



Licential Thesis in Planning and Decision Analysis

# Toward a more sustainable food system using public procurement

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## Foreword

The research described in this thesis was conducted within one project, “Influencing Sustainable Food Consumption through the use of Sustainable Procurement Criteria,” initiated by IVL Swedish Environmental Research Institute and KTH Royal Institute of Technology and funded by FORMAS. The project’s overall aim is to improve sustainability in the food system by using public procurement.

Parallel to the project mentioned above, I have been working on several other research and consultancy projects concerning the topic of sustainable food systems, sustainable public procurement, and circular procurement at IVL. At IVL I belong to the Division of life cycle management, and life cycle thinking is an important part of how I view sustainability. Apart from the academic experience, I also have a practical background growing up on a farm and starting my work experience in the food industry, being a trained cook with an international career. I believe this was a strength in interviewing practitioners and engaging in their stories about public food procurement.

In this thesis, I will leverage my practical experience and theoretical reviews of the food system to connect with my research on public procurement. Through this connection, I aim to increase sustainability in the food system.

## Abstract

Around 30 % of today's anthropogenic greenhouse gas emissions originate from the food sector. Food production is the lead cause of deforestation, biodiversity loss, depletion of fish stocks, and scarcity of fresh water. The planetary resources rapidly decrease with a continually growing population demanding resource-intensive food, such as dairy and animal protein. The global production of calories satisfies human needs, but while some suffer from hunger, even more, suffer from overweight or obesity.

For a food system to be sustainable, it must not negatively impact the three pillars of sustainability, i.e., economic, environmental, and social. One of the main challenges for the food system is to reduce the environmental impact to operate and stay within the planetary boundaries.

Three million public meals are served daily in Sweden. Public procurement has been recognized as a powerful tool with potential to promote quality and educate change. Previous research has shown that implementing sustainability criteria in the procurement document leads to an increase in certified products in procurements. The National Agency for Public Procurement (NAPP) in Sweden provides a library with sustainability criteria on different levels and for almost all commonly bought products. Active work with sustainability and applying sustainability criteria in procurement can contribute to pupils education health and a further sustainable food system.

In this thesis, I frame sustainable procurement through a systematic review of academic literature and interviews with Swedish practitioners who buy or sell food products through public procurements. Furthermore, I elaborate on the Swedish actors' experienced ability to influence the procurements, the use of sustainability criteria, and barriers and opportunities toward a further sustainable food system using public procurement. The goal is to examine possible ways toward a more sustainable food system through public procurement.

The results show that both the reviewed literature and the Swedish actors have a comprehensive take on sustainability and work with all three dimensions. Above all, the favoured sustainability aspects are predominantly procuring organically labelled and locally sourced foods. Working with food waste is recognised as important, but few initiatives are taken within the procurement process to reduce food waste. Despite a large amount of academic literature on efficiently reducing environmental impacts from the food system (mainly by dietary changes and waste reduction). The results show little interest among actors in promoting these specific public sector actions. The Swedish actors are overall satisfied with the services and the criteria library provided by the NAPP. A majority of the respondents contributed to writing and reviewing the criteria, adding to the criteria's acceptance and usage within the sector.

There are several initiatives already taken by policymakers, procuring authorities, and not the least, the market to improve sustainability in the food system.

Nevertheless, actions must be taken at multiple levels simultaneously to address the scale of our sustainability challenges. This thesis contributes knowledge that can guide future research toward sustainable food systems, bridge the stakeholder's priorities with research where they differ today, and fully use the potential in public procurements.

### **Keywords**

Public procurement, food systems sustainability, environment, social, economic, GPP, SPP, systematic review, literature, Sweden, actors, stakeholders, public meals, school meals

## Sammanfattning

Cirka 30 % av de antropogena växthusgaserna härstammar från livsmedelssektorn. Produktion av livsmedel är den ledande orsaken till avskogning, förlorad biodiversitet, utfiskning och brist på färskvatten. Planetens resurser minskar i snabb takt med den ständigt växande populationen som kräver en resursintensiv kost så som mejeriprodukter och kött. Även om den globala produktionen av kalorier tillfredsställer befolkningen lider många människor av hungersnöd och ännu fler till antalet är överviktiga.

För att ett livsmedelsystem skall kunna räknas som hållbart får det inte ha en negativ effekt på någon av de tre dimensionerna av hållbarhet. Om vi skall hålla oss inom de planetära gränserna är det nödvändigt att minska miljöpåverkan från livsmedelsystemet avsevärt.

Det serveras dagligen tre miljoner måltider i offentlig sektor i Sverige. Offentlig upphandling har blivit uppmärksammat som ett kraftfullt verktyg med potential att bidra till ökad kvalitet och lärande om hållbarhet. Tidigare forskning har visat att användande av hållbarhetskriterier i upphandlingsdokumentet leder till mer hållbara upphandlingar. Upphandlingsmyndigheten i Sverige tillhandahåller ett kriteriebibliotek, med hållbarhetskriterier som kan ställas på olika nivåer. Det finns kriterier för de flesta vanligt köpta produkterna.

Genom en systematisk litteraturstudie av vetenskapliga artiklar och intervjuer med svenska aktörer inom offentlig livsmedelsupphandling, skapar jag i den här avhandlingen en bild av hur aktörer definierar en hållbar livsmedelsupphandling. Jag vill också undersöka hur de svenska aktörerna upplever sin egen förmåga att påverka upphandlingsprocessen, om de använder hållbarhetskriterier, samt vilka hinder och vilken potential de identifierar på vägen mot ett hållbart livsmedelssystem. Avhandlingen avser att öka kunskapen om och undersöka olika vägar mot ett mer hållbart livsmedelsystem genom offentlig upphandling.

Resultatet visar att både den studerade vetenskapliga litteraturen och de svenska aktörerna har en omfattande ansats till och syn på hållbarhet och att det sker ett aktivt arbete inom alla hållbarhetsdimensionerna. Främst av allt är det ekologiskt märkta produkter och en ökad andel lokalproducerade varor som prioriteras i offentlig upphandling. Att arbeta med minskat matsvinn uppmärksammades av flera men det fanns få konkreta exempel på hur det integreras i upphandlingsarbetet. Trots den omfattande vetenskapliga litteraturen kring vilka åtgärder som är mest effektiva för att minska miljöpåverkan från livsmedelsystemet fanns lite intresse bland aktörerna för att tex främja ändrade dieter i offentlig sektor. Generellt var de svenska aktörerna nöjda med Upphandlingsmyndighetens tjänster och kriteriebiblioteket. De flesta hade deltagit i referensgrupper och således granskat eller varit med och skrivit hållbarhetskriterierna. Detta antas bidra till deras acceptans och höga användningsgrad inom livsmedelssektorn.

Det finns redan idag många exempel på initiativ från beslutsfattare, upphandlande enheter och privata aktörer som leder marknaden mot ett mer hållbart

livsmedelssystem. Det är dock avgörande att vidta åtgärder på flera nivåer samtidigt för att adressera omfattningen av de rådande hållbarhetsutmaningarna vi står inför. Den här avhandlingen bidrar med kunskap som kan vägleda framtida forskning och möjligen överbygga de skillnader som syns i prioriteringar, för att fullt ut utnyttja potentialen i hållbar offentlig upphandling.



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Vassfarfjellet, October 2021

*Elvira Molin*

## List of appended papers and author contribution

**Molin, E.,** Martin, M., Björklund, A. 2021. Addressing sustainability within public procurement of food: A systematic literature review. *Sustainability (Basel, Switzerland)*, 13, 13395

In Paper I, all co-authors jointly developed the paper's content scope and research questions. As the lead author, I wrote the search string and conducted a systematic literature search. I also solely screened the articles gathered and later studied and analysed the selected papers. I wrote the first draft of the paper, which was finalised as a collective work in an iterative process with the supervisors (co-authors).

**Molin, E.,** Lingegård, S. Martin, M. Björklund, A. (2023) 'Sustainable public food procurement – actors' role and influence'

In manuscript II, all co-authors jointly developed the paper's content scope and research questions. I wrote the interview guide with feedback from the co-authors and was responsible for contacting and interviewing the respondents. I wrote the first draft of the paper and the co-authors advised in terms of structure and content. I contributed to the research design and choice of method and was primarily responsible for performing the study and analysing the results.

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## 1 Introduction

In 2018 a heat wave and droughts like nothing earlier experienced were recorded in central Europe. The report by IPCC (2021) establishes the fact that extreme weather, like wildfires and flooding, are consequences of the anthropogenic release of greenhouse gases (GHG). About 30 % of today's anthropogenic GHG emissions originate from the food sector, and food production is the leading cause of deforestation, land-use change, and biodiversity loss (FAO, 2020, Garnett, 2013, Vermeulen et al., 2012). Furthermore, the food sector also uses 70 % of all freshwater consumed worldwide (The World Bank, 2020). In the sea, extensive depletion of fish stocks and disruption in the marine environment are ongoing problems (FAO, 2021). Today's food system destroys the environment and undermines future food production (Garnett, 2014b).

The global community continues to struggle in attaining sustainable food security. Branca et al. (2017) argue that the path forward requires government policies that facilitate access to nutritious food. A multitude of scholars suggest diverse policy interventions for bolstering the social sustainability of the food system, including the enhancement of technologies, promotion of economic viability, and the encouragement of behavioural changes (Ekvall et al., 2016, Martin et al., 2016, de Schutter, 2015). Consequently, the establishment of regulatory frameworks and initiatives is a critical step in realizing specific policy goals, as these policy instruments serve as vital catalysts in transforming the food system for a more sustainable future (Swensson and Tartanac, 2020).

