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Community-supported agriculture initiatives as niche innovations in urban sustainability transitions: a comparative case study of Vienna and Berlin

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Florentina Sarah Köck BA

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Mag. Mag. Dr. Gudrun Haindlmaier

Abstract

Agri-food systems around the world are facing several challenges that require action and innovation on different levels. The world's cities are growing and have a crucial role in driving urban sustainability transitions. In addition, civil society actors are increasingly involved in driving innovation and becoming active members of sustainability transitions. This master's thesis investigates how community-supported agriculture (CSA) in urban and peri-urban contexts of Vienna and Berlin can contribute to urban sustainability transitions by means of expert interviews and document analysis. The research embeds the community-supported agriculture concept in the multi-level perspective, exploring developments on the three levels niche, regime, and landscape. This thesis assesses community-supported agriculture as a niche innovation and explores how the three levels interact to potentially open a window of opportunity for CSAs to break out of the niche. The findings show that there are common goals to drive urban sustainability transitions in the regime. Furthermore, developments in the landscape, such as climate change and environmental awareness, make the necessity of sustainability transitions obvious and put pressure on the existing regime. However, niche innovations, such as community-supported agriculture are constrained within the niche and receive insufficient support to initiate change in the agri-food system. Demands from community-supported agriculture to enable a diffusion into the existing agri-food system include political support in terms of funding and raising awareness amongst the population.

Key Words: agri-food systems, multi-level perspective, community-supported agriculture, CSA, urban sustainability transitions, transition theory

Zusammenfassung

Die Agrar- und Ernährungssysteme auf der ganzen Welt stehen vor vielfältigen Herausforderungen, die Maßnahmen und Innovationen auf verschiedenen Ebenen erfordern. Die Städte der Welt wachsen und spielen eine entscheidende Rolle bei der Förderung der städtischen Nachhaltigkeit. Darüber hinaus sind zivilgesellschaftliche Akteure zunehmend daran beteiligt, Innovationen voranzutreiben und aktive Mitglieder der Nachhaltigkeitswende zu werden. In dieser Masterarbeit wird anhand von Experteninterviews und Dokumentenanalyse untersucht, wie solidarische Landwirtschaft (CSA) im städtischen und stadtnahen Kontext von Wien und Berlin zu urbanen Nachhaltigkeitstransformation beitragen kann. Die Forschung bettet das Konzept der solidarischen Landwirtschaft in die Multi-Level Perspective (MLP) ein und untersucht die Entwicklungen auf den drei Ebenen Niche, Regime und Landscape. Im Laufe der Arbeit wird solidarische Landwirtschaft als Nischeninnovation klassifiziert und untersucht, wie die drei Ebenen miteinander interagieren und möglicherweise den Ausbruch aus der Nische ermöglichen. Die Ergebnisse zeigen, dass es allgemeine Ziele gibt, um die Transformation zu mehr Nachhaltigkeit in beiden Städten voranzutreiben. Darüber hinaus machen Entwicklungen in der Landscape, wie der Klimawandel und das Umweltbewusstsein, die Notwendigkeit zu mehr Nachhaltigkeit deutlich und setzen das bestehende Regime unter Druck. Nischeninnovationen wie die solidarische Landwirtschaft sind jedoch auf die Nische beschränkt und erhalten derzeit nicht genügend Unterstützung, um einen Wandel im Agrar- und Ernährungssystem einzuleiten. Um Nachhaltigkeitstransformationen im Ernährungssystem zu erzielen, fordern solidarische Landwirtschaften politische Unterstützung in Form von Finanzierung und Bewusstseinsbildung in der Bevölkerung.

Schlagwörter: Agrar- und Ernährungssysteme, Multi-Level Perspective, Solidarische Landwirtschaft, CSA, Urbane Nachhaltigkeit

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1. Introduction

The agri-food sector is an integral part of daily consumption and plays a significant role in terms of sustainability. At the same time, global food systems are considered among the main drivers of negative environmental impact. About 24 per cent of global greenhouse gas emissions are linked to the food sector (UNEP, 2016, p. 7). Food production significantly impacts issues such as air, soil, and water quality related to nutrient losses and emissions of pesticides, as well as terrestrial and aquatic biodiversity due to land use changes (ibid., p. 93).

Furthermore, “globalisation, the effects of climate change, and the risk of irreversible loss of biodiversity in ecosystems critical for food production” present a threat to resource security in the future (Freibauer et al., 2011, p. 39). Many current food production systems threaten the planet's capacity to produce food in the future by nearing or surpassing environmental limits (FAO, 2023, p. xvii).

Considering these facts, achieving sustainability within the food sector requires transforming the practices, processes, products, and technologies of the current agri-food systems (Baldock & Buckwell, 2021, p. 1; Willett et al., 2019, p. 2). This transformation “towards greater efficiency, resilience, inclusiveness, and sustainability - is an essential condition for realizing the 2030 Agenda for Sustainable Development” (FAO, 2023, p. xviii).

The latest FAO report on “The state of food security and nutrition in the world” (FAO et al., 2023) suggests that while today approximately 56 per cent of the world's population live in cities, this number will increase to almost 70 per cent by 2050 (p. viii). This ongoing trend of urbanisation suggests that to solve current issues like malnutrition and food insecurity agri-food systems need to be looked at holistically, overcoming the traditional thinking of a rural-urban divide (ibid.). The FAO et al. (2023) further state: “Urbanization, in particular, by increasing the connectivity of rural and urban areas, also affects agrifood systems through changes in agricultural production. While urbanization is often associated with a diversification of diets, the availability of vegetables and fruits, in particular, is insufficient to meet the daily dietary requirements in almost every region of the world” (ibid., p. xxii).

While governments are to be considered the most influential actors when it comes to driving change in agri-food systems, other actors, such as civil society organisations, can also play crucial roles in shaping the performance of those systems (FAO, 2023, p. xxiv; UNEP, 2016, p. 18). “There is no simple cause or driver in transitions. Instead, there is co-evolution within and between levels, i.e., processes at multiple dimensions and levels simultaneously” (Geels & Schot, 2010, p. 27).

One way to observe, explain, and study transitions from an urban system to a more sustainable one is through the concept of urban sustainability transitions. Urban sustainability transitions are “fundamental and structural changes in urban systems through which persistent societal challenges are addressed” (Frantzeskaki et al., 2017, p. 1). The authors further mention one example being the shift towards urban farming (ibid.). This thesis focuses explicitly on the multi-level perspective (MLP) framework, researching the interplay of niche innovations, the regime, and the landscape level (Geels, 2002; Geels, 2004; Grin et al., 2010).

This thesis explores the role of community-supported agriculture (CSA) projects in driving urban sustainability transitions. It assesses these projects as niche innovations within the multi-level perspective in Vienna and Berlin's urban and peri-urban regions.

1.1 Research Questions

This master's thesis focuses on the following four research questions, which can be categorised into primary and secondary questions.

The primary research question is the following:

RQ1: How can community-supported agriculture initiatives contribute to urban sustainability transitions in Vienna and Berlin?

The secondary research questions are the following:

RQ2: How do the different levels of the multi-level perspective (niche, regime, landscape) interact within the urban food systems of Vienna and Berlin to enable sustainability transitions?

RQ3: What specific steps are needed to facilitate urban sustainability transitions through the adoption and scaling of CSA initiatives in the future? On which level of the multi-level perspective (niche, regime, landscape) can those steps be taken?

RQ4: How are Vienna and Berlin incorporating the Smart City concept into their urban planning, and what role does community-supported agriculture play within this framework?

In addition, the following hypotheses about the comparison of Vienna and Berlin can be formulated:

H1: Although urbanisation, sustainability, and consumer preferences for local and ecologically produced foods might be common trends across urban **landscapes**, the extent to which these trends are perceived as dominant, important, or relevant varies between the cities of Vienna and Berlin.

H2: On the **regime level**, differences in the political and governance frameworks between Vienna and Berlin influence the level of governmental support, funding for innovations, land use rights, and the degree of privatisation affecting CSA projects in each city.

H3: On the **niche level**, there are differences in the practices and purposes of CSA projects, motivations behind initiating these projects, and desires for expansion between CSA participants in Vienna and Berlin.

1.2 Significance of the Study

In the early stages of transition studies, primarily sectors like energy and mobility have been researched while the agri-food sector has been overlooked (Hinrichs, 2014, p.

146; El Bilali, 2019, p. 2). For instance, in 2012, the topics that were most researched in the context of sustainability transitions were the energy sector (36 per cent), followed by transportation (eight per cent), and food only being the topic of three per cent of published papers (Markard et al., 2012, p. 961). Only recently has transition theory been increasingly applied to analyse changes in the food and nutrition system, such as researching alternative food networks (Schermer, 2015, p. 38). Nevertheless, the need for research on this topic is imminent, which is why this master's thesis focuses on sustainability transitions in agri-food systems. Furthermore, a comparative case study analysis of Vienna and Berlin examining the topic of community-supported agriculture in the context of urban sustainability transitions has not been conducted so far. The results can be used to determine the extent to which CSA initiatives could contribute to urban sustainability transitions. Furthermore, it can be analysed in detail how the urban food system interacts on the different levels of the multi-level perspective and can thus enable urban sustainability transitions. Subsequently, it can be determined which steps need to be taken to enable such transitions in the future and to be able to use and further support innovations such as community-supported agriculture. As Hinrichs (2014) stated: "Promising efforts to engage citizens, residents, and stakeholders in considering sustainable food systems futures are evident now at the local-municipal level and in some few cases, at the state level through food policy and food systems planning initiatives" (p. 152). Therefore, this thesis explores the local-municipal level as niches and the state level through the regime.

1.3 Structure of the Thesis

Following Chapter 1 (Introduction), Chapter 2 presents the theoretical background. In the beginning, the basics of transition theory and urbanisation are laid out. Furthermore, the multi-level perspective, the community-supported agriculture concept, and the Smart City concept are presented. Chapter 3 describes the methodology of this thesis. Chapter 4 presents the findings of the empirical research, broken down by the cities studied. In addition, comparisons are drawn between the two cities, and differences and similarities are highlighted. Chapter 5 discusses and interprets the results of the empirical research in light of the scientific literature, which

is presented in Chapter 2, and states implications for policy and practice. Finally, Chapter 6 concludes the present work, summarising the central findings and offering an outlook for further research as well as the limitations of the study.

2. Theoretical Framework

This chapter outlines the fundamental theories that guide understanding how community-supported agriculture initiatives can contribute to urban sustainability transitions. It starts with an introduction to transition theory, followed by the concept of urbanisation, and explains why cities can be a turning point for sustainability transitions. The chapter then discusses the multi-level perspective (MLP), which clarifies the roles that different societal levels (niches, regimes, and landscapes) play in supporting or obstructing sustainable changes. Furthermore, the concept of community-supported agriculture (CSA) is explored as a critical topic of this thesis and is followed by and connected to the concept of smart cities.

2.1 Introduction to Transition Theory

This master's thesis explores how community-supported agriculture initiatives can contribute to urban sustainability transitions. To answer the main research question (RQ1), it is essential first to lay out and discuss the theoretical concept of transition theory.

To introduce the field of transition theory, it first needs to be defined what the term “transition” means. Hinrichs (2014) defines transition as follows: “(...) transition implies a gradual, pervasive shift from one state or condition to something different. Transition tends not to be revolutionary in its occurrence, although it can be revolutionary and certainly consequential in its effect” (p. 145). According to Loorbach (2010), transitions are “multilevel, multi-phase processes of structural change in societal systems” (p. 166). Technological transitions are “major technological transformations in the way societal functions such as transportation, communication, housing, feeding, are fulfilled” (Geels, 2002, p. 1257). Despite the name, technical transitions include more than just technological changes but also changes in user practices, regulation, industrial networks, infrastructure, and symbolic meaning (ibid.). The author Geels (2002) states that “technology” is to be viewed not only as the physical meaning of technology but more as the interplay of technology with human agency, social structures, and organisations, leading to the understanding of technology as a

“configuration that works” (Rip & Kemp, 1998, p. 330), emphasising that the technology fulfils a particular function (Geels, 2002, p. 1258). These configurations can consist of artefacts, procedures, and humans, presenting a broader characterisation of technology than just tools (Rip & Kemp, 1998, p. 387). With this background, transitions describe the change from one socio-technical configuration to another, which involves replacing technology and changes in other elements. Such transformation processes are not simple, as the elements of a socio-technical system are interlinked and coordinated. Radically new technologies find it difficult to establish themselves, as regulations, infrastructure, user practices, and maintenance networks are geared towards the existing technology (Geels, 2002, p. 1258). This difficulty of establishing new elements in those systems can be viewed as “lock-ins” that act as barriers to the niche breakthrough and transition according to whether they are related to confrontation either between technologies, between practices, or between practices and technologies (Pekkarinen & Melkas, 2019, p. 240). Such barriers can, for example, be identified as technical incompatibilities and usability problems (ibid.).

Based on the understanding of transitions in complex societal systems, Loorbach (2010) identified the need for a “long-term perspective to guide short-term development, the acknowledgement of uncertainties and surprise, the importance of networks and self-steering, and the necessity of creating space for innovation” (p. 177f). Modern societies' problems cannot be solved with short-term solutions. They are persistent and complex problems arising in various societal contexts (ibid., p. 164).

Socio-Technical Systems

Sectors like energy supply, water supply, or transportation can be characterised as socio-technical systems (Markard et al., 2012, p. 956). While previous definitions of innovation systems focused on the development of technologies, emphasising the supply side, Geels (2004) suggested widening the definition of systems to socio-technical systems, including the user or demand side on an equal level (p. 898). As a result, the focus lies also on the use and functionality of innovations, not only the innovation itself (ibid.). Geels (2004) further defines socio-technical systems as “linkages between elements necessary to fulfil societal functions (e.g. transport, communication, nutrition)”, including the production, diffusion, and use of technology (p. 900). Figure 1 presents a socio-technical system consisting of “artefacts”, such as

capital, tools, natural resources, knowledge, etc. The functioning and resources of a socio-technical system are not given; they result from human activity (Geels, 2004, p. 900). For example, human actors like universities or other educational institutions create and diffuse factors like scientific knowledge in a system, building an inherently dynamic relation between resources and actors (ibid., p. 901). Köhler et al. (2019) further add that socio-technical systems consist of “markets, user practices, cultural meanings, infrastructures, policies, industry structures, and supply and distribution chains” (p. 2). Therefore, transitions are “co-evolutionary processes” because they include changes in many different factors within a system, differentiating them from linear processes (ibid.).

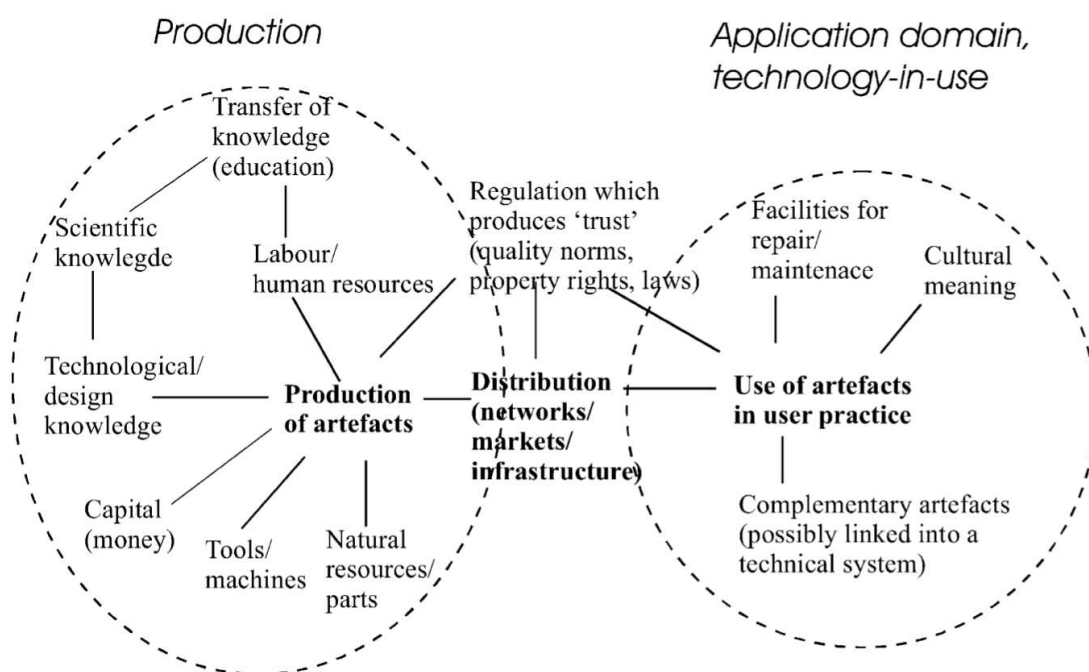


Figure 1: The basic elements and resources of socio-technical systems (Source: Geels, 2004, p. 900)

Furthermore, creating new technologies in socio-technical systems is also seen as a co-evolution of technology and society. These systems enable direct feedback between users and technologies, opening up opportunities for adaptations (Geels, 2004, p. 902). Rip and Kemp (1998) argue that co-evolution is the general pattern for technical change. The authors also suggest that this co-evolution occurs between supply and demand, as users can influence innovation by expressing their demand for

specific technologies (p. 346). They further discuss this relationship, stating that users can steer innovation through their communicated demand for specific technologies (ibid., p. 352).

There are several other characteristics of socio-technical systems, such as the variety of actors coming together. Those actors and social groups include academia, politics, industry, civil society, and households, all with resources, interests, and beliefs to represent (Köhler et al., 2019, p. 2). Societal actors can be governments, businesses, scientists, and nongovernmental organisations. Those societal actors can “create formal and informal networks because they have partially overlapping interests, and find benefits in temporarily sharing certain resources”, aiming to work together towards shared goals (Loorbach, 2010, p. 165). Another characteristic of socio-technical systems involves the interplay between stability and change, which leads to path dependencies and lock-ins, as already briefly described, while creating opportunities for innovation (Köhler et al., 2019, p. 2). This dynamic is explored in more detail in Chapter 2.5.2, which focuses on the regime within the multi-level perspective.

Furthermore, the processes happening in socio-technical systems are usually long-term because it takes time until innovations diffuse into broader contexts and systems destabilise from their usual state (Köhler et al., 2019, p. 3). Köhler et al. (2019) further describe socio-technical systems as unpredictable and complex due to the many potential innovations and paths they can take, along with unexpected shifts in politics and culture. Additionally, the contested nature of sustainability leads to disagreements over different transition pathways, particularly as powerful actors may resist changes that threaten their economic interests. Public policy, therefore, plays a crucial role in steering the direction of these transitions, guided by normative goals to overcome the limitations of private sector motivations concerning public goods like sustainability (p. 3).

Sustainability Transitions

When analysing sustainability transitions, it is essential to be aware of the different understandings of sustainability. While sometimes sustainability is seen as a one-dimensional carbon reduction strategy that has been operationalised mainly by governments and corporations, there is also a multidimensional concept of

sustainability (Moragues-Faus & Morgan, 2015, p. 1560), which was initially coined by the report “Our Common Future”, also known as the “Brundtland” commission (WCED, 1987) and can be summarised as a development that meets the needs of the present without compromising the ability of future generations to meet their own needs. This multidimensional approach takes into account social, economic, and environmental values. As food is perceived with a multi-functional character and grassroots approaches are counted in the multi-dimensional understanding of sustainability (Moragues-Faus & Morgan, 2015, p. 1560), this thesis focuses on this interpretation of sustainability. In addition, the multi-level perspective used in this thesis is a concept that considers multiple dimensions, which fits more with the multi-dimensional understanding of sustainability (ibid., p. 1561).

Nowadays, the idea of transitions as such has found a new application in the field of sustainability challenges (Hinrichs, 2014, p. 145). Research on sustainability transitions has increased rapidly since 2010 (Köhler et al., 2019, p. 1). When looking at sustainability transitions, Markard et al. (2012) define them as “long-term, multi-dimensional, and fundamental transformation processes through which established socio-technical systems shift to more sustainable modes of production and consumption” (p. 956). Sustainability transitions stem from the broader theoretical field of socio-technical transitions leading to social change and development (Hinrichs, 2014, p. 146). Compared to technological transitions, socio-technical transitions include the technological aspect and changes in user practices and institutional structures (Markard et al., 2012, p. 956).

Recently, there has been a shift in how societies and communities approach transitions to sustainability. Rather than just experiencing these changes as bystanders, they actively participate in them. Over the last decade, a transition management perspective has emerged, driven by policymakers, bureaucrats, managers, and planners. At the same time, a diverse and growing transition movement has developed within civil society. As this movement unfolds in various global contexts, transition policies, projects, and initiatives not only provide a backdrop but also offer critical insights and sometimes serve as empirical subjects for the expanding field of sustainability transition research (Hinrichs, 2014, p. 145). As this master’s thesis focuses on the role of community-supported agriculture, an approach

started by civil society groups, it is important to mention that researchers increasingly recognise the roles and interests of civil society groups in sustainability transitions (ibid., p. 151).

Once the transition to sustainability has begun, accelerating this transition comes with specific challenges. As Markard et al. (2020) discussed, one of the critical challenges is the need for whole-system change. Innovations need to align with and trigger broader systemic changes, which requires complementary interactions between multiple innovations and significant changes to the system. Furthermore, the interactions between different systems can lead to tensions. The resistance of declining industries, such as fossil fuels, changing consumer habits, and the increasing complexity of governance pose further challenges (p. 1ff). To overcome these challenges, Markard et al. (2020) further suggest that policymaking needs to become more integrated and focus on whole systems rather than isolated innovations. The involvement of a broad range of stakeholders is crucial to creating social acceptance, stimulating learning processes, and supporting industry coalitions. Policymakers should also progressively apply a mix of policies, including standards, incentives, subsidies, and taxes, to continuously increase sustainability requirements. In addition, considering the context-specific needs of different sectors and regions can help shape policies to drive the transition to sustainability more effectively (p. 5).

While research on sustainability transitions has increased and links to other disciplines have increased, the most significant problems related to sustainability remain unresolved, necessitating further efforts and an acceleration of ongoing transitions. Transition studies can play an essential part in this regard by creating new perspectives, approaches, and insights and helping to move society towards sustainability (Köhler et al., 2019, p. 1). “Although many socio-technical systems are still characterized by inertia and resistance, there are promising signs in some sectors and places that acceleration is starting to happen” (Markard et al., 2020, p. 5).

2.2 Transition vs. Transformation

While the previous chapter already introduced the term transition, this chapter introduces the term transformation and discusses the differences and definitions of both terms. First, it must be stated that there is no clear and general definition or distinction between transition and transformation; sometimes, transition is even seen as part of transformation (Rink et al., 2018, p. 5). Both terms describe the “fundamental change of societal relationship to nature” (ibid.). Nevertheless, this section gives an introduction and overview of different perspectives and views of both terms in literature to get a better understanding.

Brown et al. (2012) distinguish between the terms transition and transformation, especially in a political-economic context. Transitions are seen as incremental and iterative changes that reconfigure existing systems without completely replacing them. On the other hand, transformations are comprehensive changes that fundamentally alter the economic, political, and social structures. Transformation describes “societies and spaces that have experienced an ostensibly wholesale shift in the economic mode of production” and is mainly set in the context of the Soviet Union and the “shift from centralised state socialist planning to capitalist market economies after 1989” (p. 1607). In contrast to transformations, transitions involve significant changes in economic systems and political institutions but do not entirely renew the entire system of production (ibid., p. 1611). The authors further distinguish the two terms in their relation to the future. Transformations aim for a clearly defined, radically different future from the present, anticipating a “break” from the past that will be achieved after reaching a certain “tipping point.” However, transitions are more diverse and gradual processes. While change is also seen as goal-oriented in socio-technical transitions, other perspectives emphasise multiple phases and evolving goals. In these perspectives, speculation and adaptive management are essential for designing future-oriented strategies (ibid., p. 1611f). The authors Brown et al. (2012) add that their distinction between transition and transformation can also be seen as controversial and unclear (p. 1607).

Rink et al. (2018) argue that one difference is that transitions mainly focus on changes on the local level and within socio-technical systems, with niches functioning as incubators that trigger broader changes and can lead to sustainability transformations. On the other hand, transformations deal with “large and radical changes” (p. 7).

While the terms cannot be differentiated clearly, they have specific characteristics, such as the aim of a transformation to achieve fundamental change within a certain time frame. In contrast, transitions do not indicate the extent of change (Rink et al., 2018, p. 9). The authors further summarise specific differences in transition and transformation in the following Figure 2:

	Transition management	Great transformation
Theoretical background	Economy, innovation research	Political economy
Goals	Transitions in socio-technical systems	Fundamental societal change
Characteristics	Managed single or coupled transitions	One fundamental transformation, consisting of a variety of coupled transitions
Mechanisms	Niche innovations taken up into broader, pathdependent regimes	Globally steered change to a new society-nature-relationship
Trajectory of change	Emergent, triggered	Triggered, steered
Time frame	No exact or explicit time frame(s)	Within the next 30–35 years

Figure 2: Overview of main features of “transition management” and “Great Transformation” (Source: Rink et al., 2018, p. 9)

Furthermore, both terms have been introduced in the political context and gained popularity (Rink et al., 2018, p. 8). While transitions mainly focus on changing a particular socio-technical system (ibid., p. 9), the topics of transformations can primarily be assigned to two overarching themes. Firstly, the “post-fossil city” aims to move from a high-consumption of fossil energy sources and high emission of CO₂ gases towards a low-consumption city relying on renewable energy sources. This topic mainly focuses on energy and mobility/ transportation variables (while nevertheless including social consequences) (ibid., p. 10ff). The second topic is the “resilient city” concerning the efficient adaptation and avoidance of mal-adaptation of cities regarding a crisis or hazardous incident (ibid., p. 12f). In contrast to the relatively straightforward

goal of reducing carbon emissions, the aim of the transformation to a resilient city is more vague (ibid., p. 17).

In conclusion, in academic research, there is no universal definition for both terms, and the distinction is not fully clear and consistent. Considering the different aspects, this master's thesis understands transitions as a change of a certain socio-technical system (in this case, the food system) and as part of the bigger fundamental transformation towards more sustainable cities. Therefore, the terms transition and transformation are used interchangeably.

2.3 The Urban Age: Urbanisation

This chapter addresses urbanisation and global environmental changes related to it, and argues why cities are a starting point for transforming socio-technical systems.

The world will continue to urbanise over the next three decades, increasing from 56 per cent in 2021 to 68 per cent in 2050, meaning an additional 2.2 billion urban residents, primarily in Africa and Asia. While all regions are expected to become more urbanised, highly urbanised and more developed areas are likely to stabilise or decline urban growth, as seen in Figure 3 (UN Habitat, 2022, p. xv). “By 2050, the urban population alone will be larger than the current total world population” (WBGU, 2016, p. 12).

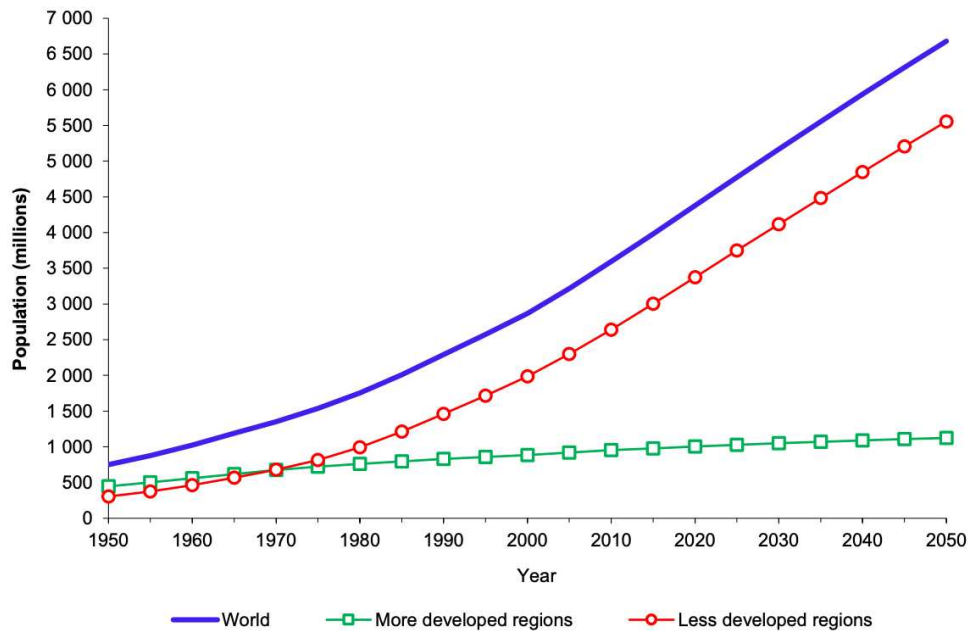


Figure 3: Estimated and projected urban populations of the world, the more developed regions and the less developed regions, 1950-2050 (Source: UN, 2019, p. 13)

In addition, the size of urban areas is increasing due to technological advances enabling cities to inhabit more people (Caragliu et al., 2011, p. 66). At the same time, growing cities are also closely linked with several global challenges. The rise of urbanisation as a worldwide megatrend is intertwined with significant challenges the world has been facing over the last 50 years, including climate change, increasing inequality, and the rise of so-called “zoonotic viruses”, most recently the Covid-19 pandemic, which led to the worst public health crisis of the past century and the most severe economic recession since the Great Depression (UN Habitat, 2022, p. xvi). Cities account for 70 per cent of global greenhouse gas emissions. With 90 per cent of urban areas located on coastlines, a large amount of the world's population is increasingly vulnerable to climate change (Elmqvist et al., 2019, p. 267), for example, because they are more exposed to flooding in coastal zones (WBGU, 2016, p. 8). In addition, there are risks due to droughts, water scarcity, and the urban heat island effect (ibid.). Further challenges that urban areas are confronted with, besides climate change and environmental degradation, are segregation, urban poverty, hunger, malnutrition, food insecurity, growing budget deficits, air pollution, lack of public trust in government and political institutions, and an ageing population (Mora et al., 2021, p. 10).

To define urban sustainability, policy documents associated the term with increasing resource use and optimisation efficiency. At the same time, the important dimensions of equity and social justice are sometimes not included (Elmqvist et al., 2019, p. 269). In academic literature, urban sustainability is seen as the “active process of synergetic integration and co-evolution between the subsystems making up a city without compromising the possibilities for development of surrounding areas and contributing by this means towards reducing the harmful effects of development on the biosphere” (Zhang & Li, 2018, p. 145). Furthermore, the definition proposed by Elmqvist et al. (2019) is to “manage all resources the urban region is dependent on and enhance integration of all sub-systems in an urban region in ways that guarantee the wellbeing of current and future generations, ensuring distributional equity” (p. 269). “Sustainable urbanisation” might sound contradictory because cities create most of the world’s wealth while primarily contributing to pollution, overconsumption, and emitting greenhouse gases (Forster & Getz Escudero, 2014, p. 9). At the same time, it is argued that cities are a starting point for change. For instance, urban spaces are places where the experiences of people with different backgrounds merge; their various skills and knowledge are joint and can lead to innovations. In addition, cities are also a compact collection of people, leading to shorter travel distances, decreased land consumption, and efficient use of resources such as water, energy, or transportation (Kabisch et al., 2018, p. xviii). “Cities have been and will continue to be centers of ecological and social innovation” (Forster & Getz Escudero, 2014, p. 9). As urbanisation continues to accelerate, addressing these challenges requires innovative and transformative solutions for sustainability, with a strong emphasis on resilience in their implementation. Addressing those issues in urban areas is critical to triggering changes on a global level (Elmqvist et al., 2019, p. 267). In this regard, cities will “require a fundamentally new holistic perspective for understanding the challenges, aligning different priorities and goals, and for strategically planning for policy and governance of better urban futures” (ibid.). With this holistic view, it is also essential that cities are overcoming a rural-urban divide and are aiming for an integrated “multi-level approach” (Forster & Getz Escudero, 2014, p. 6).

