implication of the growing role of FMs networks relates to the way markets are created and the mechanisms of governance. Particularly in the case of CIA and Coldiretti, the creation of a FM, at least in large urban areas, is the result of planning by the local branch of the organization, normally at provincial level. The local organization finds the potential public spaces available for a FM and starts the animation and selection of producers interested in regularly attending the FM in order to assess the potential of both products supply and demand in the area.[7] Then the local organization implements the business model developed by the central organization with the objective to homogeneously shape all the FMs of the network with the same organizational and communicational format. As shown in the previous section, FMs belonging to nation-wide networks usually vertically adopt the association's regulation. Coldiretti, CIA and Slow Food support the emergence and/or the development of FMs and to some extent they guide their decisions and operational behaviour.

However, membership of networks is not a constitutive fact of FMs, and it can also be the result of a development path. Indeed, we examined several cases of FMs already established and operating thanks to the initiative of producers and/or other stakeholders, which at some point decided to join networks, in particular the Slow Food Earth Market network. Joining a network can become a way for FMs to qualify themselves, effective also in terms of communication to consumers, and to reduce bureaucratic and administrative burdens, including transaction costs to homogenize the vendors, aligning them to common standards, and negotiate with local public authorities. FMs created within the Coldiretti, CIA and Slow Food networks benefit from a proven organizational and communicational format, an established and well-known image among the population (e.g., the name and the logo *La Spesa in Campagna*, the yellow flags and the visual layout that characterize the FMs of *Campagna Amica*) and the operational support of the local association. For instance, it is the local association that negotiates with the local Municipality to identify and manage the physical location for the market, obtain permits, set up the market and provide all necessary administrative formalities. According to Beckie et al. (2012, p. 333), "horizontal and vertical collaborations [between farmers markets] are resulting in innovative strategies to address challenges of scale, scope, infrastructure, and organizational capacity that are prevalent in alternative food networks."

5.5 Shaping regulations through the interaction of external and internal governance: multilevel governance models

However, from the observation of the cases, it appears too simplistic to categorise the governance model of FMs belonging to national networks as hetero-directed by external territorial actors and levels. Indeed, empirical findings show that national or regional standards and regulations are frequently at least partly redefined and adapted at the level of the single FM. Market regulations arise from interactions of actors inside the market with both territorial and vertical levels.

The role of external vertical governance is very relevant mainly in markets with an institutional identity shaped by the large farmers' unions Coldiretti and CIA. These centralized organizations have set up general regulations at national level, also in order to realize homogeneous forms of communication. However, some FMs belonging

7 According to the interview with CIA's regional representative in Tuscany (July 15, 2022): "In general, there must be a minimum number of enterprises that demand it. But before that, there is an animation process that consists of finding a vacancy, and summoning farmers who are available. They are the ones who propose it to the municipality, and the municipality says which places are available."

to *La Spesa in Campagna* and *Campagna Amica* networks are allowed to make some minor adjustments to their internal regulations, for example concerning the admission of new members, to adapt them to the territorial contexts, as it is the case of the Pisa Covered Market. This denotes a hybridization between vertical decisions and the horizontality needed by stakeholders within the FM. Anyway, in the FMs that follow a model of centralized decisions from an extra-territorial body, the formalization of procedures in national regulations and the top-down governance are efficient ways of dealing with conflicts between stakeholders. However, on a day-to-day basis, conflicts are resolved with the intervention of the market managers, and only in critical cases they also involve the local committees or managers of the farmers' unions.

In Slow Food's FMs, regulations have a more dynamic flow between the central bodies of the organization and the single FM. The flexibility of this type of governance consists in markets adopting the Slow Food philosophy principles of "Buono, pulito e giusto" (good, clean, and fair), and committing to respecting and disseminating them, being then free (as happens for instance in the Mercatale covered Earth market) to also adopt a market internal regulation concerning producers' admission, sanctions and selling rules for specific products' categories.

In independent markets, multilevel relationships are largely limited to the municipality and territorial actors. The Fierucola acknowledges the role of the local municipality and its importance for the functioning of the markets. Terra di Prato Market too has a regulation drawn up by the municipality, but it is being reworked at the proposal of the Market's Board of Directors to regulate some new emerging aspects, such as the participation of peasant businesses outside the surrounding area of Prato.

The above-mentioned forms of governance are neither linear nor fixed. This can be observed in the interrelation of stakeholders in the markets, but also in their evolution under the impulse of producers' associations, the proactivity of managers, the support of Farmers' unions, Slow-Food, and municipalities. This combination of stakeholders with flexible and networked schemes can be seen in the *Mercatale of Montevarchi*, where in order to overcome the work overload for producers to transport their products, set up the stalls and sell daily, a cooperative solution has been developed that allows to have some employees, thus reducing physical producer's assistance. This represent an innovation that have emerged from the producers and are driven by the promoters of the FMs, both at the level of internal organization and of governance.

To sum up, the regulations of the FMs need to be updated, with better participation of producers and consumers, and a greater training of managers who can rotate in leading positions. Even if they appear outdated, regulations are an important source for characterizing FMs. In the case of large organizations, they impose a top-down relationship with the actions of national farmers' unions or national or international NGOs such as Slow Food. But they also include the actions carried out from below, from the city and the territory, by farmers and neighbourhood organizations for the installation of FMs.

6 Conclusion

Through a comparative analysis, this study examined the dimensions of FMs governance and the relationships between them. Three main scales of governance were identified. The first concerns internal governance, which consists of the processes aimed at managing the relationships between the actors who actively participate in the FM, the definition of internal rules of operation, and the operational management of the FM itself. External horizontal governance concerns the relationship between the FM and the actors present in the territorial context in which the FM operates (e.g., public institutions, consumers, citizens), while external vertical governance, which links the FM to regional, national and international levels.

In the Italian context, external vertical governance has become increasingly important. Large networks of FMs have become widespread, expressing both the farmers' interests and citizens' associations of general interest. Non-local external actors have become more active in the creation of FMs, and purely economic motives have become more important. The spread of large FMs networks responds to many needs of producers: speeding up market formation, simplifying participation mechanisms, reducing transaction costs in the relationships with other actors in the territory, having a known image in relations with public institutions and consumers. This has led to a partial reduction in the scope for territorial and, in particular, internal governance, which is mostly entrusted to managers, while the role of participation is diminishing.

Following Nicol (2020), we may say that national networks ease the way to *scaling out* of FMs, expanding the geographical reach through replication, and may better contribute to the *scaling up* of FM model, having higher advocacy power towards the public authorities for institutional change (policy, rules, and laws). At the same time, within national networks *scaling deep*, that is more related to change in people, relationships, communities and culture, or in short, the "alternativeness" and transformative role of FMs, may lose energy, being more focused on the pure economic aspect of market exchange.

Notwithstanding the limited number of FMs analysed and the focus only on a specific territory, this research provides consistent evidence that FMs simultaneously implement top-down and bottom-up governance systems, involving a plurality of actors intervening in various capacities and with different interests and objectives in the context of local food systems. However, the finding that bottom-up governance models are becoming prevalent and that the space of internal and external territorial governance is shrinking must be discussed carefully, avoiding oversimplifications.

In fact, the research revealed a wide variety of organizational and governance forms in FMs, the characteristics of which are strongly linked to the constituent values and objectives behind the birth of each market. We have observed that in some FMs regulations are shaped through interactions between different external (horizontal and vertical) and internal governance levels, integrating wider external regulations and adapting them to the specific territorial context, or conversely validating internal regulation. This intervention extends to territorial and local contexts, such as the municipality, as well as to broader territorial contexts, such as the region, the country or global organizations. The complexity of interactions suggests that the characteristics of stakeholders, their influence and impact, vary, according to their position of geographical and relational proximity.

Governance has to do with the issue of who takes the lead to coordinate the FM: the vendors, the community, or large organizations (Gantla and Lev, 2015). Each solution has its own advantages and disadvantages. In the vendors' FM, the management has strong ties to the inside, but weak ties to the community that hosts them. The

managers of this type of FM find it difficult to incorporate more activities into the FM and to secure funding, due to the strong commitment to the vendors. In the community-type market, horizontal relationships and community-oriented decisions favour the ability to attract volunteer work from activists and other market actors, lowering transaction costs. However, linkages with producers depend on the incorporation of vendors' representatives in governance committees. In contrast, FMs as sub-entities of large organizations have the advantage of greater access to finance and better training of managers, but their links with vendors are normally weaker.

As for the role of consumers as stakeholders, results do not allow us to test the influence of consumers as a key stakeholder in the functioning of FMs. The possibility remains open that consumers do not play an important role as attributed to them in the literature. It is also possible that the interactions between stakeholders have created an institutional environment of trust that mitigates the need for consumers participation.

In conclusion, we can state that FMs represent a sign of the more general process of redefinition of the role of the State, the market, and civil society highlighted by numerous scholars in the field of food systems (Lamine et al., 2012; Bui et al., 2016, 2019; Geels, 2019, among others) as they implement forms of multi-level governance in which different productive, institutional and social actors are involved and interact.

According to our findings, we agree that the conjunction of values and an adequate institutional framework are important pillars for the governance of these markets (Manser, 2022) and that adequate internal coordination and multilevel coordination with relevant actors are fundamental for their future.

Generally speaking, our research underlined the important role public authorities can play in supporting FMs, at all governance levels. Indeed, FMs governance models seem more able to involve local actors and other stakeholders and set up new territorial alliances that can contribute to higher levels of food democracy and sovereignty. Therefore, public support to FMs, as well as other initiatives in the frame of SFSCs, can largely contribute to achieving more equitable food systems, easing agroecological transition, and preserving biocultural heritage. In particular, the "independent" FMs should deserve more attention as they appear to be more fragile and need to build stronger networks to benefit from collective services and reduce management costs.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Author contributions

GB: Conceptualization, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing. GTS: Conceptualization, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing. PS: Conceptualization, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing. MM: Conceptualization, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing. AM: Conceptualization, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

Supplementary material

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References

Atkočiuniene, V., Vaznoniene, G., and Kiaušiene, I. (2022). The role and functions of stakeholders in the development of local food systems: case of Lithuania. *European Countryside* 14, 511–539. doi: 10.2478/euco-2022-0026

Beckie, M. A., Kennedy, E. H., and Wittman, H. (2012). Scaling up alternative food networks: farmers' markets and the role of clustering in western Canada. *Agric. Hum. Values* 29, 333–345. doi: 10.1007/s10460-012-9359-9

Belletti, G., and Marescotti, A. (2013). Potenzialità e limiti delle iniziative di filiera corta. *Prog. Nutr.* 15, 146–162.

Belletti, G., Ranaboldo, C., Scarpellini, P., Gabellini, S., and Scaramuzzi, S. (2022). "Redes y dinamizacion territorial, factores clave para la valorizacion sostenible e inclusiva del patrimonio biocultural rural: un analisis desde el territorio de Garfagnana (Italia)" in *Biocultural heritage and communities of practice, participatory processes in territorial development as a multidisciplinary fieldwork, perspectives on rural development, vo*. 6 Ed. L. Bindi, 6:109–138. doi: 10.1285/i26113

Betz, M. E., and Farmer, J. R. (2016). Farmers' market governance and its role on consumer motives and outcomes. *Local Environ.* 21, 1420–1434. doi: 10.1080/13549839.2015.1129606

Brinkley, C. (2017). Visualizing the social and geographical embeddedness of local food systems. *J. Rural. Stud.* 54, 314–325. doi: 10.1016/j.jrurstud.2017.06.023

Brugha, R., and Varvasovszky, Z. (2000). Stakeholder analysis: a review. *Health Policy Plan.* 15, 239–246. doi: 10.1093/heapol/15.3.239

Bryant, A., and Charmaz, K. (2007). "Introduction. grounded theory research: methods and practices" in *The Sage handbook oy grounded theory*. eds. A. Bryant and K. Charmaz (London: Sage), 1–28.

Bui, S., Cardona, A., Lamine, C., and Cerf, M. (2016). Sustainability transitions: insights on processes of niche-regime interaction and regime reconfiguration in agri-food systems. *J. Rural. Stud.* 48, 92–103. doi: 10.1016/j.jrurstud.2016.10.003

Bui, S., Costa, I., De Schutter, O., Dedeurwaerdere, T., Hudon, M., and Feyereisen, M. (2019). Systemic ethics and inclusive governance: two key prerequisites for sustainability transitions of Agri-food systems. *Agric. Hum. Values* 36, 277–288. doi: 10.1007/s10460-019-09917-2

Chiffoleau, Y. (2009). From politics to cooperation: the dynamics of embeddedness in alternative food supply chains. *Sociol. Rural.* 49, 218–235. doi: 10.1111/j.1467-9523.2009.00491.x

Coelho de Souza, J., da Silva Pugas, A., Rover, O. J., and Nodari, E. S. (2023). Social innovation networks and agrifood citizenship. The case of Florianópolis area, Santa Catarina / Brazil. *J. Rural. Stud.* 99, 223–232. doi: 10.1016/j.jrurstud.2021.09.002

Davies, J., Blekking, J., Hannah, C., Zimmer, A., Joshi, N., Anderson, P., et al. (2022). Governance of traditional markets and rural-urban food systems in sub-Saharan Africa. *Habitat Int.* 127:102620. doi: 10.1016/j.habitatint.2022.102620

Di Iacovo, F., Fonte, M., and Galasso, A. (2014). *Agricoltura civica e filiera corta. Nuove pratiche, forme di impresa e relazioni tra produttori e consumatori*. Roma, Italy: Coldiretti.

Dunsire, A. (1993). "Modes of governance" in *Modern governance. New-government-society interactions*. ed. J. Kooiman. *First. Reprinted in 1994* ed (London-Thousand Oaks-New Dheli: Sage), 21–34.

Enthoven, L., and Van den Broeck, G. (2021). Promoting food safety in local value chains: the case of vegetables in Vietnam. *Sustain. For.* 13:6902. doi: 10.3390/su13126902

Freeman, R. E., Harrison, J. S., and Wicks, A. (2008). *Managing for stakeholders: Survival, reputation, and success*. New Haven, CT: Yale University Press.

Gantla, S., and Lev, L. (2015). Farmers' market or farmers market? Examining how market ownership influences conduct and performance. *J. Agric. Food Sys. Community Dev.* 6, 49–63. doi: 10.5304/jafscd.2015.061.005

Geels, F. W. (2019). Socio-technical transitions to sustainability: a review of criticisms and elaborations of the multi-level perspective. *Curr. Opin. Environ. Sustain.* 39, 187–201. doi: 10.1016/j.cosust.2019.06.009

Giacchè, G., and Retière, M. (2019). The "promise of difference" of cooperative supermarkets: making quality products accessible through democratic sustainable food chains? *Redes* 24, 35–48. doi: 10.17058/redes.v24i3.14002

Giménez, G., and Heau Lambert, C. (2014). "El problema de la generalización en los estudios de caso" in *La etnografía y el trabajo de campo en las ciencias sociales*. ed. C. Oemichen Bazán. *Primera* ed (México: UNAM-IIA), 347–364.

Hatipoglu, B., and Inelmen, K. (2020). Effective management and governance of slow food's earth markets as a driver of sustainable consumption and production. *J. Sustain. Tour.* 29, 1970–1988. doi: 10.1080/09669582.2020.1826498

Hinrichs, C. C. (2000). Embeddedness and local food systems: notes on two types of direct agricultural market. *J. Rural. Stud.* 16, 295–303. doi: 10.1016/S0743-0167(99)00063-7

Hyland, J. J., and Macken-Walsh, A. (2022). Multi-actor social networks: a social practice approach to understanding food hubs. *Sustain. For.* 14, e1–e19. doi: 10.3390/su14031894

Jarosz, L. (2008). The city in the country: growing alternative food networks in metropolitan areas. *J. Rural. Stud.* 24, 231–244. doi: 10.1016/j.jrurstud.2007.10.002

Kebir, L., and Torre, A. (2014). "Geographical proximity and new short supply chains" in *Creative industries and innovation in Europe. Concepts, measures and comparative studies*. ed. L. Lazzeretti (London: Routledge), 194–211.

Kooiman, J. (1993). *Modern governance. New government-society interactions*. London–Thousands Oaks–New Delhi: Sage.

Kooiman, J. (2003). *Governing as governance*. London–Thousand Oaks–New Delhi: Sage Publications.

Lamine, C., Renting, H., Rossi, A., Wiskerke, J. H., and Brunori, G. (2012). "Agri-food systems and territorial development: innovations, new dynamics and changing governance mechanisms" in *Farming systems research into the 21st century: The new dynamic*. eds. I. Darnhofer, D. Gibbon and B. Dedieu (Dordrecht: Springer Netherlands), 229–256.

Loconto, A., Poisot, A. S., and Santacoloma, P. (2016). *Innovative markets for sustainable agriculture. How innovations in market institutions encourage sustainable agriculture in developing countries*. Rome: FAO-INRA.

Lovatto, A. B., Miranda, D. L. R., Rover, O. J., and Bracagioli Neto, A. (2021). Relacionamento e fidelização entre agricultores e consumidores em grupos de venda direta de alimentos agroecológicos em Florianópolis-SC. *Rev. Econ. Sociol. Rural.* 59:e227676. doi: 10.1590/1806-9479.2021.227676

Manser, M. G. (2022). Systematizing authenticity and codifying values: the role of values, standards, and governance at farmers markets. *J. Rural. Stud.* 96, 154–166. doi: 10.1016/j.jrurstud.2022.10.021

Marsden, T., Banks, J., and Bristow, W. (2000). Food supply chain approaches: exploring their role in rural development. *Sociol. Rural.* 40, 424–438. doi: 10.1111/1467-9523.00158

Martens, K., Rogga, S., Hardner, U., and Piorr, A. (2023). Examining proximity factors in public-private collaboration models for sustainable Agri-food system transformation: a comparative study of two rural communities. *Front. Sustain. Food Syst.* 7:1248124. doi: 10.3389/fsufs.2023.1248124

Mengoni, M., Marescotti, A., and Belletti, G. (2024). Farmers' markets as a sustainable model of producers-consumers relationships: evidence from Italy. *Ital. Rev. Agric. Econ.*, n. 1, forthcoming.

Muchnik, J. (2006). *Sistemas Agro-alimentarios Localizados: Evolución del Concepto y Diversidad de Situaciones*. In Congreso Internacional De La Red Sial – "Alimentación Y Territorios", 3, 2006, Baeza (Jaén)

Nicol, P. (2020). Pathways to scaling agroecology in the City region: scaling out, scaling up and scaling deep through community-led trade. *Sustain. For.* 12:7842. doi: 10.3390/su12197842

Ostrom, E. (2014). Más allá de los mercados y los Estados: gobernanza policéntrica de sistemas económicos complejos. *Rev. Mex. Sociol.* 76, 15–70,

Pasquier Merino, A. G., Torres Salcido, G., Monachon, D. S., and Villatoro Hernández, J. G. (2022). Alternative food networks, social capital, and public policy in Mexico City. *Sustain. For.* 14:16278. doi: 10.3390/su142316278

Petropoulou, E., Benos, T., Theodorakopoulou, I., Iliopoulos, C., Castellini, A., Xhakollari, V., et al. (2022). Understanding social innovation in short food supply chains: an exploratory analysis. *Int. J. Food Stud.* 11, SI182–SI195. doi: 10.7455/ijfs/11.SI.2022.a5

Pierre, J., and Peters, G. (2000). *Governance, politics and the state*. Basingstoke: Macmillan.

Porras, F. (2016). *Gobernanza: propuestas, límites y perspectivas. Primera edición*. Edn. Ciudad de México: Instituto de Investigaciones Dr. José María Luis Mora.

Poteete, A. R., Janssen, M., and Ostrom, E. (2010). *Working together: Collective action, the commons, and multiple methods in practice*. Princeton, N.J: Princeton University Press.

Rhodes, R. A. W. (1997). *Understanding governance: Policy networks, governance, reflexivity and accountability*. Buckingham: Open University Press.

Rover, O. J., de Gennaro, B. C., and Roselli, L. (2017). Social innovation and sustainable rural development: the case of a Brazilian agroecology network. *Sustain. For.* 9:3. doi: 10.3390/su9010003

Sacchi, G., Stefani, G., Romano, D., and Nocella, G. (2022). Consumer renaissance in alternative Agri-food networks between collective action and co-production. *Sustain. Prod. Consum.* 29, 311–327. doi: 10.1016/j.spc.2021.10.018

Sage, C. (2003). Social embeddedness and relations of regard: alternative 'good food' networks in south-West Ireland. *J. Rural. Stud.* 19, 47–60. doi: 10.1016/S0743-0167(02)00044-X

Sanz-Cañada, J., Belletti, G., and Lagoma, C. (2018). Politics and territorial governance of food consumer groups in the district of Lavapiés, Madrid. *Ager* 25, 65–97. doi: 10.4422/ager.2018.16

Sanz-Cañada, J., Sánchez-Hernández, J. L., and López-García, D. (2023). Reflecting on the concept of local Agroecological food systems. *Land* 12:1147. doi: 10.3390/land12061147

Smithers, J., Lamarche, J., and Joseph, A. E. (2008). Unpacking the terms of engagement with local food at the farmers' market: insights from Ontario. *J. Rural. Stud.* 24, 337–350. doi: 10.1016/j.jrurstud.2007.12.009

Sonnino, R. (2007). The power of place: embeddedness and local food systems in Italy and the UK. *Anthropol. Food* 2:S2. doi: 10.4000/aof.454

Ton, G., de Grip, K., Lançon, F., Onumah, G. E., and Proctor, F. J. (2014). Empowering smallholder farmers in markets: strengthening the advocacy capacities of national farmer organisations through collaborative research. *Food Secur.* 6, 261–273. doi: 10.1007/s12571-014-0339-3

Torres Salcido, G., and Sanz Cañada, J. (2018). Territorial governance. A comparative research of local agro-food systems in Mexico. *Agriculture* 8:18. doi: 10.3390/agriculture8020018

Troccoli, C., Adinolfi, F., Pirrone, A., Bartoli, L., De Rosa, M., and Taffon, D. (2021). Farmers' markets in Italy. In C. Troccoli and RosaM. De (Eds.), *First world markets report. World Farmers Markets Coalition*, (pp. 62–72). Available at: https://drive.google.com/file/d/1Bb47nG-iUrqacXgjo3-xkorkJkem6r7C/view

Valles Martínez, M. S. (2002). *Entrevistas cualitativas, vol. 32. Primera* Edn. Madrid: Centro de Investigaciones Sociológicas.

Vandecandelaere, E., Arfini, F., Belletti, G., and Marescoti, A. (Eds.) (2010). *Linking people, places and products. A guide for promoting quality linked to geographical origin and sustainable geographical indications*. Rome: Siner-Gi, Calidad & Origen, FAO.

Yin, R. K. (1994). *Case study research. Design and methods, vol. 5. Second* Edn. Thousand Oaks, CA, London and New Delhi: Sage.

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Sustainable food networks, hybridization and values: a case study in Castilla y León (Spain)

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Sustainable food networks involve different food supply arrangements which attempt to construct a more sustainable, democratic, and egalitarian food system. Since the concept appeared at the end of the 20th century (labelled as 'alternative food networks'), two approaches have been employed to explore these initiatives. The 'view of differences' emphasizes alternativeness and opposition to the hegemonic food system, governed by large food production and retail firms. The 'view of influences' highlights the complex interactions between the mainstream food system and these more sustainable initiatives. As a result of these interactions, many sustainable food networks apply organizational practices similar to those of mainstream companies: this process has been called 'hybridization'. The present article studies the process of hybridization in the sustainable food networks based in the Spanish provinces of Salamanca and Zamora (region of Castilla y León). An inventory of sustainable food initiatives across the region has been compiled and semi-structured interviews have been conducted with initiatives all along the food value chain. According to qualitative data recorded in the interviews, it is argued that the broad set of hybrid practices embodied in these sustainable food networks are legitimized by the members' values because they contribute to achieving three key objectives: protecting the environment, promoting health, and fostering local development. These three goals frame an 'inward' notion of sustainability rooted on the product itself that is likely to turn these networks less transformative, but also more resilient against the competition of the mainstream companies.

KEYWORDS

sustainable food networks, values, conventionalization, upscaling, hybridization, Castilla y León, Spain

1 Introduction

1.1 Alternative food networks as sustainable arrangements

In a seminal contribution, Whatmore and Thorne (1997, p. 287) coined the term 'alternative food networks' to label those food supply arrangements which attempt to construct a food system that is not (completely) controlled by big corporations which commodify food and operate at long geographic distances. Researchers have considered many arrangements as 'alternative food networks': banks of seeds and disused croplands, urban gardening, agricultural parks, community-supported agriculture, participatory-guarantee systems, box schemes, on-farm shops, small organic/agroecological food processing, collective processing facilities, food hubs, farmers' markets, organic shops, consumer cooperatives, cooperative supermarkets, online sales platforms, responsible public procurement, responsible foodservice outlets, or fair trade.

Since 1997, scholarship on this topic has developed an array of terms to capture the nuances of such initiatives: 'short food supply chains' (Renting et al., 2003, p. 393; Misleh, 2022, p. 1028), 'local food systems' (Brinkley, 2017 p. 314), 'civic food networks' (Renting et al., 2012, p. 292), 'values-based territorial food networks' (Reckinger, 2022, p. 78), 'values-based food chains' (Fleury et al., 2016, p. 36), 'sustainable food supply chains'(Chiffoleau and Dourian, 2020, p. 1), 'agroecology-based territorial agri-food systems' (González de Molina and López García, 2021, p. 1050), or 'local agroecological food systems (Sanz-Cañada et al., 2023, p. 1147).

All those initiatives have three characteristics in common. First, they promote an environmentally-respectful (or 'more natural') food supply system: organic, agroecological, handcrafted food items usually flow through these networks. Second, they rely on participatory governance practices: assemblies, accountability, task-sharing, shared definitions of quality are deployed for partners to engage in networks' management. Third, they attempt to attain a fairer distribution of revenues among all stakeholders involved; hence, intermediaries are avoided as much as possible to circumvent their bargaining power and to prevent harsh price-setting negotiations.

These three pillars are aligned with the three meanings of sustainability: environmental, social, and economic (European Commission, 2020, p. 14). Therefore, this article proposes *'sustainable food networks'* (thereafter, SFNs) as an umbrella term to name those food arrangements. SFNs may be defined as follows: 'arrangements of food production, distribution and consumption (and co-ordination of these processes) whose values and practices promote a food environment respectful of nature and health, establish a more equitable distribution of economic value among the actors involved, reduce the number of intermediaries, usually operate in a frameworks of geographic proximity, and are ruled by participatory, inclusive and democratic decision-making mechanisms based on mutual trust among the people involved'.

SFN stakeholders thus strive to construct a more natural, democratic, and fair food system. According to the literature reviewed, values fundamental to SFNs are environmental respect, community development, inclusive participation, healthcare, and socio-economic justice (Figure 1). Respect for these values is intended to constitute an alternative to the corporate model that currently rules the three stages of the food system, according to Sage (2022, p. 9): food supply, food environment, and consumption practices.

The geographical scope of SFNs, a key topic for policymaking, is more controversial. Fair trade delivers food similar to that produced by SFNs, but over very long distances. The same applies to online sales platforms connecting organic producers and concerned consumers. Nonetheless, most SFNs involve geographic proximity between producers and consumers. Three main factors are at play here. First, mutual trust is more likely to be developed through repeated personal interaction, which constitutes a key factor to attach values other than economic (i.e., price, convenience) to food delivered via SFNs (Thorsøe and Kjeldsen, 2016, p. 162). Second, geographic proximity is also intended to reduce the ecological footprint of food_ the 'food miles' (or 'zero kilometer') argument brings concerned consumers to include distance as a criterion in their purchasing choices (Sanz-Cañada et al., 2023, p. 8). Finally, preference for locally-sourced food becomes an expression of partners' commitment to community development and to building closer links between urban and rural settings (Feagan, 2007, p. 27).

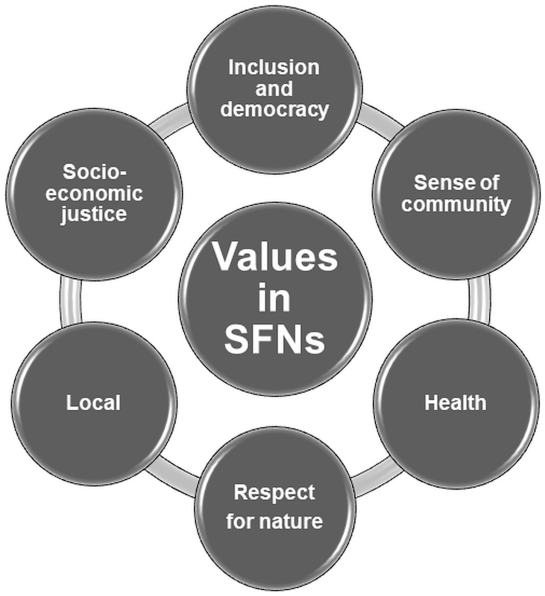

FIGURE 1
Values endorsed by sustainable food networks. Source: Author's elaboration.

But what counts as 'local'? The term sounds polysemic whenever SFN stakeholders qualify the territorial framework for such 'food with values' (Trivette, 2015, p. 479; Kłoczko-Gajewska et al., 2023, p. 5). It often refers to food produced at the administrative level (municipality, province, region) where the SFN is based. But the English language lacks the rich geographical meaning of Latin words such as the French *pays* or the Spanish *comarca*, i.e., geographical areas larger than the municipality but smaller than the province/region, whose environmental conditions ease specialization with specific crops or breeds. In Spain, these "comarcas" are frequently referred to when SFN foodstuffs are qualified as 'local' (González Romero and Cánovas García, 2021, p. 16). Therefore, the traits of SFNs are not restricted to any rigid geographical scope, but may be performed from the municipality to a broader regional or even transregional setting.

1.2 Conventionalization and hybridization in sustainable food networks

The academic literature on the SFN phenomenon presents two main strands. The first one considers SFNs as an alternative to mainstream food value chains. It highlights the differences between 'alternative' and 'conventional' in a dual approach that emphasizes how SFNs define the content, the processes, and the provenance of food (Ilbery and Kneafsey, 1998, p. 333) in ways opposite to the 'big food' system. Hallmarks of this 'view of difference' are Watts et al. (2005), Venn et al. (2006), Rosol (2020), or the collection edited by Maye et al. (2007). Common topics in this literature involve the notion of alterity (Misleh, 2022, p. 1031), internal organization (Duncan and Pascucci, 2017, p. 316; Grivins et al., 2017, p. 343; Poças Ribeiro et al., 2020, p. 491; Zwart and Mathijs, 2020, p. 590), governance procedures (Moragues-Faus, 2017, p. 465, Marovelli, 2019, p. 192), distinctive values and goals

(Calvário and Kallis, 2017, p. 604; Brinkley, 2017, p. 315; Reckinger, 2022, p. 92), interaction with public authorities (Argüelles et al., 2017, p. 37; Doernberg et al., 2019, p. 4), and assessments of their achievements and limitations (Goodman, 2004, p. 7; Forssell and Lankoski, 2015, p. 63; Chiffoleau and Dourian, 2020, p. 12; Zoll et al., 2021, p. 654).

The second strand addresses the interactions between alternative and mainstream food value networks. This 'view of influences' is rooted in the debate sparked by Buck et al. (1997) about the 'conventionalization' of California's organic agriculture. These theorists argued that organic agriculture in California was colonized by agribusiness corporations eager to capitalize on new consumer demands for healthy food, thus crowding out small farmers committed to non-capitalist values. Such an argument redefines the critical values embedded in SFNs as mere market opportunities for hegemonic players. A second major contribution was Sonnino and Marsden's (2006) advocation for a research agenda focused on the competitive relationship between alternative and conventional food networks. Common topics in this literature revolve around third-party organic certification (Baron and Dimitri, 2019, p. 773; González Azcárate et al., 2022, p. 2), contribution to rural and regional development (Hughes and Isengildina-Massa, 2015, p. 82; Mundler and Laughrea, 2016, p. 218; Lamine et al., 2019, p. 160), commodification of values like 'local' or 'healthy' (Bowen and Mutersbaugh, 2014, p. 209; Oñederra-Aramendi et al., 2018, p. 31; Macías Vázquez and Morillas Del Moral, 2022, p. 16), or the opportunity that conventionalization provides to reach consumers beyond the alternative niche (Allaire, 2021, p. 225; Enthoven and Van den Broeck, 2021, p. 11).

This 'view of influences' is fueled by the upswing of SFNs in advanced economies (Michel-Villarreal et al., 2019, p. 6), and by the upscaling of some SFNs in terms of membership, turnover, and geographical scope (Sánchez-Hernández and Espinosa Seguí, 2020, p. 22). By means of conventionalization, food corporations have partially co-opted the most profitable features of sustainable food, such as organic labelling, local sourcing, animal welfare, or healthier lifestyles. Yet, some SFNs also adopt firm-like management practices: decision boards, legal contracts, tax payment, staff hiring, price bargaining, digital applications, or sophisticated logistics. These practices seem to be the only way to meet their customers' demands and to compete with 'sustainable' food delivered by large corporations (Follett, 2009, p. 38).

Consequently, conventionalization is not limited to the appropriation of SFN attributes by agribusiness firms. Conventionalization also compels SFNs to react to the competition by corporations in the field of organic, local, and healthy food. Since most supermarkets do attach those attributes to their foodstuff, some SFNs are reshaping their operations (assortment, prices, delivery, convenience, logistics) for meeting their transformation goals.

The term 'hybridization' has been proposed (Forssell and Lankoski, 2015, p. 71; Argüelles et al., 2017, p. 39; Chiffoleau et al., 2019, p. 189; Misleh, 2022, p. 1029; Tsoulfas et al., 2023, p. 5) to describe this process of SFN adaptation. 'Hybridization' encapsulates the empirical observation that SFNs seldom accomplish in full environmental, social, and economic sustainability. Their internal organization often includes a mix of 'sustainable' and 'mainstream' practices, whose study is endorsed by Grivins et al. (2017, p. 344), Zoll et al. (2021, p. 640) or Zwart and Mathijs (2020, p. 586).

1.3 Research questions

What is the impact of hybridization upon the values, practices, and outcomes of SFNs? This paper adheres to the 'view of influences' and addresses this research question. The underlying argument points that hybridization (i) enters SFNs via their day-to-day activities, (ii) is then filtered by SFN partners' values and motivations, to (iii) finally redefine the achievements of SFNs, because environmental concerns, health promotion, and territorial attachment (the latter loosely defined) are often prioritized at the expense of any broader transformation of the food system.

This is a substantial issue, because food was conceived by SFN pioneers as a political battlefield to achieve social justice, sense of community, and direct democracy (Hall and Mogyorody, 2001, p. 416). In this early conceptualization, environmental sustainability was taken for granted as an underlying value shared by all individuals committed to different SFNs.

However, due to conventionalization and hybridization, two values have colonized SFNs: the access to healthy food and the support for small local producers. Environmental sustainability maintains its role as a core value and goal. But it is not taken for granted any longer. Rather, environmental commitment must be explicitly displayed, so organic certification becomes a prerequisite for many partners to engage in SFNs.

This argument that hybrid practices are filtered by SFNs' values to promote environmental protection, health promotion, and territorial commitment, is tested against SFNs based in two Spanish provinces, Zamora and Salamanca, in the region of Castilla y León (see Figure 2). The geographic characteristics of these SFNs provide a good test field. Their location in a peripheral, rural, and underpopulated region (see Sections 2 and 3.1 for further details) where the conventional food system is not as hegemonic as in urban settings seemingly levels the field for SFNs to carve out their 'spaces of possibility' (Moragues-Faus and Marsden, 2017, p. 275) and to achieve a compromise between values and hybridization. In this territorial context, three research questions are posed: Which values are enhanced, and which ones fade out in the new mix of values shaped by hybridization? How does hybridization influence SFN practices? What are the implications for the development of a feasible food alternative?

To answer such questions, the paper is structured as follows. Section 2 presents data, processing methods, and the geographical context of the empirical research. Results are presented in Section 3 around three main topics: motivations and values to start—or involve in—an SFN; practices that denote hybridization, and their main drivers; and an overall assessment of the perceived effects of SFN in the regional food system. These results are discussed in Section 4 around a core question: do hybridization practices compromise the attachment to values, the achievement of foundational goals, and the development of a more sustainable food system? Section 5 summarizes and suggests four questions for further research around the opportunities of SFNs in both provinces to engage with public administrations for developing a more resilient and localized food supply system.

2 Materials and methods

This paper is based upon an inventory of SFNs conducted during 2022 in the Castilla y León Regional Autonomy, the largest region in

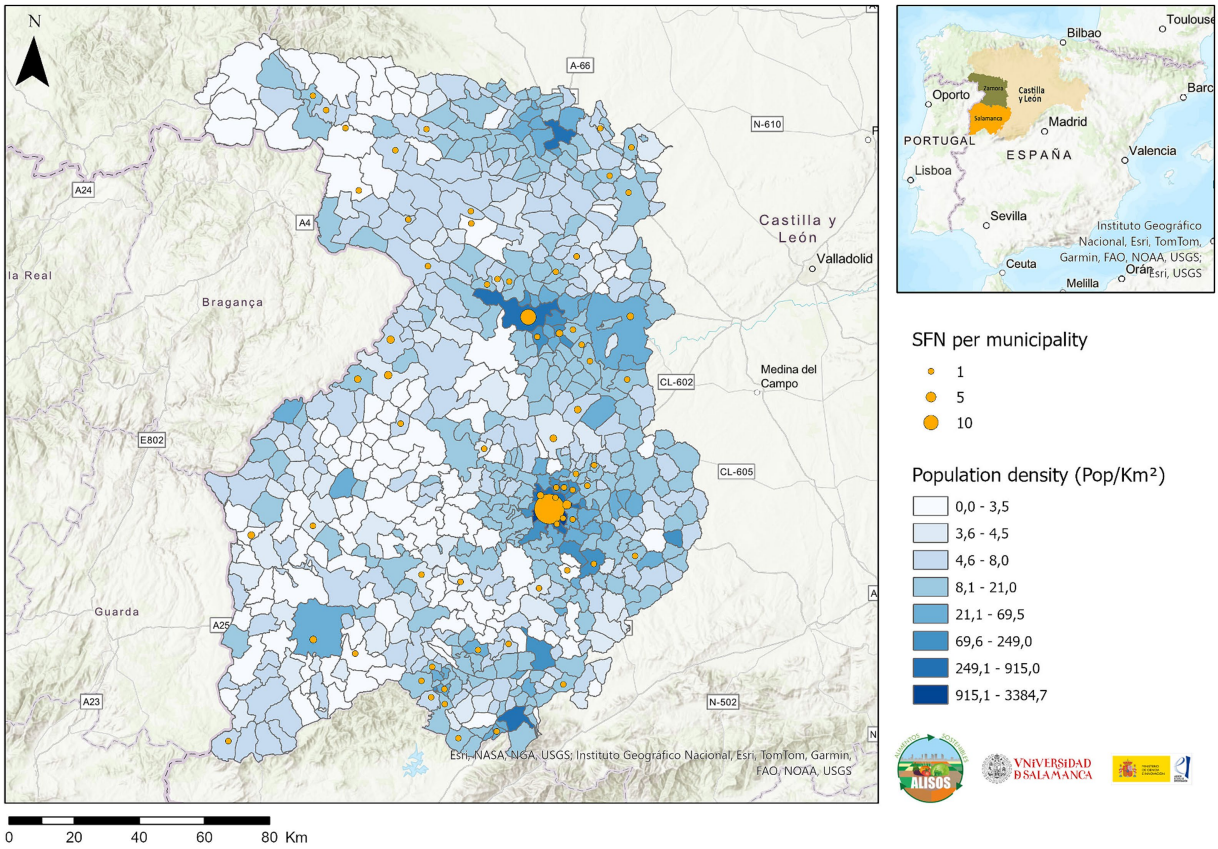

FIGURE 2
Geographical distribution of sustainable food networks in the provinces of Salamanca and Zamora, at the municipality level. Source: ALISOS research grant map collection (see Funding section).

