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Sustainable public food procurement: criteria and actors' roles and influence

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Food production and consumption significantly contribute to climate change. The public sector, which procures large quantities of food, has a crucial role in steering toward more sustainable food systems. More empirical studies involving practitioners are called for to understand the complexity of sustainable public food procurement. This study examines how actors interpret and implement sustainability in food procurement, as well as their influence on this process. A comprehensive analysis of multi-actor collaboration and stakeholder engagement involving interviews with key actors such as procurement officers, wholesalers, chefs, and food producers is presented. Findings highlight a consensus on the need for sustainability measures, such as purchasing local and organic products. The results showcase the potential transformation of power dynamics within the supply chain in response to modifications in procurement standards toward local produce and the overuse of product-specific criteria. However, assuming that local is invariably sustainable carries the risk of falling into the "local trap" when the consequence of procuring local varies and requires further investigation. The influence of system-level factors, including market dynamics and regulatory frameworks, plays a significant role in implementing sustainable procurement, as well as alignment and coordination in the supply chain.

KEYWORDS

policy, purchase, public catering, food systems, criteria, local, organic, supply chain

1 Introduction

Unsustainable food production and consumption significantly contribute to climate change, responsible for emitting approximately 20–30% of anthropogenic greenhouse gases (GHG) (Garnett et al., 2017). Achieving sustainability within planetary boundaries is challenging for food production (Rockström, 2010), and in 2018, the World Bank reported an average of 4.5 metric tons of CO_2 equivalent emissions *per capita*. Factors impacting food sustainability encompass the environment, economy, food supply, society, ethics, health, and nutrition, with priorities differing among cases and nations (Reisch et al., 2013; Garnett et al., 2017; Willett et al., 2019). One proposed solution for a sustainable food system is increasing organic food production and consumption, which is often assumed to be less polluting and more nutritious (e.g., von Oelreich and Milestad, 2017; Grivins et al., 2018). However, organic farming's lower productivity and greater land use (Meemken and Qaim, 2018) necessitate measures like reducing food waste or consuming less resource-intensive foods, such as animal

products (Muller et al., 2017). Promoting local food security and consumption is another strategy, which often focuses on minimizing food miles, packaging, and supply chain distances (Sellberg et al., 2015; Pullman and Wikoff, 2017). Nonetheless, it's essential to note that transportation emissions are only a small part of the overall environmental impact of food systems (Edwards-Jones, 2010). The diverse impacts also contribute to the varying definitions of sustainable food systems, spanning from broad, all-encompassing to overly simplistic (Garnett et al., 2017). Within the EU, the Farm-to-Fork Strategy, included in the Green Deal, was launched to ensure that the production and value chain for food promote sustainability and contribute toward the reduction targets for GHG emissions European Commission (2022). For Sweden, the food strategy focuses on environmental objectives, growth, and innovation (The Swedish Board of Agriculture, 2024). The targets are not numerical; they only show the desired direction. Additionally, when the targets were evaluated in 2024, it was stated that none of the environmental targets in the food strategy were achievable by 2030, and the general trend was going in the wrong direction. Given the various environmental impacts of food, contextual variations, varied definitions as well as consumption headed in an unsustainable direction, further research is essential to understand the priorities and challenges of achieving sustainable food systems and consumption. The public sector, responsible for significant food procurement, plays a crucial role in steering local and regional food economies toward sustainability (European Committee of the Regions, 2018). Sustainable Public Procurement (SPP) embodies public authorities' pursuit of economic, social, and environmental sustainability in procuring goods, services, or works (Commission of the European Communities, 2008), and has emerged as a promising tool for fostering sustainability (Smith et al., 2016; Schebesta, 2018; Trindade et al., 2018; Vluggen et al., 2019). The production, distribution, and consumption of food in accordance with public standards and regulations are dependent on a network of interconnected actors (Goggins, 2018; Gaitán-Cremaschi et al., 2022). Nevertheless, prior studies have emphasized the understudied aspect of actor networks and interactions within the system as a fundamental requirement for enhancing sustainability (Holma et al., 2022). The multitude of recommendations and the ambiguity surrounding sustainable food definitions, on the other hand, present obstacles for policymakers and procurement decisions, see, e.g., Dawkins et al. (2023).

This study aims to enhance the understanding of public food procurement by exploring the dynamics and interactions among the actors involved, as well as the current sustainable procurement process and the criteria used. More specifically, it focuses on the actors' roles and influence on sustainability in food procurement. Additionally, the study seeks to understand how the process and actors can improve to facilitate more sustainable food procurement. This comprehensive analysis of the multi-actor system highlights the complex interdependencies and power relations among stakeholders, along with the challenges they face in implementing sustainable practices.

2 Public procurement for sustainable food

In the EU, the European Union Directive 2004/18/EC, which seeks to foster transparency, equal treatment, and competition throughout the procurement process (European Parliament and Council, 2004), is essential for public procurement. The Swedish Public Procurement Act, LOU Act from 2007, is derived from the EU Directive and serves as the foundation for the legal framework governing all contracting authorities within the public sector (SFS 2007:1091). In Sweden, the National Agency for Public Procurement, the NAPP, plays a crucial role in providing support and guidance to procurement officers. This ensures that the procurement process aligns with the principles outlined in the LOU Act and EU Directive 2004/18/EC, including the important principle of proportionality. By offering training, tools, and resources, the NAPP enables procurement officers to comply with the legislation, including the requirement that procurement procedures are proportionate to the value and complexity of the procurement. This helps optimize public procurement practices and ensures that they are both legally sound and efficient (National Agency for Public Procurement, n.d.), especially for providing guidance for sustainable public procurement.

Sustainable Public Procurement (SPP) embodies public authorities' pursuit of economic, social, and environmental sustainability in procuring goods, services, or works (Commission of the European Communities, 2008). While prior SPP research has tackled enablers and challenges like organizational knowledge, support, top management endorsement, and sustainable product availability (Brammer and Walker, 2011; Testa et al., 2016; Trindade et al., 2018), most case studies have explored policies and procurement in areas such as organic, locally produced food, and food waste (Molin et al., 2021).

Efficient procurement processes, knowledge generation, leadership, and effective policies are essential (Carino et al., 2021). It has been suggested in research that policymakers must proactively deviate from existing structures, necessitating substantial effort, skills, and political network building to develop techniques and culturally frame new practices (Garud and Karnøe, 2003; Lawrence and Suddaby, 2006; Balland et al., 2019). Unlike the traditional 'low-price' model, which solely focuses on the lowest price, the MEAT, Most Economically Advantageous Tender, model takes into account various values, such as quality and other criteria, to determine the most economically advantageous bid (OECD, 2011). This shift in procurement practices aligns with the broader goal of promoting sustainability in food systems and improving the environmental and nutritional impact of public food procurement.

