

## Starting-Up Alternative Food Systems

Understanding the potential of value-based supply chain start-ups to localize the food system in Germany through a Multi-Level Perspective

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## **Abstract:**

As the global food system fails to cope with its social and environmental depletion, Alternative Food Systems (AFSs) have emerged. While previous studies have focused on localization efforts through consumer and producer food initiatives, emerging start-ups which act as mediators between the farmers and consumers have been neglected.

Therefore, semi-structured interviews with seven different start-ups in Germany were conducted to understand their potential to contribute to a stronger AFSs commitment within the German food system. The material was analysed through a coding framework guided by a Multi-Level Perspective on transition pathways.

The results show that the start-ups' strategies are highly diverse due to different degrees of regime interaction. Start-ups which oppose regime practices are less successful in scaling-up their businesses than those adopting common regime practices, but they are a stronger engine for sociotechnical innovation. The diverse empowerment strategies can benefit to transition the German food system along AFS characteristics as it may bring along a symbiosis of learning and legitimization discussions.

**Keywords: Sustainability Sciences, Scaling-up, Niche innovation, Supermarket regime, Localization**

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## 1. Introduction

Over the last decades, the global food system has been criticised for being unsustainable and unjust (Schut et al., 2021; Schneider et al., 2016; Rucabado-Palomar & Cuéllar-Padilla, 2020). Against this backdrop, Alternative Food Systems (AFSs) emerged, which aim to establish new relationships between actors and institutions ranging from production and distribution to consumption (Schneider et al., 2016). Combining ecological farming and a localized food system, AFSs aim to transition the food supply chain in a sustainable direction while providing a fair income for farmers (Zanzi et al., 2021; Sage, 2014; Maye & Kirwan, 2010; Milestad et al., 2017).

While the potential of AFSs seems immense, they currently only cover a niche market (Schneider et al., 2016). Accordingly, a new discussion has emerged on how to scale up AFSs (Clark & Inwood, 2016; Fleury et al., 2016). Scaling-up of AFSs, which at their core localize the food chain, may seem contradictory. Therefore, the discussion centres on how AFSs can spread while maintaining their commitment to the environment and increasing the overall volume of food being sold through AFS (Clark & Inwood, 2016). A potential solution could be the adoption and imitation of AFSs by a broader range of actors which are committed to AFSs (Clark & Inwood, 2016).

To date, studies of AFSs have focused on actors which shorten the food chain to consumer-producer interaction, eliminating all intermediates (Beingessner & Fletcher, 2020). However, a new set of actors emerging in Germany are start-ups aiming to localize the food system through novel business models along the values of AFSs to commit to environmentally benign farming methods and fair income for producers. Start-ups are defined as newly founded businesses which aim to grow and scale through novel innovation practices which promise profitability (Cavallo et al., 2021). The specific novel innovations are diverse – ranging from box schemes, online markets to self-serving stores – but are united in the focus to digitalize and modernize the system while promising sustainable and socially-just sourced local food. Considering the general scepticism how AFSs actors can scale up to move beyond a niche market while staying committed to their values (Clark & Inwood, 2016; Fleury et al., 2016), more attention to emerging actors should be given.

Accordingly, the aim of this thesis is to understand the role of start-ups engaging in AFSs to transition the German food system along the values of AFSs, asking the research question: *To what extent can value-based supply chain start-ups contribute to a sustainability transition of the German food system?* To investigate this, this thesis studies seven different businesses which aim to revolutionize the German food supply system through modernising the distribution while being committed to the values of AFSs.



This thesis operationalizes the Multi-Level Perspective (MLP) of sustainability transition studies to analyse how start-ups can contribute to a scaling-up process of AFSs. By doing so, it will contribute to the discussion of AFSs in Sustainability Sciences, which conduct problem-driven research aiming to link knowledge to action (Miller, 2013). It is argued that to fully understand AFSs and their potential to transition the food system, all actors who identify with the concept should be included to represent the multiple values involved. The transdisciplinary take, which requires knowledge integration from outside the academic community (Spangenberg, 2011), will be enriched by including the start-ups and their multiple values affecting the discussion of AFSs.

This thesis is divided into four sections: The first section introduces the German food system to set the geographical scale of the study. This is combined with the academic debates surrounding AFSs with special consideration to the limitation of scaling-up AFSs. The second section introduces the theoretical MLP underpinnings of this thesis and how sustainability transition pathways occur. Furthermore, the sustainability potential of AFSs is discussed, drawing from Forssell and Lankoski's systematic literature review (2015). Guided by the theory, the method section explains how the start-ups were sampled, the interviews were conducted and later analysed based on a coding framework. This is followed by the analysis which examines the self-understanding of the start-ups through MLP terminology. Furthermore, their sustainability performance is critically examined and combined with a discussion how their own understanding and sustainability performance can enable a sustainability transition of the food system and the implications this has. The thesis concludes by tying the findings back to the wider debate and giving future research recommendations.

## **2. Setting the Scene: Literature Review**

The following section introduces the German food system in which the start-ups operate. This leads to the academic debate of how AFSs can transition the food system along sustainable and social standards and introduces how potential barriers in scaling-up AFSs can potentially be overcome.

### **2.1. The German Food System**

A report of the German environmental ministry concluded that the whole German food system, from seed production to consumption and disposal of food, is not sustainable (Schrode et al., 2019). Schrode et al. (2019) identified that the current state of the German food system is characterized by rationalization, specialisation, and concentration due to economic, political, and social path dependency. They conclude that as the current food system is barely meeting the national goals for

environmental sustainability, animal welfare and health protection, there is an urgent need to transform to a sustainable system.

Currently, most consumers buy their food in supermarkets and discounters with a low-price spectrum which leads to price pressures on the producer's side, and a normalization of cheap food with low ecological, social, and ethical standards (Schrode et al., 2019). This intensifies the competition of food prices and leads to unequal power relations between the supermarkets and the producer when negotiating prices (BMEL, 2019).

Nonetheless, Schrode et al. (2019) identified a potential of change as consumer awareness of the social and environmental impacts is growing; consequently, the demand for more ecological and regional sourced products has also increased. A study of the Heinrich-Böll Foundation found that fair working conditions in agriculture as well as an environmental and social feasible food system are very important for consumers (Heinrich-Böll-Stiftung, 2019).

While experts argue that a re-localization of the German food system would enable a transition towards sustainability, they are questioning how feasible it is due to the decade long paradigm of "growing or leaving"<sup>1</sup> (Schrode et al., 2019). But as the negative social and environmental externalities of the current supermarket and discounter regime continue to grow in Germany, as well as globally, a political will to address the issue is seen. Accordingly, alternatives to the food system are needed to transition the conventional system.

## **2.2. Alternative Food Systems**

As the conventional global food system is one of the greatest accelerators of climate change and social injustices (Van Der Ploeg et al., 2000), alternative food systems (AFSs) have formed in the struggle against the capitalisation of agriculture, in both research and practice (Born & Purcell, 2006). Van Der Ploeg et al. (2000) define these systems as Eco-Ethical Driven Agri-Food Economies which are, in contrast to the global agri-food economies, built around new farming and food distribution practices to transition the food system. The emphasis is placed on shortening supply chains by the re-territorialisation of food chains as well as sustainably sourced food (Berti & Mulligan, 2016; Beingessner & Fletcher, 2020).

While AFSs are diverse in their practical realization, several common themes can be identified. Firstly, farming practices based on territorial diversity, ecological, and biocultural principles and multifunctional diversification are introduced to counter the environmental externalities of

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<sup>1</sup> German: Wachsen oder Weichen

industrialized farming (Berti & Mulligan, 2016). But AFSs go beyond the farm, redefining the relationship between actors within the food supply chains from production to consumption (Schneider et al., 2016). Therefore, farmed products are marketed to consumers through short supply chains ranging from farmers' markets, community-supported agriculture, box schemes, solidarity-based purchasing groups, urban agriculture to community gardens where producers can sell their products directly to consumers (Berti & Mulligan, 2016). Emphasis is placed on high-quality foods marketed directly from the producer to the consumer, to ensure higher prices for the producers (Schneider et al., 2014).

If AFSs are successful on a broad scale, the promise of re-territorialization could strengthen the direct relationships between consumers and farmers (Hebinck et al., 2014), which would lead to a stronger agency of farmers in the agri-food system while mainstreaming sustainable farming practices (Beingessner & Fletcher, 2020). But the effectiveness of scaling-up AFSs beyond niche market has been questioned (Forssell & Lankoski, 2015). Although many successful implementations in the US have been studied, 98% of all food is still being bought in supermarkets (Fischer et al., 2015). Rucabado-Palomar and Cuéllar-Padilla (2020) argue that these traditional AFSs are not able to meet the expectations created around them due to several barriers small- and medium-sized farms face when restructuring. This strong focus on shortening the supply chain to its core requires the infrastructure for farmers to sell their products directly to consumers, which is time and work intensive (Seyfang & Smith, 2007).

Accordingly, the focus of AFSs on localizing and shortening of supply chains to producer-consumer interaction became more contested. Born and Purcell (2006) criticised that AFSs confuse the scale of the supply chain (e.g., local vs. global) with sustainable production methods which they termed the 'local trap'. While localizing should be acknowledged as an aspect of a sustainability transition, the scale itself has nothing inherent about ecological sustainability, social justice, freshness or quality (Born & Purcell, 2006). Emerging from this discussion are value-based food supply chains (VBSCs) which aim to scale up the promises of these traditional AFSs (Chiffolleau, 2009).