Spain (94,226 km^2). The process of SFN search and selection is framed by the definition proposed in the Introduction. It seeks to record all initiatives aimed at constructing a sustainable food system in the region (Venn et al., 2006, p. 253): inputs, production, processing, distribution, and consumption. Such inventory consists of a spreadsheet merging information from different sources: (i) official census of certified organic producers and processors; (ii) information supplied by the Fundación Entretantos, a partner of the research project that funds the present paper; (iii) systematic Internet searches whose terms included the name of each province in the region, as well as SFN type (e.g., 'Burgos' + 'consumer cooperative', or 'Segovia' + 'organic shop'); (iv) systematic tracking of followers of each SFN in the social media; and (v) fieldwork involving alternative food events and meetings.

The inventory was structured to collect the following data on each SFN: name, legal status, physical and electronic addresses (including social media), geographic location, foundation date, economic specialization (at the product level when available), economic size (acreage, volume, staff), type of certification (official by a third-party organization; participatory-guarantee system), delivery channels, geographic scope of sales, public funding when applicable, and membership in networks engaged in sustainable/local/quality food promotion.

The inventory was intended to be exhaustive. However, it must be noted that it is incomplete. It was not possible to collect all the information for each case; it is therefore difficult to assess the overall economic size of SFNs in the region. Moreover, some SFNs are short-lived, other ones lack the resources to keep their digital profiles updated, and the thematic websites that include lists of SFN are often outdated too. Therefore, the number of living SFNs is always approximate.

The inventory excluded organic label holders who were not engaged in short/direct/sustainable delivery channels (e.g., on-farm selling, consumer cooperatives, box schemes, farmers' markets, or small independent bio-grocery stores) because they do not meet the definition's criteria. That is the case of wineries producing organic wine along with conventional wine. The same applies to organic producers fully dependent on mainstream supermarkets.

The final number of SFNs recorded in the inventory was 412, including seed banks, producers of ecological inputs (seeds, fodder, fertilizers), urban agriculture, community-supported agriculture, alternative farming (agroecological, permaculture), organic-certified producers linked to some extent to alternative outlets, collective processing facilities, food hubs, consumer cooperatives, farmers' markets, bio/eco/organic groceries, online sales platforms, and public organizations or foodservice outlets sourced with sustainable food.

Within the region of Castilla y León, the provinces of Salamanca and Zamora present the highest ratios of SFN per 10,000 inhabitants (Table 1). The geographic density of SFNs (cases by 1,000 km^2) also outscores the rest of the region, except Valladolid, a small territory

TABLE 1 Sustainable food networks (SFN) in the provinces of the region of Castilla y Leon (Spain), 2022.

Province	Area (km²)	Population (2023)	Population density (pop. / km²)	SFN	SFN/ 100,000 pop	SFN / 10,000 km²
Ávila	8,050	159,764	19.8	27	16.9	33.5
Burgos	14,292	357,370	25.0	30	8.4	21.0
León	15,581	448,573	28.8	76	16.9	48.8
Palencia	8,053	157,787	19.6	32	20.3	39.7
Salamanca	12,350	327,089	26.5	69	21.1	55.9
Segovia	6,923	155,332	22.4	30	19.3	43.3
Soria	10,306	89,528	8.7	11	12.3	10.7
Valladolid	8,110	521,333	64.3	88	16.9	108.5
Zamora	10,561	166,927	15.8	49	29.9	47.3
Region of Castilla y León	94,226	2,383,703	25.3	412	17.3	43.7

Sources: National Institute of Statistics (Spain) and Inventory of the ALISOS research grant.

which houses the region's capital city. Both provinces are located along the Spanish-Portuguese border (Figure 2), a sparsely populated area whose economy is highly specialized in the primary sector (Table 2). Accordingly, food processing is the largest industrial sector, employing 58.9 per cent of the manufacturing workforce in Salamanca and 70.1 per cent in Zamora. Furthermore, 17 products in this territory that have been awarded Protected Designations of Origin (P.D.O.) or Protected Geographical Indications (P.G.I.) (wines, cheese, ham, sheep, beef, pulses, pepper). Some specialties (red wines from P.D.O. Toro, Iberian ham from P.D.O. Guijuelo) keep noteworthy shares on the Spanish premium food market. The national and regional governments provide a significant source of income in both provinces (Table 2, again), through pensions (26.5 per cent of total income in Salamanca and 29.4 per cent in Zamora) and jobs in public services (19.4 per cent of active population in Salamanca and 17.3 per cent in Zamora).

Therefore, sourcing local food does not limit SFN setting in these provinces. Nonetheless, environmental conditions (cold winters, low rainfall) hamper fruit and vegetable cultivation, except in the mountain ranges ('sierras' in Spanish) of southern Salamanca and northwestern Zamora. Productivism was never hegemonic in these provinces, which constitute a sort of reservoir for the development of sustainable models of food provision (Parrott et al., 2002, p. 243): 72.3 per cent of total acreage in Salamanca and 52.5 in Zamora are farmed lands. Organic farming is underdeveloped in Salamanca, while Zamora holds more than one quarter of the region's organic acreage (Table 2). However, food consumption is somewhat restricted by the scant population density (far below the Spanish average of 96 inhabitants per km²), an unbalanced settlement pattern (with the capital cities, Zamora and Salamanca, housing 35.6 per cent and 43.5 per cent of their province's population), and income also lower than the rest of Spain (Table 2).

Table 3 showcases the distribution of SFNs along the food supply chain in both provinces. After fulfilling the inventory, semi-structured interviews were conducted with SFNs in each province. Cases were selected to include every stage of the food chain and to account for rural and urban settings in order to encounter more diverse perspectives. Urban gardens were not contacted because regulation bans any commercial use of the harvest.

The interviewees were usually the owners of the different SFNs: they all performed direct duties in the fields of production, marketing, and administration. For the consumer cooperative, the integrated operator, and one olive growers' cooperative, interviews were conducted with the managers. Informants were previously contacted by telephone and nobody refused the interview. All interviews were conducted in person, digitally recorded, and transcribed with the software Transkriptor™. Interview length ranges from 15 to 109 min, with an average duration of 45 min.

The interview script covers the following topics:

- SFN: foundation date, legal status, staff (gendered), suppliers and purchasers, marketing channels, geographical scope of sales.
- Founders: number, motivations, fulfillment of foundational goals.
- Values: adjectives that better describe food and partners of the SFN.
- Sustainability: type of certification, pros and cons of the organic label.
- Cooperation: for sourcing, for delivery.
- Governance procedures: pricing, decision-making, fair profit-margins.
- Transportation: own resources, subcontracted to logistics firms.
- Use of ICT for SFN management.
- Environmental, economic, social, and cultural characteristics of the province/region on SFN performance: driver or liability?
- Compromise between profitability and commitment to values.
- Membership in sustainable food organizations.
- Relationship with public administration.
- Influence of the SFN in the transformation of the local and regional food system.

Additional interviews involved one association of organic food producers in Salamanca, one researcher specialized in organic conversion (often quoted during the interviews as an influential expert) employed by the University of Salamanca, and the technical staff of the Diputación de Zamora (Provincial Government) most committed with the development of the organic food sector.

3 Results

This section presents the content of the interviews relating to the three research questions. Following a brief profile of the SFNs based on

TABLE 2 Socioeconomic profile of the provinces of Salamanca and Zamora.

Indicator	Salamanca	Zamora	Castilla y León	Spain
% Primary sector / GDP (2021)	4.8	9.0	5.4	2.7
% Primary sector / employment (2021)	6.6	12.2	6.8	3.8
% Employment in manufacturing (2022)	6.4	5.3	12.4	9.8
% Employment in food and beverages / employment in manufacturing (2022)	58.9	70.1	34.3	22.6
Population of capital city (2022)	142,412	59,475	297,459	3,332,035
Average net income per household (2021, €)	29,176	26,846	30,942	30,552
% Farmed acreage / total acreage (2020)	72.3	52.5	56.0	47.4
Farmed acreage, total 2020 (ha)	893,652	554,264	5,277,137	23,913,682
Farmed acreage, organic 2020 (ha)	3,675	20,079	75,596	1,871,529
% Organic acreage / total acreage (2020)	0.41	3.62	1.43	7.83
Organic producers, processors, wholesalers, and retailers (2022)	132	329	1887	65,424
Pensions as a percentage of income (2021)	26.5	29.4	26.2	24.9
% employed by public administrations / total employed (2023)	19.4	17.3	17.5	13.9

Sources: National Institute of Statistics (Spain). Statistical Information System (Regional Government, Castilla y León). Yearbook of Agricultural Statistics (Ministry of Agriculture, Fishing and Food, Spain).

TABLE 3 Inventory of sustainable food networks in the provinces of Salamanca and Zamora, and cases interviewed.

Specialization	Number of cases	Interviews
Inputs (seeds, fertilizers, fodder)	6	2
Agriculture and livestock farming (includes processing and direct selling)	44	10
Processing (includes direct selling)	22	7
Urban gardening	17	–
Collaborative marketing (online, on-site)	2	1
Consumer cooperatives	5	1
Retailing (farmers' markets, organic groceries)	13	2
Sustainable HORECA	8	1
Responsible public procurement	1	–
Integrated SFNs (agriculture + processing + delivery + HORECA)	1	1
Total	118	25

Source: Inventory of the ALISOS research grant.

both provinces (Section 3.1), Section 3.2 addresses the reasons for setting up the SFN and the values supported by its owners or managers. Section 3.3 systematizes the signs of hybridization (indicated by the interviewee or detected by the interviewer) and the way such hybrid practices boost or restrict the fulfilment of those motivations and values. Section 3.4 showcases interviewees' assessment of the overall effects and impacts of SFN activities on the local and regional food system.

3.1 Sustainable food networks in the provinces Salamanca and Zamora: a brief outline

The 118 SFNs recorded in the inventory for these two provinces are diverse in their economic features. 56 per cent were founded between 2010 and 2019. The outbreak of the Covid-19 pandemic in Spring 2020 has sparked this process, with 15 more initiatives launched in 2020 and 2021. Self-employment (*autónomo*, in Spanish) is the main legal status (57 per cent), followed by limited-liability companies (15.5 per cent, that includes the biggest SFN in terms of staff and turnover), and cooperatives (8 per cent). Informality is also present, with 12 SFN not registered as legal entities at all, mostly urban gardens and consumer groups.

The owner and his/her partner are the only persons employed in most SFNs, with hired staff recorded in 15 cases. The number of full-time workers may be roughly estimated around 400 individuals. Relatives are mentioned as a substantial aid during demanding seasons, like harvesting or olive processing. The largest SFNs locate in Salamanca: the integrated operator involves about 100 persons, and a big fertilizer producer employs 30 people.

Farm size ranges from 1 to 500 hectares, with most farmers in the lowest part of the distribution (below 100 hectares, and even below 10 ones). Livestock farming is larger on average (between 60 and 1,200 hectares) due to the extensive use of land in organic husbandry. Processors show a significant dispersion in their yearly volumes: 80 tons of organic fodder, 4.5 tons of organic cheese, 1.6 tons of organic

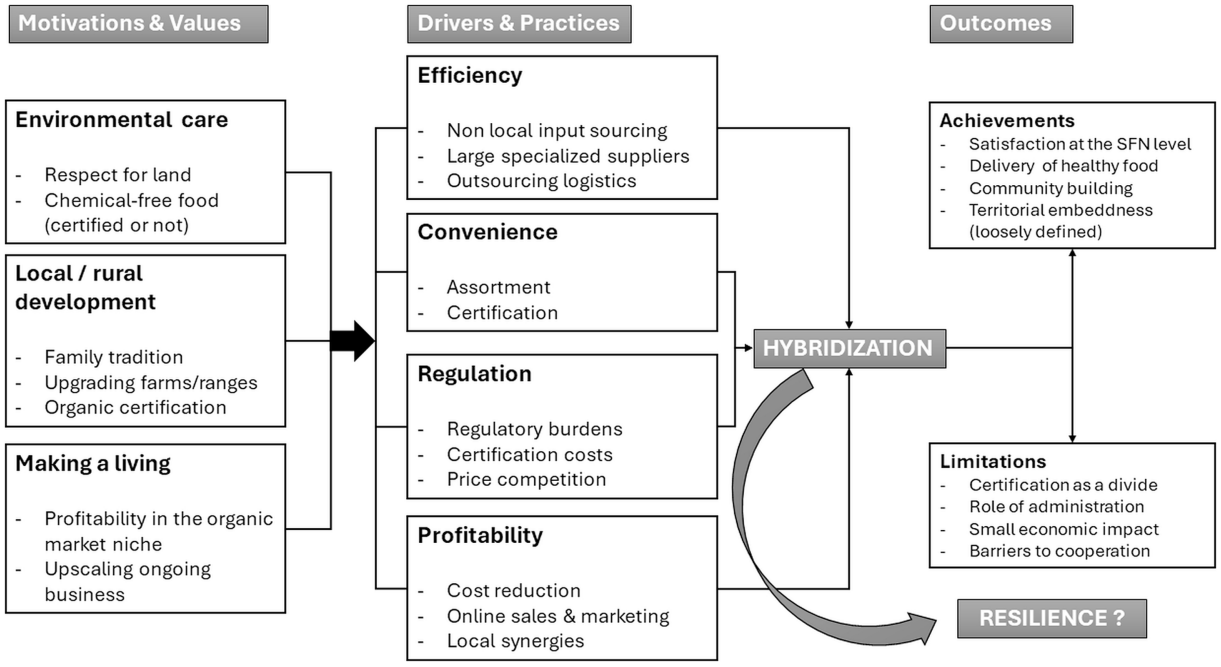

FIGURE 3
The interaction between values, drivers, and outcomes of hybridization in the sustainable food networks of Salamanca and Zamora. Source: Author's elaboration.

chocolates, 40,000 liters of organic olive oil, 10,000 cans of organic jam, 3 tons of organic snails… Also modest is the size of consumer groups (50 to 70 weekly boxes), with one remarkable exception with 200 households and a turnover of €200,000. Retailers and foodservice run small facilities (50 to 100 m^2) and barely include hired staff.

The end-to-end structure of these SFNs is also variegated. The canonic SFN model is that of short supply chains, with producers selling directly to end consumers or to local groceries and restaurants within a regional framework. SFNs focused on distribution. This model is of course very common in Zamora and Salamanca. But their upstream and downstream linkages are far more reaching. As it is discussed in Subsection 3.3, sourcing and selling overflow the provincial or regional borderlines to reach other Spanish regions very often, even for very small SFNs. In very particular cases, foreign exchanges have been reported by the interviewees, either to buy raw materials or to supply foodstuff.

The location of SFNs (Figure 2, again) follows a double pattern. First, concentration around the two capital cities, Salamanca and Zamora, which is proportional to their respective population sizes. Second, an overall bias to the eastern half of each province, where population density is higher. The western strip along the Spanish-Portuguese border, on the opposite, is even less populated and SFNs are only clustered in the comarcas of Sanabria (NW Zamora), Arribes del Duero (both sides of the Zamora-Salamanca borderline, beside the Duero river valley), and the Sierra de Francia (Southern Salamanca).

3.2 Why enter the world of SFNs? Motivations and values

When asked about the reasons for setting up their SFN, the interviewees indicated a combination of environmental, territorial, and economic arguments (Figure 3). Environmental goals are related to the individuals' own circumstances. Personal commitment to a more sustainable farming involves respectful management of the land or livestock to produce chemical-free crops, vegetables, meat, and dairy. Regular organic food consumers have entered production or have set up cooperatives to increase organic food consumption in their livelihoods.

These concerns are intertwined with the local environment, since they intend to make a contribution to rural development. Farms/ranges have frequently belonged to the same family for generations. For these interviewees, the best way to take care of their ancestors' legacy is to shift from conventional to permaculture or organic farming. Some farmers state that they adopted organic certification following decades of (in their own words) 'natural' farming. Other ones only switched to organic production after their parents had retired.

Making a living constitutes another frequent goal. Several interviewees bluntly stated that their main reason for setting up an organic grocery or workshop was its potential profitability. This group includes newcomers in the field, but other owners think of sustainable food as an opportunity to upscale their current businesses, or to make money from disused inherited land in rural areas.

These three motivations encompass the values highlighted by the interviewees when asked which attributes turn their food different. They all agree that the food they produce, or deliver, is 'better'. Such 'betterness' is anchored in environmental, territorial, and economic arguments, with adjectives such as 'natural', 'healthy', 'handcrafted' and 'local' quoted in every SFN. Producers claim to avoid chemical inputs and emphasize that they produce small batches of low-processed food (cheese, jam, olive oil, preserves, vegan recipes). Environmental care, in particular soil and pest management, is intended to endow these products with values of naturalness and healthiness. The same reasoning applies to handcrafted food processing.

Local sourcing underlies the idea of 'defending our territory'. It reduces food miles and carbon footprint. But it also merges environmental preservation (landscape, local livestock breeds and plant varieties), population recovery, and economic development via endogenous entrepreneurship. In addition, operating at the local scale is profitable for producers. Direct selling (home delivery, farmers' markets, online sales) increases their profit margins because intermediaries are avoided. These additional revenues are reported by some producers to represent a significant percentage of their income.

Few of the interviewees explicitly indicated price bargaining as being conflictive. However, many practices related to pricing embody the hybridization process, as the next Subsection describes.

3.3 Hybridization through everyday practices

The canonic SFN model internalizes almost every task, minimizes staff hiring, sources and sells at the local scale (mostly on a face-to-face basis) and prioritizes values other than profitability as a rule of thumb. It is important to underline that the cases studied in Salamanca and Zamora generally meet these criteria. Nonetheless, a closer scrutiny unveils a web of practices that fall beyond this archetype. These practices are signs of hybridization that respond to the constraints posed by the fourfold need for greater efficiency, convenience of the service provided, compliance with regulations, and sufficient profitability to make a decent living.

3.3.1 Efficiency

Efficiency seeking is apparent in upstream linkages. Producers do not purchase most of their inputs (seeds, fodder, wheat) locally because organic supply is scarce in the two provinces or in Castilla y León. Other Spanish regions are mentioned as providers of such key inputs. Some producers attempt to select their own seeds, for instance, but external suppliers are more affordable and also reliable in terms of availability and variety.

Environmental conditions are responsible for the shortage of fresh fruit or vegetables; hence, some SFNs purchase such inputs in southern Spain or in Portugal to keep the business running. The same applies to ingredients like cocoa or sugar, imported from Latin America via wholesalers specialized in organic or fair-trade products. The weak industrial development in these provinces compels SFN managers to buy packaging, equipment, and other manufactured inputs from remote suppliers.

Efficiency also comes to the fore in the field of logistics. Small operators spanning within short distances rely on their vans for most tasks. But subcontracting shipments to specialized firms is commonplace for SFNs handling larger volumes, dairy products, or when dealing with consumers beyond the regional borders. These logistic services are advantageous in terms of price, reliability, frequency, timesaving, and geographical scope.

3.3.2 Convenience

Practices rendering the SFN experience more convenient contribute to hybridization because they aim at smoothing the consumers' experience. This driver is highly influential in consumer-oriented SFNs, such as organic supermarkets, consumer cooperatives, and HORECA outlets. Interviewees report three main consumer profiles, linked to three values: health, environment, and lifestyle (e.g., sports). For these SFN to make a living, they need to mimic mainstream supermarkets, in terms of assortment and convenience, and to provide certified organic food products.

However, organic suppliers in these two provinces can hardly meet the demand for foodstuffs by these urban households, either in volume or in variety. Alternative practices (permacultural, agroecological, regenerative) are not usually accepted in these marketing channels in order to guarantee consumers' trust. This mutual trust between producers and consumers is thus replaced by eco-labels as carriers of meaning and as tools for achieving customer loyalty.

This supply–demand gap is filled with organic food purchased from larger eco-producers and eco-wholesalers located in other Spanish regions, and even abroad. Fieldwork in food outlets clearly indicates that proximity sourcing accounts for a small share of the portfolio of available food items.

3.3.3 Regulation

Regulation is the third driver of hybridization. Slaughtering, for instance, is allowed in few facilities tightly regulated by the regional government. Each slaughterhouse focuses on a narrow range of animal species (cattle, sheep, hens, chickens, turkeys, or pigs). And fewer facilities are authorized to slaughter organic livestock. Hence, organic breeders in rural settings need to transport their livestock long distances to be slaughtered, thus incurring higher freight costs.

The costs of third-party organic certification add to this financial burden. This fare is highly contested by producers, who argue that it is discriminatory because the conventional food sector, whose products are harmful for environment and health, is not taxed because of its political influence. Certification costs imply higher prices, so it reinforces the usual perception of organic food as gourmet and expensive.

European, Spanish, and regional regulations referring to the Common Agricultural Policy (CAP), organic labelling, animal wellbeing, and food safety equally apply to small and big producers. SFN stakeholders are thus compelled to invest in expensive facilities and equipment, despite their small turnover. As a result, their unitary production costs are higher than larger farms or processors. There is a shortage of SFN workers with the necessary administrative skills as well. Furthermore, a lot of time (necessary for performing core tasks) is required to provide the vast amount of information required by administrations and certifying boards. These regulatory constraints raise production costs for these small businesses.

So regulation-related costs contribute to hybridization because SFNs react as mainstream companies, attempting to offset these charges via cost reduction in sourcing or logistics. Moreover, some producers reject the idea of organic certification to save money (and to avoid paperwork), or they seek cheaper certification fees offered by private consultancy firms located in distant Spanish regions. Thus, cost-based competition, so criticized in the realm of mainstream food supply chains, is not absent of the everyday landscape of SFNs in Salamanca and Zamora.

3.3.4 Profitability

Cost cutting is just one way to achieve a reasonable level of profitability. The fourth driver of hybridization is the quest for greater profitability through proactive marketing practices to increase revenues and sales. Interviews show that direct and local/regional delivery channels absorb a significant share of producers' output. Nevertheless, according to the inventory, 50 SFNs run online shops,

and 36 sell beyond the regional boundaries. Social networks (Instagram, Facebook, X) are key instruments for these SFNs to keep in touch with their customers, with some owners spending significant amounts of time to address these issues.

Exportation to foreign countries is unusual, of course (eight cases detected), and restricted to premium producers (cheese, pulses, olive oil). But several small farmers and processors (jam, cheese, olive oil) report high shares of their sales (over 50 per cent) throughout Spain, namely in the wealthiest regions (Madrid, Catalonia, the Basque Country), where restaurants, hotels, or supermarkets appreciate the quality of their products.

Hybridization is evident in successful SFNs which have developed joint businesses with local partners to spark synergies: olive oil and wine, lamb and cheese, olive oil and social events, etc. These upscaling endeavors boost sales and increase consumer awareness, but they also strengthen socioeconomic networks at the local level and contribute to rural development. Another practice that increases processors' turnover while knitting local ties involves the processing of third-party outputs (olives, tomatoes) to be marketed under the client's own brand; this win-win deal (*maquila*, in Spanish) increases processors' sales and saves costs for farmers.

This subsection has highlighted the way in which the four drivers of hybridization (efficiency, convenience, regulation, and profitability) contribute to SFN 'mainstreaming' by directing their practices towards economic sustainability, despite usual criticisms of conventional food supply chains as profit-maximizers at the expense of huge environmental and social damage across geographical scales. Making a living according to the 'pure' SFN definition that subordinates profit to other values appears to pose a big challenge in Salamanca and Zamora. However, as the next subsection demonstrates, interviewees show a high degree of satisfaction with their contribution to the transition towards a more sustainable food system.

3.4 To what extent are SFNs transforming the regional food system?

All interviewees agree that their SFNs have positive environmental effects at two levels: protecting nature and producing 'natural' food. Both impacts are valued the most by producers, processors, and retailers. Such 'natural' food is associated with two social implications: promoting health and building community. The loyalty of consumers and the enduring economic linkages (upstream and downstream the value chain) generate a strong sense of community among SFN partners. It is often argued that personal acquittance flourishes after repeated exchanges, namely when face-to-face interaction is involved (farmers' markets, on-farm sales, HORECA outlets).

This combination of environmental and social improvement has brought some SFNs to highlight their role as leverage for territorial development in the two provinces. They claim that their attachment to land and their preference for local sourcing keep the countryside alive. Switching to organic production is deemed as a major achievement that benefits not only urban dwellers but the local economy as well, in terms of new jobs, rejuvenating the population, and even as a tourist attraction. Such attachment is very loose in its boundaries, ranging from the village to the province or the whole region of Castilla y León. As underlined in the Introduction, the 'comarca' holds an important role as geographical framework in those territories with a distinctive identity and landscape, like Arribes del Duero or the Sierra de Salamanca.

The assessment is far more critical in political and economic terms. Organic labelling is either rejected as a mere cost or called into question as a burden. The main advantage of the certification system involves gaining access to high-end consumers. This argument often prevails over the incentive of providing ecofriendly and healthy food. Simplifying paperwork and adapting food regulations to the particularities of small producers are constant demands of SFN managers.

Even more substantial is the claim that public authorities should foster organic food consumption, e.g., by public counseling, by sourcing at school canteens, or by supporting farmers' markets (a profitable delivery outlet). The mindset of population in Salamanca, specially, is pointed as a barrier that hampers the development of the sustainable food sector. Public support (at the educational and regulatory levels) is highlighted as a key factor for the SFN movement to upscale.

When considered as firms, these SFNs are small or tiny businesses, with very few exceptions. Their production volumes are very low, and their market share is almost negligible. Direct selling circumvents intermediaries and increases sellers' revenues while enabling producers to keep control of their prices. Nevertheless, competition from mainstream supermarkets (which offer cheap conventional food alongside branded organic food) jeopardizes the bargaining power of SFNs, keeping their prices low for years, despite raising energy and input costs during the Covid-19 and Ukraine crises. Although profit margins are approximately 30 or 50 per cent of total sales, at least three SFNs were on the verge of closing down as a result of lower sales, shrinking profitability, regulatory demands, or retirement.

4 Discussion

4.1 The limited scope of the transformative goals

According to the notion of hybridization, most SFNs in Salamanca and Zamora promote the enhancement of environment, health, and territory, as Forssell and Lankoski (2018, p. 51) find in sustainable food retailing in Finland and the United Kingdom. Food is not conceptualized as a tool of systemic transformation in these provinces. Very few interviews reveal any criticism of capitalism, at least in an explicit manner. 'Food sovereignty', a key claim of grassroots movements (Giraldo and Rosset, 2018, p. 549), is mentioned only once, and merged with ideas of 'back-to-basics' and 'rural renaissance'. Indeed, the degree of autonomy of these SFNs from capitalism is lower than expected because many ones depend upon exogenous inputs and services (as Baron and Dimitri, 2019, p. 772, note for organic processors in the USA), which is contrary to the principles of agroecology (González de Molina and López García, 2021, p. 1070; Van der Ploeg, 2021, p. 19) or to the everyday practices of the most committed SFNs, as Rosol (2020, p. 62) unveiled for consumer groups in Germany. This intertwined way of management reinforces the use of the term 'network' to label these initiatives, but it also opens the door to hybridization because it mimics mainstream firms through the interaction with external partners not committed to SFNs' values (Follett, 2009, p. 41; Duncan and Pascucci, 2017, p. 335).

Therefore, these SFNs address a far less ambitious target than 'capitalism', as most short food supply chains do (Chiffoleau and Dourian, 2020, p. 4). Criticism of environmental damage and corporate power pervades their discourse, thus legitimating their contribution to a healthier and greener food system, as underlined by Brinkley (2017, p. 315) or Scaramuzzi et al. (2021, p. 4). The adverse geographic setting of these provinces represents a powerful contextual factor which influences the hybridization-prone operation of these SFNs. They consider their performance as a key contribution to territorial development as well (Mundler and Laughrea, 2016, p. 222). And their commitment to the revitalization of rural economies and to reversing depopulation constitutes yet another expression of this more attuned viewpoint.

4.2 The focus on the product and the loose definition of 'the local'

These SFNs are concerned with a view of environmental sustainability that is 'inward-oriented', more focused on the product than on the larger network where it is embedded (Watts et al., 2005, p. 27; Follett, 2009, p. 39). SFN managers carefully describe their environmentally-friendly practices in agriculture, livestock farming, or food processing, to comply with organic certification rules. Interviewees honestly believe that their activities contribute to a better environment, to the supply of healthier food, and to sounder territorial development. These results are aligned with the expectations of European urban consumers, in the view of Verain et al. (2021, p. 6), and with the emphasis of Finnish consumer groups surveyed by Kallio (2020, p. 6) on good food (healthy, local), good community (trust, commitment), and good price (fair, affordable).

Nevertheless, there is little concern about 'outward-oriented' sustainability, that is, the environmental, economic, and social implications of SFNs' practices beyond their premises. The need to meet regulatory requirements legitimates controversial practices at odds with SFN goals or values, e.g., the regular purchase of organic packaging or other inputs from distant suppliers.

Bearing in mind that Castilla y León is the largest region in Spain, SFNs' claims that they prioritize 'regional' sourcing or selling conceal the intensive use of private vehicles, covering long distances, and greatly increasing their carbon footprint, a common trait of short food supply chains highlighted by Paciarotti and Torregiani (2021, p. 437). The settlement pattern of Salamanca and Zamora replicates the hindrances of the Castilla y León regional model, imposing limitations that these small SFNs overcome by means of hybrid practices and through linkages with the mainstream food environment. Nonetheless, the terms 'regional' and 'local' embody a remarkable discursive power, as Feagan (2007, p. 33) or Trivette (2015, p. 477) observed: both adjectives do not refer to any specific geographical scale or distance (Enthoven and Van den Broeck, 2021, p. 2), but constitute very effective expressions which conceal other implications.

This imbalance between 'inward-oriented' and 'outward-oriented' sustainability gives rise to organic/sustainable foodstuffs that are entangled in a web of mainstream flows and interactions. The main values of SFNs in Salamanca and Zamora adapt well to this inward-outward divide, because inward-oriented sustainability seems enough to fulfill their main concerns: earning a living from food that is natural and healthy at a broadly defined 'local' scale. Hybridization, therefore, is not perceived as such by the SFNs in these provinces. Interviewees feel neither ashamed nor guilty because of the practices described in Subsection 3.3. The search for efficiency, convenience and profitability is, in turn, considered to be legitimate if these SFNs are to continue successfully operating in a capitalist food system.

4.3 Regulation and certification as a divisive matter

Regulatory demands, reinforced by the Green Deal enacted by the European Union (European Commission, 2019), raise discontent among SFN stakeholders. These requirements call for laborious paperwork and give rise to higher costs, thus preventing the development of SFNs. The lack of involvement of public administrations in the production and consumption of sustainable food (e.g., public procurement, educational programs, simpler rules) also frames SFNs' focus on 'inward-oriented' sustainability and justifies their 'not-so-alternative' managerial practices (Forssell and Lankoski, 2015, p. 71). Simply put, it is not the food system, but rather the administrative framework, that these SFNs are challenging in the short term.

The organic label constitutes the cornerstone of this 'inward-oriented' sustainability because, for their holders, it is a guarantee of natural and healthy food that provides access to high-end markets and concerned consumers. But it also contributes to downplaying 'outward-oriented' sustainability due to the hybrid practices and strict regulations needed to get the label. Therefore, ecolabelling's overall contribution to environmental sustainability and territorial development in Salamanca and Zamora remains uncertain and calls for further in-depth study, as Chiffoleau and Dourian (2020, p. 8) recommend for all short food supply chains.

This uncertainty frames the divide between pro- and anti-ecolabelling. Pro-labelling SFNs support trustworthiness (for consumers), access (for producers) and revenues (for producers and retailers). The anti-labelling movement complains that external supervision, costly fares, and premium prices 'fetishize' organic food (Goodman, 2004, p. 5; Watts et al., 2005, p. 30), thus undermining its transformative power. Three popular arguments underpinning the anti-label standpoints involve the availability of organic food in mainstream supermarkets, the market power of corporate organic brands, and the entry barriers erected by certification procedures; these arguments from Salamanca and Zamora resemble those found in the neighboring region of Madrid by González Azcárate et al. (2022, p. 6).

These traits of the conventionalization process led by the 'industrial green food market' (Sato et al., 2024, p. 187) are not as influential as the nexus between health and organic labelling (Macías Vázquez and Morillas Del Moral, 2022, p. 9). The persistent focus on health as an attribute of ecolabels addresses households with greater purchasing power and higher cultural level. Low-income workers and minorities are underrepresented in the SFNs of Salamanca and Zamora, as Argüelles et al. (2017, p. 38) or Moragues-Faus (2017, p. 466) observe, with one remarkable exception: the church-led integrated operator located in Salamanca city which, not by chance, strongly opposes to organic certification.

This divide about ecolabelling has blurred the meaning of the term 'organic'. The most reluctant and conservative farmers associate

their self-defined 'natural' and 'traditional' practices with the attributes attached to organic labels. However, their production costs are lower and their prices usually cheaper. Consequently, certified producers refuse to share the same sales outlets with them. They argue that consumers could be confused by the differences in price of apparently similar products. Oñederra-Aramendi et al. (2018, p. 30), however, do not find such clashes among producers involved in farmers' markets in the Spanish province of Guipúzcoa. In Salamanca and Zamora, then, prices seem to be more controversial across SFNs than within them, contrary to the careful price setting procedures described by Chiffoleau et al. (2019, p. 187).

4.4 Barriers to cooperation and limits to growth

The confluence between this divide about ecolabels, first, and the persistent use of hybrid practices, second, is very likely to explain the reluctance of these SFNs to cooperate. Hybridization carries notions of individualism, competition, and self-reliance which overshadow the collaborative spirit of early SFNs (Poças Ribeiro et al., 2020, p. 503). Despite some informal networking practices (*maquilas*, attendance in fairs), interviewees feel confident about their individual managerial mixes in fields such as logistics and sourcing. The 'inward-oriented' notion of sustainability comes up as a barrier to a more responsible governance of the supply chain. In absence of such governance, the four drivers of hybridization (efficiency, convenience, regulation, and profitability) rule most exchanges across these SFNs, within or beyond the larger framework drawn by the foundational values.

When more formalized solutions involving further cooperation (food hubs or shared processing facilities, that Tsoulfas et al., 2023, p. 15, or Ajates, 2021, p. 15, consider key for SFNs to gain traction) are suggested by the interviewers, skepticism quickly arises. Lack of time, rejection of more administrative duties, satisfaction with the current situation, or dubious past experiences are mentioned to avoid engagement with larger cooperative projects.

Associations of certified organic food producers have been established in both provinces as late as 2022 (ASOESA, in Salamanca, and BioProeZa, in Zamora). Their aim is to get support from local authorities to increase consumers' awareness of organic food: more open-air markets, public procurement, educational campaigns… The underlying rationale here, however, involves increasing revenues and lowering the regulatory standards, rather than strengthening the local production networks or developing a long-term public-private partnership. Any attempt to upscale the sustainable food value chain in these provinces on the basis of collaborative territorial governance (as suggested by Yap, 2023) involves addressing the influence of mainstream players, a task that appears to be undermined by this negative effect of hybridization.

If (unconscious) hybridization is somehow responsible for these barriers to upscaling, then it is easier to understand the modest economic achievements reported by the SFNs (as it is the case of farmers' markets in South Carolina, Hughes and Isengildina-Massa, 2015, p. 83, but not in the large survey of Kłoczko-Gajewska et al., 2023, in five European countries). Upscaling is hampered in Salamanca and Zamora by a triangle based upon a narrower definition of goals, by territorial conditions (long distances, low density, scattered consumer markets), and by the multifarious consequences of hybrid practices. 'Inward-oriented' sustainability drives SFNs to following the rules for ecolabelling and to weaving links with their customers. Small scale and target niches are assumed to be intrinsic features of these initiatives, as the reluctance to engage in more ambitious schemes clearly demonstrates. The contribution of SFNs to territorial development is therefore double-sided: interviewees feel they are doing a good job in this field, but they do not realize that their everyday practices counteract such a contribution to some extent.

4.5 From hybridization to resilience?

This discussion of the interaction between motivations, values, hybridization, impacts, and limitations of SFNs in Zamora and Salamanca gives rise to a future research question, already suggested in the Introduction. These SFNs show clear evidence of hybridization. Herein, such hybridization is framed within a particular geographic context and rooted in a bounded definition of values and goals (Brinkley, 2017, 315). The 'inward-oriented' conceptualization of sustainability restricts SFNs' 'transformative power' (Calvário and Kallis, 2017, p. 614) to the environmental and social arenas, and the impacts in these two fields are even modest, given the small economic size of these initiatives, as the revision by Chiffoleau and Dourian (2020, p. 12) clearly underscores. However (and here the question arises), to what extent does hybridization strengthen these SFNs and makes them more resilient in an adverse context of growing conventionalization?

Data collected during this research clearly suggest that hybrid practices have become an integral part of these SFNs. The scrutiny of their operations shows that it would be almost impossible for them to survive if they were to adopt a more challenging set of practices, aligned with more oppositional and transformative goals. Hybridization, then, is very likely to underpin SFNs in both provinces. Their linkages to sustainable/alternative *and* to conventional/mainstream food supply chains divert resources from the latter to the former, subsequently supporting a small but real sustainable food socio-economy in both provinces. For this reason, Figure 3 argued that a specific set of values and motivations permeate a wide range of hybrid practices that, at the end of the day, provide healthy, natural, and local food to a small niche of concerned consumers in Salamanca, Zamora, and beyond.

5 Conclusion

The bourgeoning phenomenon of sustainable food networks has been addressed from two standpoints. The 'view of difference' emphasizes their potential to build a food supply system fully critical of, or alternative to, the mainstream food value chain ruled by big producers, wholesalers, and retailers. The 'view of influences' highlights the multiple exchanges between SFNs and that mainstream capitalist environment. These interactions give rise to two main trends. Conventionalization, first, refers to the attachment of new attributes (health, naturalness, localness) to foodstuffs channeled through mainstream value chains, often embodied in organic labels and proximity sourcing. Hybridization, secondly, points to the conscious or unconscious adoption of mainstream practices by sustainable food stakeholders for keeping their initiatives alive and for challenging, to some extent, the power of the big food players.

The present paper adheres to the 'view of influences' and analyzes hybridization in the SFNs located in the provinces of Zamora and Salamanca, in the region of Castilla y León (Spain). These borderline and underpopulated provinces host a noteworthy number of SFNs encompassing the whole value chain. These SFNs are, to a greater or lesser extent, influenced by the hybridization process. Efficiency, convenience, regulation, and profitability are identified here as the four drivers of hybridization. These drivers are embodied in a plethora of practices quite similar to those employed in mainstream food firms. Nonetheless, these practices are legitimized by three motivations and values: environmental protection, health promotion, and local development. The priority afforded to these three stances gives rise to an 'inward-oriented' notion of environmental sustainability that is reinforced by the geographic context in which these SFNs are operating. Long distances, shortage of inputs, and distant consumer markets stretch notions of 'local' and `regional' to encompass the everyday practices deployed by SFNs to remain profitable and viable.

