The Future of Organic Food in Swedish Retail

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Abstract

Human activity affects planetary systems that support living on Earth and the food systems is a large contributor to overstepping the planetary boundaries. Global and national sustainability aims include targets for organic food production, during the latest years many countries have grown their organic food market share. However, the Swedish organic food market share growth stopped in 2016. The purpose of this study is to understand why the decline of the Swedish market share growth occurred and what the future might hold for the organic food category. This qualitative study has aimed to find answers through interviews with initiated persons in the Swedish food system.

Results indicate that many changes in the political and societal landscape pressured the Organic food and the Organic food category transformed into the new Sustainability food category, presenting more competition for organic labelled food, together with plant-based, vegetarian and climate-friendly food. The rise of Swedish produced food, increasingly important from a national self-sufficiency and survival perspective, should be viewed as sustainable, and is also a competitor of organic food. The shine of organic food is often lost in the multi-faceted competition with the other sustainability and Swedish foods, but the market share has stayed at a stable level since 2016.

Looking to the future, the new sustainability food category in Sweden will contain organic food but also locally produced food, that has been produced with more effective and environmentally friendly methods. The Swedish climate presents difficulties for year-round agriculture and the aim to become more self-sufficient needs to include locally produced meat, dairy, vegetable, and plant-based foods, indicating a need to focus innovation and development on Swedish food production and conservation methods.

Socio-environmental sustainability aspects in Swedish food production, such as the unhealthy effects of mineral fertilizers and pesticide on all living species, should be integrated for the benefit of current and future generations and people in all stages of the food chain. In practice, government agencies in Sweden don't cover all sustainability dimensions and have conflicting aims which indicates a need for an overarching sustainability initiative to conduct and optimise governmental sustainability activity, avoid silo-thinking and lead communication efforts. Legislation guidance is needed to keep food availability in Swedish retail stores sustainable and healthy.

The EU organic label and the KRAV label have not yet adapted to the local sustainability needs of Swedish food production and efficient production methods, indicating space for a new label or possibilities to renew the sustainability range of the existing labels.

Keywords: Organic labelled food, organic food, organic labels, sustainable food, sustainability food, EU organic, KRAV, future, Swedish food retail, food retail legislation, food legislation, government agency sustainability.

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Abbreviations

EU	European Union
FAO	Food and Agricultural Organisation
GHG	Greenhouse Gases
LRF	Lantmännens Riksförbund - Swedish farmers' federation
NGO	Non-governmental organisation
SDGs	Sustainable Development Goals (by the UN)
SJV	Jordbruksverket – Swedish Board of Agriculture
SLU	Swedish University of Agricultural Sciences
SLV	Livsmedelsverket - Swedish National Food Administration
TBL	Triple Bottom Line concept of sustainability
UN	United Nations

1. Introduction

Human activity is affecting the natural systems of Earth that support the lives of most of the lifeforms on the planet, including support to the human race itself (Masson-Delmotte et al. 2021). The food system, on which humans are dependent, is formed by a combination of natural and human processes and resources (Westhoek et al. 2016). The global food system is a large contributor to the environmental problems of the planet, such as greenhouse gas emissions, exploitation of natural lands, pollution of many different kinds, biodiversity losses and food waste (Garnett et al. 2016). The food system needs to be resilient, for the food security of current and coming generations, and should only use resources that can sustainably be produced (Rockström et al. 2009). Several aims take a stance on scientific evidence. The United Nations (UN) Food and Agricultural Organisation (FAO) takes the perspective that sustainable food systems support all with nutrition and food security, without compromising the economic, social and environmental base needed by generations to come (Nguyen 2018). FAOs aim is socially sustainable food systems that offer benefits to society such as being economically sustainable by providing profitability, and environmentally sustainable by avoiding or having a positive impact on the environment (Nguyen 2018). Since 2021 FAO has also aligned officially with the UN's sustainable development goals (SDG's) (FAO 2021). The European Union (EU) has in turn initiated the Green Deal and the food-focused initiative Farm to Fork. The latter describes the European food system as not being sustainable, but with the need to be, if aiming for resilience in the face of future crises (such as a pandemic) (European Commission 2022a). By 2030 EU targets for sustainable food systems include reducing the use of pesticides, fertilizers, hand armful antimicrobics, decreasing nutrient loss and increasing the share of organic farmed lands to be 25% of total farmed lands (European Commission 2020). The Swedish Board of Agriculture aligns with EU Farm to Fork targets in the Swedish National Food Strategy (in Swedish: Livsmedelsstrategin) by setting similar targets for 2030, such as expanding the share of organic farmland in Sweden to reach 30%, and that 60% of the food served by public kitchens should be organic (Jordbruksverket 2022a).

Food choice and Swedish food retailers.

Food system performance is a result of interwoven actions of many actors, such as consumers, firms and farms (Nguyen 2018). The largest determinant of consumers'

food choice is what is available (Shepherd et al. 2006). Most of the 10,4 million Swedish consumers (SCB 2022) source their food in retail stores. Swedish food retail is highly concentrated among a few corporations (DLF 2021) (Figure 1) making retail chains important influencers regarding the Swedish consumer food choice.

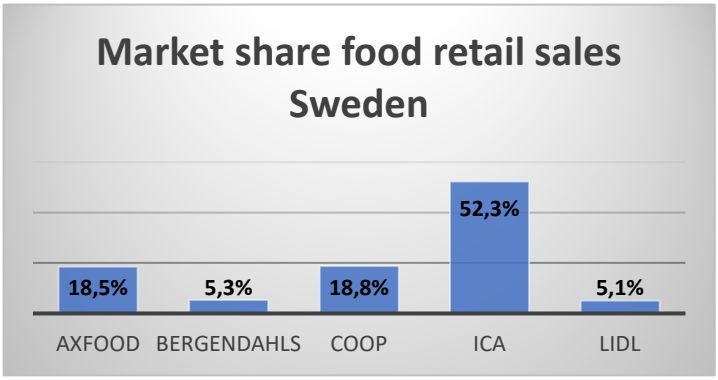

Figure 1 Retailers market share of food retail sales in Sweden, 2020 (DLF 2021).1

Swedish food retailers claim to support food produced in organic and sustainable ways in their online communication (Axfood 2022; COOP 2022b; ICA 2022a; LIDL 2022). Retailers produce sustainability reports as a part of the corporate annual report (Axfood 2021a; LIDL 2021; COOP 2022a; ICA 2022b).

Development of organic food market share

After years of growth the market share of organic food experienced a visible shift by peaking in 2016, then plateauing and slightly declining (Figure 2).

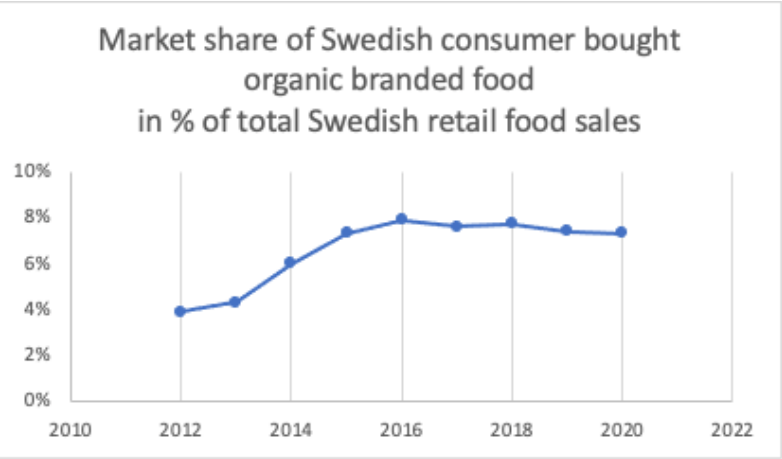

Figure 2 Organic food market share 2012-2020 (SCB 2012-2020).

[1] Axfood acquired Bergendahls Food in 2021 (Axfood 2021b).

1.1 Thesis aim and research questions

Public and private actors in the Swedish food system claim to support organic food simultaneously with a market share decline. This thesis aims to contribute by exploring the recent and future development of organic market share in Swedish food retail, as seen in spring 2022 by initiated food system actors. The unit of analysis is the sales trend of organic food in Swedish food retail.

1. **Why did the Swedish market share of organic food decline from 2015?**

2. **How might the Swedish organic food market develop in the future?**

1.2 Delimitations

Several food labels claim sustainability of some sort (e.g., fair trade, local food) but this research looks to the largest organic brands mentioned by Swedish government agencies (Jordbruksverket 2022c; Swedac 2022), i.e., EU organic label (European Commission 2022d) and KRAV sustainability label (KRAV 2022). The thesis does not sort out the meaning of different agricultural practices but has chosen to focus on organic and sustainability labelled food. The study has not accounted for a historic review of the two organic labels and does not research consumer preferences, but rather assumes that food actors controlling food availability are the main determinant of consumers' food choice (Shepherd et al. 2006).
The approach of this thesis has been to investigate the development of organic food with help of actors (Figure 3) that "can speak for many". Such as, Food processors, apart from their point of view, can shed understanding about primary producers such as farmers. NGOs, food retailers and investors can share important insights on what is viable with consumers and science etc.

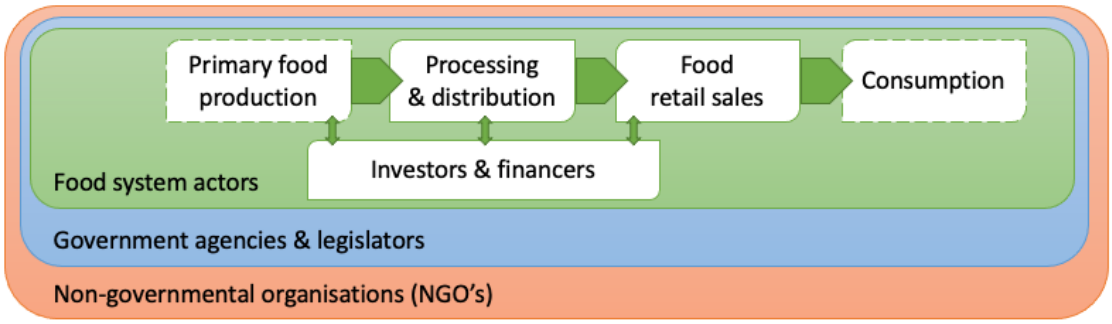

Figure 3 Groups of actors within and surrounding the food system.

2. Further context

The research questions are placed in further context with brief descriptions of the development of sustainability concept, differing views of 'organic food', the two organic labels in Swedish food retail, and their approximate market positions.

2.1 Sustainability as a concept

This section takes presents a short review of the development of the conceptual idea of sustainability and circular and regenerative systems in agriculture.

2.1.1 History of the Concept of Sustainability

The way society has developed with lacking consideration for the environment and planetary systems has been noticed for a long period, with examples such as Eunice Foote who in 1856 gave early warnings about the tenets of global warming (Foote 1856; McNeill 2016) and Rachel Carson, whom in 1962 forbode how the use of pesticides would lead to the extinction of many species and the effects this would have on natural and human society (Carson 1962). A myriad of initiatives have aimed to resolve issues deriving from the human activity (Asian Development Bank 2012). In 1987, the Brundtland Report coined the expression *Sustainable Development* (Henriques & Richardson 2004), defined as "development that meets the needs of the present without compromising the ability of future generations" (United Nations 2018). Many countries have since joined the path of pursuit of a more sustainable future, with Sustainable Development as a guideline (United Nations 2022).

In 1994 Elkington presented the sustainability concept of the Triple Bottom Line (TBL) describing the need for three dimensions to coincide to reach true sustainability; the social, economic- and environmental dimensions (Figure 4). The TBL has guided corporations (Mark-Herbert et al. 2010) and other types of organisations in their aim for sustainability (Slaper & Hall 2011), leading to the use of several sustainability measurements-, processes- and scoring frameworks such as the accounting Global Reporting Initiative (GRI) (Lamberton 2005; Hřebíček et al. 2013), the Environmental, Social, Economic Governance performance measure (ESG) and influencing process improvement tools like ISO (Hřebíček et al. 2013).

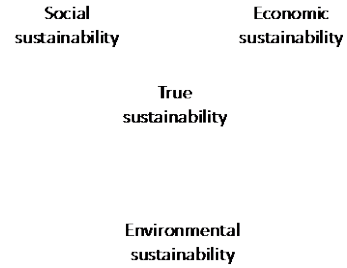

Figure 4 The Triple Bottom Line (TBL), visualisation of writings by Elkington (1997)

In 2009 natural scientists published cross-scientific findings on the planetary boundaries of natural systems and how these are being overstepped at an unprecedented level due to human activity (Rockström et al. 2009; Masson-Delmotte et al. 2021). Social scientists continued by connecting natural system boundaries with social boundaries in models such as Doughnut Economics (Dearing et al. 2014; Raworth 2018). The UN initially adopted a combination of the concepts of Sustainable Development and the TBL in 1992 (United Nations 2019) and later interconnected natural and social boundaries when setting the Sustainable Development Goals (SDGs) in 2015 (United Nations 2019). The purpose is to "achieve a better and more sustainable future for all" (United Nations 2020). Most SDGs are connected to the food systems (Duncan et al. 2021).