### **2.3. Value based Supply Chains /Scaling-up Alternative Food Systems**

VBSCs follow the promise of traditional AFSs' environmental and socio-economic benefits but broaden the supply chain to more actors and intermediaries (Dimitri & Gardner, 2019). VBSCs base their operations on a stronger connection between actors based on AFSs' social and environmental values (Diamond & Barham, 2011). But rather than focusing on the *local* dimension they emphasize the values associated with it and can therefore offer a way out of the local trap.

VBSCs include a broader set of actors which may even include participants from the conventional system if they are willing to incorporate the values of AFSs (Fleury et al., 2016). Through the commitment to sustainable farming, fair prices and supporting the community, VBSCs are theoretically able to avoid the trap of the conventional food system which prioritizes profits over (Mount, 2012; Tovey, 2009). VSSCs are more structured than AFSs in terms of organization as they “borrow” the infrastructure of the mainstream distribution system (Tovey, 2009). Furthermore, VBSCs accept that AFSs are not immune to power dynamics while acknowledging that the conventional food system has benefits for the consumer such as low prices and convenience (Clark & Inwood, 2016). VBSCs range from food hubs, midscale value chains, to spatially–proximate short food supply chains (Clark & Inwood, 2016).

But appropriating existing infrastructure while aiming to transform the conventional system is accompanied by a hybridity: Clark and Inwood (2016) found as retailers increased in scale, their distribution channels had to be streamlined and formalized, which led to a certain degree of loss of their commitment to trust relationships as well as the local scope, which they aimed for in the start and is a core value of AFSs. Fleury et al. (2016) found that due to the actors having to be economically viable, it is sometimes difficult to pay fair prices and the environmental commitment to exclusively market organic products might be renegotiated. Despite there being a general optimism that higher and equitable prices will be paid by consumers for additional environmental and socio-economic benefits, in practice paying higher prices can be a struggle for consumers, as shown in a case-study of an American Food Hub (Dimitri & Gardner, 2019).

Studying the producer’s perspective of the scaling-up process of an Austrian box scheme, farmers saw a further growth potential, but were partially sceptical about the desirability of continued expansion, due to stronger price pressure and loss of local and sustainable production. Smaller producers were not large enough to meet the growing demand and the box scheme returned to buying from larger producers (Milestad et al., 2017).

Thus, the ability to stay committed to value-based relationships must be carefully analysed when studying new VBSCs actors. They have better scale up potential but there is a danger to lose their AFSs commitment along the way if those are not constantly re-evaluated. Whether these issues exist in the German start-ups must be examined. Currently, studies of profit-driven European initiatives have been on farmers who diversify their marketing strategies by scaling-up their production and including other providers (Milestad et al., 2017; Fleury et al., 2016). Studies concentrating on entrepreneurs from outside the farmers’ communities, have focused on the US (Dimitri & Gardner, 2019).

## 2.4. Argument and RQ

From the discussed literature, the thesis draws three conclusions: 1) The German Food System in general and distribution system in particular is not sustainable (Schrode et al., 2019) and therefore in need for sustainability transition. 2) AFSs offer a better way to deal with the negative externalities but struggle to move out of their niche due to a lack of efficiency, infrastructure, and work force. 3) VBSC actors which are hybrids between the conventional system and AFSs have the potential to incorporate the AFSs potential into a more efficient system. However, those studies, have so far focused on a small range of actors particularly, in the European context where studies have either focused on non-profit actors or actors from within the farmer community. Within the identified conflict of interest in scaling-up processes between economic profitability and, social and environmental commitments, it is relevant to bridge this gap. Accordingly, there is a need to broaden the research agenda to new actors. Therefore, this thesis aims to contribute by asking *to what extent can VBSC start-ups contribute to a sustainability transition of the German food system?*

To answer the research question (RQ), the thesis proposes two sub-questions, which help structuring the research:

SRQ1.) How do the start-ups themselves identify their contribution to a sustainability transition of the food system?

SRQ2.) How do the start-ups incorporate AFSs characteristics in their VBSC business models?

## 3. Theory

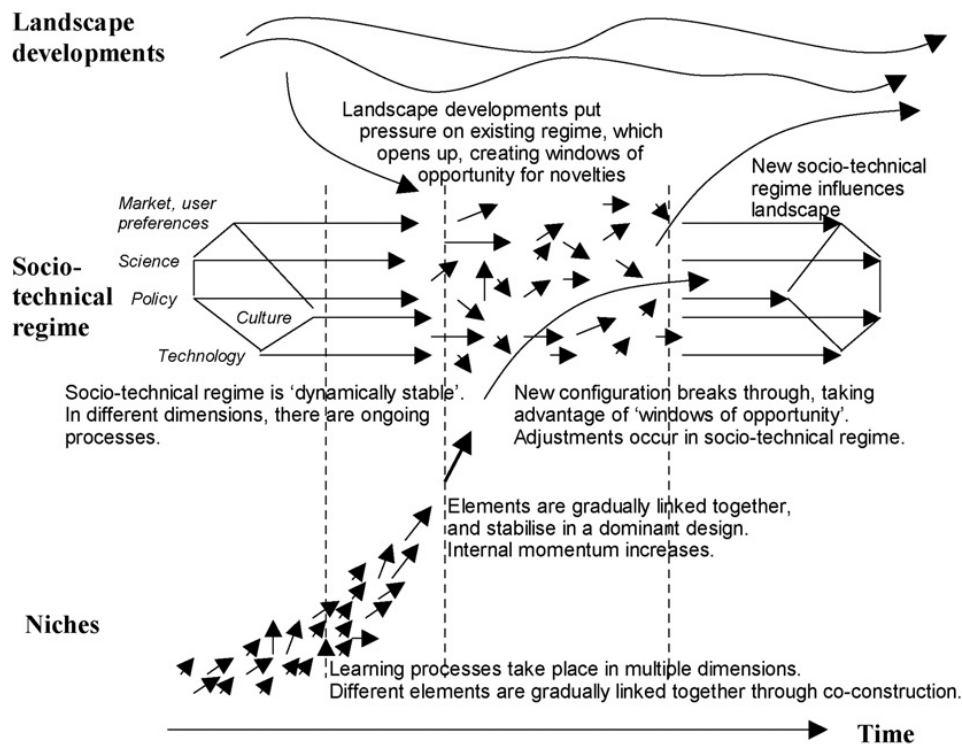
To answer the research and sub-research questions, the next section discusses theoretical considerations more in-depth which will be integrated into the methodology of the thesis. First, the Multi-Level Perspective (MLP) on sustainability transitions is introduced, which is the most featured transition theory in studying the food system and captures the multi-dimensionality, multi-actor processes, and dialectic relationship between the conventional and the alternative food system (El Bilali, 2019). Special consideration is given to how the niche actors' values and agency influence chosen business models and how they contribute to a scaling-up process within the limitations of scaling-up AFSs. In a second step, a framework for assessing the sustainability potential of AFSs is introduced by using Forssell and Lankoski's (2015) systematic literature review.

### **3.1. Transition Theory – Multi Level Perspective**

Sustainability transitions are periods in which opportunities for change open within a socio-technical system to overcome structures which the current dominant system is unable to adequately respond to (Marsden, 2013). These changes (or how changes can occur) in the socio-technical dominant system are studied within the MLP through interactions between three levels: the landscape, socio-technical regime, and niches (Darnhofer, 2015). The term socio-technical refers to technological as well as social innovation (Geels, 2011). Those include technological innovations, tangible structures as well as changing social norms, which are ‘intangible and underlying deep structures’ (Geels, 2011, p. 31).

The socio-technical regime is classified as the dominant system which is a relative stable entity of actors of the market, science, policy, and technology and act based on common structures, cultures, and norms (Marsden, 2013). While the regime level is only briefly studied in food system literature (El Bilali, 2019), it features an intensive and industrial food sector, global supply chains (Marsden, 2013), neoliberal policies and corporate domination (McMichael, 2015). The food regime is characterized by a high degree of lock-ins (El Bilali, 2019), which are processes that systemically excludes competing technologies, views and practices to create resistance from within the regime that may lead to ignorance of landscape change (Foray, 1997). For example, food regime actors often lobby and form alliances to keep their power (Duineveld et al., 2009).

How successful stabilizing strategies are, depends on the landscape level, on which the regime’s power, influence and survival ultimately depends (Marsden, 2013). When landscape changes occur, they can destabilize the regime (Geels, 2011) (see Figure 1). Landscape trends destabilizing the food regime grow and range from economic resource depletion and competition to climate change (Marsden, 2013).



**Figure 1.** Multi-Level Perspective (Geels, 2002, p. 915)

The graph shows how sustainability transitions occur. Niche actors develop new innovations and gradually link together. When landscape pressures occur which the socio-technical regime is not able to cope with, sufficiently developed niche actors are able to break through and emancipate as a regime actor. Adjustments in the socio-technical regime occur. Copy right license: 5300780008560.

Due to the regime's incapability to deal with landscape pressures, the niche level can gain momentum: Niches are seen as outside of the dominant regime and are sources of innovation and change (Ilieva & Hernandez, 2018). They identify solutions to landscape pressures which the regime is unable to deal with and through this can contribute to a sustainability transition (Forsell & Lankoski, 2015). While the concept first referred to protected spaces such as research projects, within food system research, niches became a synonym for alternative food systems (El Bilali, 2019).

