Barriers and enablers for the adoption of local and agro-ecological products in food businesses

Case Study of bakeries in Malmö, Sweden.

Tomás Castro Rojas

Independent Project in Agricultural Science • 30 credits
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Supervisor:	Jens Rommel, Swedish University of Agricultural Sciences, Department of Economics
Supervisor:	Iman Raj Chongtham, Swedish University of Agricultural Sciences, Department of Biosystems and Technology
Examiner:	Anna Maňourová, Swedish University of Agricultural Sciences, Department of Plant Breeding

Credits:	30 credits
Level:	A2E
Course title:	Independent Project in Agricultural Science
Course code:	EX0848
Programme/education:	Agroecology
Course coordinating dept:	Department of Biosystems and Technology
Place of publication:	Alnarp, Sweden
Year of publication:	2025
Keywords:	Agroecology, Leverage points, bakery, sustainability, transitions

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Abstract

The global food system is at a crossroads. While industrial agriculture has succeeded in maximising yields, this progress has come at the expense of biodiversity, ecological resilience, and traditional food practices. These impacts extended beyond the agricultural landscape, shaping how food is processed, transported, and ultimately consumed. Within this system, food businesses play an increasingly influential yet understudied role as mediators between producers and consumers, shaping not only what is sourced and sold but also how values such as ecological sustainability, quality, and locality are transmitted along the supply chain. In mainstream agri-industrial systems, this intermediary role is often characterised by large wholesalers, long food miles, and a lack of transparency, thereby contributing to a disconnection between production and consumption. Transitions towards agroecological principles, where community, trust-based relationships, biodiversity, variability, and ecosystem services are prioritised over economic principles, can lead to more sustainable food systems. This thesis researches how small independent bakeries in Malmö, Sweden, engage with and navigate agroecological transitions. Through semi-structured interviews with bakery owners and using Meadows' (1999) leverage points framework and Gliessman's levels of agroecological transitions, the study identifies the barriers and enablers that influence the adoption of local agroecological ingredients in bakery operations. Findings show that barriers were primarily concentrated at shallow leverage points, such as economic costs, certification processes, and logistical constraints. On the other hand, enablers tended to reflect deeper leverage points, including trust-based relationships, community engagement, and business values and identity. A third analytical category (tensions and opportunities) emerged during the research analysis, capturing areas of conflicting incentives and overlapping challenges within food businesses. The research argues that advancing agroecological transitions could benefit from a cross-sectoral approach that includes food businesses as active agents of change, not merely passive intermediaries. While systemic change is a complex and long-term process, fostering adaptive business models, collaborative networks, and supportive policy structures can support food businesses in aligning economic viability with agroecological principles. This thesis contributes to sustainability science by demonstrating how practical, grounded interventions at multiple leverage points can drive positive transformations within the food system.

Key words: Agroecology, Leverage points, bakery, sustainability, transitions

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List of Abbreviations

AFNs: Alternative Food Networks

CAP: Common Agricultural Policy of the European Union

CSA: Community Supported Agriculture

EC: European Commission

EU: European Union

ha: hectares

IAASTD: International Assessment of Agricultural Knowledge Science and Technology for Development

IDDRI: Institute of Sustainable Development and International Relations

LRF: *Lantbrukarnas Riksförbund* (The Federation of Swedish Farmers)

PDO/PGI: Protected Designation of Origin / Protected Geographical Indication

OECD: Organisation for Economic Co-operation and Development

SJV: *Jordbruksverket*

SCB: *Statistiska centralbyrån / Statistikmyndigheten* (Sweden's Bureau of Statistics)

REKO: *Rejäl Konsumption*

Definitions

Agroecology: a multidisciplinary science, practice, and social movement (Gliessman, 2015) that seeks to transform food systems by re-integrating ecological principles with social, cultural, and economic dimensions of sustainability. It promotes the reorganisation of agricultural and food practices *from* production *to* consumption in ways that regenerate natural resources, empower local communities, and challenge the extractive, exploitative, and industrial logic of conventional industrial agriculture. Rather than treating sustainability as an external add-on, agroecology embeds it at the core of food systems by fostering diversity, equity, resilience, and participation across all levels — from soils and seeds to policies, markets, and (food) businesses alike.

Artisanal: Creating a product using traditional methods, often in small quantities.

Bakery: An establishment that produces *and* sells its own flour-based products (pastries, bread, cakes, etc.). While there is not universally-accepted definition of small and medium-sized bakeries, this research will categorize them as food businesses with twenty employees or less.

Community-Supported Agriculture (CSA): "[A] type of direct marketing, [consisting] of a community of individuals who pledge support to a farm operation so that the farmland becomes, either legally or in spirit, the community's farm; with the growers and consumers providing mutual support and sharing the risks and benefits of food production" (USDA, 2024).

Food system: The different actors, processes, and institutions that interact and shape how food is grown, produced, processed, transported, and consumed (Zanella, 2021).

Landrace: "A genetically diverse population of a cultivated plant that has evolved over time through adaptation to its natural and cultural environment, without formal breeding. These varieties are typically locally adapted, possess a distinct identity, and are maintained by traditional farming systems. Landraces are valuable for their resilience to local stresses and their contribution to agricultural biodiversity" (Camacho Villa et al., 2005).

Heirloom: "Traditional crop varieties that have been preserved and passed down through generations due to their valued characteristics, such as flavour, nutrition, or cultural significance. These varieties are typically open-pollinated, have not been subjected to modern breeding techniques, and are maintained through seed-saving practices. While there is no strict scientific definition, heirloom grains are often distinguished by their historical use and genetic stability over time" (SeedChange, n.d.).

Heritage grains: Similar to the term 'heirloom'; both terms are often used interchangeably and refer to old and non-modernised grain varieties that predate the modern varieties that emerged from the mid-twentieth century's Green Revolution.

Organic: The production of food without the use of synthetic fertilisers, pesticides, herbicides, and other artificial chemicals. In this thesis, the word 'organic' will be used to define products at an early stage of agroecological transition.

REKO-ring: "*Rejäl Konsumption*" - An alternative model for direct trade between producers and consumers in Sweden.

Sustainability: Meeting the needs for the present without compromising the ability of future generations to meet their own needs (WCED, 1987).

Foreword

This thesis is the summation of a two-year project I embarked on since the beginning of my MSc in Agroecology. I chose to open a micro-bakery alongside my full-time studies, which, by any logical measure, was a poorly made decision. The primary driver for this was my eagerness to prove that local agroecological products can be affordable and accessible to the general public. I succeeded, albeit only on paper. The reality of the modern food system is that any decision that counters the agri-industrial complex comes at a high cost, and to my surprise, this cost was not (only) monetary. As many food business owners, entrepreneurs, and farmers I met throughout this journey would attest, the cost would be reflected in almost everything else—from logistics and infrastructure to time, overall well-being, and stability. Any food entrepreneur would tell you that starting a food business is an extremely difficult endeavour (and a bad idea—at least financially), but setting it up relying solely on local and agroecological produce is like swimming against the current with your arms tied behind your back. This thesis aims to explore the landscape in which food businesses operate, examining the crucial role that these stakeholders play as mediators between agricultural production and food consumption.

What started as an academic endeavour—by wanting to prove that local agroecological production can transcend the realms of a niche market, and become a movement embraced by all—soon became a project bigger than I ever would have imagined. This was not because of the size of the bakery I established, but rather the size of the community of people engaged in the agroecological food landscape - people who are passionate about how we grow and consume our food. They taught me to believe in a future sustainable food landscape. Food, as you might guess, is a profoundly intimate part of my life. I hope that by reading this text, you will understand why.

Acknowledgements

This thesis was made possible thanks to all research participants, who chose to take time out of their busy schedule as entrepreneurs and business owners to discuss with me the food landscape they navigate. Their insights and experience allowed for a deep-level understanding of the Malmö food scene—one that is permeated by challenges and hardships, but often characterised by innovativeness and creativity. A special thanks to Karl from *Bagaren och Bonden*, Didrik from *Leve*, Marta from *Bullarbyn*, Damien from *Dame Ginette*, and Caroline from *Brödlabbet*. Without you volunteering your time, this thesis would not exist. In addition, I would like to thank my supervisors Raj and Jens for choosing to guide me through a most-unconventional research journey. I want to also express my deep gratitude to our former agroecology professor Teun, who always believed in this project, and who,

Finally, this research would not have started if it were not for the help of my friends and classmates who were continuously by my side throughout the the length of my bakery endeavour. Naira, Ana, Miranda, and Elsa—I am glad I had you by my side these past two years. *Amapola Bageri* would not have been possible without all of you. On a similar note, my parents Mauricio and Lina, as well as my brother Mateo and my sisters Salomé and Magdalena, whose unwavering support kept me going especially during the most difficult times.

1. Introduction

Agriculture is one of the leading causes of anthropogenic climate change, and among the human practices most vulnerable to its effects (Tanzarella, 2021). Current industrial agricultural practices are destroying the foundations upon which production is based—which includes eroding soil carbon content, reducing biodiversity, and water mismanagement, among others (Altieri & Nichols, 2005; OECD, 2018). While the industrial agriculture system has managed to maximise production yield and lower food prices extensively, it has proved unable to mitigate, as well as being unfittingly prepared for a changing climate (IAASTD, 2009)–where droughts, floods, heavy storms, and pests will become more widespread. Experts, thereby, have grown increasingly concerned about the planet's ability to feed a growing population under a decreasing natural resource base and degrading ecosystems (IAASTD, 2008).

Food consumption, consequently, lies at the forefront of leading environmental pressures (EC, 2006) due to its direct influence on the agricultural landscape. Agroecological practices have emerged to reverse many of the negative effects of industrial agriculture, and to some extent improve agricultural landscapes along environmental, social, economic, and political paradigms. Agroecological practices have proven to mitigate many of the detrimental effects of conventional agriculture by restoring soil carbon, conserving biodiversity, reducing nutrient run-offs, diversifying farm incomes, and enhancing production system resiliency (Gliessman, 2015). However, the price premium on organic, local, and agroecological products has limited its access to a wider population, indirectly excluding the less affluent section of the population. While the produce from agro-ecological farms can be deemed more socio-environmentally 'sustainable', unless its food can be accessible and affordable to a wide section of the population, wide-scale impacts will be limited. Sustainable food, then, should incorporate an important aspect of inclusivity and accessibility. In this paper, therefore, sustainable food is defined as healthy and nutritious food *for all*, with minimum negative impact on the environment (Aschemann-Witzel *et al*., 2021), on society and its economy. For a transition away from conventional/industrial agriculture, this research argues that sustainable food consumption must be included in the dialogue when researching and analysing sustainable food production.

1.1 Food production in Sweden

In Sweden, agricultural production is concentrated in Skåne, the southern tip of the country, where a large part of the production takes place. Agricultural production in the region, however, is characterised by large industrial monocultures concentrating mainly on four main crops: rapeseed oil, barley, wheat, and sugar beets (SCB, 2018). This conventional model of production is highly resource-dependent and reliant on external inputs (such as fertilisers, pesticides and fossil fuels) (Johansson, 2005), most of which are finite resources, and their future scarcity, therefore, will seriously hamper this model's reproduction.

Food consumption, on the other hand, is increasingly dependent on imports. An estimated 40-50% of the food consumed in Sweden is dependent on imported non-domestic agricultural production (Baky, 2013; Gäre, 2012). This heavy dependence on the global food system makes Sweden highly vulnerable to international market fluctuations, geopolitical disruptions, and supply chain shocks (Gren, Jonasson & Andersson, 2024). Moreover, Sweden imports approximately twice as much food as it exports, which underscores a widening trade imbalance in the agri-food sector (SJV, 2018, cited in Johansson, 2005).

1.2 The role of food businesses in Sweden's food system

In Sweden, food businesses play a big role in the source of food that people consume on a weekly basis. The average Swedish household is increasingly relying on restaurants and other food service establishments to complement a considerable part of their diet (LRF, 2020; Stenmark, 2015). Food businesses represent an important element that mediates between the agricultural landscape and consumers, shaping not only consumption patterns but also the broader food environment. In our modern context, food businesses can become so large that they can exert significant power and influence on agricultural production— not just in Sweden, but globally. In the case of large fast food chains (e.g. McDonald's), for instance, they can influence agricultural practices through their sourcing demands, ingredient specifications, and price-setting authority (Chkanikova et al., 2013). Their procurement choices can dictate how and what is being cultivated across vast supply networks, advocating for monocultures (over agro-diverse landscapes), standardisation (over variety), and rigid logistical systems in primary production.

Smaller regional/local food businesses do not wield such a vast amount of influence individually. However, their aggregated level influence is nonetheless important, as they have the ability to exhibit and reinforce the offerings of what is currently being produced in the local agricultural landscape. Food businesses, such as artisanal bakeries, farm shops, cafés, and independent restaurants, can therefore act as a visible interface between regional production *and* consumption. Their sourcing decisions can either support alternative models of food networks (e.g. Agroecology, CSAs (Community Supported Agriculture), etc.) or uphold current institutionalised 'industrial' networks.

Many food businesses' adoption of local and agro-ecological products, however, remains constrained. A major barrier is due to their heavy reliance on food wholesalers, which centralise their service based on standardisation and volume, and are difficult to avoid due to their extensive infrastructure and broad accessibility. According to a recent study of Sweden's four largest restaurant wholesalers, between 55-90% of the meat sold to restaurants is imported (Naturskyddsföreningen, 2021), which highlights the disconnection between local producers and food businesses. Furthermore, while agro-ecological production has increased in the region, it remains scattered and marginal. Alternative market initiatives, such as *Bondens Skafferi*–a distributor linking small producers with local food businesses–represent positive advancement, but they remain the exception rather than the rule. Broader and wider-scale institutionalisation of such networks and markets is still lacking. Furthermore, Sweden's food sales are concentrated in a small number of food retailers (See Section 3.3), which control the vast majority of the national food market. This market concentration leverages a disproportionate level of power to a handful of companies, and limits the diversity and flexibility in retail offerings (Chkanikova et al., 2013; Wood et al., 2019), which can also influence the availability of raw ingredients for bakeries and other food businesses.

1.3 The importance of bakeries as a case study

The contemporary food system has grown increasingly complex, evolving into a highly globalised network that relies heavily on large-scale industrial production. It is continuously shaped through the interactions of various actors, including farmers, food businesses, consumers, and other stakeholders operating at local, regional, and global levels. Despite extensive research on agricultural production and consumer behaviour, food businesses remain an often-overlooked component of the food system. These businesses serve as intermediaries between agricultural producers and consumers, playing a

critical role in sourcing, distributing, transforming, and processing raw and unprocessed food products.

Analysing food businesses presents a methodological challenge due to their considerable diversity in scale, structure, and operational models. To address this complexity, this study will focus specifically on bakeries within the Malmö area, which provide a consistent point of comparison. Bakeries in Sweden often share common sourcing patterns, relying on similar key ingredients such as grains, dairy, eggs, and sweeteners. Moreover, they often adhere to seasonal production cycles, reflecting cultural traditions and seasonality through certain products (e.g. *Semlor*, *Lussekatter*, and various breads). This homogeneity makes bakeries a particularly relevant case study in the broader discourse on food system transformation.

By examining variations in sourcing practices, business structures, and motivations for change, this study seeks to assess the potential for a broader adoption of locally-sourced and agroecological products. Additionally, investigating how bakery owners rationalise their ingredient sourcing decisions will provide valuable insights into their management priorities and the factors that drive or hinder transitions toward more sustainable practices within the food business sector.