'Inward-oriented' sustainability, hybrid practices, and criticism of regulatory demands call organic labelling into question and probably hinder further cooperation among the SFNs. Under these conditions, upscaling is very unlikely in the short and medium term, in the absence of stronger public commitment towards a more sustainable food system.

Hybridization, however, might be conceptualized as a shield against competition from the mainstream food system as well. Assuming a wealth of hybrid practices, SFNs from Salamanca and Zamora are laying down a 'soft' path towards a more sustainable food system. They are not challenging the capitalist system from outside, but rather turning some of their current managerial practices into tools for delivering localized, safe, and nutritious food across geographical scales, while simultaneously making a decent living based upon fair profitability.

The recent setting up of producers' associations in both territories likely heralds a more reflexive stage in this 'soft' path. But the argument behind the 'view of influences' (that is, SFNs continuously interact with the wider food system) opens space of such reflexiveness on the part of public authorities as well. The design of public policies at the crossroads of food, territory and sustainability in low density regions may benefit from the outcomes of this research.

Three directions are suggested here: public procurement, education, and a tailored regulation. Further research on territories similar to Castilla y León should therefore monitor the evolution of this 'soft' path, anchored in a bounded formulation of goals and motivations. Herein, four main questions arise for the coming future. To what extent will public policies—mainly regional and local—support this process in the next years? Are these policies sufficient to overcoming the obstacles intrinsic to the geographical context and, consequently, to boost the upscaling of these SFNs? What are the impacts of public policies and subsequent upscaling (if this is the case) for territorial development in both provinces and for the construction of more localized and self-sustained food system? Which drivers and barriers continue to hinder advances in this path?

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent from the interviewees was required to participate in this study in accordance with the national legislation and the institutional requirements. Written informed consent to participate in this study was provided by the participants.

Author contributions

JS-H: Conceptualization, Data curation, Funding acquisition, Methodology, Project administration, Writing – original draft, Writing – review & editing.

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Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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References

Ajates, R. (2021). Reducing the risk of co-optation in alternative food networks: multi-stakeholder cooperatives, social capital, and third spaces of cooperation. *Sustain. For.* 13:11219. doi: 10.3390/su132011219

Allaire, G. (2021). "Alternative food networks and the socialization of food" in *Handbook of economic sociology for the 21st century*. ed. A. Maurer (Cham: Springer), 221–235.

Argüelles, L., Angelovski, I., and Dinnie, E. (2017). Power and privilege in alternative civic practices: examining imaginaries of change and embedded rationalities in community economies. *Geoforum* 86, 30–41. doi: 10.1016/j.geoforum.2017.08.013

Baron, H., and Dimitri, C. (2019). Relationships along the organic supply chain. *Br. Food J.* 121, 771–786. doi: 10.1108/BFJ-11-2018-0779

Bowen, S., and Mutersbaugh, T. (2014). Local or localized? Exploring the contributions of Franco-Mediterranean agrifood theory to alternative food research. *Agric. Hum. Values* 31, 201–213. doi: 10.1007/s10460-013-9461-7

Brinkley, C. (2017). Visualizing the social and geographical embeddedness of local food systems. *J. Rural. Stud.* 54, 314–325. doi: 10.1016/j.jrurstud.2017.06.023

Buck, D., Getz, C., and Guthman, J. (1997). From farm to table: the organic vegetable commodity chain of northern California. *Sociol. Rural.* 37, 3–20. doi: 10.1111/1467-9523.00033

Calvário, R., and Kallis, G. (2017). Alternative food economies and transformative politics in times of crisis: insights from the Basque Country and Greece. *Antipode* 49, 597–616. doi: 10.1111/anti.12298

Chiffoleau, Y., and Dourian, T. (2020). Sustainable food supply chains: is shortening the answer? A literature review for a research and innovation agenda. *Sustain. For.* 12:9831. doi: 10.3390/su12239831

Chiffoleau, Y., Millet-Amrani, S., Rossi, A., Rivera-Ferre, M. G., and López Merino, P. (2019). The participatory construction of new economic models in short food supply chains. *J. Rural. Stud.* 68, 182–190. doi: 10.1016/j.jrurstud.2019.01.019

Doernberg, A., Horn, P. A., Zasada, I., and Piorr, A. (2019). Urban food policies in German city regions: an overview of key players and policy instruments. *Food Policy* 89:101782. doi: 10.1016/j.foodpol.2019.101782

Duncan, J., and Pascucci, S. (2017). Mapping the organisational forms of networks of alternative food networks: implications for transition. *Sociol. Rural.* 57, 316–339. doi: 10.1111/soru.12167

Enthoven, L., and Van den Broeck, G. (2021). Local food systems: reviewing two decades of research. *Agric. Syst.* 193:103226. doi: 10.1016/j.agsy.2021.103226

European Commission (2019). *Communication on the European green Deal*. Available at: https://commission.europa.eu/publications/communication-european-green-deal_en

European Commission (2020). *Towards a sustainable food system – Moving from food as a commodity to food as more of a common good – Independent expert report*. Luxembourg: Publications Office.

Feagan, R. (2007). The place of food: mapping out the 'local' in local food systems. *Prog. Hum. Geogr.* 31, 23–42. doi: 10.1177/0309132507073527

Fleury, P., Lev, L., Brives, H., Chazoule, C., and Désolé, M. (2016). Developing mid-tier supply chains (France) and values-based food supply chains (USA): a comparison of motivations, achievements, barriers and limitations. *Agriculture* 6:36. doi: 10.3390/agriculture6030036

Follett, J. R. (2009). Choosing a food future: differentiating among alternative food options. *J. Agric. Environ. Ethics* 22, 31–51. doi: 10.1007/s10806-008-9125-6

Forssell, S., and Lankoski, L. (2015). The sustainability promise of alternative food networks: an examination through 'alternative' characteristics. *Agric. Hum. Values* 32, 63–75. doi: 10.1007/s10460-014-9516-4

Forssell, S., and Lankoski, L. (2018). Shaping norms. A convention theoretical examination of alternative food retailers as food sustainability transition actors. *J. Rural. Stud.* 63, 46–56. doi: 10.1016/j.jrurstud.2018.04.015

Giraldo, O. F., and Rosset, P. M. (2018). Agroecology as a territory in dispute: between institutionality and social movements. *J. Peasant Stud.* 45, 545–564. doi: 10.1080/03066150.2017.1353496

González Azcárate, M., Cruz Maceín, J. L., and Bardají, I. (2022). Certifications in short food supply chains in the region of Madrid. Part of the alternative? *Ecol. Econ.* 195:107387. doi: 10.1016/j.ecolecon.2022.107387

González de Molina, M., and López García, D. (2021). Principles for designing agroecology-based local (territorial) agri-food systems: a critical revision. *Agroecol. Sustain. Food Syst.* 45, 1050–1082. doi: 10.1080/21683565.2021.1913690

González Romero, G., and Cánovas García, F. (2021). Territorio y redes alimentarias alternativas: experiencias en la ciudad de Sevilla. *Documents d'Anàlisi Geogràfica* 67, 389–415. doi: 10.5565/rev/dag.660

Goodman, D. (2004). Rural Europe redux? Reflections on alternative agro-food networks and paradigm change. *Sociol. Rural.* 44, 3–16. doi: 10.1111/j.1467-9523.2004.00258.x

Grivins, M., Keech, D., Kunda, I., and Tisenkopfs, T. (2017). Bricolage for self-sufficiency: an analysis of alternative food networks. *Sociol. Rural.* 57, 340–356. doi: 10.1111/soru.12171

Hall, A., and Mogyorody, V. (2001). Organic farmers in Ontario: an examination of the conventionalization argument. *Sociol. Rural.* 41, 399–322. doi: 10.1111/1467-9523.00191

Hughes, D. W., and Isengildina-Massa, O. (2015). The economic impact of farmers' markets and a state level locally grown campaign. *Food Policy* 54, 78–84. doi: 10.1016/j.foodpol.2015.05.001

Ilbery, D., and Kneafsey, M. (1998). Product and place: promoting quality products and services in the lagging rural regions of the European Union. *Eur. Urban Reg. Stud.* 5, 329–341. doi: 10.1177/096977649800500404

Kallio, G. (2020). A carrot isn't a carrot isn't a carrot: tracing value in alternative practices of food exchange. *Agric. Hum. Values* 37, 1095–1109. doi: 10.1007/s10460-020-10113-w

Kłoczko-Gajewska, A., Malak-Rawlikowska, A., Majewski, E., Wilkinson, A., Gorton, M., Tocco, B., et al. (2023). What are the economic impacts of short food supply chains? A local multiplier effect (LM3) evaluation. *Eur. Urban Reg. Stud.* doi: 10.1177/09697764231201572

Lamine, C., Garçon, G., and Brunori, G. (2019). Territorial agrifood systems: a Franco-Italian contribution to the debates over alternative food networks in rural areas. *J. Rural. Stud.* 68, 159–170. doi: 10.1016/j.jrurstud.2018.11.007

Macías Vázquez, A., and Morillas Del Moral, J. A. (2022). Ethical values in a post-industrial economy: the case of the organic farmers' market in Granada (Spain). *J. Agric. Environ. Ethics* 35, 1–19. doi: 10.1007/s10806-022-09879-2

Marovelli, B. (2019). Cooking and eating together in London: food sharing initiatives as collective spaces of encounter. *Geoforum* 99, 190–201. doi: 10.1016/j.geoforum.2018.09.006

Maye, D., Holloway, L., and Kneafsey, M. (Eds.) (2007). *Alternative food geographies. Representation and practice*. Amsterdam: Elsevier.

Michel-Villarreal, R., Hingley, M., Canavari, M., and Bregoli, I. (2019). Sustainability in alternative food networks: a systematic literature review. *Sustain. For.* 11:859. doi: 10.3390/su11030859

Misleh, D. (2022). Moving beyond the impasse in geographies of 'alternative' food networks. *Prog. Hum. Geogr.* 46, 1028–1046. doi: 10.1177/03091325221095835

Moragues-Faus, A. (2017). Emancipatory or neoliberal food politics? Exploring the "politics of collectivity" of buying groups in the search for egalitarian food democracies. *Antipode* 49, 455–476. doi: 10.1111/anti.12274

Moragues-Faus, A., and Marsden, T. (2017). The political ecology of food: carving 'spaces of possibility' in a new research agenda. *J. Rural. Stud.* 55, 275–288. doi: 10.1016/j.jrurstud.2017.08.016

Mundler, P., and Laughrea, S. (2016). The contributions of short food supply chains to territorial development: a study of three Quebec territories. *J. Rural. Stud.* 45, 218–229. doi: 10.1016/j.jrurstud.2016.04.001

Oñederra-Aramendi, A., Begiristain-Zubillaga, M., and Malagón-Zaldúa, E. (2018). Who is feeding embeddedness in farmers' markets? A cluster study of farmers' markets in Gipuzkoa. *J. Rural. Stud.* 61, 22–33. doi: 10.1016/j.jrurstud.2018.05.008

Paciarotti, C., and Torregiani, F. (2021). The logistics of short food supply chains: a literature review. *Sustain. Prod. Consump.* 26, 428–442. doi: 10.1016/j.spc.2020.10.002

Parrott, N., Wilson, N., and Murdoch, J. (2002). Spatializing quality: regional protection and the alternative geography of food. *Eur. Urban Reg. Stud.* 9, 241–261. doi: 10.1177/096977640200900304

Poças Ribeiro, A., Harmsen, R., Feola, G., Rosales Carréon, J., and Worrell, E. (2020). Organising alternative food networks (AFNs): challenges and facilitating conditions of different AFN types in three EU countries. *Sociol. Rural.* 61, 491–517. doi: 10.1111/soru.12331

Reckinger, R. (2022). Values-based territorial food networks. Qualifying sustainable and ethical transitions of alternative food networks. *Reg. Cohes.* 12, 78–109. doi: 10.3167/reco.2022.120305

Renting, H., Marsden, T., and Banks, J. (2003). Understanding alternative food networks: exploring the role of short food supply chains in rural development. *Environ. Plan. A* 35, 393–411. doi: 10.1068/a3510

Renting, H., Schermer, M., and Rossi, A. (2012). Building food democracy: exploring civic food networks and newly emerging forms of food citizenship. *Int. J. Sociol. Agric. Food* 19, 289–307. doi: 10.48416/ijsaf.v19i3.206

Rosol, M. (2020). On the significance of alternative economic practices: Reconceptualizing alterity in alternative food networks. *Econ. Geogr.* 96, 52–76. doi: 10.1080/00130095.2019.1701430

Sage, C. L. (Ed.) (2022). *A research agenda for food systems*. Cheltenham: Edward Elgar, 3–37.

Sánchez-Hernández, J. L., and Espinosa Seguí, A. (2020). ¿Alternativa o adaptación? Los grupos de consumo de alimentos ecológicos en el área urbana de Alicante. *Scripta Nova* 24, 1–32. doi: 10.1344/sn2020.24.27056

Sanz-Cañada, J., Sánchez-Hernández, J. L., and López-García, D. (2023). Reflecting on the concept of local agroecological food systems. *Land* 12:1147. doi: 10.3390/land12061147

Sato, F., Calvet-Mir, L., and Villamayor-Tomás, S. (2024). Socially embedding the food system: the role of alternative food initiatives to build sustainable food models. *Local Environ.* 29, 187–205. doi: 10.1080/13549839.2023.2279553

Scaramuzzi, S., Gabellini, S., Belletti, G., and Marescotti, A. (2021). Agrobiodiversity-oriented food systems between public policies and private action: a socio-ecological model for sustainable territorial development. *Sustain. For.* 13:12192. doi: 10.3390/su132112192

Sonnino, R., and Marsden, T. (2006). Beyond the divide: rethinking relationships between alternative and conventional food networks in Europe. *J. Econ. Geogr.* 6, 181–199. doi: 10.1093/jeg/lbi006

Thorsøe, M., and Kjeldsen, C. (2016). The constitution of trust: function, configuration and generation of trust in alternative food networks. *Sociol. Rural.* 56, 157–175. doi: 10.1111/soru.12082

Trivette, S. A. (2015). How local is local? Determining the boundaries of local food in practice. *Agric. Hum. Values* 32, 475–490. doi: 10.1007/s10460-014-9566-7

Tsoulfas, G. T., Trivellas, P., Reklitis, P., and Anastasopoulou, A. A. (2023). Bibliometric analysis of short supply chains in the agri-food sector. *Sustain. For.* 15:1089. doi: 10.3390/su15021089

Van der Ploeg, J. D. (2021). The political economy of agroecology. *J. Peasant Stud.* 48, 274–297. doi: 10.1080/03066150.2020.1725489

Venn, L., Kneafsey, M., Holloway, L., Cox, R., Dowler, E., and Tuomainen, H. (2006). Researching European 'alternative' food networks: some methodological considerations. *Area* 38, 248–258. doi: 10.1111/j.1475-4762.2006.00694.x

Verain, M. C. D., Snoek, H. M., Onwezen, M. C., Reinders, M. J., and Bouwman, E. P. (2021). Sustainable food choice motives: the development and cross-country validation of the sustainable food choice questionnaire (SUS-FCQ). *Food Qual. Prefer.* 93:104267. doi: 10.1016/j.foodqual.2021.104267

Watts, D., Ilbery, B., and Maye, D. (2005). Making reconnections in agro-food geography: alternative systems of food provision. *Prog. Hum. Geogr.* 29, 22–40. doi: 10.1191/0309132505ph526oa

Whatmore, S., and Thorne, L. (1997). "Nourishing networks: alternative geographies of food" in *Globalising food. Agrarian questions and global restructuring*. eds. D. Goodman and M. J. Watts (London: Routledge), 287–304.

Yap, C. (2023). New geographical directions for food systems governance research. *Prog. Hum. Geogr.* 47, 66–84. doi: 10.1177/03091325221133808

Zoll, F., Specht, K., and Siebert, R. (2021). Alternative = transformative? Investigating drivers of transformation in alternative food networks in Germany. *Sociol. Rural.* 61, 638–659. doi: 10.1111/soru.12350

Zwart, T. A., and Mathijs, E. (2020). Exploring emergent practices in alternative food networks: *Voedselteams* in Belgium. *J. Rural. Stud.* 80, 586–594. doi: 10.1016/j.jrurstud.2020.10.049

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Assessing the agroecological performance and sustainability of Community Supported Agriculture farms in Flanders, Belgium

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Agroecology is receiving increasing attention and recognition as a concept for transitions to more sustainable agricultural and food systems. There is however a lack of characterization of agroecology in agricultural and food systems, while integrated and holistic measurements of their sustainability are scarce. Community Supported Agriculture (CSA) is considered to be a system explicitly based on agroecological principles and practices which shows potential in the face of the sustainability challenges in agriculture and food systems, but its link with agroecology and its holistic sustainability performance have remained understudied. Therefore, we applied the Tool for Agroecology Performance Evaluation (TAPE) to 24 Community Supported Agriculture farms in the Flanders region of Belgium in order to characterize agroecology and to assess their multidimensional sustainability performance. Our results show that Community Supported Agriculture farms can be characterized as advanced agroecological systems, highlighted by their high to very high performance on many of the elements of agroecology. Moreover, our results show positive outcomes on several sustainability criteria across environmental, social and economic dimensions such as soil health, presence of natural vegetation and pollinators and ecological management of pests and diseases, as well as dietary diversity and profitability criteria like gross value, added value and net revenue. The integration and role of animals in these agroecosystems and the importance of - and dependence on - labor are however identified as two critical aspects regarding the agroecological transitions and sustainability of Community Supported Agriculture. Our findings emphasize the exemplary role Community Supported Agriculture could play in broader agroecological transitions, which, coupled with their high performance on several sustainability criteria, highlight the potential contribution of Community Supported Agriculture, and by extension of agroecology itself, to more sustainable agricultural and food systems in Flanders and beyond.

KEYWORDS

agroecology, Community Supported Agriculture, agriculture and food systems, sustainability, assessment, TAPE, Flanders

1 Introduction

Agroecology is gaining increasing attention as a paradigm for transitions to sustainable agriculture and food systems, and it is vastly referred to as a science, a set of practices and a social movement (Wezel et al., 2009; Ewert et al., 2023). Over time, agroecology as a science has developed in both the scale of analysis and the disciplines used for its study, moving from an analysis at the field scale using agricultural and environmental disciplinary knowledge toward a scale that encompasses the whole food system requiring knowledge of social, economic, cultural and political disciplines (Wezel et al., 2009; HLPE, 2019). Agroecology therefore distinguishes itself as a more holistic and transformative approach to sustainable agriculture and food systems than other approaches such as sustainable intensification, climate-smart agriculture, conservation agriculture, regenerative agriculture and organic agriculture (IPES-Food, 2022). Evidence on agroecology points toward its potential positive impacts on, amongst others, soil health (Muchane et al., 2020; Domínguez et al., 2023; Lucantoni et al., 2023), (agro)biodiversity (Wanger et al., 2020; Tscharntke et al., 2021; Lucantoni et al., 2023), households income (Van der Ploeg et al., 2019; Stratton et al., 2021) and food security and nutrition (Bezner Kerr et al., 2021; Lucantoni et al., 2023).

A variety of actors and organizations have shown interest in and commitment to agroecology, each of them however developing different interpretations of agroecology and framing the concept based on their own views, priorities and interests. This has taken shape in the form of different definitions and frameworks, of which the Nyéléni Declaration (IPC, 2015), the 5 levels of agroecological transition proposed by Gliessman (2016), the 10 Elements of Agroecology proposed by the Food and Agriculture Organization (FAO) of the United Nations (Barrios et al., 2020) and the 13 Principles of Agroecology developed by the High Level Panel of Experts on Food Security and Nutrition (HLPE, 2019) are most commonly referred to. In this work, the 10 Elements of Agroecology will be used as the central framework. This framework was developed by the FAO as a guide for transitions to sustainable agriculture and food systems, based upon scientific literature and multi-stakeholder dialogues at the national, regional and global level. In their definition, agroecology is an integrated approach which simultaneously applies ecological and social concepts and principles to the design and management of agricultural and food systems, which seeks to optimize the interactions between plants, animals, humans and the environment while taking into consideration the social aspects that need to be addressed for a sustainable and fair food system (FAO, 2018a). The 10 Elements are key characteristics and features of agroecological systems that are deemed to be interlinked and interdependent. They consist of: (1) Diversity, (2) Synergies, (3) Efficiency, (4) Recycling, (5) Resilience, (6) Culture and food traditions, (7) Co-creation and sharing of knowledge, (8) Human and social values, (9) Circular and solidarity economy and (10) Responsible governance (Barrios et al., 2020).

Moving beyond these definitions and frameworks, a need has been identified for methods to assess agroecology in an interdisciplinary and holistic way (Darmaun et al., 2023). Assessments of agroecological transitions are however complicated by their diverse starting points and modalities, together with the broadening scope, scale and dimensions of agroecology (Wezel et al., 2020). Many of the above-mentioned definitions and frameworks have served as the basis for the development of assessment methods, of which Geck et al. (2023) provide an overview and critical discussion. One of the most prominent assessment methods for agroecology is the Tool for Agroecology Performance Evaluation (TAPE), developed by the FAO in order to evaluate agroecology, to measure progress in agroecological transitions and to build harmonized evidence of its contribution to sustainability (Mottet et al., 2020). The tool was created through a participatory and multistakeholder process and is based on the 10 Elements of Agroecology. It is a quantitative tool which simultaneously characterizes agroecology and assesses its performance, and it can be applied in any geographical location and ranging from the field to the farm, landscape and national scale although the focus lies on the field and farm scale (Darmaun et al., 2023; Geck et al., 2023). The TAPE received widespread interest and different actors, organizations and governments are adopting and adapting it, while it is currently in use in more than 30 countries in different geographic regions, territories and production systems, with most publications on its use coming from the Global South at the time of writing (Lucantoni et al., 2023).

Although agroecology can be used as a paradigm for sustainability transitions for different kinds of agriculture and food systems, the model of Community Supported Agriculture (CSA) seems to align particularly well with the concept of agroecology. A CSA farm is a community-based organization of producers and consumers in which the partaking households provide direct, upfront financial support for the local producers, while the producers in return aim to provide food in sufficient quantity and quality to meet the needs and expectations of the consumers (Groh and McFadden, 1998). The definition used by URGENCI, the international network for CSA, stresses the small and local scale as well as the agroecological way in which food is provided, while their guiding principles further emphasize, amongst others, the agroecological principles and practices with an explicit reference to the Nyéléni Declaration (IPC, 2015; URGENCI, 2016; Volz et al., 2016; Espelt, 2020). CSA is gaining increasing attention and the number of CSA farms is growing rapidly in many regions of the world as they are regarded as promising approaches to tackling the sustainability challenges in agriculture and food systems, as suggested by the systematic review of the sustainability performance of CSA farms by Egli et al. (2023). Although environmental, social and economic dimensions are considered to be intertwined, they are henceforth discussed separately for analytical reasons.

The environmental dimension of CSA is based on principles such as diversity, nutrient recycling and the reduction or elimination of synthetic inputs (URGENCI, 2016; Volz et al., 2016). A reliable evaluation of the environmental impacts has been hampered by a lack of harmonized data, although the few existing measurements and comparisons point to CSA as outperforming reference systems in measured effects such as fertilizer, pesticide and energy use and greenhouse gas emissions. Notably absent however is the measurement and comparison with a reference system regarding soil characteristics, crop and livestock diversity and productive outputs (Egli et al., 2023). The social dimension of CSA is based on principles such as solidarity, cooperation, support and community-building (URGENCI, 2016; Volz et al., 2016).

Research has predominantly focused on identifying motivational factors for supporting and participating in such a system, with environmental reasons, obtaining locally grown and organic produce and supporting local farmers and economies as the most commonly cited factors (Swisher et al., 2003; Brehm and Eisenhauer, 2008; Lang, 2010). Regarding social impacts, positive effects were found for satisfaction and income of farmers, and a positive effect was found among members regarding their behavior, well-being, health, knowledge transfer, learning and social and political engagement (Egli et al., 2023). Members were found to be predominantly white, highly educated and with a higher income, and women were found to be over-represented while socially disadvantaged populations were disproportionately absent (Lang, 2010; Volz et al., 2016; Egli et al., 2023). The economic dimension of CSA is based on principles of shared responsibilities, risks and rewards and of fair working conditions and a decent income for all involved (URGENCI, 2016; Volz et al., 2016). Notwithstanding this last principle, Galt (2013) highlights several controversies within the model, as farming operations are commonly economically viable but income for farmers is often low, with many farmers paying themselves low wages and thus engaging in self-exploitation (i.e. not earning revenues equal to the cost of their own labor). Regarding economic impacts, overall effects were found to be largely unclear, although Egli et al. (2023) found a higher profit per hectare than in reference systems, while operating costs were found to be higher due to the specificities of labor, delivery and marketing. Moreover, more labor is required than in traditional farms, but profit and sales per labor hour were found to be substantially higher (Egli et al., 2023).

Current assessments of the performance and sustainability of CSA systems are fragmented and heterogeneous in both scope and methods, making comparisons with other systems difficult and concealing the contribution of this system to more sustainable agriculture and food systems. The need thus arises for more holistic and integrated assessments of these systems, covering environmental, social and economic dimensions of sustainability (Fomina et al., 2022; Egli et al., 2023). As CSA systems are explicitly based on agroecological principles and practices, a characterization of their agroecological performance would moreover elucidate the linkages between the two concepts and potentially validate the hypothesis that these systems can be considered as highly agroecological.

In this study, we therefore apply the TAPE methodology to CSA farms in Flanders, Belgium, in order to characterize their agroecological performance, assess their multidimensional sustainability performance and moreover generate globally relevant evidence of the performance of agroecology. We contextualize the tool by translating it to the language and specific context of the farmers and by assessing the perceived importance of the indicators by the participating farmers.

2 Materials and methods

2.1 Case study site

Flanders, the northernmost region of Belgium, is one of the most densely populated and urbanized regions of the world, with a population of 6.4 million living on a surface area of 13 625 km^2, of which only 21.9% lives in rural areas. In 2021, it had an agricultural area of 624,634 hectares, comprising 46% of its total land area. Fodder crops (such as grassland and maize) and arable crops (such as potatoes and grains) took up the largest shares, accounting for respectively 59% and 30% of this agricultural area. Significantly less land was used for the production of vegetables (5%), fruits (3%) and ornamental plants (1%), while the remaining 2% is used for other and unspecified purposes. In 2021, Flanders had 23 218 agricultural holdings with an average farm size of 27 hectares. The number of holdings has been decreasing significantly over the past few decades, while average farm size has increased due to consolidation of the remaining farms. Flemish agriculture is characterized by its high degree of specialization, since 89% of its holdings are specialized in one of three subsectors: livestock farming (44%), arable farming (32%) and horticulture (13%). Although the agricultural area under certified organic practices is increasing at historically high rates, the share of organic agriculture is still very low in Flanders, as only 1.6% of the Flemish agricultural area was certified organic in 2021, which is significantly lower than the Belgian and European figures of 7,4% and 9,6% respectively (Departement Landbouw enVisserij, 2023a; IFOAM, 2023). Labor income for full-time farmers has on average been lower than that of full-time income of salaried labor in Flanders over the past few years, although there are high fluctuations between years and subsectors (Departement Landbouw enVisserij, 2023a).

Agricultural and food systems in Flanders are facing several challenges. On the environmental side, pollution is at the forefront with eutrophic nitrogen emissions to natural areas and water bodies, mainly caused by livestock emissions, exceeding critical thresholds (Vlaamse Milieumaatschappij, 2020a,b). Moreover, agriculture in Flanders is struggling with drought as the effects of climate change severely impact the availability of water. Water availability in the region is already a challenge given the very high percentage of impervious surfaces, frequent drainage of agricultural land and a high demand for water given its high population density (Vlaamse Milieumaatschappij, 2010). Other environmental challenges in Flemish agriculture include the reduction of the use of pesticides, the protection of soil health, and decreasing the dependence on non-renewable resources (De Keyzer, 2023). On the social and economic side, Flemish farmers are facing increasingly complex and tightening regulations, high administrative burdens and financial insecurities linked with big investments and low margins, leading to increased mental, physical, financial and social exhaustion. A quarter of all Flemish farmers are at risk of poverty and one in seven farmers is not even able to pay out an income to themselves (Messely et al., 2020; De Keyzer, 2023). Expanding the scope to the food system in Flanders, the consumption of healthy and nutritious food remains a challenge, as Smets et al. (2022) conclude that the food environment in Flanders is currently in a poor condition, with a widespread occurrence of food swamps, i.e. places with an abundance of unhealthy food options relative to healthy food options, potentially exacerbating the obesity epidemic in Flanders.

In this Flemish context, agroecology is emerging and developing as an alternative paradigm in a distinct way that does not closely fit the conventional trichotomy as a science, a movement

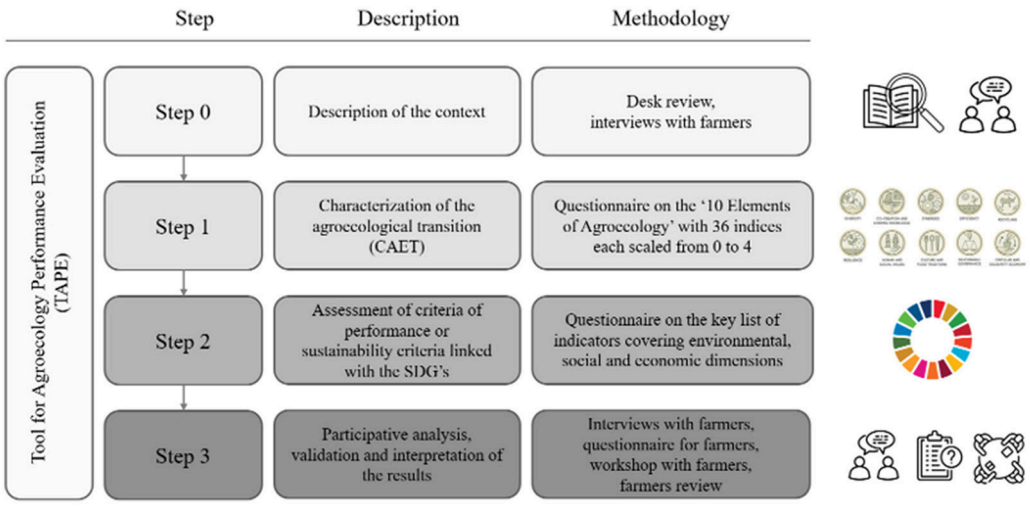

FIGURE 1
Schematic showing the different steps of the TAPE, their description and methodology 'Adapted or reproduced with permission from Flaticon.com; FAO (2018b), United Nations (2024).'

and a set of practices, while Stassart et al. (2018) found it to have significant transformative potential. Agroecological practices (crop rotation, intercropping with trees or other crops, the use of cover crops, the application of organic amendments to the soil, the minimization or elimination of the use of external (synthetic) inputs, biological pest and disease control, etc.) are used to lesser or greater extent, but are often not explicitly framed as agroecological (Tessier et al., 2021a,b). Agroecology is endorsed and campaigned for by a growing constellation of social movements, with Voedsel Anders acting as an umbrella organization for its 29 member organizations and Boerenforum as a strongly agroecology-inspired farmers organization acting as the Flemish member organization of La Via Campesina, the international farmer's organization focusing on peasant rights, farmers rights and food sovereignty (Boerenforum, 2023; Voedsel Anders, 2023). On a policy level, agroecology is not strongly or explicitly present yet, although the Flemish government launched a Food Strategy in which a Food Deal on agroecology is ongoing (Departement Landbouw enVisserij, 2023b). Mirroring the international trend, the number of CSA farms in Flanders is increasing rapidly. The first CSA farm in Flanders started in 2007, after which the number increased to around 70 farms at the time of writing, with several CSA farms in the process of starting up operations. Informal network exchanges quickly developed into the formation of a formalized network in 2011 called the 'CSA-Netwerk'. This network operates as an umbrella organization for CSA farms in Flanders, establishing a platform for knowledge exchange, building further on the concept and consolidating achievements, providing information and support to farmers and participants, promoting the concept within Flanders and acting as a forum on the topic of CSA (CSA-Netwerk, 2023).

2.2 Data collection and analysis

The methodology, guidelines and protocols of the Tool for Agroecology Performance Evaluation (TAPE) as described in Mottet et al. (2020) were used. The methodology consists of a stepwise approach which is visualized and elaborated in Figure 1.

CSA farmers were contacted through the contact information listed on the website of the "CSA-Netwerk". Out of a total of 69 farms listed, 57 were involved in food production, while the remaining farms focused on growing ornamental flowers. As involvement in food production was considered an important selection criterion for our study, only those farms were invited to participate. Of these 57 farms, 24 farms participated in our study. The sampled CSAs were spread across the region of Flanders (see Figure 2), with most farms situated in peri-urban areas close to larger urban centers such as the metropolitan areas of Antwerp, Ghent and Brussels.

Step 0 was performed by means of a desk review, which was carried out between February and May 2022, and by means of interviews with farmers during farm visits which took place between May and October 2022. **Step 1** was performed by using the CAET questionnaire proposed in the TAPE during on-farm interviews on all 24 participating farms. Based on these interviews, results were further disaggregated for age and size, as it was suggested that older and larger farms were often more agroecological and it was hence hypothesized that they would score higher on the CAET. Furthermore, a correlation analysis was carried out on the different variables in order to provide insights on the relationship between the different elements of agroecology and between the overall CAET and the underlying elements to highlight important driving factors in the CAET and to identify potential linkages between elements. **Step 2** was performed by using an adapted version of the criteria of performance questionnaire proposed in the TAPE, which was developed in the Qualtrics survey software to overcome some of the contextual challenges the original questionnaire faced, such as the language and the need for contextualized examples presented along the questions. The survey was sent out to be answered online between January and February of 2023. This survey received a total response rate of 19 out of 24 farms, where additionally several questions in the survey were not—or not completely—answered, leading to lower

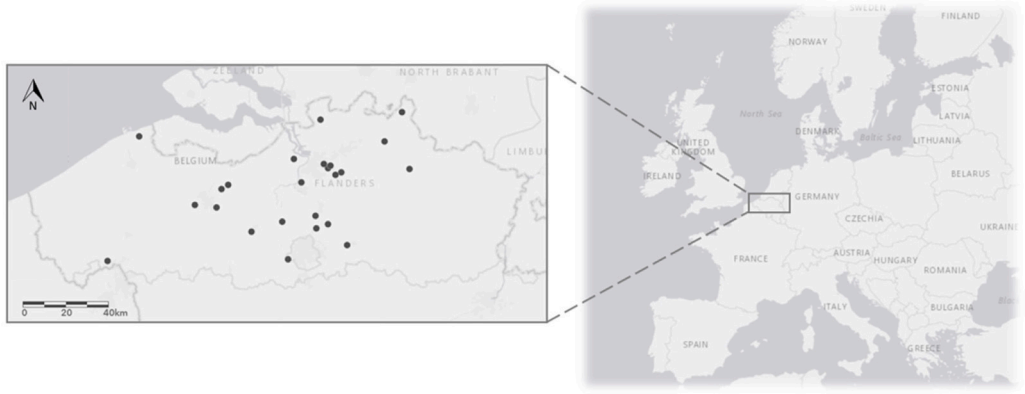

FIGURE 2
Map showing the surveyed CSA farms in Flanders, Belgium (ESRI, 2024).

response rates and thus sample sizes for some indicators. For the indicator of soil health, data was collected during the farm visits. Youth opportunities index and youth emigration index were not measured due the limited relevance of the questions in the specific case study context. Moreover, indicators which were not properly calculable or interpretable are not included in our results. **Step 3** was performed during a workshop during the yearly conference of the CSA network in March 2023, As a way to contextualize agroecology and the CAET questionnaire, farmers were asked to state the importance they attached to the different indices of each element used for the CAET in the online survey, depending on their specific context, with 0 = not important, 1 = somewhat important, 2 = quite important, 3 = important and 4 = very important. In addition, feedback received by participants through mail and personal contact during and after the farm visits also contributed to the validation and interpretation of the results. The reference year of the collected data is 2022.

3 Results

3.1 General results

The surveyed CSA farms had an average size of 4.2 hectares, notably smaller than the Flemish average of 27 hectares, while median farm size of the CSA farms was even lower at 2.35 hectares. The productive surface consisted on average of 2.3 hectares (53% of the total area), while the remaining surface was destined for permanent pastures (0.9 ha or 21%), natural vegetation (0.7 ha or 17%) and other uses such as buildings and pavement (0.4 hectares or 8%). Moreover, 29% of the surveyed farms were smaller than 2 hectares and could be regarded as smallholder farms, while this cut-off size is moreover regarded as an important turning point for the autonomy and circularity of the farm and for the integration of grazing animals, according to the surveyed CSA farmers. The majority of farms worked purely with subscriptions (i.e. members pay for a harvest share in advance of the growing season), in the form of either self-harvesting (45%) or packages (10%) or a combination of the two (10%). The remaining farms combined either subscription self-harvesting with loose sales (10%), subscription packages with loose sales (10%) or all three marketing channels (15%), with loose sales itself taking the form of self-harvesting, packages or other marketing channels such as direct sales in farmers markets and to restaurants and others. For those farms engaged with subscription self-harvest, harvest shares were bought by members which allowed them to come harvest on the field proportionately to the number of harvest shares they had, with each share representing an adult equivalent. On average, these farms each sold 203 harvest shares at an average price of €387 per year, with the number of shares ranging from 70 to 440 and the price ranging from €320 to €498.50. The farms engaged with subscription packages offered packages of fresh produce of which the size was dependent on the number of shares and the content was dependent on the available seasonal products, and this on a frequent, mostly weekly, basis. All surveyed farms were started on existing farmland and were (partly) converted to the CSA system by either professional farmers or by new entrants in agriculture, with the latter making up the majority of farms. In its form as a CSA system, the average farm was 4 years old, while 21% of farms were younger than 3 years, 46% of farms were between 3 and 6 years old and the remaining 33% of farms were more than 6 years old. All farms grew vegetables and herbs, although many also produced fruits (84%) and edible and/or ornamental flowers (74%). Farmers grew between 50 and 150 crop species with an average of 92, of which often still different varieties were cultivated. A large share of farms also raised chickens for eggs and/or meat (42%, 18 animals on average). Additionally, several farms were involved in beekeeping (47%), while only a few reared cows (11%, 3 animals on average), sheep (11%, 28 animals on average) and pigs (11%, 7 animals on average). Apart from the labor of the farm owner(s), 83% of the farms relied on external workers for additional labor, taking the shape of unpaid labor of volunteers, interns and people employed through care farming, as well as paid labor of seasonal workers and other employees.