### **3.1.1. Criticism of MLP**

MLP has been criticised for limited critical engagement with social power, institutional structures, and other elements of social practice (Paschen et al., 2017) and therefore have often been combined with other frameworks such as Social Practice Approach or Strategic Niche Management (El Bilali, 2019). Similarly, Sarabia et al. (2021) argue that transition approaches should incorporate social theories where power, politics and social relations are at the core of social change. Due to the scope of this thesis and aim to understand the VBSC start-ups' sustainability transition potential by analysing their own understandings, it was decided against introducing a second framework and instead paying extra attention to these criticisms during the research process

### **3.2. Niche-Regime Interaction**

The division between niche and regime should not be treated as separate entities as niche innovations do not develop outside but co-evolve, compete or collide with the regime (El Bilali, 2019). Niche actors in the food system are ‘hybrid’ as they adopt roles, infrastructure and practices of the niche and regime level (Sutherland et al., 2015). However, the extent to which they adopt to regime practices differs significantly. Specific dynamics and outcomes of niche-regime interactions is context specific (El Bilali, 2019). If successful, interaction between the levels can lead to a cross-fertilisation that enables reconfigurations of the system (Elzen et al., 2004). Niche-regime linkages enable knowledge exchange through networking even if niche actors may not integrate into the regime (Ingram, 2015). As internal niche processes are diverse and lacking a certain consistent, unified worldview (El Bilali, 2019), they can challenge the regime through different practices.

While some actors develop niche initiatives which are aimed to operate outside the dominant system, others use a combination of market mechanisms to increase their impact while promoting political ambitions questioning the very same food system (Feyereisen et al., 2017; Paschen et al., 2017; Pitt & Jones, 2016). Those empowerment strategies include different niche-regime relations. There are those actors who adopt and mainstream socio-technical practices, e.g., fit and conform, and others which stretch and transform by undermining regime practices through implementing new, innovative business models which are so-called niche-deprived practices (Smith & Raven, 2012).

Drawing from Vivero-Pol’s study (2017) on how normative values of food influenced retailers to adopt specific AFSs, the thesis adopts an individual agency approach which is “understood as motivations, beliefs and values of individual agents steering or influencing the transition pathways” (Vivero-Pol, 2017, p.5). Therefore, how start-ups practice AFSs is ultimately dependent on their understanding of the system and in turn these practices define the scaling-up processes. As the core feature of VBSC-actors is their hybridity which has not been studied in relation to German VBSC start-ups, this thesis uses MLP to understand how they identify their own role in AFSs and which empowerment strategies are used, as this steers which scaling-up processes are adopted, and which transition pathways occur.

### **3.3. Transition Pathways**

Transition pathways depend on timing and nature of interaction between the three levels (Geels & Schot, 2007). Geels and Schot’s typology (2007) shows that the occurring transition rarely means that one niche actor concurs the regime. It is rather the case that niche practices get adopted by regime actors, triggering adjustments in their architecture. Transitions patterns of the food system are



pluralist and often several transition pathways unfold simultaneously (Vlahos et al., 2017; Ingram et al., 2015).

### **3.3.1. Scaling-up Processes**

To gain momentum when landscape pressures occur, AFSs actors must scale up (Mount, 2012). Scaling-up is a mechanism to spread niche innovations to prompt transition by seeking to achieve more and/or having greater impact through expansion and replication (Pitt & Jones, 2016). While conventional scaling-up strategies have achieved this through firm growth and vertical integration, AFSs aim to counter these mechanisms that favour large growers for their efficiency and marginalize small and medium producers (Clark & Inwood, 2016).

Consequently, they need to scale up horizontally to increase the overall volume simultaneously to the intended social, economic and environmental impacts of the food system, not just economic efficiency (Clark & Inwood, 2016). This process can include growing their own business or a replication of their operation by new actors.

As outlined in the literature review, VBSCs are better equipped than traditional AFSs to scale up. However, there are observed tensions due to their hybridity. Studying how normative values on food has influenced retailers to adopt specific AFSs, Vivero-Pol (2017) classified participants into reformists and transformists. Reformists aim for moderate changes, adjustments, and shifts of the structure if core features remain untouched, while transformists want drastic structural changes and re-negotiate core values and balance power (Vivero-Pol, 2017).

These different strategies of empowerment influence the transition pathway. Reformists fall into Duncan and Pascucci's categorization (2017) of isomorphic AFSs which are more likely to adopt practices of the regime ranging from formalised participation rules to organisational forms of the dominant regime. This may foster a stronger agency to scale up their business, but due to pressures to align, they may lose their normative stands to some degree along the way (Duncan & Pascucci, 2017). Transformists fall into the category of polymorphic AFSs as their beliefs include changes in the very structure of the system, making them less likely to conform to the dominant regime. Accordingly, it is harder for them to influence the regime, but if successful they can promote radical changes (Duncan & Pascucci, 2017).

However, this clear-cut division of niche actors has been criticised by Davidson et al. (2016) as most actors of VBSC-AFSs operate between niche and regime, utilizing rules of the dominant regime while aiming to change its very structure. Therefore, the question is rather how and to what extent does

their interaction with the regime effect transition dynamics and processes in the food system (El Bilali, 2019). Studying the creation of the fair-trade dairy label in Belgium, Feyereisen et al. (2017) revealed the tension between being in or against the market: On one hand it maintains close links with the regime, on the other hand, it breaks with the Belgian dairy sector by creating several innovations. Accordingly, stakeholders can use market mechanisms successfully as tool to increase their social impact, but at the same time promote a political project that questions the very system (Huybrechts, 2012).

But the further use of market mechanisms can also lead to the loss of the previously existing environmental and social commitment, as outlined above (Milestad et al., 2017; Fleury et al., 2016). Therefore, the theoretical underpinnings of transformist and reformist VBSC-actors, as well as the tensions in niche-regime interaction in transition pathways, are important analytical tools for the thesis to understand how VBSC start-ups contribute to a sustainability transition of the German food system. But to understand the implications a successful scaling-up process would entail; it is important to introduce the sustainable aspects of AFSs more in-depth.

### **3.4. Sustainability in AFSs**

Definitions of sustainability are problematic when treated as fixed entities (Maxey, 2007). MLP has previously been criticized to overlook sustainability-related normative issues (Markard & Truffer, 2008). At the same time, the discipline of sustainability sciences is characterized by its research purpose to transition our society towards sustainability, rather than a specific set of methods (Spangenberg, 2011). It is purpose-bound and therefore treats sustainability as a normative concept which must be discussed transparently (Kauffman 2009).

This debate includes the relative importance of environmental problems and the values and beliefs they entail (Geels, 2010). At the core of the transition potential of AFSs is to unite environmentally sustainable farming practices with a power redistribution to producers and consumers through localizing the food system, which is the normative core of this thesis. But this also entails, that traps and barriers should be considered.

Taking “local” as a synonym for sustainable would mean to fall into the local trap, as it would assume there is something inherent about the local scale (Born & Purcell, 2006). Therefore, this thesis follows Born & Purcell's (2006) argument that scale should be understood as socially constructed. Accordingly, it moves away from the paradigm of AFSs to shorten the supply chain to producer-consumer interaction and follows VBSC literature which argues that the scale and length of the food chain is not as relevant as following general AFSs characteristics (Beingessner & Fletcher, 2020).

Forssell and Lankoski (2015) conducted a systematic literature review on AFSs characteristics, which serves as a definition of AFSs' sustainability in this thesis. They structured sustainability impacts of AFSs in environmental, economic, and social sustainability (see Table 1). Direct impacts of AFSs are wide ranging and cover all three dimensions of sustainability from improvement of environmental sustainability, employment creation and added value for producers, to increasing consumer knowledge and health. Furthermore, they identified indirect impacts which include increasing learning and participation in the food system leading to potentially more informed, aware, and empowered consumers and producers (Forssell & Lankoski, 2015). Other sustainability strategies are however outside of the scope of AFSs, for example reducing meat consumption (Morris & Kirwan, 2006).

**Table 1.** Suggested positive direct linkages between AFSs characteristics and sustainability (Forsell and Lankoski 2015, p. 69.)

<b>AFSs Themes</b>	<b>AFSs characteristics</b>	<b>Environmental Impacts</b>	<b>Economic Impacts</b>	<b>Social Impacts</b>
<i>Requirements for products and production</i>	<hr/> Natural Food <hr/> Environmentally benign (organic) <hr/> Small scale, artisanal, non-industrial diverse <hr/> Territorially embedded	<ul style="list-style-type: none"> <li>• All aspects of environmental sustainability, incl. animal welfare</li> </ul>	<ul style="list-style-type: none"> <li>• Added value for producers</li> <li>• Employment creation</li> <li>• Expanding markets for producers</li> </ul>	<ul style="list-style-type: none"> <li>• Increasing consumer health</li> <li>• Increasing producer’s health</li> <li>• Biodiversity</li> <li>• Crop Diversity</li> <li>• Preserving traditional and regional production</li> </ul>
<i>Reduced Distance</i>	<hr/> Physical Distance <hr/> Value Chain Distance <hr/> Informational Distance	<ul style="list-style-type: none"> <li>• Less “food miles”</li> </ul>	<ul style="list-style-type: none"> <li>• Supporting local economy</li> <li>• Added value for producers</li> </ul>	<ul style="list-style-type: none"> <li>• Fresher food</li> <li>• Local production/food security</li> <li>• Affordable food</li> <li>• Increasing consumer awareness</li> </ul>
<i>Governance</i>	<hr/> Redistribution of power <hr/> Sharing of risk and resources		<ul style="list-style-type: none"> <li>• Negotiation power</li> <li>• Reduced economic risk</li> <li>• Combining resources</li> </ul>	
<i>Strong relationships</i>	Social embeddedness, Trust		<ul style="list-style-type: none"> <li>• Added value for producers</li> </ul>	

Simplified version of Forsell and Lankoski’s (2015) systematic literature review which reviewed AFSs research and categorized which sustainable outcomes specific AFS characteristics have. The AFSs themes have specific characteristics of food production, sourcing and distribution which are grounded in the fundamental value of a fairer food supply chain which is not harming but enhancing the environment. These practices in turn have specific positive environmental, social, and economic impacts which could transition the food system into a just and sustainable one.