2. Aims and scope

The aim of this research was to explore the barriers and enablers that shape food businesses' adoption of local and agroecological products, with a specific focus on bakeries in Malmö, Sweden. The study sought to understand the structural, economic, social, and cultural dynamics that influence how and why bakeries source ingredients from local and/or agroecological producers (or abstain from doing so).

This research situates itself within the broader discourse of sustainable food system transformation, highlighting food businesses not merely as passive actors responding to market conditions, but as active intermediaries with the capacity to influence agricultural landscapes, consumption patterns, and sustainability transitions. While much of the existing literature has focused either on the production side (farmers, agricultural practices) or the consumption side (individual consumer choices), this research places food businesses (and bakeries primarily) at the center of analysis.

By focusing on bakeries, this study was able to maintain a narrow empirical focus while simultaneously engaging with broader theoretical discussions on food systems transformation, market power, and sustainability governance. Bakeries offered a particularly suitable case study due to their embeddedness in local food cultures, their reliance on relatively standardised key ingredients (e.g. grains, dairy products, sweeteners, etc.), and their varying degrees of autonomy over sourcing decisions.

This study focused on answering these questions, while advancing the narrative for agroecological transitions beyond the farm-level towards active stakeholders within the food system;

- What are the barriers and enablers to the adoption and accessibility of local and agroecological ingredients?—considering economic, infrastructural, regulatory, and supply chain dynamics

- How do bakery owners perceive their role within the food system, and what strategies do they employ to integrate local and agroecological ingredients into their production?

Geographically, this study focused on Malmö, a city with growing sustainability initiatives (See: Malmö Stad, n.d.), and within the agriculturally-rich region of Skåne. The scope of the research was limited to small and medium-sized bakeries that operate either independently or as part of smaller regional networks, rather than large industrial bakery chains. The rationale for this selection was based on the assumption that smaller food businesses often possess greater flexibility and potential for innovation in sourcing practices, but also face heightened vulnerability to structural barriers such as price competition, availability of ingredients, and supply chain infrastructure.

Ultimately, this research contributes to ongoing dialogue about sustainable food system transformation. It offers an in-depth, context-specific understanding of how food businesses, which exist and operate at the crossroads of production and consumption, navigate the tensions between sustainability ambitions and the constraints of the existing food economy.

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3. Background and context

3.1 The agricultural sector in Sweden at a crossroads

Sweden is one of Europe's largest countries, but only a fraction of its land is actively used for agriculture (approximately 6.5%) (SCB, 2020). This is because a large section of its territory is covered by forests, marshes, lakes and mountains. Despite its northern location, however, Sweden has favourable agricultural conditions. Cold winters inhibit the widespread infestation of many agricultural pests (Källander, 2000), and the regions in the south have fertile plains. Agricultural practices, nonetheless, vary greatly from north to south. The growing season in the southern region of *Skåne*, for instance, is approximately 100 days longer than in the north of the country (Jordbruksverket, 2008). The overall crop production is dominated by cereals (wheat, barely, and rye), ley, oilseed rape, and sugarbeet (Jordbruksverket, 2008). Most of these cropping farms are located in the southern plains of the country (where 60% of the arable land is located), while the central and northern parts of the country mainly produce crops that are suitable for a shorter growing season, such as potatoes and other root vegetables, berries, animal husbandry, among other agricultural practices—under mostly small farm holdings (Källander, 2000; Jordbruksverket, 2020). Skåne, as the agricultural 'powerhouse' of Sweden, contains the second largest number of farm holdings (after Västra Götaland), and the largest number of 'mega-farms' (farms above 200 ha) Jordbruksverket, 2020).

In the last 50 years, the agriculture sector in Sweden has undergone significant structural changes. The number of farms has drastically reduced, while their size has increased. In 1961, Sweden had 233,000 farm holdings; by 1998 this number reduced to a mere 85,600 (Källander, 2000), and by 2016, this number further reduced to 63,000 (Jordbruksverket, 2020). Today only about 2% of the economically active population is engaged in farming (*ibid*.). This reflects a growing trend whereby farms become increasingly industrially-managed and largely mechanised—thereby becoming more specialised on only a limited number of crops, replacing small, mix-use farms for large-scale monocultures.

Sweden's European Union (EU) membership in 1995, and consequently its inclusion in the Common Agricultural Policy (CAP), did not initiate this trajectory but contributed to its consolidation. A considerable percentage of the EU budget is used for CAP, primarily to stabilise agricultural prices and incentivise high levels of production within member states (Archambault, 2004). As a result, farmers within the EU (and particularly in Sweden) have become increasingly dependent on subsidies for agricultural production. Between the years 2018 and 2022, 38% of the Swedish farmers' income came from direct payments, and a staggering 54% came from the total (agricultural) subsidies they receive (European Commission, n.d.).

This brief overview provides essential context for understanding the modern structure of Swedish agriculture, one that is increasingly shaped by agro-industrial models of production. These models prioritise yields and scale, often at the expense of crop variety, resiliency, and biodiversity, resulting in a narrowing of domestic outputs and a growing reliance on imports to meet broader food system demands. This structural transformation is mirrored in food businesses (see Section 3.2), where procurement is increasingly centralised through a small number of powerful wholesalers. As a result, food businesses become further disconnected from the local agricultural landscape, both geographically and relationally, raising important questions about sustainability, resilience, and the future of agroecological transitions.

3.2 Food Consumption in Sweden

Similar to the agricultural sector, the Swedish food consumption landscape has greatly changed over the last decades. To start off, 89% of the retail market is controlled by six companies; ICA, COOP, Axfood, Bergendahls Group, Lidl, and Netto, while the remaining percentage consists of thousands of small and varied companies that sell food to consumers outside of the large institutionalized market structure (Ohlson, 2019; Andersson, 2010). Similarly, the food (distribution) network that supplies ingredients to restaurants has also diminished, and is now controlled by large wholesalers and other suppliers, such as Martin & Servera, Chefs Culinar, Snabbgorss, among others. It is difficult to determine the extent of the market share controlled by wholesalers relative to alternative food networks (e.g. REKO rings), since food businesses often rely on various suppliers across different market structures (see section 4.4).

The way this translates into the context of food businesses, more specifically in the case of bakeries, is in several ways; Firstly, the industrialisation of agriculture has been closely correlated with the industrialisation of the food business landscape, whereby a small number of large corporations make up the vast majority of the food market. This is evident in the case of Sweden, where three bakery corporations—Pågen, Fazer, and Polarbröd—dominate the bread market and collectively make up over 80% of the market share (Brancoli et al. 2019). The remaining 20% of the market for bread is made up by retailers (industrial-size bakeries at supermarkets like ICA or COOP) or independent bakeries (Brödinstitutet, n.d.). This high degree of market concentration is a worldwide phenomenon, and one which characterises the global food system very well (For a more detailed analysis, see: Horstink, 2017). Secondly, in par with industrial monoculture production, industrial bakeries (and oftentimes independent bakeries as well) have drastically reduced their acquisition of a diverse array of heirloom and landrace grain varieties (such as *Einkorn*, *Emmer*, *Spelt*, etc.), and replaced them with modern wheat varieties. Landraces and heirloom grain varieties, especially locally grown cultivars, have been proven to be more resilient to pests, diseases and abiotic stresses (Johansson & Larsson,

2014), as well as being genetically diverse and associated with traditional farming practices (Jönsson et al, 2025). Modern wheat is bred for higher yields under optimal conditions, which deem it 'unequipped' for a changing climate, where extreme weather events and higher temperatures will be increasingly common. Furthermore, modern wheat has been developed on agro-industrial practices, which make it highly reliant on external inputs (such as synthetic fertilisers) (*ibid*.).

4. Literature Review

4.1 The development of the service sector and the modern food business landscape in Sweden

The concept of "eating out," in the way it is understood today, is a relatively new practice. In Sweden, restaurants emerged as popular meeting places among the bourgeois only in the second part of the 19th century, when Sweden began to industrialise and investments in infrastructure started being made, and hotels, railroads, ports, etc. were built (Jönsson, 2020). Initially, restaurants catered largely to the more affluent section of the population and served not only as dining venues, but also as an important component of their cultural capital (Spang, 2000). Meanwhile, simpler eating establishments began to emerge for the working class, although they lacked the associated social prestige. As these new social spaces emerged, widespread concerns over alcohol consumption (often linked to these venues) prompted a series of policy interventions. Municipalities started regulating simple eating establishments through government-managed institutions such as *Systembolaget*, under which taverns and *folketsrestauranger* "common people restaurants" were created (Hasselgren, 2010). Later on, following a national referendum in 1922, alcohol was rationed in restaurants and taverns, and further restrictions, such as the prohibition of dancing and vocal entertainment, were introduced to prevent the perceived social 'decadence'. These cultural and legal frameworks around eateries greatly affected gastronomic development. As noted by Jönsson (2020), visits to taverns and food establishments were primarily intended for alcohol consumption, with food service mandated by law. Consequently, "as food became a necessary evil rather than being the purpose of the restaurant visit, it is not surprising that the standard of the food served remained low in most eating establishments" (Jönsson, 2020, p. 229). The legacy of this era—characterised by a late-developing hotel and restaurant sector and a culture of governmental and self-imposed restrictions—continued to influence Sweden's food landscape to this day (*ibid*.).

This is not to say that Sweden does not carry gastronomic complexity; From a long tradition of various food fermentation and preservation practices, bread-making, numerous seasonal foods with deeply ingrained cultural significance (e.g. *Semlor*), as well as cultural practices such as *Fika*–an important socio-cultural institutional 'practice'. Bread, in this respect, has been the base of the Swedish diet for centuries, affecting the population's eating traditions and regional gastronomy. Historically, the type of bread that was developed in a given region depended highly on climatic conditions, access to water, and milling capabilities. For instance, in the north of the country, water mills were primarily used for making flour. Since these mills could only be used a couple of times per year, a culture of flat unleavened bread (*Knäckebröd*) developed—which would be stored for consumption in the winter months (Bergfløtdt, 2012). In the south of the country, where windmills were widespread, a culture of soft bread developed—as flour could be milled more frequently and therefore bread could be baked regularly (*ibid*.). Furthermore, prior to the green revolution, the

Swedish landscape was characterised by local grain varieties, such as Ölandsvete, and Dala Lantvete, among many others. These crops were not only adapted to the local region where they were grown, but also contributed to the local *terroir*, one which is being lost with the adoption of modern varieties and imported flours. Up until the eve of World War II, about two-thirds of all bread consumed was made at home (Brödinstitutet, n.d.).

Presently, Swedish people consume 50 kg of bread per person per year on average (Sandvik et al., 2014), which reflects bread's continued significance in the national diet. However, as outlined in section 3.2, the vast majority of this bread is sourced from industrial production or food retailers instead of local bakeries. This sourcing pattern reflects broader structural shifts in Sweden's food system, particularly in the second half of the 20th century, where the country underwent rapid industrialisation and modernisation. As a result, agricultural production and food consumption patterns became increasingly standardised. According to Jönsson (2020), this transformation has contributed to a process of "de-heritagization", where "progress, innovativeness, and multiculturalism are highlighted, and heritage and tradition are downplayed". Many 'traditional' foods have undergone a significant level of industrial and modern influence, losing regional and local specificity both in the fields and on the plates. A recent study contends that many modern Swedish foods, like the ones consumed during contemporary Fika culture (Bunge, Clarke & Gordon, 2025), rely heavily on products that are linked with high environmental and socio-economic impacts, raising concerns about the cultural and ecological sustainability of modern food practices.

4.2 Food Businesses as Mediators in Food Systems

The development of food businesses as important stakeholders in the food system in Sweden is of special importance in this research, for it allows us to gain interesting insights into the way they are structured in a modern context. Food businesses increasingly function as important intermediaries between agricultural producers and consumers, shaping not only what is sourced and sold but also how values such as ecological sustainability, quality, and locality are transmitted along the supply chain. In conventional systems, this intermediary role is often dominated by large wholesalers and retailers, contributing to a disconnection between production and consumption (Goodman et al., 2012). However, research on Alternative Food Networks (AFNs) offers a contrasting model in which smaller-scale food enterprises—such as bakeries, co-operatives, and farmers' markets (e.g. REKO-rings)—act as facilitators of short and dynamic supply chains that strengthen trust, transparency, and community engagement (Renting et al., 2003; Hinrichs, 2000). These networks can serve as channels for agroecological products, especially when food businesses actively engage with local producers to support biodiversity, seasonality, and fair pricing (Vaarst et al., 2018). Nonetheless, as Rosset and Altieri (2017) argue, agroecological transitions are often undermined when corporate intermediaries consolidate market control, marginalising smaller food actors and narrowing sourcing options. This makes the intermediary role of food businesses a critical leverage point in transforming food systems toward greater ecological and social sustainability.

4.3 Sustainability, Local Sourcing, and Agroecology in Food Systems

In the definition of agroecology used in this research, sustainability within the food system is taken holistically, thereby incorporating responsibility from all relevant actors *from* production *to*

consumption. A problem within the modern view on sustainable consumption arises from the heavy emphasis on the citizen-consumer (or 'consumer-activist') as the sole or leading actor in changing the food system paradigm towards more sustainable or regenerative landscapes. It is certain that consumers contribute substantially to socio-environmental problems within the food system— "[both] directly in the form of emissions from the consumption of goods and services and indirectly by demanding and paying for market offers which cause problematic side-effects along the value chain" (Schrader & Thøgersen 2011, pg. 4). This narrative, however, makes the assumption that individual consumers will make more sustainable choices willingly if they are presented with the benefit of said consumption, and thereby assuming that the market would self-regulate in complete disregard of the powerful forces in the global food system that hinder alternative movements (such as organic, local, biodynamic, etc.) to gain widespread momentum. Main barriers include the higher price of organic and locally-grown products compared to conventional/industrial alternatives, limited price transparency from distributors, the scarcity of locally-grown and organic options in certain distribution channels such as restaurants or bakeries, and economic barriers faced by lower-income groups (IDDRI, 2023). Additionally, challenges persist in reshaping public perceptions of organic food (ibid.). "It is the economic (e.g. price), physical (e.g. shelf space), socio-cultural (e.g. image) and cognitive (e.g. confidence) dimensions that combine to make up 'food environments', which influence organic (and local food) purchases and, in this case, have not allowed purchasing practices to evolve in a lasting way" (IDDRI, 2023). In this manner, the consumer's role in affecting and in any way transforming the bottlenecks/unsustainability in the global food system is widely overstated. Consumer studies are nonetheless important and help us better understand changes in evolving perceptions, consumption patterns, and emerging trends within contemporary society. It is the contention of this research, however, to expand on these studies and incorporate them into the discussion of agroecology and sustainability science.