2.1.2 The current discourse on the concept of Sustainability

There is no sustainability definition currently accepted by all and the concept has not yet reached a steady-state (Ruggerio 2021). In continued discussions, the sustainability has developed further from the original Sustainable Development and TBL and is moving towards what has been named Regenerative Sustainability or Design (Mang & Reed 2013; Sonetti et al. 2019; Gibbons 2020). In recent years several global food companies are communicating that their sustainability aim is to be regenerative and how they are helping farming partners to adapt their production practices to become regenerative (Danone 2019; Walmart 2021; Nestlé 2022; Unilever 2022). The regenerative approach is not new, but a rediscovery of olden day, traditional perspectives (du Plessis 2012), developed disconnected from the corporate, organisational world and inspired by the intellectual lineages of ecology, living systems and systems thinking (du Plessis 2012; Hahn & Tampe 2021). Systems, such as environments and communities (Sonetti et al. 2019), can according to an explanatory model of Regenerative Design, be placed on a continuum that ranges from conventional to regenerative design (Figure 5), meaning that regenerative systems regenerate resources by co-evolution between humans and nature (Mang & Reed 2013). The left side of the model symbolises

systems that degenerate or deplete the support systems needed for their survival, named “conventional” production systems (Mang & Reed 2013).

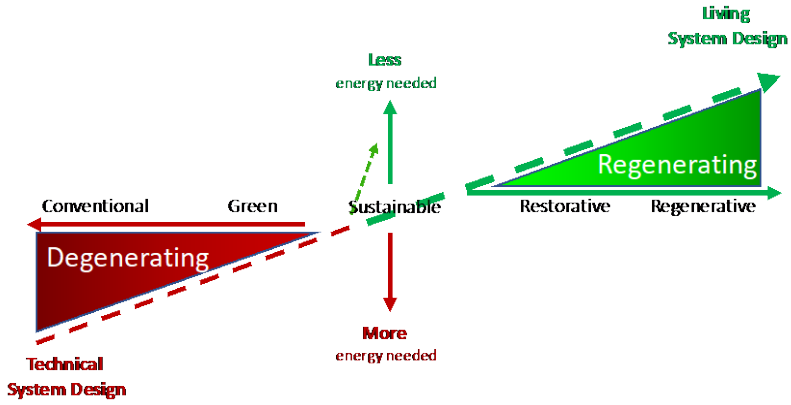

Figure 5 Systems design sustainability continuum, adapted from Mang & Reed (2013).

Regenerative Sustainability is defined as a co-creational partnership between humanity and nature, to restore and regenerate global social- and ecological systems with interconnectivity and interdependence and creates conditions for human life enhancement and life-support within the boundaries of healthy eco-systems (Hahn & Tampe 2021). Important themes are that systems need to be adapted to their natural environment, should focus on the production of renewable energy, restoration of damaged ecosystems, participation in natural water cycles and using local resources in buildings etc., finally stating that true happiness can only be achieved if not exploiting the environment and others (present or future), including fairness beyond human communities, and that cultures should be built bottom-up (Sonetti et al. 2019).
Regenerative Agriculture is built on high-level principles such as including diverse knowledge from many disciplines, caring for animals, people and the planet, taking a beyond-capitalist approach, aiming for a “commoning” of the food systems, supporting innovations that aim for being regenerative and “localising” the food systems by bringing them closer to urban settlements (Duncan et al. 2021). As with the concept of sustainability (Ruggerio 2021) there is a lack of a common definition of regenerative sustainability and agriculture but agricultural practices claiming to be regenerative share aims for soil health, resource management, relieving climate change, improving nutrient cycling, biodiversity, water quality and availability, ecosystem services, human health and economic prosperity (Schreefel et al. 2020).

Currently, the words regenerative and circularity are often mentioned in combination by different kinds of organisations regarding the economy, design and systems (GreenBiz 2021; Cirulab 2022; REFLOW 2022). Non-profit organisation Ellen McArthur Foundation sets them in context by describing a Circular economy

as the overarching concept, based on three design-driven principles: 1) Eliminate pollution and waste, 2) Circulate materials and products, and lastly 3) Regenerate nature (2022). The concepts are depicted in a circular model of the economy (Figure 6) which achieves two cycles of materials; 1) the biological cycle that returns renewable nutrients to Earth for anaerobic digestion or composting (green flows), and; 2) the technical cycle circulating finite resources and refraining for them to become waste (blue flows). The Foundation also describes a circular, regenerative food system that eliminates food waste (2019).

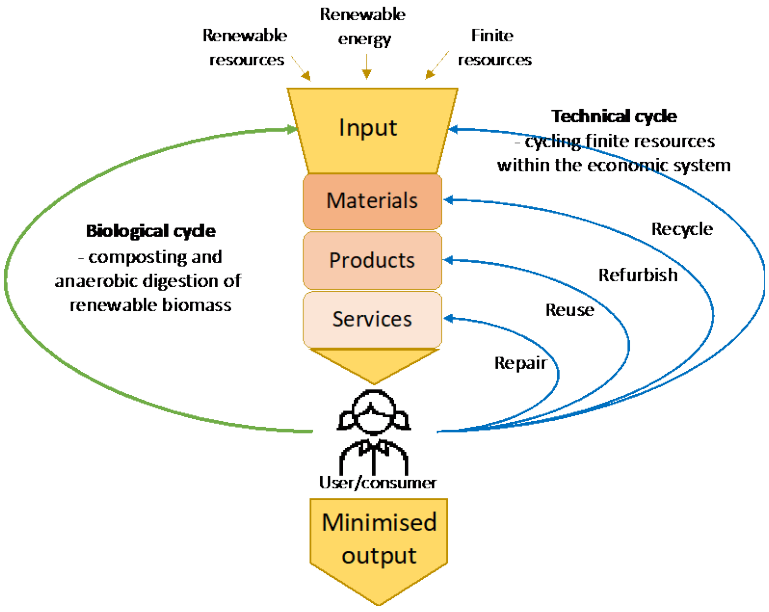

Figure 6 Circular Economy Butterfly diagram, adapted from Ellen Macarthur (2019).

2.2 Organic food

This section presents connections between global and Swedish aims for organic food, organic labels available in Sweden and their market positions.

The United Nations Food and Agriculture Organization (FAO) claims that labelled organic food is a process claim rather than a product claim and that many countries and private certification organisations share uniform definitions of organic agriculture, often based on the guidelines of IFOAM, an international non-governmental organisation (NGO) that promotes organic agriculture (FAO 1999). IFOAMs definition of Organic Agriculture is based on four principles (IFOAM 2021a): 1) health of soil, plants, animals, and humans 2) ecology, based on living ecological systems and cycles 3) fairness, relationships taking both life opportunities and the environment in regard 4) care and protection of the well-being and health of environments, and for present and future generations.

The UN, FAO and IFOAM support the concepts of Sustainable Development (United Nations 2018; IFOAM 2021b; FAO 2022).

Sustainable Development is an overarching core principle of the European Union (European Commission 2022c), but social or economic sustainability or animal care is not included in their definition of Organic Agriculture, their definition rather aims to limit environmental impacts and reach a responsible use of natural resources, increased biodiversity- and water quality maintenance, preservation of regional ecological balances and increasing soil fertility (European Commission 2022b).
Sweden is considered to be at the forefront of ecological food production and consumption (IFOAM Organics Europe 2021, Willer 2019) and also adheres to the same definition as the UN and EU on Sustainable development and its three sustainability dimensions (Regeringskansliet 2016). Several Swedish government agencies adhere to the environmental sustainability focus of the EU regarding organic food which, in the words of the Swedish Food Agency is 1) plant-based food produced without the use of synthetic fertilizers and chemical pesticides, or 2) animal-based food where the animals are fed with organic feed produced on from the same farm, and where animals can be outdoors and live according to their natural behaviours and the farmer uses antibiotics with care etc. (Livsmedelsverket 2021). Animal welfare and health protection are important in the Swedish agricultural legislation, and Sweden shows the lowest use of antibiotics and the strongest restrictions on pesticide use in the EU (Jordbruksverket 2022b).

2.2.1 Food certification schemes available in Sweden

According to the Swedish Board of Agriculture, the main sustainability certification for Swedish food producers in the *EU organic label*, but both the Board of Agriculture and SWEDAC (Sweden's national accreditation body) share information that certification may alternatively be done according to the Swedish KRAV standard (Jordbruksverket eko 2021; Swedac 2022). EU Regulations state compulsory presentation of the EU organic logotype on all products claiming to originate from organic production, even side by side with other certification schemes (EU Lex 2018/848 2022; KRAV 2022). All organic labels used in European marketing need to meet the minimum standard of the EU organic certification (EU Lex 2018/848 2022), which includes environmental rules such as not using pesticides or gene-modified organisms in the production of food (Grahn 2009). The KRAV certification goes further than EU organic in several areas, with seven more animal-centric rules (such as animals spending more time outside in natural lands), not allowing food additives, unnatural soil fertilizers or that food is grown close to highly trafficked roads (Grahn 2009). KRAV aims to ensure social justice for workers (Grahn 2009; KRAV 2020). The social aspect of sustainability

is an area that the EU organic certification does not cover in its regulations (Grahn 2009; EU Lex 2018/848 2022).
Even though EU organic labelled products primarily target environmental standards and KRAV labelled products aim for both environmental and social standards this paper will from here on refer to both certification schemes as "organic labels" that are available in Sweden.

2.2.2 Market shares of organic labels

The European Union organic labelled food market share reached 4% in 2019 (FiBL Research Institute of Organic Agriculture 2021) with a growth of 8 % (FiBL Research Institute of Organic Agriculture 2021). The EU organic market share was accompanied by a continued increase in both organic producers and organic farmland (EUROSTAT 2019; FiBL Research Institute of Organic Agriculture 2021). The USA experienced a 12,4% growth in organic food sales in 2020 (to be compared to 5% growth in 2019), in the swirl of the covid-19 pandemic (Organic Trade Association 2021).
Information from official sources is scarce regarding the Swedish market share divide between EU organic label and KRAV labelled products (Johansson 2015), but several indications show that the KRAV market share is declining (Berglund 2018; Ekoweb 2021). Swedish government statistics show that the trend of the market share of organic labelled food in Sweden has been plateauing and is even showing a slight decline since 2016 (Figure 2, on page 10). The reasons for Swedish consumers' choice of organic food are because of the environmental and climate benefits (50%), health reasons (26%), respect for animal welfare (11%) and taste reasons (4%) (Livsmedelsföretagen och Demoskop 2017).

3. Theoretical framework

This chapter presents the theoretical approach used to analyse the results. The chapter starts with a description of how the theories are combined in the theoretical framework and moves on to a separate description of each theoretical concept.

The theoretical framework that the thesis views the development of organic food in Swedish retail is divided into three conceptual areas, (1) the idea that ideas undergo a continuous evolutionary process; (2) the change drivers that affect the food system, which in turn creates; (3) societal, and food systems changes (Figure 7).

Figure 7 The theoretical framework of this thesis.

3.1 Evolutionary theory

This section explains the evolutionary theories used in this research.

3.1.1 Evolution of ideas

The intellectual exchange between natural and social sciences has transferred the natural science concept of evolution into social science areas such as Law and Economics (Nelson & Winter 2004). Evolution happens in an unplanned, self-organising and self-changing manner, where patterns emerge and trends evolve through potentially multiple criteria and mechanisms of selection (Dosi & Nelson 1994). Growth of, e.g., a product, can be determined by its qualities in relation to the competitors, but also through adaption- and variation processes within the system, where actors follow the rules but also may experiment and discover new ways to introduce system novelties (Dosi & Nelson 1994). Evolution can also result from the coevolution when system actors couple their evolutionary patterns like in a triple helix (academic, private and governmental) type of cooperation (van den Bergh 2007) but entities might also evolve in adaption to their environment and the

environment might adapt to the entities within it (Porter 2006). Dosi and Nelson (1994) claim that analyses of the development of a phenomenon that avoids including a dynamic perspective, like with help of evolutionary theory, might end with a scanty analysis. The evolution of different ideas has changed the outlook and aims of people, and ideas seem to be ever-evolving within human cultures (Ridley 2015), examples of ideas that have been under evolution are such as those of 'the universe', 'government', 'the economy', 'capitalism' and even 'life' itself (Ridley 2015), and to this can be added the idea of 'sustainability'. Schumpeter developed the idea of evolutionary economics, meaning that capitalism is a process of continuous innovation and creative destruction (Śledzik 2013; Systems Innovation Platform 2018), which can be applied to developing ideas, like the concept of 'sustainability'.

3.1.2 Foresight

Evolution covers the process of change, and looking ahead is often referred to as *foresight* (Suddendorf & Corballis 2007). *Foresight* means to mentally project into the future to pre-live events and situations, a beneficial trait for any organism as it allows to act on fluctuations and trends, giving the advantage of increased flexibility in current acting to secure the needs of the future (Suddendorf & Corballis 2007). According to Wood et al (2021) plotting a course towards sustainable solutions is characterized by volatility, incertitude, complexity, and ambivalence. The interconnectedness between humans and humans and nature requires engaging in diverse constellations and suggests using collective intelligence, i.e., the shared knowledge merging from a collaboration between diverse entities (people, organisations or others), which often might include co-developing when identifying possible ways towards a sustainable future (Wood et al. 2021).

3.2 Change drivers in food systems

This section explains the theories of drivers of change used in this research.

How food finds its way to the human table can be described by using words such as web, chain, process, and system (Guptill et al. 2013) which can show the dynamic complexity of the system (Guptill et al. 2013; TABLE FCRN 2015) or be presented more simplistic in a linear way (Wageningen 2013). Fernqvist and Göransson (2021) visualise drivers of change in a food system and value chain model (Figure 8) where food system activities in combination create an impact on both humans (including social and economic aspects) and the environment. Both the food system and its outcomes create drivers of change that interact while in

return affect the food system, showing a loop of interconnectedness between humans and the natural world and the food system (Fernqvist & Göransson 2021). Drivers of change originate from different parts of the model and can create pressure in e.g., the global environment, technology, demography, food safety etc., (IBID).