However, sustainability promises of AFSs are wide ranging offering great leverage points to shift to a sustainable food system. However, it is important to consider how it plays out in real-life food networks. Real-life AFSs vary in their characteristics and do not automatically include all aspects (Forsell & Lankoski, 2015). Therefore, it serves as a guiding framework on how VBSC start-ups incorporate different features of AFSs in their work.

The three pillars of sustainability, allow this thesis to answer RQ2 by asking how the VBSC start-ups realized the AFSs characteristics and which difficulties they may encounter. Due to the scope of the thesis, and as no producer and consumer perspectives could be incorporated into the analysis, the

analysis will not be able to prove if the AFSs characteristics bring along the impacts Forsell and Lankoski (2015) found in the literature. Therefore, the sustainability impacts are treated as assumed outcomes when implementing the AFSs characteristics. Nonetheless, further research is highly encouraged to test this hypothesis.

## **4. Method**

The study of AFSs adopts different methodological strands which are united in their qualitative nature. Previous research followed either community-based participatory research (Beingessner & Fletcher, 2020), field studies and focus groups (Fleury et al., 2016), experimental research (Rucabado-Palomar & Cuéllar-Padilla, 2020) or semi-structured interviews and coding analysis (Milestad et al., 2017).

This study followed the latter and conducted semi-structured interviews with members of the seven participating start-ups. Semi-structured interviews combine structure and flexibility during the data selection and are therefore well suited for small sample sizes (Bryman, 2015). The construction of the research design was based on the previously discussed theoretical. The next section elaborates the data collection process and its methodological considerations. Afterwards, the coding framework is outlined, and its limitations discussed.

### **4.1. Data Collection**

32 start-ups were contacted from which seven agreed to an interview. The term “start-up” remains rather undefined in academic discourses (Cockayne, 2019). Nonetheless, it is evident that the term generally refers to newly founded businesses which aim to grow and scale through novel innovation practices which promise profitability and growth (Cavallo et al., 2021). Accordingly, the start-ups were chosen based on several common variables: all start-ups were engaging in different types of local food distribution and advertised their work as local and sustainable based on novel marketing practices. All start-ups articulated their aim to scale their operation in the next years to some extent. All except Flotte Karotte were founded within the last six years. Flotte Karotte was however included as it is part of the organization Ökokiste of thirty box schemes in Germany and is therefore an important actor for the discussion of VBSC actors.<sup>2</sup> Another variable was the geographic scope to be operating in Germany. Myregionalfood does not yet operate in Germany but was included as they

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<sup>2</sup> During the interview, Flotte Karotte did not identify itself as a start-up as they are a well-established company. They however agreed that their business model was based on the other variables used for identifying the interviewees. To simplify the reading of the study, this thesis refers to all participating companies as (VBSC) start-ups.

will launch there within the next year and are located 30km from the German border. Despite start-ups all over Germany being contacted, the responding start-ups are all located in Western Germany.

**Table 2.** Participating VBSC Start-ups

Code	Start-Up	Interviewee	Location	Founding Year	Business Model
SU1	Kistenkrämer	Founder	Hirschfeld	2020	Self-serving stores with a mainly local product range which should cover the daily grocery shopping.
SU2	My Regional Food	Co-Founder	Unterweikersdorf, Austria	2021	Digitalizing and modernizing direct selling of farmers through providing a simple cash-free payment option which funds a connected platform where consumers can find direct-selling farms. Next step is to implement self-serving stores on a franchise system to farmers.
SU3	Flotte Karotte	Founder	Bochum	1996	(local) box scheme with exclusively organic products where customers order online and get the box delivered
SU4	Besserfleisch	Founder	Hamburg	2016	Ethically and sustainably sourced meat production which is locally sourced and delivered Germany-wide
SU5	Himmel und Ääd	Employee	Cologne	2021	online store for organic, local and seasonal products which are being delivered to customer
SU6	Knuspr	Head of Brand and Communication	Munich	2014 (started operating in Germany in 2020)	online supermarket with 30% local food and a delivery time of max. 4h
SU7	Frida Frisch	Co-Founder	Salem	2021	online store for local products which cover daily grocery shopping and are being delivered to customer

The table shows all participating start-ups, the person interviewed, location of the start-up, its founding year, and their specific business model. While their specific business models are diverse, they are united in the goal of selling local products which environmentally benign produced.

The semi-structured interviews were 40 to 60 minutes long. An interview guide was developed, and its guiding questions based on the theoretical considerations of MLP (see Appendix 1). As semi-structured interviews need a specific focus rather than a general notion (Bryman, 2015), the interviews were structured into three sections: 1.) Self-understanding and role within the German food system; 2.) Sustainability approach and experiences; 3.) Trade-offs and Difficulties. The overall

goal was to get an understanding of the start-up and its motivation, beliefs, and values as they can and do differ between actors and influence how they adopt specific AFSs (Vivero-Pol, 2017). Furthermore, it was important to understand how they approach sustainability and which AFSs impacts were adopted and included in their work (Forsell & Lankoski, 2015).

During the interview process, several ethical principles were considered. The participation was voluntarily, and participants were informed about the research purpose of the study. They agreed that the interviews would be recorded and later transcribed. The participants gave their consent that the companies were named in this thesis. It was decided against using the interviewees names and only their positions in the company. The interviewees were interviewed in their occupational position and not as private individuals.

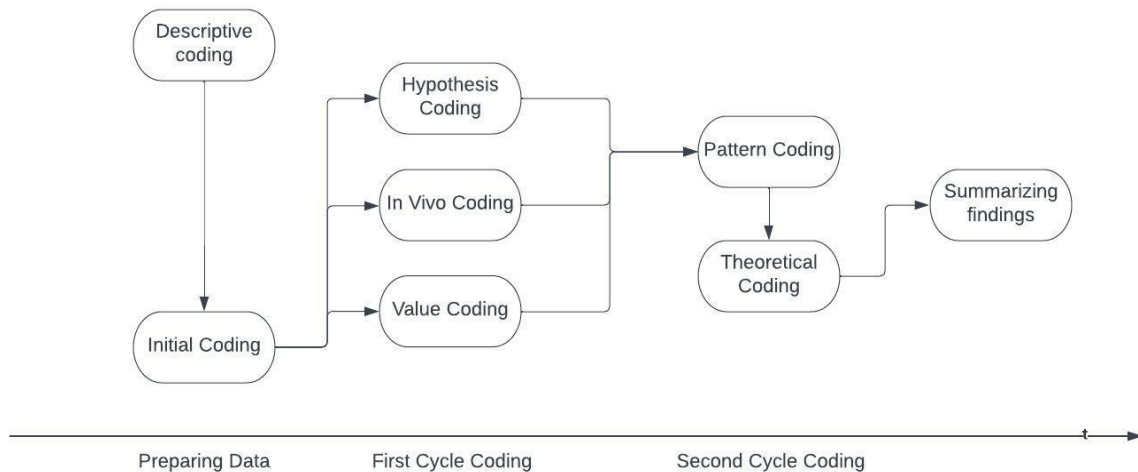
#### **4.2. Methodological Considerations: Interpretivism/Constructivism**

As MLP frames transitions in a certain way, it cannot incorporate all social theory ontologies (Geels, 2010). Therefore, this thesis adopts an interpretivist/constructivist epistemology which is interested in the meaning of words combined with a strong focus on the agency of the studied actors. It perceives actors engaging in sense-making (Weick, 1979), which are acting on a set of own beliefs and may enable transitions if they have a somewhat shared vision (Geels, 2010). It is interested in the meaning behind text and how the set of beliefs influence the actors' decisions to participate in social relations (Weick, 1979). Accordingly, an interpretivist/constructivist epistemology allows the discussion of how spoken and written words show what motivates the start-ups to participate in AFS.

#### **4.3. Coding Framework using MLP**

The interviews with the start-up members were digitally recorded, transcribed, and analysed thematically according to analytical codes (Bernard, 2006). The interviews were transcribed in German and coded in English. Qualitative coding frameworks are fluid and data is constantly revised to understand which patterns become evident (Bryman, 2012). It helps to structure the relatively broad range of data into themes which are then analysed in relation to the research question. Due to the already set goals of the question catalogue, a combination of deductive and inductive coding was used (Miles and Huberman, 1994). Deductive coding allowed me to follow the general theoretical scope of the analysis, while inductive coding helped to keep an open mind to other patterns which became evident (Gronmo, 2020). For the coding the program NVivo was used.