The food sector has made progress in SPP implementation (Yu et al., 2020), although more collaboration is necessary as public food procurement goes beyond the exchange of products and services, encompassing the exchange of ideas, values, and understanding (Morley, 2021). The environmental consequences of public food procurement are significantly influenced by state and municipal authorities (Tregear et al., 2022). Unlike traditional procurement research focusing on contracting and cost minimization, SPP of food emphasizes localization, supply, and demand, particularly for public consumers (Stefani et al., 2017; Molin et al., 2021). However, the attention on local food often encounters the "local trap" challenge, where stakeholders assume smaller-scale approaches have better sustainability outcomes than large-scale ones, but this assumption is not always accurate (Christopher Brown and Purcell, 2005; Sonnino, 2010). Several arguments for procurement from local suppliers can be found in the literature, e.g., stimulating local economic growth (Lever et al., 2019; Morley, 2021), improving the quality of food

through seasonality (Singh and Fernandes, 2018), and implying reduction of carbon emission from transports. However, transportation represents less than 5% of the emissions from an average meal (Tregear et al., 2022). Organic food procurement is also commonly used in municipalities as the first step in implementing sustainability in food procurement to mitigate environmental and health impacts in many municipalities (European Commission, 2008; De Schutter, 2014; Smith et al., 2016), though few studies have reviewed the implications for sustainability of procuring organic food.

Another part of the public perspective on SPP for food is to reduce greenhouse gas emissions and promote more sustainable diets (Garnett et al., 2017; Cerutti et al., 2018; Röös et al., 2020; Tregear et al., 2022). Often, procurement contracts for food emphasize product-specific criteria (such as organic and local), but these matter less in terms of environmental impact than the nutritional standards (Tregear et al., 2022). Public sector procurement plays a significant role in promoting sustainable diets and addressing malnutrition (Robles et al., 2013; Cerutti et al., 2018; Röös and Wivstad, 2020). Initiatives like the Farm to Fork strategy, part of the European Green Deal, aim to make food systems fair, healthy, and environmentally friendly (European Commission, 2022). Some of these initiatives specifically focus on procurement within the public sector (Thompson et al., 2014; Powell and Wittman, 2018). Furthermore, recently, a study also found that the literature suggests widening the scope of sustainability to be included in public procurement, with important sustainability aspects such as climate impacts, resource efficiency, human health, animal welfare, and the economic viability of farmers and local economies being of importance for SPP of food (Molin et al., 2021).

2.1 The actors in the sustainable food system

In the public food system, a network of interconnected actors plays vital roles in ensuring the production, distribution, and consumption of food while adhering to public standards and regulations (Goggins, 2018; Gaitán-Cremaschi et al., 2022). These actors encompass producers, such as farmers and fisheries supplying public institutions; retailers and wholesalers, who facilitate the distribution of food products to public entities; industry players, including food processing and packaging companies catering to public demands; and logistics providers, responsible for the transportation and delivery of goods within the public sector. Additionally, public buyers procure food for various purposes, such as school meal programs and hospital catering (Bergmann Madsen, 2020; Salvatore et al., 2021). Public kitchens, present in institutions like schools, hospitals, and government offices, prepare and serve meals to their guests, who are often students, patients, and employees. Each of these actors contributes to the overall functioning of the public food system, shaping its sustainability, efficiency, and impact on public health and the environment (Smith et al., 2016; Gemmill-Herren et al., 2021). Malacina et al. (2022) identify value components from the perspectives of public buyers, suppliers, and users. Individuals can also drive the implementation of sustainability. These key individuals, or change agents, play roles in enhancing public food procurement, advocating for sustainable and healthy food options, and improving the well-being of those dependent on public food services (Grandia, 2015). The literature primarily focuses on process and tendering aspects of procurement, but there is a research gap regarding actor interactions and networks in the system (Holma et al., 2022). The complex value chain of food products necessitates collaboration to promote sustainability. Overcoming challenges requires cross-sector and cross-level cooperation (Sundqvist-Andberg and Åkerman, 2021; Holma et al., 2022), with stakeholder engagement being vital for meeting needs, expectations, and sustainability goals (Gaitán-Cremaschi et al., 2022).

The predominantly centralized and consolidated food system presents challenges for public procurement, as change agents make decisions that impact the entire system (Goggins and Rau, 2016; Braun et al., 2018; Valencia et al., 2019). Public procurement relies on political goals and objectives, with companies competing for tenders to secure their share of income (Rantanen et al., 2007; Jung, 2011; Stentoft Arlbjørn and Vagn Freytag, 2012). Large retailers (wholesalers) typically wield considerable influence in conventional global food value chains and a significant discrepancy in resources and power between local and conventional systems (Kang et al., 2022).

Despite the consolidated nature of the food system, it comprises multiple actors, and inadequate analysis of relationships and dynamics among public food procurement actors may hinder innovation, design, and policy instruments (Gaitán-Cremaschi et al., 2022). While multiple actors can present barriers, they can also offer vital complementary knowledge to facilitate the learning process (Gaitán-Cremaschi et al., 2022). Environmental aspects are more successfully implemented following thorough stakeholder dialogs (Yu et al., 2020), and collaboration across levels is needed to overcome sustainability challenges (Holma et al., 2022). These dialogs create a platform for collaboration between various actors, promoting the integration of broader sustainability goals within procurement processes. The mutual dependency between suppliers and buyers fosters commitment, motivation, and positive sustainability performance in public procurement, bridging the gap between GPP and SPP to achieve comprehensive and balanced sustainability outcomes (Filippini et al., 2018; Werff et al., 2018; Carino et al., 2021).

3 Method

In this study, the procurement process of food and its actors was examined using a case study approach. Case studies are a valuable research approach for exploring complex systems and phenomena in depth (Merriam and Nilsson, 1994). By focusing on a specific case or context, case studies enable the collection of detailed and rich data that can provide insights into the workings of the system and inform improvements.

The case study approach was applied due to its suitability for examining the procurement process of food and its actors within the Swedish context. The study included food procurement for municipalities in general, not a specific category of food. The food was foremost used in schools and elderly care services. This complex system involves a wide range of stakeholders, producers, distributors, retailers, and consumers, each with their own interests and objectives see Table 1. A holistic and iterative approach was adopted to involve actors at both ends of the process, akin to the methodology proposed by Dubois and Gadde (2002).

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TABLE 1 Actors interviewed, criteria for selection of actors, and categorization of actors used.

Actor	Criteria	Categorization
Municipality	Municipal workers, mainly procurement officers, were chosen to have a geographical spread from North, Central, and South of Sweden and with varying sizes.	Large (L) - top 10 municipalities in Sweden based on inhabitants are considered large. Medium (M) – municipalities numbered between 10 and 280 based on inhabitants are considered medium-sized. Small (S) – bottom 10 municipalities based on inhabitants are considered small.
Wholesalers	Wholesalers were chosen of varying sizes depending on their market share—information from The NAPP's registration of tenders.	Large (L) – Holds 20% or more of the market for tenders in Sweden. Medium (M) – Holds 5–20% of Sweden's tenders market. Small (S) – Holds less than 5% of Sweden's tenders market.
Executive chef/public kitchen	The selected chefs in public catering services who worked in the municipalities were also picked for interviews in this study.	The chefs followed the municipalities and thereby had the same selection criteria mentioned for the municipalities above.
Producer	Food producers were chosen, following the distributors to the wholesalers and a few delivering straight to the customer. The producers were also of varying sizes.	Some chosen producers sell to wholesalers, and some leave tenders straight to the client. The size categories are the same as for wholesalers.