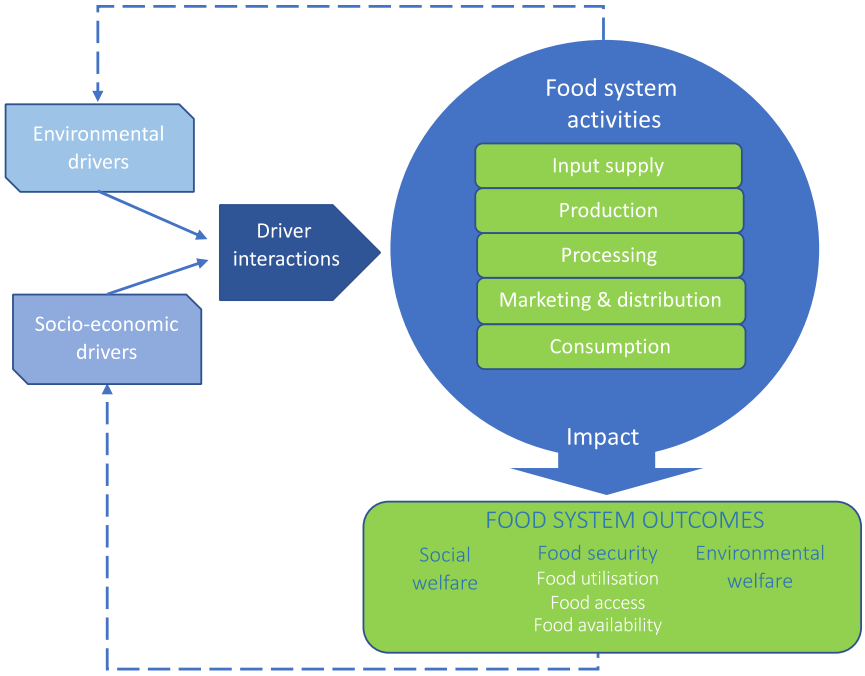

Figure 8 Chang drivers in food systems, adapted from Fernqvist and Göransson (2021)

3.3 Systems thinking in change

This section presents theories of systems thinking used within this thesis.

Systems thinking can be used to understand and work with complex situations and phenomena or processes and is defined as interrelated, interacting, or independent parts that influence the whole and are influenced by the whole in return (Kim 1999). Systems thinking can be used as an approach to solving problems in complex systems such as the food systems (Kennedy et al. 2017).

3.3.1 Four levels of thinking in systems

The four levels of thinking (see Figure 9) in systems helps to understand the root causes of *events*, e.g., the decline in last year's sales in organic food, by analysing the underlying layers such as system *patterns*, *structure* and the deepest level the underlying *mental models* of organisations and individuals (Bosch et al. 2007).

By looking at larger sets of underlying data of events one might find patterns or fluctuations that might describe what caused the event (Maani & Cavana 2010). Systemic structures reveal how patterns affect and relate to one another in relationships forged by factors such as social, economic, natural, or political (Bosch et al. 2007). On the deepest level, the influential mental models, lay values, assumptions and beliefs present underlying reasons for doing things, for reasons that are seldom openly disclosed (Bosch et al. 2007).

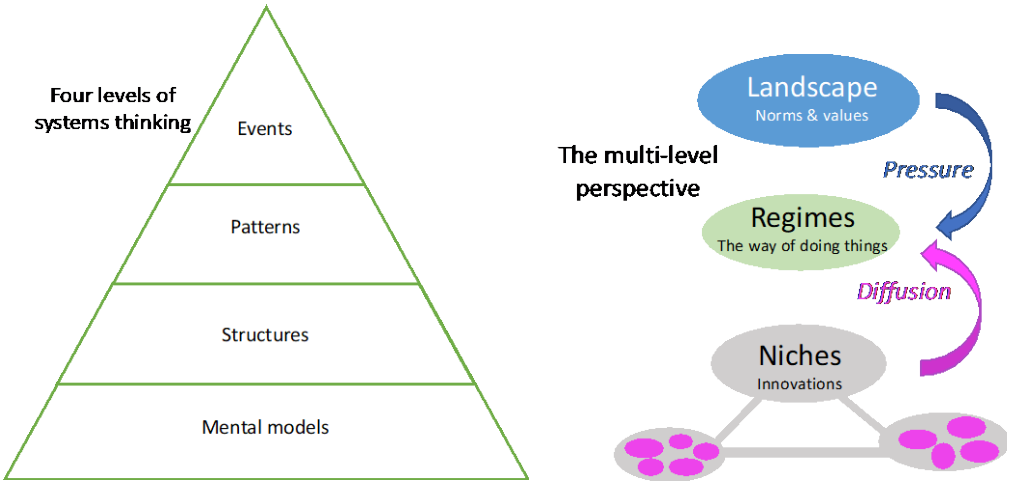

Figure 9 ***Left****: Model adapted from Cavana & Maani (Bosch et al. 2007).* ***Right****: Model adapted from Change et al. (2017) & Schot & Geels (2008).*

3.3.2 The multi-level perspective of innovation

Transitions theory and the multi-level perspective is a field that describes societal changes due to the socio-technical structures, i.e., how people use technology of different kinds to support their ways of life, which creates the current mainstream regime (United Diversity 2019) (Figure 9). The regime is pressured to change by trends and societal shifts from what is called the landscape (Geels 2004), which could be how the global energy prices affect food prices or when the growing understanding of the need for sustainable environmental welfare affects the global food demand etc. (Geels 2004; United Diversity 2019). Needs for change, ideas and innovations are developed in what are called niches. Changes in the landscape pressure the regime to change and help diffuse the novel niches that fit the need, an example of this is how the niche of plant-based milk transitioned or diffused into the mainstream regime of everyday consumption due to landscape pressure of scientists and civil society activists when highlighting arguments of unsustainability in animal-centric food (Mylan et al. 2019).

4. Method

This chapter presents the methodical procedures taken throughout the thesis research, starting with a qualitative approach, and ending with critical- reflections.

4.1 Research approach and unit of analysis

A research approach can be based on three pillars; a philosophical worldview (epistemologies and ontologies), the design and finally the methods for the data collection (Creswell & Creswell 2018). The pillars of this research are: 1) the academic worldview is of a constructivist, i.e., to find subjective meanings regarding the phenomena of the Swedish market share trend of organic food. 2) The design of inquiry, in this qualitative research, is based on non-numerical data, which has mainly been gathered with help of 3) the method of semi-constructed interviews. The research takes a qualitative approach when exploring the meaning that groups or individuals ascribe to the chosen phenomenon (Merriam & Merriam 2009; Creswell & Creswell 2018). The phenomena, unit of analysis, is *the trend of market share of organic labelled food in Swedish retail*.

4.2 Data collection

The initial stage of the research aims to build an understanding of the development of the view on the concept of sustainability, sustainable and organic food and its sales trend in Sweden. Because current research has not covered all areas of the matter, data is gathered by snowball research from an array of sources, both white and grey, such as academic papers, newspaper articles, online publications and books, which can be found in the chapters Introduction and Further context. The introduction establishes the problem of the study and contributes to the larger context of this research (Creswell & Creswell 2018). The Further context chapter aims to help guide readers that are not yet introduced to the trends of sustainability and sustainable food. The initial research supports both choices of theories and the main data collection method.

Qualitative and semi-structured interviews are considered an appropriate method when gathering insights and values into complex matters (Robson & McCartan 2016; Bryman & Bell 2017) and allows the researcher to shape further questions during the process of the interview (Ibid). This is the main reason for the *main data collection method* chosen for the thesis, being semi-constructed interviews with persons holding either foresight- or change power in the complex matter of sustainability trends in the Swedish food system.

The intuitive knowledge that was sought on the sales trends of organic food was expected to be found in several persons and types of actors. Government agencies, such as the Ministry of Food and the Swedish Board of Agriculture, are important influencers in the Swedish food system. These agencies, often in cooperation with the food industry, academia and other government agencies, drive multiple parallel initiatives to increase sustainability in the Swedish food system (Jordbruksverket 2021). While government agencies can influence societal development in many ways, a commercial perspective is the main driver for actors such as food retailers, food producers and people working with investments in the food system. Non-governmental organisations (NGOs) also own influencing and foresight power in their area of expertise. The search for, and decision on, interview subjects that held a deeper understanding of the path of sustainable and organic food in Sweden led to persons working in organisations that either focus on food production, food retail, food investments or government agencies with a food focus. Robson and McCartan (2016) display many examples of interviews and data gathered where the interviewee identity is kept anonymous, and it was decided that the interview findings of this research would also be presented anonymously, partly to encourage transparency, open dialogue, and root cause analysis but also of ethical reasons, to avoid aftereffects for the respondents. Most interviewees were approached directly by email and later by phone by the researcher. All interviews, but one, were held through online meetings. The list of the eight interviewees is presented in Table 1.

Semi-constructed interviews often follow an interview guide (Robson & McCartan 2016), which in this paper was constructed on the foundation of the chosen research questions, aim (Research approach and unit of analysis, page 22) and theoretical lens (page 18). According to academic theory regarding open-ended interviews (Robson & McCartan 2016; Creswell & Creswell 2018), the researcher has aimed for a neat and neutral personal approach and has made an effort to put the interviewees at ease. Follow-up questions were added to increase the understanding or dig deeper into a revealed topic that sparked the researcher's curiosity. The interview guide (see appendix) was customized to some extent to the circumstances of the different types of organisations that the interviewees represented.

Table 1 List of interviewees

Interviewee		Meeting & dates		
Interviewee alias	**Role in organisation**	**Meeting Type**	**Meeting Date**	**Transcript validated**
Investor 1	CEO of food investment company	Online meeting	2022-03-16	2022-03-28
Investor 2	Manager in agricultural organisation	Online meeting	2022-03-16	2022-03-28
Retailer 1	Manager in Swedish food retail chain	Meeting in person	2022-02-28	2022-03-01
Food Producer 1	Manager in Swedish food production and distribution company	Online meeting	2022-03-07	2022-03-18
Food Producer 2	Manager in Swedish food production and distribution company	Online meeting	2022-03-25	2022-03-25
Government official 1	Researcher at government agency, Jordbruksverket (SJV)	Online meeting	2022-02-23	2022-02-24
Government official 2	Head of department at government agency, Livsmedelsverket (SLV)	Online meeting	2022-02-25	2022-02-28
NGO 1	Head of environmental organisation	Online meeting	2022-03-24	2022-03-24

The interviewees represent 8 organisations in the Swedish food system, their average age is 51 (from 43 and 64), and average work experience in food and sustainability is 22 years (from 10-30).

4.3 Data (content) analysis

Following the advice from academic literature, the analysis began with the research questions and continued with the lens of the chosen theoretical framework, where thematic content analysis was used to identify interesting themes (Robson & McCartan 2016). Identified themes were formed in theoretical sub-units (page 27).

4.4 Quality assurance

The main aspects of evaluating the quality of research design are i.e., validity (accurate, correct, true) and reliability (standardised instruments of research) (Robson & McCartan 2016), which in this research have been the following:

Validity. Every interview was recorded, promptly transcribed, and sent to the interviewee for editing and validation, so that the true meaning could be used further in the research to avoid a potential researcher bias interfering with the transcribed answers, see Table 1 for the interview audit trail. For to triangulate findings of the studied phenomena and to some extent saturate current ideas, the aim was to interview food system actors of different types. The choice of not including consumers in the interviewee list was grounded in not focusing on public perception, and that interviewee experiences also include a consumer perspective, which is considered more enriching than approaching a few consumers.

Reliability. In a flexible research design the researcher is considered a standardised instrument (Robson & McCartan 2016), and to support the researcher to collect reliable data, an interview guide was developed, translated to the language held in the interview (Swedish), and was used and adjusted to the type of interviewee, throughout the process. After each interview, the summary transcript of the interview was sent to the interviewee for adjustment and validation (Table 1).

4.5 Critical reflections

Individual perception might affect researchers thinking during the research process, to keep an objective stance researchers must be aware of their values and how they might affect the study (Bryman & Bell 2017). The target of this research is to rely on the interviewee's subjective views of the phenomena under study (Creswell & Creswell 2018), and there has been an awareness of at least some of the researcher's personal views on the organic food sector. The researcher has also exerted herself to be as neutral as possible throughout the process according to the theory of Bryman and Bell (2017), however, full subjectiveness can never be achieved in qualitative research as one cannot leave one humanity behind even in situations as such (Robson & McCartan 2016). The selection of participants might in general be questioned (Creswell & Creswell 2018), the views gathered for this research were not meant to generalise public perception of the research aim and were not identified in a randomised manner. Instead, the selection of “the right” interviewees has been seen as important for achieving the findings of this research and has been conducted with thorough thought. Another selection might have won other insights, however, the aim is not to fully saturate the findings with all possible angels on the

subject (Robson & McCartan 2016; Creswell & Creswell 2018), but to find the most important ones from initiated persons in the larger food system. The roles, and years of work experience in food or sustainability, together with the characteristics of foresight- have been considered indicators of the sought knowledge of the chosen subjects. Qualitative researchers often aim to collect data in the interviewee's natural setting (Creswell & Creswell 2018), which in this research meant adjusting the way the interview was held according to the desideratum of the interviewees, i.e., conducting interviews through online meetings. In one case, it meant meeting the interviewee at their workplace. Even though not intentional, subjects might to a different extent have been influenced by the researcher, or because the researcher might not have been aware, of the interviewee's environment during the meeting.

