Social-Ecological Resilience of Local Food Supply Chains

Collaborative Governance and the Potential Role of Food Policy Councils

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Acknowledgements

Abstract

Global food systems face growing challenges from climate change, environmental degradation and socio-economic inequalities, raising interest in more sustainable, resilient alternatives. Local food supply chains (LFSCs), when managed collaboratively, offer promising pathways - but empirical insights, particularly regarding food policy councils (FPCs), remain limited. This thesis investigates how collaborative governance can support the social-ecological resilience (SER) of LFSCs, focusing on the potential role of FPCs. As part of the international Co-SFSC project, the study compares two municipalities - Södertälje (Sweden) and Karlsruhe (Germany). Guided by the Multi-Perspective Collaborative Governance Framework (MCGF), a qualitative, abductive research design is applied. Data were collected through seven semi-structured interviews (two in Sweden, five in Germany) with actors engaged in the local food systems. The analysis focuses on five dimensions: motivations, collaborative processes, institutional frameworks, outcomes, and adaptation. Findings indicate that engagement is driven by a holistic, value-based vision of sustainability, food justice and regional autonomy. Fragmented structures and limited coordination hinder cooperation, while institutional challenges include weak political support. While Södertälje has strategies and plans for food and sustainability, implementation and political anchoring remain limited. In contrast, Karlsruhe lacks clear long-term strategic direction in this area. Interviewees emphasised that cross-actor learning supports adaptive capacity, yet financial and logistical constraints persist. Inclusive, integrated strategies and regional networking show the potential for building SER. FPCs could play a valuable role by building on existing support in Södertälje and providing a neutral platform in Karlsruhe. Overall, collaborative governance structures have the potential to strengthen SER in LFSCs, but it requires sustained political commitment, inclusive coordination platforms, and long-term funding arrangements.

Key words: *sustainability, local food systems, governance, collaborative governance, food policy councils, social-ecological resilience*

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Abbreviations

EU – European Union
Co-SFSC - Co-Creation of Sustainable Food Supply Chains through Cooperative Business
Models and Governance
FPCs – Food Policy Councils
ICGF - Integrative Collaborative Governance Framework
LFSC – Local Food Supply Chain
MCGF – Multi-Perspective Collaborative Governance Framework
SER – Social-Ecological Resilience
SES – Social-Ecological System
SFSC – Short Food Supply Chain

1. Introduction

The current global food system faces critical challenges related to population growth, nutritional inequalities, environmental degradation, and unsustainable resource use (Bustamante et al., 2014; Kozar et al., 2023). Food systems refer to the complex networks of actors and activities involved in producing, processing, distributing, consuming, and disposing of food, ensuring it reaches consumers within broader social, economic, and environmental contexts (Food and Agriculture Organization of the United Nations, 2018; World Food Programme, n.d.). Globally, industrial agriculture characterised by monocultures, land-use change, and intensive chemical input use directly contributes to biodiversity loss by reducing habitat diversity and harming pollinators and soil organisms (IPES-Food, 2016). Food systems contribute to climate change because of high levels of greenhouse gas emissions, especially due to the sector's heavy reliance on fossil fuels for production, transportation, and processing. Emissions from synthetic fertiliser use, deforestation, and livestock production further intensify these impacts (Intergovernmental Panel on Climate Change [IPCC], 2019; Bustamante et al., 2014). Unsustainable agricultural practices, such as land conversion for large-scale agriculture, is a primary driver of deforestation and ecosystem degradation, entailing significant risks to long-term food security (Brassesco et al., 2022; Kumaraswamy, 2012). There is a need to address the destabilisation of ecosystems, the global food crisis, and the growing threat of severe consequences to the resilience of society and the environment (Holden et al., 2018). While the global domination of large agricultural industries has improved the productivity and food output, it has also increased inequality, marginalisation and vulnerability of smaller food producers (Berti & Mulligan, 2016). This has also caused depopulation and abandonment of land in rural areas, and highly unequal access to, and bargaining power in, the food market and food chains (Berti & Mulligan, 2016). Global supply chains include high vulnerability to shocks and low control of cross-border systems, difficulties in connecting products to their raw material source, and low consumer insight (Davis et al., 2020). Overall, the global food system is lacking the capacity to fulfil its purpose of providing adequate nutrition for everyone (Bustamante et al., 2014).

In response to these systemic pressures, there are growing efforts at both international and local levels to restructure food systems towards sustainability and resilience. At the EU level, the "Farm to Fork" strategy is one example that promotes fair, healthy, and environmentally beneficial food systems (European Commission, 2021). The strategy calls for food systems that have a neutral or positive environmental impact, support the mitigation of climate change, reverse biodiversity loss, and ensure food security, nutrition and public health (European Commission, n.d.). Although not legally binding, it may guide the development of binding EU regulations or directives requiring national implementation.

At the local level, municipalities play a key role in shaping sustainable food systems by facilitating spaces and capacities for diverse actors to collaborate and engage in food governance (Moragues-Faus & Morgan, 2015). Their responsibilities include areas such as public procurement, school meals, urban planning, and local public health, domains that directly influence the food environment. Despite their critical role, municipalities often lack

effective governance mechanisms to coordinate food policy across sectors. Common challenges include limited resources, insufficient political support, and fragmented efforts, collectively hindering the development of integrated food strategies (Dawkins et al., 2023). Essential tools used by i.a. municipalities are food strategies or action plans, which can vary in formality from informal guidelines to formal, legally binding policies (Wiek & Gascón, 2021). Urban food strategies have become increasingly popular worldwide, supported by initiatives such as the Milan Pact for Urban Food Policy (2015), which has been signed by over 250 cities (*Milan Urban Food Policy Pact*, 2015). It provides a common framing for initiatives, projects, and other institutions involved in the sustainable governance of food systems (Wiek & Gascón, 2021). Regional food strategies, often linking cities with rural surroundings, are action plans for the development of sustainable food systems through collective effort in a specific region (Smaal et al., 2021). Importantly, food strategies tend to be most effective when co-developed with committed food system stakeholders who are able to implement their measures (Halliday, 2015).

The municipalities of Södertälje and Karlsruhe represent two distinct examples of municipal food governance in Europe, the former with multi-level established food strategies and a record of sustainability innovation, and the latter without integrated food governance in policy but with substantial civil society engagement. A comparison can offer insight into how different institutional and policy contexts shape collaborative governance in food systems. While FPCs can be established by a range of actors, e.g. public institutions, private entities, or civil society organisations, the effectiveness often depends on the regulatory context and political support from the municipal or regional level. FPCs have emerged globally as promising tools for improving food system governance through inclusive, place-based collaboration. However, in the context of European municipalities, their role in strengthening the social-ecological resilience of local food systems remains unexplored.

Against this political background, Short Food Supply Chains (SFSC) have been presented as an alternative to unsustainable global food supply chains (Renkema & Hilletofth, 2022). Local food supply chains are less dependent on international corporations and global networks. If consciously structured and executed, local production and consumption can also be beneficial to environmental sustainability (Macdiarmid, 2014), increase biodiversity and local development, and reconnect people to the nature and origin of the food they consume (Thilmany et al., 2021). Additionally, local and regional food systems have the opportunity to improve connections and relations between stakeholders, such as consumers, producers, small businesses, government agencies, and civil society (Thilmany et al., 2021).

While local production and consumption can support sustainability, reduced transport distances alone is insufficient. Due to modern transportation technologies and the high environmental footprint of other life cycle stages, such as production and processing, the area of origin is not the determining factor for emissions or environmental harm (Coelho et al., 2018; Macdiarmid, 2014). While consciously structured local food systems can promote sustainability, biodiversity, and community resilience (Macdiarmid, 2014; Thilmany et al., 2021), food choices and production methods also significantly influence environmental and public health impacts (Bouvard et al., 2015; Bryant, 2022; Jones et al., 2013; Nelson et al.,

2016). To optimise local food supply chains, it is important to look beyond distances alone and consider other critical factors that affect long-term functionality. Adopting a global resilience perspective offers an important entry point for food system transformation (Brassesco et al., 2022).

Social-ecological resilience (SER) refers to the capacity of systems to adapt to and recover from disturbances while maintaining the core functions (Boyd et al., 2015; Folke, 2006; IPCC, 2012). It requires balancing short-term adaptive responses with long-term transformative capacities to address structural vulnerabilities (Rutting et al., 2022). As human-designed systems, food systems have social elements that often disproportionately influence ecological elements. Likewise, the degree of social resilience is likely to affect the resilience of local ecological systems (Hodbod & Eakin, 2015). The complexity of the challenges associated with sustainable food systems places increasing emphasis on governance, which emerges as a central approach and lever for analysing sustainability and its connection to systemic transformations (Janin et al., 2023). Governance structures influence the coordination, accountability and integration of different actors in the management of food systems. Governance refers to "all processes of governing, whether undertaken by a government, market or network, whether over a family, tribe, formal or informal organisation or territory and whether through laws, norms, power or language" (Bevir 2013). To address the complexity of social-ecological systems (SES), governance requires adaptive and inclusive strategies that account for both short- and long-term considerations (Rutting et al., 2022). In this context, governance of food systems can be understood as the "mode of interaction between the public sector, the private sector, civil society, and consumers to identify, implement, provide resources for, and monitor solutions to achieve healthy, sustainable, resilient, equitable, and inclusive food systems without leaving anyone behind" (Fanzo et al., 2021). Collaborative governance arrangements, such as Food Policy Councils (FPCs), aim to involve diverse stakeholders in addressing systemic food challenges (Koski et al., 2018). Despite the importance of both collaborative governance and SER in the food sector, interactions in practice as well as the relationship between collaborative governance mechanisms such as FPCs and SER remains largely unexplored.

The study is part of the international project called Co-SFSC (Co-Creation of Sustainable Food Supply Chains through Cooperative Business Models and Governance). The aim of Co-SFSC is to evaluate existing food supply systems, including their supporting ecosystems such as policies, funding, and education, and to create sustainable alternatives by fostering innovation and implementing cooperative business and governance models. Co-SFSC organises transdisciplinary research, including practical experiments, across five research "hubs" and six teams located in Turkey, Thailand, Taiwan, Sweden, Germany, and the U.S., fostering a Community of Practice for collaborative learning (*Co-SFSC - Homepage*, n.d.). This research concentrates on the food systems and collaborative governance forms in Germany and Sweden.

1.1 Aim and Research Questions

This research aims to explore how collaborative governance, specifically FPCs, can support the SER of LFSCs. By conducting a comparative case study of the municipalities of

Södertälje (Sweden) and Karlsruhe (Germany), the study examines local food and governance systems, and the potential role of FPCs in each location.

Despite the recognition of FPCs as mechanisms for inclusive and place-specific food governance, and the increasing urgency of sustainability and resilience in food systems, there is limited empirical evidence on how collaborative governance mechanisms, particularly FPCs, can effectively drive systemic transformations and promote SER within local food supply chains.

This master's thesis addresses the following research question:

1. How can collaborative governance support the social-ecological resilience of local food supply chains?

Given the complexity of this topic, the main question was further developed into the following sub-questions:
    1.1. How could food policy councils contribute to social-ecological resilience in local food supply chains?
    1.2. How do these contributions differ or align in the cases of Södertälje and Karlsruhe?

The research questions were examined qualitatively by an in-depth literature review and conducting interviews, enabling profound insight into the experiences and knowledge of stakeholders.