Public procurement has the potential to impact consumption patterns by promoting sustainable production practices. Sustainable food systems play a central role in achieving the Sustainable Development Goals (SDGs) of the 2030 Agenda (Valentini et al., 2019), and it is essential that government organizations and the public sector lead by example in demonstrating the change towards a more sustainable food system. A comprehensive approach to the whole food system, including policy interventions and an inversion in drivers from the human demand side, is necessary to achieve the Paris Agreement's goals. Public procurement has been identified as one of the policy tools that can motivate sustainable production methods effectively, given that public procurements amount to roughly 20-30% of the gross domestic product in many countries (Testa et al., 2016a, Upphandlingsmyndigeten, 2018). Many studies have put forward public procurement as an effective approach to drive more sustainable production methods see, e.g., Filippini et al. (2018), Morley (2021), Caputo et al. (2017). The increased demand for sustainable products and services in the public sector is expected to orient production and consumption in a more sustainable direction, according to research by UNEP (2014), Ahi and Searcy (2013), Testa et al. (2016b), Witjes and Lozano (2016).

Every day, three million meals are served in Sweden through public procurement (The National Agency for Public Procurement, 2020b). The Swedish government

aims to lead by example by using public procurement of food and catering services to promote animal welfare and environmental protection in line with national laws and ambitions (Regeringen, 2016b). However, achieving a consensus on transforming the food system is crucial for all actors, particularly policymakers. Clarifying differences in perspectives between Sweden and other international actors is essential to improving system performance (Regeringskansliet, 2021). The Swedish context.

Sweden is an interesting case study for public food procurement due to several factors. First, consumers in Sweden have demonstrated a high willingness to pay for sustainable food products. This has allowed public procurement officials to prioritize sustainability in their procurement criteria, making it a key factor in the selection of food suppliers. Secondly, Sweden has taken a proactive approach to innovation in the area of sustainability (Phillis et al., 2011), encouraging the development of new technologies and practices that promote sustainable food production and procurement. This has resulted in a wide range of sustainable food options being available on the market, allowing procurement officials to make informed decisions when selecting suppliers. Overall, Sweden's emphasis on sustainability and innovation in public food procurement makes it a valuable case study for other countries looking to improve their own procurement practices.

The Swedish government has acknowledged the fragmented nature of existing sustainability goals and the need for a comprehensive policy framework that incorporates system-level thinking to promote sustainable food systems (Regeringskansliet, 2021). Researchers have proposed several strategies, such as increasing the consumption of organic foods or sourcing more local products, to achieve sustainability goals (Stefani et al., 2017, Schebesta, 2018). Life cycle assessment (LCA) has been widely used to evaluate the environmental performance of food production and retail activities (Notarnicola et al., 2017, Sturtewagen et al., 2016, Jungbluth et al., 2016), and several studies have examined the effectiveness of different procurement measures, including those by Lilliana (2022), Cerutti et al. (2018b) or Perez-Neira et al. (2021). However, a significant knowledge gap exists regarding the most crucial sustainability aspects and the most effective measures. While the role of LCA in promoting efficiency, demanding constraints, and driving system transformation has been explored (Garnett, 2014a), further research is necessary to determine the value of different approaches to assessing the food system (ibid).

While nations, regions, and municipalities may have ambitious sustainability goals, the progress made by different organizations varies, and there is a need for coordination and alignment of efforts (Regeringskansliet, 2021). However, there is a lack of understanding regarding how the Swedish food system can establish a common target and process that would encourage all organizations to work together towards achieving these goals. This thesis examines how stakeholders recognize

sustainable practices and emphasizes sustainable public food procurement in both an international academic context and a practical Swedish setting.

### 1.1 Overall aim and research questions

The main objective of this thesis is to explore the potential of sustainable public food procurement from various perspectives, with the aim of contributing to more sustainable food systems. The knowledge gathered is intended for stakeholders in the public food sector. Public procurement is the focus because of its potential to drive change.

This thesis consists of two papers. In Paper I, a systematic review of the academic literature on sustainable public food procurement is conducted to gain insight into various definitions and motivations for working with public procurement towards a sustainable food system. Paper II adds a practical perspective by conducting interviews with Swedish stakeholders. The paper examines how sustainability is framed and interpreted at the national level and explores the stakeholders' perceived ability to influence the procurement process and its outcome. Additionally, the paper identifies the opportunities and barriers experienced by stakeholders to better understand the current state of the art and possible ways to promote a more sustainable food system through public procurement

In this thesis, I elaborate on the following research questions (RQs):

1. What aspects of sustainability are emphasised in public food procurement? (Paper I & Paper II)
2. How do scholars and Swedish actors work with sustainability in the system of public food procurement? (Paper I & Paper II)
3. What capacity do the different actors have to influence the procurement process and the sustainability criteria posed, and what are the expected consequences of using sustainability criteria? (Paper II)
4. What barriers and opportunities do the actors identify for developing procurement in a more sustainable direction? (Paper II)

RQ 1-4 are developed based on the questions posed in the individual papers.

### 1.2 Outline of cover essay

This thesis is divided into two parts: a cover essay and the appended papers. The cover essay contains seven chapters, starting with the background, Chapter 1, where the problem of environmental pressure and the contribution to climate change from the agricultural sector is described. It also motivates how public procurement could be important to lead the way toward a more sustainable food system. In Chapter 2, the Scientific context is presented, and public procurement and the different actors involved are further explained. Chapter 3 presents the methods that were used in the two papers for gathering data and analysis. In Chapter 4, the results from the two papers are summarised, and it is followed by Chapter 5, conclusions drawn from the results. The first part of the thesis ends with Chapter 6, with a discussion and concluding remarks and Chapter 7 suggesting future research.

## 2 Background and scientific context

A major part of sustainable public food procurement is reliant upon the food supply system, this chapter is therefore introduced by a summary of how I interpret sustainable food systems based on available research. The second part presents authorities and regulations linked to the public procurement process, its actors, and their specific roles. My study is influenced and shaped by my previous work with Life Cycle Assessment (LCA) and the view that a life cycle perspective is essential when developing strategies to address and mitigate environmental problems and its importance in studies on sustainable production and consumption. It is with a lifecycle thinking I approached this study and the view of public food procurement.

### 2.1 Sustainable food systems

Food production is responsible for various environmental impacts, including significant GHG emissions, primarily consisting of CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O (Baumert, 2005); global freshwater usage (Hoekstra and Mekonnen, 2012); and land-use changes, such as deforestation (Foley et al., 2011, Steinfeld, 2006). In fact, nearly one-third of total anthropogenic GHG emissions stem from the food supply chain, with the majority originating in primary production (Tubiello et al., 2021). From an environmental perspective, the activities within the food system should be neutral or positive on the surrounding environment, contribute to biodiversity, promote animal and plant health, prevent the spread of chemicals, and minimize losses, as stated by the FAO (2018). Numerous scholars assert that significantly reducing animal-based protein and food waste are two of the most effective measures for decreasing environmental impacts from the food system (Martin and Danielsson, 2016, Garnett et al., 2017, Garnett, 2011, Willett et al., 2019b, Cerutti et al., 2018b). As a result, these strategies should be incorporated to enhance efficiency and improve the sustainability of the food system.

To achieve a sustainable food system, it is imperative that human needs are met without depleting resources, exacerbating environmental degradation, or infringing upon human rights (FAO, 2018). As such, a profound transformation is necessary to ensure that we can live sustainably within planetary boundaries, both now and in the future (Rockström, 2010, Steffen et al., 2015). By incorporating strategies like reducing animal-based protein and food waste, we can enhance efficiency and improve the sustainability of the food system, ultimately fostering a positive impact on the environment, biodiversity, and the health of plants and animals.

As the global population continues to grow, urbanization and increasing wealth have led to a greater demand for resource-intensive foods like meat and dairy (Garnett, 2014a). Studies on environmental impacts from the food system have significantly increased knowledge on emissions and the use of resources in different production systems, providing robust, consistent information on reducing environmental impacts. However, there are uncertainties associated with individual calculations using LCA-models to estimate GHG emissions (Cederberg et al., 2013). To operate within planetary boundaries, multiple measures to reduce environmental impacts must be

implemented simultaneously (Conijn et al., 2018). The food system impacts the environment and several social and cultural aspects, including nutrition and health, traditions, labour conditions, and animal welfare. Nutrition and long-term health are the primary goals of the food system. Although food production of calories has kept up with the growing global population (Willett et al., 2019b), adequate and affordable nutrients are not available for all, resulting in a double burden of malnutrition (Loechl et al., 2019). While food has become cheaper, it is not always the healthiest option. More equitable resource distribution could ensure adequate caloric intake for the global population (Willett et al., 2019b). Furthermore, activities within the food system should generate benefits or economic added value for all stakeholder categories, including workers' wages, governmental taxes, enterprise profit, and food products for consumers.

The food system is an intricate and multifaceted entity that encompasses numerous aspects of sustainability. In recent years, there has been a growing focus on enhancing the sustainability of the food system in order to tackle the unsustainable practices prevalent in food production and consumption, as highlighted by Garnett (2014a). This heightened attention has been instrumental in defining the scope of the challenge and promoting a broader understanding of the various issues at hand.

Through this increased scrutiny, stakeholders from various sectors, including governments, businesses, and consumers, have started to recognize the pressing need for transformative actions. As a result, innovative approaches and strategies have emerged to address the diverse environmental, social, and economic dimensions of the food system. These efforts aim to create a more resilient and sustainable food system that can adapt to the challenges posed by population growth, climate change, and resource scarcity, while simultaneously fostering improved public health and environmental stewardship.

## 2.2 Public procurement

Public procurement refers to the purchase of goods, services, or constructions on behalf of a public authority to meet specific criteria or requirements (Sveriges Riksdag, 2016). Procurement is a critical tool for achieving sustainable food systems. In this chapter, I discuss the reasons why procurement is influential, how the process works and the main legal framework and policies that govern it in Sweden. Additionally, I provide an overview of the National Agency for Public Procurement (NAPP), which offers guidance to all stakeholders involved in procurement. Finally, I present a timeline of sustainable public food procurement development, highlighting significant historical events and policy measures.