5. Results & discussion

This section presents the results of the semi-structured interviews which are first interpreted and summarised thematically according to the three themes of the theoretical framework (page 18) each section is followed by an initial discussion.

5.1 Evolution of the sustainability concept

5.1.1 Evolving sustainability

During the past period (2015-2020) knowledge of the developing, three-dimensional sustainability concept, with all its complexity, was spread and integrated among actors in the food system and society. The sustainability concept developed with many different global and national influences and many private food system organisations were driven towards increasing sustainability to avoid falling behind or were led by the idea that "sustainable actors will survive".

The interviewees see that their organisations will continuously evolve their outlook on sustainability. The Russian war on Ukraine in 2022 has, as an example, illuminated the national need of reducing the dependency on food imports and has increased the value of self-sufficiency. Securing food supply in the face of climate change is seen as a sustainability issue to consider for at least another two decades. In general, expectations are that the multifaceted sustainability concept is still under development, bringing wider responsibilities and highlighting the need to introduce disruptive measures and large readjustments in society and the food system. As of today, the market lacks available sustainable food products, fully footprint-free. Interviewees were saying about the need for change: "Whole companies need to change" and "All actors in the food system can do more". From an organisational perspective, sustainability should be integrated into business decisions from an early stage, together with financial matters.

Disruption expected

The results show that the organisations of the interviewees have taken the same complex idea of sustainability to heart as the UN and EU (FAO 2021; European Commission 2022c) and that they aim to continuously develop it. Sustainability is

seen as a question of long-term survival, and the concept of sustainability is still under heavy development. The increasingly growing sustainability understanding must be considered by all actors in the food system and society. The interviewees also expect large disruption and change ahead, as sustainability knowledge is accepted. Aligning with the IPCC messages of environmental and natural system degradation (Masson-Delmotte et al. 2021), Retailer 1 sees that further development in the food system is needed because of the lacking existence of totally sustainable products. This implies a need for the concept of sustainability to reach further towards disruptive measures, where one possible development is that of footprint-free products (meaning products without negative or draining effects and being regenerative of natural systems). This would mean moving towards the beneficial regenerative systems described in the theory of Mang and Reed (2013). Another predicted change is the rise of sustainability to the level of finances.

Crises thinking has entered the mental models

The interviewees lift many sustainability dimensions and issues to consider, but the national food supply overshadows other sustainability areas during the spring of 2022. The reason is the effects that war and climate change might have on national food supply and show that focus on organic food is not currently top of mind, either within the industry or government bodies, but rather just food supply in general.

From point of system theory (Bosch et al. 2007), the support for organic food pre-2015 was built on the mental models (Figure 9, page 21) like care of nature, personal health and animal welfare (Livsmedelsföretagen och Demoskop 2017). These values might have mirrored a carefree time with a place for the care of nature and animals. The current reigning and underlying mentalities seem harsher, with expected problems of survival, often with the national food supply seen as a solution to the problem.

5.1.2 Learning organisations and co-evolution

The period of 2015-2020 presented guidance to the interviewee's organisations from concepts of sustainability originating from the UN and EU. Food system actors and government organisations increased their knowledge, clarified how to support global sustainability efforts, improved their aim on sustainable solutions and set targets (in some cases scientific based) to reach them. Organisational learning, awareness, and direction came from listening to the general debate involving media, consumers, government agencies and researchers, and then investing accordingly. An identified need was to increase the organisational communication of sustainability matters both internally and externally, and internal sustainability models and organisational targets were developed to this end. Government agencies commenced by developing The National Food Strategy

which became an agency guide for several food-related agencies such as The Swedish Board of Agriculture (SJV) and Livsmedelsverket (SLV). Government agencies and the food industry cooperated in several newly founded national cross-organisational (and sometimes even global) cooperation initiatives for sustainability.
Apart from sustainability, a secondary aim of national initiatives was to jointly increase the competitiveness of Swedish food producers and offer support to the marketing of the added values of Swedish food. In general, organisational understanding of sustainable food categories expanded to include not just organic but also vegetarian and plant-based food, ethical- and waste aspects and low emission issues. Only the organisation of NGO 1 held on to their former guideline that "food can only be sustainable if simultaneously organic". Retailer 1 pressed the urgency of the learning of taking all sustainability aspects into consideration, which can now be done with help of sustainability measurement models for food. However, care needs to be taken so that no one measurement, such as GHG emissions, is elevated above all others. All parts of sustainability bring large complexity, and the growing knowledge of this will help the development of organic food further.

Looking ahead, many of the interviewee's organisations want to continue supporting organic production and do so by participating in matching branch organisations, organic food projects, research, consumer advisory services and communication schemes. The agency (SJV) also supports national organic food production offering farmer subsidies (for environmental and organic services). A possible path towards increasing organic sales again is by actors joining in communication initiatives to promote the beneficial effects of organic food on human health, soil, and water quality. A worry is that sustainability cooperation between retailers might fail due to weariness or competition.

Budding sustainability structures & development of sustainability view
Looking back, the organisations implemented their budding definitions of sustainability in internal and external strategy documents, models, sustainability targets, and communication, which according to Bosch et al. (2007) could be seen as framing structures to help approach the complexity in the (food) system, clearly indicating the development of the expanding process of building knowledge and understanding of the challenges with sustainability.
Apart from organic food, the organisational learning supported new food categories to be seen as sustainable, such as plant-based, vegetarian food, having low emissions and the aspects of food waste and ethics. Retailer 1 emphasises that sustainability in the food system means taking the full complexity, all aspects of the whole, into consideration, which goes hand in hand with systems thinking theory

(Bosch et al. 2007). Only the interviewee NGO 1, claimed that the organisation held on to organic food as the guiding light, whereas all others opened to more extensive views on sustainability. The changed view of sustainability increased complexity and lead to confusion in both food communication and food choice, showing a need for a joint nomenclature to help lead society towards a sustainable future.

Labels can simplify complexity
The balancing of the multiple sustainability aims is seen as a pressing matter of sustainability, and an interviewee implies that the complexity might be beneficial for sales of organic labels because they can help balance sustainable consumer choice without consumers knowing all details or being very knowledgeable.

Co-evolution amongst actors and new food category
If a regenerative system state is to be reached (Mang & Reed 2013) co-evolution between human and natural systems is needed. During the period past, apart from building their sustainability knowledge and structures, the interviewee's organisations joined industry-government initiatives. Meaning that the period held co-evolutionary activity and development of the understanding of the many sustainability aspects. Also, the period was the dawn of the sustainable food category with competitors such as organic food, and runners up from other categories considered sustainable, including Swedish food.

Cooperation and competition
According to the theory, evolution does not follow a predicted or straight road (Dosi & Nelson 1994), still, the interviewee's organisations supported the development of organic labelled food by joining in information campaigns for organic benefits. Some interviewees saw the risk that cooperation between industry competitors could be clouded by currents of competition and cooperation fatigue. This indicates that the competitiveness of Swedish produced food at large seems important to many actors, but also that the normal internal industry competition is present. This is something to be wary of in the turmoil of evolution, as it might risk overthrowing a more optimal societal path, or organisational competition will enrich the path forward. Nevertheless, neutral actors should be appointed for joint activities.

5.1.3 Conflicts of sustainability complexity and differing targets

During the latest years, the initial growth of organic food, plateaued in the light of the growing understanding, and implementation of the multiple angels of sustainability. Organic food competitors consisted of foods such as vegetarian, plant-based, climate-friendly, and quality labels of many kinds, local food and retailer labels (in Swedish: Egna Varumärken). National self-sufficiency, taking both profits and environmental issues into account, became an important aim of

both government and food producers. The national aim has been sharpened further by the current war (Russia spring 2022). The national aim also exposed Swedish winter climate-related difficulties of all-year-around national vegetable agriculture and clarify why beef and dairy products are at the heart of Swedish traditional food production, to supply food during winter. However, climate heating issues have led to reduced demand for products with high emissions of CO2 (like beef and dairy), and the vegetable and plant-based replacements arrive via import. Some sustainability issues not yet on the public agenda, during the period, were soil and water quality, aspects seen by the interviewees as crucial for a habitable planet.

Glancing ahead, the interviewees share that organisational sustainability knowledge and overarching goals are set, but that it is not clear how to solve all problems in practice, or how to handle goal conflicts. Some goal conflicts are found with the cow (both beef and dairy production), often considered the engine of Swedish farming, beneficial to biodiversity and productive land-use, providers of year-round local proteins, but relatively large emitters of greenhouse gases. Then there is the conflict between the lack of local, Swedish vegetable production and dependence on vegetable imports. This brings risks of Swedish beef and dairy being replaced with imported plant-based proteins (like chickpeas, lenses, soybeans etc.).

Because of a foreseen increased competition within the higher-priced market segment of the "conscious consumer" (since long a stronghold for organic food) there is a worry for the future of organic labelled food. A view is that more relevant food categories, with high productivity in primary production, climate-friendly, and plant-based are already moving into the market, answering the need for updated sustainability aspects, where two important themes are securing sustainable production and the national self-sufficiency and predictable food supply.

A source of internal organisational conflict is the sales of both organic (often 10-20% of all products) and conventional food. Profit targets are strong in profit-driven companies, which in most of the organisations of the interviewees conflicts with aims for sustainable development and profit.

Diffusion of new food categories

According to the multi-level perspective on innovation (page 20), novel niches of innovations are integrated into the regime as landscape changes occur. The initially successfully growth of the organic food category could be considered to have been a part of the regime, which in the light of the growing awareness of sustainability, was forced to give space to, and emerge with novel food category entries such as vegetarian, plant-based, climate-friendly and local, Swedish food, which together formed a "sustainable food category", illustrated in Figure 10.

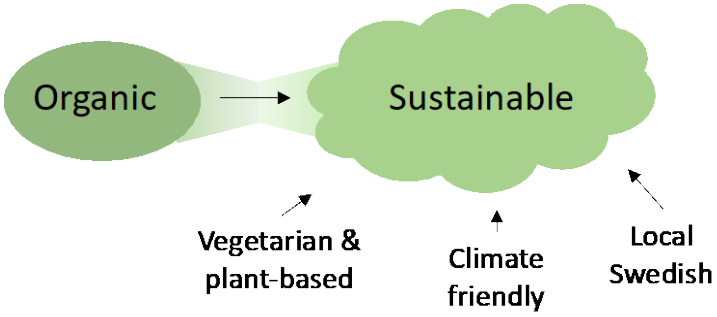

Figure 10 Organic food merging with Sustainability food category, 2015-2020.

Revival of organic beef and dairy

Dietary changes led to increased vegetable import and decreased meat consumption. Environmental issues, like water and soil quality, seemed not high in public awareness. The interviewees speak of cold winters in the Swedish climate, indicating difficulties for human year-round survival. This is the reason for Swedish beef and dairy to be at the heart of traditional food production, a local solution to help survive winters and a strong contributor to local biodiversity, (Figure 11).

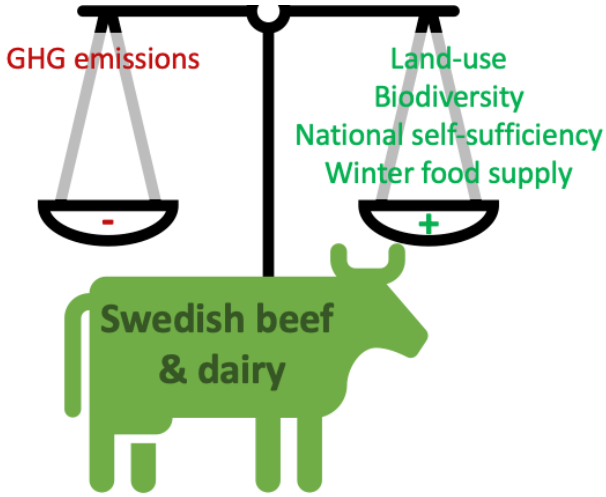

Figure 11 Sustainability contributions of Swedish beef and dairy production.

Self-sufficiency is a sustainability aspect

From a multi-level perspective (page 21), the rising importance of local self-sufficiency as a sustainability aspect marks a change in the landscape. This implies change pressures for the Swedish food system, like developing year-round vegetable production, and preservation methods and increasing the acceptance of Swedish beef and dairy and innovations to reduce their GHG emissions.

5.2 System Drivers of Change

5.2.1 Environmental drivers

Before 2020, the interviewees recognise that a societal sense of urgency for the environment and climate influenced the concept of sustainability. Simultaneously there was a growing understanding of the benefits of systems thinking, taking the many different sustainability perspectives into account. The growing plant-based and vegetarian trend took a stance on climate warming, but Swedish vegetable production is unfortunately very small and increased vegetable imports were needed.

The interviewees foresee how continued climate heating will dry the lands, decrease yields, increase food prices, and that organic food will be less affordable. There is a societal and planetary need for organically produced food and Sweden has a unique position regarding environmental matters, as many Swedish consumers choose organic food to benefit environmental (also health) aspects. The awareness of biodiversity and chemical issues are on the rise as important parts of the sustainability puzzle. Agricultural lands are a finite resource and can't be expanded further, making farming productivity of essence when aiming to secure food supply. Food supply is often a sustainability aspect not yet considered in organic frameworks. Environmental drivers might help increase the market share of organic food again, including animal welfare, low pesticide use and circular thinking.

Degeneration of natural systems will cause food system issues

According to scientific findings (Masson-Delmotte et al. 2021) and highlighted by the interviewees, there is severe overstepping of the natural boundaries of the planet. The almost joint view is the understanding that continued degeneration of Earth's natural systems will lead to food production issues. This indicates a coming decrease in food availability and the Swedish food system expects large challenges for both global and national food supply.