Key theories and concepts related to food governance and SER are outlined in the next chapter, followed by the chosen analytical framework and methods, and subsequently the results, discussion, and conclusion.

2. Theories and Concepts

2.1 Local Food Supply Chains

As an alternative to unsustainable global supply chains, short food supply chains (SFSC) embody the idea of direct relationships between producers and consumers, increasing value, knowledge, and meaning to the product and all steps in its life cycle (Renkema & Hilletofth, 2022). There is yet no universal definition of local food supply chains (LFSC), but it has been referred to as follows in EU regulation: "A supply chain involving a limited number of economic operators, committed to cooperation, local economic development, and close geographical and social relations between producers, processors and consumers." (European Parliament and Council, 2013). Geographical proximity can define LFSCs, and usually a 20–100 km radius is referred to (Enthoven & Van den Broeck, 2021). While geographic proximity remains relevant, the emphasis in this study lies on functional and relational aspects within and around the two municipalities. No strict spatial boundaries are applied, as that could be more limiting than informative when examining complex systems that lack exact boundaries. Instead, this study takes a contextual approach that focuses on the actors, institutional arrangements, and place-based dynamics shaping local food systems in and around the two municipalities. While local and regional food supply chains can contribute to sustainability and improve connections and relations between stakeholders in the food system (Thilmany et al., 2021), they do not automatically have a higher ability to withstand disruptions and adapt to crises. The concept of social-ecological resilience offers an approach to evaluate how these systems respond to change.

2.2 Socio-Ecological Resilience

The resilience perspective is an approach that is increasingly applied to comprehend the dynamics of social-ecological systems (SES), integrated systems where humans are part of nature and where ecological, economic, political, and cultural factors interplay (Berkes & Folke, 2000; Folke, 2006). In the context of LFSC, resilience is crucial due to uncertainties that need to be navigated, such as climate change, political shifts, and market fluctuations. SER describes the ability of systems to adapt to and recover from disturbances while sustaining their core functions (Boyd et al., 2015; IPCC, 2012).

The concept evolved in the 1960s in the field of ecology (Holling, 1973) with the realisation that the management of ecosystems should anticipate disturbance, variability and change rather than stability (Hodbod & Eakin, 2015). Today, resilience is generally defined as a concept with three core dimensions: First, the degree of disturbance that a system can absorb without changing its state. Secondly, its capacity for self-organisation. And finally, the ability of the system to develop, learn and adapt (Carpenter et al., 2001).

Food systems, as examples of SES, need to balance environmental (soil health, biodiversity) and social (fair wages, food access) factors. This requires flexibility, adaptability and the ability to absorb economic and environmental shocks while still maintaining a fully functional food supply chain (Folke, 2006). From this perspective, food systems are characterised differently from static, linear flow models, and variability, rather than stability, should be seen as the norm (Holling, 1973). One challenge of food systems is that although

they are SES, they are also human-designed systems. Thus, social elements disproportionately influence and control the ecological elements (Hodbod & Eakin, 2015). From a resilience perspective, inconsistencies in today's food system put the stability of our food supply at risk. While significant amounts of energy, resources, time and effort are devoted to maintaining the food system in its present state, these behaviours could bring us close to undesirable system changes in the long term. Furthermore, the system that is being sustained is not accomplishing its intended goal of food security but rather focusing on production for profit and capital enrichment (Hodbod & Eakin, 2015).

Furthermore, diversity is central to increasing the ability of a complex system to deal with disruption, as a larger set of options decreases the probability of losing certain components (Folke et al., 2004). A food system needs a diversity of functions: not only economic functions (maximising revenue) but also socio-cultural and biophysical functions, as well as functional redundancy to improve response diversity (Hodbod & Eakin, 2015). The first step for successfully achieving the needed transformation of the food system can be global resilience thinking (Brassesco et al., 2022). While the SER of food systems is shaped by societal and ecological factors, governance structures are an additional factor that determines the interaction of policies, institutions and resources.

2.3 Governance of Food Systems

Governance of food systems may be described as the "mode of interaction between the public sector, the private sector, civil society, and consumers to identify, implement, provide resources for, and monitor solutions to achieve healthy, sustainable, resilient, equitable, and inclusive food systems without leaving anyone behind" (Fanzo et al., 2021). Traditional top-down governance approaches are often insufficient for overcoming urgent challenges facing food systems, such as food supply security for a growing population, food quality preservation, local economic support, agricultural innovation, equitable access to healthy food, and climate change impacts (Campbell, 2004). Traditional, often centralised and hierarchical management models tend to rely heavily on monocultures and the use of chemicals that damage ecosystems and increase vulnerability to disturbance (Chaffin et al., 2014; Janin et al., 2023). Such approaches have led to fragmented policies that address food system elements such as production, consumption, distribution, processing and waste management separately, ignoring the interconnectedness and impacts across areas (Siddiki et al., 2015). Moreover, rural concerns and production matters are not necessarily linked to the dynamics of urban areas, despite the increasing concentration of consumers, industry, politics, wealth and finance in urban areas (Hodbod & Eakin, 2015). The multifunctionality of food systems, with economic, environmental, and social dimensions, is often inadequately addressed in current governance frameworks, resulting in persistent failures in achieving food security and sustainability (Hodbod & Eakin, 2015).

The complexity of sustainable food systems has shifted focus towards governance as a central driver for sustainability transitions (Janin et al., 2023). Governance involves collaboration between public, private and civil society actors to shape inclusive, resilient and sustainable food systems (Fanzo et al., 2021). This approach, known as sustainable food

governance or 'food democracy', promotes democratic principles, justice and solidarity between stakeholders. (Hammelman et al., 2020; Wiek & Gascón, 2021). It covers all areas of the food system, including food production, processing, storage, distribution, sales, recycling and consumption, as well as food-related policy decisions, financing, education, marketing and other support functions (Hospes & Brons, 2016).

Collaborative governance has become a popular alternative to traditional management models, bringing together stakeholders from the public, private, and nonprofit sectors for policy making, implementation, and coordination of public services (Emerson et al., 2012). It is especially suited for dealing with 'wicked problems', i.e. problems for which there are no easy solutions. Supporters of collaborative governance claim that the complexity and uncertainty that mark wicked problems are dealt with most effectively by involving those who are most interested and concerned by them, comprising those with relevant specialised knowledge (Emerson & Nabatchi, 2015). Collaboration between different stakeholders in organisational and policy contexts is additionally expected to help foster a shared understanding of the issues, increase the transparency of decision-making processes and provide contextually appropriate solutions (Ansell & Gash, 2008; Emerson et al., 2012). In terms of collaborative food system governance, participants who serve as a link to a broader range of stakeholders in the community should be involved in policy making (Siddiki et al., 2015). While traditional governance models have difficulty addressing the complexity of food systems, collaborative governance frameworks offer a more dynamic and comprehensive approach. These frameworks emphasise the interplay between different actors, institutional structures and governance mechanisms to promote resilience and sustainability. In the area of collaborative governance frameworks, a key model is Emerson and Nabatchi (2015) Integrative Collaborative Governance Framework (ICGF), which emphasises principled commitment, shared motivation and the capacity for joint action to promote coordinated efforts towards shared goals. Among the different forms of collaborative governance, FPCs are emerging as a governance mechanism able to address challenges in food systems through cross-sectoral collaboration.

2.4   Food Policy Councils

Food policy councils, also called food councils, food partnerships, food policy groups or similar (Johns Hopkins Center for a Livable Future, n.d.), exemplify collaborative governance in food systems (Siddiki et al., 2015). FPCs operate in various forms and with different tasks related to a local food system. While a universal model is lacking, these councils involve diverse stakeholders, such as government officials, business representatives, civil society, and citizens, who cooperatively engage in sustainable food system planning (Koski et al., 2018; Siddiki et al., 2015; Wiek & Gascón, 2021). FPCs were first established in North America in the 1980s and have since expanded to Europe, starting with Bristol in 2011 (Birnbaum & Lütke, 2023; Wiek & Gascón, 2021). As a decentralized form of governance, FPCs offer a way to address diverse challenges inclusively, enabling actors` participation beyond conventional policymakers (Siddiki et al., 2015).

Members engage in knowledge exchange, project development on food security and sustainability, and raising public awareness (Roberts, 2010). Membership is generally open, requiring only respect for democratic principles and food system interest (Wiek & Gascón, 2021). Participation varies, ranging from full-time occupations to limited voluntary contributions. Councils typically connect with other organizations and institutions through alliances and joint projects, allowing actors to engage in diverse roles in governance processes (Wiek & Gascón, 2021).

Many FPCs emerge from civil society and operate as registered associations, offering professionalization and legitimacy, enabling access to funding from city administrations, ministries, and foundations (Birnbaum & Lütke, 2023). To facilitate proposals and ideas that go beyond the council's internal processes, effective integration into the legislative process is often aimed at by involving representatives of ministries who inform, but do not necessarily directly represent, government interests (Adami & Reckinger, 2021).

Networking is central for FPCs, enhancing collaboration between urban policy-making, food system actors such as retailers and farmers, and alternative food initiatives (Birnbaum & Lütke, 2023). Civil society often fills gaps in governance when formal institutions fail, drawing on the specialised expertise and commitment of its members, emphasising the value of knowledge and individual responsibility and the capacity of individuals to be part of the change needed (Birnbaum & Lütke, 2023). A common mission for FPCs is to promote equitable policies that support public health and strengthen regional food systems, through network structures constructed to enable and support stakeholder influence (Koski et al., 2018). Objectives often align with broader sustainability frameworks, focusing on food accessibility, security, nutritional quality, and economic aspects (Birnbaum & Lütke, 2023; Wiek & Gascón, 2021). While activities of FPCs might differ a lot, common goals are presented in figure 1, which are shared to some degree in most councils.

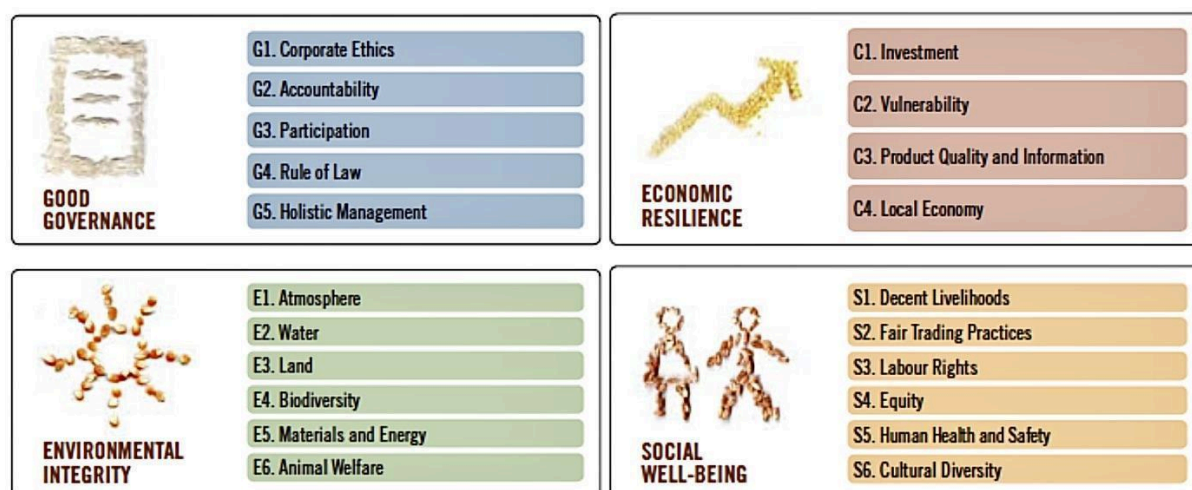*Figure 1 Common Goals of food policy councils (Wiek & Gascón, 2021)*

Through an inclusive, systems-based approach, the ambition of FPCs is to engage diverse actors to address critical concerns regarding both social and ecological aspects of food production, processing, and consumption, for instance regarding land use, food programs, and supply chains (Hamilton, 2002). The structures and funding of FPCs vary widely, ranging

from non-profit organisations to government-managed institutions, which are financed from various sources such as membership fees, grants, donations and state funds (Wiek & Gascón, 2021).