“Localizing the New Urban Agenda and SDG 11 is the most promising pathway to the optimistic scenario of urban futures” (UN Habitat, 2022, p. xvii). To give a brief overview of these two frameworks, the New Urban Agenda is a shared vision for a

better and more sustainable future and a framework for rethinking urban spaces and systems, with 197 participating states. It focuses on planning, construction, development, management, and improving urban areas along its five main pillars of implementation: national urban policies, urban legislation and regulations, urban planning and design, local economy and municipal finance, and local implementation. It also serves as a resource for policymakers, from every level of local or national governments to civil society organisations (UN, 2017, p. iv). The SDG 11 “Sustainable Cities and Communities” is part of the SDG (Sustainable Development Goals) framework established in 2015 by the United Nations in the 2030 Agenda. SDG 11 aims to “make cities and human settlements inclusive, safe, resilient and sustainable.” It focuses on several subgoals, for instance, affordable housing, public transportation, enhancing exclusive and sustainable urbanisation and participation, reducing the environmental impact of cities, and supporting linkages between urban and peri-urban and rural areas (UN, 2015, p. 24).

2.4 Urban Sustainability Transitions

“The future of the world’s climate will be decided in the cities.”

(WBGU, 2016, p. 13)

The literature on the multi-level perspective (which is described in more detail in Chapter 2.5) has paid limited attention to the urban scale and thus has offered insufficient insight into how cities have influenced socio-technical transitions (Cohen & Ilieva, 2015, p. 201), which is why in this thesis, the urban aspect is given special attention.

Cities used the concepts of urban transformation and urban sustainability even before the Anthropocene and the urban age were given attention. However, the concepts were not yet developed and used to their full potential because of the high complexity of the topics (Elmqvist et al., 2019, p. 267f). Furthermore, it has been argued that research in the field of transitions “could engage more explicitly with urban infrastructures and the challenges of transforming them” (Köhler et al., 2019, p. 16).

The “twin narratives of urbanisation and sustainability are two of the most compelling and resonant narratives of the 21st century” (Moragues-Faus & Morgan, 2015, p. 1560). Urban and regional visions are important because they bring together various actors and offer a shared direction to support local development, spread niche innovations, and create regional innovation systems (Köhler et al., 2019, p. 14). It is also argued that public policy needs to be more urban-focused because most of the world's population lives in cities. Furthermore, city governments and mayors are considered the most influential political actors in making progress, while national governments are considered slow at decision-making (ibid.). In addition, cities have significant policy capacities that directly impact their citizens in all aspects of life, such as consumption, education, and culture. This broad scope of local policies also includes methods for involving the population in planning and decision-making and providing community support for various objectives (Wolfram, 2017, p. 106f). In addition, cities are advantaged for successful niche formation because of certain circumstances, such as the “high density of potential market niches, global knowledge networks, internationally mobile workforces and particularly pressing environmental problems” (Binz & Truffer, 2017, p. 33). Indeed, sustainability, especially when creating climate change mitigation and adaptation policies, is becoming increasingly urban-centric (Moragues-Faus & Morgan, 2015, p. 1558). The trend and momentum of urbanisation and its impacts are significant and cannot be ignored. Given the existing path dependencies, continuing with business as usual, and thus allowing urbanisation to proceed in an unstructured, almost automatic manner, would lead to an unsustainable development of cities worldwide (WBGU, 2016, p. 11). To prevent that, urban societies need to be empowered to realise the opportunities for sustainability in cities and follow urban transformation pathways (ibid., p. 12).

Frantzeskaki et al. (2017) define urban sustainability transitions as follows: “Structural systemic realignments within urban contexts can be referred to as urban sustainability transitions: fundamental and structural changes in urban systems through which persistent societal challenges are addressed” (p. 1). They further name urban farming as one example in the context of food systems (ibid.). Elmqvist et al. (2019) further view urban transformation as a “systemic change of the urban system” and as “a process of fundamental irreversible changes in infrastructures, ecosystems, agency

configurations, lifestyles, systems of service provision, urban innovation, institutions and governance” (p. 269).

In the previous chapter, challenges that come with urbanisation are stated. Therefore, this chapter argues for the need for urban transformations, describing fundamental changes towards sustainability. These changes aim to reach decent life conditions for current and future generations, including, for example, a fair distribution and provision of resources (Kabisch et al., 2018, p. xviii). Changes towards urban sustainability further require changes in land use, energy, transport systems, management of materials and material flows, urban settlement policies, and in the structural-spatial design of cities (WBGU, 2016, p. 8f). These transformative changes need to be strategic and long-term with the aim to establish a form of urbanity that “sustainably promotes human quality of life” (ibid., p. 9). With these changes, participation opportunities in local civil society and collaborative governance are important (WBGU, 2016, p. 10). Frantzeskaki et al. (2017) state that governance should promote experimental approaches not only from politics (top-down) but also from the communities (bottom-up) that combine the processes of scaling and local anchoring (p. 6). Urban labs for the transition to sustainability can be experimental spaces for developing, testing, and implementing measures to promote sustainability in cities or neighbourhoods (ibid., p. 8). Therefore, “creating physical, institutional, and financial spaces for radical alternatives and experiments” can be important factors for sustainability transitions (ibid.). Indeed, the role of cities in shaping civil-society-driven sustainability innovations needs to be accounted for, especially in local activities that are activating civil actors and can lead towards a transformation of socio-technical systems embedded in an urban context (Wolfram, 2017, p. 107). Civil actors must be actively supported to engage, articulate their needs, organise themselves, co-create solutions, and achieve autonomy as stakeholders (ibid., p. 111). Thus, the transformative effect of civil society can be realised by connecting them with scientific expertise and by establishing collaborative governance structures, enabling public discourse, using instruments of participation, and facilitating participatory processes in local governments (WBGU, 2016, p. 32). For example, urban real-world laboratories are an important space for combining transformative research with education (ibid. p. 34).

The authors Kabisch et al. (2018) further argue that there is not one specific pathway that a city is following when it comes to transformations. Instead, there are multiple transformation paths towards sustainability due to various trends and their different impacts on the local level. Therefore, the term urban transformation is often, if not entirely, used in plural form since many transformations happen simultaneously, interfering with each other and aiming towards different goals (p. xx).

In the context of the food system, cities are “emerging as key transition spaces where new food governance systems are being fashioned” (Moragues-Faus & Morgan, 2015, p. 1558). That is because the cities make room for spaces that enable collaboration between actors like civil society, private actors, and the state with the joint goal of a “transition towards more just and sustainable urban food systems” (ibid., p. 1559). “Cities shape, support and normalize food practices, and in the process play an important role in transitioning the wider food system” (Cohen & Ilieva, 2015, p. 199). Urban areas with primarily built environments have both “hard and soft infrastructure” that can be integrated, such as open spaces for gardens, which can provide food. Until recently, urban sustainability and resilience planners did not often include food and agriculture infrastructure in urban, peri-urban, and nearby rural landscapes. However, this is changing as food is now beginning to be integrated into cities as part of resilient city strategies (Forster & Getz Escudero, 2014, p. 19f). The number of sustainability-oriented initiatives in cities, such as community-supported agriculture, is increasing, which makes it interesting to look at how those small-scale initiatives can influence sustainability transitions in cities (Gorissen et al., 2018, p. 172).

While urban transformations are already being stated in declarations and charters, the actual implementation has only started. One starting point is the New Urban Agenda, adopted at the HABITAT III meeting of the United Nations in 2016 (UN, 2017), already briefly mentioned above. Urban sustainability in the New Urban Agenda is often interpreted as increased resource efficiency, such as in the field of energy usage. At the same time, it often gets mentioned in the same contexts, leading to confusion about the two concepts (Elmqvist et al., 2019, p. 268). The New Urban Agenda aims to put urban areas “at the centre of achieving sustainable development for future generations” (Frantzeskaki et al., 2017, p. 1).

To give an example of urban sustainability transitions, Malmö transitioned from an industrial wasteland to a sustainable city through the active involvement of civil society and civic movements. The local government set ambitious targets, such as achieving climate neutrality by 2020 and running the city on 100 per cent renewable energy by 2030. Civil society initiatives significantly contributed to this transformation. The municipal government supported various sustainable food initiatives, including the creation of community gardens and urban agriculture projects, which resulted in Malmö turning into a “green municipality” (Moragues-Faus & Morgan, 2015, p. 1562ff).

2.5 The Multi-Level Perspective (MLP)

This chapter introduces the multi-level perspective (MLP) as the theoretical framework for this thesis and illustrates its origins in socio-technical systems theory. Furthermore, the food system is discussed as a socio-technical system, and the need for a transition towards a more sustainable food system is argued.

The multi-level perspective, first introduced by Rip & Kemp in 1998 and subsequently developed by Geels (Mora et al., 2021, p. 6), is a prominent approach in transition studies that argues that transitions occur through dynamic processes within and between three analytical levels: niches, regimes, and the landscape (Köhler et al., 2019, p. 4). The scope and impact of sustainability transitions are determined by the interactions between the three levels (El Bilali, 2019, p. 11). The MLP is especially useful for analysing “long-term dynamics, shifts from one socio-technical system to another” (Geels, 2004, p. 897). These shifts are influenced by the “co-evolution and multi-dimensional interactions between industry, technology, markets, policy, culture, and civil society” (Geels, 2012, p. 472). Although the multi-level perspective is quite complex, it has proven to be valuable in explaining transitions in different fields on an empirical level (ibid., p. 916). Because of its broad perspective, the MLP can analyse the wider problem framing of innovating entire systems of production and consumption (Smith et al., 2010, p. 436).

Figure 4 illustrates how the three levels, niche, regime, and landscape, interact over time. Niche innovations can take advantage of windows of opportunity created by landscape developments that put pressure on existing regimes. As niche innovations become more stable and align with the elements of the regime, they have the potential to become new, dominant configurations that can influence the broader landscape.

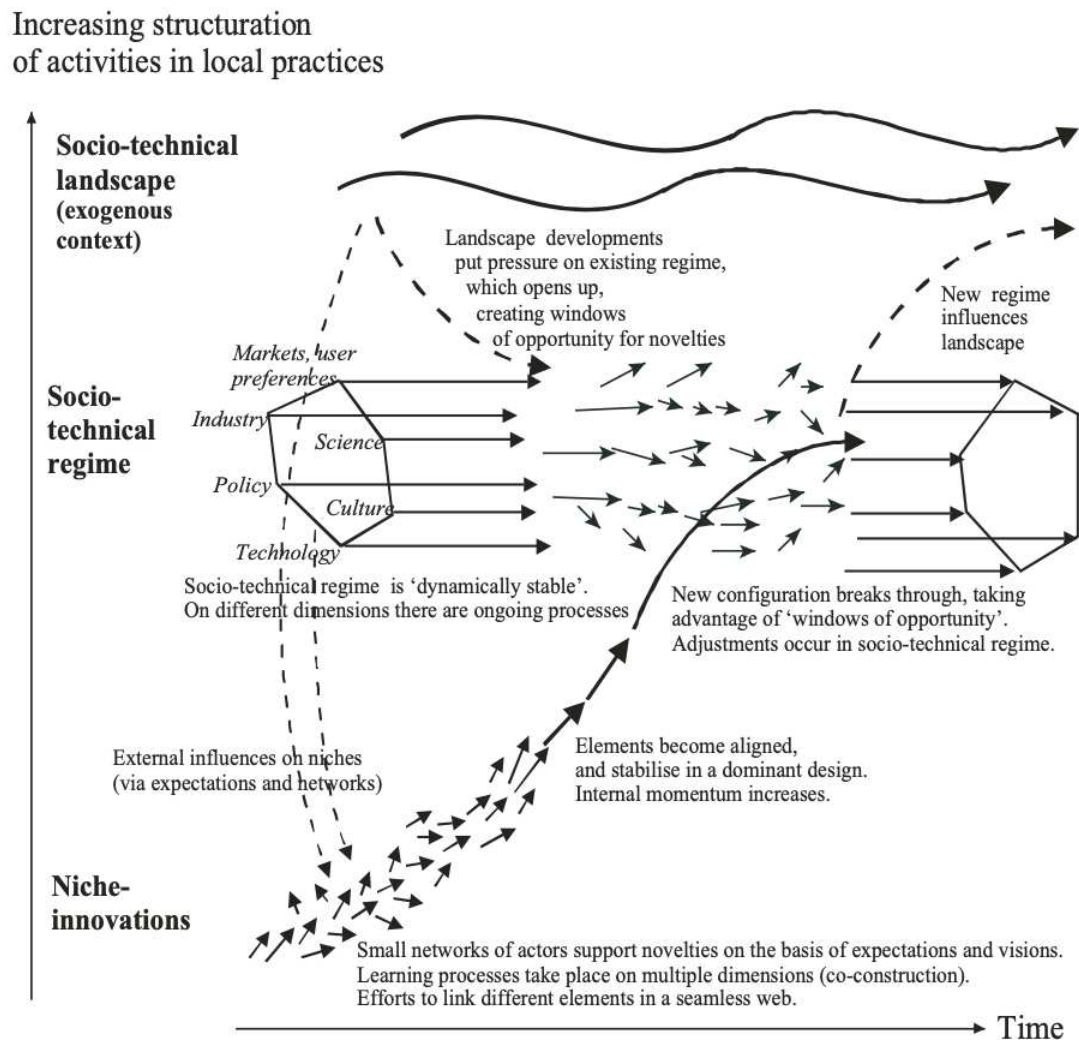


Figure 4: Multi-level perspective on transitions (Source: Geels, 2011, p. 28, adapted from Geels, 2002, p. 1263).

The different levels

"The different levels are not ontological descriptions of reality, but analytical and heuristic concepts to understand the complex dynamics of sociotechnical change" (Geels, 2002, p. 1259), meaning that the levels are not actual parts of the real world. Instead, they are tools and ideas used to help us understand and analyse the complicated ways in which social and technological changes happen.

The levels can be introduced as follows:

- The **niches** on the micro-level account for the “generation and development of radical innovations”.
- The **regime** is located at the meso-level and accounts for the “stability of existing technological development and the occurrence of trajectories”.
- The **landscapes** at the macro-level consist of “slow-changing external factors, providing gradients for the trajectories” (ibid., p. 1261).

The three levels are described in more detail in the following chapters.

2.5.1 Niches

Niches are protected spaces and the level for radical innovations to occur (Köhler et al., 2019, p. 4). They are of great value for transitions to happen because they “provide the seeds for change” (Geels, 2002, p. 1261). Innovations are identified as operational activities, experiments, or actions with a short-term horizon, typically conducted within the context of projects and programs in business, industry, politics, or civil society (Loorbach, 2010, p. 170). Innovation is often described as an “emergent, often random, and uncertain process” (ibid.). While gradual innovations and changes usually happen in regimes, niches are the level for radical innovation and radical change (ibid., p. 1260; Geels, 2004, p. 912). Those radical innovations are usually unpredictable (Rip & Kemp, 1998, p. 362). Innovations in niches emerge in protected spaces (Rip & Kemp, 1998, p. 389; Köhler et al., 2019, p. 4), or so-called “incubation rooms”, which are helping innovations grow before they get out on the regular market. Such protection can be achieved through public or private subsidies (Geels, 2004, p. 912). It is argued that such protected spaces are not only perceived as abstract but need to be “concrete places embedded within urban contexts that enable people to deeply engage with various manifestations of socio-technical change while forming part of a dense web of social and physical relations” (Wolfram, 2017, p. 112). Niche innovations can have their roots not only in usual business incubators but can also start as neither formal nor commercial innovations (Hinrichs, 2014, p. 147). Niches are a place for learning and experimenting since they are in a protected space and can deviate from

rules in the regime. As long as they are not moving “outside” of the niche, they can gain experiences and learnings about technical characteristics or user preferences, and the innovation can be tested without the pressure and conditions of the regime. The internal processes within niches, such as learning, network building, and managing expectations, are crucial for the development and potential success of these radical innovations (Geels, 2004, p. 912).

Niches usually develop on the local level (Markard et al., 2020, p. 1). Geels & Schot (2010) identify three cases of interaction within regimes: social networks being created that support, maintain, and develop innovations, learning processes to enhance performance and establish effective socio-technical configurations, and defining expectations and visions to direct learning processes and gain attention and funding (p. 23f). In contrast to regimes (which are described in more detail below) and their stability, niches are not yet bound to certain rules, which also leads to uncertainty in some fields, for instance in user preferences (Geels, 2004, p. 913). Because of this loose structure, it requires a lot of work from the actors within a niche to sustain it (Geels & Schot, 2010, p. 27). Furthermore, there is no clear distinction between different roles and the levels of interdependence are lower than in the regime. This fluidity of the niche results in a high amount of work that the social network needs to put into holding up the niche while also opening room for experimentation and learning. Over time, when learning processes are successful, the niche might adapt rules and become more stable (Geels, 2004, p. 913).

Some examples of niche innovations are solar electricity and photovoltaics (Hinrichs, 2014, p. 147; Markard et al., 2020, p. 1) or the experimentation with electric vehicles (Geels, 2004, p. 912). It is argued that the role of the government is to create niches where innovations can grow without market pressure. Policymakers should determine certain transition paths for a new regime. Following that, governments should take action to reduce the protection that is needed from the niches. This can lead to institutional adaptation through interactive learning mechanisms, leading to a new regime pushing the transition forward. At the same time, it must be stated that the government has the role of a facilitator of change, for instance, enabling communication between actors, not a regulatory role (Rip & Kemp, 1998, p. 391).

2.5.2 Regime

Regimes or socio-technical regimes represent the “institutional structuring of existing systems leading to path dependence and incremental change” (Köhler et al., 2019, p. 4). The co-evolution of social and political institutions and material resources, such as knowledge, investments, objects, infrastructures, values, and norms within socio-technical regimes, often sets up path dependencies and lock-ins. Those can consolidate current technologies and practices and prevent innovative breakthroughs of niches (Smith et al. 2010, p. 441). To prevent such lock-ins and enable the emergence of new ideas, reflexive activities integrated into the regime are necessary. Actors such as researchers should analyse long-term societal processes and dynamics and put these on the societal and political agenda (Loorbach, 2010, p. 170).

Rip and Kemp (1998) define regimes as “rule-set or grammar embedded in a complex of engineering practices, production process technologies, product characteristics, skills and procedures, ways of handling relevant artefacts and persons, ways of defining problems - all of them embedded in institutions and infrastructures” (p. 338). Geels (2002) refers to socio-technical regimes to describe the “semi-coherent set of rules carried by different social groups” (p. 1260). Those rules and structures are interconnected, meaning they are linked both within and between different regimes. Figure 5 illustrates the different components of a socio-technical regime. This interconnectedness helps to explain the coordinated activities of different groups. The concept of socio-technical regimes is introduced to describe the “deep structure” or underlying grammar of these systems carried by social groups. Regimes refer specifically to those rules that are aligned across different regimes, indicating that while regimes have some autonomy, they are also interdependent (Geels, 2004, p. 905). These rules are of different natures, for example, regulative (formal rules, laws), normative (values, expectations), and cognitive (beliefs, paradigms) (ibid.). Loorbach (2010) argues that the factors of a regime are, in general, “all established patterns and structures”, including regulations, institutions, organisations, infrastructure, and routine, as well as all actors involved in it and are interacting with those aspects daily (p. 169). While it is not impossible for actors within a regime to deviate from the rules, it requires a lot of effort from them (Geels & Schot, 2010, p. 28).

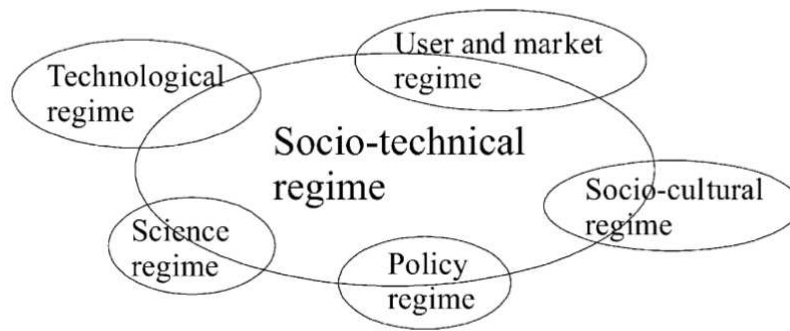


Figure 5: Meta-coordination through socio-technical regimes (Source: Geels, 2004, p. 905).

The core idea behind the regime is that it provides a “logic and direction” for gradual socio-technical change along established development paths (Markard et al., 2012, p. 957). As already briefly mentioned, these regimes stand for stability in a socio-technical system by providing orientation and coordination of the activities of specific stakeholders. The term stability should not be seen as too narrow, as stability is of a “dynamic kind”, meaning that innovation can still happen in an existing regime but is happening gradually (Geels, 2002, p. 1260; Geels & Schot, 2010, p. 21). However, while regimes provide stability with different mechanisms, they can also lead to path dependencies or lock-ins (Rip & Kemp, 1998, p. 350), as already mentioned above. For example, cognitive rules can lead to a certain blindness of engineers and developers. Learning and creating new knowledge often stems from building on old knowledge and adapting it. As a result, path dependencies are created because “old” knowledge that actors are used to is hard to overcome completely but is rather refined to a certain degree (Geels, 2004, p. 910). Such barriers to new developments coming from regimes can also be regulatory, institutional, and economic conditions, consumer routines, physical infrastructures, or specific technologies (Loorbach, 2010, p. 175). Another aspect is that actors in regimes often have the point of view that as long as issues can be solved within an existing regime, there is no need or sense in investing or allowing new technologies to be created, leading again to path dependencies (Geels, 2004, p. 910). Another reason for path dependencies is the inflexibility of organisations and actors, which are embedded in interdependent networks and mutual dependencies that contribute to stability. This resistance to change is due to established relationships, cultural norms, vested interests, and the creation of organisations that lobby to maintain the status quo (ibid., p. 910f). Furthermore, socio-

technical systems have a certain “hardness”, making it difficult to create change. Specific components of already established systems depend on each other, leading to inertia when new, radical innovations could come up (ibid., p. 911).

2.5.3 Landscape

The third level is “exogenous socio-technical landscape developments” (Köhler et al., 2019, p. 4). This level is called landscape to emphasise its physical and societal aspects, such as infrastructure or the arrangement of cities (Geels, 2004, p. 913). However, the authors Rip and Kemp (1998) do not only see the landscape as a physical space we move in but also as something we are part of and that “sustains us” (p. 334).

A socio-technical landscape consists of a “set of deep structural trends” and can be seen as an “external structure or context for interactions of actors” (Geels, 2002, p.1260). This does not imply that landscape developments happen without human involvement. Developments such as urbanisation, globalisation, environmental issues, and broad cultural shifts result from the collective impact of many individual actions. However, these landscape developments are not directly influenced by niche and regime actors (Grin et al., 2010, p. 24). On the other hand, the landscape does influence the interplay between niches and regimes (Hinrichs, 2014, p. 148). The landscape consists of different factors of the exogenous environment (Geels, 2004, p. 913), such as “oil prices, economic growth, wars, emigration, broad political coalitions, cultural and normative values, environmental problems” (Geels, 2002, p.1260). Compared to regimes, the landscape refers to a broader context of external factors, which is even more challenging to change than regimes. In addition, these changes usually happen more slowly than the ones in regimes (ibid.) The construct of the landscape takes account of “larger bio-physical and environmental changes, legal and regulatory shifts, or cultural developments” (Hinrichs, 2014, p. 148). In comparison to regimes, landscapes have even more structured activities, which are beyond the direct influence of individual actors. Not only the material environments of landscapes but also the shared beliefs are hard to deviate from. Landscapes shape the context in which regimes and niches operate, creating gradients for action (Geels, 2004. p. 913).

While landscape changes usually happen slowly over a long period (Geels, 2002, p. 1262), its effects can constitute “a source of pressures for change on the regime level; they can prompt changes from within the regime, and they generate opportunities for niches” (Smith et al. 2010, p. 441).

2.5.4 Interplay of the Three Levels

First, the three levels of the multi-level perspective are embedded within each other from the bottom up, so niches are embedded in regimes, and regimes are embedded in landscapes (Geels, 2002, p. 1261), as seen in Figure 6. The following chapter discusses how the levels interact with each other and how transitions of socio-technical systems can be achieved by considering all levels.

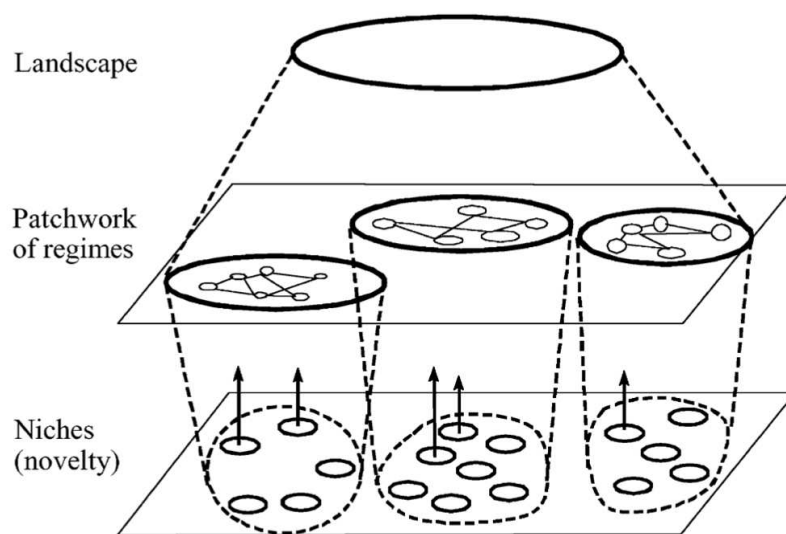


Figure 6: Multiple levels as a nested hierarchy (Source: Geels, 2002, p. 1261)

How do regime shifts occur?

Schot already answered this question in 1998 with the following explanation: “Drawing on an evolutionary model, it is argued that new technologies emerge in technological niches, which after a process of branching can lead to a regime shift. Such a shift happens when successful niche formation coincides with a number of favourable external developments. Successful niche formation depends on the articulation of expectations, the coupling of new markets and new technologies, the development of new networks and the emergence of new competences” (p. 173). **The key point of**

the multi-level perspective is the aspect that changes arise through the interaction of all levels (Geels, 2004, p. 916; Geels, 2002, p. 1262; Köhler et al., 2019, p. 4). New technologies emerge in niche innovations, which alone is not enough. However, if the regime and the landscape create space for these innovations and accept them, changes can take place in a system. The crucial aspect to be emphasised is the alignment and interplay of all levels (Geels, 2002, p. 1262; Köhler et al., 2019, p. 4). As visualised in Figure 6, the three levels have linkages (presented as the vertical dotted lines). Those linkages can lead to transitions when the interplay of all levels is aligned. Radical innovations then break out of the niche level when ongoing processes at the levels of regime and landscape create a window of opportunity (Geels, 2002, p. 1262; Geels, 2004, p. 914; Markard et al., 2012, p. 958). These windows might appear because of the tensions in the regime or by shifts in the landscape, which put pressure on the regime (Loorbach, 2010, p. 167; Köhler et al., 2019, p. 4). Radical innovations break out by gradually moving through a process called niche cumulation. This means they are initially adopted in specific market niches and application domains, and over time, their use expands and accumulates across more niches (Geels, 2002, p. 1271; Geels, 2004, p. 916).

Rip & Kemp (1998) describe the adoption of innovation as an “unstructured social experiment”, arguing that adapting to novelty and adopting it is an innovation itself, requiring action from users and the need to rearrange behaviour, society and organisations as such (p. 338). As soon as there is a successful attempt, the innovation experiment can be scaled up and repeated in different contexts (Loorbach, 2010, p. 176). Once the innovations diffuse, they cause the transition to accelerate, both in terms of geographical scope and other systems (Markard et al., 2020, p. 1), causing a transformation process (Rip & Kemp, 1998, p. 389). Eventually, the innovations may “irreversibly transform the sociotechnical landscape” (ibid., p. 338). Once established in society, those adaptations of novelties again lead to interdependencies, which are hard to undo, creating a stable system (ibid., p. 339).

The transition from niche to regime-level is not sudden but involves continuous experimentation, learning, adjustments, and reconfigurations. This process also includes aligning with existing technologies and combining new and old elements (Geels, 2002, p. 1271; Geels, 2004, p. 916). Eventually, the system adjusts to the

internal and external changes and “arrives at a higher order of organization and complexity” (Loorbach, 2010, p. 167). However, Rip and Kemp (1998) question the irreversibility of newly established technological systems and whether the people within these systems are satisfied with the technology they have (p. 345).

Furthermore, an opportunity for niche innovations to “take off” can be created, for instance, because of market growth or new markets opening up (Geels, 2002, p. 1272). Niches are often working on finding solutions for issues or challenges that can be detected in the landscape (Geels, 2004, p. 913; Rip & Kemp, 1998, p. 389). For instance, political or cultural changes or also climate change, a highly complex issue (Loorbach, 2010, p. 166), put pressure on regimes (Geels, 2004, p. 914). While those issues are global, transitions are often analysed on a national or local level because the interactions between actors, firms, and innovations can be observed empirically (Markard et al., 2020, p. 1). Also, other external issues can lead to instability of the regime, such as health or safety risks. Those problems mostly lead to change only when external actors outside of the regime raise awareness towards them since actors within the regime tend to downplay problems (Geels, 2004, p. 914). There can also be several other reasons that open up for change in regimes, such as internal technical problems that could be solved by creating new technologies, changing user preferences, competition and investments of companies or states for getting a competitive advantage, for example, within research and development departments (Geels, 2004, p. 914).

Another critical point is that the transitions do not happen suddenly from one moment to the next. While sometimes it might seem like a breakthrough is happening at a certain point in time, the changes mostly happened slowly over time, step by step reconfiguring the regime, changing the innovation, and adapting it gradually (Geels, 2002, p. 1272). A change eventually happens when the tensions in the regime open up a window of opportunity, which is used by a radical innovation. The innovation then breaks into the conventional market, enters the mass market competition, and might replace the existing system. As a result, more comprehensive changes in user practices, policies, or infrastructure will be achieved. A new system will be established, a new set of actors might form the system, and the landscape will be altered (Geels, 2004, p. 914f). Innovations especially benefit from learning economies, dynamic scale,

institutional adaptations, and finding new ways of application (Rip & Kemp, 1998, p. 389).

To sum up the interplay of all levels, breakthroughs of innovations depend on processes on the level of regimes and landscapes, making them context dependent (Geels, 2002, p. 1272).

Examples of Transitions Analysed with the MLP

The multi-level perspective has been used to analyse different kinds of transitions, such as the shift from computing systems based on punched-cards machines to modern computer regimes (Van den Ende & Kemp, 1999), a transition in grain transshipment in the port of Rotterdam with the adoption of elevators replacing the manual (un)loading of ships (Van Driel & Schot, 2005), or to study the niches of manure digestion and co-combustion in the electricity regime (Raven, 2004). The MLP has also been used to explain the failure of niches by Raven and Verbong (2004) by analysing manure digestion and heat pumps in the Netherlands caused by mismatches with regime rules of electricity and agriculture.

To name one example in more detail, Geels (2002) discusses the transition in the shipping sector from sailing ships to steamships between 1780 and 1900, using it as a case study to illustrate the multi-level perspective on technological transitions. As detailed by Geels, the transition from sailing ships to steamships involved innovations at the niche level, regime changes, and landscape pressures. Initially, steam engines were used in protected niches like inland waterways and coastal routes, allowing for development without competition from sailing ships. Persistent issues in the sailing ship regime, such as limited speed and unreliable schedules, created openings for steamships, which offered superior speed and reliability. Innovations like iron hulls and screw propulsion helped steamships penetrate the established regime. Broader socio-economic changes, such as the Industrial Revolution and liberalisation policies, drove demand for efficient transportation. The "canal-boom" and the opening of the Suez Canal in 1869 provided critical infrastructure advantages for steamships. Additionally, global events like the Irish potato famine and the Californian gold rush increased emigration and further boosted the demand for reliable maritime transport. These

multi-level changes collectively facilitated the shift from sailing ships to steamships, transforming maritime transport in the 19th century (Geels, 2002, p. 1263ff).