3.1 Data collection

Semi-structured interviews were employed in this study to gain a deeper understanding of the topic under study (Kvale, 1997). This method allowed for a guided conversation that could capture experiential and nuanced information that may not be available in written sources. The selected actors were municipalities (procurement officers), wholesalers, chefs in public kitchens, and food producers. Respondents were selected to ensure adequate coverage of the food procurement process across Sweden, with varying size and geographical spread, covering the northern, central, and southern regions of Sweden. See Table 1. To strengthen the representation, larger municipalities, which also had a greater number of inhabitants, were included in the study. Furthermore, municipalities were selected for interviews based on their proactive history of enhancing Sustainable Public Procurement (SPP) through public projects, promotional efforts, and sector recommendations.

An interview guide, see Supplementary material- interview guide, was developed to structure the conversation and ensure consistency across interviews when conducting the research. Themes were used to create the guide, and it was divided into sections of questions accordingly, as suggested by Kallio et al. (2016). The synthesis of the literature facilitated the incorporation of relevant theories, concepts, and findings into the themes for the interview guide, enabling a systematic exploration of the research topic. The literature review also revealed gaps and inconsistencies in the existing knowledge, underscoring the need for further research see, e.g., Merriam and Tisdell (2016).

The themes were selected to address the research questions, and they provided a natural flow and transitions within the discussion. Furthermore, the themes were enriched with potential follow-up questions to facilitate a comprehensive exploration of various perspectives and experiences. These themes encompassed the organization and internal and external collaborations, the interpretation and application of sustainability, the exploration of the ability to influence the procurement process and its outcomes, and considerations related to improvement and support.

Respondents were initially contacted by email, and interviews were conducted in 2020, with a duration of 45–60 min each. The interviews were conducted in Swedish using Microsoft Teams and recorded, except for two, which were conducted by phone and recorded. Each interview began with an introduction to the study and concluded with an opportunity for feedback. The interviews were conducted similarly, with modifications to suit the actor's role in procurement, and most questions were open-ended to encourage free-flowing conversation. The respondents were kept anonymous, see Table 2. All notes and the interview guide were made in Swedish but were translated into English for analysis.

3.2 Data analysis

Conducting semi-structured interviews with actors from different stages of the procurement process provided a deeper understanding of the complexities and nuances of procurement in Sweden. The first step in data analysis involved structuring the interview questions in a matrix along with corresponding answers and notes for each respondent. This organization allowed for the systematic collection and synthesis of data. This information matrix facilitated the start of the data analysis andenabled the identification of emergent themes (Merriam and Nilsson, 1994). In the next step, the analysis yielded themes essential for identifying areas for improvement in procurement. The table in the Supplementary material – drivers and Barriers presents the results of this step in the analysis. The table is divided into three ecological, social, and economic sections. The stakeholder category perspectives, the main aspects, and the specific drivers and barriers are stated. From this table, themes were identified, and follow-up questions to the respondents were used to explore them further.

During the interviews, participants highlighted several practical aspects not always covered in the existing literature, which enriched and expanded the understanding of the topic. The initial themes derived from the literature guided the interview process and provided a foundation for discussion. As the interviews progressed, the results

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TABLE 2 Interviewed respondents: actor type, respondent title, size of actor, and location in Sweden.

Actor	Respondents title	Size of organization	Location
Municipality 1	Procurement officer	L	Central
Municipality 1	Sustainability coordinator	L	Central
Municipality 2	Procurement officer	L	South
Municipality 3	Procurement officer	M	North
Municipality 4	Procurement officer	M	South
Municipality 5	Environmental director	M	North
Municipality 6	Environmental director	L	South
Producer 1	Tender administrator for public sector	M	South
Producer 2	Client manager for public sector	S	National
Producer 3	Nordic sustainability coordinator	S	National
Producer 4	Director of sales for public sector	S	National
Public kitchen 1	Executive chef in public catering	L	Central
Public kitchen 2	Executive chef in public catering	M	Central
Wholesaler 1	Director of sales	L	National
Wholesaler 2	Tender administrator and head of public sales	M	South
Wholesaler 3	Director of quality and Assortment	L	National
Wholesaler 3	Specialist in food products	L	National
Wholesaler 4	Tender administrator	M	National

Includes the actor, interviewee title, size, and location in Sweden.

led to a shift in focus, prompting a narrower and more refined structure in the study's discussion section. The results also revealed additional areas of interest, resulting in the development of new themes, such as the product-specific criteria that act to circumvent the Public Procurement Act.

The collected material was analyzed to examine how sustainability is perceived and applied in the context of public food procurements. The approach allowed for comparisons of actors' work and interpretations and to confront theory with the empirical world, incorporating relationships and patterns among actors selling and buying food through procurements. The identification of these patterns and relations allowed for a deeper understanding of the procurement process and highlighted specific areas that could be improved upon. The practical aspects brought up during the interviews were invaluable in this process, providing a real-world perspective that would not have been possible through literature alone. Ultimately, the themes that emerged from the analysis served as a valuable tool for identifying areas of improvement in the procurement process and helped to shape the discussion and conclusions of the study.

4 Results

This section provides context to the public procurement context in Sweden, an overview of the food system for public procurement in Sweden, and the results from the interviews. Focusing on the sustainability aspects of food and the actors' ability to influence the procurement process for food, both on a national level and from a buyer's internal perspective.

4.1 The food systems for public procurement in Sweden

The supply chain in public food procurement is complex, involving multiple actors that influence the process. Figure 1 maps the actors directly affected by public food procurement. By mapping these actors, four main categories of actors are identified: municipalities, producers, public caterers, and wholesalers. The study also identified several other actors that indirectly influence the procurement process, such as politicians, media, trade organizations, and the public.

4.2 Sustainable food aspects

When the respondents described sustainability in public food procurement and the aspects of sustainability emphasized in their work, they mentioned aspects from all three sustainability pillars: economic, social, and environmental. The most prominent aspects were procuring organically labeled food, buying from local producers, and climate reductions. Most of the respondents also mentioned optimizing transportation distances and modes, as well as animal welfare, see Figure 2. This comprehensive approach reflects their commitment to addressing various sustainability dimensions in their procurement practices.