While FPCs can be key platforms for advancing food democracy, they face several challenges, including insufficient awareness and accessibility, resource constraints, complex government relationships (Adami & Reckinger, 2021; Koski et al., 2018; Wiek & Gascón, 2021). Although governments could be natural allies, historical ties to industrial agribusiness have contributed to an unsustainable and centralised food sector. Since FPCs aim to provide alternative pathways for food system transformation, tensions can arise in their interactions with government agencies (Wiek & Gascón, 2021). Additionally, many FPCs operate with limited formal authority and capacity to realise ideas, making their role one of advocating for marginalised perspectives in food policy discussions (Koski et al., 2018).

While challenges exist, the potential is manifold. Within the broader shift toward integrated policymaking, increasingly seen in fields with interconnected issues, FPCs have the potential to address issues and redefine policy to better address the complexity and interdependencies in the food system (Siddiki et al., 2015). FPCs can bring alternatives to the political arena, challenging the common industrialised and commodified food system (Birnbaum & Lütke, 2023).

2.5 Food Policy in Germany

Germany's 2024 national food strategy promotes plant-based nutrition, socially equitable access to healthy and sustainable nutrition and increased organic production (*Food strategy of the Federal Government*, 2025). In Germany, there is a growing awareness of the negative effects and social disparities resulting from the agricultural production, processing, consumption and disposal of food. This shapes a large number of discussions, policies and guidelines that require individual action (Federal Ministry of Food and Agriculture, 2020). Inspired by successful examples in the USA, German FPCs have been established in cities since 2016, primarily through civil society engagement (Network of Food Policy Councils, n.d.). There are now close to 30 active councils in Germany (Birnbaum & Lütke, 2023), and most are established through civil society engagement (Network of Food Policy Councils, n.d.). Although the term 'food council' refers to the German 'Ernährungsrat', the more common English term 'food policy council' is used in this study. There is an international network of food councils in which food councils and start-up initiatives from Germany, Austria, Italy, Switzerland, Luxembourg and the Netherlands have joined forces to reshape the food system (*Das Netzwerk*, n.d.). The FPCs in Baden-Württemberg have also begun to exchange experiences and insights and have advanced cooperative actions across different stakeholder groups (Wiek & Gascón, 2021).

Karlsruhe, located in the south-west region of Baden-Württemberg, aligns its goals with the food strategies at federal and state level. The Baden-Württemberg State Centre for Nutrition (Landeszentrum für Ernährung Baden-Württemberg, LErn BW) was founded in Schwäbisch Gmünd to implement the guiding principles of the state`s food strategy (*Ernährungsstrategie Baden-Württemberg*, n.d.). The centre serves as a central point of

contact for nutritional information, education and community catering (*Landeszentrum für Ernährung*, n.d.). The city administration of Karlsruhe has been a member of the Organic Cities Network since 2017. It is developing a municipal food strategy for the sustainable and regional development of the municipal food system. Although there is not yet an official municipal food strategy, the city integrates sustainability criteria into its procurement and planning, e.g. binding organic food in school and daycare catering, and the city is committed to increasing the proportion of organic farming to 30 to 40 % by 2030 (Green parliamentary group, Karlsruhe, n.d.).

2.6   Food Policy in Sweden

The municipality of Södertälje is part of the province of Södermanland in the east of Sweden slightly southwest of Stockholm and is administratively part of Stockholm County. It presents itself sustainability-oriented, aiming for a robust, climate-neutral, and circular society (Södertälje Municipality, n.d.).

The municipal food system is guided by the Swedish national food strategy 2.0 from 2025 which aims to enhance the competitiveness and sustainability of the national food supply chain. Its primary goals include increasing food production to meet domestic demand and boost exports, strengthening crisis preparedness, and promoting sustainable practices throughout the food system (Government Offices of Sweden, 2025). Relevant to the case of Södertälje are also two regional strategies. Stockholm County`s food strategy reflects the national strategy, but is adapted to regional conditions (County Administrative Board Stockholm, 2019). Södermanland County's strategy, developed with Region Sörmland and the Federation of Swedish Farmers Södermanland (Lantbrukarnas Riksförbund Södermanland), highlights knowledge and technology, rules and conditions, prerequisites for entrepreneurship, food identity of Södermanland, and increased sustainable production (County Administrative Board of Södermanland, n.d.).

The municipality of Södertälje has had its own municipal food strategy since 2022, with guidelines on how to realise the county's strategy locally (Södertälje Municipality, 2024). Population growth and climate change are identified as major challenges in the context of ensuring safe, healthy and sustainably produced food for current and future habitants. The strategy aims to guide community planning as well as facilitate cooperation and dialogue between private, public, and non-profit actors. Its 2030 vision includes diversity in food production and robust systems of processing, storage, and distribution to manage disturbances, reduction of negative environmental and climate impacts, and the increase of circular and organic principles and systems overall – a food system based on resilience (Södertälje Municipality, 2024).

Several initiatives address changing the food system in the municipality. Södertälje's meal concept Diet for a Green Planet, now with international spread, is also the basis for MatLust, a competence hub based in the Stockholm region engaged with transforming the food industry through several projects (Södertälje Municipality, 2023). Engagement with emergency preparedness is increasing in Södertälje, including food preparedness. This includes both the official responsibility of the municipality to maintain public meal

production in times of crisis, and projects like Local Food for Local Markets run by a variety of actors, including the municipality (Leader Sörmlandskusten, 2024). Additionally, Södertälje municipality was engaged in the foundation of Ekodistrikt Sörmland (English: Biodistrict Sörmland). The Biodistrict is a geographical area where diverse actors from 21 municipalities cooperate in managing local resources sustainably, following ecological, regenerative principles of production and consumption. With around 60 bio-districts in Europe, Ekodistrikt Sörmland is now being established as Sweden's first, located in the Sörmland region, which includes parts of both Stockholm and Södermanland counties (Ekodistrikt Sörmland, n.d.).

Unlike in Germany, FPCs are still rare in Sweden. Malmö's FPC, established in 2020 as the first in the Nordic region and currently the only one in Sweden, is membership-driven and aims to enhance sustainability through cross-sectoral collaboration. With a strong focus on equity and community, the council promotes a more inclusive and resilient food system (Malmö Food Council, 2024).

3. Analytical Framework

To explore how collaborative governance can support socio-ecological resilience (SER), an analytical framework was employed in this research. The Multi-perspective Collaborative Governance Framework (MCGF) developed by Kurtsal et al. (2020) (Fig. 2) provided a lens to analyse governance mechanisms, both within FPCs and in the broader societal context. The key components of the framework, motivations, collaborative processes, institutional framework, outcomes, and adaptation have been utilised to develop interview guides and to structure the analysis. Building on the ICGF mentioned before, the MCGF provides a broader lens for examining governance mechanisms in SFSCs (Kurtsal et al., 2020). The MCGF was developed in the broader context of SFSCs, but it's particularly relevant for this study as it focuses on crucial aspects in local food systems as well as FPCs, i.e. stakeholder collaboration, institutional support, and governance challenges. The five key components are suitable for structuring the analysis on how collaborative governance could support SER. The framework focuses on motivations and examines how stakeholders collaborate to organise short food supply chain initiatives.
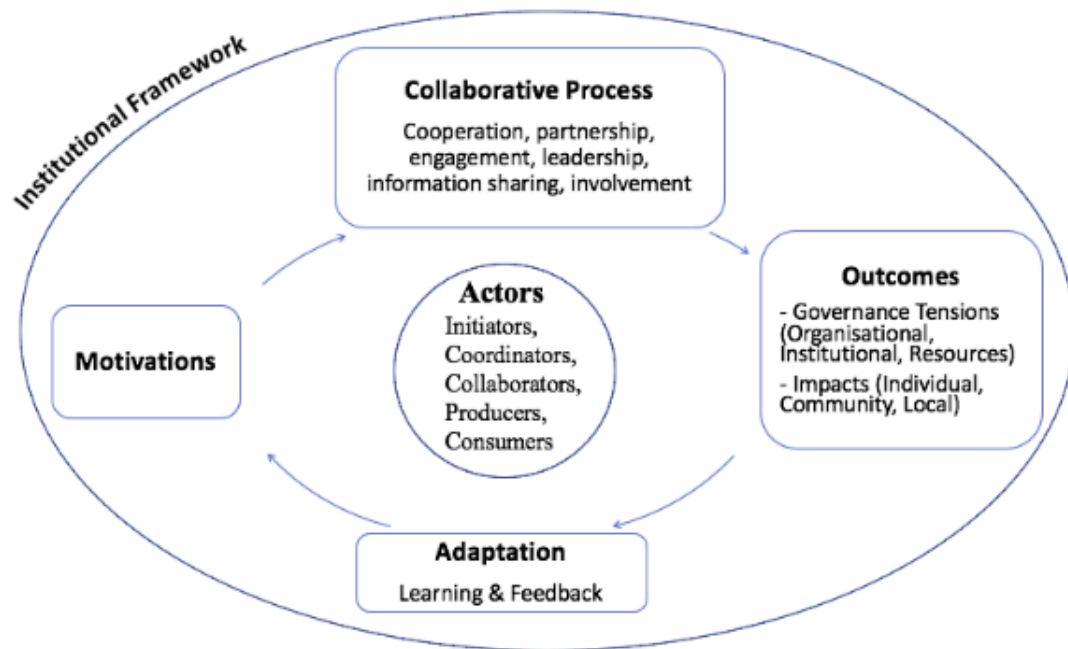
Figure 2 A Multi-Perspective Collaborative Governance Framework for short food supply chains. (Kurtsal et al., 2020).

The five components; motivations, collaborative Process, Outcomes, and Adaptation has been used for structuring the interview guide into five areas, which were then the basis for thematic analysis.

Collaborative actions are part of collaborative processes and include building partnerships, working together and sharing information and experiences. The level of collaborative action is affected by factors such as shared understanding, trust-building, face-to-face dialogue and commitment to the process, as well as the institutional frameworks that frame the engagement process, including rules, procedural agreements, norms, and inclusion criteria. The processes can result in governance tensions and individual, community and individual-level impacts within groups. The governance tensions emerge in the form of organisational, resource, and institutional tensions as initiatives evolve by growing, scaling up

and phasing out. The emergence of governance tensions and their contributions to the evolution of initiatives is an iterative cycle that is completed when the results lead to an adjustment process through feedback and learning. Impacts and adaptations occur as actors respond to challenges and refine governance mechanisms, including socio-economic and environmental impacts, and how initiatives adapt over time based on experience, feedback and changing conditions (Kurtsal et al., 2020).