In Sweden, food production and consumption have been greatly influenced by many factors in the late 19th century and throughout the 20th century, as the green revolution unfolded and many countries in the global north embraced modernisation (discussed in section 4.1). There are recent movements, however, that counter the increasingly industrialised and import-dependent food landscape in the region. In 2004, *the New Nordic Cuisine* Manifesto was formulated by a group of chefs from the Nordic countries. *The New Nordic Cuisine* aimed to foster local (sustainable) agricultural production, honour regional agrarian traditions, and establish a Nordic food identity amongst the world's distinguished cuisines (Madhus, n.d). This manifesto was developed to become a guiding light for restaurants and other food establishments (as well as individuals in their homes) to participate in a transcendent regional gastronomic and agricultural revolution. One of the principal aims of the manifesto was politically driven and aimed to democratise the ideology throughout the entire region. This, unfortunately, failed to materialise. There were nationally-driven campaigns in several Nordic countries, but they all appeared to have lost momentum. In 2008, the Swedish government launched the "New culinary Nation", which was inspired by the *New Nordic Cuisine*. Many agricultural and gastronomic projects focused on food and Swedish *terroir* were funded, but the campaign was dismantled in 2014 (Jönsson, 2020) with an uncertain degree of success. One of the most well-known outcomes of this manifesto was the foundation of the restaurant *Noma* (an acronym for "Nordisk Mad"—Nordic Food) in Copenhagen. Since its inception, it has acted as a kitchen and laboratory to bring to light the theoretical ideas developed in the *New Nordic Cuisine* Movement. NOMA's worldwide success has kept the *New Nordic Cuisine* movement alive, but it has cemented its entity within the formality of a fine-dining context. Critics of the movement often deem it an elitist project with little public appeal and exclusion of other cultures (Leer, 2016). Thus, to conclude, the *Nordic Food Cuisine* movement highlights the complexity and often contradictory nature of the contemporary

food landscape—one that is inherently industrialised and globalised, but at the same time increasingly engaged with the ethical, economic and environmental issues that arise from it. Furthermore, while the *New Nordic Cuisine* aimed at raising the health, ethical, and environmental standards of the region's food culture, some of its dogmatisms fell at odds with the food culture of its time. The *New Nordic Cuisine* would indirectly cater to a specific group of people with the proper 'culinary capital' (*ibid*.). This is especially true in terms of being unfit with the lifestyle of the general population, as many ingredients used were unfamiliar and inaccessible, thus making the New Nordic Diet difficult to access (*ibid*.).

4.4 Can there be 'agroecological' food business structures?

This part of the literature review is mainly grounded on the work by Zanella (2021), along with publications by Mason & Lang (2017) and Colonna, Fournier, and Touzard (2013), as well as the work of Caroline Lindö from Brödlabbet in Lund. In this research, agroecological food business structures are defined as those that integrate ecological principles, ethical values, community involvement, and sustainable practices into their business models. These structures challenge the dominant agri-industrial paradigm by emphasising local sourcing, biodiversity, variability and social embeddedness.

Colonna, Fournier, and Touzard (2013) suggest that there is a coexistence of diverse food systems, which can be classified according to certain typologies: "local", characterized by short supply chains and strong social embeddedness; "regional", which link producers and consumers to broader territorial spaces; "agri-industrial", dominated by large-scale, yield-driven, standardized production and long distribution chains; and "differentiated quality"; which are certified products and emphasize specific 'niche' values (e.g. organic, ethical, PDO/PGI, among others). These food systems, in a broad sense, are the ones that currently exist globally. The predominant system, as outlined in previous sections, is the agri-industrial model—which has become the 'conventional' model of food production around the world. The agri-industry currently accounts for 45-50% of world food consumption (Rastoin & Ghersi, 2010). However, traditional production systems (domestic, local, regional, and some aspects of the differentiated quality model) remain present despite the backlash from the agro-industry. They have demonstrated a high level of resilience and adaptability under increasing climate and market instability (Colonna, Fournier, and Touzard, 2013).

In the context of food businesses it is difficult to delineate in which direction food procurement leans. The reality for many small food businesses, particularly in urban areas like Malmö, is that they often subscribe to several (if not all) of the diverse food systems, developing hybrid sourcing strategies. While some ingredients may come from local and organic producers, others—due to seasonal availability or cost considerations—are sourced from regional or agri-industrial networks. For instance, while some Swedish artisanal bakeries often source their wheat flour from local suppliers, milk and dairy could come from a regional supplier (e.g. Skånemejerier), fresh fruits and vegetables (especially in winter) are often sourced from differentiated-quality or agri-industrial food systems, often traveling very long distances prior to arriving in Sweden. These food procurement practices, therefore, can create very complex 'identities' within food businesses, as singular products can subscribe to varied food production models as well as have ingredients from many regions around the world. A hybrid approach can make it difficult to establish a purely 'agroecological identity', which reflects on the tension between ideals and practical constraints (See section 7.3.3)

Assertive principles developed by Zanella (2021) (see Appendix I) by which food businesses can incorporate sustainability measures into their business models, and thereby countering the negative feedback loops often faced by the sector—such as an over-reliance on the agri-industry, lacking diversity, depending on imports, and prioritizing homogeneity over variability—can facilitate system-wide changes. Furthermore, adopting context-specific, adaptable, and dynamic practices rather than rigid models allows food businesses to navigate economic pressures while remaining committed to ecological values or ethical integrity. However, a thorough understanding of the complexity of the food system must be central to sustainable systemic transitions. Challenges can be context specific—such as unavailability of alternative food networks, economic constraints, logistical shortfalls, among others. Principles that guide forward agroecological transitions, therefore, must take into account context-specific challenges, as well as incorporate adaptable mechanisms that avoid rigidity or dogmatism. In Appendix I, a list of 10 principles are presented that incorporate simple and highly adaptable practices for food businesses. However, further research is required to analyse how these measures could be operationalised across different food businesses, with special emphasis on the potential measurable effects on procurement strategies, supplier relationships, and long-term system resiliency. Furthermore, there is a need to analyse how these principles interact within Meadows' (1999) leverage points framework (see section 5.2), to assess their ability to catalyse system-wide transformations.

5. Theoretical Framework

5.1 Gliessman's levels of food system change (expanded)

Table 1: Gliessman's levels of conversion incorporating cross-sector participation

Level	Scale	Environmental studies	Agriculture and other sectors (e.g. food businesses)	Social change
Increase the efficiency of industrial/ conventional agriculture	Local (i.e. farm, small food business)	Resource use efficiency (e.g. energy, water, fertilisers)	Lowers costs and lessens environmental impacts (i.e. precision farming)	No significant social change — system structure remains the same
Substitute practices and inputs	Local	Reducing chemical inputs and adopting renewable resources	Supports shifts to alternative practices (e.g. organic, bio-dynamic, etc.)	Minimal social change — consumption patterns and market structures stay intact
Re-design the agro-ecosystem	Local, regional	Focus on biodiversity, soil health, and ecological pest management	Builds true sustainability at the farms/business scale	Builds enterprise visibility & social support

Re-establish the relationship between consumers and producers: Alternative networks	Local, regional, national	Emphasis on food sovereignty, localised food systems, and reducing food miles	Forms directs and supportive relationships	Economies restructured; values & behaviour changes
Redesign the entire global food system	Global	A global food system that restores and protects Earth's life-support systems	Offers the practical basis for the paradigm shift	Systems fundamentally transformed— based on equity, participation, and justice

Adapted from Gliessman (2015)

While Gliessman's (2015) five levels of agroecological transition were originally developed to guide transformation at the farm level, these levels can also be applied to food businesses operating within the broader food system. Food businesses — such as bakeries, restaurants, cafés, and retailers — are not merely passive bridges (between farmers and consumers) but active agents that can support or hinder agroecological transitions, due to their high degree of integration within their local/regional food environment. At the lower levels of agroecological transition, food businesses may focus on increasing efficiency (through structured logistics, effective use of resources, etc.) or substituting conventional ingredients with agroecological or local alternatives, often without challenging the status quo of industrial/mainstream market structures. However, advancing to higher levels entails a re-design of business models and supply practices to foster biodiversity, variability (such as the adoption of heirloom and heritage grain varieties), support small-scale producers, embrace seasonality, and create direct and strong relationships that shorten supply chains and redistribute value—all of which is in line with Zanella's (2021) principles for a sustainable food business structure.

This alternative approach simply aims to decouple the agroecological transitions' focal point from the farm-level and extends it to various sectors (or stakeholders) within the food system. Ultimately, the most transformative potential lies in food businesses (and other sectors) to engage in efforts aligned with Levels 4-5: contributing to the redesign of the entire food system. This requires shifting beyond individual sourcing practices towards participating in alternative networks, promoting food sovereignty, and advocating for systemic change based on equity, justice, and (agro)ecological integrity. In this sense, food businesses become crucial sites of intervention, capable of re-creating and practising the kinds of relationships, values, and organisational structures that are necessary for a future sustainable food system.

5.2 Meadows (1999) Points of leverage to intervene in a system for sustainability transformation(s)

Table 2: Realms of leverage to intervene in a system

System Characteristic	Description

Parameters	The relatively mechanistic characteristics typically targeted by policy makers.
Feedbacks	The interactions between elements within a system of interest that drive internal dynamics.
Design	The social structures and institutions that manage feedbacks and parameters.
Intent	The underpinning values, goals, and worldviews of actors that shape the emergent direction to which a system is oriented.

Note: Increasing effectiveness to create system-wide changes (Parameters-(low) to Intent-(high))
Adapted from: Abson et al., 2017; Meadows, 1999

Despite the many challenges in the global food system, many of its unsustainable trajectories remain in place and are constantly re-created through procurement strategies, market demands, and profit-oriented structures across food system stakeholders. Many intervention strategies, as argued by Abson *et al.* (2017), focus on tangible, but fundamentally weak, leverage points—thus failing to implement system-wide transformations. Sustainability interventions must rely on effective transformational leverage points based on a system-wide analysis. Thus, this research will adopt Meadow's (1999) theoretical framework to agroecological transitions within the context of food businesses. Here is an overview of the 4 realms of leverage:

"Parameters are modifiable, mechanistic characteristics such as taxes, incentives and standards, or physical elements of a system, such as sizes of stocks or rates of material flows. Feedbacks are the interactions between elements within a system of interest that drive internal dynamics (e.g. dampening or reinforcing feedback loops) or provide information regarding desired outcomes (e.g. the effectiveness of a given incentive scheme). Design characteristics relate to the structure of information flows, rules, power and self-organisation. Finally, intent characteristics relate to the norms, values and goals embodied within the system of interest and the underpinning paradigms out of which they arise" (Abson et al. 2017, pg. 32).

Following this theoretical model, one can start to see how this framework can provide a valuable analytical lens through which to examine the complexities of the food system. *Parameters*, in this context, refer not only to the (limited) natural resources available — such as soil fertility, water availability, biodiversity, and energy inputs — but also to the socio-economic instruments that regulate their use. These include taxes, subsidies, and certification standards (organic, fairtrade, PDO/PGI, among others) that shape practices within the food system from production to consumption. *Parameters* operate at the most visible or 'shallow' levels of the system—they represent the tangible, modifiable elements that policymakers often target first when addressing sustainability challenges (Abson et al. 2017). However, focusing solely on parameters without addressing deeper structural issues often results in limited or temporary solutions.

Feedback, on the other hand, captures the dynamic and relational processes that occur within the food system. Feedback loops emerge through the continuous interactions between stakeholders—in this case farmers, cooperatives, distributors, businesses, consumers, and government institutions. Their decisions and behaviours reinforce or challenge existing patterns along the entire food system. For instance, consumer demand for cheap food may reinforce industrial farming practices, while the growth of alternative food networks (e.g., farmers' markets, CSAs, cooperatives) can create positive feedback loops that support localised and sustainable production models. Moreover, feedback

mechanisms include how information circulates (such as knowledge sharing between farmers or policy signals from government institutions), which in turn shapes future behaviour and system adaptation. Feedbacks are an essential component within a system because they reveal how interventions at one point in the system can produce chain reactions, either stabilising or disrupting the status quo.

Design can refer to the structure of governance, information flows, and the institutional rules that shape how stakeholders within the food system interact and make decisions. This includes how knowledge circulates between producers and consumers, how market access is controlled, and how regulatory frameworks either support or constrain agroecological practices. In this sense, design characteristics determine who holds power, how that power is distributed, and the degree to which local/regional stakeholders are able to self-organise and adapt to environmental or socio-economic challenges.

Finally, *intent* characteristics address the fundamental values, goals, and paradigms that guide the food system as a whole. This could mean the dominant industrial food system paradigm is focused on efficiency (in terms of yields), growth, and profit. Alternatively, a paradigm grounded in sustainability, food sovereignty, equity, and ecological health. Changing or intervening within the intent realm is often the most difficult (but also the most transformative) aspect of systemic change, as it involves shifting societal norms, cultural narratives, and the fundamental purpose of food production and consumption within a given context.

5.3 Theoretical framework synthesis

Table 3: Integration of Agroecological transitions with leverage points for systemic change

Dimension	**Gliessman's levels of conversion**	**Meadows' Leverage Points**
Core Purpose	Understand and analyse the depth of agroecological transition	Identify where to intervene in a system
Number of levels/points	5 levels	12 leverage points (within four system domains)
Focus area	Agroecological transformation	Systems change and intervention
Type of framework	Descriptive/Analytical	Prescriptive/Strategic
Typical Application	Farming systems	Policy, system redesign, leverage analysis
Unit of Analysis	Farms. Hereby extended to other stakeholders within the food system (e.g. food businesses)	Entire systems (ecological, economic, cultural)
Use for Research	Identify how far bakeries have transitioned	Target areas where bakery interventions are most effective

6. Methodology

6.1 Analytical Framework Application

To research and analyse sustainability practices in bakeries, this study integrates two theoretical frameworks: Gliessman's (2015) Five Levels of Agroecological Transition and Meadows' (1999) Leverage Points for Systems Change. These frameworks are operationalised through a conceptual table (see Table 3), enabling the classification of bakery practices along two dimensions: the depth of systemic change and the strategic potential for intervention.

Gliessman's (2015) framework was used to assess the transformational depth of bakery decisions, which ranged from efficiency-level increments (Level 1) to paradigm-shifting redesigns of business models (Level 5). Alongside this, Meadows' (1999) leverage points framework was used to identify where change is most effective within broader systems, whether in 'shallow-level' parameters (e.g., subsidies, certification standards, etc.) or in deeper structures such as flows of information, design structures, and system or societal paradigms.

Practices described by bakery owners were first coded inductively and then deductively mapped onto the matrix. For example, a bakery's decision to source organic flour might be interpreted as a Level 2 substitution that targets parameters. In contrast, practices such as integrating narratives about local grain origins into marketing might be mapped as Level 4 or 5 interventions that operate on the level of information flows or system goals.

6.2 Data Collection and Processing

Primary data was collected through semi-structured interviews with bakery owners based in the Malmö area. This approach allowed for both flexibility in responses and consistency in the themes addressed. Bakeries were contacted via emails, phone calls, and direct visits, particularly when initial contact attempts were unsuccessful. In total, six interviews were conducted. All interviews were audio recorded with participant consent, and notes were taken throughout the interview process to note areas of special importance.

Interviews were transcribed using Otter.ai, an automated transcription tool, and manually checked for accuracy. The resulting transcripts were analysed using a dual coding approach, combining inductive (emergent theme) coding with a deductive (framework-informed) approach based on Gliessman (2015) and Meadows (1999). Coding was supported by Otter.ai and ChatGPT, which enabled the identification and categorisation of key concepts, while final interpretations and theme refinement were led by the researcher. An initial set of barriers and enablers emerged from this process (see Appendix II); however, several categories were ambiguous and could be fitted into either category. This led to the emergence of a third category comprising tensions and opportunity areas within the context of food businesses' adoption of local and organic ingredients.