The interview results identified barriers and opportunities for driving procurement in a more sustainable direction see Supplementary material – Barriers and drivers. Lack of resources, particularly time, data availability, and communication, were the main obstacles. Respondents emphasized the need for additional resources to handle procurement tasks and gather information. Data scarcity

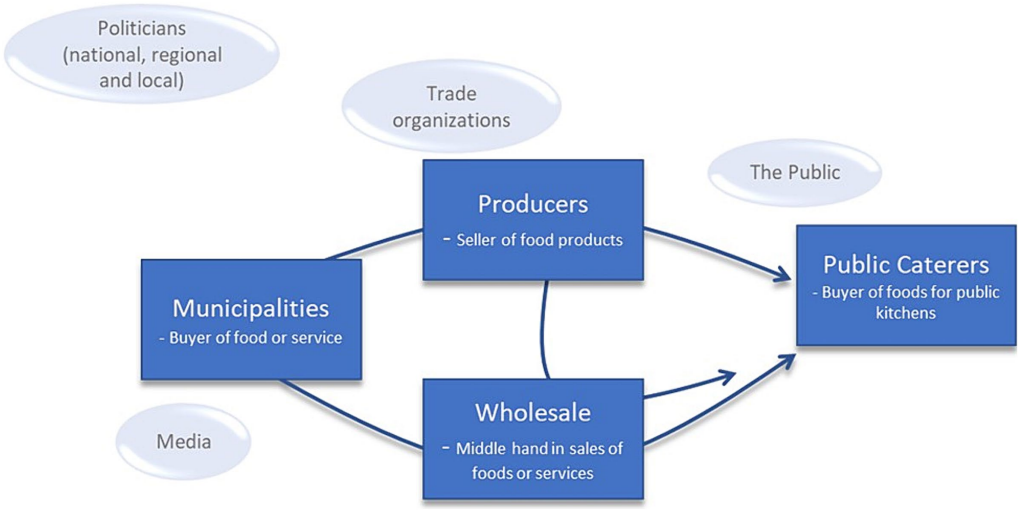

FIGURE 1
Illustration of the actor-constellation (boxes), monetary exchanges between actors (arrows), and external influencers (ovals).

related to environmental performance and the lack of communication between politicians and producers were also noted. Opportunities were recognized to address these challenges and achieve a more sustainable food procurement.

The definition and practical application of sustainability in the daily work of these actors varied depending on the specific sustainability aspects prioritized by the respondents and their organizations. This ranged from broader, holistic goals like aligning with Agenda 2030 objectives to more specific focuses, such as promoting biodiversity or ensuring the procurement of local or Swedish produce, as illustrated in Figure 2. Of particular significance were the sustainability aspects related to local and organic foods and aspects in relation to this, such as climate and transport. Producers and wholesalers often advocated for a more comprehensive approach by public buyers that would encompass multiple sustainability dimensions and provide flexibility in addressing them effectively.

One approach suggested by Municipality 3 to handle the complexity of defining sustainability was defining and using measurable goals. Once again, organic and local foods were identified as essential for addressing sustainability, with quantifiable goals, e.g., purchasing 30% organic produce or 40% locally sourced food during the procurement, mentioned by several actors but primarily by procuring officers at the municipalities. Public kitchens were also interested in such measurements to improve the follow-up of the environmental performance for the purchases.

4.2.1 Economic factors

Several actors mentioned price trends as an important economic factor for sustainable food procurement, with rising prices in Sweden being a disadvantage for Swedish products in the competition between tenderers. Municipal respondents suggested that healthy competition among tenderers, including small and local producers, was crucial to economic sustainability aspects. Municipality 5 pointed to the importance of so-called 'good quality procurements,' and, e.g., that it should be easy to leave tenders and use relevant sustainability criteria to achieve healthy competition. Actions such as exertion of the follow-up process are also necessary to fulfill criteria as a competitive advantage, as stated by Wholesaler 1.

Wholesalers and public kitchens also mentioned the inclusion of small and medium enterprises (SMEs) in procurements to increase competition and strengthen the regional economy. An increase in procured products from SMEs to the public sector was often equated with buying from local suppliers. "Sustainable is when the money is circulating locally, and local implies Sweden and Swedish agriculture" (Producer 2). Generally, sustainability criteria are seen as an advantage for local producers of all sizes, according to most suppliers and procurers.

Many respondents from different categories of actors brought up the price and quality of food associated with promoting sustainable food procurement as economic factors. Several respondents argue that, e.g., by moving away from the traditional 'low-price model' of procurement, better quality and sustainable foods can be procured. Several actors also proposed that shifting away from the 'low-price' model and instead emphasizing previously employed incentives based on higher quality criteria would support local economic development and provide advantages to small producers. This approach allows for the inclusion of various quality factors in the evaluation process, which ultimately benefits the local producers. For example, Municipality 3 described how they created an evaluation system where tenders are awarded based on quality and price, like the MEAT assessment model.

4.2.2 Environmental factors

Organic foods were the most frequently mentioned by respondents from all categories of actors for promoting environmentally sustainable food procurement (Figure 2). All actors also had converging thoughts on the benefits of organic produce, and it was suggested to have favorable environmental performance, such as reduced use of pesticides and chemical fertilizers. All municipalities had targets on the share of organically certified food. However, even though a target for organic food exists, municipal politicians sometimes ask the procurement officer to buy less organically certified