Using Sadana's manual on coding methods (2013), a systematic coding strategy was developed (see figure 2). During the coding process, the strategy was modified and re-evaluated to fit the scope of the thesis. In total, three coding cycles were conducted.



**Figure 2.** Coding Strategy

The flowchart shows the coding process. The transcripts of the interviews were firstly prepared for the two cycles of coding. The coding cycles went from broad to narrow by combining the codes into concrete patterns and opposing views which became evident. These were then systematically coded through the theoretical lenses of MLP and transition pathways.

During the preparation phase, the text was descriptively coded to get a primary categorization of the transcribed text following the interview guide. This essential first step structured the coding process for further analysis and interpretation (Wolcott, 1994). Afterwards, the data was broken down into discrete parts and closely examined to prepare them for first cycle coding to compare for similarities and differences (Sadana, 2013). This initial coding helped to get an initial understanding of the material and led to a broad range of codes.

During the first cycle coding, three different coding strategies were utilized. In-Vivo Coding, to look at what was said (Sadana, 2013), was fundamental to analyse the start-ups' own understanding of their business operation in the food system. This followed the theoretical understanding of MLP that niche actors can scale up new sustainable practices by countering landscape pressures better than the regime actors (Geels & Verhees, 2011) and therefore, the practices of start-ups had to be understood and structured. Drawing from Vivero-Pol (2017) that normative values on food influences retailers to adopt specific AFSs, value coding helped to reflect on the participant's own values, attitudes, and beliefs codes (Sadana, 2013). While the two coding strategies were guided by the theory, the coding was inductive in nature.

Through hypothesis coding, the application of a researcher's pre-determined list of codes (Sadana, 2013) the sustainability potential, drawing from Forssell and Lankoski (2015), could be examined closer. This deductive approach examined how and to what extent the start-ups understand sustainability in their everyday practice.



At the end of the first cycle, a broad set of codes emerged and gave a solid understanding of the start-up's operations, values, and sustainability approaches. The second cycle coding focused on re-organizing and structuring the data to understand the links and differences between the start-ups. Pattern coding helped conceptualize thematic similarities and differences (Sadana, 2013).

These more parsimonious analytical units were then analysed through the theoretical approach of MLP. To classify the start-ups, their understandings of the system were categorized in reformist and transformist start-ups using Vivero-Pol (2017) and Duncan and Pascucci (2017) outlined in the theory section. The theoretical understanding on how reformists and transformists are identified were carefully compared through their specific regime-landscape interaction, adaptation of dominant practices, niche innovation, regime-Niche interaction, and usage of different empowerment strategies. In a last step, the findings were summarised and put into text. Here the analysis was tied back to the wider debate.

#### **4.4. Limitations**

Like all methods, this thesis has several limitations. Qualitative research has the advantage of creating in-depth knowledge of context-dependent cases which makes it difficult to generalize its findings (Bryman, 2012). Coding methods have been criticized for fragmenting data to the extent that they lose the context in which they were said (Coffey and Atkinson 1996). To counter this during the coding process, the codes were constantly revised, and counter checked with the original transcripts.

Furthermore, it is difficult to replicate qualitative studies and they are often criticized for a lack of transparency (Bryman, 2012). Therefore, the finding's generalizability should be treated in light of the seven interviewed start-ups and in the German food system context.

The data should be treated with several limitations in mind. The start-ups studied were the ones which were willed to talk about their work. This might lead to a bias towards start-ups which are more committed to sustainability and are successful. Furthermore, the main source was one member per start-up which might exclude heterogenous opinions within the organization. Due to the short time frame of this thesis, it was not possible to get to know the start-ups in-depth. Especially regarding the conversations about difficulties, trust might have lacked or a general unwillingness to share specific issues within the organisation.

Another limitation connected to lack of trust and time is that only the start-ups themselves were interviewed and not the customers or producers. Therefore, the analysis of producer-start-up relation and customer views are based on the start-up's views, and it could not be verified with other

actors. To counter the issue to some extent, two background interviews with experts<sup>3</sup> were conducted to discuss the findings. However, further research should study the producer perspectives more in-depth.

## **5. Results and Discussion**

The following analysis is divided into three sections: first, the self-understanding and role of the VBSC start-ups is studied using MLP terminology; then the sustainability potential based on Forssell and Lankoski's (2015) systematic literature review is critically discussed using the theoretical discussion of tensions due to the hybridity of VBSC-actors from the theory section. This is combined with self-observed tensions and trade-offs of the start-ups. The last section draws back to the main research question and concludes with further research recommendations.

### **5.1. Self-Understanding of Role in The German Food System**

Using MLP terminology, the section is divided into the identified landscape pressures on the current regime level, and the business models studied from a niche perspective.

#### ***5.1.1. Landscape Pressures on the Socio-Technical Regime***

All start-ups were critical towards the current regime but to different extents. They were specifically critical of the current supermarket system which was described as the source of the issue: while the supermarket is cheap and convenient for consumers, the negative externalities are outweighing the positive aspects. Due to their market power, the supermarket chains in Germany centralized the food supply chain which led to a paradigm of "price over quality", as observed by the start-ups. Therefore, supermarkets can dictate prices to the producers who struggle to produce profitably. Price-dumping was mentioned, while the food production is not transparent to the customer. Generally, consumers are described as unaware of the issues within the system, lacking knowledge of food, and disconnected from the production itself.

Another feature which was critically observed by the start-ups was the global value chains of products which supermarkets sell. While being a comfortable feature for consumers, the long transportation routes are criticized for being unsustainable and favouring cheap food over local food.

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<sup>3</sup> One expert was a researcher from a private research institute which conducted research on direct selling farmers in Germany and the other one was an advisor of the North-Rhine Westphalian Agriculture Association.

Furthermore, three start-ups mentioned that currently politicians generally support the big players in the system due to heavy lobbying, which further strengthens the regime actors. The criticism is in line with the previously outlined German food system by Schrode et al. (2019).

Nonetheless, landscape pressures which supermarkets are unable to cope with sufficiently were observed. Generally, destruction from exploitation of natural resources, ranging from a loss of biodiversity due to large-scale farming/monoculture to CO<sub>2</sub> emissions from transport, were described by the start-ups as unsustainable. Another pressure observed has been the changing mentality and increasing awareness of consumers. While the main population may still not be aware of the production of food, a growing number are questioning which food they consume. Other landscape pressures mentioned by Besserfleisch and Kistenkrämer were the changing world market in the face of Covid and the Ukraine war, and a potential turn to securing national food production.

### ***5.1.2. Business Model from a niche level perspective***

Drawing from Vivero-Pol (2017), the niche actor's own understanding of regime-landscape interactions determines how the start-ups propose innovation of the system. Currently, all actors see direct-selling farmers as the niche actors best dealing with landscape pressures. They provide customers who want to know how their food has been sourced with more transparency, as customers buy directly at the farm. They are described as a maximum of authenticity, more value for producers and more transparency. However, they are less convenient as consumers do not know where to find farmers, they might only sell few products or are not specialised in direct selling which puts extra workload on the farmer, as also discussed by Chiffolleau (2009) as limiting factors for scaling-up potential.

Consequently, the start-ups see themselves as a mediator between consumers and producers. Building upon VBSC actors, they want to give the positive aspects of direct-selling farmers while providing the convenience of the supermarket to a certain extent. While doing so they aim to work on a different set of values ranging from transparency to shorter supply chains and fair working conditions. They follow the VBSC paradigm as the emphasis is not on direct selling and shortening the supply chain to direct consumer-producer relations, but rather want to unite actors based on values as argued by (Fleury et al., 2016).

Generally, all start-ups see themselves as a competitor of the current supermarket and aim to offer an alternative. To what extent, and how, they want to replace them however differs, which can be traced back to their understanding of the regime and landscape (table 4). Depending on how they

prioritize and understand the interaction between the three levels, the start-ups can be divided into three groups.