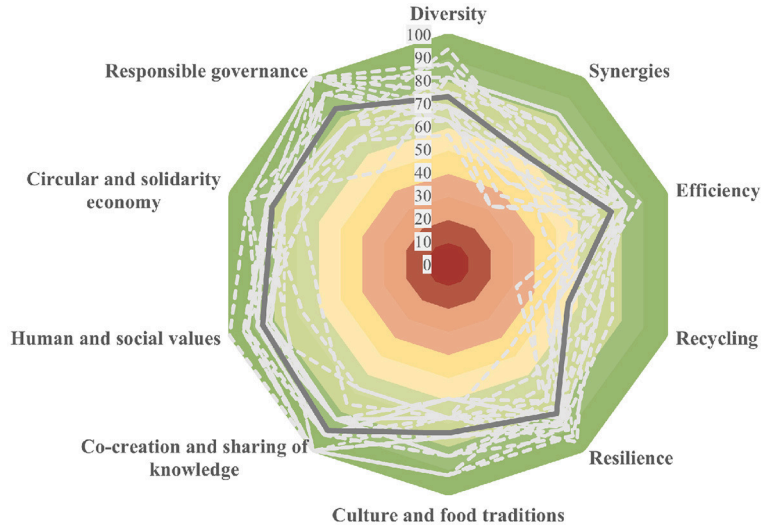

FIGURE 3
Radar graph visualization of the CAET for each individual farm (dotted lines) and the average (solid line) (adapted and modified from FAO, 2019).

3.2 Characterization of the agroecological transition (CAET)

3.2.1 The elements of agroecology

On average, the analyzed CSA farms had medium, high or very high scores on the elements of agroecology, as can be seen in Figure 3 and in the Supplementary Table 1.

A very high score was obtained on average on the elements Co-creation and sharing of knowledge (89), Human and social values (85), Responsible governance (84), Circular and solidarity economy (81) and Resilience (80). Regarding **Co-creation and sharing of knowledge**, this very high score was explained by the fact that all farms were strongly connected through platforms for horizontal creation and transfer of knowledge and good practices, while additionally they had very high interest in and very good access to agroecological knowledge. Moreover, farmers often strongly participated in local networks and organizations (neighborhood committees, local government, social organizations, etc.). Regarding **Human and social values**, farmers indicated that women were very empowered in their systems, although female farmers mentioned that there remain social and practical barriers to full equality (e.g. during pregnancy and childcare) while agriculture is sometimes still regarded as a male-dominated world. Labor conditions were believed to be good, although working conditions were deemed to be harsher than in other sectors and an important difference remained between the labor conditions of the owner, the employees and the interns on the farm. Youth empowerment and emigration showed mixed results, given that farmers identified a strong interest in agroecological farming and the CSA model by young people at a time where the general interest in agriculture in society and especially youth was perceived to be at an all-time low. This was however often not recognized in farmer's own children, who predominantly sought opportunities outside of the farms of their parents and outside of agriculture as a whole. Animal welfare was considered to be good to very good on farms that had animals, although questions were raised on how to approach and interpret what 'good' means in this sense. Regarding **Responsible governance**, farmers mentioned the existence of numerous producer organizations and associations, although it was highlighted that not all of them were functioning well and supporting their farming activities to the same extent. Producers were considered to be empowered on a micro scale although many stressed that on a macro scale, several laws, administrative burdens and government interventions were disempowering. Producers generally felt able to participate in the governance of land and natural resources, but stated that their power in influencing or making decisions was rather limited and that even the autonomy on their farms was still limited by laws and government interventions. Regarding **Circular and solidarity economy**, all products and services were marketed locally and a direct relationship with the consumer was present in almost all farms, while in some others the few intermediaries (other farmers, processors, restaurants, …) that existed were seen as useful at adding value. When looking at the local food system, farmers highlighted that members of the farm were often quite independent from other sources regarding vegetables and, to a lesser extent, meat, eggs and fruit. However, when expanding the scope to beyond their members, food supply in local food systems was considered to be still largely dominated by supermarkets and big retailers. Regarding **Resilience**, the stability of production and income was deemed to be very high, while the subscription system and the support of the community in case of natural events and during specific harvesting activities were considered to be successful mechanisms to reduce vulnerability. These mechanisms were however seldomly regarded as a complete failsafe and farmers were still largely responsible for dealing with vulnerabilities. The environmental resilience and the capacity to adapt to climate change was perceived to be high although continuous interventions by the farmer were still required.

A high score was obtained on average on the elements Efficiency (75), Diversity (73), and Culture and food traditions (73). Regarding **Efficiency**, all farms scored very high concerning

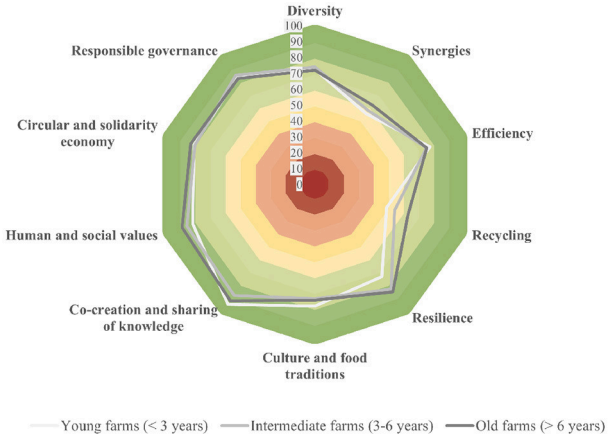

FIGURE 4
Radar graph visualization of the CAET disaggregated for young, intermediate and old farms (adapted and modified from FAO, 2019).

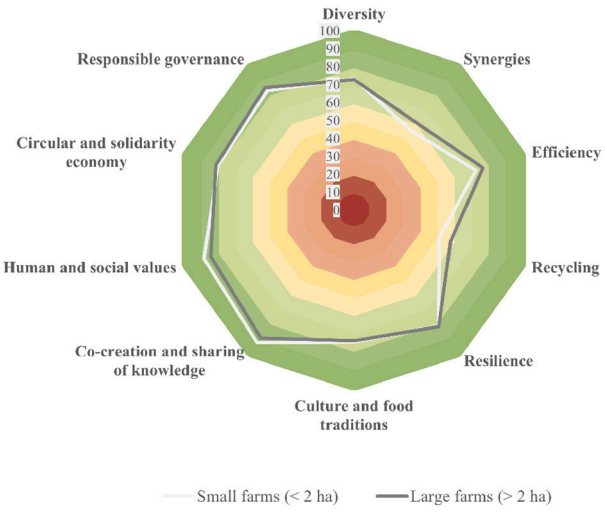

FIGURE 5
Radar graph visualization of the CAET disaggregated for small and large farms (adapted and modified from FAO, 2019).

the management of soil fertility, pests and diseases due to the fact that only organic practices were used. Productivity and households needs scored high, but farms depended significantly on external inputs such as manure, compost, seeds and breeds in their systems. Regarding **Diversity**, farms showcased a very high crop diversity given that close to 100 species were cultivated on average in diversified polyculture systems. Moreover, farms had a high diversity of activities, products and services and a high diversity of trees and other perennials. A low diversity of animals was however observed, given that 37.5% of farms did not have any animals and 42% had only one species of animal. Regarding **Culture and food traditions**, an appropriate diet and nutrient awareness was present among farmers, whereas a strong local or traditional identity and awareness was absent with most. The use of local varieties, breeds and traditional knowledge for food preparation was considered to be important, although this was deemed to be difficult to achieve in the specific regional context.

A medium score was obtained on average on the elements Synergies (58) and Recycling (55). Regarding **Synergies**, the management of soil and plants scored high due to the limited soil tillage and the use of solely organic amendments for improving soil health. Connectivity between elements of the agroecosystem and the landscape was considered to be high, although farmers stressed that they only could make improvements within the borders of their farm while their surroundings were regarded as being much less ecologically connected. The integration of trees in the agroecosystems was quite high, with many farmers implementing agroforestry and having different productive perennials in their system. The integration of crops and livestock was however very low, given the limited presence of animals on most farms. Those farms that had animals produced only negligible amounts of manure to be used as soil amendment, while external feed for the animals was often still required after having been fed with the available crop residues and feed crops. Regarding **Recycling**, biomass and nutrients were recycled on farm to a great extent and various practices and techniques were used to capture and save water. Renewable energy production and use was rather limited, with only a few farms producing and using solar energy. Nevertheless, many farmers indicated that solar panels would be installed in the near future, but that the use of fossil fuels for machinery and transport was going to remain significant even then. Seeds and breeds were seldomly recycled on the farms, with the very high diversity of crops and the more variable quality being regarded as a big obstacle to saving and using own seed. On average, no elements scored low or very low.

Results of the CAET were disaggregated for young (< 3 years, $N = 5$), intermediate (3-6 years, $N = 11$) and old (> 6 years, $N = 8$) farms and their scores are presented in Figure 4. Most scores on the elements differ relatively little between age groups, although an increasing trend with age can be distinguished for the elements Synergies (55, 57, and 62 respectively), Recycling (48, 53, and 62 respectively), Resilience (72, 82, and 84 respectively) and Human and social values (81, 85, and 88 respectively), while the total score for the CAET was increasing with age as well (74, 75, and 77 respectively).

Further, results of the CAET were disaggregated for small (< 2 ha, $N = 7$) and large (> 2 ha, $N = 17$) farms and their scores are presented in Figure 5. Here, larger farms had higher scores for the elements Synergies (54 and 60 respectively) and Recycling (50 and 57 respectively), while the total score for the CAET was slightly higher for larger farms as well (74 and 76 respectively).

3.2.2 Perceived importance of the indices of the CAET

The average results for the perceived importance of each CAET index are presented in Figure 6, and are aggregated for each element in Figure 7. On the level of the individual indices, significant variability of the perceived importance was found within most elements. Indices which were deemed to be of least importance (scores below 2.5) to the farmers were: Culture and

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food traditions: Local or traditional (peasant/indigenous) identity and awareness; Diversity: Animals; Culture and food traditions: Use of local varieties/breeds and traditional (peasant/indigenous) knowledge for food preparation; Recycling: Management of seeds and breeds and Synergies: Crop-livestock-aquaculture integration. Indices which were deemed to be most important (scores above 3.5) to the farmers were: Efficiency: Management of soil fertility, Efficiency: Management of pests and diseases, Synergies: Soil-plants system management, Recycling: Water saving and Circular and solidarity economy: Products and services marketed locally. The other indices received an importance between 2.5 and 3.5 and can be considered as relatively important. The stated importance of the indices was highly and significantly correlated (0.63***) with the actual scores on the indices, indicating that farmers scored higher on the aspects they found important and lower on those they found less important.

When aggregated on the level of the elements, some variability exists between the perceived importance of each element, although most elements had scores around 3, indicating that farmers found them overall important. The element 'Culture and food traditions had the lowest perceived importance, while the element 'Circular and solidarity economy' had the highest perceived importance. The perceived importance of the elements was not significantly correlated with the actual scores on the elements.

3.2.3 Correlations between the elements of agroecology and the overall agroecological transition

The correlations between the elements and the overall score for the CAET and the correlations between the elements themselves is presented in Table 1. Given that the CAET is made up of the scores on the individual elements, positive correlations are expected, but nonetheless there are important differences showing the relative importance of different elements in the overall agroecological transition on the surveyed farms. The element of Resilience was highly and significantly correlated with the overall CAET, as well as the elements Human and social values and Synergies, indicating that these elements were important in determining the overall score on the CAET. Further, Co-creation and sharing of knowledge was highly and significantly correlated with the overall CAET, while Efficiency, Culture and food traditions, Responsible governance, Circular and solidarity economy and Diversity were significantly correlated with it. Only the element Recycling was not significantly correlated to the overall CAET. Individual elements which were found to be pairwise highly and significantly correlated are Human and social values & Resilience, Resilience & Synergies, Synergies & Diversity, Responsible governance & Culture and food traditions and Human and social values & Co-creation and sharing of knowledge. Moreover, Human and social values & Synergies and Responsible governance & Co-creation and sharing of knowledge were significantly correlated.

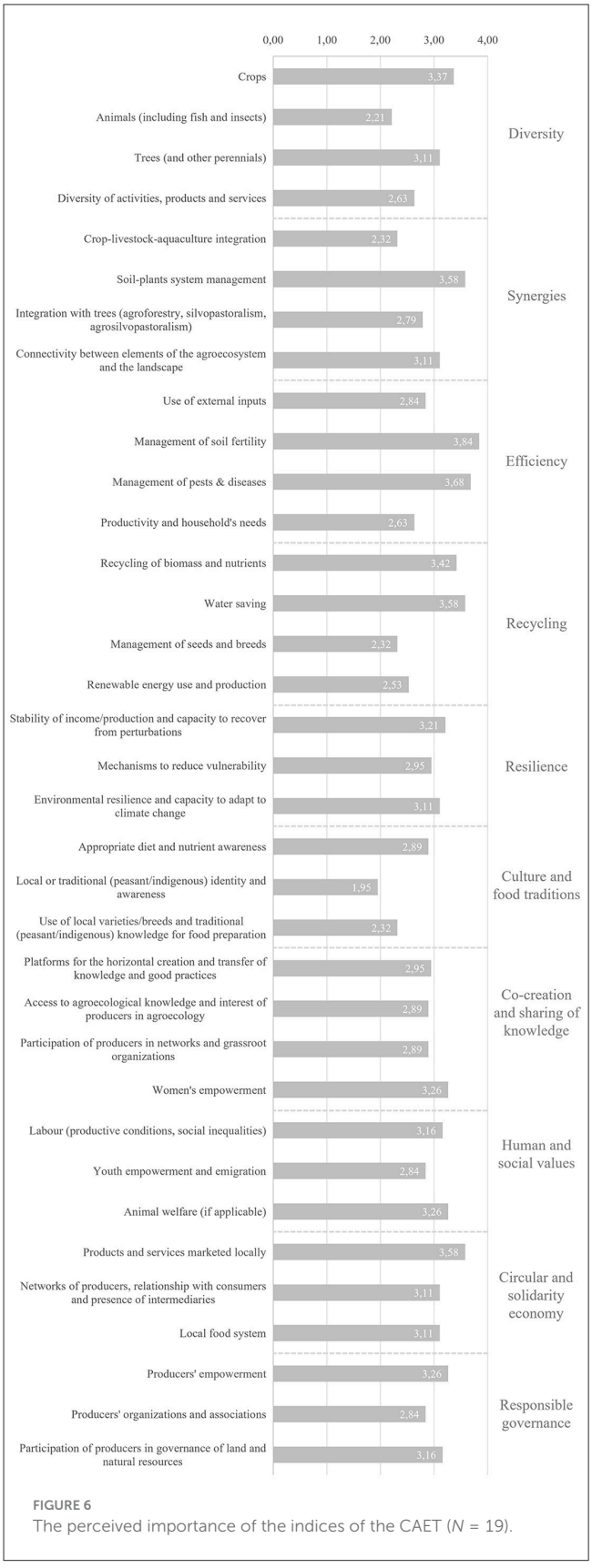

FIGURE 6
The perceived importance of the indices of the CAET (N = 19).

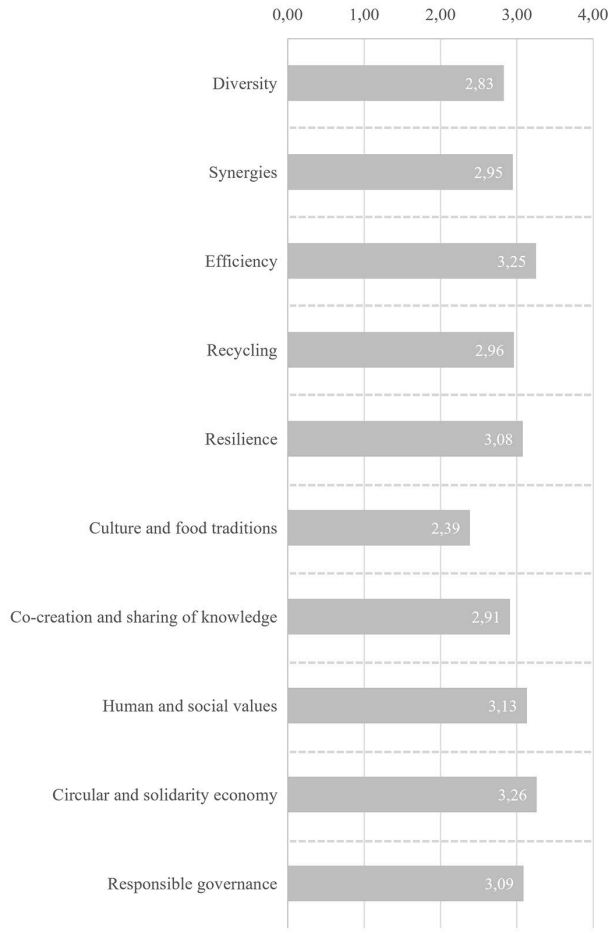

FIGURE 7
The perceived importance of each element of the CAET (*N* = 19).

3.3 Core criteria of performance: the multidimensional performance of agroecology

3.3.1 Overall results

The average values of the calculated criteria of performance are presented in Table 2. Results are further elaborated in the following subsections, disaggregated by the environmental, social and economic dimensions. Where no calculation was possible, feasible or relevant, these criteria were omitted, and alternative criteria are proposed in the Discussion.

3.3.2 Environmental sustainability

Regarding the management of pests and diseases, the large majority (93%) of farms stated that ecological management was most important, of which preventative measures (93%), biodiversity and spatial diversity (86%), encouraging the reproduction of beneficial organisms (64%), the use of cover crops to stimulate biological interactions (43%) and the use of natural repelling plants (36%) were mostly used. For the remaining farms (7%), organic pesticides, all of which had the lowest possible toxicity level, were most important. Given that all farms were certified organic, there was no use of synthetic pesticides and fertilizers. On farms on which animals were reared, either no antibiotics were used or the use of antibiotics was only used curatively. The soil health index was on average 4.275 out of 5, with scores ranging from 3.3 to 5, indicating that farms had very good soil health. Crop diversity index and animal diversity index was not calculated, but crop and animal diversity are elaborated in the general results. Presence of natural vegetation and pollinators on farm scored 67% on average, based on the fact that the majority of farms reported either abundant (32%) or significant (58%) presence of pollinators and other beneficial animals, while only a small minority (10%) reported a low presence. Moreover, all farms reported having either abundant (32%), significant (21%) or small (47%) areas of natural and varied vegetation such as natural meadows, wildflower strips, trees, hedgerows and natural ponds. Beekeeping with honeybees or other domesticated bees was done on 47% of farms, while in another 37% they were not reared but were still reported to be widespread in the agroecosystem.

3.3.3 Social sustainability

The dietary diversity index for farmers was high as they had a diet in which on average at least 7 out of 10 food groups were consumed on a daily basis. From the interviews, it became clear that farmers diets were strongly based on the vegetables, fruits and other products they produced themselves, while they consumed only small amounts of bought food (mostly grains and derived products, but also meat, beverages and food consumed while dining out). These expenditures for food for self-consumption were reported to be on average €1.136 on a yearly basis, but this should be interpreted carefully as the number of samples for this criterion was very low with only 5 observations. Regarding employment on the farm, it should be repeated that most CSA farms are no typical family farms and that the workforce is rather heterogeneous, often consisting of volunteers, interns and people employed through care farming, as well as paid labor of seasonal workers and other employees. Of all farm owners, 19% classified as youth (15-34 years), while 34% classified as women. Youth and women empowerment was perceived by farmers to be higher in CSA systems than in other farming systems in the region. Regarding access to land, all farmers had legal recognition of their ownership or use of the land. However, some farmers perceived that their access to land was still insecure, and that acquiring land is very difficult due to high land prices and the existing land tenure laws.

3.3.4 Economic sustainability

When expressed per hectare, gross value of the agropastoral production was on average €34.084 and the value added of the agropastoral production per hectare was on average €24.945, while expenditures for farming inputs per hectare were on average €3.385. When expressed per employed family member, gross value of the agropastoral production was on average €65.446, while the added value of the agropastoral production was on average

TABLE 1 Matrix of correlation between the 10 elements of agroecology and the overall CAET.

	CAET	Diversity	Synergies	Efficiency	Recycling	Resilience	Culture and food traditions	Co-creation and sharing of knowledge	Human and social values	Circular and solidarity economy	Responsible governance
Diversity	0.42*	1.00									
Synergies	0.67***	0.62**	1.00								
Efficiency	0.51*	0.32	0.31	1.00							
Recycling	0.20	-0.17	0.05	0.13	1.00						
Resilience	0.81***	0.21	0.66***	0.23	0.29	1.00					
Culture and food traditions	0.48*	-0.12	-0.12	0.08	0.07	0.23	1.00				
Co-creation and sharing of knowledge	0.59**	0.15	0.14	0.21	-0.05	0.30	0.43	1.00			
Human and social values	0.79***	0.33	0.48*	0.27	-0.04	0.71**	0.35	0.52**	1.00		
Circular and solidarity economy	0.43*	0.07	0.36	0.31	0.03	0.38	0.09	0.06	0.31	1.00	
Responsible governance	0.46*	-0.11	0.01	0.02	-0.22	0.29	0.56***	0.41*	0.34	-0.05	1.00

Variables are highly correlated when their correlation lies between 0.7 and 0.9, moderately correlated when their correlation lies between 0.5 and 0.7 and lowly correlated when their correlation lies between 0.3 and 0.5. These correlations were tested on statistical significance using a t-test, after which three stars (***) were given when the correlation is highly significant ($p \leq 0.001$), two stars (**) when it was highly significant ($p \leq 0.01$), one star (*) when it was significant ($p \leq 0.05$) and no stars when the correlation was not significant ($p > 0.05$).

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TABLE 2 Results of the criteria of performance.

Criteria of performance		Value	Sample size (*N*)
Environmental criteria			
1	Expenditure for chemical pesticides per hectare (€)	0	14
2	Soil health index	4,275	24
3	Expenditure for chemical fertilizers per hectare (€)	0	14
4	Presence of natural vegetation and pollinators on farm (%)	67	19
Social criteria			
5	Dietary diversity index (%)	77	14
6	Expenditures for food for self-consumption (€)	1,136	5
7	Percentage of farm owners classifying as youth (15-34 years) (%)	19	20
8	Percentage of farm owners classifying as women (%)	34	20
Economic criteria			
9	Gross value of agropastoral production per hectare (€)	34,084	19
10	Gross value of agropastoral production per person (€)	65,446	19
11	Value added of agropastoral production per hectare (€)	24,945	14
12	Value added of agropastoral production per person (€)	55,434	14
13	Expenditures for farming inputs per hectare (€)	3,385	14
14	Net revenue from agropastoral activities per person (€)	49,785	15
15	Value added on gross value of agropastoral production (VA/GVP)	0.77	14
16	Perception of the evolution of income (%)	66	14

€55.434. Net revenue from agropastoral activities per person was on average €49.785. The ratio between value added and gross value of the agropastoral production (VA/GVP) was on average 0,77. The large majority of farmers perceived their income to be stable and on an increasing trend.

4 Discussion

CSA farms are shown to provide a radically different approach to agriculture and food in the context of Flanders. They are smaller than the average Flemish farm but cultivate a remarkable diversity of vegetables, fruits, herbs and flowers with some additionally engaging in the rearing of animals such as chickens, honeybees, cows, sheep and pigs, while maintaining a significant area of their land for natural vegetation in the form of natural meadows, wildflower strips, trees, hedgerows and natural ponds (see Figure 8). Farmers rely on ecological and organic farming practices for improving and maintaining soil health and managing pests and diseases. The main consumers—often called members or participants of the CSA—subscribe to a harvest share with which they either come harvest on the fields or pick up a freshly picked package of produce at the farm, while being able to participate in the decision-making processes on the farm together with the farmers. As a further diversification, CSA farmers often engage with other marketing channels in short food supply chains such as local farmers markets and restaurants. These findings resonate with earlier descriptions of CSA in Flanders in the mapping report of Community Supported Agriculture in Europe by Volz et al. (2016). The CSA system differs markedly from the usually highly specialized and intensive Flemish agriculture which is facing increasing environmental, social and economic challenges. By developing alternative, ecological and local food systems, CSA farms have a high potential to tackle the interlinked environmental, social and economic dimensions of the sustainability challenges in agriculture and food systems in Flanders and beyond (Egli et al., 2023).

Our characterization of the agroecological transition confirms our hypothesis that CSA farms in Flanders are highly agroecological, showcased by high or very high scores most of the elements of agroecology. Following the categorization of farms according to their CAET score, as proposed by Lucantoni et al. (2021), a large majority (83%) of CSA farms can be considered to be *agroecological* (CAET $>$ 70), while 13% can be considered to be *in transition to agroecology* (60 $<$ CAET $<$ 70) and the remaining 4% *in an incipient agroecological transition* (50 $<$ CAET $<$ 60). No CSA farms can be considered as *non-agroecological* (CAET $<$ 50). These findings are in line with the agroecological characterization of CSA farms in Germany performed by Vicente-Vicente et al. (2023), who found them too to be strongly aligned with agroecology. These findings further elucidate the strong linkages between agroecology and CSA and confirm that CSA farms can be considered as highly agroecological systems which can serve as exemplary systems that integrate the environmental, social and economic principles and practices of agroecology. They could therefore serve as lighthouse farms in the agroecological transition of other farms, lighting the way for agroecological transitions on the landscape, territorial and regional level and beyond (Rosset et al., 2011; Wezel et al., 2014, 2020; Nicholls and Altieri, 2018).

Our finding that older and larger farms were more advanced in their agroecological transition than younger and smaller farms,

FIGURE 8
Photos taken at four participating CSA farms showcasing the diversity of vegetables, fruits, herbs, flowers and trees.

was largely explained by their respective higher scores on Synergies and Recycling - elements on which scores were lowest overall. The indices underlying these elements notably include the integration of animals on the farm, which was overall found to be low and of which the age and size of the farm are determining factors as farmers often postponed integrating animals until their crop production was considered to be optimized, demonstrating the importance of the temporal dynamics of agroecological transitions in which the various components of the agroecosystem and their interactions are reconfigured through a process of design (Tittonell, 2020). Agroecology is moreover predominantly prescribed for and embraced by smallholder agriculture (Tittonell et al., 2020), although the integration of animals necessitates sufficient land, especially in the context of agroecology in which the dependence on external feed is minimized and land-based rearing of animals is prioritized. Integrating animals into the farm could therefore be regarded as an important catalyst of their agroecological transition, although it is highlighted as a challenge by the farmers participating in this study as the necessary additional land, external inputs and labor are already considered to be critically scarce and/or expensive in Flanders. Notably, farmers attached relatively low importance to those indices related to the integration of animals, while farmers argued that the absence or scarce presence of animals on the farm should not necessarily be penalized as the integration of animals often occurs at scales higher than that of the farm itself, with neighboring farmers or other community-members often exchanging manure and animal feed by which integration is also achieved locally in a context with very high livestock densities and excesses of manure on the regional scale (Müller, 2015).

Our assessment of the perceived importance of the indices by the participating farmers was conceived as a novel means to contextualize the TAPE, as generally recommended in its guidelines (Mottet et al., 2020) and as argued by Namirembe et al. (2022). In our study, this contextualization is especially interesting as it was performed by farmers who explicitly self-identify with agroecology and whose farms are strongly aligned with agroecology. Our finding that farmers scored highest on those indicators they found most important indicates a high degree of fulfillment in what can be considered as their own interpretation of agroecology. Our method of contextualization could serve as an example in other uses of the TAPE, while the outcome of our contextualization could serve as the basis for the prioritization of further research, initiatives and policies to support agroecological transitions in the context of CSA and Flanders more broadly.

From the analysis of the correlations between the elements of agroecology and the overall agroecological transition, the element Resilience stands out as it was found to be most significantly correlated with the CAET, highlighting that more agroecologically advanced systems were more resilient while conversely resilience was a key property of agroecologically more advanced systems. Resilience was moreover found to be increasing with the age of the farm, accentuating the temporal dynamic of building resilience and advancing in the agroecological transition. Resilience can thus be considered as an emergent property of advanced agroecological systems while it is generally considered as a goal of sustainable food system transitions as a whole (Tittonell, 2020), signifying the contribution of agroecology to sustainable agriculture and food systems. Furthermore, the relative importance of Synergies in the overall CAET—together with its relatively lower score on average—indicates that this element could be an important entry point for the further advancement of CSA farms in the agroecological transition.

Our assessment of the performance of CSA farms on several criteria in the environmental, social and economic dimensions of sustainability shows predominantly positive results. In the **environmental dimension**, soil health was found to be good to very good, resonating with the often explicit focus on soil health as a starting point for environmental and broader sustainability in the principles and practices of both CSA and agroecology (Siegner et al., 2020; Domínguez et al., 2023). CSA farms purposefully do not use synthetic fertilizers and pesticides and instead relied heavily and - by their own accounts - successfully on ecological management of pests and diseases, further guaranteed by their organic certification. Organic certification can thus be considered as an important although not strictly necessary step in the agroecological transition of farms given that the principles and practices of agroecology and organic agriculture also converge to a large extent (Migliorini and Wezel, 2017). Moreover, natural vegetation such as natural meadows, flower strips, hedgerows and trees was significantly to abundantly present as they were deliberately maintained as a source of ecosystem services that underpin for example the ecological management of pests and diseases and pollination of insect-pollinated crops (Holland et al., 2017), while simultaneously a significant to abundant presence of pollinators and other beneficial insects was reported on the farms. In the **social dimension**, CSA farms were often distinct from so-called family farms in which a central family provides capital and labor, as is the case in a large majority of farming operations in Europe, Belgium and Flanders (Departement Landbouw en Visserij, 2020; EUROSTAT, 2023). Farms were often lead by sole farmers or a group of farmers without family-ties, and the workforce on the farm was often significantly expanded by additional workers in the form of volunteers, interns and people employed through care farming, as well as paid labor of seasonal workers and other employees. On many farms, the coming and going of volunteers and interns made up a steady flow of labor in a typically very labor-intensive system, for which the alternative of paid labor is deemed to be expensive, heterogeneous and increasingly hard to find (Popescu et al., 2021). Farmers moreover were largely self-sufficient in the products they produced on their farms, with the large diversity in vegetables, fruits and other products leading them to have equally diverse diets, while the need for external food purchases was relatively low and mostly limited to those products they did not produce themselves such as grains and legumes, animal products and beverages. In the **economic dimension**, positive criteria on gross value, added value and net revenue - both per hectare and per farmer - indicate that farming operations are profitable, while farmers' income was generally - and especially for the agroecologically more advanced farms - perceived to be on the increasing trend, in line with the findings of Van der Ploeg et al. (2019) and Stratton et al. (2021). The ratio between the value added and the gross value of production (VA/GVP) was found to be high and positively correlated with the element Resilience, confirming the findings of Van der Ploeg et al. (2019) who found that this ratio is strategic in distinguishing agroecological systems from conventional systems as agroecological systems try to increase this ratio by enhancing the quality and use-efficiency of internally available resources, by reducing the dependence on external inputs and by putting labor central again in farming, thereby making them more resilient in the face of external shocks. This high economic viability of CSA farms is in line with the findings of Egli et al. (2023), although they also stressed that more labor is needed in order to capture these higher returns per labor unit. Farmers' income, although it is stated to be positive and on an increasing trend, was however raised as a point of concern by the farmers and the 'CSA-Netwerk'. Farmers tend to pay themselves relatively low wages when compared to their labor, confirming the finding of Galt (2013) that CSA farmers often engage in self-exploitation due to their stated sense of providing food at affordable prices for their communities. The centrality of labor, of which a significant share is unpaid in CSA farms, implies the need for a shift from more capital-intensive to more labor- and knowledge-intensive farming in a context in which labor is however increasingly expensive and difficult to attract (Popescu et al., 2021). Unpaid labor might fill a large part of the labor needs of many CSA farms at the moment, but it can be questioned whether this dependency on unpaid labor is equitable and part of a sustainable farming model (Galt, 2013; Van der Ploeg et al., 2019).

We identify several limitations to our work. The CSA farms included in our sample are statistically not representative for the whole population of CSA farms and its results and conclusions should therefore be extrapolated with care. However, farmers participating during the participatory interpretation of the results regarded our sample as relevant enough for a valid interpretation on the population level. Looking beyond the region of Flanders, CSA farms throughout Europe—and beyond—are to a large extent based on the same principles and practices as elaborated in Volz et al. (2016) and hence we expect our findings to hold for CSA more generally to some degree, although we acknowledge that their operations and characteristics are very context-dependent. We further identify several biases which might have influenced our results and their interpretation. Participation bias potentially lead to the self-selection of those farmers more actively engaged with research, which could be linked with—and potentially confound—important variables under study in our work, such as the score on the element Co-creation and sharing of knowledge. Moreover, in questions in which the perceptions of farmers were underlying the outcome, an "upward" or "downward" social desirability bias could have influenced the results based on the conversation with the farmers during the

interviews: an 'upward' bias stemming from the self-identification with agroecology, which could lead to farmers wanting to have high scores on their characterization; and a 'downward' bias stemming from an idealistic sense in agroecologically-inspired farmers in which they felt further progress in the agroecological transition still had to be possible and necessary. Furthermore, an assessment of the sustainability performance centered on agroecology and its specific interpretation of sustainability might lead to a self-fulfilling and so-called agroecology bias, highlighting the additional need for other, more neutral tools in order to comprehensively compare agroecology with alternatives (Geck et al., 2023). Moreover, several indices and criteria proposed in the TAPE methodology were of little relevance to the specific regional context or the context of CSA farms, and where possible these indices were contextualized to make relevant interpretations possible. On the other hand, several sustainability criteria were calculated but their interpretation was not sufficiently relevant leading to these criteria being left out, but for some of which we propose alternatives below.

We recommend the following adaptations to the TAPE based on its use in the context of CSA farms and that of Flanders, although we deem our recommendations to potentially hold more broadly beyond these contexts and have relevance in other farming systems and regions. (1) Access to land is often not just a legal or institutional issue, as the challenge may lie in the availability, affordability and long-term certainty of land ownership or tenure. This is especially the case in Flanders, where high pressures on agricultural land from both agricultural and non-agricultural activities and a lack of long-term visions on land use in the political sphere make access to land for new farmers increasingly difficult (Kerselaers et al., 2013; Vandermaelen et al., 2023); (2) Youth empowerment and migration is often not the only problem regarding youth in agriculture, as is the case in Flanders where a lack of interest of youth in agriculture and a lack of generational renewal due to high investment costs or debts and an uncertain political atmosphere are the most pressing issues; regarding youth in agriculture (Coopmans et al., 2020, 2021); (3) Economic criteria for farm profitability should be harmonized to be in line with international, national and regional reporting (such as the Farm Accountancy Data Network in the European Union) allowing for meaningful comparisons with already collected and often publicly available data (EUROSTAT, 2023); (4) Demographic indicators relating to the composition of ownership of and the workforce on the farm insufficiently capture the heterogeneity of an increasing number of farming systems where there is no central family providing labor and capital, as is the case in Flanders and especially in CSA. Moreover, the demographic indicators do not acknowledge or enable to take into account family compositions and gender identities that do not fit the gender binary; (5) While diversity is one of the elements of agroecology and can be regarded as a cornerstone of CSA systems, it is still insufficiently captured with the methodology, as for example farms cultivating at least four different crops can already receive the highest possible score for the crop diversity index of the CAET. Moreover, the diversity of crops in CSA systems makes it difficult - if not impossible, given that farmers often don't harvest themselves - to measure the yield of all crops, leading to a structural underreporting in diversified systems of this criterium which Egli et al. (2023) found to be already an underreported outcome in their systematic review of sustainability outcomes of CSA, highlighting the need for the development of appropriate and relevant methods to overcome this bias; (6) Dietary diversity of farmers, although a relevant indicator in a context of subsistence agriculture, only covers a very small proportion of consumers of the produced food - if any at all - in a context where the food produced is increasingly sold to others instead of consumed by farmers themselves. A more relevant indicator might be the dietary diversity and nutritional value of the food produced on the farm itself, in line with other relevant studies on dietary and health outcomes in CSA systems as identified by Egli et al. (2023); (7) The questionnaire on the criteria of performance was considered by many participating farmers as very long and detailed, leading to some dropping out throughout this step and thus leading to lower sample sizes for some criteria in our study. Therefore, attention should be given to further reducing the length and the time requirement of completing the questionnaire by, for instance, developing regionally contextualized versions where more relevant criteria would replace those who ultimately might not be calculable or interpretable.

These proposals raise the issue of balancing the need for assessing agroecology in a manner that is both globally comparable on the one hand side while being locally relevant on the other, as highlighted by Geck et al. (2023). To balance the existing trade-offs between the evaluation purpose, the time requirement and the level of participation in the existing methods, Darmaun et al. (2023) propose to use a combination of approaches to improve the assessment of agroecology. Looking at sustainability assessments in agriculture and food systems in Flanders, Coteur et al. (2019) stress that apart from the assessment itself, attention should be given to the dynamics of cooperation and communication between chain actors surrounding the assessment, while the tools used should additionally aim at supporting farmer's strategic decision-making from developing and implementing improvement strategies to monitoring their results (Coteur et al., 2020). The assessment performed in this study should therefore be regarded as the starting point for a broader participative process in which researchers, farmers and other stakeholders engage with each other in agroecological transitions from the farm to the food system level.

Voicing the need of participating CSA farmers, the use of the TAPE should be expanded to other farming systems in Flanders and beyond, as this would allow for the comparison of their agroecological characterization and sustainability performance with other, more conventional systems. Moreover, assessing additional relevant criteria proposed in the list of advanced criteria in the TAPE (such as nutritional value of agricultural production, water use efficiency and water pollution, greenhouse gas emissions and carbon sequestration) could further expand the evidence on the multidimensional sustainability of the systems under study and in line with the challenges and needs of agriculture and food systems in their specific context. Furthermore, as sustainability challenges in agriculture and food systems are inherently complex; holistic and integrated approaches should be prioritized in not only assessments but also transition strategies and government interventions to support these transitions.

5 Conclusions

While in literature it is acknowledged that CSA farms are based on agroecological principles and practices and can thus be regarded as agroecological farming systems, a characterization of their agroecological performance remained largely absent. Moreover, current sustainability assessments of CSA - and other farming systems by extension - are fragmented and heterogeneous, concealing the contribution of these systems to more sustainable agriculture and food systems. In order to fill this knowledge gap, we applied the TAPE - a holistic and integrated methodology for the characterization of agroecology and assessment of the sustainability performance of farming systems - to CSA farms in the region of Flanders in Belgium, where agriculture and food systems are facing increasing environmental, social and economic pressures and challenges.

Our characterization shows that CSA farms in Flanders are strongly aligned with agroecology, exemplified by their very high scores on the elements Co-creation and sharing of knowledge, Human and social values, Responsible governance, Circular and solidarity economy and Resilience, while high scores were obtained on the elements Efficiency, Diversity and Culture and food traditions. The lowest scores were obtained for the elements Synergies and Recycling, although the farms can still be regarded as moderately advanced on these. Older and larger CSA farms were more advanced in the agroecological transition, especially on the elements Synergies and Recycling on which farms generally scored lowest. In order to contextualize the TAPE, the perceived importance of the indices by the participating farmers was assessed, showing that farmers scored highest on those indicators they found most important, while our method of contextualization could serve as an example for the contextualization in other uses of the tool and providing an entry point for further research, initiatives and policies to support agroecological transitions in the context of CSA and Flanders.

Moreover, CSA farms performed well on several criteria in the environmental, social and economic dimensions of sustainability. In the environmental dimension, they showcased good to very good soil health, successful reliance on ecological management of pests and diseases and, associated with and underpinning it, a significant to abundant presence of natural vegetation and pollinators and other beneficial insects. In the social dimension, the labor of the farm owner(s) was often supplemented with additional unpaid workers in the form of volunteers, interns and people employed through care farming, as well as paid labor of seasonal workers and other employees, while farmers themselves were largely self-sufficient in their diets given that they produced a wide diversity of vegetables, fruits and other products. In the economic dimension, positive gross value, added value and net revenue indicate profitable farming operations, while income was stated to be positive and on the increasing trend over time.