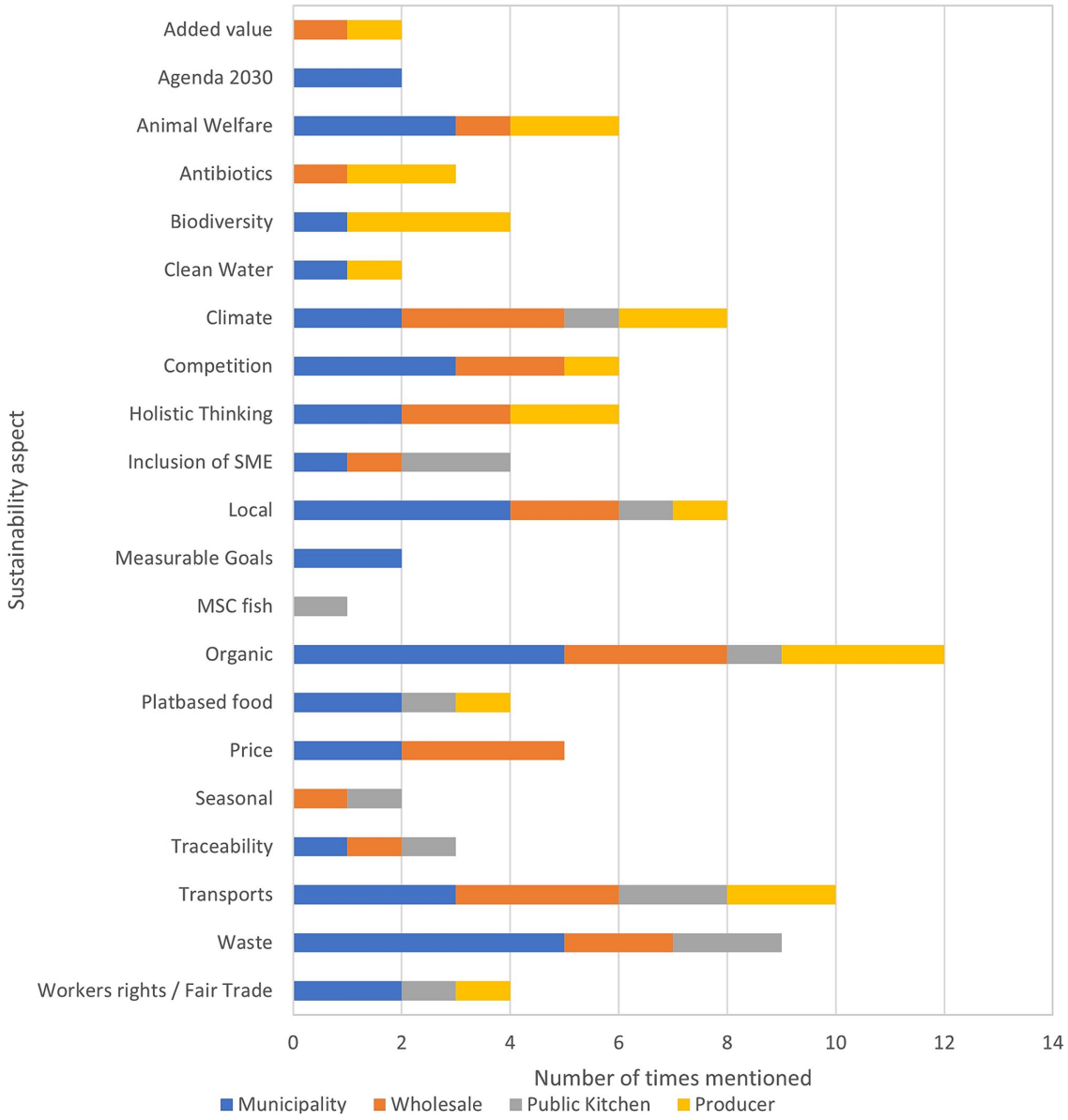

FIGURE 2
Sustainability aspects in public food procurement mentioned by the respondents. The bars show the number of times aspects comprising sustainability are mentioned in response to the question.

products to reduce costs. According to Municipality 1, this often implies an increase in price. They suggested, "In the procurement, we have chosen which volumes are to be bought organic and negotiated a price similar to the conventional alternative. When the politicians interfere in an already procured contract, this will most likely raise the price also for conventional products" (Municipality 1). Several municipalities bought large quantities of organic vegetables, which made up a significant procurement volume and positively affected the procurement's overall environmental performance. Several respondents noted that sourcing local produce fosters a strong connection with the farm, facilitating the enforcement of environmental standards due to the proximity to the producer. Additionally, they pointed out that organic produce is particularly susceptible to external influences, leading to a quicker decline in quality and freshness. As a result, this vulnerability has given organic produce a negative reputation among buyers. Producer 4 also pointed out that in the end, what ingredients are bought is the most significant aspect, and this aspect is not specified in the procurement.

Next, to organic foods, all actors also agreed that procuring local foods would promote environmental sustainability, see Figure 2. Local food was assumed by the respondents to contribute to reduced transport and GHG emissions, better quality, fresh and nutritious food. However, the definition of 'local' varied amongst respondents and regions. Half of the respondents favored Swedish produce over imported as an essential aspect of sustainable food procurement. In Municipality 2, the use of criteria for animal welfare following Swedish legislation, the desired effect was to receive Swedish produce. Many respondents mentioned that sourcing local produce establishes a strong bond with the farm, making it easier to ensure environmental standards through improved proximity to the producer. However,

wholesalers mentioned that logistics is a barrier for small-local producers. The respondents argued that this could be overcome by more aid from the wholesalers to improve logistic services to reduce transport and environmental pressure. Producer 2 also suggested that small local producers could have difficulties in performing all retail elements and could benefit from collaborations with larger producers.

All actors mentioned concerns about climate change as a major environmental factor. Public caterers did not use climate change as a definition of sustainable food procurements; nevertheless, they acted and tried to follow up on the climate declaration of products. The kitchens found a lack of availability in climate footprints and measures with a life cycle perspective on the product level and requested that this be further developed. Several respondents gave examples of attempting to minimize the environmental impacts related explicitly to releasing GHG emissions, including reduced waste, buying seasonal, optimizing transport, and increasing plant-based food products. Producer 4 measured their success in decreasing carbon emissions from their entire procurement, actively chose ingredients with more negligible environmental impacts and handled them well.

4.2.3 Social factors In SPP

Workers' rights and demands on Fair Trade certifications were two of the most emphasized social sustainability aspects brought up by all respondents, see Figure 2. Several actors agreed that GHG emissions and climate concerns had overshadowed workers' rights and other social aspects. They advocated that the focus should be equally divided between different sustainability pillars. According to the respondents, some environmental impacts, e.g., preserving biodiversity, also needed further attention. Producers and wholesalers requested holistic and far-reaching thinking for the entire food sector to include social risk areas further. Traceability was brought up by Public Caterer 1, to ensure the credibility of the producer and their products and thereby contribute to social sustainability. Traceability would also allow follow-up on several aspects for producers and consumers, allowing public examination. One such aspect is the use of antibiotics in meat. Except for public caterers, all actors mentioned animal welfare in their description of sustainable food procurement. Several actors suggested that criteria in line with Swedish regulations for meat production could ensure minimal/acceptable animal welfare standards. According to Municipality 2, politicians state that Swedish animal welfare regulations are higher than most European countries.

4.3 Capacity to influence procurement processes and the product assortment

The respondents were all asked about their perceived capacity to influence different parts of the procurement process, including development of criteria on a national level, availability of products and relations to other actors in the food system.

4.3.1 Influencing national sustainability criteria

The capacity to influence the criteria used in the procurement strategically varied amongst different actors. Examples of such strategic influence included directly shaping the NAPP's criteria wizard, ensuring dialog between actors drafting the procurement document, and sub-ordering from it. A majority of the respondents indicated that they were directly involved in the strategic development of the criteria. Many respondents participated in NAPP's reference groups for developing the criteria wizard. These groups were seen as an excellent opportunity to influence the criteria at a detailed level, address concerns, listen to other people's opinions, and engage in discussions. The municipalities primarily implemented the criteria provided by the NAPP in the procurement documents. However, Municipality 6 considered them too weak and used them only as guidance when creating their own.

Producers and wholesalers found it difficult to strategically influence the criteria's usage. They were only occasionally invited to dialog meetings with other actors and usually at a late stage in the process. Wholesalers expressed frustration that despite the pre-made criteria provided by the NAPP, several municipalities still chose to develop their criteria and implement their own solutions. Public caterers neither felt they had the capacity nor were they invited to participate in dialogs concerning the strategic use of sustainability criteria. However, the public caterers interviewed were satisfied with how the procurement officers in the municipalities they operated in listened to their opinions internally.

Procurement officers often felt steered by politicians in determining which sustainability aspects and criteria to prioritize on a strategic level. There was divergent knowledge and understanding of political targets and goals among wholesalers and municipalities, making it challenging to actualize these goals and visions with specific criteria and draft the tenders accordingly. Procurement officers also felt that other internal actors strategically influenced the municipalities' use of sustainability criteria. For instance, Municipality 1 stated that the application of criteria depended on the dietitian's interest.

4.3.2 Influencing the procurement process

Overall, most respondents expressed a perceived ability to influence both the procurement process and the outcome, i.e., what was being purchased. A balance was identified between the given responsibility and freedom, as well as the regulations and guidelines. According to a few respondents from the municipalities, regulations and guidelines both on the national and regional levels were viewed as either adequate support for the work process or as a top-down steering mechanism.

In all municipalities, the interviewed procurement officers stated that they had the ability to strategically influence the procurement process. The majority also felt that they could act as project leaders in the procurement and have the final say. The four procurement officers felt they had good internal collaboration with, for example, environmental strategists in the municipality. Procurement officers in municipalities 4 and 5 felt free to take initiatives as long as they complied with public procurement legislation regulations.