4. Method

4.1 Research Design

This research is based on case studies and follows a qualitative, abductive research design to explore collaborative governance and SER in local food supply chains. Given the complex nature of collaborative governance and the limited empirical literature on the role of FPCs in ensuring resilient food systems, an abductive approach was followed. Instead of testing theory deductively or developing theory inductively, an abductive method allowed for an iterative process with dynamic interaction between existing theoretical understandings and new empirical insights (Thompson, 2022; Timmermans & Tavory, 2012). This involved moving between data collection and refinement, revisiting and adjusting interview guides in line with the aim, as well as reflecting on knowledge gaps, recurring topics, and desired participants not yet represented.

The process initially involved deductive elements, with the five key components from the framework providing the ground for developing five main questions in an interview guide, the code categorisation, and theme development. This was complemented by a more inductive approach that incorporated topics beyond the framework, such as insights on FPCs and SER (Timmermans & Tavory, 2012). The MCGF could assist in describing existing governance structures, but since no FPCs currently exist in Södertälje or Karlsruhe, theory alone could not fully capture their potential role. The framework therefore served as an analytical tool to guide the data collection, rather than a set explanatory model, an approach specifically relevant when there is a need for contextual adaptations to existing theoretical frameworks (Thompson, 2022). The abductive method allowed for a comparison between existing governance structures and stakeholder perspectives, as well as the identification of factors that could influence the potential role of FPCs in the two municipalities, grounded in both theoretical understandings and an openness to new insights on collaborative governance forms (Thompson, 2022). To ensure a rigorous and systematic analysis, Thompson's (2022) 8-step abductive thematic analysis was used as a guide. This process included the development of themes based on both a theoretical grounding and empirical flexibility, described in detail in section 4.3. on Data Analysis.

4.1.1 Case Selection and Scope

To address the research question – How can collaborative governance support the resilience of local food supply chains? – a comparative case study of the municipalities of Södertälje, Sweden, and Karlsruhe, Germany, was conducted. This approach suits complex topics such as collaborative governance in food systems, allowing cross-case comparisons of governance structures, stakeholder dynamics, and policy environments. Case studies are relevant when developing in-depth understanding of a phenomenon in specific settings is the aim (Dubois & Gadde, 2002). Due to the context dependency of both governance and resilience, an in-depth comparison can enable the identification of drivers and barriers to SER. Combining data from existing research on governance and resilience, and the researchers' own context-specific interview-based data collection enabled deeper insights into stakeholder views and governance processes.

Södertälje and Karlsruhe were selected due their contrasting governance approaches in food policy and a practical advantage - their involvement in the CO-SFSC project and the authors proximity to these locations provided access to key actors and intervention data. These two cases also captured the differences in public commitment to sustainability and the transformation of the food system. Södertälje has a well-established approach to integrating sustainability into the local administration, especially in the transformation of the food system, and while Karlsruhe has committed to environmental and climate-related goals, the institutionalization of food strategies and other governance mechanisms is still at a developmental stage. The initial aim was to limit the comparison strictly to the two municipalities. However, as the interview-based data collection progressed, the participants in Sweden provided information based on a geographical scope beyond the municipal borders, extending to the geographically and administratively larger area of Biodistrict Sörmland, which the municipality of Södertälje is part of.

4.2   Data Collection

After looking at scientific literature and policy documents as preparatory work, the following data collection included semi-structured interviews. This phase entailed interviews to explore the potential of FPCs as a governance mechanism supporting SER. Semi-structured interviews enabled a guided but flexible discussion, ensuring that key theoretical components were covered, without limiting the participants' opportunity to voice their experiences freely. Correspondence with potential participants was initiated via email. After confirmed interest and availability, the interviews were conducted either in person or online via the communication platform Zoom. An interview guide was used in every case, with carefully worded interview questions to minimise the risk of influencing the participants' responses. The average length of an interview was 60 minutes, and responses were recorded after additional verbal consent to ensure accuracy in transcription and analysis.

The interview guide was developed based on the key components in the MCGF (Kurtsal et al., 2020): Motivations, Collaborative processes, Institutional framework, Outcomes, and Adaptation (see Appendix A). In the *Motivations* section, questions were focused on motivations behind the stakeholder's engagement and primary goals, as well as related challenges in the local food system. In *Collaborative Processes,* the focus shifted to stakeholder engagement, organisational structures, and challenges and opportunities of cross-sector collaboration. Questions about the *Institutional Framework* addressed regulatory, normative, and policy influences, as well as the level of awareness and integration in local governance. For the *Outcomes* section, questions assessed the impact of local initiatives, particularly concerning SER. Finally, the *Adaptation* section included strategies for enhancing sustainability and resilience and lessons learned from existing practices. Structuring the data collection around these five components ensured core aspects of collaborative governance were addressed, while the open-ended format allowed for perspectives outside of the framework to emerge.

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4.2.1   *Purposive Sampling*

Based on a theoretical pre-understanding of the topic and interest in different categories of actors, a purposive sampling strategy was employed to explore relevant perspectives (Robinson, 2014). Unlike sampling methods aiming for generalizable representations of larger populations, purposive sampling allows for an in-depth understanding of the views and knowledge of individuals relevant to the research topic (Campbell et al., 2020). Building on analytical inference, theoretical sampling was selected as the type of purposive sampling method, where sampling is an ongoing process throughout the study. With the aim of balancing theoretical and empirical data, this approach supported the continuous refinement of the sample and allowed for flexibility in the selection (Dubois & Gadde, 2002). In total, seven interviews were conducted, two with Swedish stakeholders and five with German stakeholders. Interviewees included project partners from the Co-SFSC research hubs and actors engaged in the local food systems, through e.g. farming, food collaboration projects, or food networks. The common characteristics of the selected participants were a high level of engagement in the food system, directly or indirectly, in either country. Participants were selected based on their background, expertise, and active engagement, with a main criterion of higher level of involvement with food systems than the general public. While several of the participants are engaged in food initiatives and projects, their perspectives should not be assumed to be representative of other stakeholders or the broader population. Ethical considerations, including informed consent, anonymity of participants and safe handling of data, were carefully considered throughout the research process and are detailed in Appendix B.

4.3   Data Analysis

4.3.1   *Thematic Analysis*

Guided by Thompson's (2022) 8-step abductive thematic analysis, the first step of the data analysis entailed transcription and familiarisation of interview material, whereby recordings were transcribed, anonymized, and uploaded to the software ATLAS.ti (ATLAS.ti, 2025). The coding process was carried out in ATLAS.ti manually, one transcript at a time. Any statement regarded as relevant, either for being unique, recurring or of theoretical interest, were noted and assigned a descriptive term, a code. As the interview questions were based on the five key components of the MCGF described by Kurtsal et al. (2020), the coding process was also structured around these components. Codes were separated directly based on the five components, creating five different clusters of codes, each code entailing one or several statements. Subsequently, the codes were exported to Excel for overview and management, with five different sheets containing all codes. While initial coding and development of a codebook are separate in Thompson's (2022) original steps, the creation of a detailed codebook was replaced with a less extensive version with categorisation in Excel to increase time efficiency. Lastly, the theme development was conducted separately within each component. Similar codes were combined, and overarching themes were created and named based on their content. In the following table, the themes within each component are presented.

Table 1 Thematic Process.
The interviews entailed five parts divided by the five components in the Multi-Perspective Collaborative Governance
Framework. Themes were identified in the data within each part.

Component	Themes
Motivations	A holistic and value-based understanding of the food system
	Motivation to engage - responding to structural challenges
Collaborative process	Fragmented structures and lack of coordination
	Building trust and shared purpose
Institutional framework	Lack of policy and structural support
	Food preparedness
Outcomes	Strengthening adaptive capacity through multi-actor learning and collaboration
	Funding, support, and logistics as operational constraints
Adaptation	Building inclusive food systems
	Developing integrated strategies and structures
	Overcoming capacity issues and logistical barriers

5. Results

The results presented in this section are based entirely on the interview data. All statements reflect the perspectives and experiences of the participants. The themes were systematically developed through qualitative analysis and resulted directly from the interview material.

5.1 Motivations

5.1.1 *A holistic and value-based understanding of the food system*

An important motivating factor was a broader focus on the food system. This included a holistic pattern of motivation at an overarching level. Various dimensions of the 'broader focus' were mentioned in the interviews: Health of people and the ecosystem, biodiversity, social justice, food security, cultural significance of food, production and consumption. It was also crucial to "place much more emphasis on the limits of food production" (P02). Instead of individual goals, a comprehensive, systematic change was required. This included an overarching vision to change the food system as a whole, from production and consumption to ecological contexts. A key concern was how to promote sustainability on different levels in the time of climate change. "Creating systems that are resilient and adaptable for the challenge of climate change" (P01) was especially important. Sustainability in terms of different food values was named in several interviews and often serves as a motivating factor to engage in the local food system. In this context, regionality and seasonality were emphasized as key food values, as were high-quality, home-grown products. The ethical framework of a food initiative in Karlsruhe called Slow Food - 'Good, clean and fair' - served as a normative orientation for several stakeholders. Furthermore, food was seen as a fundamental right and should be affordable for all, "everyone should have the right to good food", as participant five put it. Such views are part of a value system that demonstrates a holistic understanding of nutrition that combines flavour, sustainability and social justice. Finally, participants pointed to the importance of independence and food sovereignty to build up regional resilience. There should be "more regional food supply" (P02) and more "support [for] regional value chains" (P01).

5.1.2 *Motivation to engage - responding to structural challenges*

Participants from both regions pointed to several structural challenges affecting the transformation of local food systems driven not just by natural conditions, but also by economic, political and social factors. These structural problems were the main motivation for their involvement in efforts to improve the local food system. On a global level, and regional in Sweden, specialization has resulted in a decline in diverse forms of cultivation, with small and medium-sized enterprises disappearing over the last 30-40 years. "we're seeing with specialisation. We're also seeing an increasing size of farms and a loss of smaller farms" (P02). The vertical integration of the food system in both Sweden and Germany, where large companies control decisions and market access, further worsens the situation. Governance structures that favour vertical, international supply chains lead to land use conflict, import dependency and regional infrastructure shortages (e.g., dairies, storage facilities). This development is intensified by a knowledge gap in society of both countries, including among

decision-makers. There was a knowledge gap around farmers' working conditions, food production and complex demands for the upscaling of sustainable systems: "Even among decision-makers […], there's a big knowledge gap around how long the road actually is to get there" (P04). These problems also affected the education system, where the shortage of skilled labour in food production and distribution is described as a growing concern.

Furthermore, controversies surrounding organic certification were mentioned. While it contributes to the expansion of organic farming, many participants saw it as too product-oriented, which pushes the original social and ecological ambitions of the movement into the background. Some described this as a 'red flag' (P02), indicating a loss of meaning for terms such as 'eco' and 'organic'. Lastly, there was a lack of incentives and lack of long-term financing in both regions and a lack of institutional support, especially in Karlsruhe, which led to limited engagement and shorter-term projects. As one interviewee stated, "economic incentives are much too weak to drive a transition toward a more sustainable and fair system today" (P04).