## 2.3 Process, legal frameworks, and strategies of PP

**The procurement process**, also known as the procurement cycle, typically consists of three to five core steps: planning, performing, and delivering, as illustrated in Figure 1 (The National Agency for Public Procurement, 2020a). Additional steps may include the design of the procurement document, submission of tenders, evaluation



and award, follow-up, and payment. The level of detail in each step can vary depending on the country and organization. In Sweden, the National Agency of Public Procurement divides the procurement process into three phases: preparation, implementation, and contract realisation. The European Commission also provides guidance for practitioners, which includes steps similar to those suggested by the Swedish authority. The European guidance also provides tips for avoiding common errors, such as choosing the right procedure, publishing the procurement, selecting criteria, and facilitating the procurement process (European Commission, 2018).

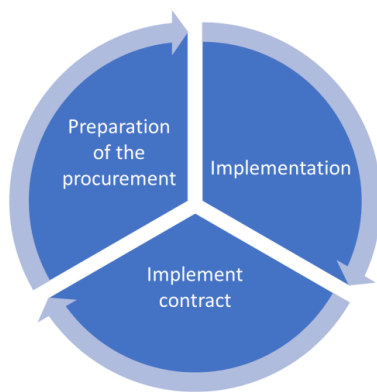


Figure 1: Depiction of the procurement process from Paper II (The National Agency for Public Procurement, 2020a)

**The Public Procurement Act** is the legal framework for all procurements in the European Union. In Sweden, any procurement exceeding a monetary value threshold set by the EU must be published on a central platform for member states to view (Sveriges Riksdag, 2016). As of 2022, the threshold for goods and services purchased by government authorities was 1,456,476 SEK (Uppanhdlingsmyndigeten, 2022). The national procurement act includes regulations for every step of the procurement process, such as procedures, agreements, time limits, and qualification criteria (Regeringskansliet, 2019). The Public Procurement Act in Sweden is based on five fundamental principles (Sveriges Riksdag, 2016):

- *Principal for non-discrimination* - There is a total prohibition to direct or indirect discrimination, out of geographical or national perspectives (4 kap. 1 § LOU).
- *Principal of equal treatment* - All suppliers are to be equally treated and given the same opportunities to participate in the procurement. No tenderer may be favoured or disfavoured (4 kap. 1 § LOU). All tenders that are equal are treated equally, and all that are different are treated differently.
- *Principal of transparency* - The procedure shall be done with openness and predictability. Matters concerning the procurement should not be kept secret, and the advertisement should be in a public place (4 kap. 1 § LOU). All tenders participating in the procurement shall be notified about the

reward of the contract. All procurement documents should be clear and well-formulated, containing all requirements that have been made.

- *Proportionality principle* - Testimonials and certificates of equal character by competent authorities issued in other countries shall be valued equally within the European Union.
- *Principal of mutual recognition* - Testimonials and certificates of equal character by competent authorities issued in other countries shall be valued equally within the European Union.

The Swedish public procurement system is guided by two key strategies aligning with national sustainability and economic growth goals. The first is **the National Strategy for Public Procurement**, which aims to increase the number of suppliers to the public sector while also promoting environmental responsibility and contributing to a sustainable society that supports the achievement of Agenda 2030. This includes creating job opportunities, promoting equity for workers and consumers, and establishing fair trade agreements (Regeringskansliet, 2017).

The second strategy is **the National Food Strategy**, known as *Livsmedelsstrategin*, which sets goals for creating a sustainable and competitive food supply chain. The strategy aims to increase national food production while meeting national environmental targets and ensuring equitable access to healthy food for all (Regeringen, 2016a). In addition to these national strategies, many regions and municipalities also have their own sustainability goals and targets to guide public procurement efforts

**The NAPP** (National Agency for Public Procurement, *Upphandlingsmyndigheten*) is an authority that collects knowledge and provides guidance and help in the procurement process (Upphandlingsmyndigheten, 2019). Their commission as an authority is to increase sustainability and make innovative and efficient procurements. The NAPP provides a library of sustainability criteria for a large number of products on different levels. In my research, I examine if the actors are content with the criteria provided.

#### 2.4 Actors in public food procurement in Sweden

In my research in Paper II, I view stakeholders in the procurement process as those who are directly impacted by the procurement, e.g., by selling or buying food products, and those who influence or are influenced by the process and its outcome, Figure 2.

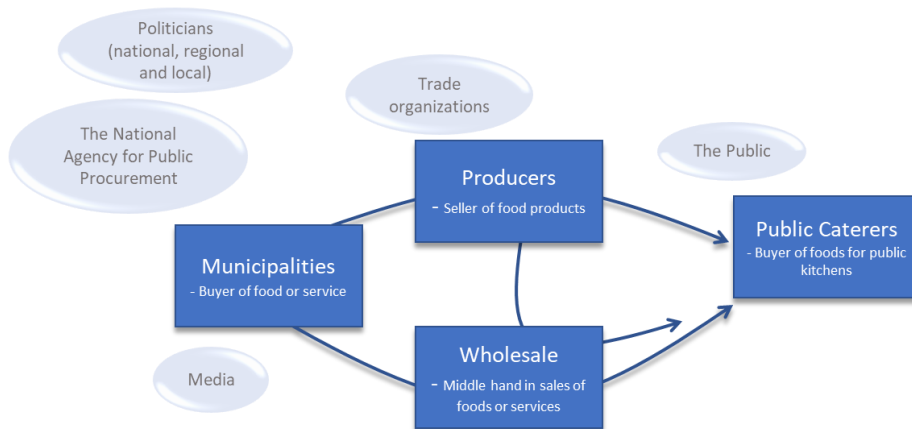


Figure 2: Actors identified as directly (boxes) or indirectly (ovals) involved in public food procurement (Paper II).

Directly impacted actors either write the procurement document or hand in tenders. They apply sustainability criteria to increase the procurements' performance or have to answer to them by delivering to their standards. In Paper II, the actors identified to be directly impacted by the procurement process are also the same actors to whom the NAPP directs their services by providing guidance and support in public procurement. The directly impacted actors are food producers, primary production or retail, wholesalers, public actors like municipalities, and public caterers or kitchens. Producers and retailers sell food products either directly to public organisations or through a wholesaler. Wholesalers act as logistic centres administrating storage and transport between producers and buyers. Municipalities contract and buy food products or services through procurements. Depending on the municipalities' size, a larger organisation can work around the procurement. Public caterers or kitchens make the final order according to the contract set up by the municipality. The different actors' ability to influence the procurement process and its outcome are elaborated on in Paper II.

Other actors were identified through literature and by the respondents during the interviews. These actors indirectly impact the procurements by, e.g., influencing those who work in procurement, such as politicians, the NAPP, media, and trade organisations. The last category is actors identified that are indirectly impacted by the procurement, the end consumer, i.e., pupils, elderly, or patients in hospitals.

## 2.5 Timeline for incorporating sustainability in public food procurement

In this chapter, I present a timeline of key events that have contributed to the development of today's framework for sustainable public procurement. The timeline illustrates the evolution of public procurement in Europe and Sweden and provides insights into the current procurement model. Figure 3 presents the events in chronological order, with international events shown above the coloured line and

events specific to Sweden shown below. The colours in the centre represent five-year time periods.

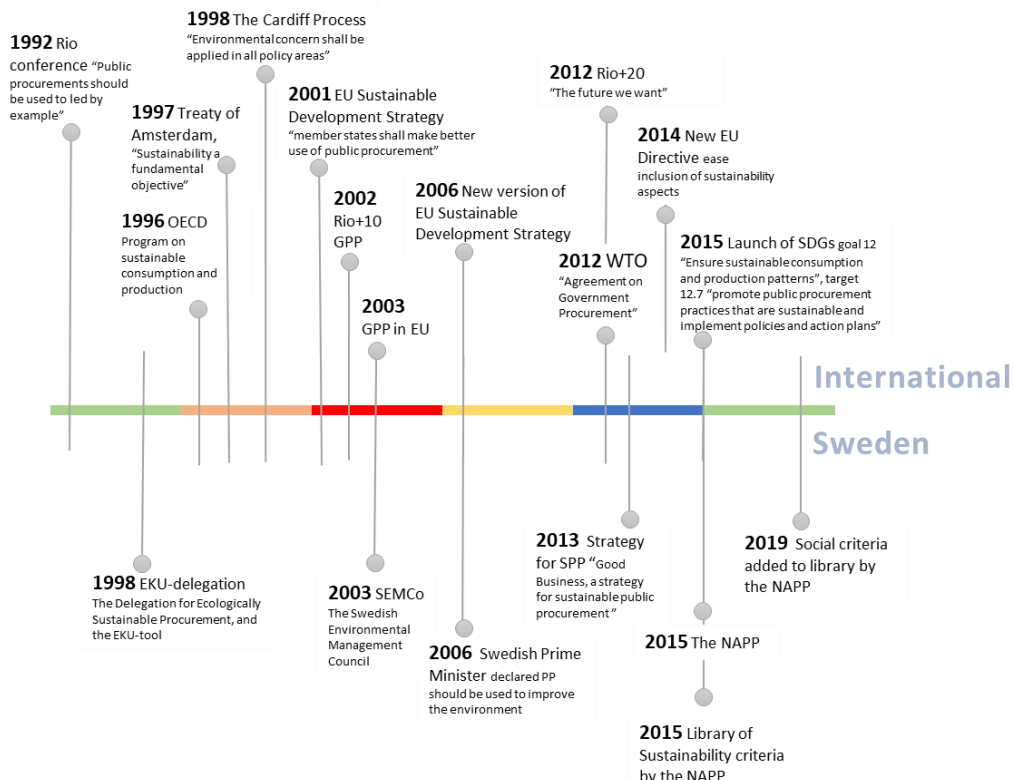


Figure 3: Depicts key happenings to shape sustainable public procurement internationally and in Sweden.

The UN has performed a great amount of international work toward implementing policies and demands for sustainable production in procurement. The states have implemented organisational strategies to protect the environment through different Conferences every ten years since 1992 (United Nations, 1992, United Nations, 2012, European Commission, 2008b). The council affirmed that green economy policies should promote sustainable consumption and production patterns in the report "The future we want" (United Nations, 2012). It was also agreed to start working on joint goals during the conferences, and the work with the sustainable development goals (SDGs) began.