Procurement officers in municipalities broadly identified that politicians, both national and regional, set sustainability goals to influence food procurements strategically. Political goals and set lead times in the process were mentioned as limitations to procurement officers' ability to influence the procurement process. Thus, the politicians' perceived possibility to influence varied. According to the respondents, politicians in some regions developed stringent guidelines and targets, while procurement officers had more power to influence targets in others. Municipality 3 welcomed quantifiable targets from politicians, such as the share of organic and local produce

to be procured. These quantifiable targets made it easy to follow up on their performance. However, Municipality 2 appreciated the freedom of being able to steer the procurement document, stating that: "there is flexibility in not having set political guidelines [with hard targets to steer the procurement process]" (Municipality 2). The four procurement officers also felt they had a good internal collaboration with, e.g., environmental strategists in the municipality. Municipalities 4 and 5 felt free to take initiatives as long as they were kept within the public procurement legislation regulations.

The wholesalers' responses varied when asked if they could strategically influence the procurement process. While some struggled more to be part of dialogs at an early stage of the process, Wholesaler 2 answered that they had this possibility. This actor found that the effectiveness of forums for meetings and dialogs varied between regions. Furthermore, Wholesaler 4 said their influence might depend on the procuring authority and their contact person.

From the producers' perspective, it could be challenging to strategically influence the procurement process. Several producers had been invited to dialogs with both wholesalers and municipalities. However, it was often found that a lack of resources at the municipalities resulted in inadequate dialogs or that dialogs occurred too late. As municipalities mainly write contracts with wholesalers, the producers are not directly involved, which was identified as both an advantage and a disadvantage. Producer 2 stated, "competition-wise, it would have been better not to go through a wholesaler, and we would have had an easier conversation. However, it would not have been possible due to distribution costs." Producer 4 worked specifically with information directed toward the Municipalities but struggled to get their products into the wholesalers' assortment. Producer 2 expressed it: "everything goes through the wholesalers, and we sit in their lap."

None of the Public Caterers felt as if they could strategically influence the procurement process or the procurement documents. However, the caterers did not express any further desire to engage in the process but solely wanted to influence the products that would be purchased. Both respondents were satisfied with how the municipality procurement officers listened to their opinions: "We have a procurement module that allows us to leave opinions regarding the procured suppliers if something is wrong… That way, we contribute to the follow-up process. If the supplier does not follow the contract, we will terminate the contract with them" (Public Caterer 1).

Overall, representatives from all actor categories identify municipalities as the actors with the largest possibility to influence the product assortment. According to Wholesaler 1, the procurement officers in municipalities set criteria, and the producers deliver, but the municipalities always have the final say in what is being bought. According to Public Caterer 2 and Producer 4, it was also perceived that municipalities could create incentives to develop new products. In contrast, Municipality 4 identified the producers as a selling organization that creates a need at the procuring authority and, therefore saw them as the most influential actor over the product assortment. Overall, wholesalers were seen as the second most influential actors, followed by producers. Public caterers were not perceived as having any significant capacity to impact the product assortment. When respondents were asked to reflect on their possibilities to influence the procurement process, several mentioned having considerable influence over what is bought and what is possible to buy in the public sector.

4.4 Implementation of sustainability criteria

This section presents the interview results on how sustainability criteria were used in the procurements. While the actors acknowledged that sustainability criteria placed additional demands on producers and increased administrative work, their collective perception was that such criteria ultimately contributed to improved production practices and were widely welcomed by the food industry due to their support for Swedish produce in public food procurement.

Procurement officers encountered minimal resistance from producers when implementing sustainability criteria, particularly those provided by the NAPP. Municipality 2 pointed out that the NAPP's sustainability criteria streamlined their adoption, potentially resulting in fewer procurement appeals. Public caterers, while influenced by these criteria when aligning their orders with municipal procurement standards, did not face opposition to their use. Wholesalers expressed optimism about the environmental and social benefits arising from increased utilization of sustainability criteria. In general, suppliers displayed a positive attitude toward heightened performance and product demands, signaling their readiness to meet such expectations.

Some criticism arose regarding the use of the NAPP criteria wizard, mainly concerning how to use it. According to the suppliers, the development of the criteria wizard has led to more homogenous procurement documents, which was welcome. Nevertheless, according to several wholesalers, there is a lack of knowledge of how to use the criteria. The suppliers experienced criteria that were sometimes used for products that they were not designed for, making it very difficult to make an adequate tender in terms of reduced competition; as Wholesaler 3 suggests: "People do not know how to use the criteria wizard. We see that many use their previous experience or look at neighboring municipalities and how they have done it" (Wholesaler 3).

The demand side sometimes uses several criteria at once to cover as many aspects as possible. However, some criteria could stand in contradiction. Mainly actors from the supply side and a few on the demand side pointed toward over-usage, which complicates tendering with the reduced competition or dishonest suppliers gaining ground in the procurement, or as they refer to it "a bad procurement." "The customers often pose more criteria than they can follow up, just to make a good procurement" (Producer 4)." Over usage often derives from a desire to produce a sound and sustainable procurement or a lack of knowledge and resources. "The procurement officer can be responsible for everything from snow shoveling to food supply, and the specific knowledge to pose criteria in different categories varies a lot" (Wholesaler 3). Wholesalers would like to see a more restrained use of criteria where the municipalities motivate their use and what is most important to them, as this makes it easier to leave tenders.

4.5 Product-specific criteria

A reoccurring topic during the interviews was product-specific criteria. There was a disagreement on whether to use overall criteria

for sustainability or if it is better to use product-specific criteria. One actor, Wholesaler 4, stated that the sustainability criteria should be lowered to the product level to favor local producers and suggested product-specific criteria. Examples of product-specific criteria could be, e.g., special packaging sizes or a specific ingredient to ensure the winning tender is from a wanted supplier. According to Producer 4: "If you, e.g., want a Swedish kidney bean, it is possible to pose criteria for 4 kg packages, as there is only one supplier of this at the market. The ones that come from China are at one-half or two kg. You will receive a more sustainable product if you pose the criteria of 4 kg packages for kidney beans" (Producer 4).

Product-specific criteria were often used to favor local produce; however, the opinions on the effects differed. "Seen from a producer's perspective, product-specific sustainability criteria are welcome. However, it would be more favorable to pose them with a range for, e.g., fat limits in dairy. Precise demands of packaging shape or the product content make for bad procurements" (Wholesaler 2). The product-specific criteria could also be used specifically to hinder imports. "To receive more local produce, one can, for example, pose criteria that do not allow vacuum-packed products. This makes it impossible with longer transports" (Municipality 2). Wholesaler 3 highlighted the lack of focus on the supplier and reduced competition when the aim was to procure local produce using product-specific criteria. Both the demand and supply sides questioned the goal of the procurement when product-specific criteria were used, as expressed by Municipality 2: "What is the goal, to support the local labor market or reduce environmental pressure from the food system?" A procurement officer felt the need to avert the product-specific criteria to avoid appeals, as they cause delays and ar costly. "The Menu planner could learn from others how to circumvent the LOU Act to receive a specific product. Then the procuring officer must act as a gatekeeper to minimize the risk for appeals" (Municipality 1).

5 Discussion

In this section, the results are discussed in two parts: the actors' perception of SPP for food and their perceived ability to influence the public procurement of food from a public buyer perspective as well as from the other actors' perspectives.