Based on our characterization of agroecology and our assessment of the multidimensional sustainability of CSA farms in Flanders, we argue that CSA, being based on agroecological principles and practices, effectively showcases a high agroecological performance. In addition, its sustainability performance in the environmental, social and economic dimensions showcase multiple positive and promising outcomes in the face of both global and regional challenges in agriculture and food systems. We identify the integration of animals into the farming system and the strong dependency on -often unpaid - labor as two critical challenges for the agroecological transition and sustainability of CSA in Flanders, and further determine several important limitations to our work that should be taken into account when interpreting our results and delineating similar future research efforts. Finally, we confirm the TAPE as a relevant and holistic framework for the characterization of agroecology and the assessment of the sustainability of farms, although we propose several adaptations to the TAPE in order to move toward more contextualized applications in Flanders on the one hand and on CSA farms on the other.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

Author contributions

RS: Conceptualization, Methodology, Investigation, Software, Data curation, Formal analysis, Visualization, Writing – original draft. JD: Conceptualization, Supervision, Writing – review & editing. DL: Methodology, Validation, Writing – review & editing. SS: Conceptualization, Supervision, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fsufs.2024.1359083/full#supplementary-material

References

Barrios, E., Gemmill-Herren, B., Bicksler, A., Siliprandi, E., Brathwaite, R., Moller, S., et al. (2020). The 10 elements of agroecology: enabling transitions towards sustainable agriculture and food systems through visual narratives. *Ecosyst. People* 16, 230–247. doi: 10.1080/26395916.2020.1808705

Boerenforum (2023). *boerenforum*. Available online at: https://boerenforum.wordpress.com/ (accessed 07 November, 2023).

Brehm, J. M., and Eisenhauer, B. W. (2008). Motivations for participating in community-supported agriculture and their relationship with community attachment and social capital. *J. Rural Soc. Sci*. 23:5.

Coopmans, I., Dessein, J., Accatino, F., Antonioli, F., Bertolozzi-Caredio, D., Gavrilescu, C., et al. (2021). Understanding farm generational renewal and its influencing factors in europe. *J. Rural Stud*. 86, 398–409. doi: 10.1016/j.jrurstud.2021.06.023

Coopmans, I., Dessein, J., Accatino, F., Antonioli, F., Gavrilescu, C., Gradziuk, P., et al. (2020). Policy directions to support generational renewal in european farming systems. *EuroChoices* 19, 30–36. doi: 10.1111/1746-692X.12282

Coteur, I., Marchand, F., Debruyne, L., and Lauwers, L. (2019). Structuring the myriad of sustainability assessments in agri-food systems: a case in flanders. *J. Clean. Prod*. 209, 472–480. doi: 10.1016/j.jclepro.2018.10.066

Coteur, I., Wustenberghs, H., Debruyne, L., Lauwers, L., and Marchand, F. (2020). How do current sustainability assessment tools support farmers strategic decision making? *Ecol. Indic*. 114:106298. doi: 10.1016/j.ecolind.2020.106298

CSA-Netwerk (2023). *CSA-netwerk - gezonde landbouw voor een betrokken buurt*. Available online at: http://www.csa-netwerk.be/ (accessed 05 September, 2023).

Darmaun, M., Chevallier, T., Hossard, L., Lairez, J., Scopel, E., Chotte, J., et al. (2023). Multidimensional and multiscale assessment of agroecological transitions. *a review. Int. J. Agricult. Sustainab*. 21:2193028. doi: 10.1080/14735903.2023.2193028

De Keyzer, M. (2023). *Tot de bodem: De toekomst van landbouw in Vlaanderen*. Leuven: Leuven University Press.

Departement Landbouw en Visserij. (2020). *Landbouwrapport* Available online at: https://www.vlaanderen.be/publicaties/landbouwrapport-lara (accessed 01 September, 2023).

Departement Landbouw en Visserij. (2023a). *Landbouwcijfers vlaanderen: Cijfers over de vlaamse landbouw*. Available online at: https://landbouwcijfers.vlaanderen.be/ (accessed 01 September, 2023).

Departement Landbouw en Visserij. (2023b). *Vlaamse voedselstrategie - voedseldeals*. Available online at: https://lv.vlaanderen.be/beleid/go4food-vlaamse-voedselstrategie/voedseldeals, 2023b (accessed 01 September, 2023).

Domínguez, A., Javier Escudero, H., Rodríguez, M. P., Ortiz, C. E., Arolfo, R. V., and Bedano, J. C. (2023). Agroecology and organic farming foster soil health by promoting soil fauna. *Environm. Dev. Sustainab*. 2023, 1–24. doi: 10.1007/s10668-022-02885-4

Egli, L., Rüschhoff, J., and Priess, J. (2023). A systematic review of the ecological, social and economic sustainability effects of community-supported agriculture. *Front. Sustain. Food Syst*. 7:1136866. doi: 10.3389/fsufs.2023.1136866

Espelt, R. (2020). Agroecology prosumption: The role of csa networks. *J. Rural Stud*. 79, 269–275. doi: 10.1016/j.jrurstud.2020.08.032

ESRI. (2024). *ArcGIS [ArcGIS Online]*. Redlands, CA: Environmental Systems Research Institute.

EUROSTAT (2023). *European commission - farm accountancy data network*. Available online at: https://ec.europa.eu/eurostat/web/agriculture/data/database (accessed 13 November, 2023).

Ewert, F., Baatz, R., and Finger, R. (2023). Agroecology for a sustainable agriculture and food system: from local solutions to large-scale adoption. *Ann. Rev. Resource Econ*. 15, 351–381. doi: 10.1146/annurev-resource-102422-090105

FAO. (2018a). *Fao Agroecology Knowledge Hub*. Available online at: https://www.fao.org/agroecology/overview/en/ (accessed 05 May, 2023).

FAO. (2018b). *The 10 Elements of Agroecology: Guiding the Transition to Sustainable Food and Agricultural Systems*. Rome: Food and Agriculture Organization of the United Nations. Available online at: http://www.fao.org/3/i9037en/i9037en.pdf

FAO. (2019). *TAPE Tool for Agroecology Performance Evaluation 2019 – Process of Development and Guidelines for Application*. Test version. Rome. Available online at: https://openknowledge.fao.org/items/8511c796-c7d1-4a04-895d-a28115731ce0 (accessed June 9, 2024).

Fomina, Y., Glińska-Neweś, A., and Ignasiak-Szulc, A. (2022). Community supported agriculture: setting the research agenda through a bibliometric analysis. *J. Rural Stud*. 92, 294–305. doi: 10.1016/j.jrurstud.2022.04.007

Galt, R. E. (2013). The moral economy is a double-edged sword: explaining farmers earnings and self-exploitation in community-supported agriculture. *Econ. Geogr*. 89, 341–365. doi: 10.1111/ecge.12015

Geck, M. S., Crossland, M., and Lamanna, C. (2023). Measuring agroecology and its performance: an overview and critical discussion of existing tools and approaches. *Outlook Agric*. 52, 349–359. doi: 10.1177/00307270231196309

Gliessman, S. (2016). Transforming food systems with agroecology. *Agroecol. Sustain. Food Syst*. 40, 187–189. doi: 10.1080/21683565.2015.1130765

Groh, T., and McFadden, S. (1998). *Farms of Tomorrow Revisited*. Spencertown, NY: SteinerBooks,

HLPE (2019). "Agroecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition. A report by the high level panel of experts on food security and nutrition of the committee on world food security," in *Technical Report* (Rome: FAO).

Holland, J. M., Douma, J. C., Crowley, L., James, L., Kor, L., Stevenson, D. R., et al. (2017). Semi-natural habitats support biological control, pollination and soil conservation in Europe. A review. *Agron. Sustain. Dev*. 37, 1–23. doi: 10.1007/s13593-017-0434-x

IDS and IPES Food (2022). *Agroecology, Regenerative Agriculture, and Nature-Based Solutions: Competing Framings of Food System Sustainability in Global Policy and Funding Spaces*. Brussels, Belgium: IDS and IPES Food.

IFOAM (2023). *Organic in Europe*. Available online at: https://www.organicseurope.bio/about-us/organic-in-europe/ (accessed 05 November, 2023).

IPC (2015). "Declaration of the international forum for agroecology," in *Technical Report*.

Kerr, R. B., Madsen, S., Stüber, M., Liebert, J., Enloe, S., Borghino, N., et al. (2021). Can agroecology improve food security and nutrition? a review. *Global Food Secur*. 29:100540. doi: 10.1016/j.gfs.2021.100540

Kerselaer, E., Rogge, E., Vanempten, E., Lauwers, L., and Van Huylenbroeck, G. (2013). Changing land use in the countryside: stakeholders perception of the ongoing rural planning processes in flanders. *Land Use Policy* 32, 197–206. doi: 10.1016/j.landusepol.2012.10.016

Lang, K. B. (2010). The changing face of community-supported agriculture. *Culture Agricult*. 32, 17–26. doi: 10.1111/j.1556-486X.2010.01032.x

Lucantoni, D., Mottet, A., Bicksler, A., De Rosa, F., Scherf, B., Scopel, E., et al. (2021). *'Evaluation des transitions vers des systèmes agricoles et alimentaires durables: un*

outil pour l'évaluation des performances agroécologiques (*tape)*. Agronomie et Politique Agricole Commune. Available online at: https://agronomie.asso.fr/aes-11-1-19

Lucantoni, D., Sy, M. R., Goïta, M., -,Picot, M. V., Vicovaro, M., Bicksler, A., et al. (2023). Evidence on the multidimensional performance of agroecology in mali using tape. *Agric. Syst*. 204:103499. doi: 10.1016/j.agsy.2022.103499

Messely, L., Prové, C., and Sanders, A. (2020). *Naar een ge integreerde aanpak voor welbevinden in de vlaamse land-en tuinbouw*.

Migliorini, P., and Wezel, A. (2017). Converging and diverging principles and practices of organic agriculture regulations and agroecology. A review. *Agron. Sustain. Dev*. 37, 1–18. doi: 10.1007/s13593-017-0472-4

Mottet, A., Bicksler, A., Lucantoni, D., De Rosa, F., Scherf, B., Scopel, E., et al. (2020). Assessing transitions to sustainable agricultural and food systems: a tool for agroecology performance evaluation (tape). *Front. Sust. Food Syst*. 4:579154. doi: 10.3389/fsufs.2020.579154

Muchane, M. N., Sileshi, G. W., Gripenberg, G., Jonsson, M., Pumari no, L., and Barrios, E. (2020). Agroforestry boosts soil health in the humid and sub-humid tropics: A meta-analysis. *Agricult. Ecosyst. Environm*. 295:106899. doi: 10.1016/j.agee.2020.106899

Müller, A. (2015). "The role of livestock in agroecology and sustainable food systems," in *Feeding the People: Agroecology for Nourishing the World and Transforming the Agri-Food System* (Brussels: IFOAM EU Group), 30–33. Available online at: https://orgprints.org/id/eprint/30166/1/mueller-2015-feeding-people-ifoamEUgroup-chapter6-p30-33.pdf

Namirembe, S., Mhango, W., Njoroge, R., Tchuwa, F., Wellard, K., and Coe, R. (2022). Grounding a global tool principles and practice for agroecological assessments inspired by tape. *Elem Sci Anth*. 10:00022. doi: 10.1525/elementa.2022.00022

Nicholls, C. I., and Altieri, M. A. (2018). Pathways for the amplification of agroecology. *Agroecol. Sustain. Food Syst*. 42, 1170–1193. doi: 10.1080/21683565.2018.1499578

Popescu, A., Tindeche, C., Marcuă, A., Marcuă, L., Hou, A., and Angelescu, C. (2021). Labor force in the european union agriculture-traits and tendencies. *Econ. Analy*. 21:475. Available online at: https://managementjournal.usamv.ro/pdf/vol.21_2/Art55.pdf

Rosset, P. M., Sosa, B. M., Jaime, A. M. R., and Lozano, D. R. A. (2011). The campesino-to-campesino agroecology movement of anap in cuba: social process methodology in the construction of sustainable peasant agriculture and food sovereignty. *J. Peasant Stud*. 38, 161–191. doi: 10.1080/03066150.2010.538584

Siegner, A. B., Acey, C., and Sowerwine, J. (2020). Producing urban agroecology in the east bay: from soil health to community empowerment. *Agroecol. Sustain. Food Syst*. 44, 566–593. doi: 10.1080/21683565.2019.1690615

Smets, V., Cant, J., and Vandevijvere, S. (2022). The changing landscape of food deserts and swamps over more than a decade in flanders, belgium. *Int. J. Environ. Res. Public Health* 19:13854. doi: 10.3390/ijerph192113854

Stassart, P. M., Crivits, M., Hermesse, J., Tessier, L., Van Damme, J., and Dessein, J. (2018). The generative potential of tensions within belgian agroecology. *Sustainability* 10:2094. doi: 10.3390/su10062094

Stratton, A. E., Wittman, H., and Blesh, J. (2021). Diversification supports farm income and improved working conditions during agroecological transitions in southern brazil. *Agron. Sustain. Dev*. 41:35. doi: 10.1007/s13593-021-00688-x

Swisher, M. E., Koenig, R., Gove, J., and Sterns, J. (2003). "What is community supported agriculture?," in *Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences* (Gainesville: University of Florida).

Tessier, L., Bijttebier, J., Marchand, F., and Baret, P. V. (2021). Identifying the farming models underlying flemish beef farmers' practices from an agroecological perspective with archetypal analysis. *Agric. Syst*. 187:103013. doi: 10.1016/j.agsy.2020.103013

Tessier, L., Bijttebier, J., Marchand, F., and Baret, P. V. (2021). Pathways of action followed by flemish beef farmers-an integrative view on agroecology as a practice. *Agroecol. Sustain. Food Syst*. 45, 111–133. doi: 10.1080/21683565.2020.1755764

Tittonell, P. (2020). Assessing resilience and adaptability in agroecological transitions. *Agric. Syst*. 184:102862. doi: 10.1016/j.agsy.2020.102862

Tittonell, P., Pi neiro, G., Garibaldi, L. A., Dogliotti, S., Olff, H., and Jobbagy, E. G. (2020). Agroecology in large scale farming a research agenda. *Front. Sustain. Food Syst*.4:584605. doi: 10.3389/fsufs.2020.584605

Tscharntke, T., Grass, I., Wanger, T. C., Westphal, C., and Batáry, P. (2021). Beyond organic farming-harnessing biodiversity-friendly landscapes. *Trends Ecol. Evol*. 36, 919–930. doi: 10.1016/j.tree.2021.06.010

United Nations (2024). *Sustainable Development Goals*. Available online at: https://www.un.org/sustainabledevelopment/ (accessed June 9, 2024. The content of this publication has not been approved by the United Nations and does not reflect the views of the United Nations or its officials or Member States).

URGENCI (2016). *Our European Declaration*. Available online at: https://urgenci.net/our-european-declaration/ (accessed 04 September, 2023).

Van der Ploeg, J. D., Barjolle, D., Bruil, J., Brunori, G., Madureira, L. M. C., Dessein, J., et al. (2019). The economic potential of agroecology: empirical evidence from europe. *J. Rural Stud*. 71, 46–61. doi: 10.1016/j.jrurstud.2019.09.003

Vandermaelen, H., Dehaene, M., Tornaghi, C., Vanempten, E., and Verhoeve, A. (2023). Public land for urban food policy? A critical data-analysis of public land transactions in the ghent city region (Belgium). *Eur. Planning Stud*. 31, 1693–1714. doi: 10.1080/09654313.2022.2097860

Vicente-Vicente, J. L., Borderieux, J., Martens, K., González-Rosado, M., and Walthall, B. (2023). Scaling agroecology for food system transformation in metropolitan areas: Agroecological characterization and role of knowledge in community-supported agriculture farms connected to a food hub in berlin, germany. *Agroecol. Sustain. Food Syst*. 47, 857–889. doi: 10.1080/21683565.2023.2187003

Vlaamse Milieumaatschappij (2010). *Waterbeschikbaarheid*. Available online at: https://www.vmm.be/water/droogte/waterbeschikbaarheid (accessed December 19, 2023).

Vlaamse Milieumaatschappij (2020a). *Jaarrapport lucht effecten van luchtvervuiling op gezondheid en ecosystemen*. Available online at: https://www.vmm.be/publicaties/lucht-2020/effecten-van-luchtvervuiling-op-gezondheid-en-ecosystemen (accessed December 19, 2023).

Vlaamse Milieumaatschappij. (2020b). *Jaarrapport lucht - emissies en concentraties van luchtverontreinigende stoffen*. Available online at: https://www.vmm.be/publicaties/lucht-2020/emissies-en-concentraties-luchtverontreinigende-stoffen. (accessed December 19, 2023).

Voedsel Anders (2023). *Voedsel anders vlaanderen*. Available online at: https://www.voedsel-anders.be/ (accessed November 7, 2023).

Volz, P., Weckenbrock, P., Nicolas, C., Jocelyn, P., and Dezsény, Z. (2016). *Overview of Community Supported Agriculture in Europe*. Available online at: https://urgenci.net/wp-content/uploads/2016/05/Overview-of-Community-Supported-Agriculture-in-Europe.pdf

Wanger, T. C., DeClerck, F., Garibaldi, F. A., Ghazoul, J., Kleijn, D., Klein, A. M., et al. (2020). Integrating agroecological production in a robust post-2020 global biodiversity framework. *Nat. Ecol. Evol*. 4, 1150–1152. doi: 10.1038/s41559-020-1262-y

Wezel, A., Bellon, S., Doré, T., Francis, C., Vallod, D., and David, C. (2009). Agroecology as a science, a movement and a practice. a review. *Agron. Sustain. Dev*. 29, 503–515. doi: 10.1051/agro/2009004

Wezel, A., Casagrande, M., Celette, F., Vian, J. F., Ferrer, A., and Peigné, J. (2014). Agroecological practices for sustainable agriculture. A review. *Agron. Sustain. Dev*. 34, 1–20. doi: 10.1007/s13593-013-0180-7

Wezel, A., Herren, B. G., Kerr, R. B., Barrios, E., Gonçalves, A. L. R., and Sinclair, F. (2020). Agroecological principles and elements and their implications for transitioning to sustainable food systems. a review. *Agron. Sustain. Dev*. 40, 1–13. doi: 10.1007/s13593-020-00646-z

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Agri vs. food? Perceptions of local policymakers on agri-food policies from a multilevel approach

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In the EU, policies towards territorial development and the sustainability of agri-food systems are exemplified above all in Pillar II of the Common Agricultural Policy (CAP). However, policies for the promotion of sustainable food systems and networks are mainly driven by municipalities and large cities. In order to understand multi-level configurations of policies to promote Sustainable Food Systems (SFS), this paper strives to identify the challenges that municipal policymakers face in implementing sustainable agri-food policies, from a multi-level governance perspective. To this end, and through in-depth interviews and secondary documentation analysis, the policies implemented in 10 different municipalities of the Madrid Region (Spain) are studied and the challenges these municipalities are facing are analysed from a multi-scale and territorialised perspective. The following research objectives are addressed: (1) description of the type of policies implemented for the promotion of SFS and the narrative frameworks in which they are shaped; (2) identification of challenges of local policies to support SFS especially governance challenges; and (3) proposals for the promotion of sustainable food systems through a multi-level, territorialised governance perspective. The paper identifies three main axes of tension and discoordination—municipal *Vs* regional competences; agricultural vs. food policies; and rural vs. urban territories—that constrains the sustainability potential of multi-level agro food policies. Finally, we provide a comprehensive, sustainable scheme to assess local agri-food governance throughout a multi-level and multi-actor approach, setting interrelations between the different levels, actors and agencies involved to overcome the lock-ins identified.

KEYWORDS

agricultural policies, food policies, sustainable food systems, food governance, urban food systems, sustainability transitions, Spain

1 Introduction and objectives

Urban food policies cannot unfold the potential of sustainable food systems by themselves, since both agencies and operations along the value chain spread among different territories and administrative levels (IPES-Food, 2017; Gonzalez De Molina and Lopez-Garcia, 2021). Multi-level territorialised approaches to food systems' sustainability, such as City-Region Food Systems, can facilitate overcoming this gap in two ways: first, by combining resources and

agencies at municipal and supra-municipal levels; and second, by generating synergies, complementarities, and economies of scale and scope between highly densely populated territories, with a preponderance of consumer activities (urban), and other less densely populated territories, where agri-food production is more relevant (rural) (Vaarst et al., 2017; Blay-Palmer et al., 2018).

However, the current legal framework of political competences[1] and responsibilities regarding sustainable food systems in Spain result in a lack of resources for local authorities, and in demands on supra-municipal administrations to enhance their support (González-Azcárate et al., 2022). The various weights and configurations of local agri-food systems across different types of territories and municipalities (depending on the weight of agri-food production or consumption in the local economy and society, among other factors) introduce differential needs and opportunities from the perspective of Sustainable Food Systems. This presents challenges in the promotion of a sustainable food system in city regions, and these could be overcome from a territorial and multi-level perspective in sustainable food policies that are adapted to the different configurations of local food systems. To activate this multi-level perspective of food system sustainability, a number of authors list various political, narrative, regulatory, and budgetary mechanisms that should be activated on different scales (IPES-Food, 2017; Béné et al., 2019; González de Molina et al., 2019).

In order to understand the needs of Local Authorities regarding multi-level configurations of policies to promote Sustainable Food Systems, this paper identifies the challenges that municipal administrations face in implementing sustainable agri-food policies framed within a Sustainable Food System approach. To this end, we analyse which policies are being implemented in 10 different municipalities of a highly populated urban region (Madrid, Spain) from a comprehensive perspective, and which challenges these municipalities are facing from a multi-scale and territorialised perspective. The following research objectives are addressed: (1) a description of the type of policies implemented for the promotion of SFS and of the narratives within which are they framed; (2) the identification of challenges of local policies to support, especially governance challenges; and (3) to deliver proposals for the promotion of sustainable food systems through a multi-level, territorialised governance perspective.

2 Agri-food systems, sustainability, and multi-level policy tools

The literature on agri-food systems has traditionally focused on the interactions between and within the social and ecological components of food-related activities (from production to consumption), and on what outcomes they provide to society in terms of food security and social, environmental, and economic processes (Ericksen, 2008; Ingram, 2011; Béné et al., 2019). Since agri-food systems have become more visible, their relationship with some of the main planetary limits, such as biodiversity, depletion of fossil and mineral resources, climate change, and diseases related to malnutrition, the scientific and political debate has gained special relevance in recent years (Steffen et al., 2015; IPCC, 2022). The focus on the localisation of the dynamics of food systems has gained great weight in this regard (Willett et al., 2019; Gonzalez De Molina and Lopez-Garcia, 2021). However, while such transitions are expected to be multi-level and to articulate urban and rural territories, empirical research is needed on how to operationalise such territorial dynamics, and how to use current policy tools, at different administrative levels, for this purpose. Recent scientific debates on sustainable food systems and their transition dynamics are revealed below. It is subsequently explored how, to this end, scholars are assessing agri-food policies at different territorial levels.

2.1 Sustainability transitions, food systems, and territory

Globalised food systems play a central role in global change, along a twofold relation as facilitators of global crises (such as climate change, and pandemics, such as COVID-19) and as socio-ecological systems deeply affected by such crises and the war in Ukraine (IPCC 2019, 2022; Rivera-Ferre et al., 2021; Pörtner et al., 2022). High Level Panel of Experts on Food Security and Nutrition (HLPE) (2019, 31) defines a sustainable food system (SFS) 'as a food system that delivers food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised'. The main goal of SFS is to achieve food and nutrition security for the whole population while addressing various socio-ecological sustainability challenges, fostering the transitions as multi-dimensional processes [High Level Panel of Experts on Food Security and Nutrition (HLPE), 2017; El Bilali et al., 2019]. Thus, the outcomes delivered by a specific food system have not been conceptualised as final products, but as crystallisations of specific system's configurations. SFS outcomes are immersed in diverse, overlapping, and changing feedback loops and therefore interact closely and permanently with other components of the system (Ericksen, 2008; Béné et al., 2019).

The sustainability of agri-food systems has often been analysed as an outcome of the social and ecological embeddedness of food networks in the territory (Granovetter, 1985; Chiffoleau, 2009; Morris and Kirwan, 2011). The territory is thus configured as a living space, traversed by pressures, conflicts, and power relations from local to global scale, in which the projects of social and economic actors are developed (Winter, 2003; Lamine et al., 2019). Vicente-Vicente et al. (2021) apply the concept of 'foodshed' and highlight the need for a true territorial approach to food production, delivery, and consumption, to overcome the metabolic rift introduced by the segregation of activities between urban and rural territories. Gonzalez de Molina and Lopez-Garcia (2021) propose the concept of Agroecology-based Local Agrofood Systems to re-localise food systems through territorialised assemblages of food chain actors, state and non-state actors, policies, and material infrastructures and flows, and through the development of new multi-actor and multi-level

1 When we talk about political "competences" we refer to the range of political issues which are assigned to a specific administrative level of the public administration, in which they own the legal, formal powers to legislate and develop public policies and policy frameworks. In Spain there are national laws that state the policy realms to be regulated, addressed and legislated at each administrative level (municipal, regional, or national) of the public administration, in order to avoid duplications and promote its efficiency.

institutionalities to drive food system transitions towards sustainability. However, such a virtuous outcome of territorial agri-food systems is highly dependent on pre-existing power relations and actors' constellations, and on the way in which they are translated into specific policies and governance frameworks (Ajates Gonzalez et al., 2018; Marsden et al., 2018; El Bilali et al., 2019; Kroll, 2021).

Indeed, symbolic frameworks and narratives are a core issue regarding how SFS are understood and assessed. Since sustainability remains a contested and political process (Eakin et al., 2016), the sustainable food system outcomes considered in the scientific literature are diverse regarding the various disciplines, assumptions, and narratives, which also represent a range of ideological positions and interests (Ericksen, 2008). Béné et al. (2019) structure different approaches towards SFS as conditioned by scholars' disciplines, and differentiate between agriculture, nutrition, (socio)ecology, the value chain for nutrition, and agroecology. Stefanovic et al. (2020) identify five types of discourse framing, regarding different SFS outcomes: (1) food (and nutrition) security; (2) global environmental change to sustainability; (3) the overall Food Systems' performance; (4) resilience; and (5) transformation. For Béné et al. (2019) information, communication, governance, cultural dynamics, and politics, all interact with each other and have long-term and sometimes unexpected implications over food systems' dynamics and thus over its outcomes.

However, a scientific consensus can be found regarding the demand for articulated, coherent multi-level policies that cut across different territorial scales not only to reduce the metabolic rift throughout the re-organisation and re-localisation of agri-food systems, but also to adapt current policy and governance tools for this purpose (IPES-Food, 2017; Vaarst et al., 2017; González de Molina et al., 2019; Lamine et al., 2021). Anderson et al. (2021, 155) suggest, for a highly transformative agroecology, to move beyond the notion of policies, to focus on 'the process, politics and principles of mobilisation and shifting power'. To this end, agri-food policies research should engage with an agri-food system perspective, and include: both agricultural and food policies; a relational approach to food governance and policies; the ability to address policy coherence between different policy realms and territorial scales; and the ability to differentiate between environmental targets and actions among territories (Recanati et al., 2019; Moragues-Faus and Battersby, 2021; López-García and Carrascosa-García, 2024). However, there is a wide difference in framings and realities between agricultural policies that are usually deployed at supra-municipal administrative levels, and in food policies, that are commonly deployed at the municipal, and more usually urban, levels (Curto et al., 2021; López-García and Carrascosa-García, 2024). This is why we have split both policy approaches in the following sections.

Indeed, the operating logic of the administration itself, with its highly sectoral approaches and little cooperation and coherence of action between the various departments and levels of administration, has been pointed out as a dysfunctional element when it comes to developing comprehensive, sustainable agri-food policies (De Cunto et al., 2017; Recanati et al., 2019; Ploeg et al., 2000). This logic rarely embraces multi-stakeholder and multi-level governance approaches, or the development of rural–urban cooperation, and thus hinders sustainability transitions at food-system scale (IPES-Food, 2017; Recanati et al., 2019; López-García et al., 2020; Sachet et al., 2021).

2.2 Agricultural policies for the promotion of sustainable food systems

The Common Agricultural Policy (CAP) of the European Union is the main public policy implemented in its Member States regarding the agricultural sector and the rural communities. Pillar II of the CAP supports many different actions for the promotion of SFS, such as those for Short Food Supply Chains (Kneafsey et al., 2013); and rural livelihoods, including (i) young farmers, (ii) new entrants, (iii) small-scale farmers, and (iv) women farmers (Recanati et al., 2019). Certain authors consider the performative indeterminacy of policy instruments as an asset for agroecological transitions (Lamine et al., 2021). These instruments enable supported farmers' groups to build their trajectory of change, which also entails difficulties in terms of implementation and evaluation (Lampkin et al., 2020). However, for several authors, it is the general framework of the CAP, explicitly oriented towards farmers' and food integration into global commodity markets, that challenges CAP sustainability aims, including organic farming and agroecology approaches (Ajates Gonzalez et al., 2018; Ramos García et al., 2018). Furthermore, actions for generational renewal have been unsuccessful, not due to difficulties experienced by farmers in accessing markets or resources, but because global markets require a scale of production that are not affordable for most newcomers into farming (Sutherland, 2023). Despite numerous calls for the integration of health and food and nutrition security in the CAP, this has not happened as effectively as certain environmental targets, such as climate and biodiversity, socio-economic equity targets (Recanati et al., 2019; European Court of Auditors, 2020).

Organic farming represents the most recognised expression of sustainable agriculture, and is simultaneously more profitable and employment-rich than conventional agriculture (Crowder and Reganold, 2015; D'Annolfo et al., 2017). Moreover, agroecological schemes based on input reduction, local markets, and territorial organisation can support the economic viability of small farmers (van der Ploeg et al., 2019). However, a transition to sustainability in agricultural systems also relies on other policies supporting the establishment of value-based food chains, dietary changes, and the protection of natural resources (Lampkin et al., 2020). Ramos García et al. (2018) recommend a range of measures that foster the development of the domestic market, which include the growth of organic food industries, a continuation of policies of public purchase of organic products, the increased domestic production of inputs (organic fertilisers and seeds), better crop/livestock integration, and a revision of the contradictions in current organic regulations. However, policies to promote organic farming are being weakly developed all over the World.

2.3 Local food policies towards sustainability

In contrast, urban food policies have provided the main means for agri-food policy innovation towards sustainable food systems in recent decades, and have acted as a major lever for food system transformation (Calori and Magarini, 2015; Moragues-Faus and Morgan, 2015). The most common actions developed by urban food policy programmes relate to supporting: the development of alternative and localised food chains and

public procurement (Doernberg et al., 2019; Simón-Rojo et al., 2020; González-Azcárate et al., 2022; Metz and Scherer, 2022); access to fresh and good quality food for marginalised social groups; multi-stakeholder and multi-level participatory food governance processes; community activation; and education and awareness-raising among the various stakeholders in the food chain, especially final consumers (Moragues-Faus et al., 2013; Calori and Magarini, 2015; Milan Urban Food Policy Pact, 2015; EIP-Agri, 2016; De Cunto et al., 2017; Ploeg et al., 2000). However, several of these institutional factors fall beyond the scope of responsibilities held by Local Authorities (IPES-Food, 2017). Nevertheless, urban food policies are usually fragmented and are often based on individual activities, and the implementation of policies commonly lacks financial and staff resources (Doernberg et al., 2019).

Currently, cities are highly dependent on several inputs, and they are especially exposed to food shortages in eventual systemic disruptions such as pandemics (Song et al., 2021). However, few studies into urban food policy focus on food production and rural–urban linkages (Doernberg et al., 2019; González-Azcárate et al., 2022). Previous research in urban food policy shows a lack of a biophysical or spatial approaches, which has been linked in turn to the segregation of urban and rural environments (Simon-Rojo, 2019; Tornaghi et al., 2019; Gonzalez De Molina and Lopez-Garcia, 2021). Several studies highlight the suitability of approaches such as City-Region Food Systems (Vaarst et al., 2017; Blay-Palmer et al., 2018) and foodsheds (Vicente-Vicente et al., 2021) to integrate the ecological dimension of urban social metabolism of food systems, that goes far beyond urban boundaries.

A recent shift in urban food policy scholarship can be observed towards a food system approach and a relational and wider approach to urban food governance (Wegener et al., 2012; Moragues-Faus and Battersby, 2021; Gaitán-Cremaschi et al., 2022). Several authors claim a more prominent role for 'materiality' and 'agency' approaches in understanding the multi-scalar implications between food systems and urban transformations (Moragues-Faus and Sonnino, 2019; Moragues-Faus and Battersby, 2021), which brings us beyond urban boundaries. Through this 2-fold perspective of relational and food system approaches, rural–urban relations, and the presence of rural actors, especially the territorialised and sustainable agri-food production sector, would become more central to research into urban food policies (López-García and González de Molina, 2020). Alliances and vibrant cooperation dynamics among local authorities and (alternative) food movements have been indicated as a key issue in promoting deeply transformative food policies (González de Molina et al., 2019; Kroll, 2021), while such cooperation dynamics have been criticised for their inability to overcome co-optation and re-signification dynamics (Rivera-Ferre, 2018; Giraldo and McCune, 2019).

To sum up, while food systems' scholars have a clear idea on the importance of a territorial approach to strengthen transformations towards sustainability, it remains understudied how to activate its potential through specific actions and governance ecosystems. While there is a growing number of research on both agricultural and food policies for socio-ecological sustainability, they—'agro' and food policies—remain weak, fragmented, disconnected, and often contradictory among them. This is what we will address in the following lines.

3 Methods

Our study combines the analysis of secondary data and in-depth interviews with policymakers from 10 municipalities in the Madrid Region (see Table 1). The different municipalities have been selected through a purposive sampling (Campbell et al., 2020), all of which are relevant municipalities for either having developed agri-food policies, or for having farming activity as a traditional distinction of the municipality. Furthermore, the sample aims to address combinations of different variables: metropolitan/non-metropolitan/rural; main agroecosystems and crops; food policies/importance of agricultural activity. A review of agri-food-related policies and activities has been carried out in all 10 municipalities, by downloading information from City-Council websites, and from the available diagnoses and Strategic Plans. One interview per municipality was subsequently carried out, which lasted between 20 and 60 min. All interviewees were elected politicians, directly in charge of agri-food policies in the municipality, with the exception of two interviewees who were formerly responsible for agri-food policies for 4 years, but had not been re-elected in the 2023 municipal elections.

The interviewers' script was constructed with seven open-response questions to gather opinions: (1) how sustainable is the local agri-food system; (2) what are local agri-food policies; (3) what has been done or is planned, or (4) should be done in each municipality; and (5) which barriers and (6) support they find [or (7) would like to find] to develop such an agenda at different administrative levels and programmes. The interviews were transcribed verbatim through Google Pinpoint software and then revised by the research team. The analysis of the content of the interviews was performed with ATLAS.ti (version 23.4), whereby a first level of coding was applied regarding the research objectives of the current research (1-narratives; 2-policies implemented; 3-barriers; and 4-multi-level governance). Within this first level, a second level of coding was developed by applying an inductive approach, across the emergent categories obtained from the interview contents.

4 Results: how agri-food policies are framed and implemented

This section presents the main results obtained from the interviews to respond to research objectives 1 (narrative framing, and policies implemented) and 2 (main challenges, and specific governance challenges). The results are shown that address a multi-level and multi-actor perspective. These allow us to better understand the various configurations of local food policies regarding the different geographical and political contexts. Such results constitute the main ingredients to respond to the third research objective and suggest proposals to improve multi-level governance dynamics in the transitions towards sustainable food systems, to be presented in section 5.

4.1 Narrative framings

The informants have deployed different framings when speaking about sustainable food systems. While there are many issues mentioned, most discourses can be organised into two main strands:

TABLE 1 Main features of the municipalities and interviewees included in the study.

Interview code	Inhabitants in 2022 (INE 2023)	Distance to Madrid city-centre (Km)	Main agroecosystem(s) and crops	Rural/ urban	Interviewee profile	Strategic document on sustainable agri-food policies (Year of approval)	Member of a City-food Network
M1	59,762	49.2	Rainfed cereal, historical irrigated meadows for horticulture	Urban (Town)	Politician, male	Strategic Plan for the Restoration of traditional farmland	
M2	13,235	52.8	Mountain, pastureland, *dehesa*.[1] Extensive livestock	Rural	Ex-politician, male		Red Terrae[2]
M3	53,389	37	Rural, mountain, pastureland, *dehesa*. Extensive livestock	Urban (Town)	Politician, male		
M5	189,891	24.5	Rainfed cereal, historical irrigated meadows for horticulture	Urban (City)	Politician, female	Agricultural Park's Strategic Plan (2015, 2021)	RMAe[3], MUFPP[4]
M5	183,219	14.4	Rainfed cereal, historical irrigated meadows for horticulture	Urban (City)	Politician, male	Strategic Plan for the promotion of Agroecology (2016)	RMAe, MUFPP
M6	13,905	46	Rural, mountain, pastureland, *dehesa*. Extensive livestock	Rural	Politician, male		
M7	298	64.3	Rainfed cereal, olive groves and vineyards	Rural	Politician, female		Red Terrae
M8	96,690	25	Irrigated meadows for horticulture	Urban (City)	Ex-politician, female	Agricultural Park's Strategic Plan (2021)	RMAe, MUFPP
M9	7,092	63.7	Irrigated meadows, vegetable greenhouses, rainfed olive groves, and vineyards	Rural	Politician, male		
M10	7,629	67.6	Rainfed cereal, olive trees, and vineyards	Rural	Politician, male		

[1]Dehesa is an agrosilvopastoral system formed from the clearing of evergreen woodlands where trees, native grasses, crops, and livestock interact positively under management (AGFORWARD 2023).
[2]Red Territorios Reserva Agroecológicos, a national-wide association of Local Authorities mainly composed of small municipalities, for the promotion of public land banks and agroecological entrepreneurship. Available at: https://www.tierrasagroecologicas.es/.
[3]Red de Municipios por la Agroecología, a national-wide association of Local Authorities composed by small, medium-sized and large municipalities, for the promotion of sustainable agri-food policies oriented towards agroecology. Available at: https://www.municipiosagroeco.red/.
[4]Milan Urban Food Policy Pact, an international network of Local Authorities, mainly from big cities, for the promotion of sustainable and healthy food policies. Available at: https://www.milanurbanfoodpolicypact.org/.

agriculture as an economic sector; and the food system as a driver for sustainability transitions. Each of the strands can be linked with different profiles of municipalities. On one hand, those in which agriculture has historically been an important activity and still represents a core part of the local identity, speak about food systems focusing on agriculture and livestock farming as economic sectors. On the other hand, municipalities in which agriculture has almost disappeared in recent decades and has no cultural relevance for its historical background, speak more regarding sustainability, territory, or even develop a discourse centred on sustainable food systems. Finally, there is an alternative narrative around the category of 'health', which also includes issues related to 'diets', which appears to be transversal to all discourses, and which could be then understood as a bridging category. Nevertheless, narratives focusing on food and the environment have appeared to be considered by the interviewees as independent and often contradictory framings to professional agriculture, which additionally target different socio-economic profiles.