**Table 3.** Grouping of Start-Ups based on transition pathway literature

	<b>Group 1 “the next supermarket”</b>	<b>Group 2 “daily grocery shopping”</b>			<b>Group 3 “Alternative food contributors”</b>		
<i>Start-Up</i>	<i>Knuspr</i>	<i>Kistenkrämer</i>	<i>Flotte Karotte</i>	<i>Frida Frisch</i>	<i>Besserfleisch</i>	<i>myregionalfood</i>	<i>Himmel und Ääd</i>
<i>Main Regime-Landscape Interaction</i>	Landscape pressures deprive from consumer pressures	Regime unable to create fair relationships	Regime of conventional, industrial farming – env. Degradation	Regime unable to create fair relationships	In-transparent meat production; lack of animal welfare	Exploitation of producers/ farmer in supermarket system	Exploitation of people and nature through supermarket system
<i>Adaptation of dominant regime practices and beliefs</i>	Complete supermarket range  Central logistic (70% of products)	Convenience of regime partially imitated  Buying from wholesalers	Convenience of regime partially imitated  Buying from wholesalers	Convenience of regime partially imitated	Using infrastructure of meat production (e.g., slaughter-houses)	Payment provider using common payment methods	Organic certification
<i>Niche Innovation</i>	30% locally sourced products through VBSC  E-supermarket with larger product range	Majority is locally produced  Self-serving stores	Exclusively organic products  Box Scheme through online order system	Elimination of wholesalers  E-commerce	Localization of meat processing by personal selection of processors  Selling based on demand  E-commerce	Providing new infrastructure for direct selling farms  Exclusively local  Self-serving stores	exclusively a local, seasonal range of products  Elimination of wholesalers  E-commerce
<i>Regime-Niche Interaction</i>	Interact and collide	Limited interaction			Opposing and separating		
<i>Empowerment Strategy</i>	adopting dominant socio-technical practices	adopting dominant socio-technical practices combined while implementing niche-derived practices			undermining the incumbent regime and transmitting niche-derived practices into it		
<i>Classification of transition pathway</i>	Reformist	In-betweeners			Transformist		

The table summarizes the start-ups’ interpretation and understanding of operating in the system. It shows how their understanding of landscape-regime interaction influences to what extent they adapt dominant regime practices and combine them with their own niche innovation. Dominant regime practices refer to infrastructure of the regime such as payment providers, certification schemes, logistics or a food supply chain buying from wholesalers. Furthermore, they include cultural norms of the regime, for example delivering the convenience it provides for customers. Niche innovations refer to the commitment to AFSs norms as well as their digital innovations as online marketing and self-serving stores. The different extent of using niche innovation and regime practices combined with their understanding of landscape-regime interaction led to a classification of used empowerment strategies based on Duncan and Pascucci’s (2017) categorization and were categorized based on Vivero-Pol’s (2017) framing into three groups: Group 1 – the reformist start-up, group 2 - the in-between start-ups and group 3 - the transformist start-ups, which served as units off analysis for the following sections.

Knuspr aims to be as they say, “the next supermarket”. They see the consumer’s preferences of a convenient food purchase while shopping ethically and sustainably produced products at the core of landscape pressures on the regime. As they offer a broader range of products through their e-commerce platform than the physical supermarket, they can include more local and sustainable products. They offer around 30% locally sourced products, while the other 70% are conventional supermarket products. They fit and conform to the regime and fall therefore into the reformist categorization (Vivero-Pol, 2017).

The second group of start-ups are Kistenkrämer, Flotte Karotte and Frida Frisch which aim to replace the daily grocery shopping. Their understanding comes from power imbalances and environmental degradation observed in regime-landscape interaction. They offer a new structure based primarily on locally sourced, environmentally benign, and transparent values while acknowledging the convenience of the supermarket which impacts customers’ preferences. They combine local products with products, which are from outside the region but still follow certain AFSs features such as organic-produced or a personal connection to the producers. Kistenkrämer and Flotte Karotte do also buy some products from wholesalers. Therefore, they do combine fewer dominant socio-technical features than Knuspr with more niche values and practices (El Bilali, 2019). They are placed between a reformist and transformist understanding (Vivero-Pol, 2017).

The last group are Besserfleisch, Myregionalfood, Himmel und Ääd. While their business models are highly diverse, they have in common that their specialization on specific areas of the system than aiming to provide an alternative to the complete supermarket: Besserfleisch – meat production; Myregionalfood – direct selling; Himmel und Ääd – seasonal diet. They criticize the supermarket structure itself and its ability to deal with environmental degradation, animal welfare issues and unfair supply chains, which is why they aim to offer an alternative structure. While the positive aspects of affordable food and convenience of the supermarket is acknowledged, they focus on the consumers’ pressure to transform the system. They can be seen as a “modernized” traditional food system where people buy their food locally but through digitalized channels. They are transformists (Vivero-Pol, 2017) and aim to undermine the regime with new structures which do not aim to change the supermarket but build new structures (El Bilali, 2019). As AFSs are not able to function in full isolation (Sutherland et al., 2015), there is a certain degree of adapting dominant regime infrastructure which is needed for their business model to function as using slaughterhouses for the meat processing which are also used by other regime actors.

The categorization shows that from their own understanding of regime-landscape interaction, the start-ups build different business models and interact to different degrees with the regime level.

While the theory section has shown that a reformist nature is more likely to scale up their practices than transformists, it must first be discussed how their sustainability approaches, deprived from their business models, play out in practice. This is crucial to combine the scaling-up potential of the start-ups with the implications it has for a *sustainability* transition of the food system.

## **5.2. Sustainability Approach**

All start-ups were aware that sustainability does not have a fixed definition and therefore needs to be backed up by their own values and strategies. While five start-ups mentioned that they base their business upon the three pillars of sustainability (ecological, social, economic), the other two also have initiatives and values within their operation. None of the start-ups gave a fixed definition or measurements how they approach sustainability. It was emphasized that sustainability must be within the profitability of the company while being a strong component of the business. Knuspr was the only start-up which did not see sustainability as a core value but as a value which their consumers expect.

### ***5.2.1. Requirements for Products and Production***

All start-ups had specific requirements for products and production, but these differed in the extent within and between the three groups. Therefore, the next section goes through the AFSs characteristics of Forsell and Lankoski (2015).

*Environmentally benign (Organic)* – There is not a clear commitment of one group to organic production: Knuspr, does have a 30% commitment to organic production in its range but also offers conventionally sourced products.

Within Group 2, the commitment is diverse: Flotte Karotte exclusively sells organic certified products, while Frida Frisch and Kistenkrämer aim for environmentally benign production while offering both organic and conventionally sourced products. The reasons ranged from questionable requirements for organic certification, to the wish to include also conventional farmers in the region which might not be organic certified but produce sustainably. Furthermore, the convenience aspect for customers played a role as they wanted to give customers a choice and offer them a broad range of products, making it hard to offer exclusively organic products. They claimed however that they could have an open approach to environmentally benign products due to the spatial connectiveness, allowing personal control of the production. Frida Frisch argued that when this is not possible due to some products such as citrus fruits coming from Italy or Spain in the winter, those had to be organically certified as no personal control could happen.

The question regarding organic production led to a discussion of local vs. organic products in group 2. Non-exclusively organic start-ups argued that it is a form of prioritizing. Organic should also be questioned and can be mass produced. While a combination is desired, they say that it is not always possible and would then prefer local over organic. For them, to have a more flexible understanding of environmentally benign production would help to include farmers with a sustainability approach which are not certified organic. Due to the short distance, the selection of producers is based on personal contact, visits and trust which is preferred over strict requirements, which might leave out farmers which they want to support. The organic start-ups argued that both must be combined, as organic is stricter and local might only be one factor within sustainable production and is only valuable when combined with aspects of organic consumption.

In Group 3, Himmel und Ääd and Besserfleisch<sup>4</sup> exclusively sell organic products. Myregionalfood did not offer exclusively organic food as they do not sell products to the consumer but offer a marketing platform for direct sellers. However, they plan to introduce a certification mechanism in the platform which shows which farmers farm organic or use other sustainable farming methods.

*Small Scale, Artisanal, non-industrial, diverse* - This section should be discussed having in mind that the start-ups do not farm themselves. But generally, all groups aimed to support small-scale farming due to its environmental benefits. To do so, they often include small-scale farmers which do not themselves have the quantity of products which would be needed but the start-ups then combine them with products from other farmers. However, this should be seen within the start-ups general approach to environmentally benign farming, e.g., that for Knuspr this concerned the 30% local products and in group 2, the products directly bought from producers. Milestad et al. (2017) who studied the scaling-up process of an Austrian box scheme, saw that the commitment to supporting small scale farmers was watered down during the process and the scheme relied more on larger suppliers over time. While the start-ups aim to include farms of all sizes, the broader the range of products are, the more the groups rely on larger suppliers including wholesalers.

### **5.2.2. Reduced Distance**

The start-ups were all aware that local does not have a fixed definition. How they defined local however differed. As this characteristic is strongly combined with the localization of the food system, this is what the next section focuses on.

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<sup>4</sup> Besserfleisch sells chicken which is not organic certified due to the relatively low standards of organic chicken production, but the production does exceed the certification requirements and therefore it was decided to be classified as organic in this thesis.

*Physical Distance* – Has been an important factor all three groups but again differed in their approaches. As previously, Knuspr sources 30% locally with a max. 100 km distance. Within group 2, the physical distance definition was more ambiguous. While for Kistenkrämer a general figure was 40km, it is not a rule of thumb, which allows for personal judgement. Similarly, Flotte Karotte and Frida Frisch argued that they always aim to find the most regional solution. Therefore, they also include citrus fruits from Southern Europe in the winter to give their customers a broader range of fruits during the winter months.

Within group 3, Himmel und Ääd and Myregionalfood sell exclusively local products. Himmel und Ääd has a very strict definition as they sell exclusively seasonal food with fruits and vegetable coming from within 20km and manufactured products have a radius of 200km. Myregionalfood does not need a fixed definition as the selling remains on farm level. Besserfleisch does not engage in local selling as they sell their products nation-wide, the physical distance is in relation to the meat production: Their meat is locally processed where the slaughterhouses are only max. one hour far from the farms.

For all three groups, physical distance did not only cover a reduction of food miles but also included values of transparency for the consumers, a reduction of CO2 emission through optimized routes and change to sustainable modes of transport (cargo bikes and e-cars). But just as with a definition for sustainability, there are few concrete requirements and an emphasis on personal judgement.