5.1 The actor's perception of SPP for food

Previous studies have shown that public procurement is key in forming markets and promoting and triggering innovation over time (Bleda and Chicot, 2019; Lingegård et al., 2021; Krieger and Zipperer, 2022). However, progress in public procurement development and innovation is slow, preventing the public sector from fully realizing its potential as intelligent and well-informed customers (Uyarra et al., 2014). This suggests that a slow and potentially stagnated sustainability development could occur by not using criteria to promote sustainability aspects. The public buyers' perception of what SPP for food entails is therefore vital for market development. The actors in this study align in describing sustainable food procurements as striving to purchase organically labeled and locally produced foods. This is similar to the findings made in a previous study by Molin et al. (2021), where local and organic were the most reoccurring concepts to describe sustainability within public food procurement. Political goals are often set to increase purchases of locally produced foods, e.g., Municipality 4 in this study, previously targeted to procure 100% organically certified foods, shifted to a larger share of local produce instead. This shift was mentioned in several municipalities. Overall, the responding procurement officers in Municipality 4 found it more challenging to follow up on this political goal of local produce since the definition of local was unclear. Another issue was establishing a satisfying number of local producers to secure competition. Focusing on the local market could create a dependency on particular suppliers and thus reduce healthy competition amongst tenders.

From a legal perspective, it is not straightforward to set criteria that limit tenders based on geographical origin, as this counteracts the proportionality principle of public procurement, stating that the criteria must have a natural connection and be reasonably proportionate to the object or service procured, see, e.g., Sveriges Riksdag (2016). As such, the transport distance for food cannot be strictly defined. As explained by procurement officers, a consequence of goals set to increase locally produced foods is the need to find loopholes to bypass the legislation to procure certain local producers. This results in using product-specific criteria (e.g., demanding specific weights, type or size of packaging or ingredients) and overseeing environmental goals and demands. When product-specific criteria are prioritized, it tends to come at the expense of sustainability criteria, leading to the down-prioritization of sustainability issues. Buyers often assume that favoring a specific local producer through product-specific criteria will automatically result in the desired environmental performance. However, this assumption lacks guarantees, especially when there is no follow-up mechanism to assess competition based on environmental performance. Furthermore, extant literature suggests that with regard to climate impact, local food does not invariably outperform non-local food (Edwards-Jones, 2010). Consequently, product-specific criteria are not a straightforward way to enhance the overall market; instead, they may undermine healthy competition and hinder ambitious tenders actively working toward sustainability. Additionally, previous research indicates that product-specific criteria have less importance to lower emissions than the nutritional standards on a low-carbon balance of food types in the meals (Tregear et al., 2022). This highlights the importance of awareness of the consequences of criteria used as well as the necessary mix of policy.

By the majority of the respondents in this study, local produce is assumed to be equal to quality produce, establishing local relations and traceability and strengthening the local economy. Similar findings were made by Kirwan (2006), Sonnino (2009), and Sonnino (2010), stating that locally sourced food can facilitate the creation of loyalty and embody local relations. The investigated municipalities have equalized quality with local produce, and local and organic are often weighted against each other. However, the limitation of producers delivering local and organic set constraints on the volume of goods to be procured. Furthermore, it is essential to avoid falling into the "local trap" (Sonnino, 2010) by repeatedly choosing local produce over organic options. While locally sourced products often align with sustainability requirements, this preference does not guarantee their overall sustainability performance (Tregear et al., 2022). Neglecting organic options solely based on their origin could lead to overlooking potentially more sustainable choices. Therefore, it is crucial to evaluate each product on its specific sustainability merits, considering factors

such as environmental impacts, resource use, and production methods, rather than solely relying on the local aspect as an indicator of sustainability.

Despite the focus on organic and local food, the price has long been the main criterion for evaluating tenders (Ceder, 2019), which is also evident from the interviews where Wholesaler 1 explained how the price always was valued most important while, e.g., collaborative approaches were not considered. However, quality may suffer if tenders are solely evaluated based on price, and it has also been recognized to disadvantage smaller enterprises (Stake, 2017), as they cannot compete only on price. There are several examples of new models for evaluation, e.g., the weighted sum model (WSM) or most economically advantageous tender (MEAT) (OECD, 2011; Lahdenperä, 2014; Marcarelli and Nappi, 2019; Lehtonen and Virtanen, 2022). Municipality 3 had started developing a price model to incorporate quality in the evaluation of tenders. Municipality 1, on the other hand, found it hard to change old patterns and recognized that changes made depended on individual initiatives, not strategic decisions. Previous studies have acknowledged the importance of such individuals, change agents, in organizational change, e.g., for significantly impacting sustainable food procurement and inspiring other cities to follow suit (Mikkelsen and Sylvest, 2012). According to Balm (2022) change agents are crucial in improving sustainable practices within large organizations, although challenges exist in realizing and scaling sustainable initiatives, including limited financial feasibility knowledge and the need for active knowledge sharing among peers. Thus, according to the producers in the case study, actions are taken to move away from the traditional low-price model, but as these models are not standard procedures yet, further development and testing are needed. Nevertheless, the respondents in this study were positive about the further incorporation of quality and softer values apart from the price in the procurement criteria.

5.2 Actor influence on the SPP for food

5.2.1 Actor relations

Few respondents valued their contribution as the most influential but passed the responsibility onwards. The actors' unsatisfactory feeling about the function of the procurement process has created a blame game of sorts. This is far from the cross-level cooperation needed to overcome challenges for sustainability suggested by Holma et al. (2022). Wholesales pointed to the public kitchens and producers as responsible for the procurement outcome, while the municipalities mainly saw the wholesalers as responsible for or in the power of the process. The substantial impact of a major wholesaler has been identified as a characteristic of conventional food systems in the past (Kang et al., 2022). On the other hand, as the municipalities increasingly favor local produce, this power may shift slightly toward local producers. Government policies and regulations provide mechanisms to "level the field" for local products and farmers to compete (Kang et al., 2022), which is the case with the municipal goals on local produce in procurement.

The municipalities also mentioned the citizens as influential actors who could, for instance, refuse dairy consumption from regions other than their own. A modest majority of the respondents found the public buyer to be the most influential actor in the procurement process. The municipalities were found to have a strong consumer power both in terms of procurement and purchases from kitchens and meal services. According to the respondents in this study, the kitchens place the final order, and they will have the last say in what is being purchased from the framework agreement. In general, most of the decisions are taken at an early stage in the procurement process see, e.g., Dominick and Lunney (2022). However, the results of this study imply that the final step of implementing the procurement, the cooking of the meals, should not be underestimated. The pre-phase dialog, the early part of the procurement process, was frequently highlighted by respondents as a tool and opportunity to develop the procurement process. Thus, feedback from users, such as the kitchens, could provide valuable input regarding their purchasing decisions and planning the procurement process. However, these functions, identified as key actors, were rarely invited to collaborate in the preface of the procurements. Establishing channels for providing feedback from users too early phases has, in previous research, been identified as a key to improving goods and services (Lindkvist and Sundin 2016) as well as to improving subsequent procurements (Holma et al., 2020, 2022; Lingegård and von Oelreich, 2023). However, in this case, the dialog was held only between municipal procurement officers and wholesalers. As such, the municipality missed out on the knowledge from individuals with first-hand experience of the products. These individuals have the possibility to serve as change agents, see, e.g., Mikkelsen and Sylvest (2012) and Grandia (2016), since their behavior could greatly influence the procurement process if considered. Furthermore, individuals in key positions in a procuring function significantly impact the outcome (Goggins and Rau, 2016). Additionally, the result from this study also points to that other parts of the process are critical as well. The respondents give the most leverage to the municipalities and the public kitchens, indicating that the key position could possibly be found outside the procuring function. It also indicates that the supply chain's power affects the procurement outcome and, thus, the ability to drive sustainable development.