A more recent example was discussed by Andersen & Markard (2020). They use the example of subsea high voltage direct current (HVDC) transmission technology to illustrate the dynamics of sustainability transitions through the multi-level perspective. HVDC technology was initially developed in niches for applications like power supply for islands and ultra-long-distance transmission. At the same time, within the regime level, the dominant high voltage alternating current (HVAC) technology faced challenges due to the growing demand for renewable energy, particularly offshore wind farms, which required more efficient transmission solutions. HVDC began to threaten this established regime due to its lower transmission losses and compatibility with renewable sources. At the landscape level, broader socio-economic and political changes, including policies promoting renewable energy and climate change mitigation, created a favourable environment for HVDC. The European Union's goals for an internal electricity market and increased cross-border transmission capacity further favoured this transition, aligning regulatory and market conditions with technological advancements in HVDC (p. 10ff).

Food as a Socio-Technical System

Agriculture-related issues presents only one of many complex and unstructured problems that industrialised countries face, and for which long-term solution strategies in sustainable development need to be created at the level of society (Loorbach, 2010, p. 162). While research on transitions mainly focused on the socio-technical systems of electricity and transport, transition research nowadays also looks at other fields, such as the food system (Köhler et al., 2019, p. 2). Geels & Schot (2010) define food systems as one example of socio-technical systems that “operate at the level of societal domains or functions” (p. 11).

The FAO defines a food system as follows:

“A food system includes all biological processes (or agrobiodiversity) as well as the physical infrastructure involved in feeding a population: growing, harvesting, processing, packaging, transporting, marketing, consumption, and disposal of food and food-related items. It also includes the inputs needed and outputs generated at

each of these steps. A food system operates within and is influenced by social, political, economic, and environmental contexts. It also requires human resources to provide labour, research, and education. A food system is derived from and interacts with the ecosystem in which it is located” (FAO, 2011, p. 15).

Like other systems, the food and agricultural system also presents several problems, such as infectious diseases, the over-usage of fertilisers, or the dependence on subsidies. These issues are “deeply rooted in societal structures and activities” (Geels, 2004, p. 916), leading to a food system crisis and requiring a radical transformation towards a sustainable society (Grin et al., 2010, p. 1).

To name an example of a transformation of the food system, Smith (2006) describes the development of the organic food niche as an interplay of the different levels of the multi-level perspective. Idealists in the food sector laid the foundations of the niche of organic food. As it developed, there was considerable learning in the regime, helping to make the niche viable. Tensions in the established socio-technical regime of the food industry offered these organic food opportunities to further gain momentum. Political support slowly increased and established food companies invested in the organic niche. This case study confirms the importance of niches as sources of innovative ideas and practices. They provide a pool of solutions ready for adoption and adaptation (p. 453). Besides organic farming, other niches in the food system are, for example, agro-ecology, permaculture, conservation agriculture, integrated farming, and alternative food networks (El Bilali, 2019, p. 1). In general, the concept of a niche in food systems aligns closely with the idea of alternative food networks, although it extends beyond just food. Originating from evolutionary economics, the niche concept is primarily focused on how alternative networks foster the development of new technologies (Bui et al., 2016, p. 93). At the regime level, the current industrial, conventional agriculture is predominant, while often not described in detail. The landscape level is generally overlooked, or when considered, it relates to international trends and developments (El Bilali, 2019, p. 1).

As a future outlook, Grin et al. (2010) take the example further and state that change in the food system is only possible if all actors within this socio-technical system contribute with a lot of effort and hard work. Although there are already signs of the

traditional institutions starting to crumble under the pressure of today's issues within the food system (such as the discussion on genetically modified food or livestock farming), the current configurations are still in place, leading to resistance and inertia. On the other hand, political decision-makers are already making efforts to end certain elements of previous configurations. At the same time, new agricultural practices have been being experimented with since the 1990s. These developments could reinforce each other and lead to structural and operational change (p. 227).

In addition, it is recognised that the conventional food system is coming under pressure from new actors "who are trying to fashion a more holistic sustainable urban foodscape in which consumption, public health, ecological integrity, and social justice loom large" (Moragues-Faus & Morgan, 2015, p. 1569).

Criticism of the MLP

While the multi-level perspective is a prominent approach in transition research, the concept does not go without criticism. This section addresses some points of criticism mentioned in academic research.

First, it is argued that while the multi-level perspective's strength is its ability to illustrate complex problems, it is still a complex perspective itself, requiring much data, often qualitative. In addition, the broad scope of socio-technical regimes makes it challenging to establish exact conclusions (Geels, 2002, p. 1273). On the other hand, El Bilali (2019) found that many researchers find the MLP "over-simplistic" and criticise the "clear-cut distinction between niche, regime and landscape elements in the MLP as well as how they are conceptualised" (p. 15).

Geels (2011) further identifies other points of criticism to be mentioned shortly. Critics argue that the MLP overly emphasises structures over the agency of individual actors. It is seen as biased towards favouring bottom-up innovation processes while neglecting top-down influences like policymaking. The operationalisation of regimes is often vague, and the explanation of the MLP is not well-defined. Additionally, the socio-technical landscape is sometimes treated as a "garbage can", a category that is used for a mix of residual aspects (p. 36). These criticisms suggest the need for further

refinement and integration of the multi-level perspective to capture the complexities of socio-technical transitions.

Furthermore, while the MLP is “interested in the socio-technical transformation of ‘societal functions’”, Smith et al. (2010) argue that the “role of places and spatial scales in these transition processes” has been neglected so far (p. 443). The spatial aspect has not been considered enough, especially when studying interactions within the regime or between regimes and niches. However, considering different institutional contexts, differences between geographical locations are to be expected (Hansen & Coenen, 2015, p. 104). The authors Coenen et al. (2012) also argue that the concept of the multi-level perspective lacks a conceptualisation of space (p. 969). In addition, the authors Raven et al. (2012) note that the different levels are often mistakenly equated with certain geographical positions: the niche level is bound to the local/regional context, the regime to the national context, and the landscape to the international context (p. 64). However, Geels (2011) argues that despite this criticism, the multi-level perspective is still a well-suited concept to approach transition research (p. 38). It is important to acknowledge this criticism within this thesis. Therefore, with a comparative case study in two different geographical contexts, this thesis aims to address this criticism and include the spatial aspect by comparing two cities, exploring if and how the spatial aspect makes a difference.

2.6 Community-Supported Agriculture (CSA)

This chapter introduces the concept of community-supported agriculture (CSA). First and foremost, the definition and origins of community-supported agriculture are discussed, followed by its concept and the potential for a more sustainable approach towards food supply in cities.

2.6.1 Terminology of Community-Supported Agriculture

Before describing the concept of community-supported agriculture in more detail, it is important to define and explain the term community-supported agriculture.

While there is no uniform definition of community-supported agriculture, this chapter collects some definitions to generate a general understanding of the concept of CSA.

The authors Samoggia et al. (2019) define CSA as a “direct partnership between producer(s) and a group of consumers/members to share the risks and responsibilities of farming activities” (p.1). Teikei, the Japanese origin of the concept of community-supported agriculture, can be defined as “a partnership between growers and consumers in which farmers share organically grown produce and, in return, consumers support and secure viable farm operations. This partnership aims to restore and enhance the ecological and agricultural landscapes of farms and their surrounding areas” (Kondoh, 2015, p.143). The author further elaborates that CSA is a “grassroots movement that intends to create an alternative agrifood system through organic farming and its consumption” (ibid., p.143). The Urgenci, the international grassroots network of all forms of regional and local solidarity-based partnerships for agroecology, define CSA as a “direct partnership based on the human relationship between people and one or several producer(s), whereby the risks, responsibilities, and rewards of farming are shared, through a long-term, binding agreement” (Urgenci, n.d.). In August 2015, representatives from twenty-two European countries met near Freiburg, Germany, to start a joint research project on community-supported agriculture in Europe. At the beginning of their collaboration, they developed the following working definition of community-supported agriculture: “CSA is a direct partnership between a group of consumers and producer(s) whereby the risks, responsibilities, and rewards of farming activities are shared through long-term agreements. Generally operating on a small and local scale, CSA aims at providing quality food produced in an agroecological way” (Weckenbrock et al., 2016, p. 8)

While different authors emphasise different aspects, all definitions agree on direct interaction (whether it is labelled as a partnership, relationship, or community) between consumers and producers without intermediaries. In addition, all definitions include the shared risk of production between both parties, enabling the operation and facilitation of the farm. At the same time, it needs to be mentioned that CSAs are unique and can differ from each other in terms of produced goods, legal form, size of members, etc. For example, some initiatives only grow vegetables, while others also produce eggs

or honey, and some CSAs have only a handful of members while others have thousands of consumers (Weckenbrock et al., 2016, p. 8).

As this thesis conducts a multiple case study in two German-speaking cities, Vienna and Berlin, it is also important to mention that in the German language, community-supported agriculture can be translated to “Solidarische Landwirtschaft” and is often simultaneously used with the abbreviation “Solawi” or “SoLaWi”.

2.6.2 Origins of Community-Supported Agriculture

Since the 1960s, a concept has emerged in various parts of the world, independently of each other, which enables farmers to farm sustainably, freed from economic constraints. The term community-supported agriculture was coined for this in the 1980s (Kraiß & Van Elsen, 2009, p.184).

Community-supported agriculture originated in Japan and can be traced back to the 1930s with a small-scale, local, and non-profit practice called “teikei”, meaning “partnership” in Japanese (Kondoh, 2015, p.144). In the early 1970s, the population of Japan had concerns about the environment, health, and food safety because of the impacts of fertilisers and chemicals in conventional food production, leading to an increased demand for a healthy and safe food supply. In addition, supply and demand and the foreign trade of agricultural products were not coordinated, and there was no standardised certification system for organic food in the market (Tang et al., 2019, p.2). Therefore, buyers and producers began to cooperate on a personal basis. Consumers started to encourage farmers to produce organic products, such as milk and vegetables. In their cooperation, they signed contracts with farmers, worked with them voluntarily, paid the farmers in advance, and received adequate product quotas (ibid., p.2).

The first known CSA in Europe, “Les Jardins de Cocagne”, was founded in 1978 near Geneva, Switzerland. While in the late 70s and 80s, only a few other CSA initiatives developed, the CSA movement experienced an upturn around the year 2000. Since then, each year new CSAs have been started in more and more countries. In 2015, 2,776 CSAs were operating in Europe, producing food for almost half a million

(472,055) members. Adding closely related initiatives like the French *Jardins de Cocagne* and Italian GAS to the CSA count increases these figures to approximately 6,300 CSA initiatives and one million consumers (Weckenbrock et al., 2016, p.9).

2.6.3 The Concept and Characteristics of Community-Supported Agriculture

Community-supported agriculture refers to an agricultural community characterised by collaboration through economic aspects and the supply of food (Kraiß & Van Elsen, 2009, p.183). The basic idea of the CSA concept is that a farm supplies its environment with food. At the same time, the environment, consisting of members of the CSA, provides the farm with the necessary financial resources, mostly upfront on a monthly, quarterly, or annual basis, to be able to operate (Plank et al., 2020, p. 58; Parot et al., 2023, p. 690).

The concept of community-supported agriculture can be characterised by the following features. In some CSAs, some features might be more pronounced than in others.

Risk Sharing

Both partners, consumers, and farmers of a CSA project are mutually responsible and share the risk of the production process (Diekmann, 2020, p. 17). Sharing the risk in this case means that, for example, in the case of poor weather conditions and lower crop yields, members and farmers collectively compensate for the loss. Furthermore, as an alternative to paying a fee, some CSA projects offer their members to contribute by working on the fields instead of monetary contribution (Plank et al., 2020, p. 58).

Partnership & Solidarity

Creating a sense of community among members is one of the aims of community-supported agriculture initiatives (Samoggia et al., 2019, p. 9). Further characteristics are the knowledge and skills of the farmer about the cultivation of the land and the resulting supply for people with high-quality products (Kraiß & Van Elsen, 2009, p. 184). Solidarity amongst farmers is also of importance, as they share best practices, information, and experiences (Plank et al., 2020, p. 58), for example, through self-organised workshops or farmer networks (Vicente-Vicente et al., 2023, p. 875).

However, farmers collaborate not only with other farmers but also with individuals from civil society and academia. This collaboration allows them to create and share knowledge, access additional resources such as land, organic fertiliser, and seeds, and expand their range of products (ibid., p. 870). Solidarity is also vital among members since they can take as much as they want while ensuring that there is enough left for others to consume (Plank et al., 2020, p. 58). Furthermore, an important aspect is the formation of personal relationships between the farmers and the members of the respective CSA, between the members themselves and between all those involved on the land (Kraiß & Van Elsen, 2009, p. 184). “The members of CSA farms emphasize the importance of a community of solidarity, understood as inclusive, universal solidarity in an emancipatory way” (Plank et al., 2020, p. 57). In some cases, members of CSAs also have the opportunity to engage in agriculture themselves and take on an active role in the production cycle, as opposed to their normally passive role in conventional food systems (ibid., p.58). Furthermore, interpersonal relations are considered to be a source of new knowledge that “enables actors with little or no awareness of agricultural and/or sustainability issues, to think and act differently” (Chiffoleau et al., 2016, p. 15).

Economic Aspects

The CSA concept goes beyond conventional forms of marketing: farming is not financed through the sale of individual products but through membership fees (Kraiß & Van Elsen, 2009, p. 183). “Every eater contributes as much as he or she can afford, either financially or through participation on the field, to provide in total the sum and workload that is needed to run the farm” (Plank et al., 2020, p. 58). This (mostly) upfront payment on a monthly, quarterly, season-based, or annual basis is one fundamental principle of community-supported agriculture (Parot et al., 2023, p. 690; Samoggia et al., 2019, p. 9; Wellner & Theuvsen, 2016, p. 7). The financing of CSAs can be managed with a solidarity-based pricing model. Wealthier members can pay more to enable members who cannot afford the total price to participate (Vicente-Vicente et al., 2023, p. 872; Parot et al., 2023, p. 691).

Products are not offered or promoted on the market but are distributed to the members without a set price. Ideally, this enables the farmer, who is freed from the constraints of the market, to farm sustainably (Kraiß & Van Elsen, 2009, p. 183) and with financial

freedom (Parot et al., 2023, p. 690). CSA farming also has the potential to reduce marketing-related costs and get better prices due to the direct “selling” to members. In general, the farmers have better control over the pricing of their products (Samoggia et al., 2019, p. 9). The broader aim of CSA initiatives is to strive for a largely closed economic cycle that goes beyond the farm to include the consumers of its products. This represents an alternative to the current predominant system in agriculture (Kraiß & Van Elsen, 2009, p. 184). “There exists an economic dependence in the best sense of the word, because as long as this is not hierarchical, it is good and reasonable” (Plank et al., 2020, p. 58).

Environmental Aims

Community-supported agriculture aims to protect environmental structures and sustainably develop agriculture, as opposed to the conventional food system (Tang et al., 2019, p. 2). “Taking care of the land and understanding nature is another common feature among CSA producers and eaters” (Plank et al., 2020, p. 60). While some farmers only produce vegan goods, others add vegetarian goods, such as eggs, to their product range. However, they have in common that they focus on sustainable and organic production, such as using organic seeds and practising crop rotation (ibid., p. 59). A study conducted in Germany found that all the studied farms were operating organically, applying neither inorganic fertilisers nor pesticides (Vicente-Vicente et al., 2023, p. 867), a part of them even being on the transition from organic towards agroecological production mode (ibid., p. 874). The solidarity of members and farmers enables the production of high-quality, organic food, which is produced locally, benefiting both parties (Plank et al., 2020, p. 58). CSA farmers perceive their environmental impact in increasing seasonal food consumption, saving water, safeguarding air quality, reducing food miles, and protecting the soil quality by growing a variety of products and the limited use of pesticides and chemicals (Samoggia et al., 2019, p.9).

Food Security & Health Benefits

In some contexts, such as China, the emphasis of CSA is laid on the aspects of food security and health benefits (Tang et al., 2019, p. 4f). A study by Vicente-Vicente et al. (2023) found that German CSA initiatives also focus on food safety (p. 879). While progressively developing, the supply network has become and continues to become

more vulnerable to possibly damaging events from both natural and anthropogenic causes in line with the growing dependencies. Safety and prevention, which are leading to increased costs, are given little consideration (Kraiß & Van Elsen, 2009, p.188). Many risks are minimised with the CSA concept, such as problems with food supply due to long transportation routes, communication, and finances. The CSA system is less reliant on the financial sector, as work can replace membership fees if necessary. The closer the members of a CSA live to the farm that supplies them, the lower the risk of communication and transportation becoming a problem. The social network already in place is also an important aspect in a crisis. The CSA system strives to be environmentally friendly and resilient due to the desired goals of a closed operating cycle, a sufficient number of workers, and the trust on which food distribution is based (ibid., p. 188f).

2.6.4 Challenges of CSA

Community-supported agriculture farms are also facing certain challenges. One challenge of CSA farming is recruiting and retaining trained labour, as agricultural work is seasonal and the salaries are low. In addition, CSA farming sometimes depends on voluntary workers with no farming expertise (Samoggia et al., 2019, p. 12). Farmers face several challenges beyond that, including the high costs associated with transitioning to and maintaining organic farming standards, the risk of overcommitting resources, and the complexities of managing a farm. From an organisational point of view, CSAs struggle with competing with other marketing channels, dealing with government interventions, and ensuring the long-term sustainability of the CSA model (Sulistyowati et al., 2023, p. 850). On the other hand, CSA members and potential members face challenges too, including the time required for working shares or the cost of membership (ibid.). In addition, people who are generally interested in CSA can face challenges in committing to join a CSA since they would need to adapt their eating habits due to the seasonal harvests of the farms (Parot et al., 2023, p. 693).

2.6.5 The Potential of CSA to Contribute to Sustainability Transitions

Now that the concept and origins of community-supported agriculture have been discussed, it is important to examine the potential of CSA to contribute to sustainability transitions.

The literature on sustainability transitions has increasingly acknowledged the significant role of civil society and social movements in transforming systems such as food and broader production and consumption frameworks. These groups influence transitions by rallying support for policies, creating safe spaces for innovation, and shaping cultural values and beliefs (Köhler et al., 2019, p. 10). For example, in France, the contribution of the AMAP (Associations pour le maintien d'une agriculture paysanne/ Association for Maintaining Small Scale Family Farming) to re-energise and bring back direct selling is acknowledged (Chiffoleau et al., 2016, p. 3). Grin et al. (2010) also recognise the potential of civil actors to play an active part in sustainability transitions. Consumers are seen as “knowledgeable and competent actors” who can transform certain social practices related to food, which they integrate into everyday life. For instance, they are in the right place to create spillover effects between such practices (p. 330).

Hartmann (2024) discusses a transformative mechanism of the community-supported mode of agricultural production, which allows for a reduction in efficiency and growth pressures by making the survival of the organisation no longer dependent on satisfying external financiers and competitiveness in regular food markets. Furthermore, this mode of production helps to reduce ecological damage in agriculture. Therefore, the author argues for the transformative potential of community-supported agriculture in the context of the current food regime (p. 259). Köhler et al. (2019) further argue that more research is needed on grassroots innovations, specifically how they scale up from niche to broader societal impacts, including how they align with profound transitions toward societal transformation or conform to existing industrial regimes. This involves examining how these innovations integrate with broader goals like social justice and democracy. In addition, they propose studying the role of social movements in cultural changes, especially how they influence everyday practices and broader perceptions of sustainability and industrial change (p. 11).

The authors Plank et al. (2020) argue that CSA can be understood as a “testing ground for values-based modes of production and consumption (VBMPC), which attempt to leave the status quo behind and reshape dominant capitalist producer-consumer relations” (p. 51). Their findings show that participants and supporters of community-supported agriculture initiatives in Austria generally agree that CSA provides an alternative to conventional production and consumption methods. However, at the same time, CSA projects in Austria face various social, material, and institutional challenges. While some of these issues are being addressed, they require more focused attention to ensure the long-term success and sustainability of CSA (ibid., p. 51). To conclude, the authors argue that CSA initiatives are a “way of creating spillover effects for society” (p. 59).

In other research, it is argued that due to the solidarity, high levels of transparency, and shared responsibilities of community-supported agriculture initiatives, they have the potential to contribute to rearranging power relations and overcoming the “lack of accountability associated with market-centric forms of organization” (Moore, 2021, p. 5) and can therefore provide room for bottom-up governance innovation (Vicente-Vicente et al., 2023, p. 872). Hinrichs (2014) describes food hubs as “innovative sustainable ‘niches’, which combine both technological and social innovations in their efforts to ‘scale up’ sustainable local and regional food systems and extend their reach to a wider range of beneficiaries” (p. 149). While food hubs might not be directly comparable to CSA projects, they sometimes collaborate within an agri-food network, fostering the reconnection between farmers and consumers within a region (Vicente-Vicente et al., 2023). Furthermore, establishing urban gardening networks or food policy councils can have a transformative potential. They aim to reshape the urban food environment by introducing more comprehensive viewpoints. For instance, they might integrate concepts of health and well-being into local food discussions, spark new activities, or foster more inclusive social narratives that reorganise and link existing initiatives in innovative ways (Moragues-Faus & Morgan, 2015, p. 1570). Furthermore, the driving role of civil society and community-led initiatives concerning sustainability transitions has been recognised (ibid., p. 1566ff).

To sum up, Egli et al. (2023) found that “if CSA would reach a bigger share in the food system, it could contribute to a transformation toward sustainable food systems” (p. 1). The authors also stated that regarding sustainability, CSAs mostly outperformed conventional systems in aspects such as resource use efficiency and reducing greenhouse gas emissions (ibid., p. 7).

2.7 Smart Cities Concept

Since the main city planning documents that are part of the document analysis mention the topic of Smart City, this chapter introduces the concept. Later, the incorporation of the Smart City concept into the urban planning of Vienna and Berlin is assessed and it is discussed what role community-supported agriculture plays within this framework.

First, it is important to define the Smart City concept. While there is no universal definition for Smart Cities (Rink et al., 2018, p. 16), several common elements define the concept. The University of Technology Vienna identified six main “axes”: smart economy, smart mobility, a smart environment, smart people, smart living, and smart governance. They are based on theories of regional competitiveness, transport and ICT (information and communication technology) economics, natural resources, human and social capital, quality of life, and the participation of society members in cities (Caragliu et al., 2011, p. 70). Based on these six axes, Caragliu et al. (2011) define a smart city as follows: “We believe a city to be smart when investments in human and social capital and traditional (transport) and modern (ICT) communication infrastructure fuel sustainable economic growth and a high quality of life, with a wise management of natural resources, through participatory governance” (p. 70). Caragliu et al. (2023) argue that a “holistic” definition of a Smart City, meaning that as many of the six axes are included and the definition is not limited to factors such as ICT, is leading to a more significant impact, while not viewing Smart Cities in their entirety can lead to an underestimation of the actual impact (p. 62). While the Smart City concept has the most substantial impact on economic outcomes, the relevance of the concept for other fields that are environmental and non-economic is not to be underestimated (ibid., p. 63). The research further indicates that the inherent characteristics of Smart

Cities have a more significant impact than specific policy actions implemented within these cities, meaning that building a comprehensive urban model is more effective than isolated policy measures (ibid.).

2.7.1 Governance of Smart Cities & Participation

One dimension of the Smart City regarding citizen involvement is “smart governance”, involving e-government in favour of the city's inhabitants. The city continuously works on its capabilities to provide public services “diligently, effectively, and in a very efficient manner” (Kumar et al., 2022, p. 12). It practises innovation in everyday life for the benefit of citizens, as well as responsiveness, accountability, and transparency for governing the official processes. For example, smart governance “allows citizens to complain about their issues using digital platforms and resolve those issues and problems rapidly” (ibid.). Through “open and multi-directional information flows among stakeholders”, the city can rapidly address emerging societal issues (Lee et al., 2023, p. 93).

2.7.2 Smart City Transition

Since this thesis explores sustainability transitions, an important aspect to be researched is how smart agendas and digitalisation in cities can impact the field of sustainability transitions in a broader context (Köhler et al., 2019, p. 15). Cities include various socio-technical systems, such as education or housing, which serve urban areas (Mora et al., 2021, p. 2). Smart Cities drive change towards a more sustainable future of cities by “adopting technologies that have the potential for urban sustainability enhancement and by creating the conditions in which these new technologies and existing local practices can mutually adapt” (ibid., p. 3), leading to smart city transitions. These transitions cause “multidimensional change”, introducing new technologies into urban infrastructures. They can be categorised as a type of urban sustainability transition (ibid.), as described previously in Chapter 2.4. This inclusive transformational character of Smart City initiatives can also be achieved through the institutionalisation and upscaling of small-scale organic urban experiments, especially when large-scale planning does not work (Lee et al., 2023, p. 94).

Furthermore, the concept of Smart Cities is recognised by the United Nations in both their Agenda 2030 and the New Urban Agenda to see “smart city transitions as a digital approach to urban sustainability” (Mora et al., 2021, p. 4). The authors Mora et al. (2021) further put these transitions in the context of the multi-level perspective, arguing that the “combination of global urban sustainability challenges and the strong transformative potential of digital technologies” (and the associated pressure on regimes) has opened up a window of opportunity for change (p. 11). Research shows that smart transitions are not only coming from civil society or governmental actors; instead, a collaborative approach is needed to engage actors on all levels (Lee et al., 2023, p. 93).

While a broad understanding of the Smart City concept can indeed drive urban sustainability transformations, there is also some criticism, such as that many examples represent “growth coalitions” in cities, mainly striving to achieve growth policy and, therefore, increasing welfare (Rink et al., 2018, p. 16).

To conclude, “building an inclusive, integrated, and multi-level planning approach is a prerequisite for effective and sustainable transformation into smart cities” (Lee et al., 2023, p. 96). The way smart city transitions happen is closely “linked to the socio-economic, cultural, and institutional contexts” (ibid., p. 93), which is why this thesis examines the approaches to Smart Cities in Vienna and Berlin later throughout the document analysis. The success of smart city initiatives depends on embedding them within the broader socio-economic and institutional contexts of a city, ensuring that societal objectives are addressed (ibid.).

3. Methodology

This chapter explains the methodology of this thesis. The comparative case study, the research design, and the selected methods are presented.

Frantzeskaki et al. (2017) argue that research and practice in the field of urban sustainability transitions will “benefit from multiple case or cross-case comparative examinations of similar phenomena”, which allows comparative research instead of mono-case explanations (p.16f). This thesis conducts a comparative case study analysis between Vienna and Berlin with a multiple-case design (Yin, 2018).

An argumentatively strong case study analysis is based on several sources of evidence (Yin, 2018, p. 113), which is why this thesis uses a mixed-methods approach (Kuckartz, 2014). To introduce the theoretical framework, a narrative literature review is conducted. Furthermore, eleven semi-structured interviews are held, five in Berlin and six in Vienna, with representatives of community-supported agricultural projects, the network perspective, city administration, and the research perspective of CSA. In addition, five documents from each city are analysed, both general strategic city planning documents and specific agriculture-focused documents.

3.1 Comparative Case Study: Vienna and Berlin

To answer the previously formulated research questions, this thesis uses a multiple case study analysis, comparing the case cities Vienna and Berlin, aiming to draw cross-case conclusions about both cities. A case study is an investigation that only refers to a single or, at most, a few, often comparable, cases. The case study, therefore, does not strive to consider all or at least the largest possible number of all existing cases but rather to dive deeply into the particularities of the individual case or a few cases (Kaiser, 2021, p. 7).

First, the method of a case study chosen for this thesis needs to be justified. Yin (2018) suggests doing a case study as a research method if the following criteria are matched:

1. The research questions are formulated with “why” or “how”
2. The researcher has little or no control over the event which is being studied
3. The focus of the research is not historical but contemporary (p. 13)

Furthermore, a case study is not limited to one case being observed but can also present a multiple case study, including cross-case conclusions being drawn by the researcher (Yin, 2018, p. 17). While the single-case study remains the most popular research design in transition research, the “geographical turn” in transition research has further encouraged comparative approaches (Köhler et al., 2019, p. 18).

The multiple case studies of Vienna and Berlin aim to “shed empirical light on some theoretical concepts or principles” (Yin, 2018, p. 38). They show how community-supported agriculture contributes to urban sustainability transitions in different geographical contexts. The comparative case study analysis reveals the specific framework conditions in both cities. The comparison also makes it possible to conclude differences and parallels later in the thesis.

Since two cases are never the same, it is important to acknowledge and discuss the differences between both cases and determine if they are similar enough to compare them (Yin, 2018, p. 198). Therefore, it is important to briefly lay out the comparability of Vienna and Berlin and the aspects in which they differ. First of all, the two cities have been chosen due to the accessibility of official data, the availability of sufficient literature, and the presence of CSA initiatives and their previous investigation (Plank et al., 2020; Vicente-Vicente et al., 2023; Doernberg et al., 2016; Kraiß & Van Elsen, 2009). Vienna and Berlin both have a certain amount of community-supported agriculture projects which can be observed. Both can be classified as capital cities and federal states. They have similar city planning initiatives and objectives to achieve urban sustainability and address global issues such as climate change on a local level. At the same time, they differ in population numbers and administrative framework conditions.

In Germany, the government wants to support “best-practice models” like CSAs (CDU et al., 2018, p. 85), whose innovative actors can play the role of a catalyst in creating

liveable rural areas (Zukunftskommission Landwirtschaft, 2021, p. 34). On the other hand, in Austria, the political support for CSAs seems to be low. In a study conducted by Gugerell et al. (2021), CSA members stated that if there has been any support, it was mostly from other alternative innovations or private actors, since they experience a lack of support from local, federal, and provincial governments. In general, the development of CSAs has been stagnating in Austria recently (ibid., p. 16).

Case Study Design

As can be seen in Figure 7, the case study design follows a linear-analytic structure. It starts with the issue or problem being laid out and a review of the relevant literature, followed by the methods, the data collection and analysis. It ends with the collection of findings and a conclusion (Yin, 2018, p. 229).

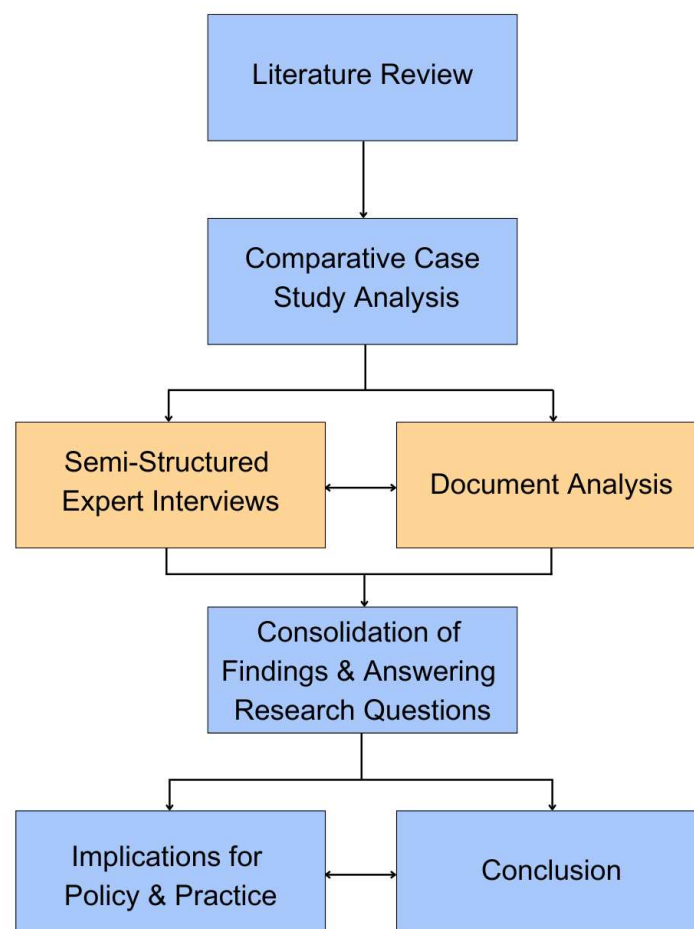


Figure 7: Case Study Design (Source: Own Visualisation, 2024)

As already mentioned, this thesis uses a qualitative mixed-methods approach (Kuckartz, 2014). The methods of literature review, document analysis and semi-structured expert interviews are used to answer the research questions. The results of the methods complement each other and provide different perspectives that go beyond the use of a single method (Kuckartz, 2014, p. 35).