6.3 Research participants and context

Through an initial registry check, a list of all independent bakeries in Malmö was made. In order to prevent a small research sample, bakeries in Lund were also contacted. The registry outlined a total of 16 independent bakeries in both the Lund and Malmö areas. Large-scale bakeries (e.g. Pågen) were not contacted because their model of operation differs greatly from that of smaller independent businesses, and the sample group was aimed to be rather homogenous in order to allow for fairer comparisons. The criteria for inclusion were determined by the compliance of bakery owners to agree to be interviewed. Out of the 16 bakeries contacted, only six agreed to participate. A total of 5 bakery owners in Malmö were interviewed, and one bakery owner from Lund. One of the bakery owners interviewed chose to remain anonymous—therefore, their name and the name of their bakery are not mentioned in the study. The participating bakeries are the following:

Bagaren och Bonden

Bagaren och Bonden was founded by Karl (a farmer) and his friend Daniel (a baker) in 2014, driven by a desire to reconnect good-quality artisanal bread with local agriculture and sustainable practices. The bakery's identity revolves around the use of local, organic, and seasonal ingredients, emphasising a connection to regional agriculture. Growing up on a farm, Karl brings a sense of agricultural heritage to the business, which aligns with their ethically-driven sourcing practices.

Leve Bageri

Leve Bageri was founded in 2017 by Didrik and Martin. Initially, a traditional bakery, it gradually transformed into a 100% vegan bakery in 2021. Leve Bageri values creativity, community, and maintaining a manageable size rather than pursuing endless growth. This approach reflects their belief in fostering a fulfilling work environment.

Bullarbyn

Bullarbyn Bakery opened in Malmö in September 2025, although it is the continuation of Marta's bakery in Poland, which had been running since 2015. The bakery blends Polish baking traditions with the use of local, organic ingredients. Marta, originally from Poland, started the bakery to create artisanal products that contrast with the industrial bread culture that has become increasingly prevalent. Bullarbyn emphasises community involvement and staff creativity, with employees encouraged to bring new ideas and recipes.

Dame Ginette

Dame Ginette is a French-inspired bakery and restaurant founded by Damien and Lea, who wanted to bring French culinary traditions to Malmö. The bakery side of the business offers a range of classic French baked goods like croissants, baguettes, and brioche, while also experimenting with pâtisserie-style desserts. Damien emphasises the importance of maintaining the quality of key ingredients, especially for simple products where quality differences are most noticeable. The bakery opened in 2024 and currently prioritises economic stability while gradually incorporating locally sourced and high-quality ingredients.

Anonymous

The owner of this bakery will be referred to as Jonathan to protect his identity. This bakery was founded during the onset of the COVID-19 pandemic. The founders, with diverse backgrounds,

envisioned a small, artisanal bakery with a focus on new and unfamiliar (to the Malmö food scene) high-quality breads and pastries. The bakery blends various European influences.

Brödlabbet (Lund)
Founded by Caroline Lindö in 2012, Brödlabbet ("The Bread Lab") was an organic sourdough bakery located outside Lund. Caroline created Brödlabbet to offer high-quality, organic bread using heritage grains, challenging the industrial standards of baking. The bakery has evolved into an educational centre, where Caroline now focuses on training other bakers to incorporate heritage grains and non-industrial flours effectively into their businesses. Through her collaborations with local farmers and millers and her involvement in projects like *Vårt älskade bröd* (Our beloved bread), she has played a key role in building networks around sustainable grain systems in Skåne. Brödlabbet now functions more as a knowledge-sharing and community-building hub than a commercial bakery, contributing to agroecological transitions in the Swedish food system.

7. Results and discussion

Table 4 summarises the distribution of barriers, enablers, and tension points that arose from the thematic coding process using Meadows' (1999) leverage points framework. The fluid boundaries between enablers and barriers in some areas of analysis highlighted the need for a third category: Tensions and opportunities (discussed in detail in section 7.3). Furthermore, Gliessman's agroecological transition levels are not incorporated into the table in order not to confuse the reader. While 'deeper' leverage points (e.g. intent) do generally relate to higher levels of agroecological transitions (e.g. Levels 4-5), they are not always exclusive. Thus, Gliessman is incorporated within the analysis, but not in the theoretical synthesis expressed in Table 4. Barriers, enablers, and tensions/opportunities will be further expanded in the subsequent sections.

Table 4: Leverage points coded within enablers, barriers, and tensions & opportunities

Category	**Leverage points**
Parameters	Legal Parameters: Organic certification
	Structure of material stock and flows: High and fluctuating costs
	Size of stocks: Sourcing options and Infrastructure
Feedbacks	Length of delays: Consumer awareness
	Negative feedback loops: Convenience and capacity
	Positive feedback loops: Relationships and trust
Design	Power
	Self-organisation: Developing efficient production workflows and cost calculations
	Access to information: Resource capital
Intent	Goals of the system: Duality of institutions and the perceived role of businesses
	Paradigm: Creating food business identities based on cultural influences and values vis à vis business logic
	Power to transcend paradigms: Sourcing patterns and priorities

Legend: Red: Barriers; Green: Enablers; Blue: Tensions/Opportunities

7.1 Barriers

Barriers by far outnumber enablers for the adoption of local and agroecological products, which is evident in the way many food businesses currently choose to operate. Even for value-driven bakeries, economic realities limit full alignment with sustainable ideals; Higher costs of local and organic ingredients, thin margins, and inflation are recurring concerns. Furthermore, structural barriers hinder deep systemic change in the way bakeries operate; from logistics to infrastructure, bakeries face significant structural limitations when trying to source locally and agroecologically. Furthermore, the acquisition and procurement of old heritage and heirloom grain varieties remains small.

7.1.1 Legal parameters: Organic certification

Out of the six bakeries interviewed for this study, only one, *Bagaren & Bonden*, is currently organically certified. It is also the oldest bakery in the study, which may grant it some advantage in terms of their proficiency with bureaucratic processes. For them, organic certification is important, as it aligns with their identity of procuring primarily organic and local ingredients. Marta, the owner of *Bullarbyn Bageri*, expressed interest in being organically certified (since she currently sources nearly all of her products from organically certified origins). However, she admitted to lacking the time and resources (information) to navigate this bureaucratic process at such an early stage of her business. Her sentiment reflects the practical difficulties that many small business owners face when balancing operational efficiency with regulatory compliance.

Didrik, the co-owner of *Bageri Leve*, expressed a different perspective. He discussed how they no longer choose to be organically certified as it limited their creative freedom. As an organically certified food business, they had to send out a list of ingredients (and their sources) every time they wanted to create a new product. This is evidently a rule designed to protect consumers and to assure full organic traceability for each product. It, nonetheless, inhibited some aspects of creative freedom and innovation. As a result, they chose to discontinue their certification, instead adopting indirect ways of communicating their commitment to organic sourcing (e.g., selling flour from *Limabacka Kvarn* at their counter as a subtle indicator). This, according to him, was a way of "saying it without saying it", since it is the same flour they use for their breads and pastries. This innovative approach to communicating with consumers is not new and it can be applied across various other platforms.

Lastly, Didrik shared an additional experience that served as a deterrent to the current legal parameters behind organic certification. During one of their first inspections from *Miljöförvaltningen*, they were reprimanded for having a flyer that read: "We're baking with organic flour, organic chocolate and organic sugar". A few days later, they received a SEK 50,000 fine from *Livsmedelverket* for adding organic labels without being licensed to do so. For simply being unaware of the rules and wanting to communicate to their customers that the flour they used was organically-sourced, they were penalised. The organic label, as a recognised institution and certificate of quality/standard, carries a heavy bureaucratic burden. Interestingly, there are no parallel legal parameters for ingredients that are locally sourced or artisanally produced.

According to Meadows' (1999) framework, legal parameters such as certification are low-leverage points because they primarily address surface-level, 'mechanistic' characteristics rather than deep structural or paradigmatic changes. These certifications do not fundamentally challenge the dominant agri-industrial model but rather add layers of compliance that can burden small businesses. Similarly, Gliessman's (2015) framework emphasises the need to transition from simply substituting inputs (e.g. organic flour) to redesigning the entire business model around sustainability. Organic certification,

however, often remains at the level of substitution without encouraging deeper systemic change, as it primarily ensures that specific inputs meet organic standards without addressing broader food system transformations.

In addition, there is an evident contradiction within the certification process: it aims to increase transparency and consumer trust, yet in practice, it can also alienate smaller businesses from fully participating in the organic movement. As observed in the interviews, bakeries like Leve Bageri choose to communicate their procurement of organic ingredients indirectly rather than formally comply with certification standards, demonstrating a practical workaround to an otherwise rigid system. Furthermore, while certification is often perceived as a pillar of sustainable practice, its bureaucratic complexity and associated costs inadvertently favor larger, more industrial operations. This creates a dichotomy where businesses that wish to be committed to sustainability practices are inadvertently penalised, while larger companies with more resources can maintain certification more easily without fundamentally changing their practices.

Bakeries interviewed generally view organic certification as beneficial but impractical, especially given the bureaucracy and paperwork, which translates into time and monetary investments—both of which are limiting resources to small independent food businesses. Despite the good intentions of this legal framework, certification remains a burdensome and difficult tool for businesses to adopt (FoodUnfolded, n.d.). Organic certification clearly defines the regressive nature of the modern food landscape—one that appears to indirectly punish entities that aim towards more ethical, sustainable structures through admin work (time), and economic costs, all the while imposing certain (managerial) constraints on businesses.

In Sweden, some legal parameters behind certification could be developed to facilitate their adoption—for instance, the incorporation of a tiered system, which can allow businesses to have degrees of certification without having to drastically change their operations in order to comply. However, the low adoption rate of these legal mechanisms amongst bakeries in Malmö signals a problem within the parameters of this system. Legal changes could bring about increased adoption of these mechanisms, which could align with higher leverage points identified by Meadows (1999)—especially amongst the design and intents categories.

The reluctance to pursue certification does not necessarily undermine a bakery’s sustainable disposition. *Leve's approach* of "saying it without saying it" reflects a strategic and innovative response to the limitations of formal certification. This aligns with Meadows’ concept of transcending paradigms (see section 7.3.3)—questioning whether certification is truly indicative of sustainable practice or merely a symbolic gesture within the existing system. By prioritising transparency and direct communication with consumers, some bakeries can cultivate trust and maintain their sustainable identity without the formal endorsement of certification bodies. This practical approach reflects a more nuanced understanding of consumer engagement, recognising that trust is built not only through labels but also through consistent practices and open communication. Lastly, other legal parameters, such as taxes and subsidies, remain important areas of analysis. However, they were not discussed in the interviews due to time constraints.

7.1.2 Structure of material flows and stock: High and fluctuating costs

Over recent years, the world has seen an increase in geopolitical shocks (e.g. The Russo-Ukrainian War and the COVID-19 pandemic), as well as climate-related disturbances (e.g. The 2018 European drought and heat wave), all of which have increased inflation and influenced food prices. Food production has been deeply affected, and consumption patterns have changed due to increased prices. Sales of organic products, for instance, decreased in the years following the COVID-19 pandemic (USDA Foreign Agricultural Service, 2024). These disturbances are recurrent and are expected to be more widespread.

Karl from *Bagaren & Bonden* mentioned how they struggled to keep up with the increased inflation rates over recent years. They failed to adjust their prices according to quickly-increasing inflation rates, which meant they had to increase the prices abruptly. This move, though necessary, is often not well-received by customers. This difficulty in keeping track of prices is an unintended consequence of largely relying on seasonal, local and organic ingredients, which often translates into managing a large number of suppliers and adds a significant level of administrative resources from the company. *Bagaren och Bonden*, in this respect, is the business with the largest number of suppliers in the group—with 27 suppliers.

Additionally, labour costs remain the highest expense for food businesses. Averaging at least 50% of total costs amongst bakeries interviewed. While these represent variable costs, similar to ingredients or utility expenses, staff size and hours can not be reduced without directly affecting the daily operations and production workflow of the company in some respect. Staff salaries are high in Sweden, and bakers, who often work at inconvenient times, have to be compensated extra according to Swedish union agreements (e.g. Kollektivavtal) (Unionen, n.d.). This was expressed by Jonathan, the owner of ANONYMOUS, who argued that high labour costs disincentivised the use of products of differentiated quality (local/organic/fairtrade/etc.);

*“It's a tough industry because it requires [trained] staff to produce baked goods, and it's nighttime work where you have, you know... we pay our workers well, so then they get double pay at night, and they get double pay on special days, whatever. If we want to prioritize our staff, then it's hard to it's hard to justify paying 400 [SEK] per kilo for f***ing tomatoes.”*

Ingredients, on the other hand, often represent a difficult category. They are essential supplies with a high degree of variability. Food businesses have to constantly juggle different product properties (such as ingredient origin, price, quality, taste, organic/fairtrade certification, convenience, etc.), and creating a matrix of what to prioritise over something else can be difficult—see section 7 for further analysis. Ingredient pricing is something that food businesses are often very sensitive to, as price fluctuations can affect the economic stability of the company. Ingredient pricing oftentimes is a significant inflection point for the choice of certain products over others. It can lead to tensions between certain values—For instance, prioritising the business economy over local sourcing or local products over organic. This is something that will be discussed in detail in section 7.3.3 It is important to note, nonetheless, that the cost of ingredients is a primal factor in how business owners rationalise their procurement strategies. This was well expressed by Jonathan, the owner of ANONYMOUS, who described the recent challenges they have had with recent price increases of dairy products:

“We've been dancing around a little with dairy because of the prices. There's been crazy, crazy, crazy price increases recently, and we've been looking for alternatives and to haggle and whatever, but it's

really hard. No one's budging, and everything's going up. So for a while we were using 'Thise' (a large organic dairy farm based in Denmark). [Then] for a while we were using a German butter [...] Now, I think we're using 'Skånemejerier'. We are using that for cream and I think butter as well. We don't really like it but we can't afford 'Thise' [products] *anymore."*

According to Meadows (1999), the structure of material stocks and flows is an important but rather shallow leverage point. Emphasis on making local and agro-ecological products more affordable can facilitate their procurement but does not affect structural or paradigmatic shifts in procurement strategies, power arrangements, organisation, accessibility, and the overall 'design' of the food system as a whole—all of which will be discussed in later sections. Similarly, this relates to the first stage of agroecological transitions, according to Gliessman (2015). The organic label has expanded the adoption of more sustainably-sourced products, as both businesses and consumers alike have a trusted label that represents products of a differentiated quality. However, the organic label only certifies products that are produced without synthetic chemicals (fertilisers, pesticides, herbicides, etc.) amongst other shallow-level practices that, in the grand scheme of agroecological transitions, only represent an initial stage of conversion. Agroecological practices incorporate many other ecological, ethical, and community-based principles that are not present in the certification standards. The organic label has been able to standardise and regulate early agroecological transitions, which could facilitate further adoption of agroecological principles.

7.1.3 Size of stocks: Sourcing options and infrastructure

Wholesalers remain the most convenient and accessible way for food businesses to manage food orders. Organic and agroecological production remains marginal in the Skåne area. At this shallow level of leverage (parameters), there is a positive movement that can set the base for deeper-level systemic transformations. *Bondens Skafferi*, *REKO-ringen*, *Vildplock*, etc. represent important, though small, alternatives to the status quo of the modern food system. However, as aforementioned, the logistics of working with multiple small-scale producers can be complex, leading some bakeries to primarily favour a single reliable source despite the desire to source locally.