Swedish vegetables need to meet the demand

Environmental drivers and circular thinking are seen by some interviewees as arguments that can win consumers' support for organic production methods again. The understanding that agricultural lands are finite and a socio-environmental aspect that can affect food supply, seems not yet to be included in the organic food frameworks. This indicates that the efficiency of organic food production also needs to be added to the sustainability frameworks. Swedish vegetable production is considerably small and is indicated as an area of development to meet the expected continued national demand. Considering the Swedish winter climate, innovation schemes, or smart production solutions for vegetables are needed.

5.2.2 Social drivers (social welfare, health, food supply)

The interviewees shed light on the development of sustainability before 2015. The more affluent "conscious consumer" increasingly searched for organic food which led to an organic food sales growth of 30-40% growth per year. In 2015, there was an increased public awareness of the growing population of our planet, the conflict between feeding all and the risk of crossing environmental boundaries and the need of taking all three sustainability dimensions into account (including aspects like biodiversity, soil health, human health, clean additive-free food, and economics etc.). Media, consumers, and government agencies were all part of lifting the new sustainability aspects higher on the public agenda. The sustainability awareness translated into food choice of climate-friendly, plant-based, and local food before dairy and beef and was a reason for the drop in, organic food sales. The complexity of the societal dialogue and ungrounded use of "sustainability" to promote non-organic vegetarian and locally produced food, and the lack of clear definitions of these food categories and expressions like "regenerative farming" led to consumer confusion about the meaning of sustainability.

Adding to consumer confusion were also the many quality labels, and retailer's food brands (in Swedish: EMV- egna varumärken). Several interviewees regret seeing consumers move away from organic labels like EU Organic and KRAV, because these labels measure and ensure several sustainability quality aspects. Sustainable food choices are complex and difficult for consumers to grasp. Education on sustainability matters is needed. Some interviewees say that consumers don't have much influence regarding food availability in stores which can be seen by the lack of organic food on the shelves, meaning there is demand, but store supply is low. Sustaining organic food will be difficult if demand is low.

A further confusing, inaccurate belief was that food transports were the largest emitters of CO2 when it is food production methods that emits the most. E.g., salad produced in Spain and consumed in Sweden can have a smaller footprint than if produced in Sweden. This belief might have benefited the development of locally produced food, often labelled "Från Sverige" (in English: "From Sweden").

Even though organisational knowledge of the social aspects of sustainability grew during the period, it was easier for some interviewees to get acceptance for environmental issues than for ethical (ex. buying from totalitarian countries) or social issues (ex. acceptable working conditions). In the future, the growing human population will need a predictable food supply. Also, national social health aspects are growing in importance, with half of the Swedish population being overweight or obese, with many connected negative health effects. Worries also include the

social sustainability aspect of unhealthy food available in stores, heavily processed, high in fat, and sugar, and containing chemical flavour enhancers.

Changes pressured rethinking of diets

Just like with the evolution of many earlier ideas (Ridley 2015) the interviewees describe how the evolution of the idea of sustainable food was formed by public dialogue and the growing awareness of sustainability issues like climate warming, population growth and environmental issues. The awareness became an important driver for consumers to rethink their diets, increasing demands on food categories like climate-friendly, local, and plant-based food, and decreasing dairy and beef.

Confusion in the food system

Interviewees' sayings concur with the theory that the journey towards sustainability is characterised by complexity (Wood et al. 2021). The sustainable food idea has been troublesome to grasp, and retailers have marketed their food brands, together with a growing amount of food quality labels, which has led to a ubiquitous food system confusion (depicted in Figure 12). The interviewees mention further confusion from the different frameworks of the organic labels, like that the EU Organic brand takes only environmental aspects into account and KRAV takes a larger number of environmental aspects, and some social aspects, into account. The many labels and brands took market share from the organic food regime.

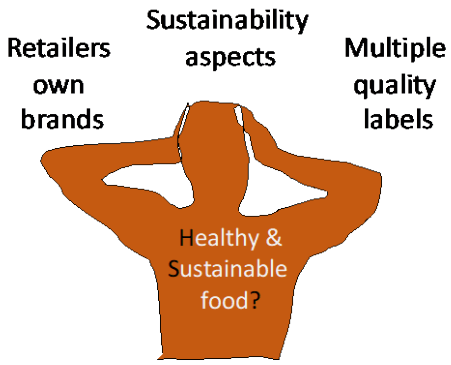

Figure 12 Confusion due to many competing food ideas, pre-2020.

Knowledge, structures, communication, and labels needed

Many food communication efforts were aimed at single sustainability benefits (ex. claim that plant-based food is better for the environment) which did not promote a balanced picture of sustainability. It seems that clear and fact-based communication might have been difficult to achieve in a phase where most, including regulating government organisations, were developing their sustainability ideas. This implies a need for building more knowledge in society, improved food marketing regulations, and developing consumer guides for an optimised sustainable food

choice, all to ease public learning and reduce footprints. Interviewees say that labels help consumers balance their sustainable food choices suggesting that sustainability labels are a good way to continue in combination with consumer education and perhaps label consolidation, or regulation.

The food system lacks taking all social aspects into consideration
Interviewees say that predictable food supply has risen to the top of the agenda, being a social sustainability dimension (Elkington 1997). The connection between the health of the environment (that we live in and grow our food in) with the health of consumers and food system workers seems not yet fully covered, understood, or implemented by the food system actors or by the organic labels.

5.2.3 Economic drivers

Consumers. During 2015-2020, Investor 1 sees that the more affluent consumer market for organic food became saturated, and most interviewees elevate the influence of price regarding customer demand and that organic labelled food is generally more expensive than conventional.

Looking to the future the interviewees see that the higher prices of organic food will continue and that a down-turn in the economic development (or raised inflation) can bring a negative influence on the demand for organic food, i.e., when the economy is bad, consumers refrain from buying more expensive food. The higher price of organic food is seen as a social hurdle that needs to be overbridge.
Many interviewees find that food prices do not include all costs, such as CO2 emissions, land- and water use etc. Low food price leads to low consumer valuation of food, apparent in the light of the 25-30% food waste mentioned. The food industry needs to adjust business models, and increase food prices, as consumers aren't paying their full food bill and could be considered "doing a runner".
A current retail trend is a low-price category, which acts as a counterweight to the premium-priced organic and sustainable food.

Profitability. Many actors in the food system see farmer's profitability to be of high importance as it ensures continuous sustainable investments in food production, which creates a predictable food supply to feed the population. Farmers must consider sustainability improvements such as the consumer willingness to pay 40 öre more for an organic cork and are in general struggling with profitability. Government official 1 says that the agency (SJV) sees the economic dimension of sustainability as important, as no company can survive without stable finances. Many see that organic production, as formed today, can't compete in productivity. Sustainable, fossil-free and biodiverse technology and solutions are available, but farmers lack financial incentives and means to invest. The organic premium

business model used to be the best way of getting paid for values throughout the food chain but falls short as demand falters. Profit-driven organisations won't encourage cautious consumption, as their drive is to increase turnover. An alternative is to increase productivity by reducing cost, rather preferred than decreasing sustainable products available in store.

Economic drivers, harnessed with regulations

Just like Elkington (1997), the interviewees and their organisations are aware of economic drivers in society and the food system. The economy is connected to survival, consumers are driven by price, organisations by profit, and companies and nations by economic growth. Retailers are not expected to encourage less consumption to benefit from more sustainable lifestyles as their drives are mainly to increase profits, suggesting the need for the future for harnessing or influencing corporate actions, the most obvious way might be through the regulatory system.

Farmer balancing act for sustainable investments

The interviewees mean that sustainable food systems support farmer profitability, the backbone of food supply and that there is a connection between their profits and sustainable investments. Food producers need to consider consumers' willingness to pay for investments, indicating that food producers balance investments between customer appealing features, sustainability improvements and profits (Figure 13).

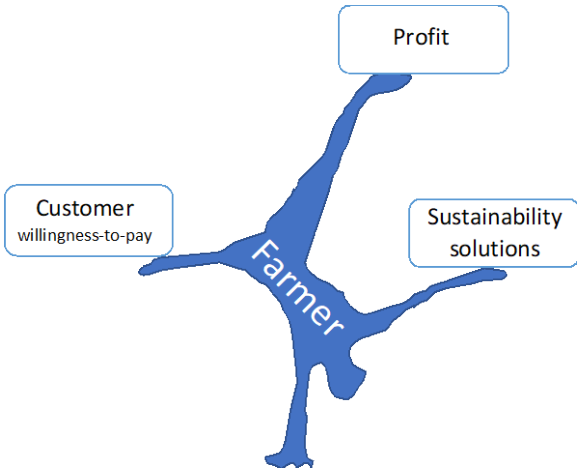

Figure 13 The many criteria for food producers to consider when investing in the future.

Internalise externalisations for sustainable consumer prices

Sustainable production considers more dimensions than conventional production (Elkington 1997) and according to the interviewees, organic food production costs more than "conventional". In parallel, there is an ongoing low price food trend but many interviewees consider retail food prices to be set too low (before spring 2022 inflation), and a reason for high consumer food waste, which shows the need to take

business models under consideration and unhide true costs to suppress demand on sustainability demanding foods in favour of sustainable consumption (Figure 14).

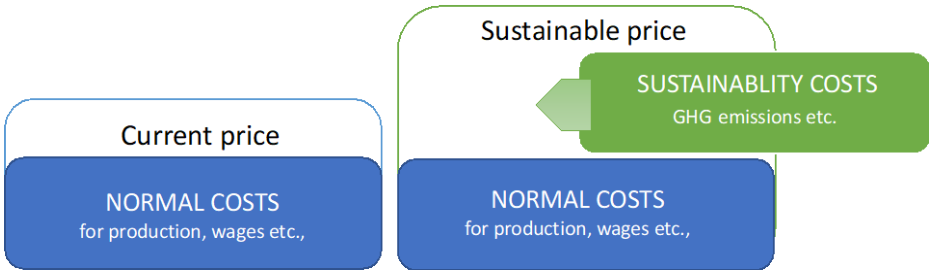

*Figure 14 Making **consumer prices** sustainable by internalising externalisations.*

Keeping organic food costs low

Recent crises (pandemic, climate change, war) have led to global monetary value loss and increasing food prices, pressuring already higher-priced organic food, and risking decreased demand for organic labelled food. Companies can lower prices by increasing internal productivity, farmers can invest in sustainable solutions, and sell organic food overcapacity to countries with a large demand (Figure 15). Notable is that profit-enhancing investments are available to both conventional and organic food producers and are not a comparative advantage solely for organic producers.

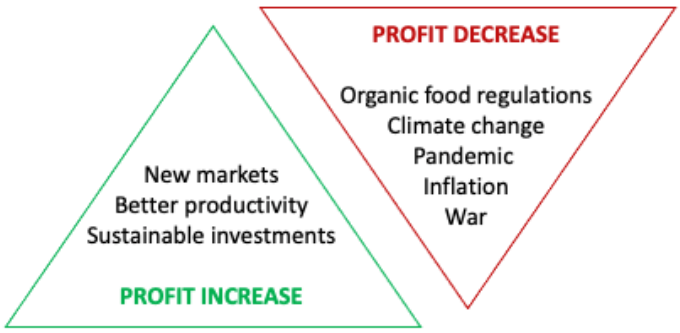

Figure 15 Organic food price and profit influencers.

5.2.4 The role of Swedish retail in the sustainability transition

Retailers are seen to have taken the internal sustainability improvements of their operations seriously and have, sometimes in collaboration, improved the use of e.g., plastics and energy. Retailer 1 says that most of their climate impact (96%) is traced to primary farming operations of products sold, which is the retailer's external sustainability and that 90% of products sold in stores are not sustainability labelled. Several interviewees see retail chains as influential actors regarding consumer food choice, with tools like product placement, nudging and marketing campaigns, and are seen as having the largest responsibility for the decline in organic food sales as

they loosened their grip on organic food and re-directed marketing efforts to Swedish produced and vegetarian food. Also, interviewees say that the number of organic items in Swedish retail stores has declined. Available foods are seldom organic, sustainable, or healthy. The profitability drive of retailers is stronger than their drive to market organic food and a continued decrease in organic retail sales is expected.

The organisation of Retailer 1 aims to help customers understand trade-offs and target conflicts between sustainability aspects, and have internal targets set on the number of sustainable items available in store. However, during the recent period Retailer 1 has experienced a decrease in the internal dialogue on organic food and internal confusion about aspects that should be considered sustainable. Internal aims of meeting consumer demand and making profits are often on the winning side. Swedish retailers fill their shelves with non-organic, non-sustainable and unhealthy foods. The current Swedish retail industry talk is on how to "raise the bottom" of the product assortment by removing the worst, most unsustainable and unhealthy products and joint discussions are held on subjects like soy, plastics, energy drinks etc.
Retail chains are seen to be able to lead the way towards more sustainable production and consumption by growing their sustainable sales. This could be done by increasing marketing activity, store availability and supply of organic products, setting good food in better store placements and removing unhealthy and unsustainable products altogether, paying fair prices to farmers but also demanding better products from actors earlier in the food chain. If they instead decided to reduce the organic category further, it would strongly affect consumers' organic food choices negatively.

Focus on primary food production needed
Retailers are taking the internal implementation of sustainability forward, yet 96 % of their climate impact traces back to primary food production and 90 % of sold products are not sustainably labelled. This implies the importance of retailers' choice on product assortment, and that retailers should focus on sustainability further back in the food chain by improving the sustainability footprints of primary production, which should be supported by all actors in the food system (Figure 3).