3.2 Methods

The following chapter presents the selected methods and justifies their choice.

3.2.1 Literature Review

The systematic use of scientific literature is necessary for answering the research questions. A literature review aims to give an overview of the topic and the state of research, as well as to put the results into a broader context (Flick, 2016, p. 73). Having a theory laid out will, at a later stage, play an important role in supporting generalised conclusions and lessons learned from the case study by putting the findings into the theoretical context (Yin, 2018, p. 37).

To introduce the theoretical concept of this master thesis, a review of relevant literature is carried out using the library of the University of Vienna and its databases, such as u:search, as well as the databases Scopus and Google Scholar. When selecting the literature, only literature in English and German is used. Furthermore, attention is paid to selecting mostly works published after the year 2000 to guarantee topicality, with only a few exceptions for standard reference works. To start, a keyword search is conducted for the essential terms for the thesis, such as community-supported agriculture, multi-level perspective, and urban sustainability transitions, as well as their German translations, to extend the search. The snowball method is used to assess further literature based on the found works. Choosing only works from the primarily scientific discourse, such as articles from peer-reviewed scientific journals, has been favoured. As an exception, websites, for instance from the city government of Vienna or Berlin, are chosen not in the theoretical part but only in the findings of the thesis to gain insights into specific local particularities.

3.2.2 Semi-Structured Interviews

“One of the most important sources of case study evidence is the interview” (Yin, 2018, p. 118). Qualitative expert interviews can be defined as a systematic and theory-driven method of data collection in the form of interviews with people who have exclusive knowledge of a topic. The concept of a systematic approach is primarily aimed at the requirement of intersubjective traceability of the data collection and data analysis procedures (Kaiser, 2021, p. 8).

The survey method of this thesis is semi-structured expert interviews, which are part of problem-centred interviews. Mayring (2023) formulates the following basic ideas about problem-centred interviews:

- The problem-centred interview chooses a linguistic approach to elicit its questions, which are based on subjective meanings formulated by the subject himself.
- The aim is to create a situation of trust between the interviewer and the interviewee.
- The research is based on concrete social problems, the objective side of which is analysed beforehand.
- Although the interview guide directs the interviewees to certain questions, they should react to them openly and without any predetermined answers.
- The problem must always be formulated and analysed at the beginning. The central aspects of the interview guide are compiled accordingly (p. 62).

The areas of application of the problem-centred interview can be derived from its main advantages. It is ideally suited to theory-led research, as it is not purely exploratory in character, but the aspects of the primary problem analysis are incorporated into the interview. Therefore, this method is suitable wherever a lot is already known about the subject. The second important point is its partial standardisation through the interview guide, which makes it easier to compare several interviews. The material from many interviews can be related to the respective guideline questions and thus be evaluated quickly. In addition, if there is a large number of interviews, it gets easier to generalise the results (Mayring, 2023, p. 63f).

The results of expert interviews help to provide answers to the research questions. This requires translating the research questions into interview questions, called operationalisation, which takes place in two steps. Firstly, the research problem must be specified in order to develop suitable questions for the interview. Secondly, the type of questions that can best be used to obtain the desired information must be clarified. These two steps are described as conceptual and instrumental operationalisation (Kaiser, 2021, p. 68). The interview guide plays an important role in translating the research context into the expert's world of experience (ibid., p. 8). The questions from the interview guide are those aspects of the topic that are recorded as most important. In addition, the interviewer can repeatedly come across aspects not listed in the guide. If they are important for the topic or for maintaining the thread of the conversation, the interviewer will spontaneously formulate ad hoc questions here (Mayring, 2023, p. 63). It is the responsibility of the researcher to disclose and document the process of data collection, analysis, and interpretation to such an extent that third parties can at least recognise and evaluate the individual steps of the procedure (Kaiser, 2021, p. 10). The interview guide is displayed in Appendix 1 of the thesis.

The processing method of the interviews is the verbatim transcription. For a detailed evaluation, the production of transcripts is indispensable. This method allows underlining and marginal notes to be made, and different parts can be compared. The transcription also makes it possible to see individual statements in their context and thus provides the basis for detailed interpretations. The transcription of the recorded interviews is done with the software sonix.ai in normal written German and subsequently translated to English, as the focus is on the content and topic of the interviews, meaning that dialect and sentence structure errors are corrected (Mayring, 2023, p. 77f).

Digital, internet-based communication services enable the creation of a location-independent face-to-face interview situation, which can save time and financial resources. Essentially, this involves software for internet-mediated ("Voice-over-IP") communication, such as Zoom and Microsoft Teams (Kaiser, 2021, p. 58f). Throughout this research, several interviews have been conducted over the video platform Zoom.

3.2.3 Selection of Experts

The selection of experts for the interviews has a central influence on the quality of the data collection (Kaiser, 2021, p. 84). An “expert” is considered to have extensive knowledge in a specific field. The interview partners are selected according to their expertise in the examined topic (Bohnsack et al., 2018, p. 76). Since the focus is on an in-depth analysis of the specifics of the two case studies, it is not necessary to select a representative sample (Kaiser, 2021, p. 84).

As part of the selection of experts, the choice of interviewed partners needs to be justified. Therefore, it must be disclosed which considerations lead to the selection of experts and how they are recruited for interviews. The selection of experts is based on the research question and the presence of relevant information regarding the questions. Furthermore, it needs to be considered which experts are most likely to be able and willing to provide precise information (Kaiser, 2021, p. 84f).

The selection of interview partners for this study is based on considerations regarding expertise in community-supported agriculture and the embedding in urban sustainability contexts. Therefore, the interview partners consist of members of community-supported agriculture initiatives in Vienna and Berlin (and the surrounding areas) as well as experts from umbrella organisations of CSAs (such as “Netzwerk Solidarische Landwirtschaft”) and the Stadt-Umland-Management (SUM) in Vienna, which is concerned with the collaboration of Vienna and the surrounding federal state of Lower Austria. To illustrate the multi-level perspective and examine the interplay of the levels, experts from the governmental city planning departments have been contacted but could not be reached throughout the process, which is why the document analysis represents the city and regime view. All interview partners are asked about their perception of ongoing trends representing the landscape.

The selected interview partners are listed in the following Table 1:

Vienna	Berlin
IV1_ Ouvertura e.V. & GeLa Ochsenherz e.V. & Munus Foundation (24.9.2024)	IB1_ Frohlawi e.V. (13.9.2024)
IV2_ GeLa Ochsenherz e.V. (25.9.2024)	IB2_ SpeiseGut (20.9.2024)
IV3_ Stadt-Umland-Management (SUM) (26.9.2024)	IB3_ Helmholtz-Zentrum für Umweltforschung GmbH - UFZ (24.9.2024)
IV4_ Solawi Leben Netzwerk (26.9.2024)	IB4_ Spörgelhof eG (24.9.2024)
IV5_ Solawi Waldgarten e.V. (30.9.2024)	IB5_ Netzwerk Solidarische Landwirtschaft e.V. (30.9.2024)
IV6_ GeLa Ochsenherz e.V. (30.9.2024)	

Table 1: Selected Interview Partners (Source: Own Visualisation, 2024)

Appendix 2 lists the names and roles of the interview partners in their organisations and the locations of the interviews.

3.2.4 Document Analysis

Another method used in the comparative case study analysis is document analysis. An advantage of document analysis is that the analysed data is already available and does not have to be generated first (Mayring, 2023, p. 43). Another advantage of this method is the variety of documents available; these can be texts, films, or media content, as long as the documents can be interpreted. The qualitative interpretation of the document is crucial (ibid.). In addition to data extracted from the expert interviews, analysing data that exists independently and without any connection to the research project is becoming increasingly important. This concerns various types of written sources, such as official documents (Kaiser, 2021, p. 36).

A document analysis consists of the following four steps. A clear formulation of the research question is always the first step in this research plan, which has already been done in Chapter 1.1. The second step is to define what is considered a document; the source material must be determined, and then the material collected (Mayring, 2023,

p. 44). In this thesis, official documents published by the cities of Vienna and Berlin are used. The third step is to critically assess the source. The intention and origin of the target group and the purpose of a document must be taken into account (ibid.). The researcher should be aware of the objectives and audience of the documents and should be reminded that each document is written for a specific purpose. Reminding oneself about those characteristics of a document helps to keep a critical eye on the data review (Yin, 2018, p. 116). Finally, the documents are interpreted in terms of the research questions in the fourth step (Mayring, 2023, p. 44). The findings of the document analysis are incorporated into the deductive category system from the interview findings.

The selected documents for the analysis are listed in the following Table 2:

Vienna	Berlin
DV1 _Smart Klima City Strategie Wien, 2022	DB1 _Gemeinsam Digital: Berlin, 2022
DV2 _Stadtentwicklungsplan (STEP) 2025, 2014	DB2 _Berliner Energie- und Klimaschutzprogramm (BEK) 2030, 2019
DV3 _Agrarstruktureller Entwicklungsplan Vienna (AgSTEP 2024) 2024, 2023	DB3 _Stadtentwicklung (StEP) Klima 2.0, 2023
DV4 _Zukunft Stadtlandwirtschaft Wien 2025, 2019	DB4 _Berliner Ernährungsstrategie Aktionsplan, 2018
DV5 _Mehrwert Stadtlandwirtschaft: Wiener Landwirtschaftsbericht 2022, 2022	DB5 _Strategie Stadtlandwirtschaft, 2014

Table 2: Selected documents from the document analysis, incl. year of publication (Source: Own Visualisation, 2024)

3.3 Data Analysis and Synthesis

This thesis summarises the empirical findings of the selected mixed methods approach. The analyses of the expert interviews and the documents are presented in

a joint findings section in Chapter 4. The findings help to answer the research questions beyond the theoretical context. Therefore, the results are covered by the analysis of several data (Yin, 2018, p. 128).

The transcribed interviews and the documents are both analysed using a deductive category system derived from the theoretical foundations of the multi-level perspective (Geels, 2002; 2004; 2011; Grin et al., 2010). Furthermore, inductive categories are added from the information provided by the interview partners and documents, especially in the case of the subcodes. To ensure comprehensibility, the entire code system is shown in Figure 8. It is divided into six main categories. These are the three levels of the MLP “Niche”, “Regime”, Landscape”, and “Transition Dynamics”, which primarily considers the interaction of the three levels. The “Case Study” category illustrates the special features of the case studies. The “Document Analysis” category refers to the locations of the documents to present them separately and to include notes from the interviewees on specific documents. The coding process is done with the software MAXQDA 2024.

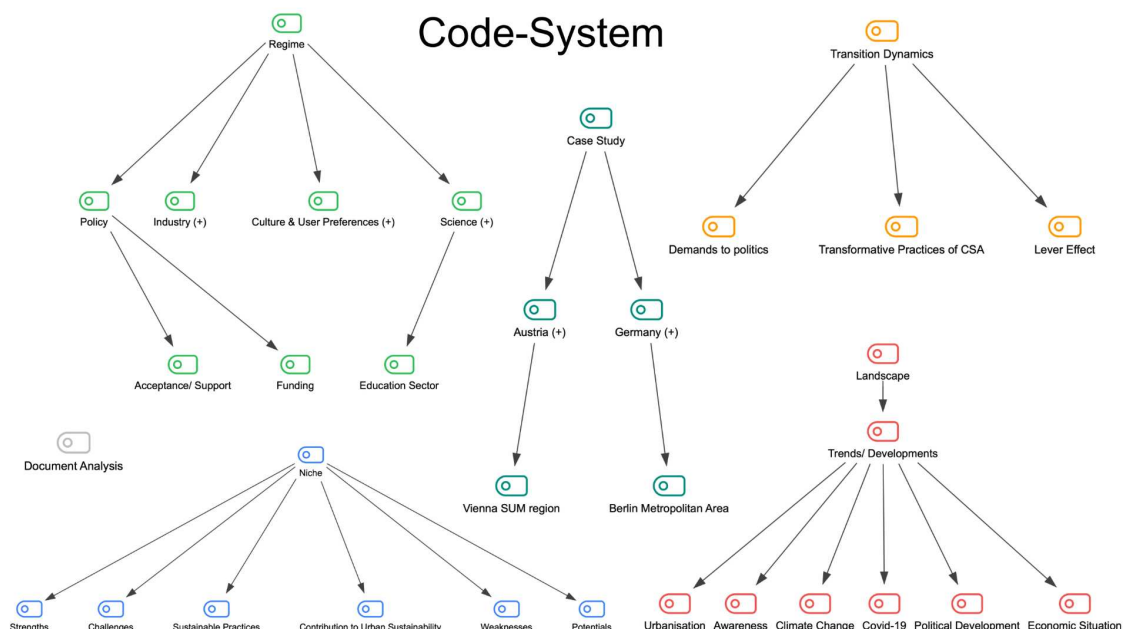


Figure 8: Code-System (Source: Own Visualisation using MAXQDA 2024, 2024)

Qualitative content analysis aims to analyse texts systematically by processing the material step by step, using categorisation systems developed based on the material

(Mayring, 2023, p. 98). This thesis focuses on thematic content analysis as part of the qualitative content analysis, which dominates the evaluation of expert interviews. It is best suited to identify and process the information generated in the expert interviews (Kaiser, 2021, p. 106).

The qualitative content analysis is divided into five steps. Firstly, the necessary text form is produced by recording or transcribing the interview. Secondly, by coding this text material, a connection is established between the expert's interview statements and the preliminary theoretical considerations. In the third step, this coding facilitates the identification of core statements and the comparison of these relevant passages in relation to the research questions. The fourth step consists of expanding the database. This is often necessary because expert interviews can generate information that is not immediately comprehensible to the researcher and, therefore, requires follow-up research. Fifthly, only with this extended database is it possible to generalise and interpret the results of the expert interviews based on theory (Kaiser, 2021, p. 15).

Cross-Case Synthesis

The analysis method cross-case synthesis can only be used when doing a multiple-case analysis and is especially helpful in a study with only two cases. The cross-case synthesis aims to compare certain variables with the data from the multiple (in this thesis, two) cases while at the same time recognising each case as a holistic piece of evidence. This synthesis method intends to view each case as comprehensive and then analyse or combine the patterns found within each case across multiple cases (Yin, 2018, p. 195f). Following this synthesis method, the findings of each case study (Vienna and Berlin) are laid out for each case individually and later compared across both cases.

4. Findings: Comparative Case Study Analysis

“The emergence and expansion of alternative forms of food supply are influenced by various factors on different scales” (Doernberg et al., 2016, p. 1). This chapter presents the findings on the three levels of niche, regime, and landscape of the multi-level perspective in the context of community-supported agriculture in Vienna and Berlin.

Introduction to the Case Studies

Community-supported agriculture initiatives are often located near cities in peri-urban areas (Plank et al., 2020, p. 61). The increasing interdependence between urban and rural regions has been recognised. These rural and urban linkages are essential in the discussion about sustainable food systems, where “city-region food systems” are becoming the critical spatial unit to be researched (Forster & Getz Escudero, 2014, p. iv). The rural surroundings of many urban and metropolitan areas, such as Paris, Milan, or Barcelona, have historically been geared towards the specific demand of urban regions for fresh and perishable foods such as fruit and vegetables (Doernberg et al., 2016, p. 5). The empirical research of this thesis focuses on the two cities, Vienna and Berlin, and their rural surrounding areas.

First, the geographical scope of Vienna is based on a study conducted by the Umweltbundesamt (2017), which examined the interactions between cities and their surrounding areas (“SUM” - “Stadtumlandregion”) for the area of “regional supply of agricultural products/food”. The study was located in the three NUTS 3 regions AT126 (“Wiener Umland/Nordteil”), AT127 (“Wiener Umland/Südteil”) and AT130 (“Wien”), which are used to define the urban and suburban region (= SUM region) as can be seen in Figure 10. In this thesis, the terms Vienna and Vienna SUM region are used interchangeably, always focusing on the whole SUM region.

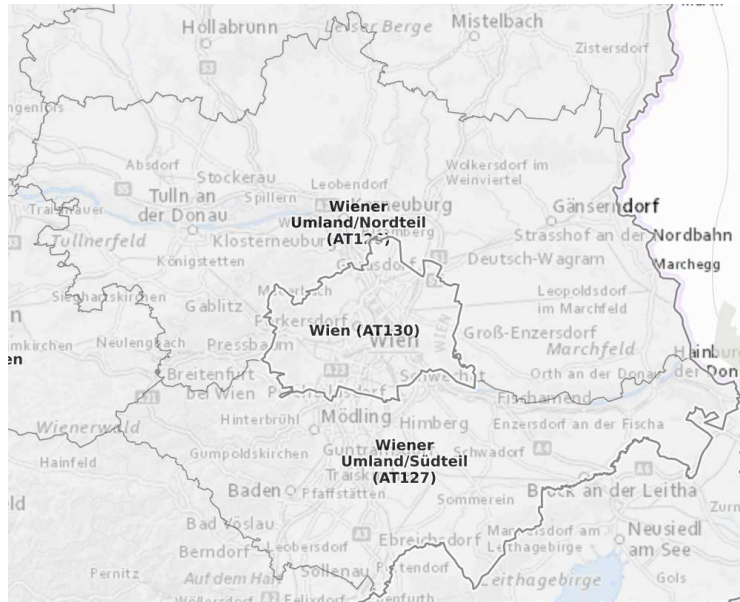


Figure 9: STATatlas: Regionale Gliederungen Österreich - NUTS 3 (Source: Statistik Austria, 2024)

Second, the Berlin Metropolitan Area, which consists of the city of Berlin and the surrounding Federal State of Brandenburg (Gemeinsame Landesplanungsabteilung Berlin-Brandenburg, 2019, p. 6), as seen in Figure 9.

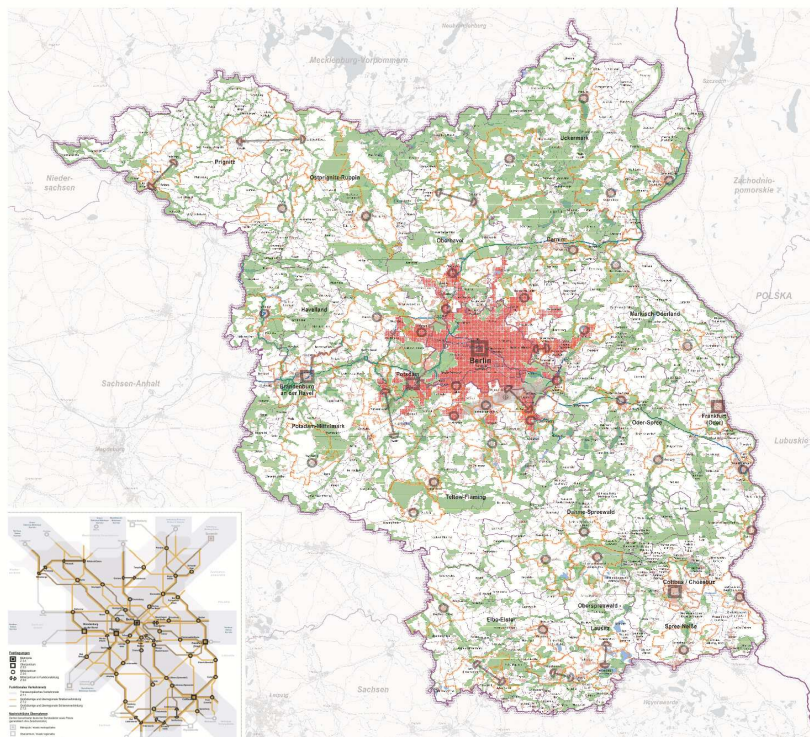


Figure 10: Landesentwicklungsplan Hauptstadtregion Berlin-Brandenburg (LEP HR) Festlegungskarte (Source: Gemeinsame Landesplanungsabteilung Berlin-Brandenburg, 2019a)

Both cities have objectives to cut down emissions and become climate neutral. Vienna aims to reduce local greenhouse gas emissions per capita by 55 per cent by 2030 compared to the base year 2005 and will be climate-neutral from 2040 (DV1). Further concepts that Vienna wants to integrate are zero waste, circular economy, reduced material consumption, conservation of resources, creation of green and open spaces, and local supply and sharing principles (DV1, DV2). All of which align well with the aspects of community-supported agriculture. Berlin has similar goals with a different time frame. The Berlin Energy Transition Act stipulates that at least 40 per cent of CO₂ must be saved by 2020 compared to 1990, 60 per cent by 2030 and at least 85 per cent by 2050 (DB2). Berlin wants to become climate-neutral by 2050. Furthermore, Berlin has the goal of using digitalisation to make previously untapped potential and synergies of the regenerative economy visible and usable. The Berlin-Brandenburg region also aims to create additional infrastructures for a circular and resource-efficient economy, learning experimentation, zero-waste, and a culture of solidarity, sharing, and repairing. Together with Brandenburg, healthy, sustainable, and local food production can be developed in the long term (DB1, DB4).

The global agri-food system has experienced significant changes and reconfigurations in recent decades. Alongside globalisation, commodification, and de-localisation trends, there has been a noticeable shift towards re-localisation (Schermer, 2015a, p. 121). Throughout these changing patterns, there has been a shift from focusing on the material exchange between producers and consumers. The traditional divide between producers and consumers on opposite sides of the value chain is not the only existing view. Instead, producers and consumers can work together, in contrast to the conventional mainstream food system. The best-known example of this shift is the emergence of community-supported agriculture, where the close relationship between producer and consumer is one of the main principles (see chapter 2.6.3) (ibid., p. 122).

For the comparative case study, semi-structured expert interviews and a document analysis are conducted. The selection of experts is presented in Chapter 3.2.3. The documents are selected thematically, primarily to represent the regime perspective. These are strategic conceptual documents published by the respective city.

4.1 Case Study 1: CSA in Vienna

For the Vienna case study, six interviews were conducted, and five documents were analysed, shown in Table 3, including the abbreviations used later.

Documents Vienna	DV1 _Smart Klima City Strategie Wien, 2022
	DV2 _Stadtentwicklungsplan (STEP) 2025, 2014
	DV3 _Agrarstruktureller Entwicklungsplan Vienna (AgSTEP 2024) 2024, 2023
	DV4 _Zukunft Stadtlandwirtschaft Wien 2025, 2019
	DV5 _Mehrwert Stadtlandwirtschaft: Wiener Landwirtschaftsbericht 2022, 2022
Interviews Vienna	IV1 _Ouvertura e.V. & GeLa Ochsenherz e.V. & Munus Foundation (24.9.2024)
	IV2 _GeLa Ochsenherz e.V. (25.9.2024)
	IV3 _Stadt-Umland-Management (SUM) (26.9.2024)
	IV4 _Solawi Leben Netzwerk (26.9.2024)
	IV5 _Solawi Waldgarten e.V. (30.9.2024)
	IV6 _GeLa Ochsenherz e.V. (30.9.2024)

Table 3: Data Material Vienna: Interview Partners and Documents (Source: Own Visualisation, 2024)

Vienna, the capital and largest city of Austria, is located in the northeastern part of the country. With the population recently reaching the 2 million mark, it is Austria's most populous city and its political, economic, and cultural centre. Vienna is currently one of the fastest-growing German-speaking cities, indicating that the dynamic growth process will continue in the coming years (DV2). Since the 1990s, the federal capital has grown by almost 500,000 inhabitants. The forecast shows that Vienna will grow by 310,000 people (+15.6 per cent) by 2053. The population is then expected to reach 2,292,000. The population growth forecast for the next 30 years thus roughly corresponds to that which Vienna has experienced in the past 15 years (Stadt Wien, n.d.). As a result, increasing demand for living space puts agricultural and green

spaces under increasing pressure. At the same time, official planning documents formulate preserving green and agricultural areas as a central goal of Vienna's urban development (DV2, DV3). Vienna's population development is also characterised by trends, such as migration (Stadt Wien, n.d. a).

Vienna has a unique administrative status, functioning as capital city, municipality, and federal state. The city has committed to an agglomeration policy based on collaborative partnerships with surrounding regions, including neighbouring municipalities, Lower Austria, Burgenland, and cross-border centres such as Bratislava and Brno. This collaboration aims to manage the entire metropolitan region more effectively by addressing shared issues like commuter traffic and developing sustainable strategies for regional growth. With over 2.6 million people living in Vienna and its metropolitan core, integrated planning and cooperation with neighbouring areas have become essential for balanced development (DV2). The “Stadt-Umland-Management” (SUM) is an initiative of the provinces of Vienna and Lower Austria for increased cooperation across the provincial border to better utilise the development potential of the urban region. The SUM is dedicated to planning and management tasks concerning both Vienna and the neighbouring municipalities in Lower Austria (DV3). A summary of the SUM Forum for urban agriculture at the Zukunftshof Rothneusiedl in 2023 shows that the topics discussed partly coincide with the topics of community-supported agriculture, such as education and appreciation of food, plant-orientated, seasonal, organic, and consumer-oriented, local nutrition, and market gardening (SUM, 2023). However, the SUM has no points of contact with CSA in particular yet, while the interest seems high and has the potential to be recognised (IV3).

Vienna is the city with the highest quality of life (DV1, DV3). In 2024, Vienna was named the world's most liveable city by the British Economist in its annual Global Liveability Ranking for the third time in a row. The decisive factor for the top position in this ranking success was the full score for stability, healthcare system, education, and infrastructure in a global comparison of cities (Stadt Wien, n.d. b; DV5). Vienna presents itself not only as a social but also as a green city (DV3). Around 50 per cent of the city's surface area is green space, 630 farms, and more and more community gardens are springing up (Kumnig, 2017, p. 139). At the same time, agricultural land

is coming under increasing pressure against the backdrop of constant population growth and a massive construction boom. However, the consequence of this is not the complete displacement of urban vegetable production. Instead, there is a selective preservation and even activation of certain forms of urban agriculture and gardens (ibid.).

Agriculture occupies a special position in Vienna, as it is the only cosmopolitan city with a significant agricultural sector. The federal state of Vienna covers a total area of 41,487 hectares. According to the 2020 land use mapping, the proportion of agricultural land is around 5,932 hectares, from which around 4,129 ha (70 per cent) are used for arable farming (DV3). With around 2,200 hectares, Vienna has one of the largest agricultural holdings in Austria (DV5). The city of Vienna cultivates 100 per cent of its agricultural land organically, supports private farms in converting to organic farming, and cooperates with farms in the city region to enable a variety of distribution channels for local supply, such as pick-up stations or boxes (DV1, DV3). While 1.6 million people were employed in agriculture and forestry across Austria in 1951, compared to 31,000 people in Vienna, the number fell. For 2020, 420,000 workers were registered in agriculture and forestry throughout Austria, with 3,145 in Vienna. Compared to 2010, this represents a slight increase of 6,263 workers for all federal states but a slight decrease of 32 people for Vienna (DV5). Furthermore, the income of the agricultural workforce is highly volatile, being dependent on external factors, such as weather conditions or economic developments (DV5). The sector may be small, but it cultivates large areas of land. Some crops, such as wine, fruit and vegetable cultivation, or organic farming, not only generate income but also fulfil other important services such as identity creation, local supply of fresh food, local recreation, and ecological functions. The agricultural structural development plan (AgSTEP 2024) contains a demarcation of areas reserved for agriculture and proposes measures that contribute to securing the cultivation of these areas (DV2). The plan further states that areas should be secured for new forms of agriculture, such as self-harvest fields and community gardens, which increasingly focus on the experience of nature and the connection to food production (DV2). In the AGStep2025, there are certain priority areas dedicated to agriculture; however, out of three categories, two are only for large-scale projects, making up 98 per cent of the priority areas (DV3). Regarding self-sufficiency, the consumption of some foods is covered entirely or mainly by domestic

production, while the country depends on imports for others. In summary, Austrian agriculture can cover 100 per cent of the demand for wine, 94 per cent for grain, 90 per cent for potatoes, 58 per cent for vegetables, 48 per cent for fruit, 47 per cent for oilseeds and 25 per cent for vegetable oils (DV5). In Vienna, research shows that in terms of vegetables, the city could supply itself entirely from local production if all available lands were used accordingly (IV3).

While CSA has its origins in the 1960s in different countries, as already mentioned in Chapter 2.6.2, Austria's first CSA initiative, the "GeLa Ochsenherz", was started only in 2011 in Gänserndorf, an area in Lower Austria near Vienna (IV3, IV4). "GeLa" stands for "Gemeinsam Landwirtschaften" or "Gemeinschaftsgetragenes Landwirtschaften", which can be translated to collective farming (IV4). GeLa Ochsenherz today supplies around 400 households. After establishing the CSA initiative GeLa Ochsenherz, around 30 CSA projects were developed and spread primarily in the east of the country (Plank et al., 2020, p. 55). Currently, there are 70-80 CSAs in Austria (IV1). Seven CSAs are supplying Vienna with either producing in the city and/ or delivering to city households (IV4).

4.1.1 Niche Innovations

This chapter explores the defining characteristics, strengths, and weaknesses of community-supported agriculture initiatives in Vienna. It examines the key challenges these initiatives face and their potential for the future. Additionally, the chapter delves into how CSAs contribute to urban sustainability, particularly within the framework of Vienna's Smart City concept, highlighting their role in promoting local food systems and sustainable city living.

When defining community-supported agriculture, all interview participants emphasised the solidarity between producers and consumers. CSA is a partnership between the producers of vegetables and other products and, on the other hand, the consumers, who try to ensure a stable supply of food produced regionally and in regenerative agriculture. The concept works according to the principle of sharing. They not only share the harvest but also the costs and the responsibility for it (IV2). At the same time, they stressed the shared responsibility and risk, enabling the farmers to produce the

whole season while being independent from market mechanisms. This allows farmers to cultivate certain crops that otherwise would not be profitable and be considerate of the nature and environment around them (IV4). Another important point is that there is no price to the product but a monthly membership contribution (mostly paid yearly in advance (IV2)) that the members themselves can choose depending on their living situation, called self-assessment (IV1, IV6). This is described as a transformative approach, doing business while focusing on the social aspect (IV1). For some, the main driver for joining this concept is that it points beyond the current way of doing business, which is profit-orientated and often environmentally destructive (IV1, IV3).

Strengths of CSA in Vienna

As one of the strengths, CSA members in Vienna see the decoupling from the market mechanisms, which allows farmers to plan ahead of time while being independent of crop losses (IV5, IV4). “The moment a CSA has allocated all its harvest shares, it can concentrate fully on farming and no longer has to worry about what happens if prices fall or there are massive crop failures. For this upcoming season, the farm is secured in the market” (IV4, translated from German¹).

Another important point is the **strong community and involvement** aspect. Members are encouraged to help in the fields, supporting the farmer in his work (IV5). “Through this community, you make social contacts; people who might be in different phases of life come together and exchange ideas” (IV2, translated from German²). This high involvement also enables a mechanism that some CSAs implemented, where members can choose if they want to contribute to the community either with monetary resources or by contributing in other ways by spending time on the field, supporting with manual labour, helping with internal and organisational aspects or others (IV2, IV1). At GeLa Ochsenherz, for instance, this allows members to choose between how much they want to pay and how much they want to work for their harvest share. In

¹ „In dem Moment, wo eine Solawi mal alle ihre Ernteanteile vergeben hat, kann sie sich voll und ganz auf die Landwirtschaft konzentrieren und muss sich keine Sorgen mehr machen, was ist, wenn Preisverfall ist oder wenn es massive Ernteaussfälle gibt. Für diese kommende Saison ist der Betrieb im Markt gesichert“ (IV4, original).