Many bakeries in Malmö depend on wholesalers like *Chefs Culinar* for bulk and consistent ingredient supply. *Chefs Culinar* is one of the largest wholesalers in the region, operating across several countries. They boast over 20,000 'unique' ingredients on their platform, with a delivery reliability of 99.5% (chefsculinar.se, n.d.). All of the Malmö bakeries interviewed in this study use *Chefs Culinar*. Interestingly, the use of this wholesaler varies across the different bakeries. Bakeries such as *Bagaren och Bonden* and *Bullarbyn*, who subscribe to a more strict environmentally-conscious and ethical ingredient procurement, use *Chefs Culinar* because it grants them access to dairy products from *Thise*. They choose to buy from *Thise*, instead of other dairy companies like *Arla* or *Skånemejerier* for various reasons: 1) Quality - Local Swedish dairy companies fail to meet the quality produced by *Thise*, according to them. 2) Values - *Thise* meets higher environmental standards than other dairy companies. As expressed by Karl, *Thise* represents a company that aligns with their own values because they choose to produce only organic products, unlike *Arla* and *Skånemejerier* who produce both organically-cetrificed and conventional products. "They (*Thise*) are 100% organic, which I appreciate because all the companies that are doing both (conventional and organic production) are, to me, a little bit [incomplete]. I prefer a company showing where they stand and believing in the organic [movement]. So this is doing that, and I think they're on a different level, quality-wise, to *Skånemejerier* and price[-wise]".

Furthermore, bakeries like *Leve* and *Dame Ginette* use *Chefs Culinar* to streamline production workflow. For these bakeries, Chefs Culinar does not constitute the largest proportion of their supply chain but remains crucial due to its convenience, reliability, and a wide array of products (this will be expanded further in the following section). This reflects a pragmatic approach where the need for stable supply often outweighs the desire for purely local sourcing. In contrast, the case of food businesses that follow conventional routes for food procurement, such as ANONYMOUS, is comparatively different. This bakery relies primarily on two wholesalers: *Chefs Culinar* and X[1]. These two companies make up the bulk of their ingredient procurement. Additional suppliers (e.g., one each for vanilla, eggs, and nuts) are also utilised but only for those specific products, allowing for minimal administrative workload and facilitating management roles.

In terms of the infrastructure of the entire supply and demand structure for bakery products, Caroline Lindö from *Brödlabbet* highlighted a significant barrier:

"It's also an infrastructural question because if you grow a smaller amount or a larger amount of heritage grains, where can you mill them? How can you sell them? You can't really grow 100 tons of spelt if you don't have someone who can mill it for you, and you know that you can sell it later. So that's also very important, and that's more difficult in Skåne because we don't have small mills. We just have large mills. Further up north in Sweden, there are some smaller mills that can take five tons of wheat or rye and mill it for you, but in Skåne, that's more difficult. I mean, Håkan (a local farmer who mills his own grains) is too small to mill other people's flour, and 'Gissleberga kvarn' is, well, a small mill, but still, if you have less than 10 tons of anything, it's no use. So really, if you're a farmer, you need to know that someone will buy your crop. Yeah, and the mill needs to know that the bakers would buy the flour if they're going to order it from the farmer. [...] [In addition,] even the smaller mills are using the industrial definition of flour quality, for example, Gissleberga or Limabacka Kvarn, when they want to buy some flour, you need a falling number that's okay. You need protein quality that's okay. You need ash content that's within limits. And if the farmer can't produce that—he or she has invested a lot of money in growing spelt, for example, and then no one wants to buy it, and they have to take it to Lantmännen and get paid [a very low price] as animal feed. And so we need to share that responsibility as bakers through the mills to actually accept larger variations in grain quality, and that also takes education. It takes training to know how to handle non-industrial flour qualities."

This quote clearly reflects the state of the network of procurement of grain products for bakeries—from producers to millers to bakeries and finally to consumers. The entire infrastructure has been organised to facilitate the production, processing and supply of industrial wheat—characterised by specific, uniform qualities such as protein content and ash levels, which are often sought for milling and baking. In contrast, heirloom and landrace grain varieties, while possessing good baking qualities, inherently exhibit more variability, which contradicts the industry's preference for standardisation of products, as stated by Caroline. However, the fixation on standardisation does not only stem from the industry—consumer expectations of consistency further reinforce this infrastructural issue (see section 7.3.1 for a more detailed analysis).

Lastly, the point of convergence amongst businesses for their procurement strategies is to strive for quality products (See section 7.3.2). Although quality can be perceived differently by each business

[1] The name of this supplier is not displayed to protect the identity of this business.

(whether it is locally sourced, sustainably produced, or of exceptional taste, etc.), it is a category that is often prioritised when sourcing ingredients. While it was mentioned that all of the bakeries interviewed work with conventional wholesalers, such as *Chefs Culinar* there is a trend towards seeking out 'alternative' suppliers (wholesalers, farmers, foragers, etc.). *Natoora*, an alternative wholesaler, is a London-based wholesaler that focuses on quality, seasonality, and flavour—working directly with over 250 producers around Europe that often work with traditional farming methods. Their value-driven business mindset is often accompanied by good quality standards. Bakeries like Bullarbyn and Leve acknowledged working with them because of the high-quality products, while their sustainability initiatives and short-chains and close connection with producers act as a good incentive to work with them. More conventional bakeries, like ANONYMOUS, mentioned sourcing a few products for them in the past and acknowledged wanting to source more from them because of their high-quality standards. Quality, in this sense, appears to be an important inflection point within value-driven entrepreneurship. Their offering of sustainably- and directly-sourced products appears to incentivise conventional food businesses like ANONYMOUS through their quality.

Lastly, three bakeries affirmed working with wild and foraged foods that they receive from local foragers. This practice not only establishes important community relationships based on trust but also reflects ingredients that can only be seasonal and locally sourced. 'Vildplock' is a company that represents a network of foragers that supplies food businesses in Malmö with foraged berries (cloudberries, blueberries, etc.), as well as edible forest plants. This alternative model of food procurement represents a strategy that transcends the parameters of conventional structures. Wholesalers often demand products to meet specific standards and to deliver fixed amounts. Vildplock and the food businesses that work alongside it (e.g. Bullarbyn, Leve, and Bagaren och Bonden) demonstrate that alternative structures that embrace variability and biodiversity over standardisation can be economically and logistically viable.

According to Meadows (1999), the structure of stocks and flows is still considered a low leverage point because physical infrastructure changes are often costly and slow to implement. Nevertheless, building adaptive infrastructure—such as flexible milling facilities, as well as collaborative local supply networks—could enhance resilience and diversity in the bakery sector. Furthermore, this infrastructure challenge also aligns with Gliessman's agroecological transition levels, where moving beyond merely increasing efficiency (Level 1) towards system redesign (Level 3) requires embracing variability rather than adhering to agri-industrial norms. The use of foraged products is a prime example of this, as it symbolises a redesign of the food ecosystem (of which forests, food businesses, and foragers are all part). It even adopts some notions from the fourth level of agroecological transitions, whereby values/behaviours change, and traditional economic structures are challenged (Gliessman, 2015).

Wholesalers have permeated the food procurement infrastructure in the modern-day food system. This study does not contend that wholesalers are incompatible with more sustainable food procurement practices. They represent an important and unavoidable part of the system regardless of the type of food business. In certain cases, they facilitate access to higher quality and more environmentally-friendly products, such as *Thise* dairy products. Over-reliance on wholesalers, however, inhibits the capacity to acquire more diverse local agroecological products.

7.1.4 Negative feedback loops: Convenience and capacity

In systems theory, negative feedback loops (or balancing loops) promote stability and equilibrium within a system whilst counter-acting changes (SFU, n.d.)—thus reinforcing the status quo. In the case of bakeries, convenience and capacity limitations reinforce a pattern (or self-correcting mechanism) where economic considerations tend to usually outweigh environmental or ethical concerns. Convenience and capacity (e.g. time, staff, logistics, and infrastructure), especially amongst the recently-established bakeries, seem to be a deterrent to the adoption of local agroecological products. Under a capitalist market, the logic of economic stability always prevails over ecological sustainability and ethical or social concerns of food origin. This is something that will be discussed in more detail in the Tensions & Opportunities section but will be shortly covered here.

Damien, the co-owner of *Dame Ginette*, when asked what would facilitate the procurement of local agroecological ingredients for food businesses like his, he answered the following:

"I would say it's time [...] because I already know some farmers or some people working in the area, and I know the prices are not necessarily crazy, but it's also time for logistics, organisation, and stuff like that. [For] some of them, you have to have a car because they don't deliver. Some others, they are only working a certain period during the year, and you have to order like 10 days in advance or stuff like that. So it's also time, because sourcing takes time, and for now, as we are still very young, all my time is dedicated to the kitchen. This is why I said: It's the priority to start the company because we really wanted to start our concept and develop it, show it, to show to people what we were doing and when things are going to be running a little bit, then we're going to take more time, both of us, Lea in the bakery, and me in the kitchen; [...] To get local suppliers or direct suppliers from France for specific products."

This quote illustrates the systemic inertia that is alluded to within negative feedback loops; even where there is an intent to adopt alternative measures, capacity limitations (in this case, time, labour, and capital) anchor businesses to established systems. This reflects on some of the economic realities that newly emerging food businesses have to prioritise over sustainability measures to maintain a viable business. The investment for opening an independent food business is one that takes years to recover—as profit margins are notably very low in the sector. Most bakery owners interviewed in this research attested to having less than 5% of profit relative to their yearly turnover.

On a similar note, Karl from *Bagaren och Bonden* echoed a similar sentiment, noting that the time and effort to establish a connection (especially a long-lasting relationship) with local farmers are significant, especially while running daily operations. Marta from *Bullarbyn*, on the other hand, mentioned that capacity limitations, such as staff and infrastructure, can make it difficult to invest time and resources in sourcing diverse local ingredients. This point relates directly to the topic of wholesalers that was discussed in the previous section. Reliance on a few wholesalers creates a reinforcing feedback loop where the economic benefits of consistent purchasing and wide availability discourage bakery owners from seeking out more fragmented, diverse, and local suppliers. In the case of ANONYMOUS, for instance, depending on one or a few suppliers gives them leverage to negotiate prices, which further deepens the bonds to these suppliers. "It's a lot of work to deal with more suppliers [...] We try to maintain the same supplier [as our] main supplier. You also get better prices the more you buy [from a singular supplier]. In this department, you have more to talk about if you're gonna haggle about the price."

According to Meadows (1999), feedback loops comprise deeper-level leverage points than parameters. This dependency loop constantly stabilises the current system, making it challenging to adopt deeper, value-driven practices that would align with agroecological principles. Systemic 'inertia', within the context of sustainability, "describes the inherent tendency of complex systems—be they societal, economic, or environmental—to resist alterations to their established pathways, even when those pathways are demonstrably unsustainable" (ESG, n.d). This section alludes to the difficulties that are involved when moving to the third level of agroecological transitions, which involves the redesign of the entire agroecosystem. Food businesses would have to restructure entire production logistics, as well as manage alternative supply chains—all while facing economic pressures and uncertainties.

7.1.5 Power

Conventional agricultural production remains the dominant practice of production in the region. Wholesalers provide the most efficient and convenient delivery system. As covered in section 3.1, the food market structure in Sweden is largely concentrated amongst a few large corporations. They hold a large degree of influence over how food is produced, processed, transported and sold—affecting the entire food system from production to consumption. Alternatives, like *Bondens Skaffer*i and *Vildplock*, represent a positive challenge to the dominant structure. However, many ingredients/producers are not part of this scheme, and therefore, some products (e.g. wild/local berries) often remain difficult to access. Due to time constraints, notions of power structures were not covered during the interviews. They remain, nonetheless, important barriers to agroecological transitions within food businesses.

7.2. Enablers

Enablers are factors that pro-actively facilitate the adoption of local and agroecological practices within Malmö bakeries. While they are limited, those that do exist are primarily driven by strong personal values, community networks, and strategic access to information. However, these enablers are often fragile and can be undermined by external factors, which will be discussed further in the Tensions & Opportunities section. For instance, while value-driven entrepreneurship prevails as the leading enabler for locavorism and sustainable/ethical business management, it was re-categorised as a tension point due to the economic pressures that most businesses have to endure to remain profitable/viable. Most bakery owners interviewed entered baking through personal values or ethical commitments, not just profit-oriented business logic. These deeply-held beliefs drive their sourcing and management decisions. These values often remain despite internal/external pressures. In addition, relationships establish networks of trust among the different components in the system, efficient workflows allow for more resilient and dynamic structures within each institution, and access to information act as a strong resource base for bakeries to rely on.

7.2.1 Positive feedback loops: Relationships and Trust

Positive feedback loops are similar to negative feedback loops, but they are characterised by interactions that strengthen sustainable practices through reinforcement and repetition— a mechanism that reinforces sustainable practices through repeated and mutually-beneficial interactions. According to Meadows (1999), positive feedback loops are mechanisms that amplify positive changes rather than

counteracting them. In the context of bakeries in the Malmö area, building relationships based on trust—both within the bakery community (B2B) and between bakeries and customers (B2C)—is fundamental. Relationships between other stakeholders (bakers, millers, farmers, foragers, etc.) is an equally crucial component in this context.

Relationships with suppliers

Karl from Bagaren och Bonden noted that maintaining long-term relationships with trusted suppliers not only ensures consistent workflow but also reduces the uncertainty associated with local ingredient sourcing. Similarly, Didrik from Leve Bageri highlighted the role of a stable and continuous procurement strategy maintains their operations dynamic and resilient;

"I think it's an ongoing process, like some of them (farmers/local suppliers) drop off, a new one comes in. [...] It is ongoing but the network gets bigger and bigger [with time], I would say. So every year, maybe we add one or two that we can ask about certain things. Either we find them or they contact us that they have something to sell."

Relationships and trust with customers

This area will be covered in detail in section 7.3.1 but in this particular case, engaging directly with customers about ingredient sourcing builds consumer loyalty and trust, which in turn reinforces the bakery's commitment to local ingredients—something that Marta from *Bullarbyn* emphasized. Nonetheless, while establishing a strong relationship with consumers can enhance their trust towards a certain company or brand, this trust has to be continuously re-evaluated as it could lead to blind trust—as was emphasised by Didrik from Leve:

"I think people trust us in what we do. So then I think in the brand, it's also they're thinking like: "oh, they work with high-quality products". [...] We have a good branding so we could just start to fool people now and get a lot of money out of it. And that's how the big companies do. Like they make you believe that they have the best ingredients, but they have the most cheap ingredients, and they just build a brand."

Relationships among bakeries

Lastly, bakery-to-bakery relationships are profoundly important but not a priority amongst the bakeries in the study. The benefit of business-to-business collaboration is a profound enabler for sustainable and ethical practices. Bakeries could exchange insights about suppliers, ingredients, and best practices, thereby collectively enhancing their sustainability efforts while extending their network. Food businesses do not exist in isolation, and what they produce influences the food scene in their surroundings. Most bakery owners interviewed conveyed openness to establish relationships with other bakeries in Malmö, especially those who share similar business values. This was expressed succinctly by Marta from *Bullarbyn*:

"I talk with bakers all the time about the ingredients that they use, because I think that's how we can evolve in our businesses—is that we share the sustainable practices, if we're looking for them [...] Bakers everywhere I work: In Poland or here (Sweden), they are very friendly, and they want to share [...] knowledge. I think that we don't see ourselves in the competition that much."