On a European level, significant steps were taken in Amsterdam and Cardiff to prioritize sustainability in public procurement (European Union, 1997, European Commission, 1998). The EU launched a Sustainable Development Strategy in 2001, which recommended that member states use public procurement to promote environmentally-friendly products and services (European Commission, 2001). In

2002, GPP was first introduced at Rio+10, and the EU recommended that member states develop action plans to implement it the following year (European Commission, 2008b). In 2014, a new Directive was launched that simplified the inclusion of SMEs and sustainability criteria in procurements (European Commission (2014).

Additionally, the Government Procurement Agreement (GPA) was established by WTO members in 2012 to ensure open, fair, and transparent conditions in the procurement market among competing governments (World Trade Organization, 2021).

In the mid-1990s, Sweden began discussions on integrating sustainability in procurement, leading to the formation of the Delegation for Ecologically Sustainable Procurement (EKU-delegation) in 1998 (Ryding, 2010). The EKU-delegation published The Swedish Tool for Ecologically Sustainable Procurement (EKU-tool) with environmental suggestions for 50 products (ibid). The Swedish Environmental Management Council (SEMCo) took over in 2003, and in 2006, the Swedish government presented an action plan for environmental criteria in public procurement (Miljödepartementet, 2006). In 2013, the governments' official investigations launched "Good businesses, a strategy for sustainable public procurement," and in 2015, the National Agency for Public Procurement (NAPP) replaced SEMCo (SOU, 2013). Today, the NAPP provides guidance, knowledge, and tools, such as criteria for environmentally sustainable procurement. The agency also launched a criteria library with over 600 sustainable criteria for commonly bought products and extended it to include a social dimension that supports labour law conditions in 2019 (Upphandlingsmyndigeten, 2019).

## 2.6 Previous research on sustainable procurement

This thesis examines possible ways toward a more sustainable food system by pursuing public procurement. A number of scholars worldwide have previously studied public food procurement (Sonnino, 2009, Cerutti et al., 2016, Morgan, 2008, Mikkola, 2009, Goggins and Rau, 2016). Morgan and Sonnino (2007) were amongst the first to study the field of public food procurement as an academic research field. They explored different procurement approaches for school meals in Italy and the UK and the importance of balancing quality and best value.

Over the last two decades, public procurement has slowly incorporated environmental sustainability, as shown in the timeline in Chapter 2.2.4. Green public procurement (GPP), also known as green purchasing, is a voluntary instrument that aims to purchase products and services with minimal adverse environmental impacts. The European Commission and several member states offer guidance on the GPP procedure (European Commission, 2008a). According to de Leonardis (2011), GPP is one of the most effective methods to implement the precautionary principle, and if employed throughout the EU, it could reduce CO<sub>2</sub> emissions by 60 million tonnes. However, a key challenge for GPP to be efficient is the need for

verifiable environmental criteria for products and services. Additionally, GPP needs to be further developed to become a common practice compatible with member states (European Commission, 2008a).

Public procurement and the food system offer opportunities for the state to promote fair trade and social sustainability. Historical examples include the USA and UK in the 19th century, where the state established fair wages and maximum working hours (McCrudden, 2004). However, conflicting interests between food policies for cost efficiency and for health have emerged with globalisation and economic constraints on the national state (Erridge and Greer, 2002, Gordon Murray et al., 2008). Despite this, public procurement has been found to be effective in promoting social sustainability goals, such as employment opportunities and social inclusion, rather than environmental goals, such as ensuring biodiversity and reducing emissions to air and water. Amann et al. (2014) also note that the market has already implemented social and environmental practices, even if they have not been fully incorporated into procurement.

Economic considerations have long been the core concept in procurement, and the EU directives for the member states were to reward tenders based on “lowest prices” or “most economically advantageous.” This implies rejecting all other, i.e., sustainability or quality objectives<sup>1</sup>. To pursue sustainability goals within the EU, market-based green growth strategies followed a shift from the dominant economic paradigm (Figure 3). Production techniques were incorporated in 2000, and the contracting authority could require environmental or social criteria<sup>2</sup>. However, rewarding based on the lowest price are still common practice, not considering the effects on human health and the environment (Morgan and Sonnino, 2008).

Several sustainability assessments have also been performed using tools such as LCA to quantify environmental impacts (Notarnicola et al., 2017, Sturtewagen et al., 2016, Jungbluth et al., 2016). There are also studies on how procurement practices cover different sustainability schemes (see, e.g. Neto (2020). Stefani et al. (2017) performed a literature review of public food procurement, identifying the increasing interest in the field with the rising number of publications, disciplinary approaches, and research methods. However, the schemes and sustainability aspects emphasised have never been compiled.

Several case studies conducted in Sweden have focused on GPP schemes for food products and catering services and environmental criteria to assess sustainability in procurement (Cerutti et al., 2018a, Lundberg and Marklund, 2018, Neto, 2020). Other studies have explored issues such as conflicting goals for cost efficacy, environmental standards, animal welfare, and opportunities to promote a circular economy through public procurement (Ohlund et al., 2017, Alhola et al., 2017).

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<sup>1</sup> Council Directive 93/36/EEC, Council Directive 92/50/EEC, Council Directive 93/37/EEC, Council Directive 93/38/EEC

<sup>2</sup> Council Directive 2004/18/EC.

These studies demonstrate various ways to implement policy schemes and achieve environmental goals in Sweden through procurement using the current governing system. However, Olsson and Öjehag-Pettersson (2020) analysis of Swedish public procurement raises a critical concern: by equating unsustainability with market failure, there is a risk of limiting the scope of potential solutions. This perspective may inadvertently constrain the search for innovative approaches and hinder the development of creative solutions that extend beyond the existing system. Such a narrow focus could lead to an overreliance on traditional market-based interventions, while neglecting other potential avenues for fostering sustainability in public procurement.

For instance, exploring novel collaborative models, technological advancements, or shifts in consumer behavior could offer alternative pathways to addressing unsustainability issues. By broadening the understanding of the underlying causes of unsustainability, policymakers and stakeholders can consider a wider range of strategies and interventions, enabling a more holistic and adaptive approach to transforming the food system. This expanded perspective may uncover new opportunities for innovation and collaboration that would have otherwise remained unexplored within the confines of a market failure-centric approach.

It is widely acknowledged that insufficient resources for procurement authorities can result in suboptimal procurement processes. While some studies, such as those by Goggins (2018) and Kristensen et al. (2021) have investigated the roles of different actors, more research is needed to provide robust evidence to policymakers regarding the allocation of resources. A more comprehensive understanding of the roles and influence of various actors on sustainability performance in public food procurement demands further examination.

Additionally, further research is necessary to understand how food procurement actors perceive sustainability and to adapt the system accordingly. While some studies have explored the roles of different actors, such as Goggins (2018) and Kristensen et al. (2021), more investigation is required to substantiate arguments for policymakers regarding resource allocation. Overall, deepening the understanding of actors' roles and their impact on sustainability performance in public food procurement is essential for informing policy development and promoting a more sustainable food system.





### 3 Methodology

To address the research questions presented in section 1.2, this study utilized a mixed-methods approach involving both desk studies and empirical work. The desk studies were conducted to gather and review existing literature, while the empirical work involved interviewing practitioners to gain new perspectives and insights. This approach allowed for a comprehensive and descriptive analysis of the current state of the art and the barriers and opportunities in driving the food system towards sustainability through public procurement. The study provides a unique understanding of the different levels and actors involved in the procurement process and their perceived ability to influence it. The methods applied in this study are briefly described in the following section and are further elaborated on in the corresponding papers. Figure 4 provides one possible way to position this study based on the most relevant references for this work.

To position my research within the context of sustainable food systems, I created Figure 4 to visually link my overarching goal and the methods I applied. The figure divides the food system into activities that influence it from a global perspective (in green), approaches to applying policy instruments (in blue), and different policy instrument categories (in orange). The fifth column (in grey) displays the various methods commonly used to investigate policy instruments, as identified in Molin et al. (2021) review article. Creating Figure 4 allowed me to cluster my research ideas and perspectives and map out a clear path forward. Through this process, I gained a better understanding of the field and my position within it, which I hope will contribute to the larger conversation on achieving sustainable food systems.

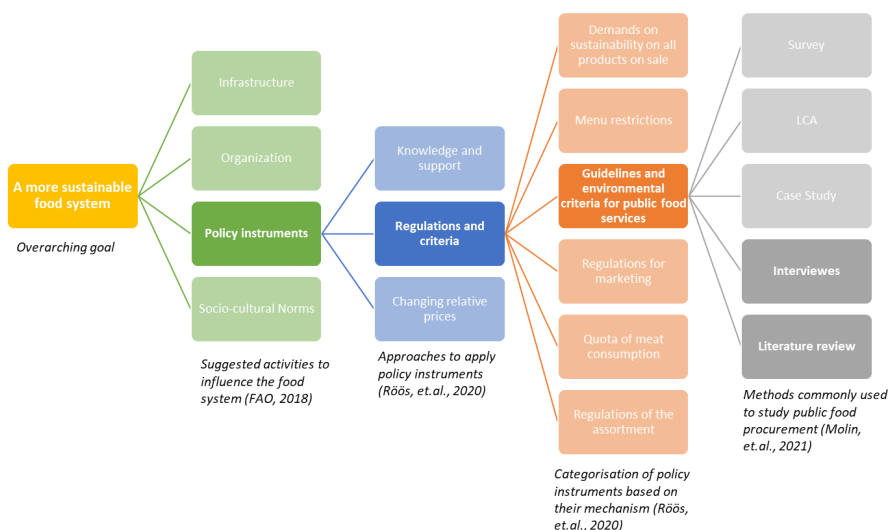


Figure 4: Depiction of position amongst other published works on public food procurement.

The green column in the figure represents the food system's dimensions, as the FAO (2018) suggested. These dimensions include socio-cultural norms, organization, infrastructure, and policy instruments. The FAO, being the UN's branch for agriculture, has a global perspective on the food system, and studying policy instruments was included as part of the original research strategy for this project.