² “Durch diese Gemeinschaft knüpft man soziale Kontakte. Menschen, die sich vielleicht in unterschiedlichen Lebensphasen befinden, kommen zusammen und tauschen Ideen aus“ (IV2, original).

some cases, members even choose to cover the contribution entirely by manual labour, paying no membership fee in a narrow sense (IV2).

All those mechanisms are only possible because the concept of community-supported agriculture in Vienna is based on **small-scale structures**, and there is no aspiration for endless growth (IV4, IV6). “CSAs should not grow; they should become more” (IV1, translated from German³). An example can be seen in Vienna, where the CSAs GeLa Ochsenherz, Ackerschön, and Ouvertura all come from the same beginning and are now three individual projects instead of one. In contrast to the conventional economic way of thinking, size is not a goal in this case because it harms the model and sustainability (IV1). This aspect of small-scale farming enables social cohesion and a social control mechanism that prevents the basic principles, such as self-assessment of membership fees, from being exploited, because the groups are small enough for people to create a certain system of mutual responsibility (IV1).

These small-scale structures lead to the next strength of CSAs, which is **transparency**. Due to the small community being highly involved in the process, members have high transparency of knowing exactly how the products are being cultivated, which creates trust among the community and producers (IV2, IV6). At Ouvertura, for example, there is a participatory guarantee system, similar to an audit for production. Members are invited to visit the field and check whether the way the CSA produces aligns with what they envision, and the results are discussed at the annual meeting (IV1).

Another aspect being mentioned by some members is the **resilience** of community-supported agriculture. Due to the decoupling of the market and global supply chains, they are also independent in times of crisis. In addition, crop failures are rare because farmers minimise the risk by increasing the number of vegetables they grow and the staggered sowing or planting (IV6). An example mentioned here was the start of the Ukraine war, which caused a strong wave of inflation. Members of GeLa Ochsenherz set their contribution in January for the whole year, paying the same amount for their vegetables all year round, while foods in the supermarket have become 50 or even 80

³ “Solawis sollten nicht größer werden, es sollten mehr werden” (IV1, original).

per cent more expensive. “You have much more planning security with CSAs than with supermarkets - it is a yearlong price guarantee” (IV4, translated from German⁴).

Furthermore, CSA is “trying to give back a bit of quality of life to the citizens by giving them back local vegetables and others so that they do not have to rely on these supermarket chains” (IV2, translated from German⁵). Another strength of CSA mentioned is the access to a variety of **local, organic, seasonal, fresh, unpacked, and high-quality food** (IV2, IV6). Community-supported agriculture raises awareness among members by showing them how the products they consume are cultivated and where they are from (IV2).

CSA in the Urban Context

One of the strengths of CSA in urban areas is its ability to provide access to locally sourced food for citizens who do not have personal outdoor spaces, like balconies, terraces, or gardens. This allows urban residents to engage in local food production despite their lack of access to private agricultural spaces (IV2). Urban CSAs also offer a sense of self-sufficiency and the chance to participate in a more sustainable lifestyle, as the produce is locally grown and the transportation distances are very short, reducing the carbon footprint (IV2). Urban contexts are advantageous for CSA because they present large consumer markets. With many people living in dense city areas, there is a high demand for fresh, locally grown produce, making it easier for CSAs to find participants. Urban areas also present opportunities to integrate CSA into urban planning and development projects, such as the concept of edible cities, making them more visible and accessible to a broader audience (IV3). However, it is also noted that the concept of CSA often struggles in rural areas due to difficulties in reaching enough participants (IV4). Vienna has a clear trend toward integrating local food systems into the urban fabric, with a growing interest in initiatives like food coops and urban gardening projects. These often operate alongside or in competition with CSA, but collectively, they indicate a strong demand for local, sustainable food production in the city (IV6). At the same time, the socio-economic makeup of urban

⁴ „Es ist viel mehr Planungssicherheit als wenn ich im Supermarkt einkaufe. Man hat ein Jahr lang eine Preisgarantie“ (IV4, original).

⁵ “... den Bürgern ein bisschen Lebensqualität dadurch zurückzugeben, dass sie lokales Gemüse und anderes anbieten, damit sie nicht auf die Supermarktketten angewiesen sind“ (IV2, original).

areas can influence the success of CSA. Wealthier, more politically engaged communities tend to support CSAs more actively, while lower-income areas might be less interested, with many residents relying on their gardens or other, more affordable food sources (IV5).

Weaknesses of CSA in Vienna

One of the most significant weaknesses of the current concept of community-supported agriculture in Vienna is the **commitment** and engagement of members needed. “We live in an ego-centred society, at least in Austria and neighbouring countries” (IV2, translated from German⁶). A common challenge connected to commitment is the lack of flexibility. CSA members need to pick up their harvest share at fixed times, which can be difficult for those with full-time jobs or busy schedules. This inconvenience can lead to people dropping out or losing interest (IV1, IV4). Additionally, participants are limited to seasonal crops, which might not always meet their expectations or preferences. For example, “if someone wants tomatoes in February, they will not get them, which can be frustrating for those used to supermarket convenience” (IV2, translated from German⁷). Another key barrier is the price and upfront payment of the membership fee. The idea of paying in advance, often around 100 euros (for example, 146 Euros per month at GeLa Ochsenherz), can be off-putting, especially for those who will not make the step to calculate the value of locally grown, organic products compared to cheaper supermarket alternatives. This financial barrier can prevent potential members from joining (IV2, IV4). Even though CSA promotes solidarity-based pricing, where wealthier members contribute more to support those who can pay less, this idea is not always well understood or accepted (IV4, IV6).

Engagement in the community aspect of CSA is also a problem. Many people are unwilling or unable to invest the time required to participate fully, whether by helping with harvests or attending to other farm duties. Additionally, for those who engage, there is a high turnover of workers, particularly young people who view such work as

⁶ “Es ist eine ganz ego-zentrierte Welt in der wir leben, zumindest in Österreich und den Nachbarländern” (IV2, original).

⁷ „Wenn jemand im Februar Tomaten will, dann wird er keine bekommen. Das kann dann schon frustrierend sein, wenn man es gewöhnt ist, dass es im Supermarkt diesen Komfort gibt“ (IV2, original).

temporary (IV6, IV2), leading to the next weakness of the CSA concept, the **dependence on the community**. Firstly, CSAs rely heavily on securing enough members to ensure financial viability. Without a certain number of participants, particularly those willing to commit financially and consistently, the CSA model struggles to cover operational costs (IV4, IV6). The size of the community is crucial, and finding enough households that both desire and can afford the regular delivery of fresh, local produce can be challenging (IV4). Furthermore, many CSAs depend on the involvement of members in fieldwork. Members are expected to assist with farming tasks, like harvesting. “In the end, we must have this quantity of vegetables together. And if I don't achieve my quota, then the others must achieve mine. And that is not the spirit of CSA” (IV2, translated from German⁸). This hands-on involvement is especially critical during unexpected challenges, such as poor weather or crop failures (IV2). This can also lead to problems because a lot of people who do not have an agricultural background have a say in agricultural aspects. On the other hand, it is advantageous if the community has a say in the crops and can give feedback (IV5). Finally, the CSA model heavily depends on the farmers and a stable workforce. Finding consistent labour can be difficult, with high turnover rates among younger workers who may only stay for a short period. Establishing a reliable workforce alongside community volunteers is complex and time-consuming for farmers (IV5, IV6). Especially in the starting phase of a CSA, it can be challenging to build up infrastructure while not having enough members yet. This can lead to most of the work being managed by the founder (in this case, also the farmer) alone without any support (IV5).

Regarding the **composition of members**, there are different points of view. On the one hand, the danger of becoming an exclusive “bobo” event for the wealthy middle class in the cities who can afford it is cited as a weakness (IV1). On the other hand, the composition of members is described as “surprisingly heterogeneous” (IV4, translated from German⁹), ranging from students to retired people, people with a stable income or no income at all. However, a common denominator is that members are enthusiastic about food and open to alternatives (IV4). On both sides, it is argued that

⁸ „Am Ende müssen wir diese Quantität an Gemüse zusammenhaben. Und wenn ich nicht mein Pensum erreiche, dann müssen die anderen mein Pensum erreichen. Und das ist nicht der Spirit von Solawi“ (IV2, original).

⁹ „überraschend heterogen“ (IV4, original)

certain inequalities can be balanced by the mechanism of members assessing their contribution by themselves. Therefore, some members pay more than others to compensate those who cannot afford such a high contribution (IV1, IV4).

Challenges of CSA in Vienna

“It is a drop of hope in an ocean of market economy, greed for profit and competition. And it is in this ocean that we must move“ (IV1, translated from German¹⁰).

CSAs in Vienna face several challenges, ranging from social and financial to physical aspects, which are described in more detail below.

The **social challenges** that were named partly overlap with certain weaknesses already mentioned, such as the challenge of finding enough committed members willing to pay, the lack of engagement for the community (IV2), or the fluctuation of the workforce (IV2, IV6). Another challenge is the need for agricultural knowledge to start a CSA (IV4, IV5, IV6). A good practice for starting a CSA can be working with an existing farm and turning it into a community-supported agriculture model (IV4). However, this transition can also cause tension between members until a consensus is met (IV1). Nevertheless, it can be helpful to convince an existing farm of the concept and set up a CSA with them rather than start from scratch, making the learning curve a lot flatter. Studies show that successful CSAs usually start with an existing community (IV4).

CSA as the previously mentioned “drop of emancipation in the ocean of the market economy is within the narrow corset of what is possible in terms of money and how it is embedded in the market economy. Because we don't have more money than we have, and we can consider how we distribute it and try to get more from the members” (IV1, translated from German¹¹).

¹⁰ „Es ist ein Tropfen der Hoffnung in einem Ozean aus Marktwirtschaft, Profitgier und Konkurrenz. Und in diesem, in diesem Ozean müssen wir uns bewegen“ (IV1, original).

¹¹ „... der Tropfen der Emanzipation im Ozean der Marktwirtschaft ist in dem engen Korsett dessen, was an Geld möglich ist und wie das marktwirtschaftlich eingebettet ist. Weil wir haben halt nicht mehr Geld, als wir haben und wir können überlegen, wie wir es verteilen und können versuchen, mehr von den Mitgliedern zu bekommen“ (IV1, original).

Financial challenges include the contribution of members. For some CSAs, the financing through the membership fees is working well, while it is not for others. “Goodwill is not enough; you have to work with a certain business model” (IV2, translated from German¹²), where certain people control the finances. In the case of GeLa Ochsenherz, this issue is solved with the discussion of finances in the annual meeting, where all members work on raising the necessary budget together (again working with the mechanism of self-assessment) (IV2, IV6).

Another challenge is that the high membership fee presents a barrier for people to join the CSA, which can also lead to farmers being forced to resort to selling otherwise, such as to other farmers or shops (IV5). Furthermore, the small amount of financial resources also leads to low employee wages (IV1, IV6). A solution for this challenge is to apply the already explained concept of self-assessment to the farmers and employees. While members should be able to choose a fee themselves, considering how much they can contribute, monetary and non-monetary, workers should do the same by considering how much time they can work and how much financial compensation they need for their living situation (IV1, IV6). Therefore, the self-assessment mechanism is no longer a contradiction between the members and the workers, but it becomes a common core question (IV1).

Another financial challenge is the dependence on funding to compensate for the small amount of financial resources, which are oftentimes hard to get since they are bound to certain requirements (IV5). The topic of funding is addressed in more detail below in Chapter 4.1.2.

A typical **physical challenge** all interviewees address is access to suitable land for the CSA. Suitable land is described as land where it is possible to grow certain types of crops (IV6), accessible to members and workers, and equipped with infrastructure such as water and electricity (IV5). Most CSAs get their land through lease agreements, such as the CSA Ackerschön, which are usually concluded long-term. However, it always presents a certain amount of uncertainty, primarily when investing, because, at the end of the day, “you are at the mercy of the owner” (IV4, translated

¹² “Dieser gute Wille reicht dann nicht, es braucht schon auch ein Business Model” (IV2, original).

from German¹³). In addition, due to the sealing of soil and increased land prices in urban contexts, access to land is becoming more and more challenging (IV3). A founding member of GeLa Ochsenherz shared an example of access to land: “We started with small plots of leased land from a local farmer. When this land was converted into building land, as is customary, the farmer wanted to sell it for a profit, which is why we had to leave. We were lucky that the farmer had two hectares of land nearby at the time, and we could lease more land adjacent to it. Good parts of this land have now been secured with the Munus Foundation. Part of it is still leased land and therefore still precarious” (IV1, translated from German¹⁴). The non-profit Munus Foundation is a community of people who want to dedicate property or money to a solidary, ecological, or emancipatory purpose. For instance, the foundation bought some land that the GeLa Ochsenherz is now cultivating, ensuring that the land is dedicated to this purpose. These areas are withdrawn from the market, and even if they all become building land, they will still be available as agricultural land for ecological projects (IV1, IV6). Such dedicated land areas that belong to the Munus Foundation are also the case for the CSA Ouvertura (IV1).

Potentials of CSA in Vienna

“Community-supported agriculture has a great potential to be a real example of how we can produce and exchange in a communal, egalitarian, and sustainable way, which is a fundamental need for food” (IV1, translated from German¹⁵).

According to the SUM, representatives of the Lower Austrian Chamber of Agriculture see a vast potential for topics such as the city farm or edible city as in the Rothneusiedl region (IV3). There is also great potential in the field of local supply in Vienna; whether this takes place in the form of community-supported agriculture plays a subordinate role. The city of Vienna addresses this topic with concepts such as edible cities, climate cities, and urban farming because these concepts can be marketed well.

¹³ „... ist man der Willkür des Eigentümers ausgesetzt“ (IV4, original).

¹⁴ „Wir hatten kleine Flächen, von einem ortsansässigen Landwirt gepachtet. Als dieses Land, wie üblich, in Bauland umgewandelt wurde, wollte der Bauer es gewinnbringend verkaufen, deshalb mussten wir weg. Wir hatten das Glück, dass der Bauer damals zwei Hektar Land nebenan hatte, und wir konnten weiteres Land pachten. Ein großer Teil dieses Landes ist inzwischen durch die Munus-Stiftung gesichert. Ein Teil davon ist immer noch gepachtet und daher prekär“ (IV1, original).

¹⁵ „Die solidarische Landwirtschaft hat ein hohes Potenzial in sich, ein reales Beispiel dafür zu sein, wie wir gemeinschaftlich, egalitär und nachhaltig produzieren und austauschen können; das ist ein grundlegendes Bedürfnis für Lebensmittel“ (IV1, original).

Community-supported agriculture is just one of many business models in this context (IV3). In the future, CSAs alone cannot or should not feed the whole city. Every system needs diversity in terms of the concepts that are part of the system (IV4). One example of further potential (similar to Japan) is building cooperative supermarkets, where small farmers deliver to a supermarket characterised by cooperation and joint distribution, eventually replacing many standard supermarket products (IV5).

CSA members acknowledge their pioneering role in driving change in the food system; however, right now, they lack time and financial resources (IV5, IV1). In conclusion, all interviewees considered community-supported agriculture a niche, and even the exact wording “niche” was used by four out of the six interviewees. However, most of them see the growth of CSA projects in recent years as a marker of the concept's potential to evolve into more prominent structures (IV1, IV2, IV5) and potentially even reach the mainstream (IV4). There are 70-80 CSAs in Austria (IV1), seven CSAs are supplying Vienna, some of which have their operations in Vienna or deliver to Vienna. The largest one is GeLa Ochsenherz, with 300 harvest shares, providing 400 households. In total, around 1000 households are supplied by CSAs throughout Vienna (IV1, IV4). “We are still in the pioneering phase that all developments go through. And it can now develop in this niche. You look at what works, what doesn't work, what needs to be adapted so that it works for more people. And at some point, the time will also come when it can go mainstream” (IV4, translated from German¹⁶). In this phase, “there is the need for CSA members to get out of their corner a little and show what this concept can achieve for the general public and also include that in the communication” (IV3, translated from German¹⁷).

CSA members have different views on the potential of technological advancements. Some see them as a tool with significant potential to enhance efficiency in various aspects of farming, such as automated irrigation systems and renewable energy sources, that could make CSAs more attractive and sustainable (IV2, IV5). For

¹⁶ „Wir sind noch in der Pionierphase, die alle Entwicklungen durchmachen. Und in dieser Nische kann sich es jetzt entwickeln. Da schaut man, was funktioniert, was nicht funktioniert, was muss man adaptieren, damit es für mehr Leute funktioniert. Und irgendwann wird auch der Zeitpunkt da sein, wo es in die Breite gehen kann“ (IV4, original).

¹⁷ „Da muss man vielleicht ein bisschen raus aus dieser Ecke. Und was So ein Konzept auch für die Allgemeinheit leisten kann. Das muss man in der Kommunikation berücksichtigen“ (IV3, original).

example, automating irrigation could save time and energy, allowing farmers to control systems remotely, which is especially helpful when financial constraints prevent hiring additional labour (IV5). While there is a recognition of the benefits of digital tools, such as apps, that help with crop planning and marketing, a desire remains to balance these advancements with the hands-on, community-oriented nature of CSA farming (IV1, IV5). On the other hand, some CSAs still lean towards traditional, manual methods, seeing high-tech solutions as somewhat contrary to their principles of returning to simpler, more sustainable agricultural practices (IV2).

Sustainable Practices of CSAs in Vienna

“I help with the harvest, bring my jute bag, take the vegetables with me, and then travel home by public transport. If they're all powered by green electricity, then I'm already doing relatively well in terms of my ecological footprint. CSA is a tool to achieve environmental awareness” (IV2, translated from German¹⁸).

There are several sustainable practices applied by CSAs in Vienna. Some are driven by the concept of a circular economy, such as the reduction of food waste. If products are no longer edible, they are put in the compost and work them back into the soil. Members are not expecting standardised products as in the supermarket, so CSAs do not have to work towards a certain physical standard. “Sometimes, we have already harvested five boxes of peppers, and someone suddenly says, ‘Wow, the peppers look like they are from the supermarket.’ Then you realise that if we spend half an hour harvesting peppers for a supermarket, you do not want to know what has to be thrown away, making those the only ones left over” (IV4, translated from German¹⁹).

Other points are the avoidance of packaging of products (IV2, IV4) and the short transport routes from the fields to the distribution in the city, leading to small emissions

¹⁸ “Ich helfe bei der Ernte, bringe meinen Jutebeutel mit, nehme das Gemüse mit und fahre dann mit den Öffis nach Hause. Wenn die alle mit grünem Strom betrieben werden, dann ist mein ökologischer Fußabdruck schon relativ gut. Solawi ist ein Tool zur Förderung des Umweltbewusstseins” (IV2, original).

¹⁹ “Manchmal haben wir schon fünf Kisten Paprika geerntet und plötzlich sagt jemand: 'Wow, die Paprika schauen aus wie aus dem Supermarkt.' Dann wird einem klar, wenn wir eine halbe Stunde damit verbringen, Supermarkt-Paprika zu ernten, will man gar nicht wissen, was weggeschmissen wird, damit nur diese übrig bleiben“ (IV4, original).

(IV2, IV4, IV6). Furthermore, the mindful use of energy is a topic, not heating foil tunnels, and the goal of reaching energy autonomy (IV5, IV6).

In terms of cultivation, the positive impact on biodiversity is an objective (IV2, IV5). The cultivation of CSAs includes various sustainable practices, such as soil cultivation and humus formation (IV1, IV3, IV5) and the preservation of seed-resistant varieties and their seed and young plant production, which was the case with all CSA interview partners. Other aspects are market gardening (IV5), drip irrigation (IV6), agroforestry (IV5, IV6), and organic farming in all cases, or in the case of GeLa Ochsenherz even Demeter farming, which goes one step beyond organic farming (IV2, IV4, IV6). This includes, for instance, the total renunciation of pesticides and artificial fertilisers (IV4). Finally, polyculture is preferred to monoculture (IV2, IV3).

Contribution to Urban Sustainability

Currently, the environmental impact on cities, in terms of biodiversity and avoidance of CO₂ emissions through unnecessary transportation or packaging, is negligible on the scale that CSA currently has (IV4). However, where CSA already impacts urban sustainability is on the level of raising awareness amongst citizens regarding sustainable consumption of food (IV2, IV3, IV4). In terms of education, CSAs are working with schools to start learning about sustainable food at a young age (IV2). “By learning about seasonal and regional food, you notice how a process starts with the members and spreads within themselves. Then, it usually infects a few people around them, spilling over into other areas of life, such as housing or mobility. I think that is the impact we want to have now” (IV4, translated from German²⁰). One interviewee acknowledges the leverage effect of CSA when it comes to education and raising awareness (IV2). In contrast, another interviewee believes that while the leverage effect of CSA is there, it might not be enough to transform the whole system alone (IV3).

²⁰ “Wenn man sich mit saisonalen und regionalen Lebensmitteln beschäftigt, merkt man, wie ein Prozess in den Mitgliedern startet und sich in ihnen selbst ausbreitet. Dann steckt er in der Regel einige Menschen in ihrem Umfeld an und schwappt auf andere Lebensbereiche über, wie etwa Wohnen oder Mobilität. Ich denke, das ist der Impact, den wir jetzt haben wollen“ (IV4, original).

4.1.2 Regime Interactions

The relationship between niches and regimes is about how those actors of both niches and the regime interact and build or not build bridges that enable collaboration that can lead to a reconfiguration of the system (El Bilali, 2019, p. 11). This chapter describes the regime of the current food system in Vienna/ Austria and presents the findings on how community-supported agriculture and the regime interact with each other. In addition, it is explained how the concept of Smart Cities is embedded in the city regime and the connection to CSA is explored.

In Austria, the food system has undergone a radical transformation in recent decades from the post-war supply system to a globalised market economy (Schermer, 2015, p. 34). The unique features of the food industry are the high level of regulation and the specific influence of social practices (ibid., p. 39). In 2015, Schermer found that the current configurations of the agri-food system in Austria prevent a mass movement towards initiatives such as community-supported agriculture (Schermer, 2015a, p. 122). This chapter gives an overview of the characteristics of the current food system in the Vienna SUM region. After Geels (2002, 2011), this chapter will describe the socio-technical food regime in terms of market user preference, culture, policy, science, industry, and technology, specifically focusing on the Smart City framework in Vienna.

“The question is whether we as humans recognise and accept that we take responsibility for where our food comes from and under what circumstances it is produced” (IV1, translated from German²¹). While the general attitude towards agriculture is very positive (for example, 94 per cent of the population surveyed have a positive image of farmers, and 90 per cent see agriculture as an important part of Austrian culture) (DV5), open-mindedness towards new concepts is relatively low. One of the issues perceived by the interviewees regarding **culture and market preferences** is the ingrained mindset shaped by the competitive, profit-driven market, which influences consumer choices (IV1). Many consumers, especially those facing

²¹ „Die Frage ist, ob wir als Menschen erkennen und akzeptieren, dass wir Verantwortung dafür übernehmen, woher unsere Lebensmittel kommen und unter welchen Umständen sie produziert werden“ (IV1, original).

economic pressures and limited time, struggle to engage with alternatives like CSA. For example, people have certain hesitation about the commitments required, such as picking up food at fixed times, and financial barriers like the high membership costs (IV1, IV4). The comparison to supermarket prices leads many potential members to question whether CSAs offer enough added value for their involvement, especially when supermarkets have started to offer regional and exotic products themselves, which were once distinguishing features of CSAs (IV1). In addition, members of CSAs need to be flexible, while many people still have a conservative mindset towards food, hesitating to try out new ingredients (IV6). Another challenge is the current system's lack of awareness and understanding of CSA models. One of the reasons why CSAs are still at the niche level is that people do not know about it or do not accept the concept because of either commitment or costs, as mentioned above (IV2). While those involved often become more engaged over time, the concept remains unfamiliar or unappealing to many. The need for public outreach and education is crucial to expand CSAs beyond niche markets and increase their appeal. Despite this, structural challenges persist. The dominance of large corporations in the food market limits the competitive potential of smaller, localised systems like CSAs (IV2, IV4). Unless there is a broader societal, structural shift away from the current profit-driven food system, CSAs will likely continue to face difficulties in scaling and competing effectively with traditional supermarket chains (IV2). To increase the awareness and importance of concepts such as CSA, support from the political side is needed (IV2, IV3), as well as public communication with and from CSAs (IV4).

The traditional agricultural **industry** is still dominated by large-scale, machinery-driven methods, leaving little space for innovative models like community-supported agriculture. Although these innovative approaches hold potential, they remain marginalised within the current agricultural structures, limiting their broader adoption (IV3). Some CSAs work with partners from agriculture and the production side, establishing a quid-pro-quo solution that benefits both sides to extend the idea of community-supported agriculture to other farms and experiment together. For example, small and mid-size farms are interested in innovating and learning about new ways of farming, which leads them to partner up with CSAs (IV1, IV4). In general, there are two ways of building up CSAs: either starting with a community and looking for a farm to start or an already existing farm adopting the CSA concept and looking for a

community (IV5). The adoption of the CSA concept often happens when a generational transition takes place on a farm, offering a good opportunity to change the business model. However, this approach does not suit all farms or regions in Austria. Support networks offer guidance to farms considering the transition. However, public assistance could help expand these efforts even more. The process requires different planning strategies compared to farming for the open market. However, there are several advantages to working with an existing farm instead of starting from scratch, such as getting the necessary agricultural know-how (IV4). One successful example is the CSA Waldgarten, where a Demeter farmer (160 hectares) was interested in the CSA concept and leased part of his land to the CSA (IV5).

In Austria, there is an umbrella organisation called “Solawi Leben” that aims to connect CSA organisations from all over the country (IV1, IV2, IV4). Its main goals are raising public awareness about CSAs, fostering collaboration among existing farms, and organising regular national meetings to share experiences and solutions. The network also plans to provide advisory services for new and transitioning farms, with future ambitions to represent CSA interests in political discussions. Key principles of the network are collaboration and synergy, emphasising solidarity and mutual support rather than competition (IV4). Some CSAs work together closely on different levels, for example, by exchanging goods and creating a wide range of products, as in the case of CSA Ouvertura and GeLa Ochsenherz (IV1, IV2). While GeLa Ochsenherz delivers to around 400 households, primarily focusing on vegetables, Ouvertura delivers to 100 households, also focusing on food processing (IV1).

There are also other institutions that CSAs collaborate with, such as the Vienna Food Council or the ÖBV (Österreichische Berg- und Kleinbäuer_innen Vereinigung), an organisation supporting small farmers. The CSA network Solawi Leben also collaborates with other networks, such as the Netzwerk Solidarische Landwirtschaft in Germany and others in Europe. Other partners are, for instance, food coops, such as MILA (Mitmach-Supermarkt), a community-driven supermarket (IV4). Several CSAs leased land from the Munus Foundation, a private foundation that aims to secure land for agricultural, sustainable agricultural production (IV1, IV4).

In the urban context of Vienna, one strength is the potential market and target audiences, such as kindergartens, schools, care homes, and hospitals. There are many potential consumers who could be involved more closely in urban development (IV3). In urban contexts, innovative agricultural practices such as edible cities and city farms (IV4) in the context of the Smart City are of high interest. On the other hand, in Lower Austria, traditional agriculture is still of great interest, leaving a different attitude towards alternative concepts and no space for urban concepts (IV3). While in Vienna, there are certain showcase projects, such as the Rothneusiedl area, in Lower Austria, those concepts remain even more of a niche (IV3).

“CSAs, food coops, cooperative supermarkets - all this together is the future food system. The current situation, where three corporations dominate 80 per cent of the food market, is not the right way” (IV4, translated from German²²). In general, there is a mix of idealism and scepticism regarding the potential for expanding community-supported agriculture in the currently existing system. On the one hand, there is a belief that a structural shift in how society operates is necessary to make concepts like CSAs reach a broader mass. The current profit-driven mindset is seen as a barrier that keeps many people from embracing CSAs, as these are not competitive with large corporations and supermarket chains (IV2). “The market economy is unbeatable at turning everything into profit that can be turned into profit” (IV1, translated from German²³). Therefore, the regime has already changed, so organic, seasonal, and regional products have long been available in all supermarkets, making it harder for CSAs to be a new alternative. Thus, they have to focus more on solidarity as a unique selling point, which is difficult to achieve in the regime because the market mechanisms and the mindset of the population are rigid (IV1).

The acknowledgement of the CSA concept in **science and research** is high, as can be seen by the amount of research work on this topic (IV5, IV6). Universities also support CSAs in different ways. The University of Vienna provides its botanical garden for farmers to learn about agriculture (IV5), and the University of Natural Resources

²² “Solawi, food coops, genossenschaftliche Supermärkte - all das zusammen ist das Lebensmittelsystem der Zukunft. Die derzeitige Situation, in der drei Konzerne 80 Prozent des Lebensmittelmarktes beherrschen, ist nicht der richtige Weg” (IV4, original).

²³ „Die Marktwirtschaft ist unschlagbar darin, alles, was sich in Profit verwandeln lässt, auch in Profit zu verwandeln“ (IV1, original).

and Life Sciences Vienna (BOKU) collaborates with different actors regarding innovative concepts (IV3). CSAs also cooperate with schools, raising awareness and educating students about local food and agriculture (IV2, IV3). In addition, the research centre Bio Forschung Austria is working together with CSAs on different projects, such as integrating market gardening (IV5).

In general, the acceptance and support of CSAs from the **political side** are perceived as insufficient by all interviewees. The lack of support unfolds in different areas, such as the non-transparent and profit-driven land allocation. For instance, agricultural land, especially in Vienna, is getting more and more expensive and is preferably given to buyers, such as investors willing to pay more, as well as relatively new actors from the energy market, especially for photovoltaics (IV3). This increases lease prices, making it difficult for CSAs to compete. Furthermore, purchasing land is also difficult as the authority is the land commission (Grundstückskommission), which prefers to give agricultural land to farmers and does not recognise CSAs as such (IV3). Within these “laissez-faire” concepts, there is no place for community-supported agriculture. For CSAs to be included, an urban development concept would have to include all kinds of agricultural producers (IV3).

In general, the CSA concept has not quite reached the institutions in the Vienna SUM region (IV3, IV4). It is perceived that the agricultural system is built for large-scale farmers, leaving small-scale structures such as CSAs without much support (IV5). While the “Bioverbände” are interested in the concept, the Chambers of Agriculture and other agricultural institutions are holding onto old structures (IV3, IV4). The “Bauernkammern”, which focus on regional agricultural development, are generally interested in the concept and willing to help with information, legal support, and consulting. However, there is no legal basis for them to offer CSAs anything regarding marketing or support to funding and financial assistance (IV5). In other cases, while there is little to no contact with official institutions, CSAs like Ouvertura and GeLa Ochsenherz work closely with the local municipalities, receiving support in raising awareness and sponsoring events (IV1). CSA members also note that they intentionally did not reach out for support, assuming that “if we wanted it to work, we

would have to manage it on our own" (IV1, translated from German²⁴). Other interviewees believe that political will and support are needed to raise awareness about concepts like CSAs within the population. Besides financial support, education, raising awareness, promotion, and sensitisation are components of political support that could help CSAs gain popularity (IV2, IV4). There are also differences between institutions in the city of Vienna and the surrounding areas in Lower Austria. Lower Austria tends to hold on to old structures, as do certain members of the agricultural chamber in Vienna (IV3). At the same time, the agricultural development plan dealing with allocating and preserving agricultural lands is being co-developed by the city government and the Chamber of Agriculture (DV3). However, Vienna generally accepts the rise of new concepts, such as community-supported agriculture, while hands-on support is only in the beginning (IV2, IV3). Furthermore, CSAs often face prejudice from public institutions, being dismissed as niche or alternative, commonly labelled as something only for "eco-freaks." This perception overlooks that CSAs promote solidarity, enhance public well-being, and offer a sustainable alternative to large-scale agriculture. To overcome this misperception, communication on both sides needs to be more open (IV3).