The influence power of Swedish retailers is one reason for the decline
Most interviewees see that retailers have a high influence on consumer food choice by methods such as pricing, nudging, store placement, marketing, and food availability (Figure 16). Retailers have reduced the use of the tools regarding organic food, implying that retailers are highly accountable for the organic market share decline.

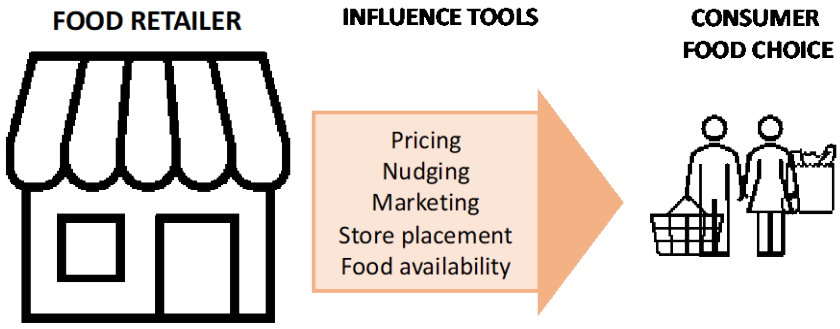

Figure 16 Retailers influencing tools on consumer food choice

Reasons for retailers to reduce promotional support for organic food

Several reasons are implied for retailers' reduced support for organic food; 1) when internal forces of sustainability and profits compete, the profit aim wins 2) the decline of the organic food share might be attributed to organisations suffering from the same sustainability complexity confusion as society at large, removing focus towards many sustainability goals, 3) retailer aims to help consumers understand sustainability aspects made consumers lose focus on organic food and the demand for organic food was dampened.

Consumer health aspects falling short in Swedish retail

Interviewees claim that consumer health aspects are lacking by retailers, noticed the many unhealthy foods on retail shelves suggests that health issues of foods available need to be taken seriously. With the strong retailer influence on consumer food choice, government regulation might be a way forward (Figure 17) which would set a common playground for all retailers. Another possibility is the development of a retail niche guaranteeing sustainable and healthy food products.

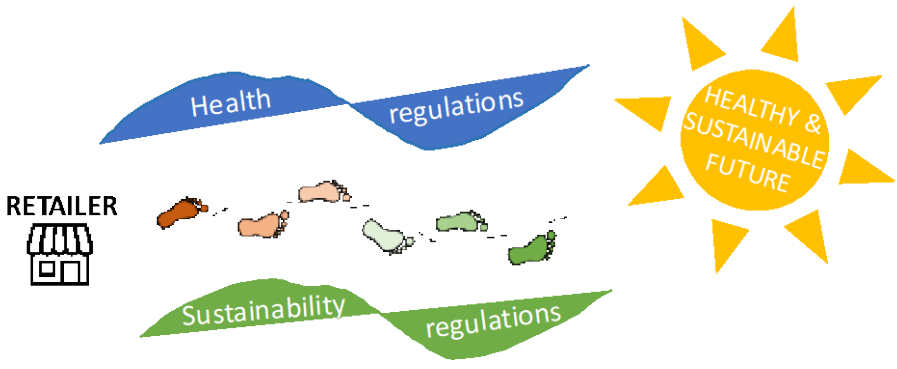

Figure 17 A possible corporate retail path towards a healthy and sustainable future?

5.2.5 Food producers and investors in sustainability transition

Swedish food producers have high set sustainability targets (on soil health, GHG emissions, biodiversity etc.). They continuously work to improve operations

(energy, local production, and climate-smart solutions) and some food producers set targets for organic sales. The decline in organic food demand has led to decreased organic farmed lands. Stable, but non-increasing organic food share is predicted.

The investors say they aim to investing in healthy food and increasing food availability to mitigate crises (climate change, value chain disturbances etc.). They see that the capital market (pension funds, industry investors and government etc.), could do more for sustainability by aiming financial support towards innovations and companies reducing CO2, "internalising externalisations" and promoting biodiversity and efficient land use. Investor 2 says the capital market is not moving fast enough: "Capital owners could do the same for the environment as they have done for Ukraine" (meaning the global economic embargo on Russia, spring 2022).

Health and climate change are high on investor agendas

Investors are one of the actors in the food system that actively work with and securing the needs of the future (Suddendorf & Corballis 2007). Vision and targets of investors can be indicative of changes expected. Changes mentioned were social health aspects of food and food availability, strongly indicating a future bringing problems of these kinds. The foreseen climate change issues (or other crises), align with scientists' forecasts (Foote 1856; Carson 1962; Rockström et al. 2009; Garnett et al. 2016). The investors see that bold moves are needed from capital investors in all parts of society to forward sustainability. An idea presented was a joint global capital investor movement to target endeavours like climate change avoidance, development of biodiversity or improved health.

5.2.6 The role of two government agencies, the Swedish Board of Agriculture (SJV) and the Swedish Food Agency (SLV)

The Swedish Board of Agriculture (SJV). According to Government official 1 (SJV), the long-term plan of the agency (SJV) is found in The National Food Strategy, which apart from TBL aspects includes sustainability aims for animal welfare, profitability, and competitiveness of Swedish food production.

The agency (SJV) view is that Swedish produced food increases national resilience during crises, when food chains and food supply might be affected. Swedish food regulations for both conventional and organic food are considered to have added values like animal welfare and lower environmental footprint.

The agency (SJV) will with the aims in the national food strategy and increase public understanding of the benefits of different food categories (good and bad aspects). It will not side with either organic or conventional food and will only

communicate known facts. Targets within The National Food Strategy are, in parallel with relevant sustainability targets, to increase national food production.

The Swedish Food Agency (SLV). According to Government official 2 (SLV), the agency's direction was influenced by global (e.g., UN, EU) and national guidelines for organic food. It has taken a trans-disciplinary sustainability approach with one of the aims connected risks of climate issues, entailing secure drinking water, food supply and matters of national- and civil defence. The latter has brought the agency to reinforce the self-sufficiency of Swedish food processing and production with mitigation of expected arrival of climate issues, such as viruses, animal disease, droughts, floods, dampness etc.

The agency (SLV) set targets for the social aspect of healthy and nutritional food consumption. The agency's health definition includes consumer health at the time of food consumption and to reduce unhealthy food consumption, harmful effects of child poverty on food consumption etc. The agency aims and health definition do not include organic food as not scientifically proven to be healthier or have higher nutritional value than conventional food. Neither does the agency (SLV) look to the harmful effects of food production methods on lands where people live or work. Organic food is neither prioritised nor de-prioritised.

In October 2021 the agency (SLV) received a government instruction update, based on the TBL dimensions, to work for "sustainable consumption in the interest of the consumer". The update held a change in focus from "the individual" to "the food system". Government official 2 says the agency works holistically to transform food consumption to become sustainable from all TBL dimensions.

Conflicted internal aim of the agencies

The agency (SJV) acts for the development of the Swedish food production, of conventional and organic methods, with the TBL of sustainability as base for the agency's aims. The agency's (SJV) national agricultural support implicates the same inner target conflict between organic and conventional tackled by other actors. The several targets, such as national food resilience and increasing the competitiveness of Swedish food, but also national organic food production. This exposes an inherent target conflict for organic food production. Summarising, there are several target conflicts within the agency (SJV) for organic food (Figure 18).

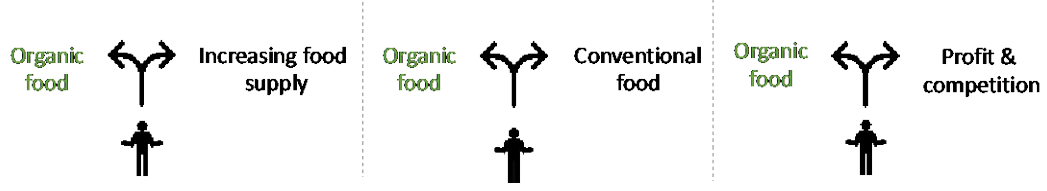

Figure 18 The many target conflicts of organic food, by agency and industry alike.

Agency aim to support human consumption

The Swedish Food agency (SLV) is developing a multi-disciplinary approach to secure national food supply, mainly from a consumer health perspective. This includes fighting issues of public health and securing local food and drinking water for the Swedish population. An illation can be that the agency falters in taking wider responsibility for the human aspect of food and water supply, such as avoiding the effects of degeneration of waters and lands from pesticide and mineral fertilizer use, or long-term human health issues that the use of these substances bring.

Cross-agency leadership to avoid the risk of silo thinking

The Swedish Food Agency (SLV) only guards Swedish consumer health. Organic food is not covered in the agency's recommendations for healthy foods. Does this suggest that the agency's (SLV) sustainability aim leads to government silo thinking, not covering the full array of sustainability, such as the environment, or even the full social array of sustainability including living lands, the environment, or the food worker perspective? If the TBL dynamics were not considered when setting up the agency purpose it could, according to the theory of Dosi and Nelson (1994), imply gaps in the agency purpose. Is the responsibility-divide of the agencies in Figure 19 depicted correctly? Then there is a need for cross-agency leadership to reach sustainable solutions. Noteworthy is that the agencies (SLV and SJV) participate in multiple cross-agency and industry cooperative activities and agency development of the sustainability concept is still ongoing, which might explain why all sustainability aspects are not yet acted upon.

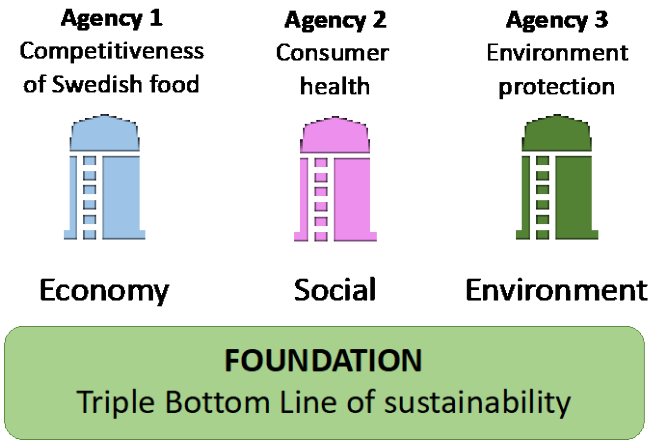

Figure 19 Risk of silo thinking in Swedish government agencies?

5.2.7 Political tendencies and legislations drivers

During the past period, political currents shifted focus from organic food, and increasing promotion of local food was noticed by actors like the Swedish farmers'

federation (LRF). Several political tendencies were mentioned that might have influenced the market share of organic food, such as the rising importance of national self-sufficiency in food supply, nationalistic tendencies, or the politicising of "the green" (the political party), which might have been seen to include organic aims for food, and finally the growing multifaceted sustainability awareness, especially the climate issue. Academic researchers communicated mixed messages on organic food and production, where negative opinions weren't based on the benefits of organic over time. It is unclear which actor was most influential in setting the self-sufficiency trend, consumers, companies, or government agencies.

The Russian war (spring 2022) is seen, by the interviewees, to push focus on national self-sufficiency of food even further. They hope there will be a simultaneous focus on the TBL-dimensions. The finite organic farmlands and higher organic production complexity make the future development of organic food highly unsure. Suggestions are that Swedish politicians could take after the Danish politician's example, hook arms over party borders and unitedly work to increase Swedish organic food production. When increasing focus on self-sufficiency the government could also support organic producers and consumers financially.

Apart from the environmental aspects, KRAV also takes the welfare of animals and social sustainability into account. The beneficial effects of the higher and multifaceted sustainability aim of KRAV, compared to EU organic- and conventional food, is according to Retailer 1 measurable and can be visualised with new models and measurement tools. In the past, Food producer 2 says the organisation has followed regulations (EU, national and KRAV) but has not done more to add to the bureaucratic burden of the farmers. In a review of Swedish food production regulations over 850 rules were found that go further than the EU organic brand. Retailer 1 says the high standards of Swedish food production regulations are often, but not always better from a sustainability perspective. Due to the even tougher EU legislation ahead, organic farming will be more administrative and expensive, which will bring higher prices.

Looking to the continued development of organic production there is a need for less rigid regulations and certifications (from EU, Sweden and KRAV) than what is offered by organic food producers today. Legislators can increase sustainability but also complicate reaching profitability. They could help improve the share of organic food, with measures like VAT differentiation (like higher VAT or taxes on foods like sugar, fat and meat, lower VAT on "good" foods). It is also seen that organic actors, like NGOs, organic branch labels and organic food producers might need to change strategies, work unitedly to update the complex organic framework, and start a public conversation on the benefits of organic and issues like the future, water-, land welfare and soil quality.

Political tendencies behind the decline in organic food

The interviewees attribute the decline in the growth curve of organic food to several political tendencies during the period. The first tendency was the promotion of local food and national self-sufficiency by consumers, farmers, government agencies and companies. A second possibility is that local food promotion might also be connected to political nationalistic tendencies of the times. A third reason for the organic decline is attributed to a growing opposition towards "green politics" or the green party where organic food might have been collateral damage. A fourth reason mentioned was the growing awareness in society of sustainability issues including the high-profile climate issue. Finally, NGO 1 says academia presented mixed findings on organic food methods, not always showing the long-term benefits.