In my research, I examine public procurement as a policy instrument for promoting sustainable food systems. Rööös et al. (2020) describe three main approaches to using policy instruments: through knowledge and support, changing relative prices, or regulations and criteria. This is visualized in the blue column of Figure 4. Other scholars, such as Keller et al. (2016), Wolff and Schönherr (2011), and Jordbruksverket (2021), have also explored different policy tools and their combinations. For the purposes of my project, Rööös et al. (2020) focus on the Swedish context, and relevant measures were particularly relevant in positioning my research.

My focus in this study is on the "regulations and criteria" approach, which is represented in the fourth orange column of Figure 4. Within this category, sustainability criteria for public food procurement fall under the label of "guidelines and environmental criteria for public food services" (ibid). While FAO's perspective paints a global picture of the food system, Rööös complements it by narrowing the focus to the Swedish context and providing national direction for moving towards more sustainable procurement practices. Several methods could be applied when studying public food procurement, and the following sections will describe the methods used in this study, which are commonly used and presented in the last column in grey (Stefani et al., 2017).

### 3.1 Research strategy

In the following section, I elaborate on my research strategy. First, I needed to create an overview of the current state and research sustainable public food procurement. This was done by answering RQ 1:

1. What aspects of sustainability are emphasised in public food procurement?

Answers to the first RQ were sought in academic literature using the systematic literature review method.

Continuing the project to further understand the stakeholders' work and roles in sustainable public procurements, the next set of questions arose:

2. How do scholars and Swedish actors work with sustainability in public food procurement?
3. What capacity do the different actors have to influence the procurement process and the sustainability criteria posed, and what are the expected consequences of using sustainability criteria?

#### 4. What barriers and opportunities do the actors identify for driving procurement in a more sustainable direction?

Research questions 2-4 could not solely be answered by reviewing previously performed research, but a practical view from Swedish actors was added. Therefore, semi-structured interviews were chosen as an adequate method to answer research questions 2-4. The research context had a broad range of possible dimensions and structures at different analysis levels. In the review paper I've written, and in this thesis, I assess the sustainability aspects brought up in the scientific literature on public food procurement to find consensus on what scholars find important in terms of sustainability aspects. The results are compared to the findings in the interviews with practitioners to find overlaps and disagreements.

#### 3.2 Systematic literature review to frame sustainability aspects

To answer RQ 1, I conducted a systematic literature review. Systematically reviewing existing research can lead to comprehensive knowledge on a particular subject. The method was chosen due to its applicability to finding the relevant literature and encompassing a broad range of disciplines. Similar methods have been applied by (Lazarevic and Martin, 2016, Stefani et al., 2017, Walker and Preuss, 2008, Filippini et al., 2018) to explore the research field of sustainable food systems and public procurement. Systematic reviews also help identify research gaps in our current understanding of a certain field (Poklepović Peričić and Tanveer, 2019). The literature review in Paper I answers RQ 1 and partly RQ 2.

The literature review was built in four blocks based on words related to public, procurement, food, and sustainability. Only articles written in English and published after 1999 were gathered. The timeframe was chosen because of the increasing amount of literature available from the beginning of this millennium. Building the search string was an iterative process trying to eliminate too much "noise" (literature off-topic). When the search string was finalised, it was used in three different search engines, and all available articles in the result were gathered for screening and further analysis.

A total of 391 articles were gathered. After screening the abstracts, 103 remained for further analysis. Information to answer RQ 1 was gathered in a matrix for further content analysis, e.g., objectives of the studies and methods used. In a final step, a relational analysis was performed to, e.g., interpret how different scholars address the sustainability concept.

#### 3.3 Content & relational analysis

Content analysis is often used to determine the presence of keywords, themes, or concepts of relevance for the field of study (Columbia University, 2019). The data resulting from the systematic literature review was gathered in a matrix. Content analysis was a suitable method to structure the information. The content analysis

method was used to identify objectives, objects, methods used, regions studies, and focus words related to sustainable practices in the literature. The content and relational analysis were used to answer RQ 1 and partly RQ 2.

A relational analysis follows a content analysis by further examining the chosen concepts and exploring relationships between them (Columbia University, 2019, Krippendorff, 2004, Kassarian, 1977). Relational analysis was used to examine how scholars addressed sustainability and how the focus words (gathered in the content analysis) linked to the three pillars of sustainability.

### 3.4 Semi-structured interviews

A semi-structured interview is a qualitative method of inquiry that falls between a structured survey format and an open-question interview (Adams, 2018). In semi-structured interviews, the researcher often follows an interview guide but also has the flexibility of how and when to ask questions (Kvale and Brinkmann, 2019). An interview guide was developed to structure the conversation. Therefore, the guide contributed to objectivity and trustworthiness and was applied in this study (Kallio et al., 2016).

The semi-structured interview was chosen as a research method in Paper II to answer RQ 2-4 and better understand the actors' perception of their work with procurement and sustainability. The guided conversation is a way to gather information from experiences and new angles that are not yet accessible in writing, which was the case in this study (Kvale and Brinkmann, 2019).

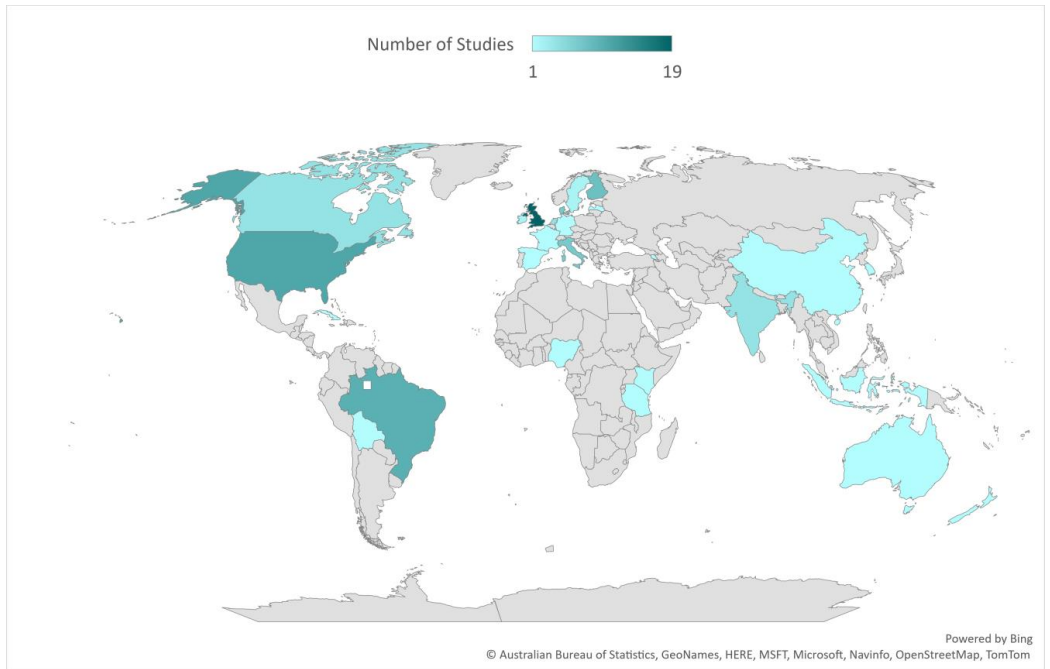
When selecting respondents for the study, capturing a range of meanings is generally prioritised over finding representative samples. In this study, I found the two coincided when recruiting different respondents to size and geographical location to cover the food supply chain in the public sector.

The method is preferably conducted conversationally with one respondent at a time, allowing dialogue to meander around the research topic (Adams, 2018). The interviews were held digitally on Teams using the video function.

In total, 18 respondents were interviewed, representing 16 different organisations or companies. The respondents were from four parts of the food supply sector, namely primary production (Producer), procuring authorities (Municipality), suppliers (Wholesale), and buyers (Public kitchen).

### 3.5 Scope and scale

The individual papers examine the concept of sustainability and how it is framed within public food procurement. In the literature review, Paper I, practical examples were investigated mainly from a national to a local perspective.



*Figure 5: Depiction of geographical spread amongst areas of research in the academic literature on sustainable public food procurement, result from Paper I.*

Paper II has a Swedish focus even though several sustainability aspects also reach globally. The interviewed actors had a large geographical spread within Sweden, from Helsingborg in the south to Umeå in the north, see Figure 5. This was important to identify or dismiss assumed differences in, e.g., resources, suppliers, and deliveries based on geographical location.



*Figure 6: Depiction of geographical spread amongst respondents in the interview study, Paper II.*

## 4 Results and analysis

Based on the appended papers, the key results from the project are presented in the following sections.

### 4.1 RQ 1: Sustainability aspects and practices

*“What aspects of sustainability are emphasised in public food procurement, and what practices are seen as sustainable?”*

The systematic literature review of scientific articles investigating sustainable public procurement in various ways (Paper I) shows that all the sustainability pillars are considered. The 103 reviewed papers focused on evaluating and exploring policy and good practices for promoting sustainable procurements. Several aspects are brought up to have more than one objective, i.e., they are seen as contributing to more than one sustainability aspect. For example, procuring organic food could contribute to reduced use of chemicals and increased farmer income (Paper I). Sustainability aspects mentioned in the literature were waste, transport, organic, local, packaging, seasonal, toxic, climate, resilience, education, quality, health, safe, fair, ethic, affordable, efficiency, growth, poverty, and livelihood (Figure 7). The figure shows the number of times each aspect was mentioned in the reviewed papers. The word local was mentioned over 3 000 times and appeared in 93 individual papers, and the word organic was mentioned over 2 500 times in 72 individual papers, indicating that organic and locally sourced food are areas of major concern. Organic and locally sourced food was also identified as the primary solution to develop a more sustainable food system both by scholars and actors.