Funding

In the reporting period from 2017 to 2021, total funding for Viennese agriculture and forestry, including nature conservation, totalled EUR 88.40 million; if the entire EU funding period from 2014 to 2021 is considered, the total amount was EUR 125.98 million. Regarding start-up subsidies, 281,000 euros was paid out to 34 young farmers in Vienna (DV5). "Traditional agricultural funding policy is still focused on size, leaving little room for concepts like CSA. The funds spent on agricultural subsidies are enormous; even a small portion allocated to CSAs could make a real difference" (IV4, translated from German²⁵). In the current funding system geared towards the large-scale agricultural industry, CSAs do not meet certain requirements and are thus not eligible for funding in most cases (IV1). Kumnig (2017) characterises this situation as "grow or move", describing the funding to safeguard farms with "optimal development

²⁴ „Wenn wir wollen, dass es funktioniert, müssen wir es auch alleine schaffen“ (IV1, original).

²⁵ „Die klassische Agrarförderungspolitik ist immer noch ausgerichtet auf Größe und da haben Konzepte wie Solawi nur wenig Platz. Die Mittel, die für Agrarförderung ausgegeben werden, sind ja enorm. Schon ein kleiner Anteil davon könnte bei Solawi so viel bewirken“ (IV4, original).

opportunities” and thus determine which type of urban agriculture is considered worthy of protection and preservation and which other forms are increasingly disappearing from the city's soils (p. 154). This leads to marginal financial support, for example, from the AMA (AgrarMarkt Austria), which happens much less than for traditional farms because it is not designed to promote small-scale farming as CSA (IV1). However, some CSAs also deliberately choose to waive funding since they want to be self-sufficient and not dependent on the funding system (IV1). One CSA member explains that the premise of the funding question assumes that funding for CSA projects is desired, but this might be a misunderstanding of the core values of CSAs (IV1). Since the CSA model fundamentally opposes traditional profit-driven and production-focused economic systems, such support is unlikely to align with existing funding structures. The nature of CSAs is inherently in conflict with the conventional logic of the economy, making it unlikely that compatible funding mechanisms will emerge under the current framework (IV1, IV2). However, other CSA members suggest that funding for CSAs should focus on the start-up phase, supporting them with infrastructure investments to help them become self-sustaining in the long-term (IV2, IV5), which partly already exist, for example, supporting the investment in machinery or tools, but are not exclusively for supporting CSAs (IV4).

In Vienna and Lower Austria, there are general agricultural subsidies available, such as from the ÖPUL (Österreichisches Programm für umweltgerechte Landwirtschaft), which supports biodiversity measures and the transition to organic farming. These are standard agricultural grants that are not specifically tailored for CSAs. Some programs, like those from the Austria Wirtschaftsservice (aws), promote sustainable food systems and could be accessible with certain adjustments. For example, a current funding initiative supports building a CSA network in Austria. However, there is no dedicated funding for CSA start-ups or operational support over the first few years (IV4). Another institution advocating for CSA is the “Ernährungsrat Wien”, which is driven by civil society and not a public institution (IV4). Additionally, Vienna only funds businesses located within the city limits. This creates challenges for CSAs like Gela Ochsenherz, located in Gänserndorf, Lower Austria, which provides food to 95 per cent of its members located in Vienna but is not eligible for city funding. There is a need for greater flexibility or cooperation between Vienna and the surrounding regions, such as Lower Austria, to support initiatives that benefit the city, even if they are based

outside its borders (IV4). In Lower Austria, standard regional funding exists, like support for setting up a photovoltaic system on land, which some CSAs also do and therefore apply. Still, it is not specific to CSAs (IV4). Also, there are certain requirements that CSAs need to meet, for example, reaching a minimum of three hectares of land, which, in some cases, CSA do not have. There are also some exceptions to this rule, such as the “Einheitswert”, a standard assessed value for tax purposes, being of a certain amount, which is also not easily reached by CSAs (IV5). Financial support and start-up assistance should also be tailored to smaller farms, enabling them to succeed despite their unconventional size and methods (IV5).

Furthermore, despite presumably being created for their needs, many traditional farmers themselves do not approve of the current agricultural subsidy system, particularly those who rely on programs like the AMA for a significant part of their income (IV1). This dependence makes it difficult for them to break free from the constraints created by these subsidies. However, CSA members believe that if farmers were presented with viable alternatives for producing and distributing food, many would be eager to adopt them, especially those more conscious of resource management. While large-scale industrial farmers may not be interested, there is significant potential among smaller farms, particularly those in Austria, which have an average of around 20 hectares of agricultural land. These farmers are often innovative and open to exploring new models, such as direct sales from farms, but they need support and interest from consumers to make these alternatives successful (IV1).

Demands to Politics

Representatives of community-supported agriculture in Vienna expressed several demands from the political side. First of all, one interviewee demands cost transparency from the state, arguing that consequential costs for future generations, such as environmental damage due to long transport routes, less fertile soil because of conventional farming, or inhuman working conditions, are not included in the price of a product (IV1). Connected to that, educational work and raising awareness for food and the environment are considered levers that politics could use to make way for initiatives such as CSA (IV2). In theory, a city development concept that helps to expand CSAs in and around Vienna would help to support the spreading of the concept and help minimise costs. Still, at the same time, pessimism is expressed that the city

planners will act in such a way (IV2). Furthermore, the agricultural legal and funding system, such as the hygiene guidelines, is geared towards large-scale farming, making it difficult for small-scale structures such as CSA to compete in this system (IV2, IV4). For the small structures of CSAs, a small portion of the general funding for the agricultural sector would already make a big difference for them. Therefore, the funding for CSAs is demanded to expand (IV4). Especially in the start-up phase of CSAs, funding is demanded by CSAs to enable them to build up infrastructure and pave the way for them to become self-maintaining (IV2, IV5). The increased collaboration between the city of Vienna and the surrounding districts is also demanded in terms of financial support for farms that operate in more than one region (IV4). In addition, the SUM demands transparency in land allocation (IV3). The city also expresses some demands, such as legislation at the federal level providing the most essential prerequisite for the effective reduction of food waste, pollutants of all kinds, and consistent species protection. To safeguard the green and natural spaces of Vienna's green belt and those green axes and bodies of water that extend beyond the city limits, joint coordination with the neighbouring municipalities is required, which also benefit from their ecosystem services. National and European funding, accessible to private and public actors, can support projects for the innovative greening of the densely built-up city (DV1).

Technology and CSA: Smart City Vienna

In Vienna, the Smart City concept focuses on creating a sustainable, forward-thinking urban environment that enhances the quality of life for all residents while reducing the city's ecological footprint. It aims to integrate a radical conservation of resources, high, socially balanced quality of life, and the development and productive use of innovations and new technologies. The idea is to build a city prioritising environmental sustainability and social equity through innovative approaches, especially in energy, mobility, and infrastructure (DV1, DV2).

CSA members express differing views regarding community-supported agriculture and how the concept fits together with the Smart City framework. Some see synergies between the two concepts, particularly in the use of technologies like data-driven tools and automation to optimise processes. For instance, using AI for more efficient resource management aligns well with Smart City principles (IV1). However, members

partly resent the Smart City concept, mentioning that sustainability should be the focus, not cost optimisation (IV1). Others argue that CSA's commitment to traditional, hands-on farming methods might be in tension with the highly digital and technological approach of Smart City initiatives. They point out that CSAs often favour returning to older, more crafting farming techniques rather than embracing new technologies (IV2).

Despite these differing perspectives, there is recognition that integrating CSA into the broader urban planning of Smart Cities through practices like urban gardening, rooftop farming, or the concept of edible cities could play a valuable role in making cities more sustainable and self-sufficient (IV3, IV4). However, the practical implementation of such concepts remains a challenge, and further dialogue between urban planners and CSA advocates could help bridge the gap (IV2).

4.1.3 Landscape Influences: Sustainability and Urbanisation Trends

Many different trends and developments have influenced urban and community-supported agriculture in Austria in recent years. One development was the **Covid-19 pandemic**. The pandemic presented a significant challenge for the agricultural sector in Vienna (DV5) as it was subject to large economic fluctuations during this period (DV3). This is because the loss of the catering trade meant that essential sales channels for other sectors of urban agriculture were lost. In addition, the pandemic limited the availability of external labour (DV5). However, there was a higher demand for regional products among the population. Awareness of regionality and security of supply increased. This was also evident in the increased visits to the stadtlandwirtschaft.wien website, particularly in farm-gate sales (DV5). During the pandemic, supply security and local food supply were of great importance in Lower Austria and Vienna, and it dropped significantly after the crisis was overcome (IV3). At the same time, the pandemic interrupted the previously strong environmental movement and the political awareness about climate change (IV4). During the pandemic, CSAs recognised a “boom” in interested people, and the waiting lists were long, as people had the time to commit to being members of CSAs (IV4, IV5).

While this initial boom and **environmental awareness** dropped after the pandemic (IV5), it is still a constant trend revolving around healthy nutrition and sustainability in

the food sector (IV4) and the goal to strengthen regional value chains (DV1). For people with a lot of interest and awareness about food and sustainability, CSA presents an alternative since the transparency about food production is very high (IV1, IV2, IV4). Especially urban residents show interest in alternative concepts, such as CSA, as they often cannot grow their own food (IV2). However, the commitment in terms of effort and financial ability still presents a barrier to those interested in sustainable food and environmental awareness (IV2, IV4, IV5). In general, the awareness in Vienna is perceived as relatively high, which is also reflected in the numerous concepts being developed in the city revolving around no-waste, organic, regional, and local food; however, CSA is not explicitly mentioned (DV4, IV3).

The urban population increasingly demands affordable, high-quality food under strict environmental, social, and production standards. Consumers favour fresh, locally sourced products while valuing biodiversity and nature conservation. They also seek opportunities for young people to engage with agriculture and enjoy well-maintained landscapes. Surveys consistently show a growing interest in food origin (DV5). At the same time, people are not ready to commit to the time, effort, engagement, and inflexibility that goes together with being part of a CSA (IV1, IV4, IV6). Instead, **individualism** in today's society is high, leading people to choose their preferred food at their preferred time and supermarket (IV4, IV6).

In addition, the **economic situation** is characterised by intensified economic competition (DV2), increased demand for labour on farms (DV4), globalisation of agricultural markets, speculation with agricultural commodities, energy market effects, and inflationary price and market fluctuations, all of which contribute to the fact that economic results in agriculture are constantly subject to significant fluctuations (DV5). All these developments are leading people to buy cheaper products, while at the same time, many CSAs are being found, which could lead to tension in the future (IV5).

Vienna's **political landscape** is undergoing significant changes due to various crises. The city's strategic position has improved following political shifts in Europe, transforming from a peripheral location to a central hub connected to Eastern European markets (DV2). Current crises, such as the war in Ukraine, have highlighted the importance of regional, ecological agricultural production for food security, and

there is increased pressure on land use for sustainable energy solutions (DV3, DV5). The overall political tensions in society are growing due to the many different crises, leading to uncertainty (IV6).

Future-oriented urban planning is more important today than ever, because of the biggest challenge of the 21st century, the **climate crisis**. Vienna is faced with the task of sustaining a city that will still be one of the most liveable cities in the world in 50 or 100 years, especially for young people (DV1). The consequences of climate change, such as extreme weather events, have increased significantly in recent years due to global warming. Periods of heat and drought, as well as storms and heavy rainfall events, are putting pressure on urban infrastructures (DV1) since they are particularly affected by climate change due to the high infrastructure density and the high degree of sealing (DV2). Vienna is, therefore, making climate protection and climate change adaptation an integral part of the planning, implementation, and further development of urban neighbourhoods and open spaces (DV2). Vienna's agricultural lands also face several climate-related challenges. Preserving healthy soils is essential for carbon storage and water retention during heavy rainfall, contributing to climate protection. Additionally, the global decline in biodiversity demands ecological land management, including the conservation and expansion of biotopes and refuge areas for species (DV3). Heat waves and shorter harvest times are a direct or indirect consequence of climate change. This reduced harvest time also requires more workforce than before (DV5). On the one hand, agriculture is called upon to reduce its greenhouse gas emissions; on the other hand, it must inevitably adapt to changing climate conditions, as agricultural yields depend on the weather and climate. The Austrian Programme for the Promotion of Environmentally Sound Agriculture (ÖPUL) contains numerous measures that are classified as climate-relevant. These measures aim to increase and maintain soil fertility and thus improve climate protection. These include, for example, mulch and direct sowing, erosion control measures, the planting of arable land and organic farming methods (DV4), which are often taken by CSAs (IV5).

These various challenges stemming from climate change are putting pressure on the current system as it forces us to think of alternative ways of production, such as community-supported agriculture (IV1, IV2, IV5), which will also lead to increased environmental awareness (IV4). At the same time, all those challenges open opportunities for CSAs, showing that they can contribute to sustainable production

through mindful cultivation of agricultural soils without a lot of machinery, with the building of humus, reducing CO₂ emissions, and other benefits (IV3).

Vienna and the surrounding areas are experiencing significant population growth, leading to several challenges that must be addressed through strategic urban planning (DV1, DV2). Key issues include enhancing infrastructure and urban services while ensuring sustainable management of limited natural resources. The high density of infrastructure and extensive **urbanisation** worsen the impacts of climate change, necessitating the preservation of healthy soils for carbon storage and water retention, as well as the maintenance of biodiversity through ecological land management (DV2, DV3). Effective urban planning in Vienna requires close collaboration with its surrounding regions, going beyond administrative boundaries in the SUM region. This collaboration is essential to support regional agricultural production, enhance resilience against climate-related challenges, and promote sustainability that balances social, health, ecological, and economic considerations (DV2, DV3, DV5). While Vienna is considered a role model of land efficiency, having the lowest land consumption per capita of all federal states (DV1), Lower Austria still has a high demand for single-family homes, which results in inefficient land use and contributes to urban sprawl (IV3). By fostering regional cooperation and adopting holistic, systemic approaches, Vienna aims to maintain its status as one of the most liveable cities in the world while addressing the multifaceted challenges posed by urbanisation and climate change (DV1, DV2, DV3, DV5). Regarding CSA, urbanisation can also have some advantages, such as an increased amount of young people, which leads to new consumption patterns, and high purchasing power (DV4), which could be an opportunity for CSAs since most members are living in Vienna (IV1, IV5). Densification can also be positive, as CSAs can reach more potential members within a small radius and shorten transport routes (IV1). At the same time, worries are expressed that in the face of urbanisation, concepts such as CSA will not be taken into account (IV2).

Another development rapidly transforming Vienna is **digitalisation**, creating new potentials for urban development, including innovative solutions in agriculture (DV1, DV4, DV5). Vienna aims to use digital technologies to develop urban agriculture further. Smart farming, crop protection warning services, GPS-supported guidance systems, and forecasting models have been used for years. Digitalisation has also

become an indispensable partner in organic farming (DV5). While digital tools, such as automated irrigation systems, are already proving beneficial in agriculture, the financial barrier to adoption by small farms such as CSAs remains significant. Nevertheless, the potential of digitalisation for CSAs is acknowledged, especially in terms of automated irrigation, crop planning, and marketing efforts (IV5).

4.2 Case Study 2: CSA in Berlin

Five interviews were conducted for the Berlin case study, and five documents were analysed, shown in Table 4, including the abbreviations used later.

Documents Berlin	DB1 _Gemeinsam Digital: Berlin, 2022
	DB2 _Berliner Energie- und Klimaschutzprogramm (BEK) 2030, 2019
	DB3 _Stadtentwicklung (StEP) Klima 2.0, 2023
	DB4 _Berliner Ernährungsstrategie Aktionsplan, 2018
	DB5 _Strategie Stadtlandwirtschaft, 2014
Interviews Berlin	IB1 _Frohlawi e.V.(13.9.2024)
	IB2 _SpeiseGut (20.9.2024)
	IB3 _Helmholtz-Zentrum für Umweltforschung GmbH - UFZ (24.9.2024)
	IB4 _Spörgelhof eG (24.9.2024)
	IB5 _Netzwerk Solidarische Landwirtschaft e.V. (30.9.2024)

Table 4: Data Material Berlin: Interview Partners and Documents (Source: Own Visualisation, 2024)

With a population size of 3.87 million people (dpa, 2023), Berlin is the capital and largest city of Germany, located in the northeastern part of the country. As Berlin is both a state and a municipality, the conditions for interdepartmental and cross-level administrative work are complex (DB1). Berlin and Brandenburg together form the German capital region in the centre of the extended European Economic Area. With

around 6.2 million people living in an area of over 30,000 km² in 2020, both states have strengths and potential in all their sub-regions and are perceived internationally as one region (Hauptstadtregion Berlin Brandenburg, n.d.). The “Gemeinsam Digital: Berlin” strategy aims to strengthen the Berlin-Brandenburg metropolitan region through fostering collaboration with the federal state of Brandenburg at the ministerial level, as well as with individual municipalities and other stakeholders in the region. This cooperation uses the region’s interdependencies to address acute problems, such as using mutual aid in the event of disasters, while also promoting the development of an innovative ecosystem in the long term (DB1). In general, the close collaboration of Berlin and Brandenburg is important for the food industry (DB1, DB4). It is also strategically determined by the “Landesentwicklungsplan Hauptstadtregion Berlin-Brandenburg” (LEP HR), which defines the spatial planning framework for spatial development in the region. The plan states that agricultural land use must be given special consideration when weighing competing utilisation claims. The further development of possibilities to produce sustainable, organically produced agricultural products is particularly important in addition to conventional production (Gemeinsame Landesplanungsabteilung Berlin-Brandenburg, 2019, p. 41). It is also stated that the cooperation between Berlin and the municipalities in the surrounding areas will be further developed due to the increasing interdependencies (ibid., p. 48).

Until a few years ago, the capital region had suffered considerable population losses. Overall, the population weighting in the Berlin-Brandenburg region has been shifting in favour of the core of the capital region for years (Gemeinsame Landesplanungsabteilung Berlin-Brandenburg, 2019, p. 13). Due to the expected population growth in the core of the capital region, it can be assumed that the amount of land used by the population will continue to increase despite the overall expected population decline in the wider metropolitan area. Nationwide, land consumption for settlement and transport areas still amounts to 66 hectares daily. In many cases, valuable arable land is taken up, and unfragmented landscape areas are lost (ibid., p. 19). Berlin represents one of the largest markets for organic food in Europe (Doernberg et al., 2016, p. 7).

Germany is regarded as a frontrunner country in the transformation towards post-fossil cities. The German “Energiewende” is one of the most well-known examples of a

transformation embedded in national policy (Rink et al., 2018, p. 11). In general, a trend in city documents can be observed that the most recurring topic in Berlin is the topic of energy, which is also the field where the city sees the most potential in cutting down on CO2 emissions (DB1, DB2, DB3). However, the city itself also stated that the positive contribution of nutrition to climate protection is still not sufficiently recognised by the public. Therefore, the city urges campaigns revolving around sustainable consumption and education about nutrition (DB2).

Berlin is considered a green city, with almost 44 per cent of the city area covered by forests, bodies of water, parks, cemeteries, allotments, and agricultural land (DB2, DB5). The most recent agricultural census in Berlin (Landwirtschaftszählung) states that 47 farms in Berlin farmed 1,864 hectares of utilised agricultural area (UAA) with 233 workers, including 1,073 hectares of arable land and 778 hectares of permanent grassland in 2020. Six farms (12.8 per cent) worked according to the principles of organic farming. These farms had 15.8 per cent of the UAA (295 hectares). 84.8 per cent of the UAA was leased land (1,580 hectares). On average, the Berlin farms paid 146 Euros per hectare of UAA (Statistik Berlin Brandenburg, n.d.). Figure 11 shows the overall number of agricultural businesses in Berlin has decreased steadily since 2005.

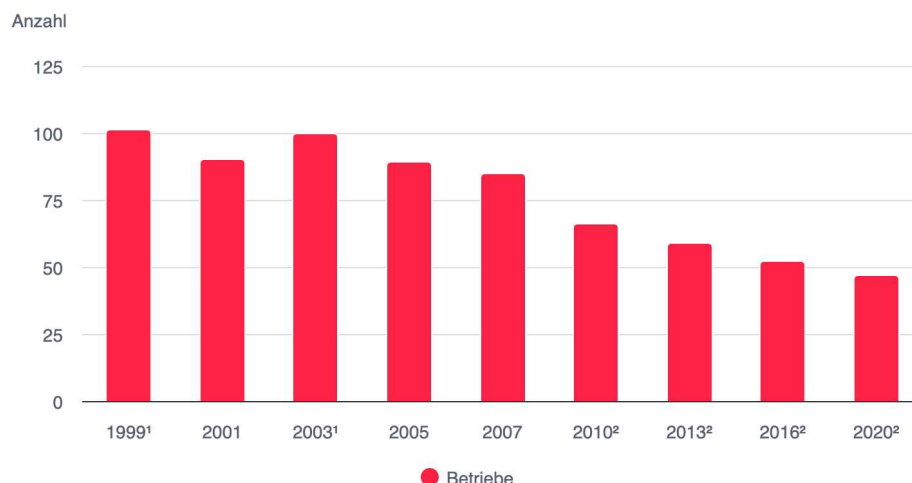


Figure 11: Ausgewählte Ergebnisse der Landwirtschaftszählung in Berlin 2020, zehnjährlich (Source: Statistik Berlin Brandenburg, n.d.)

A core objective of the Berlin Food Strategy is to improve the quality of communal catering. The proportion of organic, regional, seasonal, healthy, and fairly traded food

is to be continuously increased and food waste minimised. Expanding the use of organically produced food is an important measure to strengthen the sustainability of the food system (DB4). Furthermore, the Berliner Ernährungsstrategie states that the innovative strength of the diverse players in the sustainable food industry is promoted within the framework of the existing funding instruments, even specifically naming CSA as a model (DB4, p. 9). Not all players are fully aware of these funding instruments, so advisory services are also being developed, particularly in the start-up phase (DB4). The current debate on the future direction of EU agricultural funding already aims to include small-scale agricultural and horticultural measures in an urban context. This could promote urban agriculture projects and strengthen the model of the productive landscape (DB5).

The first solidarity-based economic community in Germany was founded in 1988. Only ten years later, another CSA was founded. The development of the CSA movement was initially slow (Wellner & Theuvsen, 2017, p. 5). Only from 2010 onwards the number of CSAs per year increased significantly, as Figure 12 shows.

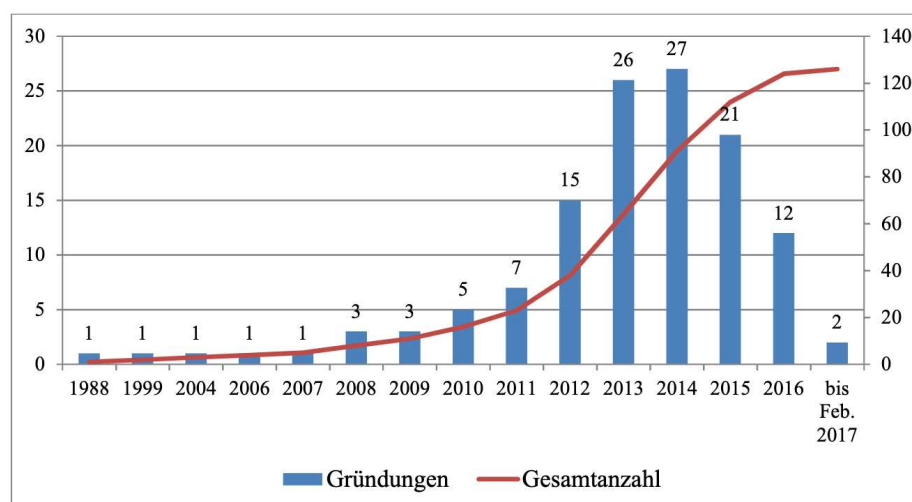


Figure 12: Number of CSAs that were founded in Germany by year (Source: Wellner & Theuvsen, 2017, p. 5)

Today, over 500 CSAs can be found registered in Germany, of which four are in Berlin and 32 in the surrounding district of Brandenburg. The biggest CSAs in Germany have around 2000 members. An optimum number of members is set at around 400-500 members for one CSA (IB3, IB5, Netzwerk Solidarische Landwirtschaft e.V., n.d.),

however some CSAs in Germany also have significantly more members, such as the CSA PlantAge in Berlin, the KoLa in Leipzig, the Kooperative in Frankfurt, and the Kartoffelkombinat in Munich (IB5). In Germany, the government mentioned in an official document that they want to support best-practice models like CSAs (CDU et al., 2018, p. 85). Documents further state that especially urban CSAs, as innovative actors, can be catalysts in creating liveable rural areas (Zukunftskommission Landwirtschaft, 2021, p. 34). To improve the limited knowledge of CSA in Germany, a research project was carried out at the Department of Agricultural Economics and Rural Development from 2015 to 2018, funded by the Federal Ministry of Food and Agriculture. The project aimed to consider CSA as an alternative niche strategy for farms (Diekmann, 2020, p. 17). The project report concluded the following findings: As a social innovation, the current popularity of CSAs can be seen as an indicator of the needs of a specific consumer group that farms can use for their benefit. A CSA can offer certain farms a way out of the "grow or lose" dilemma - as a supplement to existing business branches or a comprehensive new business concept. In particular, farms located in the catchment areas of universities or large cities can take advantage of the urban population's interest in food production and, by integrating the social demands on agriculture into daily practice, tap into a niche market that appeals to a target group that is willing and able to pay. However, implementing a CSA - like any business strategy - requires proper planning of working time requirements and the necessary production factors to be sustainable in the long term (Diekmann, 2020, p. 17). As part of innovative regional marketing, alternative food networks like CSAs appeal to an increasing number of consumers in Germany. By adapting the traditional CSA concept to current needs and opening it up to a larger group of interested parties, the suitability of the concept for regional marketing increases. For farms located in the catchment area of a conurbation, CSA can offer an interesting niche and alleviate the high competitive pressure that small farms, in particular, often feel unable to cope with (Wellner & Theuvsen, 2016, p. 9). Another reason for the still low prevalence of CSAs in Germany is the easy access to organic food via food retailers and the existence of a greater variety of alternative models that make it possible to involve customers more closely in agricultural activities (Van Elsen & Kraiß, 2012, p. 63).

4.2.1 Niche Innovations

This chapter addresses the defining characteristics, strengths, and weaknesses of community-supported agriculture initiatives in Berlin. It examines the challenges these initiatives encounter and the potential they offer. Furthermore, the chapter highlights the contributions of CSAs to urban sustainability, particularly in relation to Berlin's Smart City framework, emphasising their role in fostering local food systems, environmental awareness, and sustainable living within the city.

In the Berliner Ernährungsstrategie, CSA is defined as a concept where several private households bear the costs of a farm, in return for which they receive its harvest yield (DB4). All interviewees agreed that one obligatory characteristic of CSA is pay-as-you-go financing, where you pass on the entire production cost to the members. In addition, certain principles, such as transparency about the costs and the solidary aspect of the community, apply (IB3). CSA members further describe the concept as a way for people in large cities to access locally and sustainably produced seasonal food. At the same time, it allows farmers to step away from the traditional market economy and agricultural systems, enabling them to focus on cultivating diverse crops and adopting socially and environmentally responsible practices like awareness and consciousness about eating habits (IB2). Other CSA members see CSA as the most future-oriented and transformative model (IB5) for building local and regional, resilient, community-driven supply structures (IB1). In the context of global disasters such as climate change, CSA offers communities the possibility to take control of their basic supply needs through self-managed systems (IB5). The legal form of CSAs is being discussed. Being organised as a cooperative is considered a highly democratic form that “has great potential to contribute to a socio-ecological transformation” (IB4, translated from German²⁶). CSA is further recognised as a social innovation (IB3) and a driver of socio-ecological innovation (IB4).

CSAs still represent a small portion of the agricultural landscape in Germany. There are around 500 CSAs across Germany, compared to a total of 250,000 farms. This means that less than 0.2 per cent of farms are CSAs, and the number of members is

²⁶ „...ein ganz hohes Potenzial hat, einen Beitrag zu leisten zur sozial-ökologischen Transformation“ (IB4, original)

similarly small, with around 150,000 people involved, accounting for less than 0.5 per cent of the population (IB3). This shows that while CSAs are growing, they remain a niche within the agricultural sector. In the Berlin region, although there is a diverse range of CSA formats in and around Berlin, they still make up a small fraction of the food supply chain, causing a significant gap between CSA reach and the demand in the region (IB5). The lack of visibility and promotion of CSAs are also considered as reasons why it is still a niche concept, as many people are still unaware of the model, and there is insufficient support to expand their presence (IB4), which will be discussed in more detail below in Chapter 4.2.2.

Strengths of CSAs in Berlin

“The strengths are that CSA operates on all three dimensions of sustainability: the economic, the social, and the ecological level. That means we operate in a holistic system in which we want to do everything right” (IB5, translated from German²⁷).

CSAs members in Berlin see one of the strengths in the **decoupling from market mechanisms** (IB1, IB2, IB3, IB5). By creating price stability through shared costs among members, they can move beyond the regular supply and demand model (IB1, IB3). This allows farmers to operate with greater economic security, enabling them to plan better and invest in more sustainable agricultural practices, such as organic farming (IB2, IB3).

Another strength of CSA mentioned by all interviewees is the strong **involvement of members**. By being involved in agricultural production through voluntary activities, the alienation of people and nature is counteracted (IB1), including an educational aspect (IB2, IB4). “The hands-on days are not just about weeding. You get a free gardening seminar every time, and you get to know people you would not otherwise meet” (IB4, translated from German²⁸). The aim is to act against hierarchies and act on an equal footing, recognise people's needs, and establish democratic structures (IB5), which is

²⁷ „Die Stärken liegen darin, dass Solawi auf allen drei Dimensionen der Nachhaltigkeit arbeitet: auf der wirtschaftlichen, der sozialen und der ökologischen Ebene. Das heißt, wir arbeiten in einem holistischen System, in dem wir alles richtig machen wollen“ (IB5, original).

²⁸ „Die Mitmachtage sind nicht nur Jäten. Man kriegt im Grunde jedes Mal ein kostenloses Gartenbauseminar und man lernt Menschen kennen, die man sonst nicht kennenlernen würde“ (IB4, original).

especially strong in the legal form of a cooperative, where everybody is equally involved, owning the cooperative as a community (IB4). This high involvement and say of members might also cause hesitation of existing farms in converting to the CSA model. However, there are already different forms of democratic involvement that can be considered (IB3).

The size and scaling of CSAs in Berlin is quite a controversial topic. Some CSAs want to remain **small-scale structures** (IB5), which also correlates to the positive contribution to biodiversity (IB1). Conversely, there are also large-scale CSAs in Germany, mostly in Munich and Leipzig (IB1). One disadvantage of CSAs remaining a small-scale structure is the missing economies of scale, the potential of needing less energy per unit as they grow. One way to avoid this problem is to collaborate with other CSAs to achieve economies of scale by sharing tools or exchanging crops (IB3). It is not yet solved how big CSAs should become, as there is a tension between preserving small CSA structures that foster strong member connections and opting for larger, logistically more efficient collection centres, which may compromise the community-driven aspects (IB4). For larger CSAs, the legal form of a cooperative is again argued to be fitting, as it is easier for many members to participate equally and democratically in the organisation. This structure also supports large-scale investments in land and equipment (IB4).

Transparency of production and costs is another strength of CSAs in Berlin, as there is direct collaboration between farmers and members and no units in between (IB2, IB3). One interviewee stated that CSAs are rethinking nutrition and basic supply because they act beyond the exploitative, non-transparent market structures where producers and consumers act as opponents (IB5). However, the topic of self-exploitation is still occurring in CSA structures. Although there is a vision of creating fair working conditions, there is still room for improvement. Most CSAs in Germany start from scratch, causing an intense starting phase and leading to overworked farmers who do not pay themselves much (IB3).