The organic growth declined but the category was not obliterated

The insights of the interviewees show that despite the early successful organic growth, the organic category could not stand its competitive ground altogether when competing with the many political currents of the period. Seemingly, very few actors stood for protective measures of organic development. On the other side, organic labelled food didn't crumple in what Schumpeter, in the eye of innovation, calls "creative destruction" (Śledzik 2013). The development of the organic food category rather declined slightly compared to the achieved market share in 2015 (Figure 2). This implies either an intrinsic resilience or continued societal support for, and demand for, organic food and agricultural methods.

Growth of Swedish, local food with help of many supporters

Actors from all parts of the food system brought the local, Swedish food trend ahead. The main aims of government agencies were to secure water and food supply from a consumer health perspective (SLV) and support the promotion of Swedish food produce (SJV), both agencies see organic food as one type of Swedish produce but neither of them mainly supports organic food. All Swedish food system actors are mentioned as supporters of Swedish food, which implies that the number of champions for Swedish, local food outnumbered the forces working for organic food. The reasons might have been local profitability, self-sufficiency, and survival, connected to the expected arrival of climate change and other possible crises. The interviewees suggest that continued food production efforts stay within the TBL.

A joint endeavour for organic food, according to the Danish model

Some interviewees support the benefits of organic food and see possibilities of increasing organic market shares, like the example of the national united efforts of Danish politicians.

Heighten public awareness of the environmental benefits of organic food

The public awareness of organic benefits is low and in need of being reinforced. It is important to bring consumers, last in the food systems chain (Fernqvist & Göransson 2021), aboard the change train to achieve a sustainable future. According to the interviewees, joint efforts are needed by labels, producers, NGOs, and branch organisations to use the up-sailing environmental knowledge (e.g., the welfare of water, lands, and soil) to increase the public opinion toward organic food.

Measurable societal and environmental benefits of organic

Sustainability benefits of organic labelled food can be visualised with help of modern measurement tools, strongly implying that the benefits of organic methods for long-term insurance of healthy soils, waters and natural resources should be of global public and societal interest to value and protect these practices, which in turn brings the questions like why is organic not valued higher, or at least as an ideal to reach? Should the development of organic and sustainable food be seen in context as an evolutionary process according to the theories of Schumpeter (Śledzik 2013) and Dosi and Nelson (1994)? The organic growth has slowed but the organic market share seems stable, indicating that it might be on a step on the development ladder, waiting for the right time to continue the climb?

Government activity can support or undermine organic food

The many rules set upon organic food businesses by the EU, Swedish law and the organic labels create complexity and financial strains for organic farmers. There needs to be a revision of regulatory tools to support organic farmers better. Figure 20 depicts encouraging and counteracting government (or label) activity.

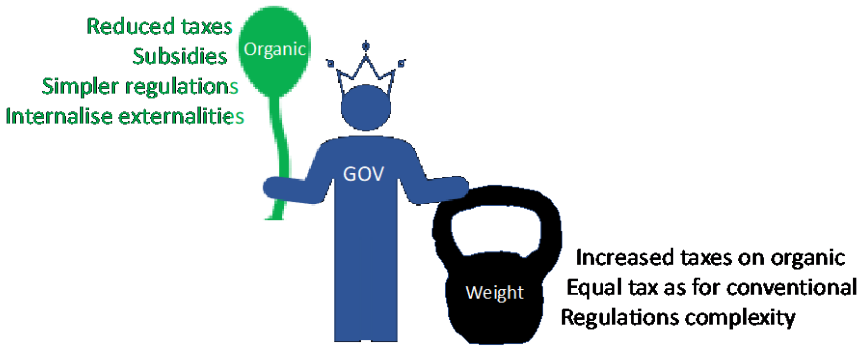

Figure 20 Uplifting and down-weighting government influence on organic food.

5.3 Systems Changes

5.3.1 Trending ideas, niches, and mental models

Several trends took off between 2015 and 2020, leading to competition for organic labelled food and a change in market shares. The contenders were local, Swedish produced food (often labelled with "Från Sverige"), food low on climate emissions, vegetarian or plant-based, and the low-price food trend. Underlying mental models and ideas mentioned by the interviewees were those of national survival (self-sufficiency), and the expected climate change crisis. The latter might be an underlying reason for the rise of the national defence idea. A reason for the decreased organic market share was that when consumption patterns were re-routed from meat to plant-based and vegetarian, the Swedish industry failed to supply these food categories (ex. organic bean mince, Swedish tomatoes in wintertime).

The interviewees foresee continued growth of plant-based and vegetarian food. A solution to the lack of national vegetable supply could be to increase national vegetable agriculture (and reduce imports). Meat consumption is foreseen to be further reduced but in contradiction, the sustainability benefits of the organic Swedish cow (ex. biodiversity and contribution to self-sufficiency) will be acknowledged and balanced with the comparably high GHG emissions of the species. Trends that are foreseen to diminish are small-scale farms and market initiatives as the future will support productive and effective food system solutions.

Underlying thought currents created food trends

Underlying mental models and trends that competed with organic food after 2015 were: national survival, risk of climate change and the consumer demand for low-price food. According to the four levels of thinking (Bosch et al. 2007) food trends might derive from these ideas. The benefits of organic food were surpassed by national survival and geographic heritage, promoting plant-based, veggie, climate-friendly and Swedish food.

Optimal characteristics for a new label

Continuous ongoing changes are expected in the food market, but vegetarian, plant-based, local Swedish food trends, and efficient production methods are foreseen to overshadow contenders. One view is that the Swedish food industry has failed, to meet the demands of organic vegetable and organic plant-based foods. The organic food market share might grow by either competing or merging with effectively produced, local or vegetarian food. These are also food characteristics that can be gathered in a new "organic" label or be possibilities to adjust "the old labels".

5.3.2 Ideas on organic production methods and labels

Some interviewees say that an idea discussed has been that organic production methods are better for the environment but less productive. Many farmers made organic investments during the organic demand growth before 2015 and were disappointed when it declined. Organic farmers were seen as leaders by example, that moved the sustainability positions of the whole food industry forward.

Several interviewees see the EU organic and KRAV concepts as old-fashioned and not up to date with current challenges like food supply and the developing idea of sustainability. Some believe organic food is one of many solutions for the future of food. Others worry about the survival of the current organic labels, especially KRAV that is seen to have high sustainability ambitions. Several persons foresee the development of new environmentally friendly, effective, scalable, and regenerative farming concepts, with practises connecting cities and rural areas, binding coal, with low environmental footprints and with local origin. Investor 2 says a "new organic concept" could be called "effective organic production". Several interviewees mean the new concept needs to compete with yields of conventional production and contain the freedom to adapt methods (like short-term use of pesticides and mineral fertilizers) to solve temporary issues to contribute to a predictable food supply. NGO 1 sees that pesticides and chemical fertilizers only work short term and that organic methods should be seen over time. The growth of the human population will keep food supply and self-sufficiency high on the sustainability agenda.

Update needed for organic methods and frameworks

Several interviewees acknowledge the importance of organic farmers and worry about the survival of KRAV. Organic production is seen as one method of the future but needs to be updated to support current sustainability issues like local food supply, scale, and efficiency. The change of the sustainability concept could be the driver of a new label, with additions that coincide with the systems design theory of Mang and Reed (2013), and "sustainability" improvements move towards "Regenerative systems" (page 14). "New" organic methods need lighter regulation burdens, aim for efficient and regenerative practices, circularity, and fulfilling the need for a predictable food supply (Figure 21). The need for a label retake could imply the current organic market unitedly developing the already existing organic methods, or the creation of a novel, freer niche food label for sustainable practices.

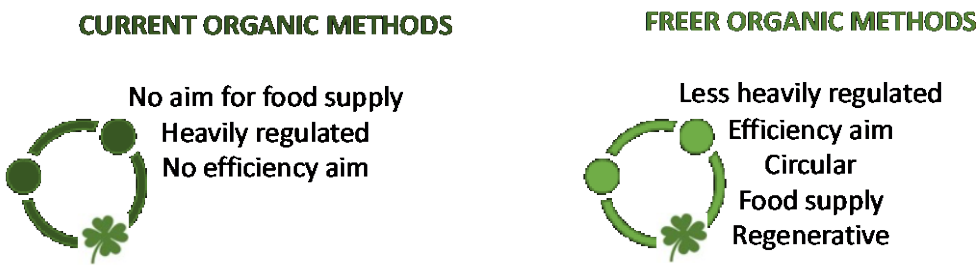

Figure 21 Suggested move of organic methods, less burdening for farmers.

Predictability of food supply in focus ahead

Several interviewees expect larger human populations ahead, meaning that securing food supply will stay in focus for human survival. Global and national sustainability frameworks press the need of securing survival for current and coming generations (United Nations 2018; European Commission 2022b), showing the gravity of including long-term beneficial organic or regenerative farming practices ahead.

5.3.3 Retailers' brands – market niches

Between 2015 and 2020 Swedish retailers aimed to strengthen their own branded products, negatively affecting the organic market share. Retailers wouldn't put organic labels on their brand if not brand strengthening, creating further hurdles for organic food producers to reach the market.

The retail chains' brands competed with organic food labels

Before 2020, retailers' brands can be seen as diffusing niches, according to the multi-level model by Schot and Geels (2008), (Figure 9, page 21), i.e., the retailers entered their brands into the market and won market share from organic food. The Swedish retail chains in Sweden (Figure 1 on page 10), have a large array of tools to influence the development of organic food choices (as shown in Figure 16, page 40) which strongly indicates that the retailers' intentions are of importance for forming the Swedish food system. Implications are that retailers will be successful with their large toolbox to create possibilities for implementing their aims.

6. General discussion

This section discusses and summarises the development of organic labelled food, available to consumers through Swedish retail channels.

Pre 2015
As portraited by both SCB (Figure 2, page 10) and the interviewees, the development of organic labelled food market share in Swedish retail was on an upwards moving trend of 30-40% a year before 2015. The interviewees acclaim this to consumers' care for the environment and animal welfare with the more affluent segment “the conscious consumer”. Retailers profited from the trend and used their promotional strength to increase the organic sales.

2015 - 2020
Around 2015 UN and EU introduced the multi-dimensional definition of sustainability, based on Sustainable Development and the TBL (see History of the Concept of Sustainability, page 12). Simultaneously, many global issues appear in the political and societal landscape, like national survival and self-sufficiency, climate warming and the awareness of many sustainability aspects, and an ambiguity on sustainability, depicted in Figure 22. Underlying mental models were profit and survival in the face of climate warming and other crises. These landscape pressures opened for the Sustainable food regime to replace the Organic food regime. Several novel niche products contended with organic food in the new Sustainable food category, such as Swedish, vegetarian, plant-based and climate-friendly food. The many consumer messages on foods with varying sustainability benefits confused consumers' food choices. Also, Swedish retailers decreased their organic food promotional activities (Figure 16). Other food categories that competed with sustainable food were “low-price” brands owned and marketed by retailers, and various quality labels. The joint results of the landscape and niche market transformations (Figure 22) slowed the organic market share growth to zilch by 2016, and the market share of sold organic labelled food continued at the same approximate stable level off 8% throughout the period (Figure 1, page 10).

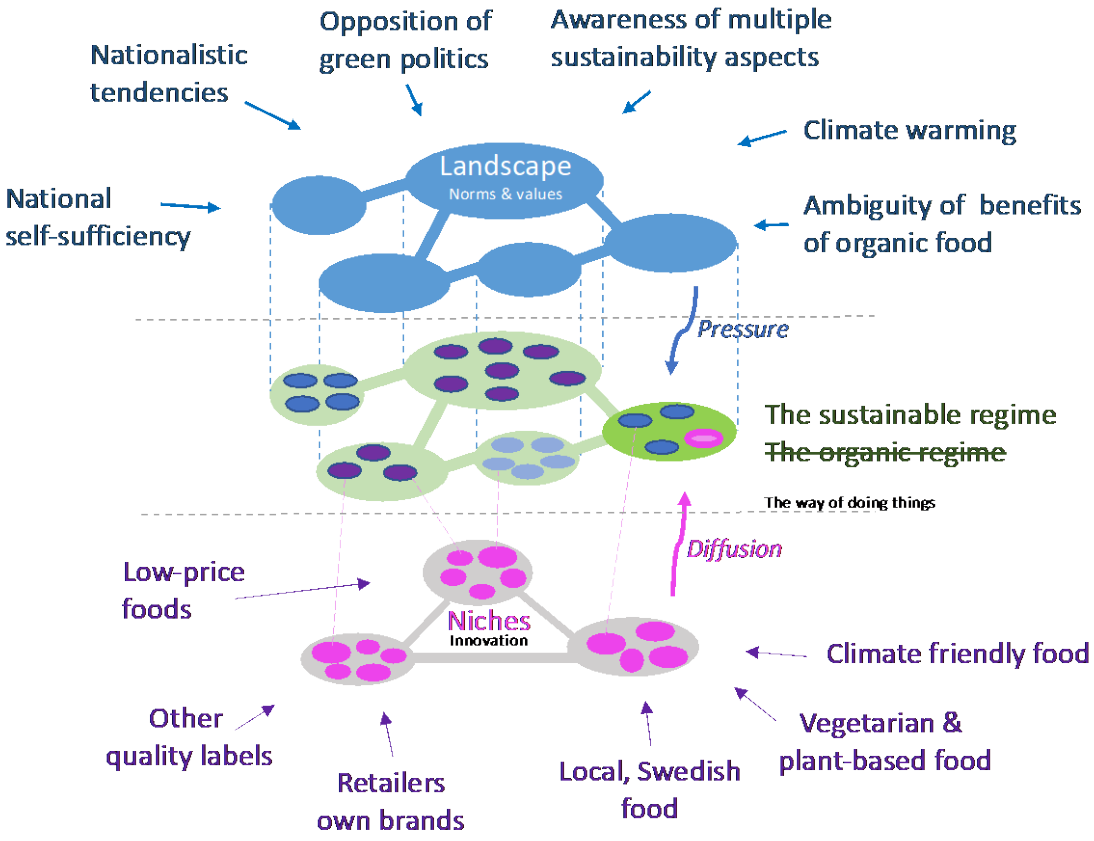

Figure 22 Changes influencing sales of organic food in Sweden 2015-2020.