Deduction

To summarise, while positive feedback loops are beneficial mechanisms to reinforce positive changes, they are not inherently stable. They can be hampered by economic factors, such as changes in product availability or price increases—as was pointed out by Jonathan from ANONYMOUS and Karl from *Bagaren och Bonden* in earlier sections. According to Meadows (1999), positive feedback loops are considered higher leverage points because they can lead to rapid and long-lasting transitions when well-established. In the context of Malmö bakeries, fostering strong relationships amplifies sustainable practices by creating a network of mutual support and knowledge sharing, which can help, and to some extent withstand external shocks, such as supply disruptions or economic downturns. Furthermore, relationships are not static, they evolve and require constant reinforcement, which requires time and resources. As was noted by Didrik from Leve, as new relationships form and old ones fade, the network becomes more resilient and adaptable. This dynamic nature of positive feedback loops highlights the importance of continuously nurturing partnerships and relationships amongst food system stakeholders to create a robust network, which alludes to the fourth level of Gliessman's (2015) agroecological transitions. Lastly, it is important to note that further research is needed to uncover other positive feedback loops, especially among larger and more conventional bakeries, which often have a larger outreach and degree of influence independently amongst consumers and producers.

7.2.2 Self-organisation: Developing efficient workflows and cost calculations

Amongst the many challenges of food businesses, a persisting one is meeting their maximised potential based on physical (infrastructure and staff) and logistical constraints. For instance, a bakery can have the equipment to be able to produce 50 breads and 75 pastries per day. If the bakery does not have the logistical capacity or knowledge to reach this potential, it could potentially lose resources or capital. This point was briefly touched upon in the interviews, but remains an important leverage point for the way businesses operate and organise themselves logistically. According to Meadows (1999), self-organisation is a powerful leverage point as it enables systems to adapt and evolve independently. In the context of bakeries Malmö, efficient workflows and accurate cost calculations are essential components of self-organisation. When bakeries develop resilient structures and adaptable workflows, they are better positioned to absorb fluctuations in ingredient pricing/availability or market demand, as well as mitigate challenges. Furthermore, a stable business is more prone to be open for innovative changes if it has a strong structure.

Developing efficient workflows is particularly difficult for small and emerging food businesses, as they have to establish themselves economically, while managing many other aspects of the business. As Karl from Bagaren och Bonden pointed out, calculating costs is especially challenging:

"Actually, I would like to work more on that, to be better informed. Maybe make better calculations. But I think calculations are tough—to calculate what something should cost, but maybe that's one way of doing it; [From the] bottom up or something. Or the other way would be just to look at what the market value for this is basically. To calculate is difficult, I would say, because as a baker, you also do like three things at the same time, and you do this and the time [is not enough]. How do you calculate the time it takes? It's not so easy, and that's the biggest thing."

Similarly, Marta from Bullarbyn noted that calculating the cost of the work (in terms of time), while estimating production batches can prove to be very difficult, but an essential component in logistics:

“I'm not really good at calculating the [cost of the] work. I think it's like more, because the way I think about organising work in the bakery is that [...] In general, the bigger the batch is, the lower the work cost it's going to be. But then if your machines are too small, or if your batch is too big, just because it's 'Fettisdagen' (a busy holiday) then it might mean that it's not going to be that much lower, because you maximise your capacity, and then you need to make a second batch. Yeah, basically, so you have to know what's a good batch size to optimise the work.”

Despite its potential, self-organisation requires recurring adjustments to remain effective, particularly during the early years of the business, and as market conditions and production demands evolve. This area requires further scrutiny and research. Future research could explore how different bakery models manage these challenges and whether larger commercial bakeries could benefit from adaptive self-organisation strategies typically seen in smaller artisanal business setups—which could potentially make them more adaptable and thereby increase their adoption of local agroecological products. Efficient and effective organisational structures relate to early stages of agroecological transitions. However, they make the base of food business' logistical and operational decision-making.

7.2.3 Access to information: Resource capital

In a landscape where conventional agricultural production prevails, access to alternative platforms and organisations for alternatives (such as heritage and heirloom grain production) are scarce. Access to information is a pivotal leverage point within the food system, as it facilitates the flow of knowledge and resources between stakeholders. According to Meadows (1999), improving information dissemination can significantly enhance a system's ability to adapt and transform. In the context of bakeries in the Malmö area, having access to reliable networks and platforms that promote the use of diverse, local, organic, and heritage ingredients is vital for sustainable transformation. Several platforms and organisations, such as *Allkorn*, *Vård älskade bröd* (Our beloved bread), as well as *Brödlabbet* were crucial driving forces for change. These resources acted as pivotal platforms for information exchange and networking.

Karl and his business partner from *Bagaren och Bonden* pointed out that they did not come originally from this part of Sweden. This meant that when they first opened the bakery, they lacked the social capital to get access to important information about local farmers and suppliers. *Allkorn*, a Swedish association that works on preserving cultural wheat varieties allowed them to meet farmers and other small producers in the region who were working with old swedish grain varieties and heirloom grains. This was an essential component for networking with suppliers and others working in the sector who shared similar values. Karl mentioned that while “this region (Skåne) is the agriculture region of Sweden, [...] the share of organic farmers is the lowest. I think it's like 5% [...] So it's very hard to find organic and heirloom grain varieties. It's just a couple of them in Skåne, and so we didn't buy from Skåne [initially]”.

Caroline from *Brödlabbet* echoed this concern: “the most difficult thing with starting the bakery was actually finding good flour. And that's weird, because in Skåne there are fields of wheat everywhere, but all of it is industrial wheat, and all of the mills, they mill industrial flour”. She emphasised that engaging in community networks, such as "*Vård älskade bröd*" (our beloved bread)—a project funded by *Länsstyrelsen*—enabled her to establish long-term partnerships with grain suppliers. By sharing knowledge and pooling resources, these collaborations not only ensured a stable ingredient supply but also promoted collective collaboration. Furthermore, it is what led her to transform her organic bakery

into a resource center or “educational bakery” to disseminate knowledge and networks around heritage grains, which has allowed her to expand her network of millers, bakers, and farmers who are aiming to disseminate the use of diverse and locally-produced heritage grains. “I'm using my time better in training other people how to use heritage grains. So that's what I do full time now. I try to inspire people, I try to spread knowledge, and I help people who want to start a bakery or already have a bakery, but want to develop and use more of heritage grain flour and help them to understand flour and sourdough from a scientific perspective, so they can better tackle difficulties that arise when you use artisan flours in your production.”

In line with Gliessman’s (2015) agroecological transition model, redesigning food business practices requires building networks that support knowledge and information exchange. Access to information enables bakers to break away from conventional supply chains and experiment with old local varieties or heritage grains, thereby fostering sustainability practices from the ground up. Furthermore, Caroline’s initiative to transform her bakery into an “educational bakery” exemplifies how knowledge hubs are important centers that can disseminate otherwise marginal artisanal practices, such as the incorporation of heritage and heirloom grains in day-to-day production. This can empower bakers to adopt new and innovative practices. Brödlabbet, in this case, represents an important example of how impact can be multiplied across the food system through knowledge exchange and “re-education”.

7.3 Tensions & Opportunities

Subsequent to the data analysis, a third category arose; Tensions and Opportunities.This category captures areas of conflicting incentives, overlapping challenges, and unclear possibilities within food businesses. These are instances where bakery owners are required to negotiate between clashing values, such as economic viability vs. sustainability, or efficiency vs. ethical sourcing.

Rather than representing strictly enablers or barriers for sustainable transitions, these tensions often reflect ambiguous or dynamic conditions in which pragmatic compromises are made. In the following subsections, what appears to be a constraint often also presents an opportunity for innovation or deeper engagement with sustainability principles. This section explores such gray areas, where bakeries navigate internal and external pressures, resulting in complex and sometimes contradictory or mixed outcomes.

7.3.1 Length of delays: Consumer awareness

In Meadows’ (1999) framework, the length of delays alludes to the time lag between the cause of a change and its visible effect within a system. Delays can significantly affect how a system responds to interventions and how feedback loops stabilise or destabilise the system. Stabilising effects refer to short delays that grant a system enough time to react and adapt to mitigate its effect. For instance, if a business notices the benefits of transitioning to local grain suppliers instead of industrial grain varieties, it can assess and adapt its procurement strategies to incorporate these changes. On the other hand, destabilising effects relate to long-term delays that can cause a system to dramatically under-react or overreact to changes. For instance, the impact and benefit to sourcing local and organic products may not be clearly apparent, which can lead to slow and inconsistent adjustments. In this section, we will focus solely on destabilising effects that arise from consumer awareness. Consumer

awareness in this specific context relates to their understanding of where ingredients come from, the value placed on sustainable procurement strategies, and the willingness to support businesses that align with these principles.

Lack of consumer awareness vis à vis food businesses' sourcing practices persists as one of the largest tension points in this system. While consumers constitute important stakeholders in transforming the local food landscape, they appear to seldomly leverage their power to stimulate change. Informed consumers can provide feedback to bakeries and other food businesses, stimulating demand for local and/or agroecological products. However, as most of the business owners in this study pointed out, consumers pose little leverage for systemic changes. In the interviews, consumers were oftentimes characterised as passive actors, primarily concerned with superficial attributes of products, rather than underlying values, such as product origins, ethical considerations, environmental concerns, etc.

Moreover, consumer expectations for uniformity in baked goods—consistently shaped by industrially standardised products—create additional pressure on bakeries to adhere to consistent ingredient quality. This ingrained mindset makes it difficult for consumers to appreciate or value the inherent variability of using heritage or heirloom grains. As Marta from Bullarbyn noted, even slight variations in flour quality can result in noticeable differences in final products, making it sometimes challenging to justify only using locally milled grains with variable properties. The process of baking pastries, for instance, can be more demanding of precision than bread baking, and requires the flour to have strong gluten properties to create a stable and consistent product. According to Marta, many of the local Swedish flours are relatively 'weak' and therefore have to be strengthened with the addition of strong flours (such as Italian Manitoba). Caroline from Brödlabbet, however, pointed out that this is not due to the properties of old heritage grain varieties, but rather "lack of skill or knowledge" about how to work with non-industrial wheat. Moreover, in the case of the customer's expectations for consistency and 'industry-level standards', she argued that it's "also part of the baker's job to train the customers [...] to tell them *what* is good and *why* that is good." Variability then can be taught as not only natural, but desirable, as it is from an agroecological perspective.

Karl from *Bagaren och Bonden* pointed out that people appear to be more concerned about esthetic qualities as well as price, rather than value-driven concerns about the ingredients in the food they buy from bakeries:

"I would like people to want this [...] I'm waiting for people to start caring about this, but it feels like they don't, to be honest [...] You can argue that no one can buy it if it's not available, and that's the truth. Sometimes, like ICA and these supermarkets, they don't have [local/organic] products and these things. But to me, the biggest problem is that people won't want it and want to pay for it, and then business owners would care too. Then everything would follow, maybe. I don't know which way it has to start".

Similarly, Marta from Bullarbyn echoed this presentiment by saying that an increase in "customer awareness will make it easier to order organic." She, nevertheless, hoped people cared more about the 'substance' behind the bakery products instead of the visuals. She proactively makes the effort to communicate with the customers about where her ingredients come from, which can stimulate consumer trust (as covered in earlier sections), as well as shifting perspectives towards more sustainable choices:

"[...] It's always me talking about this because I want them to know that. I don't want them to need to ask about that. I want them to know that we have organic this, and we have organic that, because when they come into the bakery they expect a nice, shiny croissant. They don't expect it to be organic or locally-sourced or anything. [For example], two or three days ago, somebody posted about our Semlor and they were like: "Oh, go there and fetch this again, because it's organic and locally-sourced". So I guess the message is coming through to some. We had also some customers coming after [the shop that was here before] in the same place [as this] bakery, which was also focusing on organic and sustainably-sourced food. And these customers are usually more [the type of customer who] likes asking about ingredients."

This practice of re-educating the consumer can strongly influence positive feedback loops, as consumers can be taught to increase their expectations of bakery products and therefore stimulate demand for higher quality products and value-driven sourcing patterns. At the same time, this would reinforce businesses' commitment to sustainable sourcing of ingredients. Consumers in the context of this research currently appear to represent a destabilising effect on the length of delays on the bakery scene in Malmö. Their lack of awareness of businesses' sustainability efforts (or lack thereof) can translate into their continuation of choosing products based on familiarity, rather than sustainability measures. Caroline Lindö from Brödlabbet mentioned, nonetheless, that there are a number of concerned and well-educated consumers who seek out more 'wholesome foods'. They, however, represent a minority group or niche in the market.

To summarise, Based on Meadows' (1999) framework, long delays are destabilising because they obscure the connection between cause and effect. When sustainable initiatives do not immediately translate into consumer recognition or support, bakery owners may revert to more conventional practices, assuming that customers do not value sustainable efforts. This reaction can undermine the imperative momentum needed for a systematic shift towards local agroecological sourcing. In the case of bakeries in Malmö, customer awareness is causing a significant length of delay for sustainable transitions. This pattern of low consumer awareness is not unique to Malmö but reflects broader food system dynamics where marketing and industrial production have cultivated preferences for uniformity, convenience, and cost-effectiveness (Wu et al., 2021). These destabilising effects, however, can be counteracted through re-education of consumers and transparent communication—which can stimulate positive feedback loops for long-term transitions. However, addressing this tension point does not depend entirely on a 'consumer-activist', but requires a collaborative effort across stakeholders in the food system.

7.3.2 Goals of the system: Duality of institutions and the perceived role of businesses

What is the goal of a food business? Is it to be economically successful or structurally viable? Is it recognition and fame? Or is it to strive for quality and sustainability standards? These touch upon subjective and intangible measures that are difficult to define, and therefore lead to persisting tension points within businesses. According to Meadows (1999), the goal of a system represents one of the deepest leverage points because altering it fundamentally changes the way the system behaves. Under a capitalist economic system, businesses can be (and oftentimes are) reduced to economic units, where profit-driven motives—such as minimising costs, and maximising profits are seen as 'logical' and prioritised over value-driven goals. As was exemplified by Abson *et al.* (2017, pg, 32), "economic growth can be understood as the emergent intent of a socio-economic system if this is the dominant trajectory that the system supports. Notably, such an emergent intent does not imply that all actors

within the system of interest share this end as a normative goal, or that the system itself has a goal". This is precisely the case of the majority of the bakeries in the study. They don't entirely subscribe to the profit-oriented reductionist approach to business management and ownership. They operate their business beyond profit creation and see them also as mechanisms for community, culture hubs, creative food labs, as well as knowledge exchange and active change makers in the spaces where they interact—both with consumers and the agricultural landscapes. A food business as a profit-constraint institution, but with the capability of transcending paradigms as active agents in food system transformation (see section 7.3.3).

From the interview data gathered, all bakery owners, in some respect, defy the conventional profit-oriented motive of business management. *Leve*, for instance, highlights the importance of a bakery as a creative hub, where new and innovative products arise from often locally-sourced and seasonal ingredients. In addition, their opposition to the physically and intellectually 'draining' nature of bakery work, which often requires early-morning work-shifts, led them to organise their business that prioritises more regular working hours over profits. Furthermore, he mentioned that there is a common business mentality in Sweden (*tillväxt*), which promotes constant growth—something he disagrees with;

"It's hard to understand why the company always has to expand and grow and get another location and go bigger and bigger and bigger. Because for us, if this feels good and it works, we don't feel like we have to grow bigger. [...] When we became too big, like everyone stopped caring a little bit. And it was tricky to maintain a healthy environment in the group... So then we decided to scale it down back again, and now we're on a good level."

This quote clearly reflects on how systemic goals can help transcend conventional paradigms (see section 7.3.3)—where the individual values of a business can work to go beyond traditional economic growth models.

Similarly, Marta from Bullarby emphasised the importance of giving preference to new and innovative ideas and recipes from employees to create a strong community space within the business;

"I think I see a small business more as a project for everyone, also for employees. [...] A small business is more demanding, but it can also be more rewarding."