In the future, urban infrastructures and supply chains should be designed in such a forward-looking way that both reliable operation and the basic supply of the city are ensured, according to the city of Berlin (DB1). At the moment, the proportion of

regional value chains is deficient. Strengthening regional value chains can contribute to **resilience** (IB3). CSAs are considered resilient structures, as the diversity of crops results in a fairly high level of yield and production stability (IB3). Self-sufficiency and independence from global supply chains, which might be affected by global issues as seen in the Covid-19 pandemic, are strengths of CSAs (IB3, IB4).

Furthermore, an advantage of CSAs is the practice of producing **organically**, leading to a **high quality** of food valued by members (IB2, IB4). By going beyond organic produce, most CSAs have an inherent aspiration to operate in a regenerative and constructive way, giving back to nature (IB5).

CSAs in Urban Contexts

CSAs are making use of the advantages that result from being located in urban contexts. For example, short transport routes are named as strengths, leading also to higher quality of the products as the time they are transported from the field to the pick-up stations is optimised (IB2, IB3). In addition, short transport routes can be managed with electric vehicles, cutting down on emissions (IB2). Another positive effect is the relatively low barrier from members to join the work on the fields, creating a stronger connection between consumers and the source of their food, compared to fields far outside the city centre (IB2). Additionally, the access to pick-up points within the city adds to the convenience of members (IB2). However, the pick-up stations could be more visible in the cities by, for example, being placed in standard supermarkets (IB4). Being close to a city also allows for a larger target audience and potential members, as urban areas typically have a broad population interested in sustainable food systems (IB5). However, after the initial CSA boom in Germany, starting around 2011, many of the early adopters interested in organic food have already been reached, challenging CSAs to reach the remaining part of the population which are less environmentally engaged (IB5).

Weaknesses of CSAs in Berlin

One of the main weaknesses of the CSA concept in Berlin is the **dependence on the community**. CSAs depend a lot on members taking on voluntary activities, like organisation, community management, IT, and communications, in addition to their day-to-day jobs and the work on the field, causing members to be overwhelmed (IB2,

IB4, IB5). The dependence is caused, on the one hand, by the farmers needing to focus on fieldwork and having the pressure of delivering a certain amount of harvest shares per week. On the other hand, the price of the harvest shares is already high, and by increasing them even more to afford more workforce, members could be put off (IB4). For those reasons, one of the interviewed CSAs even makes the support from members obligatory at six days per year while also mentioning that there is no control mechanism to that (IB4). Because of the close connections between members, there is also a risk of interpersonal tension (IB1). Another aspect mentioned is that there are no inherent incentives to increase productivity. If the members pay their fees in advance, it is the farmer's choice to be productive (IB1).

Another weaknesses of CSAs in Berlin is the lack of flexibility (IB2). While some people enjoy not having to think about what they are eating, others do not like the rigidity of being told what to eat and not having a full range of products (IB2, IB4). Another aspect is the lack of **commitment** of many people to join for one year in advance (IB4).

Another weakness is the homogenous **composition of members**. The members are typically high-income individuals who are predominantly white (IB5) and from academic backgrounds, often located in urban contexts (IB3, IB5). However, members see the potential to reach other target groups, but only with political support and funding (IB4). Some see CSAs as places for people from different political views to create a common vision and interpersonal exchange (IB1).

Challenges of CSAs in Berlin

CSAs in Berlin face several challenges, from social to financial to physical ones, described in more detail below.

One of the **social challenges** is raising awareness about the CSA model in the population and getting people to commit financially and personally to stay for a long period (IB2, IB4). Many potential members struggle to understand the concept (IB2). Furthermore, social equity within the CSA is a concern, as many farmers still face difficult working conditions, including low pay and long hours, despite the collaborative nature of the system (IB3), which has already been mentioned above under the topic of self-exploitation. Another point is the lack of retirement provisions. In traditional

agriculture, in most cases, the retirement provision is the farm you have, which is not the case with CSAs, which needs to be kept in mind (IB3). Sometimes, there are also subordinate issues, such as finding committed board members, which are common for volunteer-based organisations, not only CSAs (IB1). Additionally, there are issues related to theft on publicly visible CSA fields, which might not be severe but can be frustrating (IB2).

While collaboration amongst CSAs has potential, such as the economies of scale mentioned above, some view the growth of CSAs as competition. For example, in Leipzig, one middle-scale and one large-scale CSA have grown recently, which has caused competition for other CSAs in that area that also want to grow (IB3).

Simultaneously, the pressures of burnout and overwork among CSA organisers and farmers are growing, exacerbated by external factors such as inflation and economic uncertainty (IB5). A negative trend is currently being observed, which is counteracted by collaboration and social coherence in the CSA network organisations (IB5).

Furthermore, CSAs in Berlin face several **financial challenges**. For example, CSA SpeiseGut and others are self-funded or “bootstrapped”, with little to no external investment, making it difficult to scale operations or cover essential costs, especially in the beginning (IB2, IB4). As mentioned above, acquiring members is a critical financial challenge (IB4). Another point is the limited access to funding and subsidies, as most support is directed towards larger agricultural enterprises (IB4), which will be discussed in more detail in Chapter 4.2.2.

Physical Challenges, especially for new CSAs, include access to land (IB3). While there are certain laws that only farmers can buy land, in reality, several huge companies invest in land, leaving small players such as CSAs behind (IB3). Some CSAs lease the land, which is linked to the often unsatisfactory duration of the contract, as certain subsidies also depend on the duration of a lease. In addition, CSA practices such as humus formation are long-term practices that require long-term security of land (IB4). There also have been some negative cases where leasing contracts expire, or the landlords favour other partners, such as ones installing photovoltaic systems, because much higher lease prices can be achieved (IB5). In some cases, benefits

result from leased land. For example, the CSA SpeiseGut leased their land from the “Landschaftspflegeverband” and some tasks are taken over by the CSA for them, such as cutting hedges and maintaining all the meadows. As a result, the CSA gets certain reimbursements, leading to lower lease prices (IB2). Another solution is to socialise land through the cooperative purchase of agricultural land, which is still uncommon because the land is usually only given to CSAs by leasing contracts (IB5).

Potentials of CSAs in Berlin

“The concept of community-supported agriculture is the most sustainable and transformative concept when it comes to building local or regional, resilient, community-based basic supply structures, given the challenges we are facing now and in the future” (IB5, translated from German²⁹). However, the question of whether CSA remains in the niche or can reach the masses is one that CSAs often ask themselves. In particular, the question of scaling the concept remains uncertain. Some interviewees believe the current concept is unsuitable for the broader mass because there are too many individual lifestyles to consider. This requires innovation and a change of the basic concept, which needs reform to be flexible and user-centred. However, with certain changes, the concept has the potential to go into broader masses (IB2). In the context of the demise of farms, where in recent decades many small and medium-sized farms disappeared, CSA can certainly offer a perspective. At the same time, the scalability of the concept faces a lot of barriers (IB3). For example, the question of how much growth is still possible for CSAs remains open. A study in Saxony revealed that around 30 per cent of respondents showed strong interest in the concept, and 9 per cent expressed a willingness to join a CSA in the future. While these figures might not represent the entire population, even if 5 per cent of people joined, it would significantly increase visibility. This could unlock further growth potential, especially if regions focus on creating integrated value chains, like connecting CSAs with local producers like mills and dairies to offer a wider range of products through shared distribution centres or food hubs (IB3). Furthermore, the target audience could be increased by going beyond single households and moving

²⁹ “Das Konzept von Solawi ist das nachhaltigste und transformativste Konzept, wenn es um den Aufbau lokaler bzw. regionaler, resilienter, gemeinschaftsgetragener Grundversorgungsstrukturen geht, im Hinblick auf die Herausforderungen, vor denen wir schon heute und in Zukunft stehen“ (IB5, original).

towards schools or companies that want harvest shares for their employees. Expanding to wider audiences is essential for CSAs to move out of the niche (IB3).

Regarding the technological potential, CSAs in Berlin are, in general, open to further development. While some CSAs are still far off, high-tech digitalisation is seen as a potential, for example harvesting robots (IB1). Some CSAs are already working with AI-supported robotic systems for weed control. However, there is certain hesitation about digitalisation with the background of being dependent on technical gear and electricity, for example, in case of power shortages (IB5). On the other hand, if people would be willing to pay more for food and the wages could increase, then the need for digitalisation is not necessarily given (IB1).

Furthermore, CSAs can potentially drive education and social community amongst all population groups despite having different backgrounds (IB1). Another potential is the increase of collaboration amongst CSAs, aiming for joint production, administration, public relations, and marketing for CSA to optimise processes in terms of the lean farming aspect (IB4, IB5). One potential goes beyond the CSA concept:

Interviewees further see the potential to expand the CSA concept to other areas. “If there are different CSAs, one grows vegetables, another one does arable farming, and a third one offers processing structures for agricultural products, that is where we reach the CSX aspect” (IB5, translated from German³⁰). CSX is a concept that transfers the CSA principles to other supply areas (IB5). Furthermore, there is much potential in making pick-up stations more visible, reaching a status where coffee shops and supermarkets can “not only be a pick-up station, but a place of social interaction” (IB4, translated from German³¹).

Sustainable Practices of CSAs in Berlin

The CSA concept is connected to specific sustainability impacts (IB3). For instance, regarding food losses and food waste, only a small amount is sorted out because there

³⁰ “Wenn es verschiedene Solawis gibt, von denen eine Gemüse anbaut, eine andere Ackerbau macht und eine dritte Verarbeitungsstrukturen für landwirtschaftliche Produkte anbietet, dann sind wir bei dem CSX-Aspekt angekommen” (IB5, original).

³¹ „... sind dann nicht mehr nur Abholstationen, sondern Plätze wo soziale Interaktion stattfindet“ (IB4, original).

are no standards about the appearance of food (IB2, IB4). Members also tend to have greater environmental awareness, which can lead to less food being thrown away (IB2). There are always people at the pick-up points responsible for taking care of any leftovers, for example, gifting them to social organisations (IB4).

Furthermore, short transportation routes (IB2, IB4, IB5), and the use of electric vehicles are mentioned (IB2). Connected to that is energy efficiency. Some CSAs, such as Frohlawi, have photovoltaic power produced self-sufficiently or “off-grid”, meaning it is not connected to any public power grid (IB1). CSAs generally aim to have a low energy input (IB4). There are only a few studies on the energy efficiency of CSAs, which show mixed results. Some research, such as in Spain and China, indicates that CSAs have a good energy balance, yielding high returns relative to the energy invested (IB3). However, other studies, such as those conducted in Saxony, reveal a more complex picture. While CSAs often rely on mechanical weed control, leading to higher fuel consumption due to frequent tractor use, this can increase energy inputs compared to conventional farming. Additionally, the labour-intensive processes common in CSAs affect the overall energy balance, which can be both a strength because they create jobs and a challenge because of labour shortages. Scale efficiency also plays a role, with larger farms being more energy-efficient per unit. Collaboration between CSAs to share resources and machinery, potentially improving their energy performance could address this issue (IB3), as already stated above.

Further sustainability practices are avoiding packaging and, therefore, less waste (IB4), as well as contributing to biodiversity through their variety of crops and their cultivation practices (IB1, IB3). These include polyculture instead of monoculture (IB1, IB3, IB4), no use of pesticides or chemical fertiliser (IB1, IB3, IB4), drip irrigation (IB1), agroforestry (IB4, IB5), market gardening (IB1, IB4), resulting in an overall organic produce (IB1, IB3, IB4).

Contribution to Urban Sustainability

According to the city of Berlin, the basic prerequisite for a sustainable city is the protection of its resources and natural foundations of life so that future generations will also have an intact environment worth living in (DB1). Community-supported agriculture contributes to urban sustainability mainly through education and raising

awareness (IB1, IB2, IB3). In Berlin, consumer education is integrated into school curricula to foster responsible consumption starting from an early age, including activities like farm visits and gardening projects to strengthen the connection between children and food production (DB4). CSAs help reduce the disconnection between citizens and food production, offering hands-on experiences like harvesting or farm maintenance that reveal the effort behind sustainable, local food (IB1, IB2, IB3). Many participants, especially those engaging in voluntary participation days, often become more enthusiastic and continue long-term involvement, helping to promote awareness of regional and seasonal consumption. For instance, from the CSA SpeiseGut, another association was founded, making CSAs an entry point for people to get active in other areas (IB2). CSAs also play a role in community-building and learning in a social environment, fostering interactions among members who share the same values (IB4). Moreover, being part of a CSA increases the overall environmental consciousness of members, leading to more sustainable behaviours in other areas, such as reducing waste (IB3). Some CSAs also encourage further involvement in social and political initiatives, broadening their impact on urban sustainability beyond just food supply (IB5).

Furthermore, CSAs impact urban sustainability in terms of their diverse fields, which are more ecological than those of conventional agriculture or large-scale organic farming (IB1, IB3). As a social innovation, CSA is considered to have a certain leverage effect if all the positive potentials discussed above can be scaled (IB3).

4.2.2 Regime Interactions

Regimes or socio-technical regimes represent the “institutional structuring of existing systems leading to path dependence and incremental change” (Köhler et al., 2019, p. 4). This chapter gives an overview of the current food system in Berlin and describes the socio-technical regime. After Geels (2002, 2011), this chapter will describe the regime in the aspects of market user preference, culture, policy, science, industry, and technology with a specific focus on the Smart City framework in Berlin.

Regarding the **culture, market and user preferences**, there is a great demand for regional and seasonal food, which has exceeded the local supply for years (DB4).

Ultimately, the organic sector is still growing; for example, the number of organic companies, such as “Denn’s” supermarket, is increasing in Berlin. However, these supermarkets are still part of global value chains, and the origin of their products is not transparent. Therefore, there is also the belief that some people are interested in learning about other forms of nutrition or access to vegetables. In general, there are many movements around nutrition, such as so-called food saviours or food coops (IB4). Members state that when talking to people outside of the “CSA bubble”, there is a lot to explain about community-supported agriculture because many people are still unfamiliar with the concept (IB4).

In the **industry**, there are several actors that CSAs are collaborating with on different levels. First of all, CSAs collaborate with each other, for example, setting up joint communication to find members, but also in terms of a joint representation in city politics. These collaborations can also lead to more synergies, such as a joint administration and bureaucracy or purchases of gardening materials (IB4, IB5). CSAs are also working with each other within an umbrella network organisation called “Netzwerk Solidarische Landwirtschaft”, which is the representation of CSA members (IB4) and offers a lot of consulting and advising CSAs in terms of expertise and overcoming common challenges (IB3). The Netzwerk Solidarische Landwirtschaft also provides opportunities to connect with other CSAs to learn from each other and become politically active (IB4). For example, meetings are taking place with many CSAs to meet and brainstorm possible synergies such as joint delivery logistics, exchanging products to broaden the variety of products (IB4), or sharing machinery (IB5).

There are also further regional collaborations amongst CSAs, the so-called “Regionalgruppen”. These are voluntary groups formed by CSAs in the same region, such as the regional group “Berlin-Brandenburg” (IB4, IB5). The organisation of and engagement in those regional groups are often restricted by the shortage of labour CSAs are facing. For that reason, there are several plans by the Netzwerk Solidarische Landwirtschaft to offer more support in the form of other organisations. A new development is the federal representation called “Landesvertretungen”. These groups are explicitly about political representation at the federal level because many agricultural fundings are set up at the federal level, not the state level. Furthermore,

there are plans to establish umbrella cooperatives focusing on realising economic benefits from collaboration. To sum up, the regional groups within the Netzwerk Solidarische Landwirtschaft are focusing on personal exchange, communication, and solidarity, the federal groups for political representation, and the new umbrella cooperatives for the ability to cooperate on an economic level (IB5).

There are also other private actors that CSAs collaborate with, such as private companies, which are often located in the same region, such as associations concerned with biodiversity supporting CSAs (IB1). Other collaborations do not follow the traditional CSA model. For instance, the CSA SpeiseGut sometimes sells surplus produce to other distributors, like the “Supercoop”, a community-led supermarket, hospitals for patient meals, or restaurants in Berlin. These smaller collaborations help them to maintain cash flow during times when membership drops and allow them to diversify their income streams, providing a bit more financial security (IB2). CSAs also partner with different organisations to provide their pick-up stations in the city, host the annual meetings of members, or give them more exposure. These partners are from various fields, such as youth centres, educational centres, foundations, festivals, magazines, or collectives, such as the “Bündnis Junge Landwirtschaft” (IB4) or the “Ernährungsrat Berlin” (IB2).

Private collaboration in terms of financial support often comes in the form of private or subordinated loans. In this case, individuals give loans to CSAs with good conditions, usually without interest rates. This is especially useful in the initial building of infrastructure, where a lot of investment is needed (IB3).

While there are many different forms of collaboration amongst CSAs in the industry, there are also further demands to support. A variety of actors at the state level, civil society, and private sector are needed to support CSAs and enable them to diffuse. All those actors are needed to achieve diffusion, including farmers' associations, who are not yet open to new approaches like CSA (IB3). Another issue lies in the processing sector, as many small structures like mills, for example, needed to make way for bigger structures to process big quantities in the past. For this system to enable scaling, such small structures need to be built up again (IB3).

The **science and research sector** has shown increasing interest in community-supported agriculture initiatives in Berlin and across Germany. Universities like Eberswalde, Freiburg, and Gießen have dedicated research to CSAs, with a growing number of research regarding the topic and entire departments focusing on CSA (IB4, IB5). This academic attention has increased the legitimacy of CSAs, helping to bridge connections with policymakers and advocate for further support. Research projects, such as the "nascent" research project, partly funded by the Federal Ministry of Education and Research, explore how to encourage existing agricultural businesses to partially transition to CSA models and how different organisations can assist them. This focus not only affirms the transformative potential of CSAs but also seeks to address challenges such as the agricultural labour shortage (IB5). There are also other educational forms of collaboration with CSAs. For example, CSAs cooperate with Waldorf schools or kindergartens, which own a few shares of the CSA and, in return, support the CSA with fieldwork while getting educated about agriculture and food (IB3). However, against the background of the shortage of skilled workers in the agricultural sector and the declining number of farms in general, there is also a need for change at universities to create entire curricula around CSA to reach young, motivated people and people changing their careers (IB3, IB5).

The perception of CSA members of **political acceptance and support** is generally low (IB1, IB2, IB3, IB5). Some even perceive that they are hindered by politics, for example, when they need permission to construct buildings on the field (IB1). One of the main challenges many CSAs face is gaining recognition as legitimate agricultural operations. This stems from the fact that CSAs often do not fit traditional legal and agricultural frameworks. For example, when leasing land and trying to register, authorities may initially perceive CSA activities as more of a hobby rather than professional farming due to the lack of profit-driven motives or commercial production. As a result, CSAs may be denied certain rights, such as building privileges typically granted to agricultural enterprises, under the assumption that they do not meet the criteria of a farming business. It often requires explaining and advocating for the model before achieving recognition, as many authorities are still unfamiliar with it (IB3). However, some federal states also support the CSA concept, for example, by offering funding advice or a day of free seminars about funding or legal inquiries (IB3). In Leipzig, there is even a land allocation concept that distributes agricultural land owned

by the city. Through this concept, CSAs can apply and have a good chance of securing land when applying for leases. However, the topic of land use and land allocation still is a huge problem because several laws only allow land purchase by a farmer. Still, in reality, several companies invest in land nevertheless (IB3), resulting in non-transparent land allocation (IB4). The land allocation concept in Leipzig can significantly help ease access to land for CSAs, facilitating their operations and growth (IB3). In terms of guidelines, specifically hygiene regulations, there are certain difficulties. While they are without doubt essential, they can be difficult for small-scale operations to comply with, as politicians often design them for large businesses and supply chains (IB3).

In summary, while academic interest helps legitimise the concept and reach policymakers, the process is lengthy and does not meet the urgent need for resources. CSAs operate in a precarious agricultural sector, struggling with challenges like economies of scale, self-exploitation, and an inadequate funding system. The statement argues that significant financial investment and political will are required to make CSAs sustainable and capable of contributing to community resilience and food security (IB5), leading to the next aspect of funding.

CSA Funding in Berlin

In general, Berlin's goal is that learning and experimentation must be possible, for example, through urban labs called "Reallabore". Adaptive financing models and impact-oriented funding tools support the experimentation with and testing of promising approaches and their consolidation. Public procurement processes should adopt agile methods, where legally possible, to better accommodate the flexible and iterative nature of digital projects. This approach would also help make public tenders more appealing to start-ups and local small to medium-sized businesses. Regular sharing of experience is as crucial as training in administration. Beyond achieving efficient processes, transparency, and sustainability criteria will be considered more in public tenders (DB1). In the Berliner Ernährungsstrategie, producers of organic, regional, seasonal, healthy, and fairly traded food, specifically naming CSA as one actor, are to be promoted with the help of funding (DB4, p. 9). However, the current funding situation for CSAs in Berlin, imposed by political structures, is characterised by various challenges for CSAs. If funding is granted, it offers minimal support, only

keeping their basic operations alive (IB5). The financial aid often comes in the form of small, sporadic grants or projects, which “keep CSAs busy but do not provide the resources needed for real growth or sustainability” (IB5, translated from German³²). While funding sums of, for example, 5000 Euros are helpful for CSAs, they are insufficient to build a stable workforce (IB4). Although necessary for survival, this type of funding does not allow for long-term planning or significant development (IB5). In general, CSAs have experienced frustration when applying for certain funding, and the time and effort needed are not proportional to the funds granted (IB1, IB2, IB4, IB5).

The funding system is generally laid out for large-scale projects, leaving small structures such as CSAs facing challenges (IB2, IB3). Fundings are often tied to certain requirements, such as a minimum area of one hectare of land, which CSAs often do not reach (IB3). Some investment subsidies also demand a minimum capital outlay of a certain sum, such as 20,000 Euros in one case (IB3), often presenting a financial burden for small businesses. Furthermore, other conditions include buying new equipment instead of pre-used tools (IB3). Moreover, the duration of a leasing contract can be a condition for accessing certain types of subsidies (IB4). These requirements could lead to small businesses being incentivised to use unsustainable practices such as acquiring more land, practising monocultures, or buying new machinery instead of working with pre-used tools (IB2). These requirements and the time and effort that needs to go into the application process are reasons why CSAs deliberately choose not to rely on subsidies because they reject the funding system in general and do not want to depend on it (IB2, IB3, IB5). While being dependent on public funding in the long term does not match the vision and goals of CSAs, a jumpstart in the founding phase could be helpful (IB3, IB4). Moreover, if received, funding tends to provide relatively small sums. These funds, while useful, often do not match the scale of the needs of these organisations, especially when it comes to ensuring long-term stability (IB4).

There are also certain fundings granted by the European Union, such as the “Leader” programs for regional development or the EIP (Europäische Innovations-

³² “... es hält Solawis zwar beschäftigt, aber es stellt nicht die Ressourcen bereit, die für echtes Wachstum oder Nachhaltigkeit erforderlich sind” (IB5, original).

Partnerschaften für Landwirtschaftliche Produktivität und Nachhaltigkeit), which are - similar to state fundings - tied to certain requirements, such as collaboration amongst CSAs from different European countries. While this international collaboration is important, it cannot be achieved at the current state and scale of CSAs (IB5). There are also smaller funds for incentivising certain environmental actions, such as planting hedges and getting appropriate compensation (IB3). Furthermore, the allocation of funds from the EU is perceived as not transparent, as many of the costs go into the process itself, and it is unclear where the money ends up (IB2, IB5).

To sum up, CSAs in Berlin are facing several challenges when applying for funding. While there are occasional funding opportunities, the support is often minimal and insufficient to create lasting change. At the same time, CSAs need to accept them to survive. Further burdens are the bureaucratic efforts that need to go into funding, with many CSAs struggling to access larger financial resources due to their small scale and lack of institutional support (IB5).

However, there are also positive examples outside of Berlin mentioned at this point, where certain federal states accept the CSA concept and want to support it. Within their possibilities, they have created extra funding programs that were not exclusively meant for CSAs but predestined for them. For instance, in Saxony, the Ministry of Agriculture has been run by the Green Party for the last five years, enabling many calls for funding that were very suitable for CSAs (IB3). If more funding were granted to CSAs, members believe that certain effects could be achieved, such as reaching more people, raising awareness for the concept of local and organic food, allowing potential members to join who cannot afford the monthly member fee, and being more active in the education sector (IB4).

Demands to Politics

In general, Berlin aims to support positive trends and existing approaches that point in the right direction of climate protection so that they can move from the niche to the mainstream (DB2). There are several demands to politics expressed by the interview partners that could help to support CSA as niches to be mentioned here. First of all, land allocation should become more transparent and small-scale initiatives like CSA should be considered (IB1, IB3, IB4). Furthermore, funding should be available to

CSAs, and the city's marketing could focus more on sustainable initiatives like CSA in their communication (IB1, IB3, IB4). Fundings should not be tied to a certain amount of land. Instead, the funding system should also consider supporting small projects (IB2, IB4). Especially in the start-up phase, public funding should be available to CSAs (IB3, IB4). Furthermore, to support career changers in agriculture, it would be helpful to recognise prior work experience and practical skills in the education of the agricultural workforce (IB3). In addition, certain legal frameworks are made for large structures, such as hygiene regulations, which are undoubtedly important but hard to implement for small-scale structures such as CSAs. Politics are demanded to consider special rules for smaller businesses (IB3). In terms of raising awareness and eliminating prejudices about alternative forms of agriculture like CSA, public institutions, such as the Chambers of Agriculture, play an important role in legitimising such initiatives (IB3). At the same time, it is mentioned that not only public actors are of importance, but also private companies and civil society are part of driving the recognition of CSAs (IB3). CSAs recognise that they also need to raise awareness themselves since they do not get funding for promoting the concept (IB4).

Technology: CSA and Smart City Berlin

In Berlin's understanding of a Smart City, "smart" goes beyond being "digital". It emphasises addressing future challenges through creative, open, practical, and participatory solutions. While digital technologies play an important role for a sustainable and public welfare-oriented transformation of the city, they are not perceived as an end in itself (DB1). Smart City measures in Berlin are designed to be transparent, open, and participatory but also require central coordination, clear technical responsibilities, and an agile implementation framework (DB1). This approach envisions a sustainable, community-oriented, resilient, and cooperative city (DB1).

The role of CSA in the smart city strategy is facing differing views. For example, the idea of a 15-minute city or, in general, short distances due to regional production (DB1) aligns with the goal of CSA to provide local food through nearby collection points, reducing transportation needs and supporting community connections (IB4, IB5). Furthermore, agriculture between Berlin and Brandenburg promotes the development of a smart capital region (DB1). Others see the role of CSAs in the Smart City concept

as marginal. The Smart City concept is being viewed mainly in the aspect of increased digitalisation because the term Smart City is argued to be quite vague (IB1). Implementing technologies such as the Internet of Things (IOT) within CSAs is not seen as a potential use case for CSAs. Some CSAs contrast the concept of a highly digitalised society, emphasising manual work and face-to-face interactions with farmers rather than relying on digital tools like newsletters or apps for their operations (IB1). Some others express worries that if everything is being digitised, members neglect the hands-on, analogue practices and are at risk of power shortages (IB5). On the other hand, many CSAs are trying to make the concept more modern and accessible to members through digitalisation (IB5). Overall, while CSAs can fit into the Smart City concept through the lens of local food systems and community-building, there is tension around the role of technology in these efforts.

4.2.3 Landscape Influences: Sustainability and Urbanisation Trends

Global developments such as the **Covid-19 pandemic** have shown locally that Berlin's administration must become more results-oriented, pragmatic, creative, and experimental and move quickly from idea to implementation (DB1). The pandemic has shown the importance of sustainable urban development. Massive disruptions to public and private life made it clear how crucial the urban structure is for the functioning of society and the economy. The importance of short distances to amenities, robust public spaces, diverse open spaces close to homes and a balanced mix of uses across Berlin became clear (DB3). The pandemic has shown how important a resilient urban structure is, but also how positive government action can be, and what simple changes in behaviour can be achieved between a climate-resilient city. Also, health and disaster prevention became apparent: centres, residential districts, and workplaces surrounded by green and shady places for breaks and recreation have clear advantages for urban society, especially in times of climate change, which leads to more hot days in the city, just as in times of pandemic, when activities are spatially restricted (DB3). Regarding community-supported agriculture, a certain “boom” has been recognised during the Covid-19 pandemic (IB2, IB4). People were interested in the concept because they had more time to put in effort for nutrition and they were also worried about global supply chains, which opened up the conversation about self-sufficiency and resilience (IB2, IB3, IB4).

The demand for conventional and organic food from the region is increasing amongst Berlin's citizens (DB4), and regional value chains need to be strengthened (DB2). Furthermore, a do-it-yourself trend can be observed in Western countries. Berlin states that in an increasingly alienated, globalised world, people want to grow their own food. Genuineness and authenticity are key values for both the product and the process (DB5). Urban agriculture and urban gardening are a general, widespread global trend. Socially just green space design must allow and promote new forms of appropriation and utilisation (DB5). Despite stagnating recently, CSA members agree that there is an ongoing trend of **awareness** about nutrition and food, as well as longevity and vegetarianism (IB1, IB2, IB3, IB4). In addition, the "Fridays For Future" movement and the general climate debate and awareness have contributed to this (IB1). Stagnation has recently been caused by overshadowing other topics, such as the political development (IB1, IB3). Although climate change is a global development, it significantly impacts the local level as more natural disasters happen in regions in Germany. This could result in either growing awareness about the topic or frustration, insecurity, and not working on solutions (IB3, IB5).

There is an increasing trend towards **individualism** and a personal preference for flexibility, which challenges CSAs to find enough members. Many individuals, especially the younger generations, want or have flexible lifestyles, often travelling or working remotely, making long-term commitments, such as a year-long membership in a CSA, less attractive (IB2). There are certain commitments required by CSAs, such as picking up products at specific times and locations, which do not fit into these lifestyles, leading to hesitation about joining a CSA (IB4). Additionally, the accessibility of organic products in supermarkets at lower prices presents challenges for CSA, as it is a more convenient option with less commitment (IB5). On the other hand, **inflation** and increasing prices in supermarkets could make joining a CSA more attractive since the prices are now almost equal (IB1). At the same time, CSAs are facing the task of raising prices to meet fair wages for their farmers and workforce (IB1). Regarding the power of purchase, some think that through urbanisation, more and more people with high income present an increase in the target group (IB2). In contrast, others argue that through inflation, CSAs struggle to find enough members due to the high costs of membership (IB3, IB4). Some argue that it depends on the region; in structurally weak

areas, change has to happen at a higher level for the wage levels to improve to spend more money on food (IB3). Perceived financial insecurity often leads to individuals changing their behaviour, even if their economic situation has not significantly changed. This is influenced by external factors like media and political discourse, which increase fears and uncertainties (IB3). In general, the **political developments** are currently shaped by populism, division of society, uncertainty, wars and fears, and a tense social climate, presenting a challenge for the administration of Berlin (DB1) and actors in community-supported agriculture (IB1, IB3, IB5). These current developments leave little space for discussing positive solutions to societal challenges, suppressing alternatives like CSA (IB3, IB5). At the same time, especially in times of crisis, CSAs could present spaces for exchange for people of different political backgrounds, discussing societal challenges at eye level (IB1).