5.2 Collaborative Process

5.2.1 Fragmented Structures and Lack of Coordination

Fragmentation of structures and lack of coordination were seen as big barriers to successful collaboration. The Swedish participants pointed out that there is a lack of a platform to connect the different stakeholders across sectors, although providing this is one of the main objectives of the Biodistrict (P04). Without a clear level of coordination, collaboration becomes more difficult: "There's no place to make decisions" (P02). In Karlsruhe, the lack of systematic cooperation and regular, centrally organised meetings was seen as a hindrance to participation and engagement over time (P03; P05; P06). Attempts by a single initiative in Karlsruhe to establish coordination could easily lead to tensions if they were perceived as biased or self-serving, emphasising the need for a neutral coordinating actor that is widely accepted: "What's needed is a neutral actor or one that's accepted by everyone in that role – and that doesn't exist." (P06). Moreover, networking between different food initiatives in Karlsruhe was difficult, as shown by the missing cooperation between SlowFood and GloW (P03), the latter is a local initiative for global learning. Uncertain participation and personnel turnover made cooperation more difficult (P03; P05). This complicated building sustained partnerships and trust, and often disengagement: "And at some point, most participants thought it wasn't worthwhile anymore. We stopped doing it" (P05).

5.2.2 Building Trust and Shared Purpose

Building trust and shared purpose appeared to be essential but challenging for collaboration. One participant from Karlsruhe stated that they "didn't really find a shared activity to collaborate on" (P06). Clear, motivating goals seems to be essential for maintaining dynamics and cohesion in networks with multiple actors. Furthermore, "it was also not really clear what the benefits of these network meetings were, as there were not many synergies" (P06). The lack of perceived value seems to contribute to disengagement and low participation in joint activities.

The difficulty and complexity of finding "an agenda that works for everybody" (P01) increased with cross-boundary collaboration. Actors had to navigate institutional, sectoral and geographical boundaries. For many structures, such as bio-districts, administrative boundaries hindered cooperation: "you require collaboration across administrative boundaries, which is a challenge for the eco District […] they're more designed around like a geographically functional area" (P02).

A quadruple helix model, meaning the cooperation between public stakeholders, business, civil society, and science, was seen as crucial (P04), but platforms were needed to network all these sectors. A major challenge in this context was that understanding the requirements and constraints of other sectors was a prerequisite for successful cooperation. Misunderstandings between food producers and institutional buyers showed how sector-specific logics differ, which required efforts to build trust: "We've built trusting relationships... Otherwise, people would've just walked away" (P04).

Furthermore, participants named disconnection between producers and consumers. Apparently, there were barely any places where food production is visible or encounters with producers are possible: "There's no places where we see food being produced or we interact with it or we can meet" (P02). It was therefore rare to have opportunities for direct interaction, and for many people food remains abstract and separated from its origins: "Food doesn't go beyond the shelf in the store" (P04). This alienation makes it difficult to build trust on the one hand, and to develop a common understanding of needs and challenges along the value chain on the other.

Exchange spaces such as workshops and informal events helped to "get to know each other, sharing knowledge" (P03) and "to help the actors understand each other´s situations" (P04). Furthermore, trust between stakeholders was essential when it came to complex issues, so that risks could be taken and new approaches tried out: "So people dare to try new things and invest in them" (P04). The aim was to build lasting relations, not just occasional cooperation. Broad participation of a wide range of social groups was considered a crucial prerequisite for successful cooperation and governance in food policy. Participant one stated that it is important "to have a very diverse set of stakeholders - people that represent different interest groups in the food economy". However, it was also noted that attendance at meetings alone is not enough; deeper involvement is a necessity (P02). The quotes showed that successful work in sustainable food systems is not only based on functional structures, but is strongly supported by interpersonal relationships, trust and community building.

5.3 Institutional Framework

5.3.1 Lack of Policy and Structural Support

Participants across multiple interviews described structural and political factors that hindered effective food governance. These included challenges related to market concentration, policy, and funding. A recurring topic was policy, and the lack of it. Participants mentioned that Karlsruhe lacked implemented strategies for food governance, and that the topic of nutrition was treated as secondary to mobility or digitalisation, where

"… even the Greens [pro-environmental political party in Germany] in Karlsruhe don't have a strategy in their group. Nutrition is simply not on their agenda." (P03).

The lack of policy instruments targeting fairness was mentioned in the Swedish context, "… what policy instruments exist to bring about a more transparent and fair distribution system – where a larger share of the money goes to those producing the food? I don't see that we have equally clear instruments for that yet." (P04). The lack of incentive structures to make good healthy food more profitable than food that's typically not healthy, was also mentioned as a particularly difficult challenge. Despite the existence of food strategies at municipal, regional, and national levels, participants emphasised their vagueness, having strategies is better than not having them, but "…when you're trying to cover a lot of actors […] you want everyone to be able to engage with the document, it ends up very ambitious but very vague at the same time…" (P02). Related to this, a conflict between interests and priorities was highlighted in the context of dealing with local and regional challenges while also having broad EU-level laws aiming to ensure the open single market in the EU. These all fall under the umbrella of structural and political constraints in governance, showing absence or inconsistency in food strategies, a lack of or insufficient policy, and political mandates.

In Karlsruhe, participants emphasized a lack of political will and formal commitment to food policy and food security at the municipal level. While some individual efforts exist, they are not institutionally embedded, an issue summarized as, a "… lack of political will in the city to truly support something like this in an effective way." (P05), and by another as: "no one is interested at all" (P03). Participants also described an absence of designated political responsibility or overarching strategies in the city administration, as stated on the topic of food security: "I don't really see anyone officially responsible for it." (P06).

5.3.2 Food Preparedness

Another concern raised by participants was the lack of institutional preparedness for food system disruptions. While awareness of food resilience has grown in Sweden, often as a result of recent crises like the COVID-19 pandemic and ongoing conflicts, strategies to ensure access to food in times of emergency don't always exist. Södertälje stands out, at least on paper, where preparedness is prioritized. As one German participant noted, "They have to know what's stored and where it's stored in case of crisis… Here, nobody deals with that" (P03). This citation also showed that food preparedness is not yet a topic in German municipalities. However, even in Sweden, this level of readiness is not the norm, and "We need to have these [regional food networks] in case all of a sudden we can't get food from overseas or in the case that there is a broader crisis like we experienced with COVID" (P02).

5.4 Outcomes

5.4.1 Strengthening Adaptive Capacity through Multi-actor Learning and Collaboration

Cooperation and resource sharing were brought up several times and were the basis for this theme, such as sharing resources with other actors in both stable times and in times of crisis was mentioned by participants, for instance, the loss of crops due to weather events was compensated for by actors close by (P02). Networking events also allowed for the creation of

relationships and business agreements between neighbouring farmers (P03). Collaboration on different scales and with a diversity of actors was also highlighted, phrased as follows by one interviewee: "We also talk a lot about 'multi-scalarity' as a key component of resilience. Because it's easy to fall into a polarised debate – large-scale versus small-scale, local equals small, etc. But we try to avoid that dichotomy and instead talk about 'many scales' – and that within this diversity, there's robustness." (P04). Furthermore raising awareness and investing in food education was mentioned by several actors in both contexts. Public meals like school and daycare catering were raised as a topic of concern, "… this is also important because it's a pedagogical topic – nutrition as a topic for education." (P07). The role of raising awareness in influencing the public and decision-makers, showing how initiatives lead to greater sensitivity to sustainability issues, was also reflected. One participant stated that "that's incredibly important – both to spark awareness among those who haven't yet thought about these things, and to affirm those who are working on this every day." (P04). FPCs were mentioned in this context as having the function of raising awareness, among many others.

5.4.2 *Funding, Support, and Logistics as Operational Constraints*

Funding fragility and logistical barriers were two operational challenges highlighted in the data. Participants expressed concern about the unsustainable nature of project-based funding, with issues arising when the search for funding takes away time and resources from the actual work (P02; P01). Insufficient or unstable funding for initiatives, organisations, or projects was stated to be a challenge that undermines the effectiveness of any engagement to transform the food system. This issue was presented by one participant as: "They get funding and then that sort of end like halfway through the project, then your task is to find funding for the next year which is quite a large task that takes quite a lot of effort, to continue to do fundraising, that also pulls people away from the work in the projects as well as threatens the long-term viability of those projects." (P01). Insufficient and unstable funding was stated to limit what can realistically be achieved: "One obstacle is definitely financial" (P03). Personal constraints were also mentioned, especially in terms of time. Farmers, and particularly self-employed actors, found it difficult to participate in joint activities due to their workload (P03).

A prominent issue in Karlsruhe highlighted by the participants is the low support from the city, financially and strategy-wise. The city was stated to be in a position where money needs to be saved rather than spent, creating difficulties in obtaining funding for areas that are already overlooked (P07). Even with a responsible government branch, financial challenges could hinder any progress, as one interviewee stated: "The environmental department is formally responsible for this, but they're financially so tightly constrained that they can't develop such a nutrition strategy" (P07). This was not presented as a clear concern in the Swedish context; rather, the lack of knowledge and lack of investments into research, specifically funding for research on organic agriculture, was mentioned (P04). Within the topic of missing support, the stakeholder group of farmers were repeatedly mentioned as disproportionately disfavoured in the current system, in both cases. It was stated that "… farmers here basically never get proper support. They're all on their own" (P03) and "many farmers work extremely hard, for very little money, at a very high risk. And then we expect

them to solve a bunch of problems and still do even more or do it even better, without really getting anything in return" (P04).

Logistical challenges ranged from infrastructure gaps and outdated procurement practices. Participants emphasised the need for improved infrastructure and new innovations, such as subscription-based models, to create stability and support more resilient supply chains. Current logistics were also stated to be fragmented, with "… mostly direct procurements where each farmer might deliver themselves, and that results in many separate transports." (P04), a structure that is not only inefficient, but also environmentally damaging and economically unsustainable. Institutes buying from established wholesale suppliers where existing relationships exist was also expressed as limiting market access for smaller, local producers (P07).

Efforts are being made to close these gaps through shared infrastructure and new business models, building storage solutions that don't exist yet to enable local food actors to scale up, as well as new business models that ensure fairness. This theme captures how financial insecurity and infrastructural limitations act as interconnected barriers to the development and scaling of sustainable food systems.

5.5 Adaptation

5.5.1 Building Inclusive Food Systems

Developing resilient food systems depends on inclusive structures that promote accessibility, diversity, and reconnection to food production. Physical meeting places and regular contact were seen as crucial for cooperation: "We've gotten feedback that it's important to have these kinds of contact points." (P04), with the merging of different groups already seen as a valuable result (P04). Inclusive interactions need active participation in a variety of social settings - including educational institutions, community catering and food processing - and organised in a way that is geographically accessible to different groups (P02; P03). Diversity appeared to be a fundamental element of resilience. Diverse and redundant infrastructure - from cultivation to processing to consumption - was seen as a key requirement for a crisis-proof and robust food system: "diversity and redundancy in everything" (P01). Supporting culturally rooted food production and diverse agricultural practices is also important (P02). At the same time, as described above under structural resource constraints (6.2.3), interviewees pointed to an increasing alienation between people and the origin of their food, calling for practical, experience-oriented education to restore awareness of ecosystems (P02; P04). Participant two particularly emphasised the importance of respect: "I think it needs to have a higher level of respect from the cities" (P02). Finally, broader engagement - both from civil society and municipal actors - was seen as crucial, whether through public funding, supportive land leasing policies or a commitment to invest in sustainable food practices (P01; P03; P05).