4.1.1 Agriculture as an economic sector, quality, and localness

This first narrative strand embraced categories such as 'prices' and 'profitability', 'localness', 'quality', and 'employment'. It is possible to set up links between the professional profile of the interviewees and the discursive approach that is given, such as those linked to quality and marketing, for politicians alien to the agricultural sector, and in M9 or M2, both with family roots in agriculture and

deploying a discourse focused on farmers: '*I am an agricultural engineer and agronomist, so because the training I had has helped me to be able to take to the council […] and perhaps because I come from a family of farmers*' (M9). However, all 'economy' strands of discourses focused on the farmers as protagonists of agri-food policies: '*We must be united because we are going to favour and help the farmer*' (M9). Municipalities with vibrant agri-food sectors focused their discourses on traditional farmers' profiles, with an explicit tendency towards professionalisation and an increase in the scale of production: '*Either you are very professional and you are a good farmer, or you do not stay in the sector*' (M9).

Furthermore, municipality representatives with a stronger agricultural background deployed in the interviews discourses rooted in a sense of quality based on local food: '*We advocate for these quality and proximity products*' (M1). This also links with the idea of sustainability through discourses on the category of 'tradition': '*our elders are the ones that teach us how to cultivate*' (M7). Through the idea of 'tradition' it is also possible to trace the current socio-economic importance of agriculture in local communities, beyond professional agriculture: '*From a food point of view* (olive groves and vineyards) *are two fundamental crops, in every family there is some land, although they were not professionals*' (M10). In several cases, local and direct marketing schemes were associated only with supporting the local economy.

4.1.2 Sustainability, sustainable food systems, and agroecology

The discourses based on 'sustainability' were observed regarding municipalities with less historical and economic importance of agricultural activity, or from visions of territorial development that transcend the strictly agri-food chain, including issues such as the conservation of agro-ecological enclaves. Certain interviewees showed a complex vision of agri-food systems and territorialised development: '*By sustainable production and sustainable food, we mean that there is a meeting between demand and supply, a meeting of trust. […] That there is a sector to be developed, which is the primary sector, that if there is a commitment by the rest of the citizens to promote and support it, they will be able to feed them*' (M2). For some interviewees, sustainability issues were framed within activist approaches: '*Agroecology was one of the concerns of the local social movements and environmentalist movement*' (M4), which links the concept of sustainability with other socio-ecological aims: '*What we understand is that* [food policies] *would be a set of actions that should have an impact on sustainable production, the promotion of healthy eating, and the localisation of the food system*' (M5).

Agroecology was mentioned only in cases of municipalities that form part of City-Food networks, and of politicians who show a firm commitment to the promotion of sustainable food systems as a core tool for sustainable and equitable local development. Indeed, the two national networks in which the various municipalities participate make explicit mention of agroecology in their name. Agroecology also appeared linked to interviewees' profiles far from agricultural family backgrounds, and closer to environmentalist positions, as an ideological backbone which sometimes emerged as separated from the actual agri-food background of the municipality: '(we want to) *go beyond the issue of urban community gardening in the idea of covering the whole food chain […], that we can cover the whole issue of production and also marketing*' (M4).

Some of the studied municipalities with stronger urban pressure or weaker agri-food sectors deployed narratives around agri-food economy, focusing on generational renewal: '*we want to restore the self-provision capacity of our city through agroecology*' (M4). However, for interviewees from other types of cities, sustainability discourses were questioned. The politicians featured the average local conventional farmers as opposed to sustainability by questioning the profitability of sustainable agricultural models: '*I have seen in the village few* (farmers) *aware of sustainability*' (M9).

4.1.3 Health

All interviewees agreed on the role of 'health' as a core category to support local agri-food policies for sustainability and local development. 'Health' appeared as a bridge for both the previous narratives of economy and sustainability, and was able to link what in other ways is presented in binary terms as opposite and contradictory. '*It is necessary to think about the direct competences of a city council (regarding food and agriculture) and whether it can exercise them or not. And one of them is ill-health prevention (on non-communicable diseases related to food and diets). There I think everything comes in […] in a transversal way*' (M2).

Only in one case can we found an explicit description of a comprehensive approach to food policies within a Local Authority, linked to health and other departments: '*The way we see* (food policies) *is in a transversal way. That is to say, it is not something that only affects my department, […]* (it) *is not just a household issue. We are talking about the shops, the hotel and catering industry, which is where the Department of Commerce comes into play, […]. So we are not alone in this awareness*' (M5). The 'health' approach also served to integrate a multi-level governance approach: '*the regional administration of Madrid has to finance (agri-food policies) since it is responsible for health*' (M10).

4.2 Actions

The actions in the field of agri-food policies carried out by the local governments analysed covered the entire food supply chain: production, processing, distribution, retail and consumption (Table 2). Our findings suggest that municipalities with a strong agricultural sector implement more actions focused on production (e.g., promoting agricultural parks to protect and revitalise agricultural land use in metropolitan settings, land banking to promote access to land, and training activities for newcomers into farming), and also on the promotion of their food products. In both cases, farmers were a key stakeholder and target: '*We influence four areas. One of them is agricultural production and there would be agricultural production, regional food production and marketing, the area of consumption and then other areas*' (M5). This can be sometimes developed in coordination with other local economic sectors, such as tourism: '*The initiatives that we have made the theme of the fair, tasting activities that were attractive enough to function as tourism […]. To make this type of production more known because in the end if the consumer does not know, they do not demand it either*' (M9), or the restaurant sector. Touristic activities around local food always remained within an economic narrative framework.

Municipalities within this study with a weaker agricultural background focused on consumer issues (such as awareness

TABLE 2 Main agri-food policy actions developed by the target municipalities.

Agrifood supply chain	Target population	Profiles	Actions
Production	Farmers	Villages, towns, and cities with agricultural activity	• Agrarian park • Land banking • Training • Support for entrepreneurship • Fostering urban agriculture • Sector engagement
Marketing and distribution	Farmers	Villages, towns, and cities with agricultural activity	• Labelling • Promotion of local products in international events • Local fairs • Local market • Regulation of farm sale • Advertising
Consumption	Consumers	Villages, towns, and especially in cities	• Awareness and information campaigns • Support for food group consumption • Awareness campaigns with schools and kindergartens • Awareness campaigns focusing on agroecological products (local, seasonal, organic) • Organised visits to food gardens and agricultural parks • Awareness campaigns on agro-environmental challenges and sustainable consumption • Support of school food gardens • Arboretum • Community garden
	Hotels, restaurants, and catering	Towns and cities	• Campaigns with local restaurants • Collaboration with restoration schools
	Public food procurement	Cities	• Food bank • Catering in kindergartens • Catering for local events
Circular economy actions	Farmers, consumers, and restaurants	Villages, towns, and cities	• Composting • Recycling campaigns • Waste management

raising), community gardening, and the reactivation of the local agricultural land with new entrants (such as by promoting agricultural parks). Several interviewees mentioned public procurement as a key instrument in the transition towards a more sustainable food system: '*It would be in municipal buildings and schools, expanding the contact that has been made with schools with the climate-friendly menus. […] It is a way to grow and show the product to families*' (M5).

Framed within a 'circular economy' approach, a number of the studied municipalities also implemented measures aimed at taking advantage of the waste generated. In certain cases, all these actions have been structured within the framework of an agroecological plan, but in general, it is a series of actions coordinated by the corresponding department without a specific planning framework. During the field work, municipalities that lack policies and a discourse on the food system have also been detected. *A priori* these municipalities considered that the field of food needs no specific local policies.

4.3 Barriers to promoting sustainable food systems

The barriers to the promotion of sustainable food systems mentioned by the interviewees have been organised, by following an inductive approach, into four main blocks: political will, resources, political competences, and structural conditions of the food system. Structural conditions of the current food regime impose important constraints on sustainability transitions that cut across all territorial scales, from the farms to the global agreements on agri-food trade. We will discuss briefly such an issue, as there is already a huge body of literature on the issue, and as it falls apart from the capabilities of the Local Authorities. By its side, governance issues appear to be, for the policymakers, a core obstacle to advancing the aims of the municipalities. Topics on resources, political power, and political will show significant roots, as we will see, in neglecting multi-level governance.

4.3.1 Political will and training

Food policies were seen by some interviewees as an innovative policy realm in the local agenda, while other interviewees consider that '*from a political point of view, this is something that is believed to have little electoral value*' (M8). Sustainable agri-food policies were understood by some as conflicting with other economic sectors, which are perhaps more valuable in financial terms: '*So when all productive land has been dedicated to construction, the countryside has been completely abandoned and the focus has been on tourism and environmental figures for the protection of biodiversity*' (M2). For several policymakers, the eventual disappearance of agriculture was the driving force behind the abandonment of agri-food policies: '*we do not have agriculture, so we have not done anything like that*' (M6). However, in cities where politicians have shown clear commitment with food policies, including a dedicated budget to such policies, its development has been wide and deep: '*there is a commitment on the part of the City Council, on the part of our mayor […] where he is committed to supporting farmers and agriculture*' (M5). As referenced above, there were a number of cities in our sample in which agriculture has also disappeared, but in which sustainable agri-food systems were made a cornerstone of the local development project.

Farmers were mentioned to be reluctant to sustainable agri-food policies, and thus as an excuse for not promoting them: 'There *was a lack of interest on the part of farmers to make the conversion towards more sustainable agriculture*' (M9). Supra-municipal policy-makers were also mentioned to have no interest in such approaches: '*With* (the regional or national scale) *as facilities* (to promote agri-food models of a more sustainable nature) *I think that, in reality, there are none*' (M9). As an innovative policy realm, scarce knowledge was mentioned as a detriment of political will: '*There is a great lack of leadership and training of managers of these types of projects because, in the end, the projects that are cooperatives, associations,* etc., *are highly fragmented and are not something very transcendental in the culture of the region*' (M2). Lack of information was also mentioned to be at the basis of the lack of demand from citizens: '*What I see above all is the misinformation that prevents people from consuming differently. And, above all, the product that is of the Community of Madrid, which is rarely promoted*' (M6).

4.3.2 Agricultural policy competences

A second issue involved the lack of competences of local administrations in agriculture: '*When you have competences, you can (implement policies), but when you do not, it's more difficult (to promote agri-food transformations models)*' (M1). This further generated a lack of resources (see Section 4.3.c) and instability in the political agenda: '*Then you come up against a bureaucratic obstacle that tells you that legally there is something you cannot do, you cannot legally invest money in it (agriculture)*' (M2). In certain cases, local specificity enabled municipalities to assume a more active role: '(our case) *is special because of what I was saying: because 70% of the farms belong to the municipality*' (M9), which can also present additional difficulties regarding the structure of responsibilities in the Local Authority perceived by the various city officers: '*We have a kitchen, so the idea was to train* (workers) *and to make other* (processed) *products […]*, (but) *the town council would not let us because training for the unemployed is not a municipal competence* (but a competence of the regional government)' (M9).

4.3.3 Financial and personal resources

Both the lack of political competences in agriculture and the issue of food policies being an innovative field in local policies, determined a significant lack of resources: '*We have neither technical resources nor economic resources*' (M1), which can be seen even for specific programmes: '*If you want to promote a product, you have to advertise it, and that costs money*' (M1). The application for resources from higher levels of Administration also appeared as a matter of resources: '*There is little help and the funding from grants is very complicated and very difficult*' (M8), especially for small municipalities: '*They are too many projects for too little aid*' (M7), which often complain of being overly controlled: '*what is applied is a total tutelage of what he does, why he does it, and whether he can do it*' (M2). In smaller municipalities, the public municipal auditor was mentioned as having major power for both enabling and blocking the development of agri-food policies: '*has been a major brake*' (M9).

The excessive burden of administrative work was highlighted also for farmers, who refused to apply for funding from supra-municipal funds: '*Everyone complains to me about the bureaucracy and obviously they* (livestock farmers) *are people who are almost 24 h a day in the field*' (M3). Similar complaints were gathered when talking about the application of environmental regulations for farmers, which generated a growing administrative burden and added pressure towards professionalisation and raising the scale of production: '*Regarding the application of phytosanitary products, if you already have a certain surface area, you already need advice that is signed by a technician […]. So if you are not very professional and you do your* (administrative) *work very well, you will fall by the wayside*' (M9).

4.3.4 Structural constraints of the agricultural system

Finally, a number of issues regarding the current structure of the agricultural system have been highlighted by informants as key challenges for the promotion of policies for sustainable food systems. These ranges from low profitability and precarious working and living conditions of farmers, small scale of production, cheap food with lower prices for farmers, lack of generational renewal, to socio-economic challenges regarding highly populated territories and powers between agricultural and urban uses of the territory.

4.4 Governance

Lastly, local food governance processes have been widely discussed in the interviews. Interviewees highlighted the dependence of Local Authorities on supra-municipal funding and political competences and demanded better cooperation and coordination among political scales. City-food networks were presented by their members as key tools for making food policies visible, for providing technical and expert support, and for knowledge exchange. The need to develop multi-actor approaches did not arise in all discourses but emerged in some of them as powerful tools to activate local resources and give coherence and strength to local agri-food policies. The interviewees called for multi-level governance processes and tools for the better deployment of the sustainability potential of agri-food policies. Several interviewees suggested integrative frameworks, such as 'health' and 'sustainability' policies, in order to enable multi-actor and multi-level governance.

4.4.1 Coordination between and within administrations

Interviewees generally expressed the need for stronger support from supra-municipal administrations. They called for better cooperation and coordination between different administrative levels and sections: '*There has to be teamwork*' (M10). However, not all the multi-level experiences were referenced as negative: '*We are treated very well (by the Regional Agriculture Department), and they help us. I help them and propose things to them, and I'm thankful that we are working together*' (M3). The regional government and the EU were cited, but the National State administration was hardly ever mentioned. Fragmentation of competencies and changes in the governmental structure was mentioned as a major constraint: '*There is a lack of common work for each of* (the different Regional Departments) *to be able to work together within their sphere and jurisdiction, as it is quite segregated. […] I think that many times we miss out on possibilities because the resources are not channelled well*' (M10). Overcoming such incoordination between administrative levels and sections appeared to be a common concern for all interviewees.

The policymakers more committed to sustainability and agroecology mentioned to a lesser extent the dependencies and lack of support from supra-municipal levels, and mentioned political differences: '*Until now, it has been impossible with the Regional Government of Madrid*' (M8). Nonetheless, these interviewees appeared to posit relevant expectations of support in city-food networks at the national level: '*We have learned a lot from this Network* (Spanish Network of Municipalities for Agroecology)*, from other municipalities*' (M8). Such an expectation included the possibility to access technical, specialised support, which is scarce among the cities analysed, and was also highly valued: '*We are understaffed. I think that we have raised this as a development need, but I think that the fact that we are part of the Network of Municipalities, I think that we can really receive support*' (M4).

4.4.2 Multi-actor processes

A great emphasis has been placed on the centrality of farmers in co-production processes of agri-food policies: '*The farmers are the real actors in the important work, not only in the municipality but at a general level, which is primary resources and primary production: to try to give them what they want, what they need*' (M1). Farmers were presented in most municipalities as the main (and sometimes unique) target of agri-food policies at the municipal level: '*we have an extraordinary relationship* (with the municipality's livestock farmers) *and we are doing things little by little so that* (they) *are better off*' (M3). However, in municipalities with weaker agricultural socio-economic fabrics, the focus was reoriented towards new entrants into farming and towards strengthening farmers' organisations, as in M5; or towards the reconfiguration of new plural socio-economic subjects to boost the relocalisation of the food system: '*agreements with the Community of Madrid, universities, the issue of food culture, the issue of knowledge exchange… Here we have a cooperative supermarket…*' (M4). Alliances with dedicated consultancy entities appear to be key to developing sustainable and localised agri-food policies; as such policies are an innovative topic in the political agenda of most municipalities: '[Our technical consultants] *have grown under the heat of the Agricultural Park. The growth of the Agricultural Park has made them grow. In this sense of strategic alliance, public and private* [entities] *go hand in hand*' (M5).

References to alternative food networks were scarce and weak in the interviews, and even some of the most progressive politicians suggested hybridisations of alternative and conventional actors to develop local markets: '*Small producers can also form alliances with other larger companies, which in the end I think would make it easier for the entire marketing sector to reach the rest of the population*' (M8). For other interviewees linked to economistic approaches, agricultural policies and even farmers remain separated from, and sometimes opposed to, food policies and consumers: '*My department has always been closely linked to agriculture, so maybe it's because of what I bring from my family, maybe I leave food or the consumer aside* […]. *The farmers themselves are very far from the community*' (M9). Only one city representative expressed to have formalised multi-actor governance spaces for agri-food policy co-production: '*From this Council, we have the […] Sectoral Council of participation,* (our idea) *is that this is also one of the tools for associations to be able to participate and to familiarise ourselves with the steps that are being taken*' (M4).

To end this section, several suggestions have been gathered to construct a strategic approach to the governance of local food systems, to overcome the aforementioned challenges. The first approach focused on the construction of governance tools for multi-level and intersectoral governance within the State: '*We (Local Authorities) would have to sit down* (together, at regional level) *and above all see what the future is (for the regional agriculture) and where we want to go*' (M1). A second approach, perhaps complementary, focused on thematic and narrative hooks to overcome policy fragmentation, in which "health" issues appeared as a common place for several interviewees: '*That's where we could invest, but you have to work hard, you have to justify it a lot because nobody believes it*' (M2), while rejected by others: '*Promoting healthy eating or something else, maybe it fits in with health, I do not know, it escapes me*' (M9). As we can see, the interviewed politicians cover a wide range of profiles and positions regarding agri-food policies. While we have found a general claim for multi-level cooperation between administrations and support from supra-municipal bodies, what to support appears as a contested issue. As we will see below, several contradictions hinder the potential of an agri-food system approach to promote transitions to sustainability through local agri-food policies.

5 Discussion

In this section, a framework is suggested for food policy co-production, to promote socio-ecological sustainability at the agri-food system level. Below, based on our findings, a multi-actor and multi-level approach is developed that is aimed at overcoming current approaches in which current agri-food policies are based on a 3-fold, overlapping opposition between municipal and supra-municipal administrative levels, agricultural and (sustainable and healthy) food policies, and rural and urban territories. Such a threefold binary opposition is highlighted here as being a core obstacle to developing comprehensive and transformative approaches for agri-food policies, and to building governance arrangements to promote sustainable food systems. We suggest overcoming this threefold contradiction by mainstreaming a food system approach across different administration

levels and sections, thereby giving space to different kinds of actors and knowledge, and deploying comprehensive and integrative policies, and narratives to support its implementation (see Figure 1).

5.1 Multi-level gaps for sustainable food-policy co-production

Public policies at the municipal level play a major role in the specific configurations that food systems adopt at the local scale (Morgan, 2015; Moragues-Faus and Battersby, 2021). Although a large part of the decisions are at the regional and national level, there is a wide range of actions that can be developed by local governments (see Figure 2), as we have seen, to promote transitions towards food systems sustainability. Most of the resources employed by the municipalities under study for the implementation of their food policies are solely municipal resources, both in personnel and budgetary terms. In Spain, most political competences and budgetary resources on agri-food, health, environmental, territorial (urban–rural), and rural development policies rely on both the regional and national Administrations. The lack of power in agriculture has been previously identified as an opportunity for local administrations to develop sustainable, territorialised agri-food policies, regarding less resistance among politicians and public officers towards alternative approaches such as agroecology (López-García et al., 2019). However, such a lack of competencies limits their agency regarding two main issues: (1) access to resources; and (2) administrative and political capacity of action. Most interviewees have expressed their specific concerns regarding a lack of power in agricultural policies, and a clear need for integrated agri-food policies and governance frameworks, which will be later discussed in depth in section 5.4.

Only a few municipalities have departments explicitly oriented towards agriculture, most of which promote agri-food policies supported by the scant resources (both budgetary and personnel) of departments such as environment, education, waste, and climate change. Most interviewees have reported very little internal collaboration between departments within each municipality, and this appears to be a common issue. Significant administrative difficulties, and in certain cases, specific administrative and accountability roles, such as the municipal comptroller or secretary, are decisive (López-García et al., 2020). A lack of political competences can be utilised as an argument by civil servants to place obstacles in front of innovative approaches to local food policies, as has been reported by several interviewees. Nevertheless, ideological biases and lack of information in technical staff might also introduce obstacles regarding policy implementation (Wheeler, 2008).

Most municipal policymakers expect no support from supra-municipal administration. The regional government and the EU are cited by interviewees, but the national administration is hardly ever mentioned. The support from supra-municipal administrations is needed for the maximisation of the impact potential from coherent, multi-level public policies (IPES-Food, 2017). In many cases, this implies access to the budget for the development of such local policies (IPES-Food, 2017; Doernberg et al., 2019), as long as local government teams remain sensitive to these issues. In cases when cooperation with regional administration has been developed, the success in promoting the sustainability of food systems has been much greater, as is the case of the Chilean INDAP (Curto et al., 2021). The intermediate strata of cooperation between municipal and regional administrations have revealed success for public-community cooperation, especially regarding regulatory mechanisms to organise multi-actor participation on local food governance (Lamine et al., 2021).

Territorial integration is essential in a framework in which several of the main barriers to the development of agri-food policies involve the communication and coordination between administrations, and the distribution of competences and powers, as

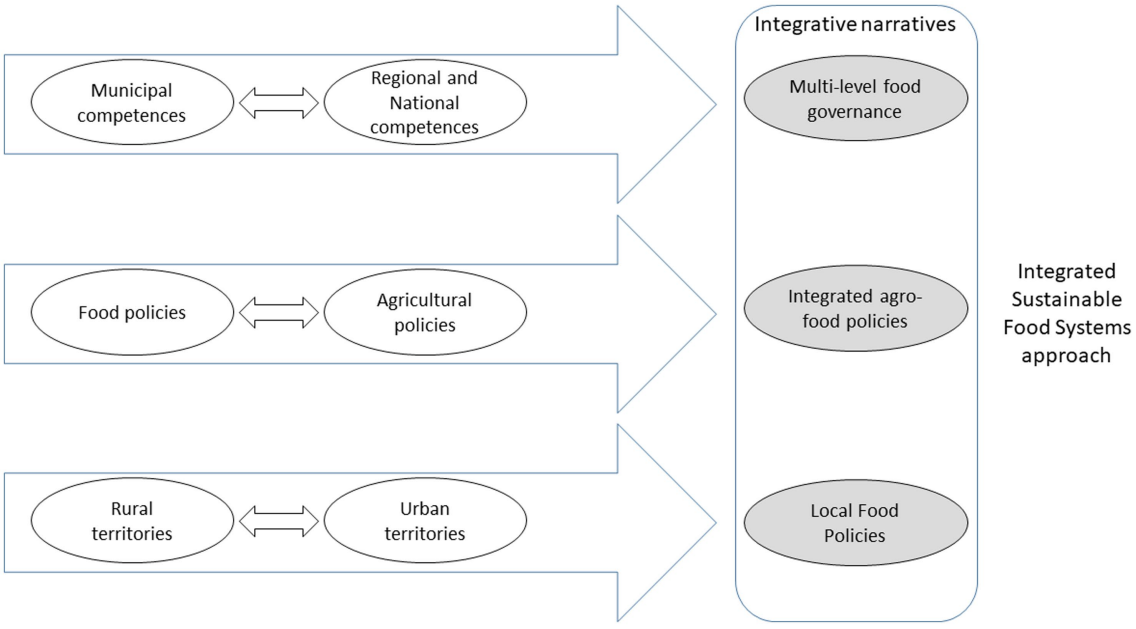

FIGURE 1
Binary approaches and integrative approaches for enabling (local) food systems sustainability.

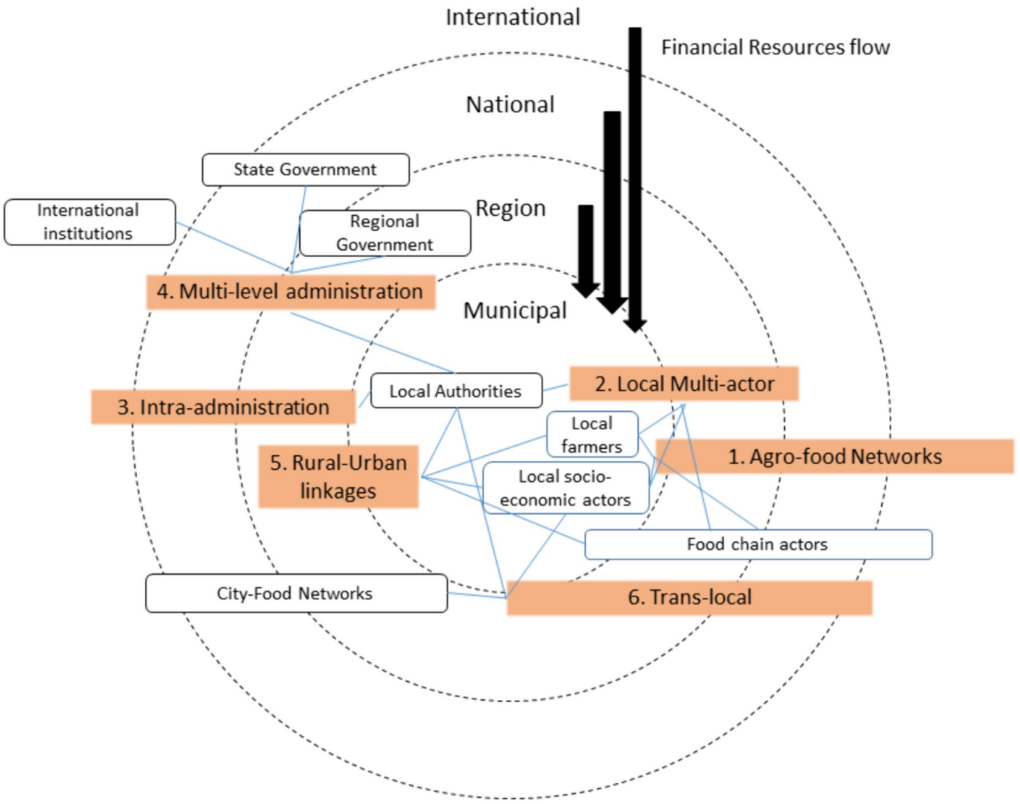

FIGURE 2
A comprehensive approach to multi-scale and multi-actor local food system governance.

will be proposed in section 5.4. The sustainability potential of urban food governance has been linked with the ability to apply both a relational and food system approach (Moragues-Faus and Battersby, 2021), which cuts across administrative scales, across boundaries of Local Authority departments, and across types of actors (Anderson et al., 2021). However, significant differences in how agri-food policies are framed at the municipal and regional/national levels have been identified, regarding a focus on food or agriculture, in rural or urban settings, or transformative/conservative approaches (López-García et al., 2019). Urban food policies in certain of the municipalities assessed, mainly medium-sized cities, are framed on topics such as sustainable food security, equity, sustainability, and overall within a sustainable approach to food systems. However, agricultural policies at regional, national, and supra-national levels seek productivity on and integration into global markets (Recanati et al., 2019). Such a contradiction in its framing sets different approaches to the final aims and outcomes of food systems, and also to the actors involved in its actual implementation (Giraldo and Rosset, 2018; Béné et al., 2019).

5.2 Agricultural vs. food policies: towards integrated agri-food policies

In the preceding section, we identified a gap between food policies, which are usually developed at the municipal level and in urban territories, and agricultural policies, which are usually developed at supra-municipal levels including regional, national, and supra-national (IPES-Food, 2017; Doernberg et al., 2019). Such a gap means that (municipal) food policy for sustainable and healthy diets usually lacks competences in agriculture issues and thus adequate resources, which usually rely on the regional and national levels (IPES-Food, 2017; López-García and Carrascosa-García, 2024). Furthermore, while agricultural policies in Europe are explicitly oriented towards sustainable and healthy diets, their practical implementation has been criticised to deliver unhealthy diets and nutrition and strong negative impacts in both social and ecological terms (Solazzo et al., 2016; Recanati et al., 2019). To overcome such a contradiction, our proposal involves integrated, agri-food policies that cut across different territorial levels and involves a diversity of actors and sectors and activities, as will be described in more depth in section 5.4.

Interviewees have identified structural constraints of global, agri-food markets that put pressure on farmers to intensify their (unsustainable) farming methods and raise their production scales to meet market needs. Agricultural policies are oriented towards producing large amounts of 'cheap food' and are based on commoditisation and a constant search for growth in productivity, efficiency, and scale (Moore, 2015; Walthall et al., 2024). In contrast, urban food policies focus on promoting sustainable and healthy diets and social justice but often disregard rural and agricultural processes (Morgan, 2015; Gonzalez De Molina and Lopez-Garcia, 2021). Such incoherence between food policies and agricultural policies expresses a lack of an overall approach to the food system and could be the

prime cause of the failure of agri-food policies to promote sustainability of comprehensive food systems (Recanati et al., 2019). The lack of a territorialised approach that is both rural–urban and multi-level could lie at the centre of such unsustainability (Vaarst et al., 2017; Blay-Palmer et al., 2018; Anderson et al., 2021; Gonzalez De Molina and Lopez-Garcia, 2021). As has been already mentioned, the integrated perspective we are proposing here, and especially in section 5.4, can help overcome such a gap.

Policies depend on the will of each politician. In the cities where politicians have shown a clear commitment to food policies, including dedicated budgets, their development has been wide and deep. In the municipalities analysed, the size of the municipalities is not significant concerning the deployment of agri-food policies that are more or less committed to the perspective of sustainable agri-food systems. There is an agricultural focus in both medium-sized cities (M5, M3) and small municipalities (M9) in our sample, and there is a food focus in both large (M4, M8) and small municipalities (M2, M7). The political orientation of the government team is not significant either. Rather, it seems to be the training and personal will of the elected officials (often linked to personal experiences and even family background) that constitute the most decisive aspects in this respect. Nevertheless, it is difficult to move from planning to specific policies, as there are many competing interests in each territory, depending on the actors involved (Ajates Gonzalez et al., 2018; López-García et al., 2019; Curto et al., 2021).

The articulation of local administrations with pioneering social organisations in the promotion of sustainable food systems has been identified as a key element that requires effort in both directions (Lampkin et al., 2020; Kroll, 2021; Vara-Sánchez et al., 2021). The institutionalisation of sustainable models based on the access of activists to institutions makes it possible to go beyond binary, simplistic approaches to the interrelations State/social actors and introduces changes in the logic of the administration as well as in the activist fabric itself (Curto et al., 2021). In the cases analysed, this can be observed in three ways: first, in the activists who have acceded to the positions of councillors; second, in the profiles, which are usually linked to food movements, that provide technical assistance to those government teams that have made the most progress in their agri-food policies: and third, in the importance given to technical and political support from city-food networks, that are driven in the Spanish cases (Red Terrae and Red de Municipios por la Agroecología) by entities and technical teams with an activist profile, thereby representing clear examples of meta-governance (Moragues-Faus and Sonnino, 2019; Moragues-Faus, 2021; Vara-Sánchez et al., 2021). Both the integration of food activists in food policy co-production processes and the support of city-food networks could lead to a more integrated and trans-scalar approach to (urban) food policies (Moragues-Faus, 2021). Such an approach can facilitate overcoming binary approaches towards 'agro vs. food' policies, through mainstreaming a sustainable food system perspective (Moragues-Faus and Battersby, 2021; López-García and Carrascosa-García, 2024).

5.3 Urban vs. rural food policies, or 'local agri-food policies'?

As already mentioned, a key element in the orientation of agri-food policies is the personal vision of the policymakers. Although the size of the municipality and the political orientation of the government seems to be of little relevance in defining the type of policies implemented, the urban/rural character does indeed appear to be a relevant factor. First, the agrarian tradition of the municipality appears to be highly relevant in shaping, for example, the centrality of farmers and agriculture in local agri-food policies. And second, small municipalities manage small budgets and are thus more dependent on higher scales of the Administration, which becomes more sensible in a densely populated region such as Madrid. In this respect, the term 'urban food policies' fails to explain all issues regarding agri-food policies at the municipal level, and hence 'local agri-food policies' is the term employed. Within such an approach, the rural/urban character of the municipalities shapes the set of actions to be developed (see Table 3). This can be related to the centrality of specific actors' profiles in the orientation of the policies. In urban settings, the policies are formed around health and sustainability issues and are mainly oriented towards consumers. Alternatively, in rural settings and municipalities with strong agricultural backgrounds and identities, farmers are central in the narratives of the policymakers, and the main actions are oriented towards professional agriculture and framed by economic narratives related to productivity, professionalisation, and profitability.

The opposition between the objectives of agricultural and food policies can be related to mutual exclusions of specific actors in governance and decision-making spaces. The segregation of agricultural policies and food policies, and of the collective actors that participate in the governance spaces related to each type of policy, reproduces the metabolic rift between urban and rural spaces, and between processes along the food chain. Reproducing such a metabolic rift hinders the sustainability potential of both agricultural and food policies (Recanati et al., 2019; Gonzalez De Molina and Lopez-Garcia, 2021). However, no actions of cooperation have been identified between urban and rural municipalities, nor the deployment of a city-region food system approach, which could mitigate such a metabolic rift. A stronger supra-municipal orientation, along with multi-level coordination and alignment, could provide a major step in this respect, since they would enable both consumption and production aims to be addressed in rural and urban settings (Blay-Palmer et al., 2018; Moragues-Faus, 2021).

The pressure from global markets and policies to raise the scale of production makes it increasingly difficult to render farms profitable in municipalities where agricultural land and infrastructure are segregated and degraded, and where the social, economic, and political fabric of the agricultural sector is degraded (López-García et al., 2021; Sutherland, 2023). The efforts of local administrations to support farmers in metropolitan regions such as Madrid appear to be policies for a socio-economic actor that is often absent, and thus policy performance becomes weak and disoriented in terms of the degradation of the agricultural social fabric. This explains why certain city governments are promoting the self-organisation of organic farmers in some metropolitan regions (Doernberg et al., 2019; López-García and Carrascosa-García, 2024). Strengthening the local agricultural sector has been identified as a key issue in addressing social and environmental imbalances regarding the intensification and globalisation of food systems (Anderson et al., 2021; Martínez-Valderrama et al., 2023), as in the case of several of the cities in the present study. Nevertheless, the role of farmers in local agri-food policies appears to be fuzzy and ambivalent. On one hand, farmers' voices disappear from food governance spaces in urban settings, and their agri-food policies therefore become incomplete (López-García and Carrascosa-García, 2024). On the other hand, approaches based on

TABLE 3 Framing of the policies developed in the municipalities regarding its rural/urban character.

	Agrarian	Non-agrarian
Rural	- Limited vision of the consumption side - Support and concern for the agricultural sector as an economic sector	- Orientation dependent on the sensitivity of the government team
Urban	- Comprehensive vision of the food system - Actions to support the agricultural sector and promote consumption of local food - Protection of agricultural land	- Orientation towards sustainable consumption - Awareness-raising initiatives

sustainable and healthy food and diets have been hindered in municipalities where the agricultural (conventional) sector is politically strong. Hence several cities are promoting the specific role of organic farmers in agri-food policies and policy co-production spaces (López-García and Carrascosa-García, 2024).

5.4 Towards a comprehensive, sustainable food system approach in local agri-food governance

In Figure 2, we present a conceptual scheme to overcome binary oppositions, described above in this section that prevents transitions towards socio-ecological sustainability. A territorial approach to agri-food governance can be strengthened through regional institutions and policies but also through new grassroots and alternative institutions that transcend existing regional boundaries (Anderson et al., 2021). Thus, our conceptual scheme operationalises the one proposed by López-García et al. (2020), integrating both the multi-scale and multi-actor dimensions of local food systems' governance processes by describing six realms of governance. It helps posing both the socio-economic and political actors and the relationships between them in specific territorial and administrative scales. It moves beyond policies to focus on process, politics, relations, agency, and finally power (Anderson et al., 2021; Moragues-Faus and Battersby, 2021). Such a scheme might be useful for both the understanding and planning of local agri-food policies for food system sustainability aligned with the elements above described.

Figure 2 draws up a structure of nested territorial/administrative scales (concentric circles) in which policies—and thus resources, black arrows—are put into practise regarding the competences and jurisdiction of each level of administration, corresponding with territorial scales. While some authors show similar schemes focusing on governance and bottom-up transformation processes (Anderson et al., 2021), our approach here focuses on policies and how policies are inserted within wider food governance ecosystems. Figure 2 offers an operational scheme to identify interrelations between different actors, agencies, knowledge, and agency levels, that would help to overcome the lock-ins expressed in Figure 1—municipal vs. regional competences; agricultural vs. food policies; and rural vs. urban territories. Such a figure helps to shape a comprehensive view on the governance mechanisms and flows around sustainable food systems, necessary to deploy the (socio-ecological) sustainability potential of agri-food policies (Anderson et al., 2021).

In Figure 2, white boxes represent different actors related to agri-food policies co-production and implementation, from policy-makers to policy-targets, whose main space for action is located in specific territorial/administrative scales, and sometimes specifically set bridges throughout scales. By setting the articulation between the different agencies and competences of the actors—both institutional and non-institutional—, located in different scales, it is possible to identify six realms of agri-food governance (in coloured boxes) that allow overcoming the binary oppositions described in the precedent sections. Such a structure of realms for sustainable agri-food governance is based on that proposed by López-García et al. (2020).

The first realm (Agri-food Networks) identified lies outside the administration, and brings together both local and extra-local food chain actors, including farmers, to develop universes of new socio-economic institutions that have managed to introduce food policies into the local political agenda. The second realm (Local multi-actor) embeds the dialectics between administration and social organisations in the co-production of local agri-food policies, conjugating unequal competences and agencies within the local context. The third realm (Intra-administration) brings together different sections of the different levels of the public administrations to coordinate horizontally agri-food policies and mainstream the food systems approach along a nested scheme of competences and jurisdictions. The fourth realm (Multi-level administration) addresses the coordination process between the different levels of public administrations with competences, jurisdiction, interests, and resources of different nature. The fifth realm (Rural–urban linkages) explores the political, economic, ecological, and cultural interactions between the main urban centres and its hinterland, throughout municipal and City-region scales, including both institutional and non-institutional actors (Blay-Palmer et al., 2018; Vaarst et al., 2018). Finally, the sixth realm (trans-local) addresses horizontal coordination and cooperation between local actors—both institutional and non-institutional, and thus with differentiated agencies—in different locations, as a key process for coordinated policy and governance innovation (Moragues-Faus and Sonnino, 2019).

Beyond the interactions between actors and scales, we have identified various narratives that enable or hinder the deployment of a comprehensive and sustainable agri-food system. Health has been mentioned by the interviewees who are more committed to sustainability approaches as a crosscutting narrative for both overcoming limitations of agrifood competences in the municipalities and deploying a comprehensive approach to sustainable food systems. Such an approach can be supported by the proposals for sustainable food security, which are becoming increasingly relevant in both scholarly and policy arenas (Sonnino et al., 2014; Wezel et al., 2020).

However, the symbolic importance of agricultural activity, beyond its economic contribution, has proved to be very powerful in sustaining local agri-food policies, since agriculture generates other ecosystem services and strengthens non-agricultural economic activity (such as commerce, hotels, tourism, and spaces for sustainable public

use in urban areas). Beyond 'defensive localisms', which can hide social and environmental unsustainability behind the tag of 'local' (Winter, 2003), narratives for reactivating the fabric of sustainable agriculture in city-regions such as Madrid can play a major role in the transition towards sustainable agri-food systems. To this end, sustainable farming and farmers could play a core role in such a transition.