Furthermore, re-defining food norms is an essential part of challenging industrial conventions and socio-economic intents of a capitalist economy. As was emphasised by Caroline from *Brödlabbet*, food businesses can take an active role in reclaiming the narrative behind what constitutes good quality. "So it's about education and training and redefining or defining our own norms of what is bread, what is a croissant, what is a cinnamon bun? Instead of working under the norms of the industry. [...] It takes more knowledge and it takes more practice". By re-educating customers to value natural diversity and variability in products, bakeries can counter the conventional strive towards homogenisation.

On the same note, however, it is important to note that challenges of balancing sustainability goals with economic realities are often persistent. For instance, while *Bagaren och Bonden* remain committed to organic and local sourcing of ingredients, they are aware that the financial pressures to remain competitive are difficult to ignore. Comparably, *Dame Ginette*, as a newly emerging business, prioritises securing the economic stability of the company over sustainable procurement strategies.

This often forces compromising for cheaper ingredients in some areas to reduce costs—which contains the difficult reality of sustaining a value-driven business. This concern was echoed by ANONYMOUS, who still have not recovered the investment after running the business over 5 years:

“We haven't started paying ourselves back for that investment. So we've made no money at all and we haven't taken salaries even though we've spent hours and hours and hours working on it. Hopefully this year--we are projecting a profit from this company, and that profit will probably go to reinvesting into a company. Yeah, it's a terrible [investment] if you're in it for the money.”

In the context of the Malmö bakery scene tangible examples of transcending capitalist constraints exist, which act as potential catalysts for systemic change.Ultimately, transitioning the goal from maximising profits to fostering community, (re)education, and sustainability can create transformative changes, allowing these businesses to act as agents of systemic transformation rather than mere economic units. However, these are gradual and complex processes. Redefining goals is often faced with a plethora of economic and logistical constraints.

7.3.3 Paradigm: Creating food business identities based on cultural influences and values vis à vis business logic?

Paradigms are amongst the deepest leverage points because they are what define the very goals and boundaries of a system. In the context of Malmö bakeries, shifting from a profit-centric paradigm to one that prioritises community, sustainability, or cultural preservation can fundamentally reshape business practices and decision-making processes. This paradigm shift challenges the conventional logic that success equates solely to economic growth. All of the bakeries in the study are actively creating (or evolving) their own business identity — encompassing a combination of cultural heritage, sustainability values, quality standards, and economic pragmatism. This not only grants them some leverage power in the market (by standing out amongst other bakeries), but also helps them create a core identity upon which business decision-making operates.

For instance, *Bagaren och Bonden*’s identity is characterised by their procurement of local, organic, and often seasonal ingredients—highlighting a connection to regional agricultural production. Leve’s identity is defined by their production of vegan and often seasonal products. For bakeries like Dame Ginette and Bullarbyn, cultural heritage acts as a paradigmatic framework that guides product offerings and ingredient choices. For instance, at *Dame Ginette*, the bakery’s french culinary identity guides product offerings—offering classic french products. To maintain authenticity, however, they source many key ingredients (such as flour and cheese) directly from France. Vegetables and other fresh produce is sourced locally. Meanwhile, Bullarbyn subscribes to a polish bakery culture—offering typical polish pastries and breads, but remaining open to other European baked goods as well. They adapt their identity to the local context by using some heritage grain varieties for their bread and seasonal produce for pastries. Despite their cultural core identities, they do not adhere solely to one paradigmatic model, but incorporate and develop other value-driven identities—such as prioritising ethical, sustainable, quality, or economically-driven principles at varying degrees. As Marta from Bullarbyn pointed out:

"You choose the sets of values that you're gonna follow, whether this being the most respected bakery in Malmö, or whether this is going to be like, let's make just affordable stuff for people."

To begin, a recurring tension point within food businesses interviewed was the pursuit of conflicting values, which often created unstable sourcing patterns and relative operational instability. For instance, prioritising low-cost as well as high-quality ingredients represents values that are highly dissimilar and often counter or contradict each other. In the case of ANONYMOUS, it can lead to having to choose one value over the other, or making compromises for individual products:

"The [imported][2] flour is very delicious. It's very good flour and it has a great taste. That's the reason we are willing to pay the extra cost for it. And the other one (from Lilla Harrie) is cheap and good enough. We use it in products where the flour is not the main flavor—so products that have a lot of butter, for example. But whereas you know, if it's just bread or the flour ***is*** *the main flavor [then we need to use the more expensive flour], but if it's an enriched dough—like a brioche or croissant, then we can get away using an inferior flour without too much [impact] on the taste of it."*

When asked what is prioritised in their procurement priorities, Jonathan, the owner of ANONYMOUS answered that "price and taste [are] the primary factors. Taste is first, but if [they] can get away with buying a cheaper product that tastes good enough, then [they will] buy that [instead]." They currently buy organic flour for its optimal taste qualities but not for its value-driven concerns:

"Well, the taste is the main thing that's important. But if we can't afford the taste, then we have to come up with alternatives, and we have to see what's acceptable. So it's like the taste, of course, if we could afford whatever ingredient we wanted, then we would buy those different good ingredients. But we live in reality in our company. We prioritise price, not the environment, not organic stuff, not like actively [at least]. It's price-based, and taste is first."

While these economy-driven preferences can minimise costs, it can lead to an increase in administration. This was exemplified in section 7.1.2, where price increases led to administrative resources invested into looking for cheaper dairy alternatives. Suppliers were changed several times and now they currently work with a product that they are not fully satisfied with. This emphasises the realities of some food businesses, which have to prioritise business stability and economic security prior to environmental or ethical concerns for the ingredients they source.

Interestingly, the notion of 'key ingredients' emerges as a significant consideration for bakeries balancing quality and cost. As Damien from Dame Ginette explained, simpler products—like a bread and cheese sandwich—require the quality of their core ingredients to remain uncompromised, as opposed to more complex products (e.g. pastries mentioned in the earlier quote). *"The* ***key product****, which is [...] what makes the taste, the texture, the flavor of the product that we have. [...] If you want to go simple, I would say you have to get good products. The more simple you are, the more quality you have to get."* This recognition of 'key ingredients' as anchors for quality reflects an adaptive approach to tensions; maintaining business integrity despite economic pressures.

Nonetheless, food businesses that are less environmentally-driven often make sustainable/ethical procurement choices because they notice the quality difference on some local and/or organic products. For instance, ANONYMOUS chooses to buy organic flour because of its high-quality and taste. However, organic certification was irrelevant for them: "We don't care [about the label]. If it was not organic we would still pay for it". Notwithstanding, they counterbalance the use of high-quality

[2] The country where this product is sourced is not disclosed in this research to protect the identity of the interviewee.

organic flour with lower-quality flour for products where they know they can "get away with buying a cheaper [ingredient] that tastes good enough"—as was mentioned earlier. The notion of 'key ingredients' emerges as a relevant tool to counterbalance this tension point. While it was only mentioned by two business owners, this case can help explain how some food businesses who don't subscribe to ethical/environmental values, rationalise the choice of sustainable ingredients because of their high-quality properties—while at the same time seeking to counterbalance their costs through the purchase of cheap ingredients.

To summarise, business identities in the Malmö bakery scene are varied, dynamic, and often convoluted. Contradicting values can often lead to volatile procurement strategies, as the cost of ingredients can fluctuate, thereby pushing businesses to seek out more affordable suppliers. On the other hand, coherent paradigms—whether it is cultural, ethical, or quality-focused— can facilitate procurement strategies and can help build trust and transparency with customers and other stakeholders. They nonetheless, could result in higher costs, which is difficult to justify for some emergent businesses. Nevertheless, aligning business strategies that transcends conventional capitalist logic demonstrates that economic stability and value-driven entrepreneurship are not mutually exclusive and can coexist in a redefined paradigm.

7.3.4 Power to Transcend paradigms

According to Meadows (1999), changing a paradigm fundamentally alters how a system behaves, as it reconfigures the underlying logic and values that guide decision-making processes. The power to transcend paradigms arises from an effective incorporation of a combination of the leverage points discussed previously.

8. Concluding discussion

Sweden's food environment has changed significantly over the last 50 years. It has seen a decline of agricultural diversity, and an increase in agri-industrial production. The food system has been largely restructured to embrace standardisation, economics, and yield over biodiversity, variety, and community relationships. This has been reflected in the case of food businesses, where procurement strategies have prioritised convenience and efficiency. Important movements, like the New Nordic Cuisine, have served as important reminders of the diversity of local ingredients, as well as the richness in many forgotten gastronomic traditions in the Nordics. Their dogmas, however, attracted a lot of criticism as its rigidity was a hindrance to creativity and cross-border diversity. Presenting tangible parameters that embrace sustainability practices, but are nonetheless aware of food businesses' (economic) constraints can be important mechanisms for agroecological transitions. Food businesses operate in competitive environments alongside varied logistical and administrative difficulties. Agroecological objectives must remain sensible and conscious of these realities. The guidelines presented by Zanella (2021), for instance, represent concrete and practical ways in which food businesses can incorporate sustainable practices within food business models, without the stigma and dogmatism of some food movements.

This research demonstrates that focusing on decentralised and diverse starting points—that go beyond the farm level—can dynamise agroecological transitions. In this way, by engaging various stakeholders within the food system (from farmers to businesses, suppliers, consumers, etc.), progressive sustainable movements can emerge more dynamically, instead of solely relying on agriculture-level transformations. This perspective aligns with agroecological principles by promoting the reorganisation of food practices *from* production *to* consumption in order to re-integrate ecological principles with social, cultural, and economic dimensions of sustainability within food systems. Furthermore, it challenges the traditional notion that agroecological change must be farm-centric, instead proposing a more holistic and interconnected approach that includes food businesses (e.g. local bakeries) as active agents of change.

This research sought to analyse what mechanisms, practices, socio-political structures, as well as economic conditions influence why food businesses source local and agro-ecological ingredients (or abstain from doing so). Meadows' (1999) leverage point framework was utilised to analyse the barriers and enablers for businesses to these sustainable procurement strategies. Furthermore, through the identification and differentiation of 'shallow' to 'deep' leverage points, this research aimed to grant a tangible set of structures that facilitate sustainable transitions at different 'levels of effectiveness' to create system-wide changes. The findings suggest that food businesses are not merely passive intermediaries between agricultural production and consumers but rather can challenge the dominant agri-industrial food system model through dynamic and adaptive strategies, as well as community engagement. Furthermore, the integration of Gliessman's (2014) levels of agroecological transitions exemplifies how analytical frameworks can be integrated with strategic ones to maximise the potential of tangible mechanisms to advance the adoption of sustainable and agroecological practices across various stakeholders within the food system. This dual framework embraced the inter-disciplinary nature of agroecology in order to emphasise how agroecological transitions require specific focus on determined leverage points to achieve deep structural or paradigmic changes. This is a narrow case study of food businesses, but could be amplified to other stakeholders within the food system.

This study remains a precursor for future research, upon which a continued research agenda needs to develop—especially focused on identifying a broader and more complete list of leverage points for sustainability, as well as studying the interaction between shallow and deep leverage points (Abson et al., 2017). An important continuation of this study should incorporate the research of large conventional bakeries in the Malmö area, as well as other cities. Additionally, exploring cross-sector collaborations between food businesses, local/regional suppliers, and community initiatives could provide valuable insights into systemic food system transformations from various areas. Bakeries that continue to operate under early levels of agroecological transition have operations that often reproduce and reinforce the status quo within the modern food system—reliance on a few wholesalers and, thereby, an industrial agri-business model. Understanding their perspectives and business structure can shed light on their modus operandi and rationalisation behind product acquisition.

8.1 Limitations

This study is subject to several limitations. First, the sample size was restricted by the availability and willingness of bakery owners to participate, which may introduce selection bias. Most large/conventional bakeries refused to participate in the study, which limits this study to small, artisanal bakeries in the Malmö area. While considerable effort was made to ensure a range of perspectives, findings may not be generalisable beyond the Malmö context or across different sectors within the food system. In addition, time was a big limitation. Most bakery owners and managers are often very busy. Interviews, therefore, had to remain concise and short (under 1-hour). This limited the extensiveness of the interview guide and the depth of some of the answers given.

Furthermore, this thesis research embodies many terms that are ambiguous in some respects, such as sustainability, agroecology, artisanal, local, and regenerative, among others. Literature focusing on the discussion of sustainability, for instance, is so wide-ranging that there is no commonly-accepted definition. Adjacent terms are equally debated and difficult to define, not only because they are often dynamic in nature but also highly context-specific (due to diverse socio-economic and environmental conditions in different locations). For example, there is no set distance or regional boundary upon which products stop becoming ‘local’. In the city of Malmö, ‘local’ can include the Copenhagen area more than the region of Stockholm, even though it lies in a different country. Similarly, agroecology transcends the notion of being merely a concept that is practiced at the farm-level, and embodies the conviction of social movement and the determination of the scientific community. This does not mean that agroecological producers who do not take part in advancing scientific research are excluded from being agroecological. A conscious effort is made by the researcher to define these terms. However, it is important to note that many of these concepts are guiding principles towards greater social and environmental regeneration rather than describing end states or goals.

In addition, the integration of otter.ai and ChatGPT in the coding process, while innovative, carries potential drawbacks. Although it accelerated the organisation of data and aided pattern recognition, there remains a risk that subtle or context-specific insights may have been under-emphasised. This is why these tools were only used to facilitate or enhance the coding process with themes that were already developed by the researcher. As such, all AI-supported outputs were manually reviewed for contextual and thematic accuracy.

Finally, the automated transcription process using Otter.ai may have introduced minor errors or semantic nuances, especially with technical or multilingual language (Swedish in this particular case).

These were corrected during a secondary manual transcription, where all the recordings were reviewed individually by the researcher.

9. Conclusion

This study demonstrates the potential of bakeries as agents of change within the food system. Through direct interviews with bakery owners, this research has identified key leverage points where small food businesses can influence sustainable transitions despite various challenges. Using Meadows' (1999) leverage points framework, this study highlights how shifting paradigms and adaptive/dynamic practices can enable bakeries to move beyond the profit-driven motives towards more sustainable practices. Decentralising agroecological principles from the farm-level across various stakeholders in the food system can provide an alternative route to create system-wide changes.

Most barriers were identified at shallow leverage areas. A major barrier is the economic disincentive associated with sustainable practices—since many of them pose no clear or highly abstract benefits. Organic certification, for instance, often represents a bureaucratic burden and a hindrance to dynamic/creative workflows, thus discouraging bakeries from pursuing certification—despite their potential efforts for sustainable sourcing practices. Additionally, conventional infrastructural structures currently shape procurement strategies, as large wholesalers (e.g. *Chefs Culinar*) offer consistency, reliability, and operational stability. While wholesalers facilitate access to certain high-quality organic products (e.g. organic dairy products from *Thise*), they simultaneously reinforce dependency structures and hinder the adoption of more diverse and locally-sourced ingredients. This dynamic creates and strengthens negative feedback loops, where time-saving and economically-rational practices can reinforce and reproduce the status quo. For bakeries in Malmö, reliance on wholesalers offers reliable supply chains and logistical efficiency, which reinforces supplier loyalty and often discourages adopting alternative procurement strategies. The emergence of alternative wholesalers (like *Natoora*) and local food service platforms (such as *Bondens Skafferi* and *Vildplock*) represent important transitions in an otherwise-rigid market structure.