5.5.2 Developing Integrated Strategies and Structures

Sustainable food systems require more than just local food supply; a mix of solutions is needed to create diverse, democratic and interconnected systems: "it definitely needs to be

more democratic, more diverse, more cross-scales" (P02). A comprehensive transformation requires a combination of consulting, research, funding, political support and grassroots initiatives: "importance of research and training and consulting and financing and policy makers that are also willing to support these food businesses" (P01).

In Karlsruhe, participants were aiming for an overarching strategy. There is no overall strategy linking individual initiatives such as FoodCircle and SlowFood: "there are individual institutions and various efforts, yes – but no coherent strategy that is coordinated with the city" (P07). The aim is a comprehensive municipal food strategy that brings together the existing initiatives and aligns them towards a common goal: "the city should develop this municipal nutrition strategy together with this network" (P07). The food strategy "has to be independent and broad-based" (P07). Participants also called for a visible coordination centre: "At least one person who collects data, can provide information about support programs, and can create networks." (P03). This coordination role must be well-resourced and independent: "A publicly owned, nonpartisan organisation, not run by a specific association." (P07).

FPCs were suggested as a solution, providing a collective, city-wide approach to food issues: "The idea is to work together toward a comprehensive solution for the city, with everyone involved" (P07). FPCs could have several functions, such as education, decision-making, logistical support and networking: "It could have a very important education function and depending on where you're located... it could have a lot of a very multifunctional existence." (P02). They support existing structures (P01), combine competences, and offer structural orientation to better network the existing initiatives in the region: "They bundle competencies and they try to create some kind of guiding force for the activities that are already happening in the region" (P01). A FPC's success can depend on a diverse membership: "The typical concept I know of is a 'tripartite' model: one third local politicians... one third from the local food economy... and one third from civil society" (P05). Finally, independent citizens must be involved to ensure broad participation: "Such food councils should include independent citizens... people who are active participants, even on the board." (P07).

5.5.3 Overcoming Capacity Issues and Logistical Barriers

Logistics seem to be a key, though underdeveloped, factor in sustainable local food systems. Improved logistics were seen as necessary for efficiency, as each producer currently handles logistics alone, leading to high costs and inefficiencies: "Each farmer is on their own when it comes to marketing their products and has to handle logistics themselves." (P03). Regional hubs, centralised warehouses and subscription systems were suggested to improve planning security: "Building storage and logistics solutions – hub solutions – because those don't really exist today when you want to scale up." (P04).

Many stakeholders were overloaded and lacked the capacity to engage in projects such as food policy councils: "They're usually maxed out already and don't have the energy, time, or capacity to get involved in something like this." (P05). The voluntary nature of much work in food policy councils could lead to burnout: "A lot of young women who are doing a lot of work that is partially not compensated." (P01). "One obstacle is definitely financial."

(P03). Therefore, diverse funding sources were needed for effective initiatives. In Karlsruhe, FPCs were recognized at the federal and state levels, but financial support was crucial: "both the federal and Baden-Württemberg state food strategies explicitly mention food councils and also say that food councils should be supported. But that support has to be financial." (P03). Some FPCs, for example, in Freiburg, receive financial support from both municipal funds. FPCs with their own funding have more employees and can organise their work much more effectively and professionally than entirely voluntary initiatives: "They do have quite a few employees and that really distinguishes them from other food policy councils." (P01). But unfortunately, "those positions are not nearly big enough to meet the demand of the work that they are tasked to do." (P01). Political and institutional support from the local authorities is crucial for success: "Having a strong degree of institutional support is [...] really important if you want impact" (P01). Finally, FPCs must maintain neutrality to ensure broad involvement: "food councils that are genuinely nonpartisan – not centred around a single association that controls everything" (P07).

6. Discussion

The following discussion summarises the findings from the interview data and supplements them with findings from previous studies, document analyses and information available on municipal websites. This integrative approach enables the interpretation of key themes and provides answers to the research questions.

6.1 How can Collaborative Governance Support SER of LFSC?

6.1.1 Motivations

Motivation to engage: responding to structural challenges

The interviews showed that the motivations for collaborative governance go further than pragmatic cooperation covered in the MCGF. In Södertälje, actors are driven towards increased food sovereignty, emphasising political autonomy and independence from dominant agri-food systems. The drive for food preparedness and regional self-sufficiency is directly supportive of resilience as it can increase autonomy and self-organisation, which is one of the three core dimensions of resilience (Carpenter et al., 2001). Before the Covid-19 crisis, preparedness was not central in the Swedish national food strategy. The pandemic exposed vulnerabilities in global and national food supply chains and led to a policy shift towards increased focus on local food security. This shows, as already described in theory, that disruptions can potentially create new opportunities for innovation and development (Folke, 2006). In Karlsruhe, on the other hand, there is a desire for greater support for regional value chains, but there is a lack of strategies and measures in general.

A Holistic and Value-Based Understanding of the Food system

The motivations of the committed stakeholders in Karlsruhe are rooted in a holistic food ethic that includes justice, biodiversity, seasonality and cultural significance. Those values can support functional diversity and adaptive capacity. The latter is again a core dimension of resilience (Carpenter et al., 2001). And diversity, as described in theory, is central to increasing the ability of a complex system to cope with disturbances, as a greater number of options reduces sensitivity to the loss of certain components (Folke et al., 2004).

While the overall goals of the food system are aligned with the values-based motivations of the framework, the structural barriers that undermine change are not included in the MCGF, as challenges are not addressed in the motivational component. The barriers represent vulnerabilities that weaken resilience, particularly by narrowing actor diversity and hindering long-term adaptive strategies. The loss of small businesses leads to less redundancy and diversity. Market concentration undermines self-organisation and adaptive governance, and weak incentives and short-term funding limit long-term planning and adaptability.

6.1.2 Collaborative Process

Fragmented Structures and Lack of Coordination

The MCGF focuses on collaborative action, including partnership building, collaboration, information and experience sharing (Kurtsal et al. 2020). Factors such as shared understanding, trust building, face-to-face dialogue and commitment are particularly relevant in the process. In the interviews, these factors were also categorised as important in

both cases, although significant coordination gaps were additionally highlighted, which is outside of the MCGF. The lack of neutral facilitators and the lack of platforms tend to hinder cooperation, especially in Karlsruhe. Lack of neutral coordinators means lower capacity for self-organisation, which is crucial for resilience. There are many committed people, projects and initiatives in Karlsruhe, but they are not networked, and there is no overarching coordination. Individual events organised by individual engaged people lead to exchange and cooperation, but there is no systematic change. The coordination problems highlight the importance of social networks and trust in building resilient food systems. In Sweden, a best practice example was reported of farms in the Biodistrict working together and supporting each other in the event of a crisis. The ability to deal with and adapt to coordination challenges reflects the adaptability of a system, a key attribute of resilience. This ability was seen as relatively high in the Biodistrict and in Södertälje. The Biodistrict can provide a neutral cooperation platform, and the municipality acts both as a member and mediator in different initiatives and projects targeting sustainability and SER in the food system. Unlike in Karlsruhe, where neutral coordination is lacking, there are several municipal actors working with coordination and food system Södertälje, which promotes flexibility in resolving conflicts. In the Biodistrict, there is a coordination structure that allows diverse actors to come together and facilitates cross-sectoral co-operation.

Building Trust and Shared Purpose

Trust and shared purpose are highly relevant for collaboration, as illustrated by the interview data. Shared goals between different stakeholders can promote adaptability, which is essential in the face of uncertainty and shocks. In Karlsruhe in particular, it has so far been difficult to synergise the various interests of local stakeholders, a difficulty that was highlighted in attempts of cross-boundary collaboration. Trust serves as an important enabling factor for collaboration, and can be strengthened through workshops and informal exchange spaces. This can in turn improve the cohesion of the network and the social capital that supports the systems robustness, increasing resilience by building the relational foundations for collective action and collaborative governance.

6.1.3 *Institutional framework*
Lack of policy and structural support

According to Kurtsal et al. (2020), the extent to which collaborative action takes place is influenced by the institutional setting, which includes rules, procedural agreements, norms, etc. The MCGF assumes a stable institutional framework. However, the interviews showed that the lack of institutional grounding, especially in Karlsruhe, limits the governance capacity. In Karlsruhe, food is often not prioritised politically, which limits the institutional space for embedding resilience concerns. The strong municipal commitment in Södertälje contrasts with the institutional gaps in Karlsruhe. With food strategies on several levels, different municipal employees to implement the guidelines, and its engagement in the Biodistrict and several food-related initiatives, Södertälje tries to transform the local food system. Reliable institutions provide the necessary support for resilience by enabling effective governance and policy implementation. By focusing on local sourcing and sustainable practices, Södertälje is strengthening the resilience of its food system and its readiness to

respond to potential disruptions. The Biodistrict Sörmland prioritises the development of SFSC to increase the resilience of the food system and reduce dependence on external supply chains. Although significant successes have been achieved, particularly in the involvement of the public sector, such as the integration of sustainable practices into public meals, and regional cooperation in the Biodistrict, many implementation challenges remain in terms of coordination, resources and infrastructure. It should be noted that vague or symbolic strategies without concrete implementation instruments can hinder policy coherence and reduce the ability to coordinate across sectors and scales. Local actors in the Biodistrict, as well as in Karlsruhe, are committed to addressing these challenges and trying to implement practices. However, in both cases, it was stated in the interviews that this is made extremely difficult by governance structures that favour vertical, international supply chains. The literature also states that the maintained system does not achieve the desired goal of food security but rather focuses on production for profit and capital accumulation (Hodbod & Eakin, 2015).

Food preparedness

These findings point to the need for a more integrated, coherent policy framework that explicitly supports the adaptivity of food systems - a prerequisite for building resilience. The ability of a food system to anticipate and prepare for disruptions is central to its robustness and adaptability. Several Karlsruhe participants noted that food security and resilience are not formalised responsibilities in local government - an indication of a governance gap that affects preparedness for shocks. The lack of formalised food preparedness strategies highlights a systemic vulnerability in Karlsruhe and reduces the capacity for long-term adaptation planning.

6.1.4   Outcomes

According to Kurtsal et al. (2020) collaborative processes can lead to tensions in governance and individual, community and localised impacts within groups. While the MCGF emphasises improved collaboration and system impact, the interview findings introduce another layer of vulnerability. Initiatives often achieve awareness-raising but not structural change, and the uncertainty of funding undermines long-term outcomes. Long-term funding is critical for sustainable outcomes in resilient food systems. In the MCGF, it can be found under resource tensions. Participants often described unstable project-based funding that disrupts continuity and undermines long-term planning - a key prerequisite for resilience. Limited financial and strategic support from local governments (especially in Karlsruhe) limits the capacity to sustain or scale up promising initiatives. This shows the importance of long-term capacity. According to Rutting et al. (2022), a balance between short-term adaptation measures and long-term transformation capacities is needed to address structural weaknesses.

Funding, support, and logistics as operational constraints

Resource tensions also include time and energy constraints from local stakeholders. Especially farmers and self-employed actors in the food sector find it difficult to participate in joint activities due to their workload. Often, work is voluntary and not compensated, and

burnout is common in the sector. The time constraints of the actors were also evident in the fact that it was very difficult to recruit certain actors for interviews, especially locally engaged actors and from FPCs. Another resource and organisational tension occurs around logistics. Logistical issues, including fragmented sourcing, insufficient infrastructure and a lack of coordinated delivery systems, limit the ability of local supply chains to become efficient, inclusive and environmentally sustainable. These constraints emphasise the fragility of existing initiatives. Without reliable support structures and logistics, the ability of local food systems to adapt or withstand shocks remains limited. Resilience requires not only local commitment, but also stable infrastructures, fair compensation models and institutional recognition of the role of all actors, especially the most vulnerable.