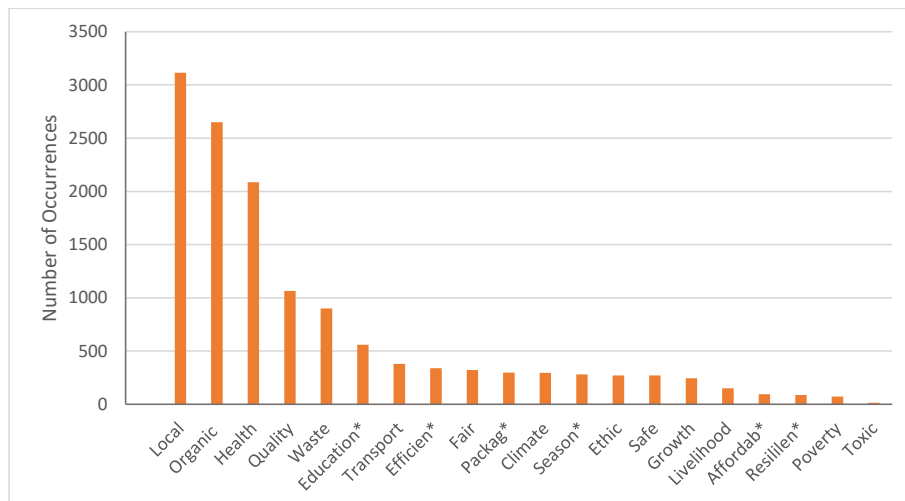


Figure 7: Depiction of sustainability aspects brought up in academic literature on sustainable public food procurement.

Results from the interviews with actors in public food procurement in Sweden (Paper II) show that procuring organically labelled and locally sourced food and minimising climate change are sustainability aspects of great concern (Figure 8). Furthermore, transport and animal welfare optimisation were also issues of concern for the Swedish actors.

Organically labelled food was the most reoccurring topic for environmental sustainability amongst Swedish procurement actors (Paper II). The Swedish actors and scholars behind the reviewed literature linked organic food primarily to the positive effects of reduced use of pesticides and chemical fertilisers (Paper I, Paper II). The scholars also stated that organic production could prevent soil degradation and eutrophication, improve biodiversity, and reduce GHG emissions (Goggins and Rau, 2016, Cerutti et al., 2016, Laurentiis et al., 2019, Løes and Nölting, 2011, Brunori and Di Iacovo, 2014). Actors in Sweden described how large quantities of organic vegetables were bought to fulfil the political goals of a significant share of the procured volume being organic (Paper II).

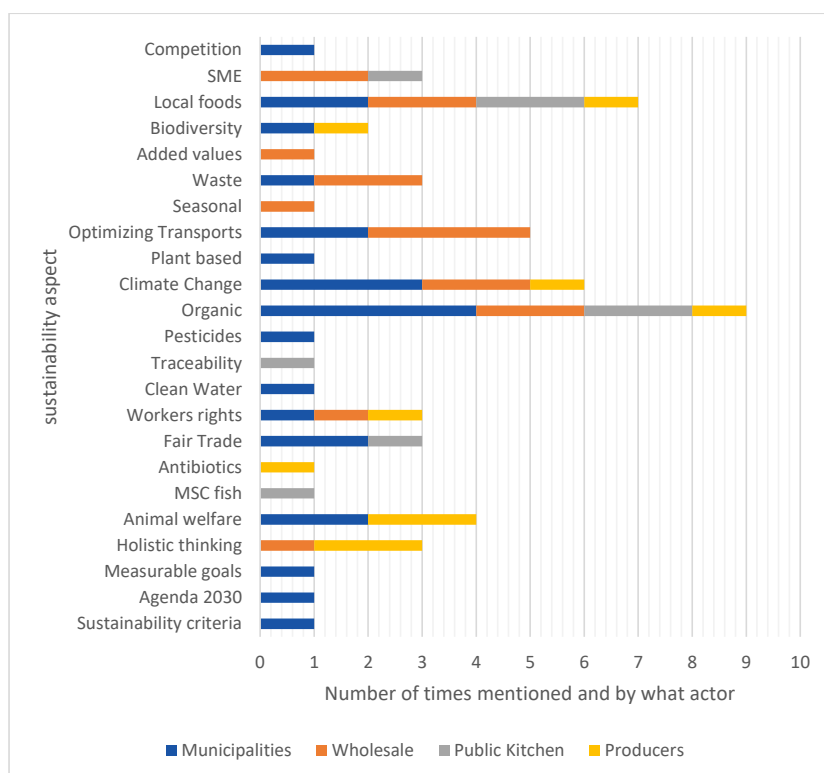


Figure 8: Depiction of sustainability aspects mentioned by Swedish actors (Paper II).



Waste from the food system was the greatest environmental concern in the reviewed literature on public food procurement (Paper I). Both scholars and Swedish actors emphasise waste as an issue related to the food system. In the literature review, waste was mainly related to food, but the packaging was also mentioned. The incentive for reducing waste was often to minimise the need for resources by reducing waste in food and packaging (Doherty et al., 2011, Reisch et al., 2013, Bloomfield, 2015). The literature also focused on waste in the public sector in terms of kitchen, serving, and plate waste (Paper I). In the Swedish context, waste was mentioned referring mainly to production, storage, and transport from producers and wholesale, focusing more on the supply chain (Paper II).

Locally sourced food was, in literature, assumed to contribute to environmental sustainability through the reduced need for transport (Caputo et al., 2017, Pullman and Wikoff, 2017, Reisch et al., 2013, Doherty et al., 2011, Sonnino and McWilliam, 2011). The Swedish actors had a similar view that fewer means of transport led to less GHG emissions and contributed to better quality fresh and nutritional products (Paper II). The literature also brought up increased energy efficiency due to the reduced need for storage and packaging (Mikkola, 2009), but not by the Swedish actors. The actors, however, emphasised how shorter transportation eased the connection and communication with the supplying farmer and enhanced the possibility of following up on criteria (Paper II).

Health was the most common word found in relation to social sustainability in the literature (Paper I). Scholars associated it with nutritious and fresh food to increase human well-being and reduce the spread of diseases and conditions related to diets (Smith et al., 2016, Goggins and Rau, 2016). The Swedish actors did not share the same concern for diseases but also stressed how food can impact health, e.g., by the use of antibiotics in meat production (Paper II). In a Swedish context, animal welfare was connected to social sustainability.

Animal welfare was also a reoccurring topic in the literature, mainly in discussing ethical rights (Kleine and Brightwell, 2015; Reisch et al., 2013). Ethical concerns in the literature also covered food safety, fair trade, and workers' rights (Paper I). For the latter, the Fair-trade label was seen as a guarantee for fair pricing (Kolk, 2012, Goggins and Rau, 2016, Kleine and Brightwell, 2015). The Swedish actors also recognised the fair-trade label and its importance in ensuring workers' rights (Paper II). As previously mentioned, the actors were also concerned about how environmental targets often shadowed social issues.

Procuring locally sourced food was assumed to contribute to social sustainability by the increased traceability and transparency following shorter distances between producers and consumers (Paper II). This is agreed upon and strongly emphasised in both studies. In the literature, further links between locally sourced food and social sustainability were the culture and identity that could be connected to geographical areas (Cerutti et al., 2016, Kleine and Brightwell, 2015, Goggins and Rau, 2016, Schwartzman et al., 2017). Swedish actors did not bring up culture and identity but

emphasised the practical improvements that followed shorter distances, e.g., following up on procurement criteria (Paper II).

Procuring locally sourced food was the most prominent economic factor in the reviewed literature (Paper I). Buying local or regional would stimulate the economy at all levels within a country and increase job opportunities (Rimington et al., 2006). A similar thought was raised in the interviews with Swedish actors (Paper II). In Sweden, local producers were often small and medium-sized enterprises (SME), and their inclusion of them was thought to lead to better and more competition in procurements. The inclusion of SME was found important to reduce inequalities in rural communities and help preserve local cultural values in the literature (Tolley et al., 2015, Antier et al., 2014, Nuutila et al., 2019, Goggins and Rau, 2016), something that was not brought up as a concern by Swedish actors.

Locally sourced food stood out as a top priority in the academic literature on sustainable public food procurement, while organically labelled foods were number one in a Swedish context. Human health and well-being were of greater concern in the literature than amongst the Swedish procurement actors.

An overview of the answers to RQ 1 from Paper I-II is depicted in Appendix 1.

#### 4.2 RQ 2: Working with sustainable procurements

*“How do scholars and Swedish actors work with sustainability?”*

A number of good practices and examples were brought up in the reviewed literature (Paper I). Using public procurement to promote human well-being, e.g., improving nutritional standards and meeting environmental objectives, were some examples of good practices (Løes and Nölting, 2011, Bloomfield, 2015, Robles et al., 2013). Several policy programs have been monitored and evaluated in the literature, such as the Farm to School program in South Carolina (Thompson et al., 2014, Powell and Wittman, 2018), the Balanced Menu Challenge in Maryland (Ranke et al., 2015), and Food for Life Partnership program in the UK (Jones et al., 2012).

The Swedish actors' work with sustainability varied (Paper II). Municipal procurement officers had political goals to achieve, such as procuring 30 % organic or 40 % locally sourced foods or working in line with Agenda 2030. Wholesalers worked to a large extent with optimising transport routes, filling up the trucks, and avoiding waste generation. Chefs in kitchens tried to buy certified food, e.g., organic, fair trade, and sustainable fishing (MSC), and producers tried to increase animal welfare and contribute to biodiversity. Overall, the Swedish procurement actors' work often overlapped with similar agendas, and all actors covered a range of sustainability concerns.

The complexity in defining sustainable food procurement and the number of actions taken were similar in both the literature review and the interviews. Even though all three pillars of sustainability were covered in the scientific literature on sustainable

public food procurements, there was a significant focus on organic labels and locally sourced foods (Paper I).

There are several examples of policy practices to increase the share of locally sourced food see, e.g., the Farm to School program in Maryland or the Brazilian School Feeding program PNAE (Sidaner et al., 2013, Ranke et al., 2015) in the literature. Even though procuring local food is high on the agenda in Sweden and is seen as a way to increase sustainability within the food system, there are no similar political initiatives or examples of that extent on a national level in Sweden (Paper II).