*Value Chain* - It was observed that all start-ups aim to reduce intermediates within the value chain. How strict this is done, however, differed as also discussed previously as it is strongly connected to the usage of dominant socio-technical regime practices: Knuspr buys 70% which are not local products at wholesalers or the producers themselves, like supermarkets. Within group two, Kistenkrämer and Flotte Karotte include few products from wholesalers to broaden the product range. Flotte Karotte has two wholesalers they buy products from which they know for years and trust. Reasons mentioned were the convenience for consumers, but the usage of wholesalers had a minimalized role. Frida Frisch and group 3 buys exclusively directly from the farmer, or in case of manufactured products, from the producer.

*Informational Distance* - All start-ups engage in some sort of education of consumers. All say they give more information about their products than an average supermarket does. Furthermore, all, except Knuspr who does not wish to educate consumers, give further, critical information about the current food system ranging from newsletters to workshops and blog articles. Within group 2 and 3



education is seen as a personal duty but it is simultaneously a good marketing strategy to bind customers stronger to the start-up.

### **5.2.3. Governance**

The governance aspect is strongly related to the commitment to fair and power-balanced relationships within the full value chain. However, they should be treated cautious as they mainly reflect the start-ups perspective and not the producers or consumers

*Redistribution of Power* - As all identified the producer as being exploited to a certain extent by regime actors, all have buying procedures which should re-balance power in price negotiation.

Knuspr's 30% local products are being bought through a specific purchasing team which ensures negotiations on equal terms through shorter and transparent contracts and personal contact with the producers. In group 2, Kistenkrämer and Flotte Karotte say that personal contact with the producers is accompanied by more transparent and fairer negotiation. Due to the shortened supply chains, it was argued that both the producer and the start-up would have higher margins than regime actors would. Frida Frisch said that they do not engage in price negotiations and the producer would dictate the price.

Similarly, also Myregionalfood, and Himmel und Ääd of group three argued that this works well, as farmers know the value of their products and would not over-charge. Besserfleisch said that they had specific prices which they would like to pay and that most farmers found fair. If there would be occasions where it was not, they talked and found a solution that fit both. As Besserfleisch processes the meat after buying it from farmers, they have a different set of fixed costs than the other start-ups.

*Sharing Risk and Resources* - Sharing of risk by combining resources has not been observed. The focus was rather on reducing the economic risk for producers. The organic start-ups as well as Frida Frisch did so by guaranteeing farmers a market to help when they transit to organic farming. Similarly, Flotte Karotte and Frida Frisch support when farmers want to try out new fruits or vegetables which would usually be imported as the yield due to German weather conditions would normally not be profitable.

### **5.2.4. Strong Relationships**

Strong relationships with the producers were seen as key. All start-ups know their producers personally and visit them frequently. As trust and personal contact was seen as the major control

mechanism for environmentally benign products and a redistribution of power, they are at the core of all start-up's practices. However, as the farmers and consumers were not included in the study, I cannot draw any conclusions how the relationships are perceived from their side.

While trusting relationships have the advantage that the start-ups can be flexible about certification schemes, it can also have disadvantages. Clark and Inwood (2016) found that as retailers increased in scale, their distribution channels were streamlined and formalized by introducing fixed certification models, which then excluded producers which were previously included. This leads to a potential tension how strong relationships can play out if the start-ups increase in size and cannot guarantee personal control anymore.

Furthermore, as no official collectives of farmers were found which would strengthen the producer's power structurally, the producers must trust that the start-ups continue operating as they do. Therefore, further research should study how AFSs' governance characteristics play out in practice. Contrary to farm-cooperative AFSs, the start-ups have the benefit that the farmers do not have to build their own direct-selling infrastructure or invest extra work and time, but also due to the very nature of the start-ups being in the end suppliers, this also keeps farmers in the role of producers. Considering the reviewed literature, this can lead to tensions as seen by Milestad et al. (2017) where not all farmers wished for a scaling-up of the box scheme.

The analysis how AFSs characteristics were incorporated by the three groups showed that the closest connection has been observed in the transformist group, while the reformist group was the least connected when considering its full product range as was also observed in previous research (Vivero-Pol, 2017). Drawing from transition pathways, reformist AFSs are more likely to be successful while transformists AFSs have it harder to influence the regime but if successful are able to promote radical changes (Duncan & Pascucci, 2017). Accordingly, the next section will discuss how the different commitment to AFSs characteristics combined with different empowerment strategies can scale up AFSs in Germany.

### **5.3. Scaling-up Experiences: Opportunities and Constraints**

As discussed in the literature, scaling-up AFSs is difficult due to its core of localizing the food supply chain. They must spread through increasing their volume in all forms (Mount, 2012) while simultaneously staying committed to the intended social, economic and environmental impacts of the food system, not just economic efficiency (Clark & Inwood, 2016). Accordingly, rather than one niche actor scaling-up vertically, a horizontal scaling-up process is preferred. The start-ups agreed

that vertical scaling-up processes were limited due to the localized food system approach, similar to how it has been observed by (Pitt & Jones, 2016).

Therefore, three different strategies were found across all three groups: Knuspr, Frida Frisch, Besserfleisch seek to expand by opening new businesses in new localities with new logistics and producers. Kistenkrämer and Myregionalfood build their model as franchises as they provide the infrastructure to self-employed owners. Himmel und Ääd and Flotte Karotte focused on expanding the customer base within the region rather than expanding to new cities. Flotte Karotte is also a member of the organization Ökokiste, which unites different German box schemes to share ideas, resources, and experiences. Drawing from Clark and Inwood (2016), these strategies are capable of scaling-up the overall volume which increases transparency and strategic partnerships in the overall supply chain and simultaneously the intended social, economic and environmental impacts of the food system and not just economic efficiency.

To what degree the start-ups expressed the wish to scale up their operation however differed: Group 1/Knuspr articulated the ambitious goal to have 30% market share by 2030 in Germany. Due to their aim to restructure the supermarket from an inverted pyramid (local products as the minority in the bottom to brand products in the middle to broad range of entry priced products) to a cake with three equally sized sections, organic and local products would rise in share. This isomorphic empowerment strategy has the advantage that it is likely to scale up successfully as it has a range of products which attracts most customers, from discounter priced products to higher priced local products and provides the same convenience as the supermarket regime. However, looking at the core characteristic of AFSs to counter the monopolistic nature of the food system, it is questionable how such a market concentration can remain true to AFSs core characteristics. While they certainly have more environmental and social consideration than the current supermarket regime (Schrode et al., 2019), it differs significantly from the other two groups.

The other two groups were less ambitious, since their current size of customer base is sufficient to be economically stable. Nonetheless, they expressed a potential of their business models growing in the future and a wish to extend their business.

Group 2 saw their business models as able to cover the daily grocery shopping in the future. However, they did not aim to replace the supermarket. While consumers would still buy at supermarkets, they could imagine that its role in the food system would diminish to a place that would mainly sell imported products they do not provide. Realistically, they however questioned if they would reach the full customers range through their business.

Flotte Karotte and Kistenkrämer question if they will reach price sensible customers as they charge higher prices than the supermarket which many consumers cannot or do not want to afford. Frida Frisch does not have higher prices than the average supermarket (excluding discounters) and therefore argue that it might be more connected to being less convenient than the supermarket. It was often mentioned that Germany has low food prices and a strong price culture, which would influence how customers prioritize food.

The public debate of cheap and affordable food was criticised for focusing on the wrong components. A healthy, seasonal, local diet would not necessarily cost more but would need a change of consumption patterns. Only a small percentage of Germans would not be able to afford higher than discounter priced food. The rest would not want to pay more for their food, would not be aware of the issues of the supermarket or it would be too inconvenient to shop at other places.

Furthermore, due to the customer base which is willing to pay a higher price for food, the observed struggle from the literature is that economic viability – which often counters a commitment to fair prices or environmentally benign products (Fleury et al., 2016) – was not experienced. Rarely, Frida Frisch and Flotte Karotte found that there might be a more sustainable solution, but it would no longer be profitable. However, this leads to the question of how successfully they might contribute to a scaling-up process of AFSs: While they are certainly committed to AFS characteristics, it seems difficult to reach the same number of customers as, for example Knuspr does. On the other hand, all of them have observed a growth in their customer base, especially during the Covid19-pandemic which could lead to a shift in consumer practices.

However, while they can accompany a food culture shift to a certain extent by informing and educating consumers, they agreed that a full shift of mindset in society is only possible with the contribution of political and social stakeholders. The start-ups give politics only a small role in transitioning, but previous research has shown that governance structures must be supportive towards niche innovation for sustainability transitions to be favourable (To et al., 2018). Other constraints mentioned were stabilizing efforts of the regime level. For example, Kistenkrämer criticized the advertisement of supermarkets, which puts their small range of locally sourced products into focus to convince consumers that they are changing their business model.

Group 3 saw a potential that they could sell on broader scales through their initiatives but that would not replace supermarkets. While Besserfleisch and Myregionalfood are operating within a smaller arena than the other start-ups, they saw their scaling-up potential into the regime level rather limited. Besserfleisch said that they certainly aim to be a larger supplier of meat but also identified a

general decline of eating meat as a limiting factor, especially with younger people cutting meat out of their diet rather than looking for sustainable alternatives. Myregionalfood, which aims to digitalize and modernize the direct-selling system said that while certainly more people will purchase from farmers directly in the future, it will only be a part of a society which can cope with the inconvenience of buying at farms. Himmel und Ääd, argued similarly. As being the strictest when it comes to local products, they questioned how to best unite their values and the convenience aspect for customers: If customers buy chocolate regardless, would it then not be better to provide the best, sustainable and fairest option? While they are currently selling exclusively organic, seasonal, and local food, the organizational structure of online ordering and delivery service are like Frida Frisch and Flotte Karotte's. These two have already broadened their products by offering organically sourced citrus from Southern Europe during the winter, to offer more convenience to the customers while still giving a better solution than the supermarket.