Strengthening adaptive capacity through multi-actor learning and collaboration
As mentioned above, there have been successes in awareness raising. Efforts to raise awareness and promote nutrition education (e.g. in schools, public canteens) contribute to cultural and cognitive resilience and help to embed sustainability values in society in the long term. The interviewees also emphasised the importance of collective motivation and social learning, which can support both adaptability and the potential for transformation in socio-ecological systems. The ability to learn from initiatives and innovate accordingly also contributes to resilience. This aligns with community-level change outcomes in the MCGF.

The participants described the sharing of resources and mutual support in times of crisis, demonstrating practical response diversity and flexibility, key indicators of resilience. The emphasis on multiscale and the avoidance of polarised dichotomies between local and global and small and large reflects a nuanced understanding of system-level diversity, which is crucial for dealing with uncertainty and building resilience.

These findings show how cooperation and awareness-raising can strengthen resilience by fostering social cohesion, enabling mutual support during disruptions, and promoting long-term changes in food-related norms and values. This underlines once again the importance of balance between short-term adaptation measures and long-term transformation capacities.

6.1.5   Adaptation
In resilience theory, adaptation itself is one of the three core dimensions (Carpenter et al., 2001).

Building inclusive food systems
The MCGF's feedback loop for adaptation is somewhat confirmed; the results emphasise that adaptive learning requires an institutional memory that is not present due to personal turnover and inconsistent funding. The MCGF describes an iterative process that is completed when the outcomes lead to an adaptation process, through feedback and learning. This is not yet fully the case in either Södertälje or Karlsruhe, even though efforts with adaptive measures are being made.

Participants emphasised accessibility, diversity and reconnection to food production - all crucial factors for building adaptive capacity. Physical meeting places and regular social contact were described as essential for collaboration and trust-building that support collective learning and action. The emphasis on diversity and redundancy across infrastructure, farming practices and cultural diets is in line with resilience theory, which values system flexibility and multiple pathways to fulfil important functions. Furthermore, reconnecting people to food through experiential education was identified as a requirement to address disconnection from food origin, thus increasing ecological awareness and long-term transformative capacity. The importance of broader engagement and institutional respect points to the need for multi-level and cross-sectoral engagement that further supports inclusive resilience building. This can support the creation of resilient food systems by promoting diversity, redundancy and community involvement. All of this helps systems cope with shocks and reorganise without losing their essential structures, thereby strengthening SER, their capacity to adapt to and recover from disturbances. (Boyd et al., 2015; IPCC, 2012).

Developing integrated strategies and structures

In Karlsruhe, the development of integrated structures and strategies is essential for resilience at the system level: the participants emphasised the need for coherent, cross-actor nutrition strategies and institutional structures that connect different initiatives and actors. The participants also addressed the need for non-partisan, inclusive and publicly anchored coordination that promotes legitimacy and broad participation, both important resilience characteristics. The calls for democratic and cross-scale integration reflect the resilience concept of multi-level governance, which improves the system's ability to respond to complexity and uncertainty. The desire for a coordination centre also reflects the recognition that resilience requires organisational capacity and an infrastructure for information sharing, especially when actors and initiatives are otherwise not networked. This emphasises the importance of structural integration and coordination as enablers of resilience. Without mechanisms to coordinate efforts, share resources and promote mutual learning, food systems remain fragmented and vulnerable to disruption.

Overcoming capacity issues and logistical barriers

The problems outlined above, such as fragmented logistics, lack of infrastructure and long-term funding, were clearly recognised in the interviews as necessary for resilient systems. While some promising solutions (e.g. subscription systems, logistics centres) were mentioned, their implementation remains inadequate. Actual implementation is hindered by resource gaps, capacity constraints and institutional neglect. If these problems are not addressed, adaptation efforts will remain vulnerable and limited in scope.

6.2   How could FPCs Contribute to Social-ecological Resilience in LFSC?

6.2.1   *Creating Platforms and Bridging Initiatives*

The commonly raised challenge of lacking a platform for collaboration could be directly addressed by a FPC. By providing a neutral coordination platform, a FPC could act as an intermediary across sectors, contributing to reduced fragmentation and improved cross-sectoral collaboration. FPCs and similar initiatives have successfully unified food

system stakeholders by providing a platform for collaboration all over the world, e.g. the Gent en Gard FPC (Belgium), the London Food Board (UK), Los Angeles FPC (USA), and the Antananarivo FPC (Madagascar) (One Planet network, 2021). Facilitating trust building and shared understanding could improve the adaptive capacity of the local food system by creating the social conditions necessary to respond, learn, and reorganise in the face of uncertainty.

FPCs also have the potential to bridge gaps between initiatives, linking isolated projects such as SlowFood or GLOW in Karlsruhe into multi-scalar networks, enhancing systemic coherence and robustness. In Södertälje, strong municipal leadership and cross-sector collaboration, such as the *Diet for a Green Planet* (Södertälje Municipality, 2023) mentioned before, have enabled effective connections between food-related projects, civil society, and public institutions. A FPC could build on this collaborative infrastructure, helping to sustain these efforts over time and scale them across municipal boundaries or into regional governance.

Importantly, in Europe, FPCs are increasingly embedded in broader transnational co-operation: There is an international network of FPCs in which food councils and start-up initiatives from Germany, Austria, Italy, Switzerland, Luxembourg and the Netherlands have joined forces to reshape the food system (The Network, n.d.). In Baden-Württemberg, FPCs have also started to share experiences and insights and to drive collaborative action between different stakeholders (Wiek & Gascón, 2021).

6.2.2 *Strengthening Institutional Framework*

FPCs could assist in translating broad, vague food-system strategies into actionable plans. Through the co-production of local policies grounded in local knowledge and stakeholder priorities, local goals can be transformed into concrete initiatives. In cases where there is a lack of policy or strategies, a FPC could instead advocate for their creation. While its efficiency depends on the FPCs' size, structure, and ability to influence, advocating for the institutionalisation of resilience goals in local food strategies and embedding SER in policy is another potential function. By acting as a mediator between local actors and regional/national levels, FPCs could also translate policy frameworks into local action where needed, and vice versa. The effectiveness of such mediation can however depend on the governance structure of the FPC itself, as nonprofit-led and government-embedded councils may differ in their institutional power, legitimacy, and access to decision-making arenas (Wiek & Gascón, 2021).

Other functions related to keeping food on the political agenda include advocating for mandates, budget allocations, and policy prioritisation, thus addressing the lack of political will noted in both cases. Where political will and support for creating sustainable and resilient food systems are lacking, FPCs can assist in mobilising civil society and creating bottom-up pressure to place food system challenges on the political agenda.

Another aspect of the results is the absence of coordinated logistics infrastructure and procurement mechanisms that limit market access for local producers and reinforce reliance

on dominant wholesale suppliers. This could be addressed following an example from Washington, DC's "Values-Based Food Sourcing" guide (DC Food Policy Council, 2022) in which public institutions can find guidance on how to adopt procurement policies that prioritise local, sustainable products. FPCs can target challenges related to public procurement and balancing local needs with EU legislation by mediating between levels of governance and navigating tensions between local priorities and broader regulations, improving cross-scale alignment. This would align with activities already occurring on an EU level, with the EU Food Policy Coalition advocating for clearer EU public procurement legislation to better support local food procurement and the systemic transition to sustainable food systems (Nikolova, 2024).

6.2.3 Addressing Resource Tensions

Structural resource constraints, such as lack of funding, personnel, and time, can limit resilience indirectly by reducing the capacity for long-term planning, innovation, or building redundancy. In this context, a FPC could channel resources more effectively by mapping existing funding opportunities, coordinating grant applications, or advocating for stable municipal support, enhancing long-term planning and reducing burnout from project-based cycles. By linking actors and strengthening the diversity of both stakeholders and infrastructure, a FPC could also enhance functional redundancy, increasing the ability to tackle disruptions. However, a large challenge that remains is that without dedicated funding or staff, FPCs rely on voluntary effort. And as revealed in the interviews, when participation is voluntary and unfunded, the number of people able to engage remains limited. Further, securing even part-time roles would require municipal or regional support, but if political leaders already lack the will to prioritise food system resilience, resources will probably be allocated elsewhere.

6.2.4 Knowledge Production

As highlighted by the results, there are knowledge gaps among citizens and decision-makers regarding the food system, and a risk of losing valuable expertise. Besides loss of knowledge, the current trend of fewer large actors instead of a diversity in size and scale also causes reduced crop- and product diversity, reducing the variability and diversity that can support resilience (Holling, 1973). This undermines resilience by reducing redundancy and the system's ability to absorb shocks, adapt, and recover (Darnhofer et al., 2016). FPCs could facilitate knowledge production and support capacity-building through workshops, peer learning, and outreach campaigns, to counter loss of knowledge and enhance adaptive learning and innovation. Examples of existing activities increasing capacity and knowledge include the Johnson County FPC (USA) utilizing a "Racial and Social Equity Tool" to increase intersectional understanding of racial and social equity in food systems (Johnson County Iowa, 2021) and the Bordeaux Métropole FPC (France) creating a shared, territory-wide food policy by uniting over 130 local actors through structured collaboration (Eurocities, 2024).

6.3   Differences and Alignments in the Cases of Södertälje and Karlsruhe

The previous discussion (6.1-6.2) has already highlighted several empirical differences and similarities between the Södertälje and Karlsruhe cases in terms of motivations, cooperation, institutional frameworks, outcomes, and adaptation strategies. This section now addresses the sub-question 'How do these contributions differ or align in the Södertälje and Karlsruhe cases?' by focusing more explicitly on the national and contextual frameworks that shape these differences, with particular attention to the role and potential of FPCs.

A key difference between the two contexts can be found in the institutional awareness and visibility of the FPCs. In Germany, FPCs are a widely recognised form of local food governance and exist in several municipalities near Karlsruhe, including Freiburg, Heidelberg and Stuttgart. These councils are increasingly recognised as legitimate governance bodies and in some cases receive direct funding from city or federal state governments. Because of this institutional grounding, it was both possible and relevant to conduct more interviews with stakeholders in the German context. Even though there is no FPC in Karlsruhe, the concept is well known, and the stakeholders interviewed have already had experience with FPCs. In contrast, in Sweden, the concept of FPCs is largely unfamiliar. Although the initial aim was to include stakeholders from Sweden's only known FPC, limited responses hindered this effort. As a result, the Swedish data relies more heavily on grey literature and local governance documentation than on interview material.

The difference in the awareness of FPC is closely linked to general institutional traditions and government culture. The Swedish government culture is characterised by a strong municipal autonomy, where local governments have the mandate to implement national policy in a way that is tailored to local needs. Food policy is often embedded in municipal strategies and aligned with national guidelines supported by national-level actors such as the Swedish Food Agency. This facilitates institutional continuity, reduces fragmentation and enables a more adaptable administration. In Södertälje, for example, the strategic integration of food system objectives is already well advanced. Although there is no formal FPC, such a council could nevertheless improve existing structures by promoting cooperation, extending initiatives beyond municipal boundaries and turning broad strategic goals into actionable local plans.