The NAPP provides a library of sustainability criteria for a number of different foods (Paper I). The criteria are a reoccurring topic amongst the Swedish procurement actors. No similar tool or support from authority was mentioned in the reviewed literature, even though further criteria were requested for a number of sustainability concerns, e.g., ethical aspects like animal rights and food safety (Neto and Caldas, 2018). The procuring actors in Sweden agreed on the positive effects of using harmonised sustainability criteria and how they overall contributed to better procurements with higher quality performance (Paper II). The actors often returned to the importance of well-written procurement documents with relevant criteria and precise tasks as a practical skill to increase competition in public food procurement.

Both Swedish actors and international scholars advocate the opportunity that exists to educate school children on eating habits in favour of both human health and the environment (Morgan, 2008, Robles et al., 2013, Nelson and Breda, 2013, Sonnino et al., 2014, Stahlbrand, 2016, Castner et al., 2017, Filippini et al., 2018, Harvie et al., 2009, Rööös et al., 2020).

4.3 RQ 3: Capacity to influence and consequences of using sustainability criteria  
*“What capacity do the different actors have to influence the procurement process and the sustainability criteria posed, and what are the expected consequences of using sustainability criteria?”*

A majority of respondents perceived the buyer to be the most influential actor, with municipalities exhibiting strong consumer power in both procurement and purchases from kitchens and meal services (Paper II). However, friction emerged between actors, as responsibility for procurement outcomes was often passed on, leading to a "blame game."

The respondents see potential in pre-phase dialogue, which includes feedback from users like kitchens, to enhance the procurement process (Paper II). Nevertheless, key actors were seldom invited to collaborate during early procurement stages. Dialogue that did take place typically involved municipalities and wholesalers, leaving out the perspectives of kitchens and producers (ibid).

Top-down steering was identified by the respondents as a barrier to advancing sustainability. Municipalities and procurement officers tend to rely on political

knowledge and goals, which can result in unfocused and scattered local initiatives in the absence of science-based guidelines (Paper II).

One example brought up by a respondent demonstrated the power of wholesalers, who forced a municipality to revert to traditional criteria when it attempted to introduce sharper sustainability criteria for higher-quality products. This example implies a status quo in the formulation of sustainability criteria, with wholesalers and producers advocating for municipalities to possess more knowledge about using and combining criteria.

A lack of supplier competition in public food procurement in Sweden may impede progress towards a more sustainable food system. The result also underscores the ongoing challenge of balancing cost and sustainability goals in the face of rising prices and stagnant municipal budgets (Paper II). Ultimately, the findings call for increased collaboration and dialogue among all stakeholders, as well as more transparent, inclusive policy development and implementation (ibid).

#### 4.4 RQ 4: Barriers and opportunities

*“What barriers and opportunities do the actors identify for developing procurement in a more sustainable direction?”*

The main barriers to sustainable procurement in Sweden, as identified by the actors involved, include a lack of resources, limited dialogue time between actors, insufficient data availability, and cost development (Paper II). Limited staff capacity hinders proper follow-up on sustainability criteria or other demands, while restricted dialogue time prevents knowledge sharing, answering questions, and measuring impacts (ibid).

Insufficient data on aspects such as product origin or waste generation makes evaluating procurements challenging (Paper II). Overconfidence in what can be achieved within sustainable food procurement has led to discrepancies between political targets and product availability. Increasing data availability presents an opportunity to enhance knowledge and set accurate targets (ibid).

Rising prices pose a disadvantage for Swedish producers and wholesalers, and the old model of rewarding tenders based on the lowest price has been criticized (Paper II). Swedish actors want quality to be valued higher in the procurement model. Procuring locally sourced food is important, but logistical barriers exist, and ensuring the purchase of Swedish products requires posing criteria aligned with Swedish agricultural regulations. However, it is unclear how many other countries would meet these criteria, which raises questions about the potential benefits for Swedish producers (ibid).

Platforms for dialogue and improved communication between actors are seen as opportunities (Paper II). Wholesalers want better connections between actors from the entire supply chain and those who indirectly influence procurements, such as politicians, to ensure better acceptance of new strategies (ibid).



## 5 Discussion

This thesis aims to examine possible ways toward a more sustainable food system by pursuing public procurement. In the following Chapter 5.1, the results from Paper I-II are compared with previous work on sustainable food procurements. It is followed by section 5.2, which elaborates on insights from Swedish practitioners. The Chapter is finalised in two sections, 5.3 limitations to the study and 5.4 future research.

### 5.1 Contextualising the results

Paper I and Paper II results show a similar attitude amongst scholars towards the sustainability aspects of increasingly buying organic food and local produce. Improving the amount of organic and local produce consumed was recognised as highly important in both papers, answering the first research question posed for this thesis. A difference between the studies was that the academic literature raises an increase of local sources as the primary goal meanwhile, the Swedish actors favour organic produce. Motivations as to why locally sourced food is the best option varied, implying there are several benefits.

In the reviewed literature, the procurement strategy often came to choosing between local and organic products. The benefits of strengthening regional economies and creating job opportunities are important factors (Rimington et al., 2006). Continually demanding high environmental standards should not contradict finding sources locally but rather strengthen those producers aiming to change. Evidence shows how both organically labelled and locally sourced food contributes to several sustainability aspects (von Oelreich and Milestad, 2017, Muller et al., 2017, Sean et al., 2014). However, according to Morgan (2008), one of the biggest threats to sustainable public procurement policies is a pious and self-referential localism in which local is presumed to be better than global. Even if research backs up the sustainability effects mentioned, several assumptions remain, e.g., how local produce is equal to small-scale and sustainable agriculture (Born and Purcell, 2006). My studies indicate that achieving the sought-after benefits with local and organic products in procurement requires a continuous evaluation and further developed methods for followed-up. Nevertheless, there are rarely one or two solutions to multiple problems. A fixation with local and organic comes with the risk that the full complexity of transforming the food system to something sustainable for the future, possibly even limiting innovation and new paths, will not be addressed. Taken together, the most emphasised sustainability aspects might not have the best effect.

School lunches have a long tradition in Sweden with a recognised positive effect on both learning and health (Livsmedelsverket, 2013). International scholars and Swedish practitioners differed on health and using procurement to promote healthy food. Responding to the second research question, this is one example where the scholars' and practitioners' focuses diverge. Whereas the literature brought up health as a major concern for social sustainability and the importance of purchasing healthy nutritious food to increase human well-being (Smith et al., 2016, Goggins and Rau, 2016), the Swedish actors were not overly concerned about diseases but solely

stressed the over usage of antibiotics. Also, dietary changes have been appointed the most efficient measure to reduce environmental impacts from the food system in several academic papers that apply LCA, see, e.g., Laurentiis et al. (2019), Berton et al. (2021) and Garnett (2014a) or Martin and Brandão (2017). Despite the evidence and the focus on health by scholars, dietary guidelines are not common or suggested to any larger extent in the reviewed literature on sustainable procurement or by the Swedish actors. However, this does not entirely mirror the national guidelines for, e.g., school meals in Sweden (Livsmedelsverket, 2019, Quetel, 2013). With a lack of focus on health, the result of my study could be the consequence of already established nutritional plans for health and nutrition in public meals that are controlled by regulations. But it could also be overconfidence in performance that could lead to stagnation in the progress of transforming any system. Nevertheless, the use of antibiotics in Swedish animal production has reached record low figures since the 80s (Jordbruksverket, 2022). Obesity, however, continue to increase in the country especially amongst youth (Folkhälsomyndigheten, 2022), creating a further need to continually deal with health related food issues in particularly within the school system.

Work toward reducing food waste is also recognised as important to significantly reduce environmental impacts from the food system (Willett et al., 2019a, Garnett, 2011, Martin and Danielsson, 2016). In this thesis, both scholars and practitioners raise concerns for waste generation high on the agenda. However, while academic literature foremost targeted waste related to meal services, e.g., from plates in the canteens or the kitchens, the Swedish actors focused on how transportation could cause waste and choices and amounts of packaging materials. Swedish actors have requested further data on performance amongst their suppliers in terms of waste and imply that this is needed to pose demands on waste reduction. The result of this thesis emphasises how further quantitative measures and practical examples could strengthen decision-making. Practical examples of waste reduction are available, see, e.g. (Trop, 2021, Livsmedelsverket et al., 2018). Based on these studies, broader implementation could need further motivation by stakeholders, be forced by regulations, or be strengthened as a market advantage, e.g., public procurement.

In the academic literature, a number of examples of policy programs and initiatives for local farmers to supply public institutions were demonstrated. Even though procuring local food is high on the agenda in Sweden, there are no similar political initiatives or examples of that extent on a national level in Sweden. Actions taken by the Swedish actors were mainly on a regional level in the daily work. Following up on that and answering the third research question, all stakeholders interviewed for Paper II felt able to influence the procurement process and its outcome. The procurement officers mainly operated on a municipal, sometimes regional, level, which could explain the level of actions referred to by practitioners. The result also shows an opportunity to advance policy programs that further enhance sustainability measures in public procurement on a national level.

The main barrier identified to further implementing sustainable food procurements was a lack of resources. The capacity to follow up on criteria in procurement, such as organic labels, is a reoccurring topic and was specifically mentioned by the respondents. If the follow-up process got a further structured format and resources became available, this could contribute to setting and achieving sustainability goals. It would pressure the entire supply chain to fulfil their commitments when winning procurements and hopefully contribute to a fairer process.

International scholars and Swedish practitioners agree on the opportunity that exists with education (Morgan, 2008, Robles et al., 2013, Nelson and Breda, 2013, Sonnino et al., 2014, Stahlbrand, 2016, Castner et al., 2017, Filippini et al., 2018, Harvie et al., 2009, Rööf et al., 2020). Teaching all children to eat more healthy and sustainable food consumption by purchasing and serving sustainable food in all aspects assures that the state organisations lead the food system by a good example.

## 5.2 Insights from Swedish practitioners

The Swedish actors were overall satisfied with the criteria library provided by the NAPP, which could serve as inspiration for international authorities with similar assignments. An essential part is an invitation to develop the criteria for all stakeholders to participate. The Swedish environmental protection agency (SEPA) has continually investigated the use of environmental demands in public procurement in Sweden (von Oelreich and Philip, 2013). The joint work in designing the criteria gives them credibility. It also provides the stakeholders with partial ownership as well as responsibility and is likely to contribute to their acceptance and broad usage within the food sector.