In terms of enablers, trust-based relationships and community networks prevailed as important positive feedback loops that reinforce sustainable practices. For instance, Karl from *Bagaren och Bonden* emphasised how maintaining long-term relationships with trusted suppliers can decrease the uncertainty of local ingredient sourcing. Furthermore, access to information resources can act as an important driver for the adoption of diverse local production, such as heirloom grains. Lastly, Didrik from Leve highlighted that maintaining a manageable business size can preserve core community values while strengthening creativity.

Finally, tensions and opportunities arose as a new category within the research, as it represented areas where enablers or barriers could not be clearly differentiated. These were categories where food businesses had to balance conflicting values or incentives, thus leading to mixed results. Value-driven entrepreneurship came out as an important tension point, as food businesses have to establish and constantly reinforce their core values and identities through their management, logistics, and procurement strategies. While some bakeries actively pursue value-driven practices, others are constrained by economic realities that shape their sourcing strategies. Food businesses, especially at the early stages of establishment, often aim to secure their economic stability prior to advancing sustainable procurement strategies. This, however, could lead to them falling into negative feedback

loops that hinder sustainable practices at the early stages of business establishment. Furthermore, opposing values can create disparate procurement strategies, as well as take up more administrative resources (i.e. when a company has to constantly seek out new suppliers due to price increases). As most tensions and opportunities were identified within the 'Intents' realm (the deepest leverage points in a system), they represent areas of a high degree of complexity. Bakeries that define their business identities alongside agroecological parallels (such as biodiversity focus, variability, and ethical sourcing) are engaging in paradigmatic resistance. However, these values often exist alongside little economic, structural, or logistical incentives, thus highlighting the ongoing negotiation between systemic transformation and economic stability.

Ultimately, fostering adaptive business models, legislative support, and alternative infrastructures (e.g. milling facilities that can process a wide variety of grains and variable quantities) that align economic resilience with (agro)ecological integrity requires many paradigmatic shifts. Building on the insights from this research, future initiatives should focus on creating collaborative networks, dynamic and adaptive business models, enhancing consumer (re)education, and promoting legal frameworks that support food businesses in their efforts to actively navigate agroecological transitions. Lastly, sustainability science and research could benefit from a stronger emphasis on the practical applicability of tangible and actionable measures that can be adopted in real-world contexts.

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Appendix I

Ten principles for food sustainability (Zanella 2021, pg. 32-33):

• Embrace **diversity and seasonality** as the basis for food sustainability;

• Cook **real food**: minimal processing, and prioritising wholesome, fresh and nutritious products;

• Prioritise **local**, but do not close borders;

• Prefer **organic** and/or agro-ecological food; labels are important, but what really matters is how food is produced;

• Adopt a **vegetable-oriented diet**, but keep in mind that many food systems require animals for achieving sustainability;

• Favour **small producers**: their personal efforts pay off in quality, while income stays in the local economy and the benefits will be more fairly shared across the food system;

• **Reduce waste** to a minimum: reduce, reuse, recycle. Be efficient and adopt a nose-to-tail approach to cooking;

• Be **innovative**, but do not always reinvent the wheel; in many situations, being innovative means returning to our roots and traditions;

• Consider that the food industry needs **fixing**, but we are addicted to it. Radical solutions inspire but do not always lead us to a needed gradual transformative change; and

• **Change** recipes, techniques, ingredients: never sacrifice taste.

Appendix II

Interview coding table

Categories	Themes	Bullarbyn	Dame Ginette	Bagaren & Bonden	Brödlabbet	LEVE	Anonymous
Barriers	**Certification**	"I want to get certified, but it's too complicated. "		"And we are organic, like, everything is organic, and it's obviously more expensive, and we are still here after 10 years. And that's an accomplishment in itself, I think, in a way."	"He [Håkan] wasn't certified organic, and I told him: come back when you are. Then we collaborated."	"We got a fine of 50,000 krona... for saying we use organic ingredients without certification."	
	Economic Constraints	"We'd switch to Solmarka Gård if it doesn't raise prices too much."	"If I had the choice... I will change most of the product that I use to go more ecological, more quality... but for now, we had to prioritize economy."	"In the beginning, we really wanted to be cheap, but now I think it's a little bit more bullshit to be cheap. Actually, no one ever thanks you, and there's always going to be cheaper options, if you really looking for cheap stuff. We were kind of targeting someone that wanted good price, and [who] likes organic and quality and stuff. But the guys who want good price, they don't care about organic. So for us, it's kind of... and also it's a matter of surviving."		"Organic berries are almost impossible to find. When we do, they're extremely expensive."	"We're in a game where our margins are so small, we are basically still not profitable after 5 years."
	Structural		"Some farmers don't deliver, or only work certain periods during the year... sourcing takes time."	"[It's] harder than buying everything from wholesalers of course––that takes a little work. There's some work in [building a relationship with local suppliers], for sure, but it was what we wanted"	"If you grow 10 tons of Dala Lantvete, who can mill it for you? Who can distribute it?"	"Distribution is a problem. If we want fresh strawberries three times a week, logistics are tough."	
	Time/Capacity		"All my time is in the kitchen. That's why we haven't started direct sourcing yet."		"You need systematic work to implement heirloom grains while running a business. Many don't want to put in that work."		
Neutral/both	**Customer awareness**	"If we switched to cheaper ingredients, most customers wouldn't notice."	"People don't ask. I think in three months, I've had maybe three questions about ingredients."	"It's just a few enthusiastic places that do like organic and no one... people don't really care. People care about [esthetic] quality and like more superficial values, I think, like price and [esthetic] quality."	"In Lund, customers sought out heirloom and organic bread—there's a specific customer base that values it."	"We say it without saying it. People trust our brand."	"We're not receptive to customer demands, like 0%. We offer them something they don't know they wanted."

Enablers	**Supplier relationships**		"We visited the mill before buying flour — it showed us their values align with ours."	[26 suppliers in total] "And that's that's fine, but to me, working with like a farmer that's like experimenting, believing, pushing things in a direction, like towards more sustainable practices. That's more interesting to work with than [...] [farmers] I don't think are super convinced of organic farming."	"I built a relationship with the miller who initially refused to sell to me. Over time, they saw I could bake with their flour."	"We're happy that Vildplock brings forest produce... it's built on trust."	
	Values	"Sustainability is key. Practices matter, not just labels."		"Organic is number one. Then quality, then local."	"Bread has always been homemade. I wanted to offer real, organic sourdough bread you couldn't find anywhere."	"We became fully vegan because it made sense, not because it was profitable."	"If we had all the money in the world, we would buy better ingredients. But it's not our main concern."
	Substance vs. Image (marketing)	"I wish people cared about substance, but they only care if it's pretty"	"You need to make beautiful products and have a nice place... we didn't believe in this before, but now we do."	"From when we started, I was like, oh, surface and esthetics and... let's just just have a nothing but just really good bread... but that I don't believe in anymore, you need to make, like, beautiful products, have a nice place. Is because this is important [to people]."	"The industry removes the good stuff and sells the image. We have to **redefine** what bread, croissants, and buns [really] are."	We say it without saying it. People trust our brand."	"If a product that is not organic tastes better, we buy it. Taste is first."
	Trust						
	Percieved role		"I think there is still work to do connecting local producers with small businesses like ours."				
	Food Waste		"We try to reuse as much as possible, give leftovers to Folkets Skafferi or freeze for soups."				

Appendix III

Results Summary Table

Category	Leverage points	Description
Parameters	Legal Parameters: Organic certification	A helpful tool, but clearly describes the contemporary food landscape, one that appears to indirectly penalize entities that aim towards more ethical, sustainable structures through admin work (time) and economic costs. Furthermore it inhibits creative freedom.
	Structure of material stock and flows: High and fluctuating costs	Ingredient cost fluctuation and high labour costs; Food production has been deeply affected and consumption patterns have changed due to increased prices. Sales of organic products, for insatnce, has decreased in the years following the COVID-19 pandemic. These disturbances are expected to be more widespread.
	Size of stocks: Sourcing options & Infrastructure	Wholesalers remain the most convenient and accessible way for food businesses to manage food orders. Organic and agroecological production remians marginal in the Skåne area.
Feedbacks	Length of delays: Consumer awareness	Custumers' (lack of) expectations vis a vis actual sourcing practices remains a big tension point in this system. While consumers can pose as important stakeholders in transforming the local food landscape. Informed consumers can provide feedback to bakeries and other food businesses, signaling demand for local and agroecological products. However, as most of the businesses interviewd utlined, consumers pose no leverage for systemic changes. In the interviews, consumers were oftentimes characterized as passive actors, primarily concerned with superficial attributes of products, rather than deeper concerns, such as product origins, ethical values, environmental concers, etc.
	Negative feedback loops: Convenience and capacity	Negative feedback loop of operating with wholesalers. The more a business orders from a specific wholesaler, the more leverage it has to haggle and negotiate prices for products.
	Positive feedback loops: Relationships	Profoundly important but not common amongst the bakeries in the study. The benefit of business-to-business collaboration is a profound enabler for sustainable and ethical practices—through knowledge exchange, networking, access to ingredients, etc.
Design	Power	Logistics of (local) sourcing and distribution; Conventional agricultural production remains the dominant practice of production in the region. Wholesalers provide the most efficient and convenient delivery system. Alternatives, like Bondens Skafferi, present a positive challenge to the dominant structure. However, many ingredients/producers are not part of this scheme, and therefore products like berries remain difficult to access

	Self-organization: Developing efficient production workflows	Amongst the many challenges of food businesses, a persisting one is meeting the full potential based on physical (infrastructure and staff) and constraints. If the bakers don't have the logistical capacity or knowledge to reach this potential. The way businesses operate and organize themselves logistically. A stable business is more prone to be open for innovative changes and resilient to hardships. This point requires further scrutiny and research.
	Access to information: resource capital	Access to information facilitates the flow of knowledge and resources between stakeholders. According to Meadows (1999), improving information dissemination can significantly enhance a system's ability to adapt and transform. Having access to reliable networks and platforms that promote the use of diverse, local, organic, and heritage ingredients is vital for sustainable transformation.
Intent	Goals of the system: Duality of institutions and the perceived role of businesses	Represents one of the deepest leverage points because altering it fundamentally changes the way the system behaves. Under a capitalist economic system, businesses can be (and oftentimes are) reduced to economic units, where profit-driven motives—such as minimising costs, and maximising profits are seen as 'logical' and prioritised over value-driven goals.
	Paradigm: Creating food business identities based on cultural influences and values vis a vis business logic	Shifting from a profit-centric paradigm to one that prioritises community, sustainability, or cultural preservation can fundamentally reshape business practices and decision-making processes. This paradigm shift challenges the conventional logic that success equates solely to economic growth.
	Power to transcend paradigms	According to Meadows (1999), changing a paradigm fundamentally alters how a system behaves, as it reconfigures the underlying logic and values that guide decision-making processes. The power to transcend paradigms arises from an effective incorporation of a combination of the leverage points discussed previously.

Appendix IV

Semi-structured interview template

Introduction (5 min)

1. **Introduce yourself and the study**
    - Briefly explain your research objectives.
    - Mention that the interview is **confidential and voluntary**.
    - Ask for **consent** to record the interview (if needed).
2. **Background Information on the Bakery**
    - Can you tell me about your bakery? How did it come to be?
    - How long have you been in business?
    - What types of baked goods do you primarily produce?
    - Who are your main customers? (e.g., individuals, restaurants, retailers)

Current Sourcing Practices (10–15 min)

3. **Ingredient Sourcing**
    - Where do you primarily source your ingredients (e.g., flour, eggs, dairy, sweeteners, spices, salt, etc.)?
    - Do you source any local or agroecological ingredients? Why or why not?
    - What do you prioritise when sourcing ingredients?
    - What role do food wholesalers play in your supply chain?
4. **Decision-Making Factors**
    - What factors influence your choice of ingredient suppliers? (e.g., price, availability, quality, customer demand, sustainability)
    - Have you noticed any trends in consumer preferences regarding the sourcing of ingredients?

Barriers to Using Local and Agroecological Foods (15 min)

5. **Challenges in Sourcing**
    - What are the biggest challenges you face in sourcing ingredients? (**local** or **agroecological**)
    - Are there specific ingredients that are particularly difficult to source locally?
6. **Economic and Logistical Barriers**
    - How do cost and pricing influence your ability to use local/agroecological ingredients?
    - Are there distribution or logistical challenges for these ingredients? (e.g., delivery, consistency of supply)
    - Do you think the current food distribution system (wholesalers, suppliers) limits your access to these ingredients?
7. **Consumer and Market Demand**
    - Do your customers ask about the origin of your ingredients?
    - Would they be willing to pay more for products made with local or agroecological ingredients?

- How do you think price sensitivity affects your ability to transition to more sustainable sourcing?

Enablers and Opportunities (15 min)

8. **Motivations for Sustainable Sourcing**
    - Have you ever considered increasing your use of local or agroecological ingredients? Why or why not?
    - If you currently source local or sustainable ingredients, what benefits have you observed?
9. **Potential Support and Incentives**
    - What would make it easier for bakeries like yours to use more local and sustainable ingredients?
    - Would you be interested in direct partnerships with local farmers or cooperatives?
    - How do you see the role of food policy or government support in facilitating sustainable sourcing?
10. **Alternative Distribution Channels**
    - Have you explored working with local food networks (e.g., farmers' markets, direct producer relationships, alternative distributors like Bondens Skafferi)?
    - What would make it easier for you to establish such relationships?

Closing Questions & Reflections (5 min)

11. **Future Outlook**
    - How do you see the future of sustainable ingredient sourcing in Malmö's bakery sector?
    - Do you think consumer demand for sustainable bakery products will increase?
12. **Final Thoughts**
    - Is there anything else you'd like to add that we haven't discussed?
    - Can you recommend any other bakery owners who might be interested in talking about this topic?

Additional questions (in case of extra time)

- Introduction questions
    - Are there any core values that the business consistently upholds?

- Food sources (wholesalers/farms/suppliers/etc.)
    - Where do you source your ingredients? (wholesalers/direct partnerships with farmers/cooperatives).
    - Why do you buy from these sources instead of others?
    - Are you satisfied with these products, or would you like to see alternatives? If so, why?
    - How often do you look for more suppliers?

- Food origin and traceability
    - Do you know where your ingredients come from? Who produces them?

- Business structure
    - How big is the business economically/outreach?

- Labour
    - Where is the most energy concentrated: marketing, sales, production, innovation, sourcing, etc.?

- Food waste
    - How much food waste do you produce?

- Drivers for change
    - How receptive is the business to customer demands?
    - What mechanisms do you have in place to allow this interaction/communication to take place?)

Appendix V: Factsheet

Barriers and enablers for the adoption of local and agro-ecological products in food businesses using Meadows' (1999) leverage point framework

INCREASING EFFECTIVENESS TO CREATE SYSTEM-WIDE CHANGES

Category	Leverage points	Description
Parameters	Legal Parameters: Organic certification	A helpful tool, but clearly describes the contemporary food landscape, one that appears to indirectly penalize entities that aim towards more ethical, sustainable structures through admin work (time) and economic costs. Furthermore it inhibits creative freedom.
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	Power to transcend paradigms	According to Meadows (1999), changing a paradigm fundamentally alters how a system behaves, as it reconfigures the underlying logic and values that guide decision-making processes. The power to transcend paradigms arises from an effective incorporation of a combination of the leverage points discussed previously.

Enablers

Barriers

Tensions/Opportunities

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