6 Conclusion

We have analysed herein the policies implemented and the discourses on agri-food policies of policymakers from a European urban region: Madrid. The historical background of each municipality and the personal background of each policymaker, including family and training backgrounds, appear to be the main elements in shaping the orientation of the policies implemented. Local food policies are key factors in the transition towards sustainable food systems, and local governments are becoming increasingly committed to this transition. However, the municipalities experience certain challenges regarding legal competences, financial resources, structural constraints of the global food system, training, and (multi-level and multi-actor) governance processes. We propose an integrative, multi-level, and multi-actor approach to address these challenges by overcoming three contradictions of the policies implemented: first, the opposition and discoordination between various administrative levels: second, the opposition of the aims and tools between agricultural and (sustainable and healthy) food policies; and third, the disconnection and discoordination between urban and rural municipalities. All three binary oppositions can be overcome by taking a comprehensive food system approach towards delivering all the sustainability potential of relocalisation processes. However, such an approach comprises major challenges regarding the current political framework in Europe. First, there is a need to harmonise the aims and tools of both agricultural and food policies within a framework of growing commodification of food and growing concentration of power in the global food system (Clapp, 2023). Second, we must learn how to overcome the structural constraints of the food system that put pressure on unsustainable farming practises. Third, the segregated structure and orientation of the different levels of state administration make it difficult to coordinate and harmonise measures, and to support the right policies at each administrative level. Advancing towards multi-level and multi-actor governance processes and spaces for food system sustainability remains a key issue in territorial, sustainable transitions.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Oral informed consent from the patients/participants or patients/participants legal guardian/next of kin was obtained to participate in this study in accordance with the national legislation and the institutional requirements.

Author contributions

DL-G: Writing – review & editing, Writing – original draft, Visualization, Software, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. JC-M: Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. MD: Writing – review & editing, Software, Investigation, Formal analysis, Data curation.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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References

Ajates Gonzalez, R., Thomas, J., and Chang, M. (2018). Translating agroecology into policy: the case of France and the United Kingdom. *Sustain. For.* 10:2930. doi: 10.3390/su10082930

Anderson, C. R., Bruil, J., Chappell, M. J., Kiss, C., and Pimbert, M. P. (2021). Agroecology Now! Transformations Towards More Just and Sustainable Food Systems. Cham: Palgrave Macmillan.

Béné, C., Oosterveer, P., Lamotte, L., Brouwer, I. D., de Haan, S., Prager, S. D., et al. (2019). When food systems meet sustainability–current narratives and implications for actions. *World Dev.* 113, 116–130. doi: 10.1016/j.worlddev.2018.08.011

Blay-Palmer, A., Santini, G., Dubbeling, M., Renting, H., Taguchi, M., and Giordano, T. (2018). Validating the City region food system approach: enacting inclusive, Transformational City region food systems. *Sustain. For.* 10:1680. doi: 10.3390/su10051680

Calori, A., and Magarini, A. (2015). Food and the Cities. Food Policies for Sustainable Cities. Milano: Edizioni Ambiente.

Campbell, S., Greenwood, M., Prior, S., Shearer, T., Walkem, K., Young, S., et al. (2020). Purposive sampling: complex or simple? Research case examples. *J. Res. Nurs.* 25, 652–661. doi: 10.1177/1744987120927206

Chiffoleau, Y. (2009). From politics to co-operation: the dynamics of embeddedness in alternative food supply chains. *Sociol. Rural.* 49, 218–235. doi: 10.1111/j.1467-9523.2009.00491.x

Clapp, J. (2023). Concentration and crises: exploring the deep roots of vulnerability in the global industrial food system. *J. Peasant Stud.* 50, 1–25. doi: 10.1080/03066150.2022.2129013

Crowder, D. W., and Reganold, J. P. (2015). Financial competitiveness of organic agriculture on a global scale. *Proc. Natl. Acad. Sci.* 112, 7611–7616. doi: 10.1073/pnas.1423674112

Curto, R., Bondaruk, V., Gutierrez Molina, F., Pessah, S., and Monkes, J. (2021). Políticas públicas de Agroecología en el Cono Sur de América Latina. *Apuntes Agroeconóm.* 21, 1–11.

D'Annolfo, R., Garibaldi, L. A., Gemmill-Herren, B., Graeub, B. E., Cunningham, S. A., and Breeze, T. D. (2017). Farming approaches for greater biodiversity, livelihoods, and food security. *Trends Ecol. Evol.* 32, 68–80. doi: 10.1016/j.tree.2016.10.001

De Cunto, A., Tegoni, C., Sonnino, R., Michel, C., and Lajili-Djala, F. (2017). Food in cities: study on innovation for a sustainable and healthy production, delivery and consumption of food in cities.

Doernberg, A., Horn, P., Zasada, I., and Piorr, A. (2019). Urban food policies in German city regions: an overview of key players and policy instruments. *Food Policy* 89:101782. doi: 10.1016/j.foodpol.2019.101782

Eakin, C. M., Heron, S. F., Maynard, J. A., and Van Hooidonk, R. (2016). Warming trends and bleaching stress of the world's coral reefs 1985–2012. *Sci. Rep.* 6:38402. doi: 10.1038/srep38402

EIP-Agri (2016). Cities and food. Connecting producers and consumers. Final Report. EIP-Agri Workshop. European Commission, Brussels.

El Bilali, H., Callenius, C., Strassner, C., and Probst, L. (2019). Food and nutrition security and sustainability transitions in food systems. *Food Energy Secur.* 8:e00154. doi: 10.1002/fes3.154

Ericksen, P. J. (2008). Conceptualizing food systems for global environmental change research. *Glob. Environ. Chang.* 18, 234–245. doi: 10.1016/j.gloenvcha.2007.09.002

European Court of Auditors (2020). Report of the European court of auditors on the performance of the EU budget – status at the end of 2019. Available at: https://www.eca.europa.eu/lists/ecadocuments/annualreport-performance-2019/annualreport-performance-2019_en.pdf (Accessed February 26, 2024).

Gaitán-Cremaschi, D., Klerkx, L., Aguilar-Gallegos, N., Duncan, J., Pizzolón, A., Dogliotti, S., et al. (2022). Public food procurement from family farming: a food system and social network perspective. *Food Policy* 111:102325. doi: 10.1016/j.foodpol.2022.102325

Giraldo, O. F., and McCune, N. (2019). Can the state take agroecology to scale? Public policy experiences in agroecological territorialization from Latin America. *Agroecol. Sustain. Food Syst.* 43, 785–809. doi: 10.1080/21683565.2019.1585402

Giraldo, O. F., and Rosset, P. M. (2018). Agroecology as a territory in dispute: between institutionality and social movements. *J. Peasant Stud.* 45, 545–564. doi: 10.1080/03066150.2017.1353496

Gonzalez De Molina, M., and Lopez-Garcia, D. (2021). Principles for designing agroecology-based local (territorial) Agri-food systems: a critical revision. *Agroecol. Sustain. Food Syst.* 45, 1050–1082. doi: 10.1080/21683565.2021.1913690

González de Molina, M., Petersen, P. F., Garrido-Peña, F., and Caporal, F. R. (2019). Political Agroecology: Advancing the Transition to Sustainable Food Systems. Boca Ratón, FL, USA: CRC Press.

González-Azcárate, M., Cruz-Maceín, J. L., Bardají, I., and García-Rodríguez, A. (2022). Local food policies from a city-region approach: fostering the SFSCs in the region of Madrid. *Cities* 133:104158. doi: 10.1016/j.cities.2022.104158

Granovetter, M. (1985). Economic action and social structure: the problem of embeddedness. *Am. J. Sociol.* 91, 481–510. doi: 10.1086/228311

High Level Panel of Experts on Food Security and Nutrition (HLPE) (2017). Nutrition and food systems. A report by the high level panel of experts on food security and nutrition of the committee on world food security. Available at: http://www.fao.org/3/i7846e/i7846e.pdf

High Level Panel of Experts on Food Security and Nutrition (HLPE) (2019). Agroecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition. Committee on World Food Security, Rome.

Ingram, J. (2011). A food systems approach to researching food security and its interactions with global environmental change. *Food Secur.* 3, 417–431. doi: 10.1007/s12571-011-0149-9

IPCC (2019). *Climate change and land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems*. Ginebra: IPCC Disponible en.

IPCC (2022). "Climate change 2022: impacts, adaptation, and vulnerability" in *Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. eds. H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama; Cambridge University Press, Cambridge, UK and New York, NY, USA, 3056 pp.

IPES-Food. (2017). What makes urban food policy happen? Insights from five case studies. International panel of experts on sustainable food systems. Available at: www.ipes-food.org (Accessed February 26, 2024).

Kneafsey, M., Venn, L., Schmutz, U., Balázs, B., Trenchard, L., Eyden-Wood, T., et al. (2013). Short food supply chains and local food systems in the EU. A state of play of their socio-economic characteristics. *JRC Sci. Policy Rep.* 123:129. doi: 10.2791/88784

Kroll, F. (2021). Agroecology and the metropolitan biopolitics of food in cape. Town and Johannesburg. *Urban Agric. Region Food Syst.* 6:e20010. doi: 10.1002/uar2.20010

Lamine, C., Magda, D., and Amiot, M. J. (2019). Crossing sociological, ecological, and nutritional perspectives on agrifood systems transitions: towards a transdisciplinary territorial approach. *Sustain. For.* 11:1284. doi: 10.3390/su11051284

Lamine, C., Schmitt, C., Palm, J., Derbez, F., and Petersen, P. (2021). "How policy instruments may favour an articulation between open ended and deterministic perspectives to support agroecological transitions? Insights from a franco-brazilian comparison" in Agroecological Transitions, Between Determinist and Open-Ended Visions. eds. C. Lamine, D. Magda, M. Rivera-Ferre and T. Marsden (Bruxelles, Belgium: Peter Lang Verlag), 129–152.

Lampkin, N., Schwarz, G., and Bellon, S. (2020). Policies for agroecology in Europe, building on experiences in France, Germany and the United Kingdom. *Landbauforsch. J. Sustain. Org. Agric. Syst.* 70, 103–112. doi: 10.3220/LBF1611684471000

López-García, D., Alonso-Leal, N., García-García, V., Molero-Cortés, J., García-Fernández, J., Arroyo-Escudero, L., et al. (2020). Ámbitos de gobernanza en las políticas alimentarias urbanas: una mirada operativa. *Estud. Geográf.* 81:e051. doi: 10.3989/estgeogr.202065.065

López-García, D., Benlloch Calvo, L., Calabuig Tormo, V., Carucci, P., Diez Torrijos, I., Herrero Garcés, A., et al. (2021). Las transiciones hacia la sostenibilidad como procesos de final abierto: Dinamización Local Agroecológica con horticultores convencionales de l'Horta de València. *Bolet. Asoc. Geógr. Españ.* 88. doi: 10.21138/bage.2968

López-García, D., Calvet-Mir, L., Di Masso, M., and Espluga, J. M.. (2019). Multi-actor networks and innovation niches: university training for local Agroecological Dynamization. *Agric. Hum. Values* 36, 567–579. doi: 10.1007/s10460-018-9863-7

López-García, D., and Carrascosa-García, M. (2024). Sustainable food policies without sustainable farming? Challenges for agroecology-oriented farmers in relation to urban (sustainable) food policies. *J. Rural. Stud.* 105:103160. doi: 10.1016/j.jrurstud.2023.103160

López-García, D., and González de Molina, M. (2020). Co-Producing Agro-Food Policies for Urban Environments: Toward Agroecology-Based Local Agri-food Systems. in *Urban Agroecology. Interdisciplinary Research and Future Directions*, Eds. M. Egerer and H. Cohen. Boca Ratón (FL): CRC Press. 188–208.

Marsden, T., Hebinck, P., and Mathijs, E. (2018). Re-building food systems: embedding assemblages, infrastructures and reflexive governance for food systems transformations in Europe. *Food Sec.* 10, 1301–1309. doi: 10.1007/s12571-018-0870-8

Martínez-Valderrama, J., Olcina, J., Delacámara, G., Guirado, E., and Maestre, F. T. (2023). Complex policy mixes are needed to cope with agricultural water demands under climate change. *Water Resour. Manag.* 37, 2805–2834. doi: 10.1007/s11269-023-03481-5

Metz, J. J., and Scherer, S. M. (2022). The rise and decline of farmers markets in greater Cincinnati. *Agric. Hum. Values* 39, 95–117. doi: 10.1007/s10460-021-10228-8

Milan Urban Food Policy Pact (2015). Milan Urban Food Policy Pact. Available at: https://www.milanurbanfoodpolicypact.org/the-milan-pact/ (Accessed February 26, 2024).

Moore, J. W. (2015). Capitalism in the Web of Life: Ecology and the Accumulation of Capital. London, UK: Verso Books.

Moragues-Faus, A., and Morgan, K. (2015). Reframing the foodscape: the emergent world of urban food policy. *Environment and Planning A: Economy and Space*, 47:1558–1573. doi: 10.1177/0308518X15595754

Moragues-Faus, A., and Battersby, J. (2021). Urban food policies for a sustainable and just future: concepts and tools for a renewed agenda. *Food Policy* 103:102124. doi: 10.1016/j.foodpol.2021.102124

Moragues-Faus, A. (2021). The emergence of city food networks: rescaling the impact of urban food policies. *Food Policy* 103:102107. doi: 10.1016/j.foodpol.2021.102107

Moragues-Faus, A., Morgan, K., Moschitz, H., Neimane, I., Nilsson, H., Pinto, M., et al. (2013). Urban food strategies: the rough guide to sustainable food systems. Document developed in the framework of the FP7 project FOODLINKS (GA no. 265287). Available at: http://www.foodlinkscommunity.net/fileadmin/documents_organicresearch/foodlinks/publications/Urban_food_strategies.pdf (Accessed July 11, 2019).

Moragues-Faus, A., and Sonnino, R. (2019). Re-assembling sustainable food cities: an exploration of translocal governance and its multiple agencies. *Urban Stud.* 56, 778–794. doi: 10.1177/0042098018763038

Morgan, K. (2015). Nourishing the city: the rise of the urban food question in the global north. *Urban Stud.* 52, 1379–1394. doi: 10.1177/0042098014534902

Morris, C., and Kirwan, J. (2011). Ecological embeddedness: an interrogation and refinement of the concept within the context of alternative food networks in the UK. *J. Rural. Stud.* 27, 322–330. doi: 10.1016/j.jrurstud.2011.03.004

Ploeg, J. D., Van der Renting, H., Brunori, G., Knickel, K., Mannion, J., Marsden, T., et al. (2000). Rural development: from practices and policies towards theory. *Sociologia Rurali* 40, 391–408. doi: 10.1111/1467-9523.00156

Pörtner, L. M., Lambrecht, N., Springmann, M., Bodirsky, B. L., Gaupp, F., Freund, F., et al. (2022). We need a food system transformation—in the face of the Russia-Ukraine war, now more than ever. *One Earth* 5, 470–472. doi: 10.1016/j.oneear.2022.04.004

Ramos García, M., Guzmán, G. I., and González De Molina, M. (2018). Dynamics of organic agriculture in Andalusia: moving toward conventionalization? *Agroecol. Sustain. Food Syst.* 42, 328–359. doi: 10.1080/21683565.2017.1394415

Recanati, F., Maughan, C., Pedrotti, M., Dembska, K., and Antonelli, M. (2019). Assessing the role of CAP for more sustainable and healthier food systems in Europe: a literature review. *Sci. Total Environ.* 653, 908–919. doi: 10.1016/j.scitotenv.2018.10.377

Rivera-Ferre, M. G. (2018). The resignification process of agroecology: competing narratives from governments, civil society and intergovernmental organizations. *Agroecol. Sustain. Food Syst.* 42, 666–685. doi: 10.1080/21683565.2018.1437498

Rivera-Ferre, M. G., López-i-Gelats, F., Ravera, F., Oteros-Rozas, E., di Masso, M., Binimelis, R., et al. (2021). The two-way relationship between food systems and the COVID19 pandemic: causes and consequences. *Agric. Syst.* 191:103134. doi: 10.1016/j.agsy.2021.103134

Sachet, E., Mertz, O., Le Coq, J. F., Cruz-Garcia, G. S., Francesconi, W., Bonin, M., et al. (2021). Agroecological transitions: a systematic review of research approaches and prospects for participatory action methods. *Front. Sustain. Food Syst.* 5:709401. doi: 10.3389/fsufs.2021.709401

Simon-Rojo, M. (2019). Agroecology to fight food poverty in Madrid's deprived neighbourhoods. *Urban Des. Int.* 24, 94–107. doi: 10.1057/s41289-019-00088-4

Simón-Rojo, M., Couceiro, A., Del Valle, J., and Fariña Tojo, J. (2020). Public food procurement as a driving force for building local and agroecological food systems: farmers' skepticism in Vega Baja del Jarama, Madrid (Spain). *Landscape* 9:317. doi: 10.3390/land9090317

Solazzo, R., Donati, M., Tomasi, L., and Arfini, F. (2016). How effective is greening policy in reducing GHG emissions from agriculture? Evidence from Italy. *Sci. Total Environ.* 573, 1115–1124. doi: 10.1016/j.scitotenv.2016.08.066

Song, S., Goh, J. C., and Tan, H. T. (2021). Is food security an illusion for cities? A system dynamics approach to assess disturbance in the urban food supply chain during pandemics. *Agric. Syst.* 189:103045. doi: 10.1016/j.agsy.2020.103045

Sonnino, R., Moragues-Faus, A., and Maggio, A. (2014). Sustainable food security: an emerging research and policy agenda. *Int. J. Sociol. Agri. Food* 21, 173–188. doi: 10.48416/ijsaf.v21i1.161

Stefanovic, L., Freytag-Leyer, B., and Kahl, J. (2020). Food system outcomes: an overview and the contribution to food systems transformation. *Front. Sustain. Food Syst.* 4:546167. doi: 10.3389/fsufs.2020.546167

Steffen, W., Broadgate, W., Deutsch, L., Gaffney, O., and Ludwig, C. (2015). The trajectory of the Anthropocene: the great acceleration. *Anthrop. Rev.* 2, 81–98. doi: 10.1177/2053019614564785

Sutherland, L. A. (2023). Who do we want our 'new generation' of farmers to be? The need for demographic reform in European agriculture. *Agric. Econ.* 11:3. doi: 10.1186/s40100-023-00244-z

Tornaghi, C., Vandermaelen, H., Dehaene, M., and Vanempten, E. (2019). "Embedding agroecology's soil care principle in the urbanised society: the case of Flanders" in *9th AESOP-SFP Conference Agroecological transitions confronting climate breakdown*. Editorial Universidad de Granada, 205–209.

Vaarst, M., Getz Escudero, A., Chappell, M. J., Brinkley, C., Nijbroek, R., Arraes, N. A. M., et al. (2018). Exploring the concept of agroecological food systems in a city-region context. *Agroecol. Sustain. Food Syst.* 42, 686–711. doi: 10.1080/21683565.2017.1365321

Vaarst, M., Padel, S., and Zaralis, K. (2017). Supporting innovation in organic agriculture: a European perspective using experience from the SOLID project. *Sustain. Dev. Organ. Agric. Historic. Perspect.* 4, 115–134. doi: 10.5539/sar.v4n3p32

van der Ploeg, J. D., Barjolle, D., Bruil, J., Brunori, G., Costa Madureira, L. M., Dessein, J., et al. (2019). The economic potential of agroecology: empirical evidence from Europe. *J. Rural. Stud.* 71, 46–61. doi: 10.1016/j.jrurstud.2019.09.003

Vara-Sánchez, I., Gallar-Hernández, D., García-García, L., Morán Alonso, N., and Moragues-Faus, A. (2021). The co-production of urban food policies: exploring the emergence of new governance spaces in three Spanish cities. *Food Policy* 103:102120. doi: 10.1016/j.foodpol.2021.102120

Vicente-Vicente, J. L., Doernberg, A., Zasada, I., Ludlow, D., Staszek, D., Bushell, D., et al. (2021). Exploring alternative pathways toward more sustainable regional food systems by foodshed assessment – City region examples from Vienna and Bristol. *Environ. Sci. Pol.* 124, 401–412. doi: 10.1016/j.envsci.2021.07.013

Walthall, B., Friedrich, J., Piorr, A., Vicente-Vicente, J. L., and López-García, D. (2024). Complementing or co-opting? Proposing an integrative framework to assess the transformative capacity of approaches that make use of the term agroecology in the global north. *Sustain. Sci. Policy.* 156:103748. doi: 10.1016/j.envsci.2024.103748

Wegener, J., Raine, K. D., and Hanning, R. M. (2012). Insights into the Government's role in food system policy making: improving access to healthy, local food alongside other priorities. *Int. J. Environ. Res. Public Health* 9, 4103–4121. doi: 10.3390/ijerph9114103

Wezel, A., Herren, B. G., Kerr, R. B., Barrios, E., Gonçalves, A. L. R., and Sinclair, F. (2020). Agroecological principles and elements and their implications for transitioning to sustainable food systems. A review. *Agron. Sustain. Dev.* 40:40. doi: 10.1007/s13593-020-00646-z

Wheeler, S. A. (2008). What influences agricultural professionals' views towards organic agriculture?. Ecological Economics, 65:145–154. doi: 10.1016/j.ecolecon.2007.05.014

Willett, W., Rockström, J., Loken, B., Springmann, M., Lang, T., Vermeulen, S., et al. (2019). Food in the Anthropocene: the EAT–lancet commission on healthy diets from sustainable food systems. *Lancet* 393, 447–492. doi: 10.1016/S0140-6736(18)31788-4

Winter, M. (2003). Embeddedness, the new food economy and defensive localism. *J. Rural. Stud.* 19, 23–32. doi: 10.1016/S0743-0167(02)00053-0

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Urbanizing food systems: exploring the interactions of food access dimensions for sustainability

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This paper aims to conceptualize the dimensions of food access to enhance urban food system sustainability by analyzing the cause-effect interactions between the five dimensions and the urban food environment and using spider web diagrams to illustrate their interrelationships in terms of community perception and objectivity. Various studies have conceptualized access as a construct of five dimensions. This new expanded view supports both objective and perceived aspects of access and values the knowledge of residents through community-based participatory research, thereby providing a more complete understanding of access. This study, building on Usher's broader themes of spatiality, objectivity and perception, analyzes the cause-effect interactions between the five dimensions and the urbanizing food environment by expanding and modeling the dimensions of access and their interactions critical to the analysis and decision-making processes of sustainable urbanizing food systems. With the use of spider web diagrams, we demonstrate the degree of interactions among the five dimensions (availability, accessibility, acceptability, accommodation, availability, and affordability), with respect to the community perception and objectivity. We used the DPSIR causal framework to analyze the cause-effect relations between the five dimensions and the DPSIR components: drivers, pressures, state, impact, and response. The five dimensions are further conceptualized for spiderweb and DPSIR for low, medium and high interactivity. The conceptualizations are applied to three case studies from the literature. This paper, additionally, integrates insights from Systems Thinking, which has been pivotal in understanding the complex, interconnected nature of sustainable food systems. Furthermore, ecosystem approaches to health, which emphasize systemic and holistic perspectives, are also considered. These approaches highlight the interdependence between ecological and human health, advocating for integrated strategies that promote both environmental and human well-being.

KEYWORDS

food access, food security, five dimensions of access, DPSIR, spider web diagram, objectivity, perception

1 Introduction

The aim of this paper is to explore the interactions of the dimensions of food access to enhance the sustainability of urban food systems by (a) examining the cause-effect interactions between the five dimensions and the urbanizing food environment, expanding and modeling these dimensions, and (b) using spider web diagrams to demonstrate the degree of interaction among the five dimensions (availability, accessibility, acceptability, accommodation, and affordability) in relation to community perception and objectivity.

In our previous publication, *A conceptualization of the urban food-energy-water nexus sustainability paradigm: Modeling from theory to practice*, under the driver of urbanization, we developed a conceptual model of the urbanizing food-energy-water nexus in the framework of environmental, social and economic sustainability (Gragg et al., 2018). In our second paper on the rapidly transitioning and evolving urban agricultural food and nutrition system we conceptualize, expand and operationalize the Usher (2015) dimensions of food access (Figure 1) in the DPSIR framework (Andress and Fitch, 2016; Penchansky and William Thomas, 1981; Usher, 2015). Usher (2015), reconceptualized food access as a construct with five dimensions: *acceptability, accessibility, accommodation, affordability*, and *availability by applying* the Penchansky and Thomas concept of health access to the concept of food access. This expanded view supported both objective and perceived aspects of access and values the knowledge of residents through community-based participatory action research (Gragg et al., 2015), and thereby provided a more complete understanding of food access and its complexities. In subsequent work by the authors, we sought to conceptually describe the causal chains and feedback loops between the driver variables (e.g., precipitation and temperature) and response variables (e.g., impacts in several ecosystems (Anandhi and Bentley, 2018; Bentley and Anandhi, 2020) as well as describe the urbanizing food energy water nexus in the context of the sustainability paradigm (Gragg et al., 2018).

1.1 Existing food access models and definitions

Access to safe and nutritious food is a basic human right (Lawlis et al., 2018). The World Food Program and FAO's preliminary estimates indicated the COVID-19 pandemic could almost double the number of people suffering acute hunger (Grimaccia and Naccarato, 2022). In fact, the pandemic had global consequences at all levels of life, such as limiting access to food, reducing freedom of movement, and hindering various activities (Salisu et al., 2024). Therefore, applying an integrated system to ensure equitable food access, particularly during crises, is critical and addresses a fundamental aspect of public health (Wopereis et al., 2024) and access to adequate nutrition (Haji and Himpel, 2024). The ripple effects of reduced access to agricultural inputs (fertilizers, interrupted harvesting, and destroyed shipping routes), which caused a shortfall in the global food supply (Alam et al., 2024). Food access is considered as one of the four interdependent dimensions of food security frameworks (Pérez-Escamilla, 2024; FAO, 2006). In the context of food insecurity, food access has economical and physical components (Lawlis et al., 2018) pertaining to economic and physical access to food for households, especially for the poor and vulnerable. The food access dimension received the least amount of attention among the four at both the national and regional levels (Lowitt et al., 2016). Over the last two decades, a surge in systemic approaches and frameworks has endeavored to unravel the complexities of food systems challenges, offering insights to mitigate negative externalities and enhance the well-being of individuals, societies, economies, and the environment (Bustamante et al., 2024; Pérez-Escamilla, 2024).

Regional institutions have a narrower approach to food security than national governments (Lowitt et al., 2016). As food security shifted from larger to smaller spatial scales (e.g., global, national, regional, local, household, and individual); (Ecker and Breisinger, 2012; Hasyimi et al., 2024; Clapp et al., 2022), so did the thinking from food supply to food access (Borch and Kjaernes, 2016; Hussain et al., 2025). Key themes characterizing the food access dimension of food security are monitoring systems access, support rural development and livelihoods, rising food prices and equitable food access (Lowitt et al., 2016). The former two are emphasized in regional food security and the latter three are emphasized at the national level (Lowitt et al., 2016). Short food supply chains facilitate physical and financial accessibility, and allows access to fresh, healthy, pesticide-free, seasonal and local/regional food (Martinelli et al., 2020). Food production must be close to the consumption locations, supporting convenience and a sustainable food system (Martinelli et al., 2020). Strategies such as the delivery of food kits at home have been an important farmers' production outflow, besides providing consumers with fresh food (Martinelli et al., 2020). Street markets facilitate the purchase of healthy and sustainable food with less risk of contamination, because they are operating outdoor, and may be another opportunity for direct sales between producer and consumer (Martinelli et al., 2020). Encouragement to expand urban agriculture and community gardens can also assist in two greater access to fresh food, especially during the pandemic, within an accessible physical boundary of the community's food environment. Exposure to a food environment that offers high ultra-processed foods (UPF) availability and access favors inappropriate food choices, because a greater availability and lower prices increase the chances of such food consumption (Martinelli et al., 2020). Insufficient food access arising from resource constraints is one of the measures of household food insecurity (Loopstra et al., 2015). In a household, food access has three components: physical, financial, and socio-cultural. Nekmahmud et al. (2022) used the World Food Programme definition "food access as a household's ability to regularly gain an adequate amount of food through purchases, barter, borrowings, food help, or gifts."

Food insecurity for individuals is conceptualized as a function of lack of the financial, physical or means of transport to obtain nutritionally adequate and safe foods (Burns, 2015). They associate physical or means of transport with food access because of the convenience to eat at site or the inability to carry grocery (retail or in bulk) from site to home and reduced car access. At the individual level, access to food by gender was modeled by considering several personal and household characteristics (Grimaccia and Naccarato, 2022).

Urban food systems and frameworks influence every human institution and practice (Moores et al., 2025). They influence the economy in terms of labor, capital investment, and productive activities, with implications for the value of surrounding housing and other land uses. Urban food systems impact and guide local ordinances regulating public spaces, public markets, and public health

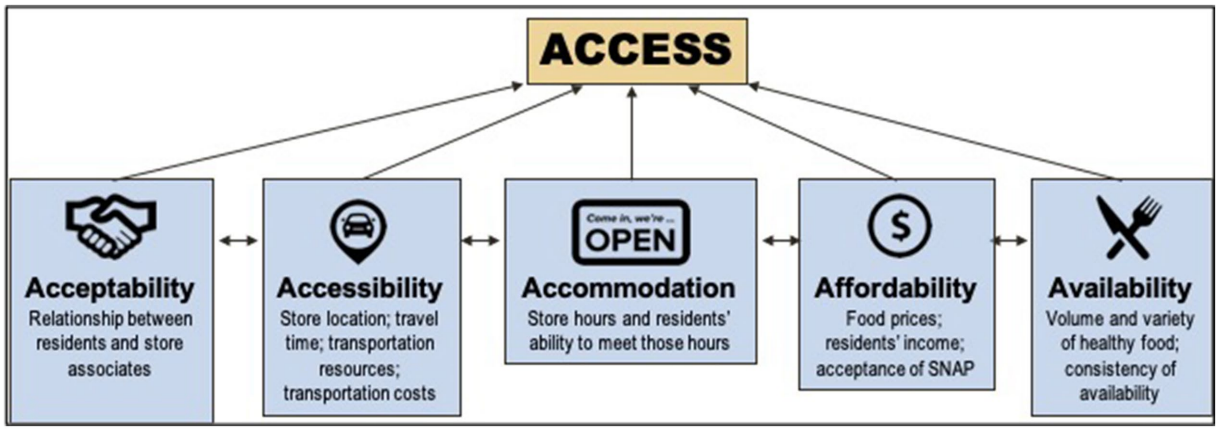

FIGURE 1
Usher (2015) five dimensions of food access.

initiatives associated with producing, processing, distributing, and consuming food. Systems Thinking can be instrumental in this regard, as this discipline and related literature provide a range of traditions, concepts, approaches, methods, and tools that have been central to the paradigm shift away from linear and reductionist thinking, and toward addressing complex issues and supporting systemic changes (Gates et al., 2021).

1.2 Objective

We broadly define food access as a phenomenon that is interpreted and uniquely experienced by the actor given their circumstances and positionality in the globalized food system at any given point in time. While objective attributes, such as food location, cost and availability are necessary to our understanding of the phenomenon, alone, they are insufficient to completely characterize access. The goal of this research is to operationalize the dimensions of food access models in the contexts of their interactions and the societal components of perception and objectivity (Anandhi et al., 2018; Gragg et al., 2018; Usher, 2015). The novelty of the work is its applicability across spatial and temporal scales. We argue that dimensions of access are critical to the analysis and decision making of sustainable food security for vulnerable populations in urbanizing food systems.

2 Methods

2.1 The methodology used in this study is described in the following steps

Step 1: We did an in-depth analysis of food access conceptual models and Usher (2015) Five Dimensions of Food Access and classified the dimension interactions into three levels using two societal components (perception and objectivity).

Step 2: We used the spiderweb diagrams, the interactions between the five dimensions (acceptability, accessibility, accommodation, affordability, availability) and the two societal components of objectivity and perception to explain conditions under the three hypothetical scenarios namely: no interaction, one-way interaction, multiple way interaction.

Step 3: We used the DPSIR framework diagrams, the levels of interactions between the five dimensions and objectivity and perception to explain the three hypothetical scenarios. We use the Driving Forces Pressure State Impacts Response (DPSIR) framework to develop causal chain diagrams for selected case studies (Kristensen, 2004; Patrício et al., 2016; Rodriguez, 2016). The DPSIR, a causal framework for describing the interactions between society and the environment, is utilized to analyze the cause-effect relations between the dimensions of food access utilizing the DPSIR components: drivers, pressures, state, impact and response model of intervention. Essentially, DPSIR converts the complexity of access across the urbanizing demographics and geographies into relatively simple, easily understood, cause and effect diagrams. These diagrams can be subsequently used to develop further analyses to better understand cause and effect in more detail. Accounting for the drivers and pressures that affect food access outcomes, our purpose is to advance a more holistic conceptualization of access to healthy food within urban (metropolitan) areas for utilization in the development of urban food policies and food access-related initiatives, with a particular focus on vulnerable populations.

Step 4: We used three case studies to develop/understand/plot the interactions between the five dimensions and objectivity and perception using spiderweb diagrams. The spider web diagram is utilized to demonstrate the degree of interactions among the five dimensions of food access with respect to the societal components of perception and objectivity. We make that argument by demonstrating the interactions utilizing the spider web diagram and the DISPR Framework—a well-established and utilized decision making tool (Patrício et al., 2016).

Step 5: We also used the three case studies to further elucidate and explain the interactions between the five dimensions and objectivity and perception using DPSIR framework diagrams.

Step 6: We developed an expanded conceptualization of access through the synthesis of the hypothetical cases and case studies. We then developed the descriptions of the five dimensions and objectivity and perception.

3 Results and discussion

3.1 Improved definitions and conceptual model (step 1)

3.1.1 Food access

The use of the word "access" (meaning a means of approaching or entering a place), which by its nature is an individualized notion, yet when used with "food" is often taken to imply a community (or even larger) scale. Past definitions and subsequent measures of food access have cited type and scale of purchasing location and distance to the purchasing locations as essential components of a definition, with most focusing on supermarkets and grocery stores as primary points of food access. But all food purchasing locations are part of the larger picture of food access, and spatial measurements are subject to their own local meanings based on the individual conditions within the community (Andress and Fitch, 2016; Penchansky and William Thomas, 1981; Usher, 2015).

Measures of objectivity are material facts in the food environment that can be quantified and measured directly. They are not influenced by personal feelings or opinions in considering and representing facts. Some examples are the number and type of food stores, location/distance, sidewalks, street lighting, cost of fruits and vegetables, income of customer (e.g., SNAP, EBT, farmers' market "bucks"), availability of fruits and vegetables speaks to volume and variety, transportation: mode, distance, time and costs (Andress and Fitch, 2016; Caspi et al., 2012; Dubowitz et al., 2015; Lytle and Sokol, 2017; Rahkovsky and Snyder, 2015; Sharkey et al., 2010).

Measures of perception are influenced by personal feelings, attitudes, or opinions in considering and representing facts. They can be quantified indirectly. Some examples include, personal feelings and attitudes toward existing objective, culturally relevant foods, ideas/feelings about a store, cleanliness, food quality, store workers. Perception incorporates the notion of *Accommodation: store hours, acceptance of EBT and SNAP, store credit*. This might be seen as Objective, but the customer's Perception of the store's measures of accommodation is what we are pointing toward. Lastly, one's perception of crime in an area impacts their food-buying decision (Andress and Fitch, 2016; Caspi et al., 2012; Cummins et al., 2014; Freedman and Bell, 2009; Hilbert et al., 2014; Motoyama and Usher, 2020; Penchansky and William Thomas, 1981).

Measures of interaction are characterized as None, One-way and Multi-way levels of interactions among the five dimensions of food access and the social components of objectivity and perception.

3.2 The interactivity framework

Existing models lack the interactivity among dimensions of access as well as the societal components: "Perception" and "Objectivity." In the adaptation (Figure 2), the gray triangle and the two circles are added to the original model to capture the view with respect to perception and objectivity.

To clearly describe/demonstrate the interaction, we are presenting it below with all the dimensions of access along with perception and objectivity. As a result of our analyses of the five dimensions of food access described by Usher (2015) and analysis of potential types of interactions described by Anandhi and Bentley (2018) and Bentley and Anandhi (2020) we derived the following interactions (Figure 3).

The interactivity framework which describes the interactions between the five dimensions of access in the contexts of objectivity and perception is illustrated (Figure 3). The first column in Figure 3, shows results from Usher (2015) where the five dimensions and objectivity and perception are seen as individual silos with no interactions among them. The second and third columns are this paper's reconceptualization of Usher (2015) and suggests one-way and multi-way interactions between the dimensions influenced by objectivity and perception.

This conceptualized framework is first visualized and described hypothetically using spiderweb diagrams (section 3.3) and the DPSIR frameworks (section 3.4). Next, to further explain the interactivity, they were applied to real-world problems using three case studies (sections 3.5) obtained from published literature using what we refer to as the "Interaction Analysis" (steps 1 - 3) process.

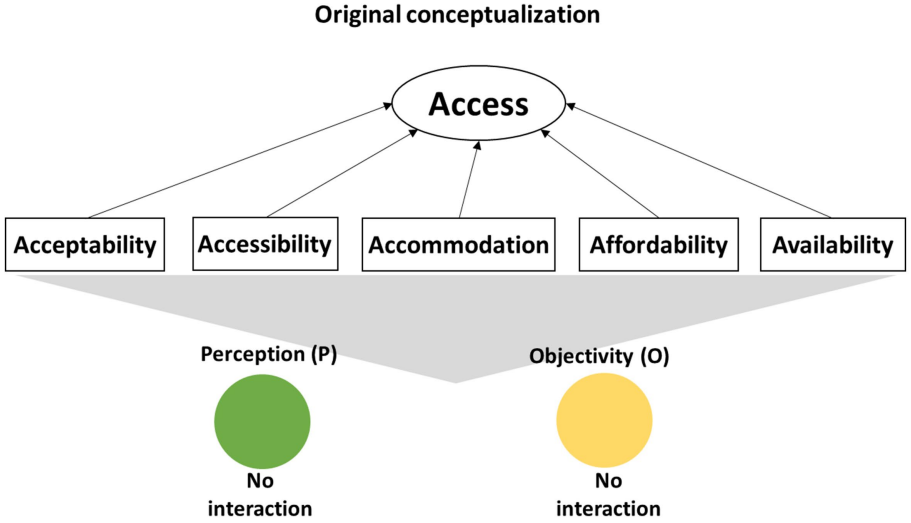

FIGURE 2
Starting model, adapted from Usher (2015) conceptual model.