On the supply side, producers and wholesalers would like to see advanced knowledge on using and especially combining different criteria. This is now ongoing work by the NAPP, which aim to cluster them further to facilitate usage. To fulfil criteria must also be an advantage that requires a functioning follow-up process to be in place. The Swedish suppliers, producers, and wholesale generally saw sustainability criteria as an advantage for themselves in the competition of tenders.

The criteria in procurements should focus on product and supplier performance to serve market development for a more sustainable food system. Product-specific criteria (typically formulated on specific weights, ingredients, or packaging materials) could decrease competition, lack sustainability concerns, and favour individual suppliers.

National and regional sustainability goals are often ambitious, but the municipal work and achievements are not evenly developed (Regeringskansliet, 2021). The difference in how far gone municipalities are in implementing sustainability aspects in their work mainly depends on economic resources and staff capacity, which correlates with the municipality's size. Collaboration between municipalities in writing the procurement document could contribute to small municipalities achieving sustainability goals. However, joint procurement risks becoming too large for small



actors, eliminating tenders from SME and local producers. If a collaboration could still divide the procurements into smaller parts, this could result in more synchronised work favouring smaller municipalities and suppliers.

Compared with the international examples in the reviewed material, the work with sustainability criteria and support by the NAPP in the procurement process has come a long way in Sweden. However, the change towards more sustainable food systems must take place at a global level. The timeline for developing sustainable public procurements presented earlier in this thesis shows that most actions in Sweden have followed international events and decisions. Nevertheless, even if Sweden is a minor actor in the global market, the free trade agreements allow us to be a player amongst everyone else. We are also a nation to which many others turn for advice and guidance, and this should not be underestimated in our ability to influence the food system (Swedish FAO Committee, 2021).

### 5.3 Limitations to the research

Public procurement is practical and hands-on, and most stakeholders do not work within research. Therefore, knowledge gathered in scientific literature is limited in relation to the practical experiences available. Furthermore, the available literature mainly stems from OECD (Organisation for Economic Co-operation and Development) countries (Regeringskansliet, 2020). Hence, including “grey” literature, which is much larger than the scientifically published articles, could be considered for further studies and better representation. Enlarging the literature review by a less limiting search string would also allow for further generalisation.

Several possible respondents were contacted to have a geographical spread, actors from all parts of the supply chain and of varying sizes. However, the result shows that most of the respondents are in Stockholm. Enlarging the number of respondents could allow for further generalisation but also make an even more accurate understanding of the field, with several practical examples and experiences.

The respondents' contribution was voluntary, and it can be assumed that the represented stakeholders are more engaged in improving the system and sustainability in the food sector than average. The result could be biased, showing a better picture of the current state than a random selection of respondents would have done. Also, no worst scenarios are described in this study, only contributions to development. Therefore, the result should not be seen as an absolute description of the state of public food procurement but rather as describing the development in the forefront.

### 5.4 Future research

Given the limitations of the methods used in this study, future research could include a review of grey literature on sustainable public food procurement, which could provide practical insights and cover a wider range of nations. This would contribute to a more comprehensive understanding of the current state of public food procurement and could lead to recommendations based on practices rather than theories.

One of the key findings of this study was the limited number of articles assessing sustainability or procurement outcomes through quantitative or qualitative methods. Therefore, further case studies and guidelines are needed to measure public food procurement development, progress, and performance.

While the knowledge gathered in this thesis can be used to develop and improve criteria for sustainable procurement, it is essential to anchor policy measures in scientific knowledge about what sustainable measures are needed for the food system. The thesis's findings do not fully align with the overall findings in the food sector, which suggests that locally sourced food is not always the most sustainable option.

Additionally, it is crucial to model the implications of adopting specific criteria to evaluate their performance and quantify the results. This could provide additional tools for the follow-up process in procurements. However, the implications of such analyses should also be assessed to ensure that there are no unintended trade-offs. These scenario analyses are currently being developed as part of another study.

## 6 Conclusions

The impact of the food system goes beyond the environment and climate change and extends to social, economic, and health dimensions. Public food procurement can significantly contribute to advancing sustainability across these dimensions. To promote sustainability more comprehensively, public procurement must consider the environmental impact and social and economic factors, such as fair labour practices and supporting local and regional food systems. Prioritizing healthier and more nutritious options in public food procurement can advance sustainability in terms of both environmental impact and public health. Therefore, it is crucial to consider sustainability in all its dimensions when addressing public food procurement.

This study reveals that sustainable public food procurement involves several aspects of sustainability, including waste, transport, organic, local, packaging, seasonal, toxic, climate, resilience, education, quality, health, safe, fair, ethical, affordable, efficiency, growth, poverty, and livelihood. However, both the reviewed literature and the Swedish actors interviewed emphasize the procurement of locally sourced and organically labelled foods as key sustainability aspects that have positive impacts on all three pillars of sustainability. For instance, increasing the share of locally sourced food is beneficial not only for the environment but also for regional economies. Nevertheless, ensuring that the sustainability criteria adopted truly benefit the most sustainable option and do not create opposing goals is crucial. Focusing on solutions that do not contribute significantly to achieving the ambitious targets of Agenda 2030 and the Paris Agreement poses a risk. Thus, balancing different sustainability aspects is essential to achieve a more sustainable food system.

The literature review and interviews reveal how scholars and actors work with sustainability in public food procurement. Good practices and policy programs have been identified, such as promoting human well-being and meeting environmental objectives through procurement. Swedish actors work towards sustainability goals that overlap with similar agendas, covering a range of concerns. The complexity in defining sustainable food procurement and the number of actions taken were similar in both the literature review and interviews. Although there is a focus on organic labels and locally sourced foods, further criteria for other sustainability concerns are necessary. Both Swedish actors and international scholars advocate for educating schoolchildren on eating habits that favour human health and the environment. The study highlights the importance of ongoing evaluation and improvement of public food procurement processes.

Although the reviewed literature identified health as a major concern, it received less attention from Swedish practitioners compared to international scholars. While the latter emphasized the importance of nutritious and healthy food, they did not advocate for additional dietary changes to enhance sustainability in the food system. However, recent scientific evidence indicates that promoting healthier diets could effectively reduce environmental pressure. The limited attention given to this issue by Swedish practitioners may stem from overconfidence in their ability to achieve

sustainability goals, potentially resulting in missed opportunities to learn and take preventive measures. Consequently, further research and action are needed to promote both health and sustainability in the Swedish food system.

In Swedish food procurement, actors feel empowered to influence the process and outcomes, maintaining a balance between responsibility, guidelines, and regulations. Stakeholder participation has been crucial in developing and reviewing sustainability criteria in Sweden, fostering a sense of ownership and responsibility, resulting in greater acceptance and use of these criteria. A majority of respondents perceived the buyer, particularly municipalities, as the most influential actor with strong consumer power in procurement and purchases from kitchens and meal services. However, friction between actors has led to a "blame game" as responsibility for procurement outcomes is often passed on. While the National Action Plan for Public Food Procurement (NAPP) has successfully promoted sustainable practices, it lacks product-specific criteria, which some actors suggest could increase quality or sustainability aspects. The problem with product-specific criteria is that they often favour particular products, leading to a procurement process that discriminates against tenderers who cannot meet these criteria, running counter to the overall aim of creating a more sustainable food system. To prevent unintended consequences, further actions are needed to ensure that sustainability criteria are designed to benefit the most sustainable options and do not favour specific products or producers.

The findings suggest that a lack of resources and limited dialogue time between actors are the primary barriers to achieving sustainability goals in public food procurement in Sweden. Differences in capacity were identified between municipalities, with larger municipalities having more resources to collaborate and be responsible for different concerns. The lack of data on waste generation and product availability on the market poses challenges to evaluating procurement and achieving political targets. Additionally, the rising cost of locally sourced food was viewed as a disadvantage, but Swedish actors advocated for valuing quality over the lowest price. To increase knowledge and set accurate targets, increasing data availability was identified as an opportunity. Although procuring locally sourced food and setting criteria in line with Swedish agricultural regulations are crucial, logistical barriers and unknown market competition pose limitations. Platforms for dialogue and communication between actors were identified as opportunities for better acceptance of new strategies.

The sustainable public procurement model has evolved significantly in terms of development and regulatory framework. The current model is flexible and allows for the incorporation of sustainability demands. The trend of solely rewarding the lowest price is gradually fading away, and several initiatives by policymakers, procuring authorities, and the market are underway to improve sustainability in public food procurement. However, implementing sustainable procurement practices requires actions to be taken at multiple levels simultaneously, which continues to present a

challenge for procuring authorities. While the services offered by NAPP are appreciated, more criteria and the inclusion of lifecycle thinking could improve their effectiveness.

Both the reviewed literature and the interviewed Swedish actors strongly emphasize the procurement of locally sourced and organically labelled foods. These two sustainability aspects in procurement are believed to contribute positively to all three pillars of sustainability. However, it is crucial that sustainability criteria truly benefit the most sustainable option and do not create opposing goals. Committing to solutions that do not contribute to meeting Agenda 2030 and the Paris Agreement goals poses a risk.

Despite the progress made in sustainable public procurement, different views on sustainable food procurement and knowing which actions to prioritize still make for a challenging decision at the procuring authority. The study identified and categorized obstacles at different system levels and contributed to a system perspective by identifying key actors and their relationships. This understanding can help identify areas for improvement and facilitate a more comprehensive and integrated approach to sustainable public food procurement. Nonetheless, the current procurement model's flexibility and further incorporation of sustainability demands are promising. The NAPP's services are appreciated but could be improved with more criteria and further incorporation of lifecycle thinking. This thesis's knowledge could guide further research towards sustainable food procurement, bridging stakeholders' priorities with measures that scholars have identified as most efficient. It could also identify steps in the procurement process that require more profound analysis, contributing to further effective and full use of the potential in sustainable public food procurement.

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