Furthermore, Himmel und Ääd said that they have internal discussions to what degree they are activists. They recognized their own impact not only through the broadening of their customer base but also engaging in political discussions or social movements to shape the discussion of local food systems. But how much of their financial and human resources they are willing to dedicate to this work is undecided.

The last group offers the most radical change due to their operation system and commitment to AFSs values. They however also focus on specific arenas in the food system and are therefore automatically not aiming to replace the full regime level. Furthermore, even within their areas, they question if such a strong commitment to AFSs characteristics contribute to a broader change of system. But niche initiatives can also influence the regime through learning and questioning the regime actor's operation (Seyfang & Haxeltine, 2012). Therefore, they can be seen as stirring innovation through which they challenge the regime practices while remaining a niche actor. Especially, regarding Himmel und Ääd's internal debates, it shows that they may not be able to stretch into the regime level but can contribute to a regime shift, for example through activism or developing new local food structures.

#### **5.4. Contribution to Scaling-up AFSs in Germany**

Turning to the main research question, to what extent VBSC start-ups can contribute to a sustainability transition of the German food system, the findings need to be tight back together. The niche of VBSC start-ups and their innovation is diverse, and they cannot be treated as one entity. It is rather their different engagement with the regime level, their different empowerment strategies

ranging from reformist to transformist, which makes them unique. Knuspr's reformist nature which incorporates AFSs characteristics only for 30% of its product range will not bring a transformist pathway, but due to the adaptation of dominant practices such as a broad product range, they have the potential to scale up fast. Group 2 and 3 might have more difficulties to move beyond the niche due to a higher price spectrum, narrow product range or less convenient shopping experience. Nonetheless, they have a growing customer base and are economically stable. While they might not reach all consumers, they are certainly able to test new social and technical innovations and become a stable player in the food system.

Accordingly, the question is not if the niche is sufficiently developed to transition the food system but rather if there is room in the niche for various types of social and technical niche innovation, and if they are able to interact with each other by learning and questioning another (Audet et al., 2017). Rather than focusing on the lack of a common vision as an obstacle, it should be treated as a transition process which brings along a discussion of legitimization (El Bilali, 2019). Therefore, the different AFSs commitment and empowerment strategies should be treated as a potential symbiosis of learning. Himmel und Ääd already questions if they should broaden their product range to non-seasonal products and vice versa, if Himmel und Ääd is successful it can put pressure on regime and reformist niche actors to adapt a stronger AFSs commitment. They do not need to move into the regime level but are able to steer the social and political discussion of sustainability transitions (Seyfang & Haxeltine, 2012). This potential could be further strengthened by connecting each other. Flotte Karotte is already member of the organization Ökokiste which connects 40 different box schemes in Germany where they exchange experiences and developed a manifest of the values they operate on.

From the theoretical perspective that a sustainability transition of the food system is pluralist, and several transition pathways unfold simultaneously (Vlahos et al., 2017; Ingram, 2015), the diversity of VBSC start-ups gives AFSs in Germany a new potential to scale up. A diverse range of internal niche processes and niche-regime interaction leads to durable transitions due to cross-fertilisation that enables a reconfiguration of the system (Elzen et al., 2004). Accordingly, VBSC start-ups contribute to scaling-up AFSs in Germany in the sense that they offer a new set of actors which use market mechanisms successfully as a tool to increase their social impact, but at the same time promote a political project that questions the very system (Huybrechts, 2012). How strongly the social impact and promotion of AFSs characteristics is, will ultimately depend on how successful actors of group 2 and 3 can legitimize their practices and have them adopted by others.

But it also depends on several variables which are beyond the scope of this study. The landscape pressure and the (in)capability of the socio-technical regime to cope with them will in the end determine if and which stream of niche actors can lead a sustainability transition of the German food system. Therefore, it is important to further investigate if the changing consumer awareness is strong enough to reach a broader customer base. Currently, there are enough customers who buy at the VBSC start-ups, but more actors appear offering this rather narrow customer base an option to buy local food. It remains to see what will happen if the competition between the niche actors increases and if they are then able to cope with the tension between economic profitability and AFSs commitment as was observed in previous studies (Fleury et al., 2016; Milestad et al., 2017; Clark and Inwood, 2016).

The German food system has a high degree of lock-ins which may lead to an ignorance of landscape change (Foray, 1997). For example, start-ups identified that supermarkets accept the growing consumer awareness and therefore focus their advertisement on their narrow local product range. If this strategy will be able to stabilize their position or if consumers will shift towards VBSC start-ups which are more committed to AFSs than the supermarket, will be an important factor for future development.

## **5.5. Going Forward**

Due to the small sample and scope of the study on the start-up's own perception, it is beyond the scope of this study to fully answer the RQ. The identified potential to contribute to scale up AFSs should be combined with future research. The landscape and regime should be further researched to understand if windows of opportunity for AFSs open. The findings should be tested in different countries and localities to be able to draw generalizable conclusions on how VBSC start-ups can be an actor of change in scaling-up AFSs. The proposed typology of reformists, inbetweeners and transformists could help to replicate the study in different locations.

Furthermore, more perspectives and actors of the food chain should be included, and future research should specifically include the producers and consumers' side. It would also be interesting to study start-ups more in-depth to grasp an understanding of internal discussions regarding scaling-up processes. Such research should include a closer analysis how the AFSs characteristics contribute to a sustainability transition by using concrete measurements and quantitative methods.

## 6. Conclusion

This thesis identified a gap in AFSs research in sustainability sciences of studying VBSC start-ups which aim to localize the food system based on AFSs characteristics and employing novel marketing strategies. Guided by the research question, which asked *to what extent can VBSC start-ups contribute to a sustainability transition of the German food system*, the start-up's self- understanding of contributing to a transition of the German food system was studied along with their AFSs approach.

The analysis showed that the niche of VBSC start-ups is highly diverse in its commitment to AFSs characteristics and empowerment strategies. Reformist start-ups are less committed to AFSs characteristics but have a higher potential to scale up as they align with supermarket practices such as a full product range and providing convenience to the consumer. Transformist start-ups are stronger committed to AFSs, but they face difficulties reaching a broad customer range due to less convenience or higher prices. But rather than seeing the different commitment and empowerment strategies as an obstacle to scale up AFSs in Germany, it should be treated as a transition process which has the potential for a symbiosis of learning. Therefore, this thesis draws the conclusion that the range of VBSC start-ups has a great potential to scale up AFSs in Germany. The niche is currently able to accompany the different start-ups and they are all economically viable. Niche actors do not only challenge the regime but also each other, which can bring along mutual learning experiences and discussion of legitimization. Furthermore, the hybridity of the start-ups to commit to AFSs characteristics while being economically stable is not an obstacle for the Inbetweeners and Transformists due to their committed customer base. Future research should however evaluate how this hybridity develops when the start-ups mature- Specially, considering that more actors are emerging in their niche which may lead to higher competition if they are not able to attract a broader customer base. Furthermore, future research is necessary to fully understand if the landscape pressures on the regime are strong enough for niche actors to emancipate.



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## 8. Appendix

### 8.1. Appendix 1

#### *Interview Catalogue and its relation to theory and research question*

<b>RQ: To what extent can VBSC start-ups enhance a sustainable transition of the German Food System?</b>				
<b>Sub-Research Question</b>	<b>Theory</b>	<b>Section</b>	<b>Guiding Questions</b>	<b>Goal</b>
<i>1. What role do the start-ups play in a sustainable transition of the food system?</i>	MLP  Transition Pathways  Empowerment strategies of niche actors	Self-understanding and role within the German food system	What did inspire you to start the start-up?	motivation
			How would you describe which niche you are occupying in the food system?	Business model and niche
			How would you describe the current food system and where is your place in it?	Beliefs and understanding of current system
			How do you see yourself contributing to a shift in the food system?	Desired change of system
<i>2. How do the start-ups incorporate AFSs characteristics in their VBSC business models?</i>	Local Trap (Born & Purcell, 2006)  Forsell and Lankoski's literature review (2015)  Transition Pathways  Empowerment strategies of niche actors	Sustainability approach and experiences	How do you define sustainability?	General Sustainability Approach
			How do you define local/regional?	General Local Approach
			How do you approach environmental sustainability?	Looking for positive env. Impacts of AFNs
			How do you approach social sustainability?	Looking for positive social Impacts of AFNs
			How do you approach economic sustainability?	Looking for positive economic Impacts of AFNs
		Trade-offs and Difficulties	Do you encounter difficulties in scaling-up your business?	General understanding of issues with dominating regime level
			While growing your business, have you ever encountered issues with the compatibility between your values, guidelines and beliefs and being profitable?	Looking for trade-offs

**Table 1.** Interview Catalogue and its relation to theory and research question

The table shows which theoretical concepts influenced the adoption of guiding questions in the interviews. The guiding questions were then connected to specific goals which helped to answer the sub-research questions. The guiding questions served as backbone for the interview but were slightly modified depending on the start-up's general business model and the given answers.