In Germany, on the other hand, the federal structure leads to a more fragmented landscape, where local food initiatives often emerge in a bottom-up manner, driven by civil society rather than institutional mandates. The federal government structure confers considerable powers on local authorities but offers only a limited coordination framework. In Karlsruhe, this leads to a multitude of project-based initiatives that are often short-term, underfunded and vulnerable to political and institutional change. This is where a FPC can serve as an important mediator, providing a neutral platform to connect actors across sectors, bridge fragmented projects and promote coherent municipal food strategies.

Crucially, FPCs could act as translators and mediators in both contexts - connecting local needs with regional and national frameworks, advocating for mandates and resources,

and mobilising civic engagement when political will is lacking. In Karlsruhe, this role is particularly important given the lack of a comprehensive local food strategy. A FPC could advocate for such a strategy, following the example of the Stuttgart FPC, which is currently working on a food strategy for the city. In Södertälje, a FPC could complement the existing institutional structures by reinforcing bottom-up voices and ensuring the long-term continuity of efforts.

These differences observed are not only institutional but also shaped by national strategic priorities and political cultures. In Sweden, food policy has recently become more orientated towards national resilience goals, particularly in the context of geopolitical uncertainty. The evolving strategy of 'total defence' integrates food security as part of national preparedness. This top-down framework provides a supportive policy environment for local actors, even in the absence of formalised local FPCs. In contrast, food preparedness remains marginal in German municipalities, even as new federal strategies emerge.

In summary, the contributions of Södertälje and Karlsruhe to SER are very similar in terms of bottom-up engagement and common goals. However, they differ significantly in terms of institutional support structures, the awareness of FPCs and the integration of food policy into municipal administration. Recognising these differences is crucial when considering the design and implementation of FPCs as a means for resilient food system transformation in different national contexts.

6.4   Limitations

A first limitation is the study's scope, with the focus on two specific municipalities and a narrow topic limiting the generalisability. While case studies can provide in-depth understanding of a subject and inform or inspire studies elsewhere, they often offer limited scope for scientific generalisations (Dubois & Gadde, 2002). Secondly, the sample selection was based on theoretical sampling, but interview participation depended on availability. A lack of responses from representatives of the Swedish FPC and from municipal actors in both Södertälje and Karlsruhe affected the data collection and thereby also the understanding of context-specific differences between the two cases. The imbalance in the number of interviews, two in Sweden and five in Germany, further affected the comparability of the interview data.

The interviews with Swedish actors included broader perspectives related to the Biodistrict rather than exclusively the municipality. While this provided a transboundary view of food governance and current strategies in Sweden, it complicated direct comparison with the German case. To address this imbalance, statements were compared with care across contexts and triangulated with supplementary grey literature to support interpretation and provide consistent background information on both municipalities.

Challenges in accessing some stakeholders, particularly those active in FPCs, limited the attainable depth of insight into current practices, possibly causing data gaps. Some voices, particularly those of less engaged or marginalised groups, may be under-represented. Views and perceptions presented by interviewees may not be shared by non-participants.

Additionally, despite systematic coding to minimise potential influences by researcher interpretations of the data, a certain degree of subjectivity in interpreting qualitative data remains inevitable and should be acknowledged as a limitation to reliability. Responses may also have been influenced by factors such as social desirability or strategic positioning. Finally, the translation of interview transcripts from Swedish and German may have affected nuance and interpretation, particularly if certain expressions or terminology lacked direct equivalents.

7. Conclusions

The role of collaborative governance in supporting the SER of local food systems has been explored in this study, with particular focus on FPCs as a governance mechanism. Findings from the municipalities of Södertälje and Karlsruhe demonstrate the complexity of local food governance and the need for inclusive, cross-sectoral coordination and adaptive, inclusive mechanisms. Collaborative governance offers a promising approach by fostering shared responsibility, integrating diverse perspectives, and building bridges across policy sectors and stakeholder groups. FPCs can enhance the resilience of food systems by integrating multiple stakeholders, as diversity improves system adaptability. By fostering trust and social networks, FPCs can strengthen social resilience, which in turn can enable adaptive, ecosystem-supportive responses to environmental challenges. FPCs can provide a platform for dialogue, cooperation, and collective learning, facilitating coordination, bridging sectors, and translating complex challenges into actionable local strategies. The capacity of FPCs to engage diverse actors makes them especially relevant in navigating the complexity of food systems and mediating trade-offs across environmental, social, and economic dimensions.

However, realising this potential depends on overcoming barriers such as short-term funding, political discontinuity, and trust-building among actors. Their effectiveness also depends on institutional embeddedness, resources, and legitimacy. FPCs connected to public administrations may benefit from stable funding and policy access but can face political constraints, whereas independent, civil society-led FPCs offer flexibility and continuity across political cycles but often lack funding and influence. A hybrid model combining institutional support with operational autonomy may balance these trade-offs.

The cases of Södertälje and Karlsruhe illustrate how context shapes FPC's potential impact. Södertälje's strong institutional support shows benefits of a governance framework where a FPC could play a supportive and demand-based role. In contrast, Karlsruhe's bottom-up initiatives underscore the role of civil society in driving food system transformation even when institutional support is limited, a context where a FPC may provide a neutral platform for e.g. initiating food policy development. These contrasts demonstrate that there is no one-size-fits-all model, rather governance must be adapted to local needs and capacities. Looking ahead, strengthening local food governance through knowledge sharing, education, and cross-sector collaboration will be vital to building resilient food systems capable of adapting to social and environmental change. Comparative research across diverse regions can help identify enabling conditions for collaborative governance. Future studies would also benefit from engaging more stakeholders, especially aiming for direct input from FPC actors, to deepen understanding of governance dynamics.

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Appendix A Interview Guide

Framework's components: Motivations, Collaborative Processes, Institutional Framework, Outcomes, and Adaptation

1. Motivations
What motivated you to engage with local food systems?

- Main objectives/goals of an FPC
- Challenges or vulnerabilities of the local food system (e.g., in times of crisis, environmental issues)

2. Collaborative Processes
How do different actors work together to improve the local food system?

- Engagement/collaboration of local food initiatives, stakeholders in Karlsruhe/Södertälje
- Possibilities vs. challenges fostering collaboration between different stakeholders
- Connection to other stakeholders in the region (e.g., farmers, businesses, policymakers)
- Key actors or organizations involved in shaping the local food system

3. Institutional Framework
What institutional structures shape the local food system?

- Laws, norms, rules, systems that shape the work
- Current state of the local food supply chain in the region
- Local policies or programs that support local food production, distribution, or access

4. Outcomes
What impact have you or your initiative had on the local food system?

- Contribution to the socio-ecological resilience of local food supply chains (Examples of initiatives or policies)
- Dealing with socio-ecological challenges like climate change, biodiversity loss, or food insecurity
- Challenges/tensions (organizational, resource and institutional tensions)

5. Adaptation
How can food systems evolve to be more sustainable and resilient?

- How can the city better support local food systems in the future?
- Most effective strategies in making the food system more sustainable and resilient
- Familiarity with the concept of food policy councils (if not - providing information)
- Lessons learned from the current food system's operations
- Who do you think should be included in a potential council (e.g., farmers, NGOs, policymakers)

Ending

Do you have any questions/was something unclear?
Is there anything you would like to add?

Appendix B Ethical Considerations

Given the direct engagement with participants through qualitative interviews, sensitivity to potential ethical issues was crucial. Leading questions were avoided and the interviews were carefully worded in order to prevent that questions reflected personal opinions (Creswell & Creswell, 2023). Before conducting interviews, an informed consent form was developed based on the EU GDPR. Since researchers have a responsibility to be transparent about potential benefits or losses that could impact the participants (Khan, 2014), the form entailed detailed information about the aim and purpose of the study, participatory rights, contact information for potential questions, and data management specifics. The form emphasised that participation was voluntary and anonymous, that all data would be treated as autonomous, and that participants could withdraw at any time without explanation (Khan, 2014).

Appendix C Response to Reviewers

Reviewers' Comments to the Authors

1. Aim, Abstract, and Research Gap

Reviewer: We think describing how the current global food system contributes to biodiversity loss, etc, and doesn't fulfill its purpose would be helpful. This could strengthen your argument for why the study is relevant. In the second paragraph, you mention food systems again. We think most people have a vague idea of what it is, but a definition would be helpful to understand the context within which the study was conducted.

Authors: Examples of how the food system contributes to the mentioned challenges are now included. We agree that a definition of food systems would be beneficial, it's also added in the introduction.

Reviewer: We wonder if the first three paragraphs of the aim can be a part of the introduction instead?

Authors: They are now moved to the introduction, and the aim aim paragraph only includes the aim and research questions.

2. Theories and Concepts

Reviewer: The difference between the spatial boundaries of LFSC and the contextual definition you are using is a bit unclear. Isn't it still based on geographic proximity? We feel that more details regarding the issues with today's food systems would be helpful to understand why they need to change. Is it just their global nature, or are there other factors?

Authors: This part has been clarified. While geographic proximity is relevant, a contextual approach is taken, focused on functional and relational dynamics rather than exact spatial boundaries. Explanations of the structural and environmental issues driving the need for change in global food systems are also added.

3. Methods

Reviewer: Why was the decision made to extend the area of Södertälje to Biodistrict Sörmland, and does this allow for accurate comparisons to be made when one area is a large geographical area and another is one municipality? - answered in limitations, maybe move the limitations section? Do you see any issues with having conducted an uneven number of interviews with German vs Swedish participants? (This you also answer in limitations, but you have to read until almost the end of the paper to get an answer, maybe move limitations to the end of the methods section.)

Authors: Limitations are kept where they are, at the end of the discussion since this placement was discussed with our supervisors. We were advised that the methods part should be fully descriptive and since limitations reflect the methods in an interpretative way they might fit better under discussion.

Reviewer: We think the methods section is well-written and informative. Why is the "Purposive sampling" in the data collection bold? Should this be a subheading?

Authors: This is changed into a subheading.

4. Results

Reviewer: SlowFood and GLOW- what are they? They maybe should be introduced briefly in the introduction or background if they are discussed in the results.

Authors: A short in-text description is now added, when they were first mentioned in the results

Reviewer: We think the result could maybe be organized somewhat differently to highlight the comparison between the Swedish and German systems. Now they're one after the other, or it's not always clear from which country the quote was from, or you mention Germany, then Sweden, then Germany again.

Authors: It is true that the results are not divided by the cases, we did not change that because we did a thematic analysis based on all the results and not divided per case at the beginning. We made it clear where a statement comes from when relevant and explained the specific case differences later in the discussion on sub-question two.

Reviewer: Quadruple helix model- this should maybe also be introduced since it's mentioned in the result.

Authors: The sentence where it is mentioned is now adjusted slightly, but it is a direct citation and it includes a description of what is meant by the term.

Reviewer: Who are the Greens in Karlsruhe? Political party?

Authors: We included a short in-text description now, when they were first mentioned in the results.

Reviewer: In what ways does Södertälje stand out in terms of food preparedness?

Authors: How it stands out in comparison to Karlsruhe, and Germany in general, is from our perspective clear, no further explanation has therefore been added.

Reviewer: Generally with the results, the interview results are very clear and well-discussed, but we feel that the result of the document analysis is lacking/not as clear.

Authors: We did not do a document analysis, so it is not part of the results. The section on data collection in the methods has been changed since that part caused misunderstandings. Great feedback, this part now only describes how we conducted interviews.