Climate change issues were a change driver for all organisations and also led to societal tendencies of shunning foods with high emissions of greenhouse gases. Beef and dairy, a traditional stronghold for Swedish agriculture, were also avoided, without accounting for the sustainability benefits of Swedish beef and dairy production (Figure 11, page 32), which led to reduced consumer demand.
Another sustainability aspect that was clarified during the period, was Swedish food and its importance for the national self-sufficiency in times of crises. National food supply can be more controlled by the nation and food produced under Swedish regulations hold many "added values" (exceeding EU with over 800 regulations). Meaning that local, Swedish food is more sustainable in a Swedish context. General demand growth for vegetables and plant-based foods was satisfied by import, as Swedish production didn't meet demands due to the climate and lack facilities.

Many actors shifted their promotional activity from organic to other sustainability categories such as local food, partly because of reasons of survival through self-sufficiency, but also to strengthen Swedish farming and national financial growth.

Apart from the highlighted climate issues, the importance of a healthy natural environment and healthy non-degenerative food production methods were shaded

in the rumble of the many entries of sustainability dimensions and aspects. The organic labelled food category stopped growing but wasn't obliterated, or succumbed to what Schumpeter called "creative destruction" (Śledzik 2013) from other growing food categories but continued at a stable level of market share.

The current period, 2020-2022

Swedish food system organisations (Figure 3) are still developing their sustainability definitions, aims and activities. Issues of sustainability in the food system seem to be confusion surrounding the idea and communication of healthy and sustainable diets, risk of government bodies acting in silos, retailers' profit aim before other values, lack of understanding of the societal benefits of organic food, lack of the supply of local sustainable food and contextual retail regulations, lack of support of sustainable primary production, lack of unity between food system actors in their aim for a sustainable food future, to mention some.

Future to come

Expected disruption from crises (war, pandemics, climate, and environmental issues) brings the need for a retake of Swedish food sustainability. Global food supply will be affected, leading to problems of survival and a need of recognizing the importance of year-round availability of local food with low environmental footprints. The environmentally sustainable food category needs to be revived, currently named "organic food". Apart from bringing short and long-term environmental excellence, there are also many connected social benefits, e.g., leaving natural lands and waters clean and unharmed and avoiding negative effects on food chain workers and plants and animals (with their beneficial long-term effects on humans). Social-organic benefits in food production are in favour of this generation and the next. Further food categories to be added to Swedish sustainable food are Swedish beef (and other meat) and dairy, supporting year-round food availability with many environmental benefits.

Organic labels need to adapt. Ideas evolve (Ridley 2015), just like the idea of organic and sustainable food has (Figure 22, page 51). New circumstances can affect food supply and food availability, increasing the need of efficiently and locally produced food. Both organic labels lean on sustainability but neither have adapted their frameworks to what Porter (2006) refers to as their "environment", by including the social sustainability of national food availability. Efficiency, affecting price and competitiveness, could be an aspect to pick up by both labels. Local food might be difficult for EU organic label to adopt, but easier for local the KRAV label.

Innovation is needed to improve local shortcomings. The glimpse of the disruptive future implies the need of growing the Swedish and organic food categories and a

focus on innovation within both. The main issues are the Swedish year-round vegetable growth in a cold climate, the emissions of Swedish meat and dairy production and that organic production is less efficient compared to conventional food. Developing and innovating foods of Swedish origin, produced with effective and environmentally friendly methods, and conservation methods, should be on the national food industry innovation agenda and supported by all in the food system.

Sustainability legislation on retail supply. The creativity of profit-driving organisations is often seen as the engine of economic growth but setting boundaries is important as profit aims might subvert sustainability. Legislation can help keep corporative actions within limits of health and sustainability, by e.g., regulating the amount of GHG emissions that a retail store may sell or limiting the amounts of unhealthy foods available in store. Hopefully, the food retail industry would react by suggesting healthy and sustainable foods and pressuring food producers to stay within the boundaries. Legal actions could also be to "internalise externalities", letting consumer prices mirror environmental damage connected to a product (Figure 14, page 38), which would increase prices and reduce demand for conventional food, and have the opposite effect on sustainable food.

Introduction of government agency sustainability leadership. Agencies are important actors that can support but also overthrow sustainability endeavours. Agencies are engaging in a variety of sustainability activities but have conflicting targets within their purposes (example in Figure 18, page 42). It seems that agencies do not individually regard all sustainability aspects, implying the need of instilling cross-agency leadership to avoid agency silo-thinking and communication. The sustainable direction needed includes safeguarding possibilities for generations to come and for people farther up the food chain, and to dispel sustainability confusion among consumers.

A wider view of sustainability means needs of label adjustments. Sustainability has outgrown organic and the many present labels and brands confuse consumers, suggesting to develop of one label with many sustainability aspects; 1) produced locally 2) with organic 3) and effective methods (like large-scale), 4) vegetarian or plant-based 5) or of animal production, and 6) levels of healthiness and nutrition, 7) low emissions, 8) and resting on a broader base of sustainable working conditions (Figure 23). Label adjustment could help dissipate the confusing mist of the many current consumer messages in retail stores.

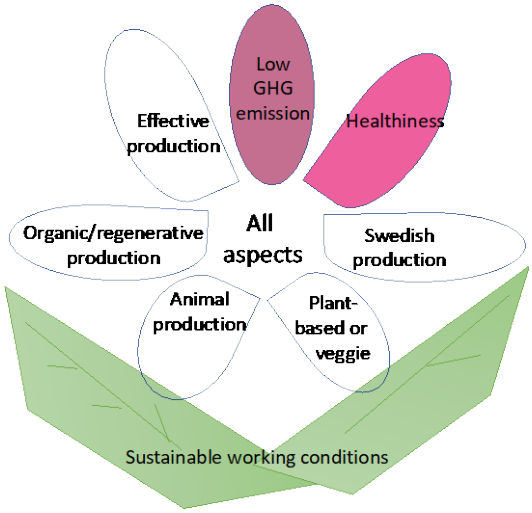

Figure 23 "All" aspects of a new possible food label.

6.1 Limitations of this research

Eight voices, albeit from persons heavily integrated and knowledgeable of the Swedish food system, are not enough to foresee all possible past and future perspectives, but the group of interviewees chosen can give a fair indication. The interviewer and researcher's effect on the final material should also be taken into account when evaluating if the gathered research gives a fair explanation of both past happenings and the foresight of what might come, the latter of which, according to Suddendorf and Corballis (2007), can be liked by a mental journey into the future that might never become, but can be used to assure needs of the future.

7. Conclusions

This chapter reconnects and summarises key findings to the thesis aims to identify the reason for the recent decline of the organic labelled food market share growth in Swedish retail and understand its future developments.

Answers to research questions

The declining trend of the organic market share in Swedish retail before 2020 can be ascribed to changes in the national mental landscape due to expected disruption in the global food system from crises (e.g., climate issues, war, pandemics etc.) and the development of the complex concept of sustainability. National food production and efficient agricultural methods are seen to support national survival and have jointly elevated Swedish food on the public agenda. Other pressures on organic food have been novel sustainability dimensions, retailer brands and labels. The Organic food category evolved and became part of the Sustainability food category joined by local, plant-based, vegetarian and climate friendly food.

From a Swedish point of view, self-sufficiency is a sustainability aspect, as Swedish food supports both the environment and national self-sufficiency. Since Swedish climate is cold and discourages year-round agriculture, Swedish meat and dairy production should nationally be acknowledged as supporting year-round food supply and added to the category of sustainable food. Swedish food system innovations should focus on developing year-round vegetable production, food conservation and reducing GHG emissions in meat and dairy production.

Socio-environmental sustainability (like unhealthy effects on humans from environmental degradation on lands, waters, plants, and animals), present needs for integration of long-term environmental care in Swedish food production methods.

The labels, EU organic and KRAV, have not adapted to the changes in the Swedish mental landscape regarding Swedish and efficiently produced food, and need to move their positions forward regarding farming methods, being more supportive of food producers and including new, sustainability aspects such as that of local food supply, production efficiency, and adapting their consumer communication.

Swedish government agencies are conflicted by internal sustainability aims and do not individually cover the full sustainability dimensional palette. This speaks for the need of instilling an overarching agency sustainability leadership, to optimise governmental activity, avoid agency silo-thinking and lead public communication from a joint agency perspective. Legislation can guide the profit driven food retailers to offer food availability within sustainable and healthy boundaries.

Suggested continued work on the topic

The character of this study gives many possible spin-off areas to research further, such as 1) investigating the development and innovations of Swedish vegetable and plant-based foods and conservation methods, 2) identifying the optimal sustainability label of the future, 3) identifying the most effective legal tweaks directed to Swedish retail to improve healthy and sustainable food availability in stores, 4) investigating agency solutions to optimise sustainability aims of the Swedish agencies, and 5) strengthening the findings of this research with data.

Summary and reflections on this research

Admitting that the first thought when seeing the drop in organic sales was that of dismay, this research has elucidated a new picture, namely that Sweden might not be the culprit country that slowed organic sales, but rather a world citizen trying to master the complexity of sustainability of the food supply, at the unfortunate (hopefully only initial) cost of organic labelled food.

Contributions

This study contributes with insights the development of organic food market share in Sweden was affected by many changes in the political and societal landscape between 2015 and 2020, which led to a decline in market share growth. The study also contributes with the insight that from a Swedish sustainability perspective local food can be considered sustainable which could redefine labelling of Swedish meat, dairy, vegetable, and plant-based food. The Swedish local perspective also needs to be acknowledged by organic or sustainability labels. Another contribution is the identification of inconsistency within and between Swedish government agencies' sustainability aims. The final identified aspect of the Swedish food system is of the importance of the Swedish food retailers, their profit aims and their food supply of sustainable and healthy food, which affects consumer food choice. For societal and sustainability benefits retailers' food supply need to be harnessed by legislation.

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Popular science summary

The food system is a large contributor to environmental issues and many countries have set targets for environmentally friendly food production, often called “organic”. The organic food market share has grown in many countries but not in Sweden. By interviewing Swedish food system professionals this paper explains the organic labelled food market share decline and foresees its future development.

The Swedish Organic category, together with vegetarian, plant-based, climate-friendly, and local food, merged into a new Sustainability food category. Coming crises are expected disrupt the food supply which has increased the awareness of national self-sufficiency as a sustainability aspect. Swedish food should be considered sustainable in Sweden. The organic food market share growth declined in company of sustainability and local food but with a stable position since 2016.

Looking to the future, the new sustainability category contains both organic and Swedish produced food. It will ideally be produced more effectively, optimising limited farming lands. The Swedish climate makes year-round food production difficult and food innovations are needed to increase self-sufficient and provide local meat and vegetables in every season. Production methods will be more efficient, climate-friendly, and organic and less burdening to farmers.

Fertilizers and pesticides have harmful effecs on e.g., waters, lands, and animals and this affects humans. Environmental sustainability of farming needs to be taken seriously for current, future generations and people in the food supply chain. Swedish government agencies don’t cover all sustainability dimension and have conflicting aims indicating need for agency leadership for the sustainability activities of governmental bodies. There is also a need for legal guidance of retail stores to keep the food available to the population both sustainable and healthy.

The two organic labels available in Sweden, the KRAV label and the EU organic label, have not adapted to the Swedish sustainability needs of increasing food produced in Sweden, nor to the need for efficient food production methods. This makes room for either label adjustments or the making of a new food label to cover the novel sustainability aspects that have been uncovered during the latest years.

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Anne Dominique Vos, Enskede, June 2022

About the author

Anne Dominique Vos has an academic profile from Sustainable Food Science, IT and Business, and over twenty years of experience of business development and business innovation in industries like banking and fashion retail. She has also founded and headed an online magazine - for a sustainable future.

Appendix 1 – Interview questions

	Interview questions
1	How does your organisation define sustainability? / What is sustainability for your organisation?
2	What would you say was the organisations view and direction of sustainability from 2015-2020?
3	Did the concept (idea) of sustainability change in your organisation 2015-2020?
4	What were the competing ideas with organic labelled food during 2015-2020?
5	Currently, has sustainability as a concept reached a steady state or is it continuing to evolve within your organisation?
6	What does your trend analysis and business intelligence show regarding the development of organic labelled food?
7	Does your organisation have a preferred future scenario or vision for sustainable or organic labelled food?
8	What change drivers to you see that have influenced the sales trend of organic labelled food during 2015-2020?
9	What drivers do you see that might influence sales trends of organic labelled food ahead/in the future?
10	Which were the underlying ideas (mental models or values) that led to the decreased growth of organic labelled food in Sweden during 2015-2020?
11	What do you see as new niche ideas or mental models that are currently forming the picture of sustainability - and how do you think they will affect sales trends ahead?
12	How did you organisation prioritise and value organic labelled food during 2015-2020?
13	How does your organisation value and prioritise organic labelled food today - spring 2022- and why?
14	Do you consider the current direction of Swedish food retail sales heading in a sustainable direction - from an overall/holistic perspective?
15	Which actors in the food system could be more active in increasing sustainability?
16	Do you see any target conflicts regarding organic food in your organisation?

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