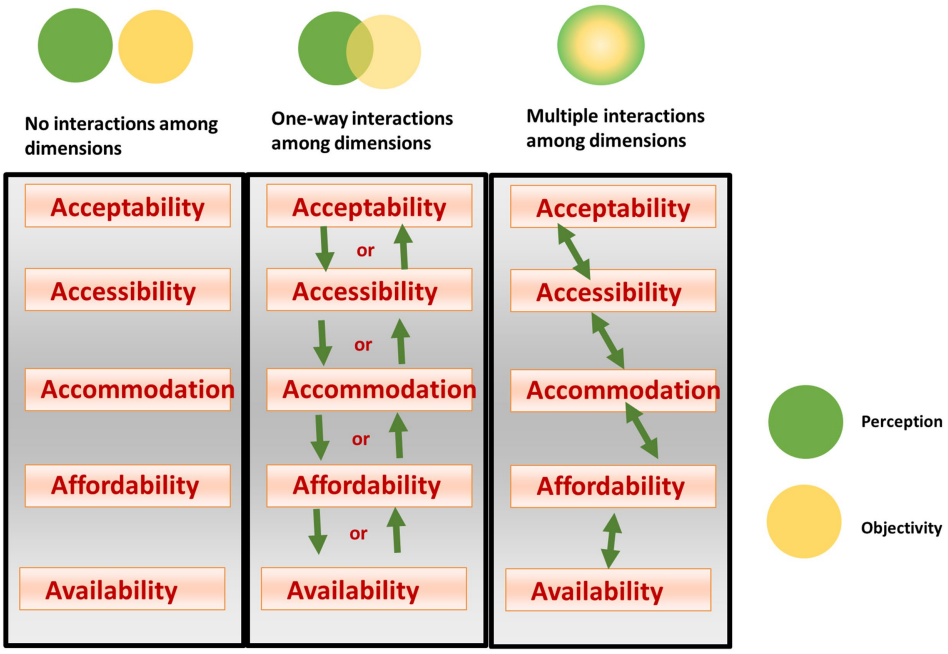

FIGURE 3
Interactivity framework conceptualized for food access.

3.3 Interactivity explained using spiderweb diagrams for hypothetical cases (step 2)

We developed the spider web diagrams (Figure 4) to conceptually represent the five dimensions and two measures individually for the three levels of interaction (Figure 2).

In this spider web diagram (Figure 4), we begin to model (or show) the hypothesized interactions and outcomes among objective and perceptive realities and the Five Dimensions of Access with three scenarios of increasing interactivity (rows). The corners of the spiderweb diagrams represent the indicator variables for each of the 5 dimensions. The length of the black line shows the trade-offs/differences among the least interactive (no interactions) to the most interactive (multi-way interactions), for the five dimensions and two silos.

The most complex Figure 4 scenario, as shown in row 3, depicts high, multi-way, and co-equal interactions among the five dimensions of food access and the social components of objectivity and perception. The least complex scenario, as shown in row 1, depicts no interactions and no influence among the dimensions and the social components. The intermediate complex scenario, as shown in row 2, depicts medium, one-way and variable interactions among the dimensions and social components. Here in general, the influence is intermediate between least and most complex scenario.

3.4 Interactivity explained using DPSIR framework for hypothetical cases (step 3)

From the corners of the spider web, the social components were viewed in the DPSIR framework (Figure 5). Causal chain and loop diagrams were developed.

Our model shows the interactions among the two (O, P) along with the exogenous drivers/variables, using the Driving Forces Pressure State Impacts Response (DPSIR) framework to develop the causal chain diagram (Figure 5). Essentially, the diagrams convert the complexity of access in urban food systems into relatively simple, easily understood cause and effect diagram for the three hypothesized interactions. They are used as an assessment of the linkages between problems and their underlying (root) causes. This can include intermediate causes, and the root causes that lead to the creation of the problem. The causal chain is an ordered sequence of events in which any one event in the chain causes the next. Causal loop is when an event in the chain causes an earlier event in the chain, then the loop developed is referred to as causal loop (Anandhi et al., 2018).

In the DPSIR framework, there is a chain of causal links (or components) starting with "driving forces" (e.g., population increase, temperature and precipitation change) through "pressures" (e.g., changes in freeze, rain, poverty) to "states" (five dimensions) and "impacts" on urban food systems, eventually leading to "responses" (prioritization, target setting). More examples of the DPSIR components are provided in the three case studies.

Describing the causal chain from driving forces to impacts and response is a complex task especially among the five dimensions of access. In the case of the least complex scenario (row 1; no interactions among dimensions) the cause and effect due to the dimensions is not clear and difficult to document. Therefor there is no visible causal loop. While the intermediate complex scenario (row 2; one-way interactions among dimensions) has an influence on DPSIR components only in a cyclic loop with not sub-loops. The most complex scenario (row 3; multiple interactions among dimensions) have all five dimensions influence component (Objective and Perceptive) is complete. This type of interaction can result in multiple causal loops.

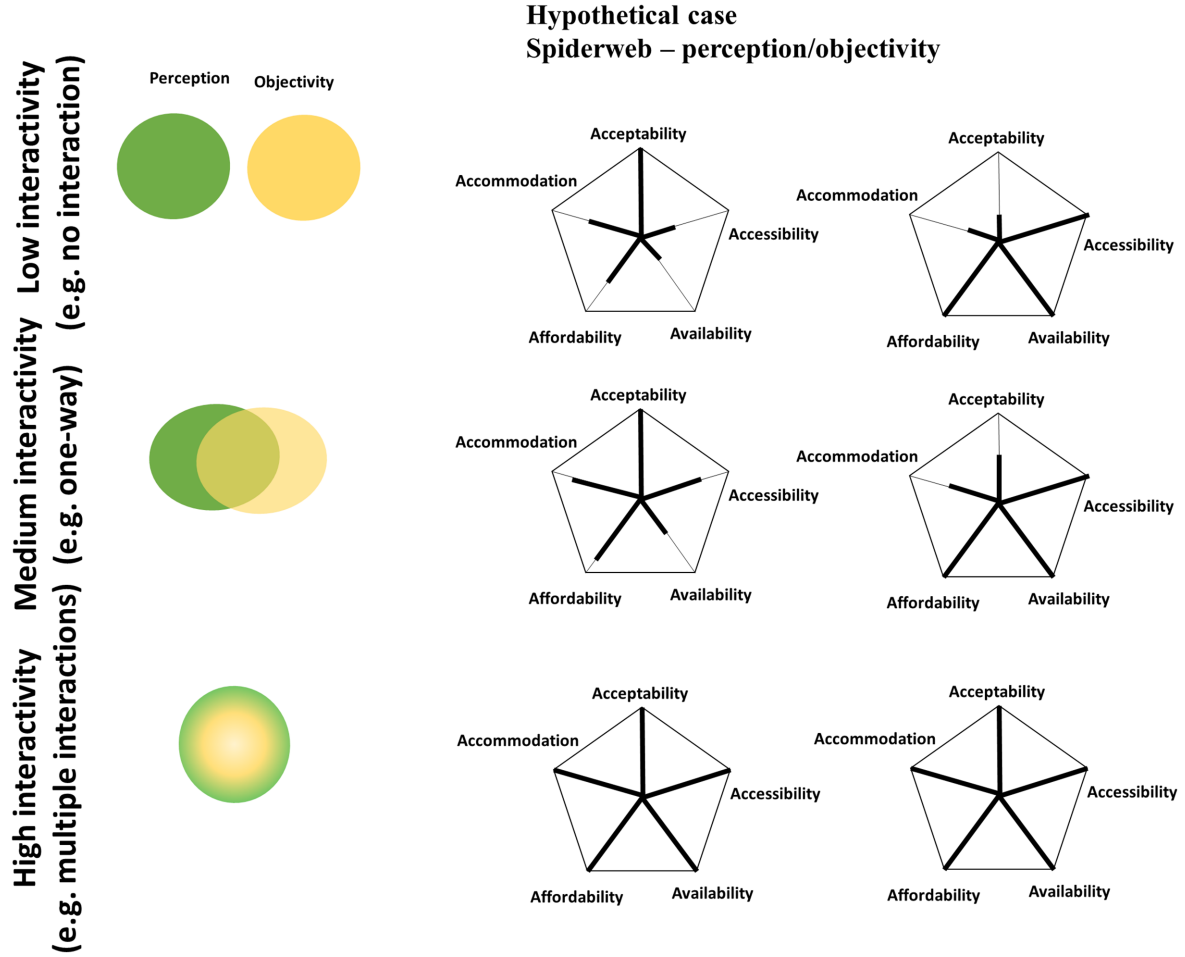

FIGURE 4
Hypothetical interactivity depicting interactions and outcomes (rows) between the two aspects of objectivity and perception (columns), and the five dimensions of access (spider diagrams).

3.5 Interactivity explained using spider web diagrams for three case studies (step 5)

In the following case studies, we apply our "Interaction Analysis" to demonstrate the interconnected relationships among the five dimensions of access in the context of perception and objectivity using spiderweb diagrams and the DPSIR framework.

3.5.1 Case study 1. Florida health: food access (regional scale)

This case[1] discusses four ways in which the State of Florida is working to increase access to healthy food to residents within the state. This is done by establishing and increasing the number of Farmers' markets in low-income, low-access areas, and concomitantly, increasing the number of *farmers' markets* that accept *SNAP* (Supplemental Nutrition Assistance Program), *WIC* (Women, Infants and Children) and *FAB* (Fresh Access Bucks).

When we applied the Five Dimensions of Access we found that:

- *Farmers' markets* align with *Accessibility* and *Availability*; however, *Acceptability*, Accommodation and Affordability and not directly addressed. Indeed, food at farmers' markets tend to cost more than at grocery stores. Also, farmers' markets tend to be seasonal and even during season they are not opened for an entire day. And although they provide fresh fruits and vegetables, these may not be culturally acceptable for peoples of all cultures particularly immigrants. The low interactions are applied to the DPSIR frameworks and are represented as dotted lines (Figure 6, row 1).
- *SNAP*, *WIC*, and *FAB* all address the dimension of *Affordability*. These in compliment to farmers' markets would improve access to healthy foods. However, they do not address the other dimensions.
- These interventions, while necessary, are not sufficient as they are focused on objective measures alone and do not consider subjective/perception nor temporal components.

1 https://www.floridahealth.gov/programs-and-services/community-health/food-access/index.html

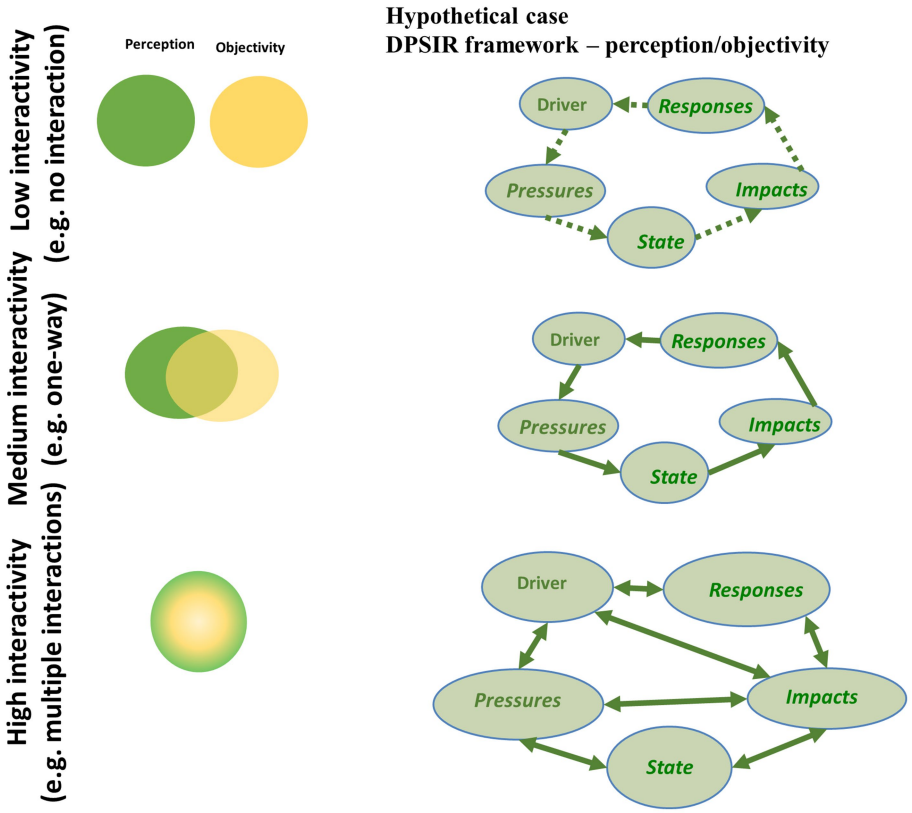

FIGURE 5
Depicts the hypothesized interactions and outcomes (rows) between the two social components, Objectivity and Perception, (columns) using DPSIR. The bold arrows in the DPSIR show the trade-off/differences between the least interconnected (no clear interactions) to most interconnected (two-way interaction) for the two. The dotted arrow represents the lack of clarity among the interactions.

3.5.2 Case study II. Food Security and Social Work at Virginia Commonwealth University

The Social Work program at Virginia Commonwealth University[2] specifically trains social workers to address food insecurity and food access. Social workers improve food access by providing residents with emotional support as well as knowledge and connecting them to services such as SNAP, WIC and the National Lunch Program. Here the perception is high.

In terms of public policy remedies, in February 2021, a bipartisan Bill[3] to increase access to healthy food in "food deserts" areas was introduced by Sen. Mark Warner of Virginia. The Bill sought to increase healthy food *Availability* by incentivizing grocery shops in low-access areas through subsidies for new store construction with 15% tax credit, retrofitting existing stores in the area, supporting new-build food banks with grants of 15% of construction costs and supporting "temporary access merchants" that have 501(c)(3) status such as mobile markets and farmers' markets grants for 10% of their annual operating costs. The medium interactions are applied to the DPSIR frameworks and are represented as solid lines with one-way arrows (Figure 6, row 2).

3.5.3 Case study III. Ecker & Breisinger Conceptual Framework (2012) (several scales form global/national scales to individual)

In this case,[4] This case study discusses the Ecker & Breisinger's conceptual framework presented in their IFPRI Discussion Paper 01166. They discuss three major shifts in how we conceptualize food and nutrition security: (a) From objective to subjective/perception indicators, (b) From global and national to household and individual, and (c) From food first to livelihood. They also offer Four Pillars of food security: Availability, Access, Utilization and Stability. The *availability* pillar relates to our conceptual model and the interaction between objectivity and perception is high across the scales. However, *Accessibility, Acceptability, Accommodation*, and *Affordability* are not directly addressed, and they are indirectly part of the other three pillars. For example, they are addressed indirectly at global/national scales while discussing the overall agricultural growth for lower food prices, agricultural exports/imports through trade and transport, health and education through high interventions (cost-effective,

2 https://onlinesocialwork.vcu.edu/blog/food-access/

3 https://www.warner.senate.gov/public/index.cfm/2021/2/warner-introduces-bipartisan-bill-to-increase-access-to-nutritious-foods-help-eliminate-food-deserts

4 https://ers.usda.gov/sites/default/files/_laserfiche/publications/45432/53943_err195.pdf?v=47702

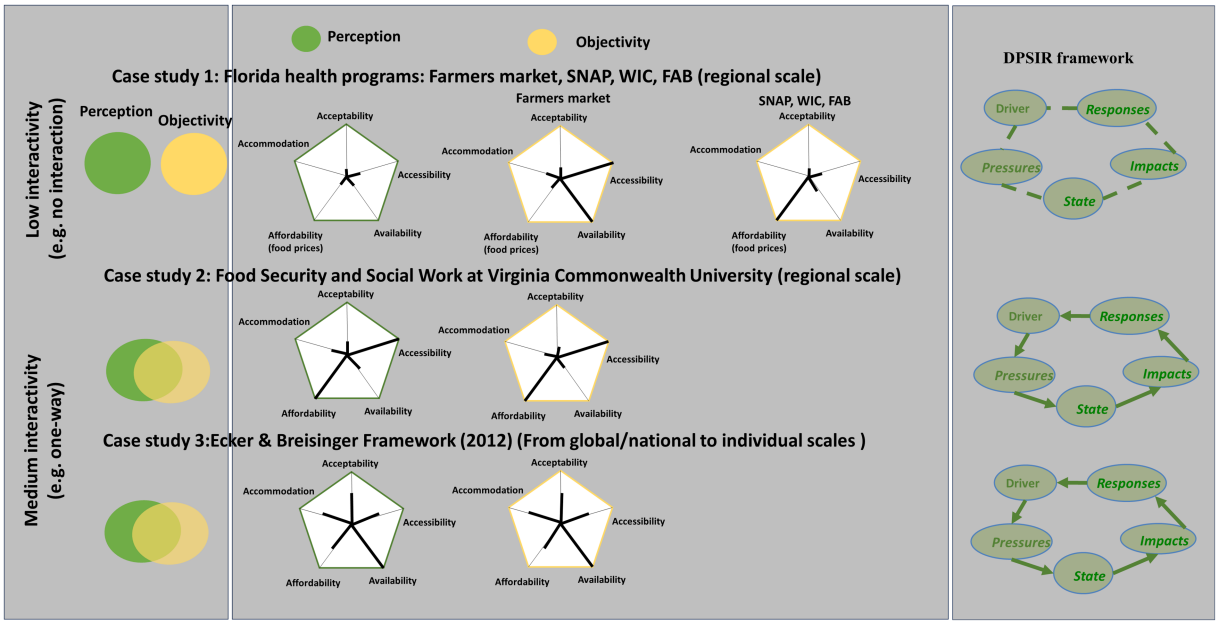

FIGURE 6
Interactions in case studies between the two aspects of objectivity and perception (rows), and the five dimensions of access (spider diagrams). The DPSIR framework (column) shows the cause-effect between the least interconnected (no clear interactions to medium interconnectedness one-way interaction) for case studies 2 and 3. The dotted arrow represents the lack of clarity among the dimensions interactions in case study 1.

increased awareness of nutritious food, etc.). At an individual scale they address volatility in nutrition supply, food shortages, intrahousehold allocation. Here we can observe medium interactivity among perception and objectivity.

The intersection of food systems and urban sustainability is a critical issue as cities confront growing populations and environmental challenges (Morain and Anandhi, 2022). The principles of sustainable cities rely on the integration of sustainability practices in urban and regional planning, building retrofits, green transportation, integrated waste management, environmental education, natural resource management, the food-water-energy nexus, and policymaking, among other factors (Elkamel et al., 2023; Bustamante et al., 2024). Systems thinking offers valuable insights on employing a comprehensive approach when enhancing food environments (Wopereis et al., 2024).

One key concern is ensuring equitable access to nutritious food, particularly in food deserts, where fresh produce is scarce. To address this Elkamel et al. (2023) an urban agriculture network linking different farmers' markets could be established. Residents without access to fresh produce could utilize green transportation (GT) options, such as electric vehicles (EVs), including autonomous electric vehicles (A-EVs), to improve mobility. This approach could help bridge the gap in food deserts, mitigating the impact of food insecurity while promoting more sustainable and accessible food systems.

Furthermore, the COVID-19 pandemic exposed vulnerabilities in urban food systems, underscoring the need for more localized, sustainable, and resilient initiatives such as rooftop gardens and community farms (Kaushik et al., 2023; Salisu et al., 2024; Simon, 2023). These solutions offer multiple sustainability benefits, including reduced food transportation emissions, improved local food security, and environmental advantages like mitigating urban heat islands, reducing cities' ecological footprint, recycling urban wastes, containing urban sprawl, protecting biodiversity, building resilience to climate change, stimulating regional economies, and reducing dependency on the global food market (Simon, 2023; Kaushik et al., 2023).

However, urban agriculture faces challenges such as limited space and regulatory barriers. Despite these obstacles, it remains a vital component of sustainable urban food systems, promoting local food production and reducing reliance on industrial agriculture (Salisu et al., 2024). Another pressing issue is food waste, with approximately one-third of food produced globally going to waste. Urban areas are increasingly exploring circular economy models, where food waste is repurposed into compost, animal feed, or bioenergy, helping reduce emissions and redistributing edible food to those in need (Oroski, 2025).

As cities continue to grow, adopting sustainable food practices, reducing waste, and promoting local food production will be crucial in making urban environments more resilient and equitable, contributing to long-term urban sustainability (Karn et al., 2023).

The role of food systems in urban sustainability becomes even more complex during and after disasters clay. Urban agriculture has demonstrated its potential to support recovery by establishing food supply bases within cities and surrounding areas, contributing to long-term food security and urban resilience (Dakubo, 2021). Additionally, the ability to produce disaster-preparedness food, with a short shelf life necessary to support disaster survivors from the time of the event until life returns to normal, highlights the growing importance of local food production and urban agriculture (Çakmakçı et al., 2023). Ecosystems health, a model consisting of an iterative cycles of participatory study design, knowledge generation, intervention, and systematization of knowledge plays a greater role (Charron, 2022). The benefits of this approach include innovations that improve health,

evidence-based policies that reduce health risks; empowerment of marginalized groups through knowledge gained, and more effective engagement of decision makers.

4 Expanded conceptualization of food access (step 6)

Starting with the original conceptualization (Usher, 2015), our goal is to arrive at a more holistic conceptualization of the phenomenon of "food access" that more closely illustrates reality. This expanded conceptualization is important if we are to develop effective and just policies to improve the health, safety and wellbeing of our entire community. We posit that there are three major areas: the five dimensions of access, the social components of perception and objectivity, and the interactions among both areas. The final image in the figure displays this evolution (Figure 7).

In the first image (Usher, 2015), we illustrate the 5 Dimensions that constitute access—Acceptability, Accessibility, Accommodation, Affordability and Availability. Just below are the two social components of Perception and Objectivity. We offer that these two lenses/components are necessary "bi-focal" through which access can be realized. Objectivity represents the collection of physical and quantifiable elements that make up the local food environment: stores, distances, fruits and vegetables, (time, hours of operation), food costs, transportation resources. Perception addresses both the notions, ideas, feelings and attitudes of the individual perceiver of the physical/objective components of access in the food environment and the intangible characteristics of the perceiver: culture, race, ethnicity, gender, age and others.

The Spiderweb diagrams (Step 1, 3) are graphical illustrations of hypothetical interactions (possibly also representing real and hypothetical food policy initiatives) among the 5 Dimensions. Access is said to be achieved when all five lines are fully extended. So, building on the first image, we took those 5 dimensions and show their relationship among themselves. Next, after acknowledging that the 5 dimensions are interrelated and interact with each other, we build on this idea by showing how they effect and are affected by elements in the system. These interactions are characterized with the use of the DPSIR framework (Step 2, 4).

Finally, in the last image (far right), we rebuild and improve our conceptualization of access. This image illustrates that the phenomenon of access is comprised of 5 dynamic Dimensions always interacting with each other and interpreted through the lenses of Objectivity (physical and tangible components of the local food system) and Perception (personal/private/resident-oriented) qualities (Step 5). Food access (true, complete, holistic) is achieved when the 5 dimensions are each fully realized, and objectivity and perception are aligned. The interaction identified between food access dimensions can inform policy, urban planning and community-based interventions to promote equitable access to healthy food (D'Hooghe et al., 2024).

5 Summary and conclusion

Access to adequate food is a core social determinant of health (Kent et al., 2020). During the COVID-19 pandemic, reduced access to food, price gouging of foods in response to increased demand impact the ability of rural residents to buy enough healthy food to meet their needs (Kent et al., 2020). A visitor in a city living in a hotel downtown (e.g., Raleigh, NC) may find it difficult to find grocery shops with healthy fresh fruits and vegetables for salads. Their options are often just restaurants or shops with processed foods. It is often difficult to find shops in google search engines when fresh fruits and vegetables because they can be part of a general store.

The objective of this study was to explore the interactions of the dimensions of food access with the view of making urban food systems more sustainable. Three levels of interactivity are hypothesized: no interaction, medium interaction, and high interaction. The interactions among the five dimensions and two social components are conceptualized using spider web diagrams. The DPSIR framework was used to explore the additional interactions of the two social components, resulting in an expanded conceptualization of food access with three levels of interactivity applied to three case studies to clearly show the interconnected relationships among the five dimensions of access in the context of perception and objectivity using spider web diagrams and the DPSIR framework. Moreover, this paper incorporated insights from Systems Thinking, which has been crucial in understanding the intricate, interconnected nature of

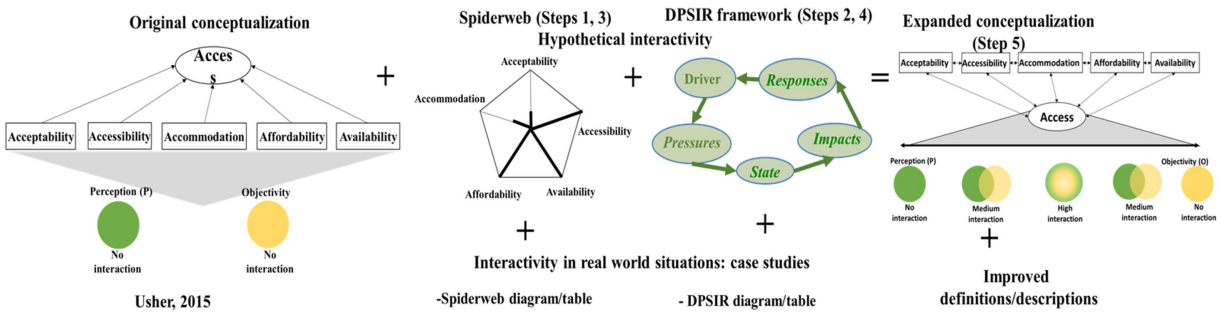

FIGURE 7
In depth analysis of edited Usher (2015) (Figure 1, above) + Spiderweb + DPSIR = revised Figure 1 by interactions (add 2-way arrows, in scale, and cross level (dimensions) interactions).

sustainable food systems. Systems Thinking allows for a comprehensive analysis of how various sub-systems within the food system interact and influence each other, offering a robust framework for tackling sustainability challenges. Ecosystem approaches to health, which emphasize holistic and systemic perspectives, are also considered. These approaches underscore the interdependencies between ecological and human health, advocating for integrated strategies that enhance both environmental and human well-being.

Future research will address the spatial and temporal aspects of the dimensions of food access, integrate these dimensions into the DPSIR framework, and adapt the conceptualization model for vulnerable populations.

Author contributions

AA: Conceptualization, Formal analysis, Methodology, Visualization, Writing – original draft, Writing – review & editing. KU: Conceptualization, Formal analysis, Methodology, Visualization, Writing – original draft, Writing – review & editing. RS: Conceptualization, Formal analysis, Methodology, Visualization, Writing – original draft, Writing – review & editing. MJ: Conceptualization, Formal analysis, Methodology, Visualization, Writing – original draft, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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References

Alam, M. F. B., Tushar, S. R., Ahmed, T., Karmaker, C. L., Bari, A. M., de Jesus Pacheco, D. A., et al. (2024). Analysis of the enablers to deal with the ripple effect in food grain supply chains under disruption: implications for food security and sustainability. *Int. J. Prod. Econ.* 270:109179. doi: 10.1016/j.ijpe.2024.109179

Anandhi, A., and Bentley, N. (2018). Predicted 21st century climate variability in southeastern US using downscaled CMIP5 and Meta-analysis. *Catena* 170, 409–420. doi: 10.1016/j.catena.2018.06.005

Anandhi, A., Sharma, A., and Sylvester, S. (2018). Can Meta-analysis be used as a decision-making tool for developing scenarios and causal chains in eco-hydrological systems? Case study in Florida. *Ecohydrology* 11:e1997. doi: 10.1002/eco.1997

Andress, L., and Fitch, C. (2016). Juggling the five dimensions of food access: perceptions of rural low income residents. *Appetite* 105, 151–155. doi: 10.1016/j.appet.2016.05.013

Bentley, C., and Anandhi, A. (2020). Representing driver-response complexity in ecosystems using an improved conceptual model. *Ecol. Model.* 437:109320. doi: 10.1016/j.ecolmodel.2020.109320

Borch, A., and Kjaernes, U. (2016). Food security and food insecurity in Europe: An analysis of the academic discourse (1975–2013). *Appetite*, 103, 137–147.

Burns, D. (2015). How change happens: the implications of complexity and systems thinking for action research. *The SAGE handbook of action research*, 434–445.

Bustamante, M., Vidueira, P., and Baker, L. (2024). Insights from systems thinking and complexity science to strengthen food systems frameworks. *Glob. Food Sec.* 42:100777. doi: 10.1016/j.gfs.2024.100777

Çakmakçı, R., Salık, M. A., and Çakmakçı, S. (2023). Assessment and principles of environmentally sustainable food and agriculture systems. *Agriculture* 13:1073. doi: 10.3390/agriculture13051073

Caspi, C. E., Ichiro Kawachi, S. V., Subramanian, G. A., and Sorensen, G. (2012). The relationship between diet and perceived and objective access to supermarkets among low-income housing residents. *Soc. Sci. Med.* 75, 1254–1262. doi: 10.1016/j.socscimed.2012.05.014

Charron, D. F. (2022). Ecosystem approaches to health for a global sustainability agenda. *EcoHealth* 9, 256–266. doi: 10.1007/s10393-012-0791-5

Clapp, J., Moseley, W. G., Burlingame, B., and Termine, P. (2022). Viewpoint: The case for a six-dimensional food security framework. *Food Policy*, 106, 102164. doi: 10.1016/j.foodpol.2021.102164

Cummins, S., Flint, E., and Matthews, S. A. (2014). New neighborhood grocery store increased awareness of food access but did not Alter dietary habits or obesity. *Health Aff.* 33, 283–291. doi: 10.1377/hlthaff.2013.0512

D'Hooghe, S., Inaç, Y., Vandevijvere, S., Deforche, B., De Ridder, K., Van Dyck, D., et al. (2024). Exploring the multiple dimensions of perceived food access in the local food environment. *Eur. J. Pub. Health* 34, 144–154. doi: 10.1093/eurpub/ckae144.1543

Dakubo, C. Y. (2021). Evolution towards an ecosystem approach to public health. in Ecosystems and Human Health: A Critical Approach to Ecohealth Research and Practice, New York, NY: Springer New York. 21–36.

Dubowitz, T., Zenk, S. N., Ghosh-Dastidar, B., Cohen, D. A., Beckman, R., Hunter, G., et al. (2015). Healthy food access for urban Food Desert residents: examination of the food environment, food purchasing practices, diet and BMI. *Public Health Nutr.* 18, 2220–2230. doi: 10.1017/S1368980014002742

Ecker, O, and Breisinger, C. (2012). *The food security system: A new conceptual framework*.

Elkamel, M., Valencia, A., Zhang, W., Zheng, Q. P., and Chang, N. B. (2023). Multi-agent modeling for linking a green transportation system with an urban agriculture network in a food-energy-water nexus. *Sustain. Cities Soc.* 89:104354. doi: 10.1016/j.scs.2022.104354

FAO (2006). Food security: FAO.

Freedman, D. A., and Bell, B. A. (2009). Access to healthful foods among an urban food insecure population: perceptions versus reality. *J. Urban Health* 86, 825–838. doi: 10.1007/s11524-009-9408-x

Gates, E., Walton, M., Vidueira, P., and McNall, M. (2021). Introducing systems- and complexity-informed evaluation. *N. Dir. Eval.* 2021, 13–25. doi: 10.1002/ev.20466

Gragg, R. S., Anandhi, A., Jiru, M., and Usher, K. (2018). A conceptualization of the urban food-energy-water Nexus sustainability paradigm: modeling from theory to practice. *Front. Environ. Sci.* 6:133. doi: 10.3389/fenvs.2018.00133

Gragg, R. S., Mitchell, M. M., Usher, K. M., Schensul, S., and Schensul, J. (2015). Collaboration of Community and University Scholars: Training in the Transformation of Research for Community Development. *Practicing Anthropology*, 37, 44–48. doi: 10.17730/0888-4552-37.4.44

Grimaccia, E., and Naccarato, A. (2022). Food insecurity in Europe: A gender perspective. *Social indicators research*, 161, 649–667.

Haji, M., and Himpel, F. (2024). Building resilience in food security: sustainable strategies post-COVID-19. *Sustain. For.* 16:995. doi: 10.3390/su16030995

Hasyimi, V., Putro, U. S., Novani, S., and Hendriadi, A. (2024). Critical systems thinking for managing complexity of food security. *Systems Research and Behavioral Science*, 1–22. doi: 10.1002/sres.3088

Hussain, M. A., Li, L., Kalu, A., Wu, X., and Naumovski, N. (2025). Sustainable Food Security and Nutritional Challenges. *Sustainability*, 17, 874. doi: 10.3390/su17030874u

Hilbert, N., Evans-Cowley, J., Reece, J., Rogers, C., and Ake, W. (2014). Mapping the cost of a balanced diet, as a function of travel time and food Price. *J. Agric. Food Syst. Commun. Dev.* 5, 105–127. doi: 10.5304/jafscd.2014.051.010

Lawlis, T., Islam, W., and Upton, P. (2018). Achieving the four dimensions of food security for resettled refugees in Australia: A systematic review. *Nutrition & Dietetics*, 75, 182–192.

Loopstra, R., Reeves, A., Taylor-Robinson, D., Barr, B., McKee, M., and Stuckler, D. (2015). Austerity, sanctions, and the rise of food banks in the UK. *Bmj*, 350.

Lowitt, K., Saint Ville, A., Keddy, C. S., Phillip, L. E., and Hickey, G. M. (2016). Challenges and opportunities for more integrated regional food security policy in the Caribbean Community. *Regional Studies, Regional Science*, 3, 368–378.

Lytle, L. A., and Sokol, R. L. (2017). Measures of the food environment: a systematic review of the field, 2007–2015. *Health Place* 44, 18–34. doi: 10.1016/j.healthplace.2016.12.007

Kent, S. A., Spires-Jones, T. L., and Durrant, C. S. (2020). The physiological roles of tau and Aβ: implications for Alzheimer's disease pathology and therapeutics. *Acta neuropathologica*, 140, 417–447.

Karn, A. L., Pandya, S., Mehbodniya, A., Arslan, F., Sharma, D. K., Phasinam, K., et al. (2023). An integrated approach for sustainable development of wastewater treatment and management system using IoT in smart cities. *Soft. Comput.*, 27:5159–5175. doi: 10.1007/s00500-021-06244-9

Kaushik, K., Praanjal, P., Kumar, M., Singh, S., Singh, A. K., Kumar, D., et al. (2023). Rooftop gardening: a modern approach of production in urban areas. *Pharma Innov. J.* 12, 4766–4770.

Kristensen, P. (2004). "The DPSIR framework." In A comprehensive/detailed assessment of the vulnerability of water resources to environmental change in Africa using River Basin approach, 1–10. Available online at: http://enviro.lclark.edu:8002/rid=1145949501662_742777852_522/DPSIROverview.pdf (Accessed on 08/10/2023).

Martinelli, A. W., Ingle, T., Newman, J., Nadeem, I., Jackson, K., Lane, N. D., et al. (2020). COVID-19 and pneumothorax: a multicentre retrospective case series. *European Respiratory Journal*, 56.

Moores, A., Charalampopoulos, D., Williams, A., and Rivera, X. (2025). Incorporating circularity, sustainability, and systems thinking into an assessment framework for transformative food system innovation. *Front. Sustain. Food Syst.* 8:1502468. doi: 10.3389/fsufs.2024.1502468

Morain, A., and Anandhi, A. (2022). Fresh water use in Florida: trends and drivers. *Water* 14:3726. doi: 10.3390/w14223726

Motoyama, Y., and Usher, K. (2020). Restaurant reviews and neighborhood effects. *Pap. Appl. Geogr.* 6, 386–401. doi: 10.1080/23754931.2020.1791942

Nekmahmud, M., Ramkissoon, H., and Fekete-Farkas, M. (2022). Green purchase and sustainable consumption: A comparative study between European and non-European tourists. *Tourism Management Perspectives*, 43, 100980.

Oroski, F de A. (2025) Understanding food surplus: Challenges and strategies for reducing food waste – A mini-review. *Waste Management & Research*. doi: 10.1177/0734242X251320878

Pérez-Escamilla, R (2024). Food and nutrition security definitions, constructs, frameworks, measurements, and applications: global lessons. *Front. Public Health.* 12:1340149. doi: 10.3389/fpubh.2024.1340149

Patrício, J., Elliott, M., Mazik, K., Papadopoulou, K. N., and Smith, C. J. (2016). DPSIR-two decades of trying to develop a unifying framework for marine environmental management? *Front. Mar. Sci.* 3, 1–14. doi: 10.3389/fmars.2016.00177

Penchansky, R., and William Thomas, J. (1981). The concept of access: definition and relationship to consumer satisfaction. *Med. Care* 19, 127–140. doi: 10.1097/00005650-198102000-00001

Rahkovsky, I., and Snyder, S. (2015). Food choices and store proximity. Economic Research Report No. ERR-195.

Rodriguez, K. (2016). Building urban resilience to climate change in Belize - a risk management approach. The Astrophysical Journal Letters, 832, L2.

Salisu, M. A., Ridzwan, C. R., Oyebamiji, Y. O., Usaizan, N., Abioye, A. E., Biola, I. F., et al. (2024). Disruption of the Covid-19 pandemic on the Agri-food sector: a systematic review of its implications in post-pandemic and future of food security. *AIMS Agric. Food* 9, 148–168. doi: 10.3934/agrfood.2024009

Sharkey, J. R., Johnson, C. M., and Dean, W. R. (2010). Food access and perceptions of the community and household food environment as correlates of fruit and vegetable intake among rural seniors. *BMC Geriatr.* 10:32. doi: 10.1186/1471-2318-10-32

Simon, S. (2023). The 'Covid-trigger': new light on urban agriculture and systemic approach to urbanism to co-create a sustainable Lisbon. *Syst. Pract. Action Res.* 36, 87–109. doi: 10.1007/s11213-022-09598-9

Usher, K. M. (2015). Valuing all Knowledges through an expanded definition of access. *J. Agri. Food Syst. Commun. Dev.* 5, 1–6. doi: 10.5304/jafscd.2015.054.018

Wopereis, T. M., Dijkstra, C., Wierda, J. J., Rongen, F. C., and Poelman, M. P. (2024). Systems thinking for local food environments: a participatory approach identifying leverage points and actions for healthy and sustainable transformations. *Health Policy Syst.* 22:101. doi: 10.1186/s12961-024-01199-3

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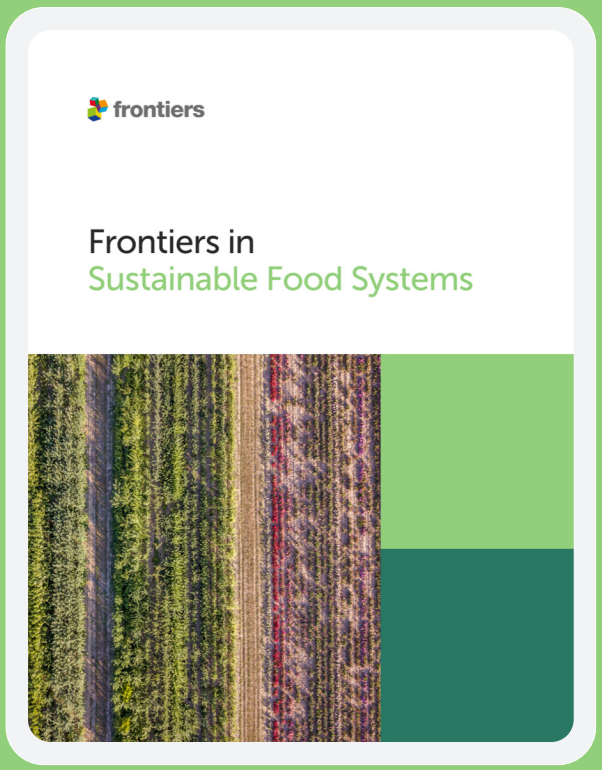

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