Procuring organizations often consider sustainability during planning and implementation but lack ongoing guidance and training to maintain standards (Husgafvel et al., 2022). The example suggests a certain status quo in how sustainability criteria are formulated. Wholesalers and producers were not in favor of municipalities drafting their sustainability criteria and called for greater knowledge among procuring authorities on using and combining criteria. Although several respondents actively participated in reference groups and developed sustainability criteria, few seemed to collaborate closely with The NAPP. The suppliers in public food procurements in Sweden are limited, consisting of two main actors, which grants them a degree of market control. In one specific case, municipal respondents faced the challenge of incorporating new and more stringent sustainability criteria to procure higher-quality products. However, the wholesalers ultimately rejected this attempt, forcing the municipality to revert to traditional, mainstream criteria. This highlights the power of wholesalers in this supply chain. As such, a very influential actor may create challenges when moving forward. To strengthen the sustainability of food value, the value chain dynamics may have to change to promote continuous improvement (Mattas et al., 2022). This is particularly relevant considering the historical context of public procurement. Several countries have long used public procurement to address

sustainability aspects, but the practice lost some momentum during the 1980s' neo-liberal influence when the state's power was reduced in favor of the private market (McCrudden, 2007; Melo Araujo, 2016). While municipalities are public institutions with sustainability goals, wholesalers are profit-driven companies, suggesting that the state's power through procuring authorities is still limited by market forces. The lack of competition among tenderers in public procurements could hinder the development of a more sustainable food system. With today's rising prices and municipalities' fixed budgets, balancing price and sustainability goals will become increasingly challenging. However, it is essential to note that public procurement still holds significant power to shape markets and drive innovation, especially in sustainability (Edler and Georghiou, 2007). The rising prices and inflation further emphasize the need for innovative procurement strategies and a focus on long-term sustainability, as current market conditions expose weaknesses in the traditional procurement approach (Loader, 2015).

5.2.2 The role of local and national policy

The Food and Agriculture Organization FAO (2018) highlights the potential for public authorities to influence entire markets due to their purchasing power. Public procurement can play a role in creating new markets and exerting pressure on firms to develop more sustainable operations (Uyarra and Flanagan, 2010). However, the results of this study reveal that one barrier to driving sustainability forward is the top-down "steering" approach, with insufficient engagement with the supply chain in the procurement process. Municipality 4 said that the politicians decide what sustainable procurement is, and we follow their guidelines. Municipalities and procurement officers rely on established regulations, goals, and targets and depend on local political knowledge of food systems to make informed decisions. Lindström et al. (2022) suggest that there has been an increase in voluntary policy adoption and that local political goals can indeed have significant and positive impacts on the environment and society.

Nonetheless, this assumes that local initiatives are inherently beneficial and aligned with broader environmental and social objectives. Procurement policy can reconfigure power relations within and beyond the food value chain (Sonnino 2009). Therefore, it is crucial to ensure that such local policies are carefully designed and assessed to ensure that they contribute effectively to sustainability goals and are not merely driven by short-term interests or misaligned priorities. Additionally, creating a marketplace were smaller producers and wholesale buyers can develop relationships is important as it will facilitate long-term cooperation and resilience (Miller, 2021).

In cases where local initiatives do not contribute positively to the environment and society, the absence of clear, science-based political guidelines can result in scattered efforts that lack focus and direction. To ensure effective and coherent outcomes, it is crucial to provide municipalities and procurement officers with evidence-based guidelines, as well as political support and resources. This would enable local procurement practices to better align with overarching environmental and social objectives and facilitate a more strategic approach to sustainable food procurement. Synchronization between productive sectors, policy areas and levels of government is needed to improve the efficiency of the transition to sustainable food systems (Mattas et al., 2022). Additionally, comprehending the food system as dynamic and interlinked involves understanding all pillars of sustainability and system feedback (Kugelberg et al., 2021). Thus, the implementation of policy through procurement must entail feedback and the involvement of relevant stakeholders to withhold transparency continuously.

6 Conclusion

This research investigated public food procurement through an analysis of the interactions and dynamics among the various actors involved, in addition to the application of sustainability criteria. Addressing crucial knowledge gaps regarding the intricacies of public food procurement involves emphasizing the diverse array of challenges and opportunities inherent in this critical domain. Unless there are comparable policy contexts and procurement processes, the applicability of this case study on sustainable food procurement beyond a specific geographical area is restricted. Nevertheless, the results are generalizable to several scientific disciplines from an analytical standpoint. The findings augment the current body of knowledge concerning sustainable food systems by discerning the principal stakeholders in terms of public procurement, their definition of sustainable foods, and how this impacts food procurement. Furthermore, it provides insight to the policy implementation field by showcasing the translation and implementation of policy on different levels.

From the public procurement perspective, the study emphasizes how procurement officers circumvent legislation by utilizing product-specific criteria to procure goods from local producers in pursuit of political objectives regarding local produce. However, assuming that local is invariably sustainable carries the risk of falling into the "local trap" when the consequences of the public procurement criteria have not been thoroughly investigated. Thus, further research is required to determine the sustainability implications of this.

Furthermore, the findings offer valuable perspectives on sustainable supply chain management through empirical evidence that demonstrates a potential transformation of power dynamics within the supply chain in response to modifications in procurement standards. Therefore, a relevant avenue for future research entails further examining the potential for collaboration or coexistence between conventional and local food systems. Additionally, as local produce varies with the geographical setting, potential discrepancies and effects could also be analyzed. In addition, the study demonstrates how a lack of coordination and alignment within the sustainable food supply chain can hinder development. Furthermore, external and internal stakeholder engagement is crucial during the early stages of the procurement process, especially for vital feedback from users.

The research enhances our comprehension of the challenges and opportunities in promoting sustainable food procurement and fostering a more sustainable food system. In doing so, it serves as a resource for academics, policymakers, and practitioners striving to positively impact public food procurement practices and, subsequently, our worldwide endeavors toward sustainable food systems.

Data availability statement

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

Ethics statement

Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

Author contributions

EM: Conceptualization, Formal analysis, Investigation, Methodology, Validation, Visualization, Writing – original draft. SL: Conceptualization, Formal analysis, Methodology, Supervision, Writing – original draft, Writing – review & editing. MM: Conceptualization, Formal analysis, Funding acquisition, Methodology, Project administration, Supervision, Writing – original draft. AB: Conceptualization, Methodology, Project administration, Supervision, Writing – original draft.

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

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Supplementary material

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