Climate change and the finite nature of fossil resources are recognised as key challenges of our time, which must be met globally and locally with climate protection measures (DB2). This especially applies to urban areas, large cities, and metropolises, which are not only polluters and affected parties but are increasingly seen as key components of the solution to energy and climate problems (DB2). Cities and citizens, as well as nature and open spaces, are affected by the consequences of climate change, for example, due to rising temperatures, water shortages on the one hand, and heavy rainfall events such as flooding on the other (DB2, DB3, DB5). As the consequences of climate change are already clearly noticeable today, there is an urgent need for action in climate adaptation (DB1, DB2). Global warming will vary from region to region. For Berlin, it is assumed that the average annual temperature will rise by 2.5 degrees Celsius by 2050. Precipitation will only decrease slightly, although it will shift throughout the year. Winters in Berlin will become wetter, summers drier and hotter. At the same time, extreme weather events will become more frequent (DB5). The Berlin Energy Transition Act states that Berlin should become climate-neutral as quickly as possible (DB3). For CSAs, climate change presents certain challenges, such as severe weather events forcing CSAs to change the type of cultivation. In addition, access to arable soils is becoming more difficult as lands face degradation (IB4). On the other hand, climate change can open opportunities for alternative solutions like CSAs, producing in a sustainable way and promoting self-sufficiency amongst the population (IB3, IB5).

Regarding **urbanisation**, in 2014, Berlin's demographic change was described as a decrease in population numbers, an ageing society, and a declining number of children and young people (DB5). Now, the growth of Berlin's population represents a challenge in reorientating Berlin's energy and climate protection policy (DB2, DB3). A key challenge here is the growth in population and income, as both factors tend to increase consumption and, thus, energy consumption. At the same time, the demand for space and the competition for it is increasing. Rising land prices, a tight housing market, and the development of space for housing and business have been much-discussed topics in the city for years (DB3). Urbanisation is expected to lead to an increase in final energy consumption and CO2 emissions until 2030 (DB2). Despite the increased CO2 emissions in cities, CSAs see mostly potential in urbanisation (IB3). In general, there is room and great interest for initiatives like CSA in cities. CSAs located in urban contexts have certain advantages, such as a large target group that is typically more open to concepts like CSA, and the logistics are favourable due to short distances (IB2, IB3, IB4).

Berlin wants to use the potential of **digitalisation** to enable cross-thematic thinking, work together differently, and try out new approaches when cooperating within the administration and with stakeholders in urban society. Digital transformation is only possible with a cultural change in the population and administration. Berlin, therefore, established a new political function last year, the Chief Digital Officer (CDO), who is responsible for the city's digital transformation. The Gemeinsam Digital: Berlin strategy therefore combines the areas of smart city, digital strategy, administrative digitalisation, and digital citizen services (DB1). Many CSAs are trying to make the concept more connectable and modern through digitalisation. Some CSAs are already working with AI-supported robotic systems for weed control. At the same time, hands-on production methods should not be neglected to remain resilient even in times of crisis, such as power shortages (IB5), as already mentioned above.

4.3 Comparative Analysis

As mentioned in Chapter 3, a cross-case synthesis is conducted in this chapter. First, it is important to consider that no two cases are identical. Therefore, it needs to be laid out how the two cases differ in their contexts, such as political or cultural settings. At the same time, those differences do not undermine the cross-case findings (Yin, 2018, p. 198). Berlin and Vienna are the first and second most populated cities in the German-speaking world (Stadt Wien, n.d. c), making them both major cities in Europe. Both are similarly integrated into a multi-level political system: Berlin is the state capital and federal state; Vienna is the capital, federal state, and municipality. The population figures and development are heterogeneous, as is the age structure.

The following chapters focus on similarities and differences between Vienna and Berlin on the three levels of the multi-level perspective, identifying patterns, contrasts, and insights. Furthermore, the previously formulated hypotheses are tested.

4.3.1 Similarities and Differences on the Three Levels Niche, Regime and Landscape

Community-supported agriculture emerged in different ways in the two cases. In Germany, the first CSA initiative started in 1988, with a slow start and a “boom” from 2010 onwards (IB5; Wellner & Theuvsen, 2017, p. 5). Today, there are over 500 CSAs in Germany, four in Berlin and 32 in the surrounding district of Brandenburg. The biggest CSAs in Germany have around 2000 members (IB3, IB5). In Austria, the first CSA initiative was started only in 2011 (IV3, IV4), when the “boom” in Germany already happened. Currently, there are 70-80 CSAs in Austria (IV1) and seven CSAs in Vienna (IV4). The biggest CSA in Vienna supplies 400 households (IV1), showing a significant difference in the number of members that CSAs have in both regions. In addition, CSA members in Vienna clearly state that CSAs should become more, not grow infinitely, emphasising the small-scale aspect of CSAs (IV1, IV4, IV6). The question about the ideal size of CSAs amongst interviewees in Berlin is not as clear as in Vienna, discussing the advantages and disadvantages of small and large-scale structures, which are primarily located in Leipzig and Munich (IB1). While both cities agree that CSAs are transformative concepts (IV1, IB5) and speak of a leverage effect towards

a more sustainable food system, interviewees from Berlin explicitly call CSAs the drivers of socio-ecological innovation (IB4) and a social innovation (IB3), further acknowledging their role in the transformation of the food system. Regarding the practices of CSA projects, interviewees from both cities mentioned the same topics, such as avoiding food waste and packaging and having short transport routes. The purposes and motivations of starting CSAs are recurring, including resilience, the high quality of products and a local supply. Therefore, the hypotheses that there are differences in the practices and purposes of CSA projects, motivations behind initiating these projects, and desires for expansion between CSA participants in Vienna and Berlin (**H3**) can be partially disproved and partially confirmed in the case of expansion of CSAs, since in Berlin, or the broader context of Germany, the small-scale structures of CSAs is not undisputed. The practices, purposes, and motivations behind CSAs in Vienna and Berlin are similar.

Berlin and Vienna have strategies and institutions to better connect the city and surrounding areas. Vienna has the Stadt-Umland-Management (SUM) connecting Vienna and Lower Austria. Berlin has the Landesentwicklungsplan for the Capital Region Berlin-Brandenburg (LEP HR). Both cities are enclaved by another federal state, leading them to collaborate closely. Since CSAs are primarily located in urban or suburban areas (Plank et al., 2020, p. 61) and deliver to the city, enabling a local supply for the city, CSAs fit well into the strategy of connecting cities with their surrounding areas. In city documents, it can be observed that Berlin mentions CSA specifically (DB4), while in Vienna, no documents use the specific term or concept.

Furthermore, representatives of CSAs in Vienna and Berlin, as well as the SUM express similar demands to politics. For example, they are asking for a transparent allocation of land, which also considers small-scale farms such as CSAs (IV3, IB1, IB3, IB4). A positive example mentioned is the city of Leipzig where there is a land allocation concept in place, as already mentioned above. The agricultural land that belongs to the city is leased out according to a procedure. “CSAs do very well in this concept when they apply. Measures like that can, of course, help to facilitate access to land” (IB3). Although this is not the case in Berlin, it needs to be mentioned here that such a land allocation concept cannot be found in the whole region of Austria.

Additionally, CSA members demand a funding and legal system that is not only geared towards large-scale farming. Especially in the start-up phase of CSAs, financial support from the political side is demanded (IV2, IV4, IB2, IB4). Moreover, raising awareness and education about the food sector and sustainable alternatives like CSAs is equally demanded by politics (IV2, IB1, IB3, IB4). While in Vienna, the public sector seems to be the main addressee of demands by CSA, in Berlin, it is emphasised that “not only state actors are of importance, but also private companies and civil society are part of driving the recognition of CSAs” (IB3, translated from German³³), considering it also their own task. In Vienna, one interviewee directly drew a comparison to Germany: “There are already very good structures in Germany that offer advice for farms that want to convert to CSA, that simply explain to them at the beginning how they need to proceed. I think the public sector also needs to provide a bit of support in Vienna” (IV4, translated from German³⁴). Therefore, the hypothesis that differences in the political and governance frameworks between Vienna and Berlin influence the level of governmental support, funding for innovations, land use rights, and the degree of privatisation affecting CSA projects (**H2**) can be refuted, as the lack of both financial support, access to land and acknowledgement and support by the public is named by both city representatives, indifferent of the political frameworks. For the degrees of privatisation, no interview partner or document gave insights on the status of privatisation, which is why this part can neither be confirmed nor refuted, leaving room for further research.

Regarding the role of CSAs in the Smart City concept, interview partners from both cities stated that CSAs generally fit into the Smart City concept (IV1, IB4, IB5). At the same time, they emphasised the importance of non-digitised practices and the hands-on agricultural approach that CSAs should remain (IV2, IB1, IB5).

On the landscape level, it can be recognised that interviewees and documents of both Vienna and Berlin acknowledge the Covid-19 pandemic as a development strongly affecting the cities, causing a “boom” in community-supported agriculture (IV4, IV5,

³³ “...nicht nur staatliche Akteure sind von Bedeutung, sondern auch private Unternehmen und die Zivilgesellschaft sind an der Anerkennung von Solawis beteiligt” (IB3, original).

³⁴ “In Deutschland gibt es schon sehr gute Strukturen, die Betriebe, die auf CSA umstellen wollen, beraten, und die ihnen am Anfang einfach erklären, worauf sie schauen müssen. Ich denke, auch in Wien muss die öffentliche Hand da ein bisschen Unterstützung leisten” (IV4, original).

DV3, DV5, IB2, IB4, DB1, DB3). Another equally perceptive trend is environmental awareness, whereas the interviewees in Berlin recognise a certain overshadowing of other topics, such as the current political development towards right-wing parties (IB1, IB3). In Vienna, though the same political development described in Berlin can be observed, it is instead described as a general tension (IV3, IV6), which does not overshadow the sustainability debate. Though the other developments and trends on the landscape level were quite similar in both cities, certain differences in importance can be recognised due to the different frequency of mentions of trends in the cities, as can be seen in the following two Figures 13 and 14:

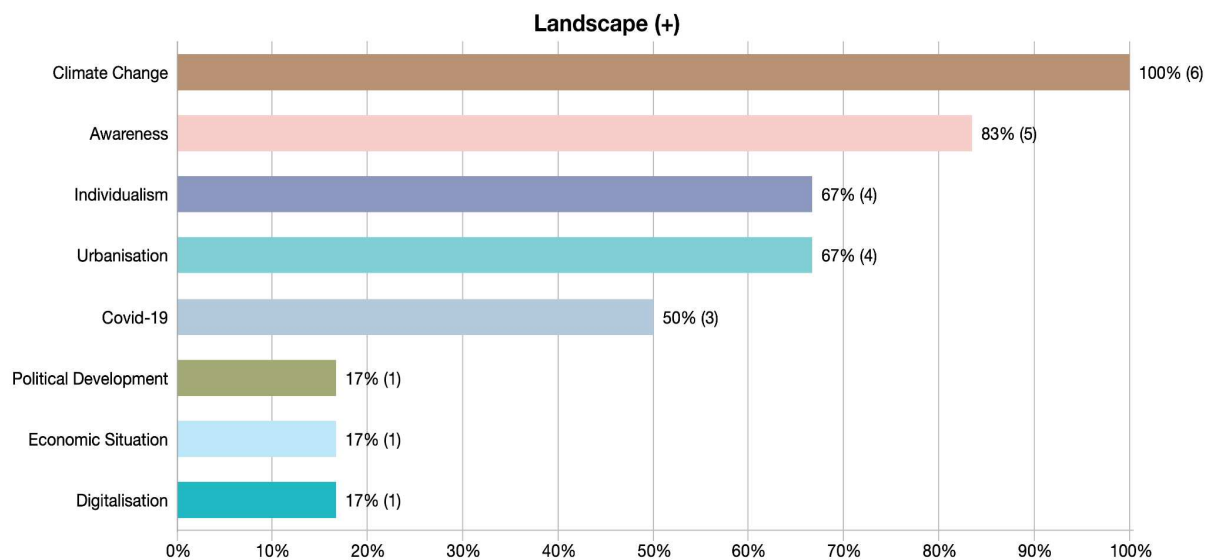


Figure 13: Frequency of mentioning the landscape subcodes listed in Vienna (Source: Own Visualisation with MAXQDA 2024, 2024)

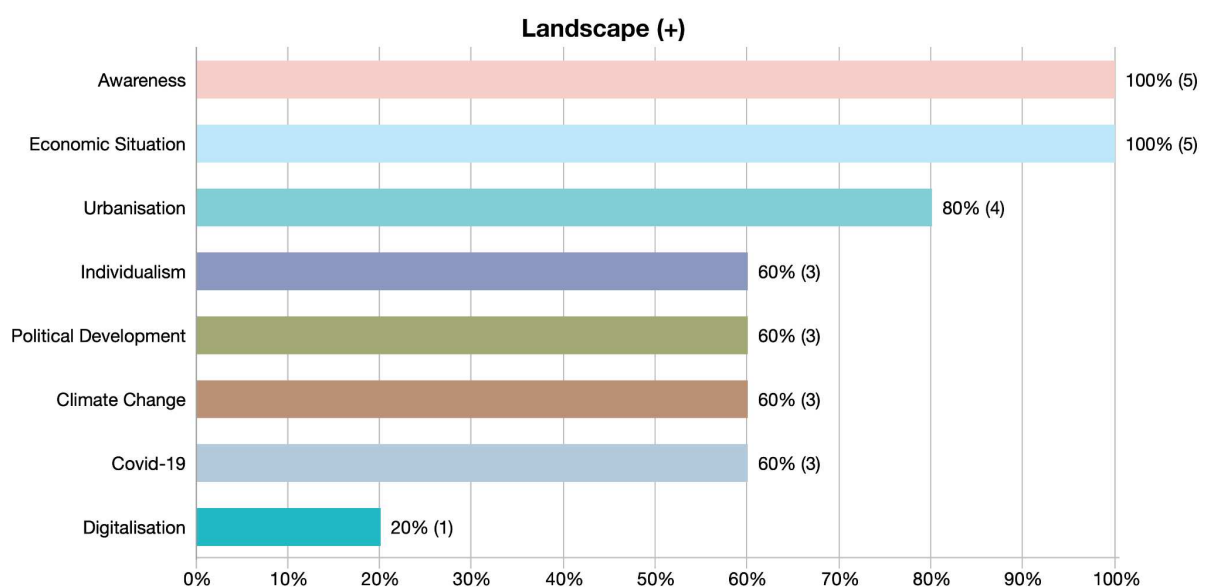


Figure 14: Frequency of mentioning the landscape subcodes listed in Berlin (Source: Own visualisation with MAXQDA 2024, 2024)

It can be observed that none of the trends were named by all the interviewees of both cities. While awareness and the economic situation, including inflation, is the most named development affecting CSA in Berlin, it is climate change in Vienna. While the economic situation seems very relevant for CSAs in Berlin, the same trend is only mentioned by one out of six interview partners in Vienna. Digitalisation is equally subordinate in both cities. The hypothesis that although urbanisation, sustainability, and consumer preferences for local and ecologically produced foods might be common trends across urban **landscapes**, the extent to which global trends are perceived as dominant, important, or relevant varies between the cities of Vienna and Berlin (**H1**), can therefore be partially confirmed, since the trends that were named by interviewees and stated in city documents, in general, are recurring. However, the frequency of mentioning certain trends indicates that they are perceived differently in the two cities, as explained above.

4.3.2 Comparing the Factors Influencing CSA Success and Challenges

One success factor named by an interviewee in Berlin is the start of CSAs in different parts of Germany in the early 2010s, a time of high environmental awareness and an optimistic spirit. As successful pioneer projects, the CSAs PlantAge in Berlin, KoLa in Leipzig, Kooperative in Frankfurt and Kartoffelkombinat in Munich are named, which are all relatively large-scale projects with around 800 members (IB5), significantly more than CSAs in Vienna have. In Vienna, it is generally agreed that CSAs should remain small-scale, resulting in advantages such as a strong sense of community. In the case of Berlin, the scale of CSAs is still a topic of discussion, as is the case in the broader German context. In the German context, large-scale CSAs and interviewees from Berlin acknowledge certain advantages of growing bigger, such as economies of scale and more efficient logistics (IB3, IB4). The larger CSAs get, the higher the competition in a certain area, possibly threatening small CSAs within the same region (IB3), which has not been named a challenge by interviewees from Vienna.

A common factor for success, named by interview partners from Vienna and Berlin, is the proximity to urban centres. CSAs in urban contexts have a lot of advantages, for example, providing a large consumer market to address (IV3, IV5, IB5), while in rural areas, CSAs often struggle due to difficulties in reaching enough participants (IV4).

Other factors are short transport routes (IV2, IB2, IB3) and the high demand for locally produced food (IV3, IB5)

Interview partners from both Vienna and Berlin mentioned that the acknowledgement and awareness of the science and research sector regarding CSAs are high, and they are experiencing support from this sector, increasing the legitimacy of community-supported agriculture in general.

Regarding public representation, CSAs in Berlin are building up several organisations to increase awareness and visibility of CSAs, such as the umbrella network, regional groups, federal representation groups, and the planning of another umbrella organisation focused on economic benefits. In Vienna, the only collaborative organisation is the umbrella network Solawi Leben.

A common challenge for CSAs in Vienna and Berlin is the lack of support and recognition as legitimate agricultural operations by politics. Another factor is the insufficient funding for CSAs, as the funding system in both Vienna and Berlin is made for large-scale agriculture and tied to certain requirements, not taking into account small structures, leading to CSA members deliberately not applying for funding to avoid frustration. Especially in the start-up phase, financial support can be very helpful for CSAs.

Another challenge in Vienna and Berlin is access to land. In Berlin, a solution is the cooperative purchase of agricultural land. However, this is still very uncommon because the land is usually only given to CSAs by leasing contracts (IB5). A solution in Vienna is securing land, such as through the Munus Foundation, which buys and allocates land to CSAs, securing their production for a lifetime (IV1, IV6).

Furthermore, a burden for CSAs is the lack of commitment and engagement from society, which, already implied by one interviewee (IV2), stems from the ego-centred society in Austria and neighbouring countries. This factor affects CSAs in Vienna and Berlin equally in acquiring new members for CSAs or keeping existing members (IV2, IV4, IV6, IB2, IB4).

5. Discussion

This chapter discusses the empirical findings on community-supported agriculture and its contribution to urban sustainability transitions in Vienna and Berlin. The aim is to link the empirical results with the multi-level perspective theory, answering the four research questions of this thesis. Furthermore, recommendations for action and measures to realise the potential of community-supported agriculture are discussed.

5.1 Contributions of CSA to Urban Sustainability Transitions

Like other systems, the food and agricultural system results in several issues, such as infectious diseases, too much fertiliser, or too many subsidies needed. These issues are deeply rooted in societal structures and activities (Geels, 2004, p. 916), leading to a food system crisis and requiring radical transformation towards a sustainable society (Grin et al., 2010, p. 1). CSA presents an alternative food supply, independent from subsidies, not using fertiliser, and working in an overall mindful and sustainable relationship with the environment. It is for these reasons that CSA presents a viable alternative for food supply in urban contexts and has the potential to be a part of the transition to a more sustainable urban food system.

To set CSA in the context of the multi-level perspective, possible innovation and changes in the MLP start at the niche level. Recently, there has been a shift in how civil society approaches sustainability transitions. Rather than just experiencing these changes as bystanders, they actively participate in them (Hinrichs, 2014, p. 145). CSAs are movements started by civil society actors who acknowledge those initiatives as transformative and as the drivers of social-ecological innovation, aiming to actively shape the food system. Niches are protected spaces and the level for radical innovations to occur (Köhler et al., 2019, p. 4). CSAs can be characterised as niche innovations, with the empirical data of CSA members describing CSAs as initiatives that are decoupled from the market and are in a protected place to experiment, learn and develop the concept further. To answer the main research question (**RQ1**: How can community-supported agriculture initiatives contribute to urban sustainability

transitions in Vienna and Berlin?), currently, CSA mostly has an impact in the field of raising awareness and educating society about the food system and possibilities of transforming it to a more sustainable one. A certain spillover effect from CSA is discussed in literature (Plank et al., 2020, p. 59) and can be confirmed by the empirical data, since CSA members often start other sustainable behaviour resulting from joining a CSA (IV4, IB2). On the other hand, the environmental impact that CSAs have in Berlin and Vienna is negligible since CSA members all agree that the number of CSAs is still too small. However, members believe that CSAs have a lot of potential to transform the food system that can be realised in the future.

“There is no simple cause or driver in transitions. Instead, there is co-evolution within and between levels, i.e., processes at multiple dimensions and levels simultaneously” (Geels & Schot, 2010, p. 27), leading to the next questions of how the food system currently is operating on the three levels of the MLP and what steps need to be taken to scale CSA and realise their potential. The following section describes the interactions of the levels to answer the second research question (**RQ2**: How do the different levels of the multi-level perspective (niche, regime, landscape) interact within the urban food systems of Vienna and Berlin to enable sustainability transitions?).

The landscape consists of different factors of the exogenous environment (Geels, 2004, p. 913; Geels, 2002, p.1260). The current developments of crises such as climate change and environmental awareness, the Covid-19 pandemic, and political conflicts affecting the resilience of global value chains all put pressure on the existing regime. Community-supported agriculture offers an alternative that operates in an ecological and socially just way and presents resilient local supply for cities. Radical innovations break out of the niche level when ongoing processes at the levels of regime and landscape create a “window of opportunity” (Geels, 2002, p. 1262; Geels, 2004, p. 914; Markard et al., 2012, p. 958). It can be argued that while the landscape is already putting pressure on the regime and CSA is presenting a niche innovation, the missing factor is the regime to create a window of opportunity. While there is a certain openness from the regime for alternative ways of food supply, such as urban farming, as stated in certain city documents, the necessary support and funding to make innovations break out of the niche are missing. Therefore, they are trapped in the niche level. Path dependencies and lock-ins can create barriers and constraints

for the innovative breakthroughs of niches (Rip & Kemp, 1998, p. 350; Smith et al., 2010, p. 441; Pekkarinen & Melkas, 2019, p. 240). Such barriers can, for example, be identified as technical incompatibilities and usability problems (Pekkarinen & Melkas, 2019, p. 240). There are path dependencies and lock-ins because the current system is strongly orientated towards the traditional farmers who have been cultivating on a large scale for a long time. It is also observed, in theory, that at the regime level, the current industrial, conventional agriculture is predominant (El Bilali, 2019, p. 1). This can, therefore, be confirmed by the empirical data. These lock-ins and old ways of thinking prevent the acceptance of innovations such as CSA. There are also barriers in the general society, such as usability problems because there are many hurdles to joining CSA, such as the high membership fee and the lack of flexibility in collecting the harvest shares and the available products. The resistance of declining industries, such as fossil fuels, changing consumer habits, and the increasing complexity of governance pose further challenges (Markard et al., 2020, p. 1ff). Furthermore, it is important that cities overcome a rural-urban divide and aim for an integrated “multi-level approach” (Forster & Getz Escudero, 2014, p. 6). Vienna and Berlin strive to collaborate closely between cities and surrounding states. However, the complexity of governance even increases due to many CSAs operating in the urban context, being located just outside city borders, making them an object to governmental structures of the city and the surrounding federal state. While the two cities strive for better urban-rural connections, it is unclear to what extent this is achieved. For example, many CSAs are not eligible for city funding, although they supply mostly citizens, because of the divided administration.

Another aspect is that actors in regimes often have the point of view that as long as issues can be solved within an existing regime, there is no need or sense in investing or allowing new technologies to be created, leading to path dependencies (Geels, 2004, p. 910). It can also be argued that unsustainable practices and the harmful effects of the current agri-food system are not being recognised enough in society, which is why no radical action is being taken. Global political and economic trends and the focus on other topics, such as the energy transition, could be factors for the lack of awareness.

Change only occurs when external actors raise awareness since actors within the regime tend to downplay problems (Geels, 2004, p. 914). CSA members argue that the support and acknowledgement from the research and science sector are high and legitimise CSA in political contexts. However, the political support is insufficient. Niche innovations are taking place in protected spaces, which helps innovations grow before they go out on the normal market. Such protection can be achieved through public or private subsidies (Geels, 2004, p. 912). From the empirical data, especially public funding is demanded by CSAs. These subsidies have so far been perceived as insufficient by CSA members, which might have caused them to stay inside the niche without the chance to emerge into the market. On the other hand, CSA members also see an advantage in the protected space they are currently in, allowing them to experiment and develop the concept further. Furthermore, learning and network building are crucial aspects for the potential success of innovations (Geels, 2004, p. 912), which CSAs are already doing in their current state. At the same time, a high amount of work from the social network needs to be put in to hold up the niche (Geels, 2004, p. 913), which can also be confirmed by CSAs since the dependence on the community is perceived as high.

In addition, in the MLP, certain components of already established systems are dependent on each other, leading to inertia when new, radical innovations could come up (Geels, 2004, p. 911). In the current food system, traditional farmers are dependent on subsidies and funding from the state (IV1). At the same time, those fundings are tied to specific requirements, such as a minimum amount of land, because it has been geared towards large-scale farming for a long time. Therefore, it is challenging for CSA to become a part of this co-dependent system.

While CSA is not yet diffusing in terms of becoming a bigger part of the current agri-food system in Vienna or Berlin, it can also be observed that CSA is an innovation that is already diffusing in terms of geographical scope and other systems (Markard et al., 2020, p. 1) since CSA has been emerging in many countries since the past decade. At the same time, the CSX concept has already been mentioned, which applies the CSA concept to other systems.

5.2 Influence of Urban Contexts on CSA Effectiveness

Continuing with business as usual, and thus allowing urbanisation to proceed in an unstructured, almost automatic manner, would lead to an unsustainable development of cities worldwide (WBGU, 2016, p. 11). As cities grow and the urban population increases, they face several challenges, such as climate change and environmental degradation, food insecurity, and growing budget deficits (Mora et al., 2021, p. 10). Despite or maybe because of that, cities are starting points for innovation and change (Kabisch et al., 2018, p. xviii). Urban societies need to be empowered to use the opportunities for sustainability in cities and follow urban transformation pathways (ibid., p. 12). The role of cities in shaping civil-society-driven sustainability innovations needs to be accounted for, especially in local activities that mobilise civil actors and can lead towards a transformation of socio-technical systems embedded in an urban context (Wolfram, 2017, p. 107). Therefore, sustainable innovations such as CSA are relevant, especially in urban contexts. In addition, cities are advantaged for successful niche formation because of certain circumstances, such as the “high density of potential market niches, global knowledge networks, internationally mobile workforces and particularly pressing environmental problems” (Binz & Truffer, 2017, p. 33). This can be confirmed with empirical data since several interviewees named the city context as highly positive for CSAs to emerge because of the increased potential consumers and target groups and the short transport routes enabling efficiency. In general, the proximity to a large city has been named a success factor for CSAs in Vienna and Berlin. Furthermore, as part of the SDG framework, which both Berlin and Vienna are committed to in their strategic documents (DV1, DB1), SDG 11 aims to “make cities and human settlements inclusive, safe, resilient and sustainable”. It focuses on several subgoals, for instance, enhancing exclusive and sustainable urbanisation and participation, reducing the environmental impact of cities, and supporting linkages between urban, peri-urban and rural areas (UN, 2015, p. 24). CSAs are tapping into all these aspects and are, therefore, contributing to SDG11, which is why they are a lever for developing sustainable cities.

Similar to the multi-level perspective, smart transitions need a collaborative approach to engage actors on all levels (Lee et al., 2023, p. 93). Therefore, smart transitions

coming from the Smart City concept, in general, fit together with CSA and their contribution to urban sustainability transitions. However, CSA members are sceptical about the Smart City concept and to which extent it is implemented in their cities. Furthermore, there are different findings on the technological potential of CSA. While some members believe technology can help make CSAs more efficient and less labour-intensive, others argue for preserving traditional hands-on working methods. Interviewees mainly focused on the digitalisation part of Smart City concepts, but there are also other aspects. This could be due to the unclear and not generalised definition of what a smart city is. To answer research question four (**RQ4**: How are Vienna and Berlin incorporating the Smart City concept into their urban planning, and what role does community-supported agriculture play within this framework?), Vienna and Berlin both have Smart City concepts integrated into their urban planning documents, going beyond just digitalisation means. In the city planning documents, certain aspects favour practices similar to CSA, such as the 15-minute city and prioritising short and regional value chains as well as the participation of civil society. However, neither of the strategies explicitly mentions CSA, which again argues for the niche status of the concept and, therefore, the marginal role of CSA, not only in the Smart City concept but in the general urban food system.

5.3 Implications for Policy and Practice

To answer research question three (**RQ3**: What specific steps are needed to facilitate urban sustainability transitions through the adoption and scaling of CSA initiatives in the future? On which level of the multi-level perspective (niche, regime, landscape) can those steps be taken?), several steps need to be taken involving many actors from different levels. The most important changes should happen on the regime level, but also on the niche level there is room for adaptation, which will be addressed in more detail below.

The involvement of a broad range of stakeholders is crucial to creating social acceptance, stimulating learning processes, and supporting industry coalitions. For example, policymakers should progressively apply a mix of policies, including

subsidies. In addition, considering the context-specific needs of different sectors and regions can help shape policies to drive the transition to sustainability more effectively (Markard et al., 2020, p. 5). Industry coalitions could be realised, for example, by connecting existing farms that want to transition to a new concept with CSAs, as many already did successfully. One interview partner from Vienna mentioned that in Germany, there are efforts to offer guidance to farms considering the transition from traditional farms to CSA, which Vienna is still missing and could be supported from the political side (IV4). Vienna needs to create structures that enable existing farms to familiarise themselves with the CSA concept and see it as an alternative. Many CSAs view the transition from an existing farm to a CSA farm as a successful option for founding new CSAs. Documents also confirm that given the strong price volatility in all areas of agriculture, forms of cooperation (such as food coops, machinery cooperatives, or social farming) are becoming increasingly important again. Such cooperation represents a solution for many farms (DV4). Therefore, it is a common objective that can be reached on the regime level.

Furthermore, the importance of the political sector supporting innovations with subsidies can be confirmed since all interview partners agreed on financial support as one of the main ways that could help them develop further. In general, the total funding in the EU makes up 125.98 million Euros. Regarding start-up subsidies, 281,000 euros was paid out to 34 young farmers in Vienna, making up 0,2 per cent of all subsidies granted (DV5). The current funding system is laid out to further support and keep alive large-scale farming, neglecting new, small-scale businesses to receive support through funding. This has also been observed by many CSAs, who confirmed that funding was one of the major pain factors for them. Therefore, an obvious and important next step is at the regime level to adapt the current funding system and either open new funds for small-scale farming, such as CSAs, or redistribute the current funding sums to benefit small businesses. In addition, one document aims to ensure unbureaucratic and efficient support for urban agriculture (DV4). However, this support is not perceived by CSA members, who perceive the funding processes as highly bureaucratic and causing frustration. This could be because CSAs are not seen as legitimate members of urban agriculture. This might also be because some of them are located in the neighbouring federal states, however, these CSAs also primarily supply the nearby cities with food. Therefore, they should also promote them.

Generally, both cities aim to support the development of regional value chains. This objective fits perfectly with CSA, yet CSA members say that the Chambers of Agriculture do not support them. It might be the transformative way of doing business of not making a profit (IV1), which is a deterrent because it does not add overall economic value to the regions.

Above all, large-scale farms are prioritised, which leaves no room for small farms such as CSAs. The documents make it obvious that the understanding of small and large differs: Even though the average agricultural area per farm has increased by 26 per cent, Austrian agriculture remains small-scale by European standards. The area per farm increased on average from 18.8 hectares to 23.6 hectares (DV5). The understanding of small and large-scale diverges from that of CSAs since 23 hectares is still large-scale for CSAs. The different understandings of scale can present a problem and an opportunity for discussion and rethinking of the political side since CSAs prove that agriculture also works on one hectare of land.

Socio-technical transitions not only include the technological aspect but also changes in user practices and institutional structures (Markard et al., 2012, p. 956). This can be confirmed by the empirical data since there is the acknowledgement that user practices and institutional structures of the government need to be changed to enable community-supported agriculture to emerge from the niche and transform the food system. Users need to become more flexible in their thinking about food choices. Institutions, such as governments, need to move away from old structures and enable innovations such as CSA through funding and support.

On the niche level, implementing a CSA - like any business strategy - requires proper planning of working time requirements and the necessary production factors to be sustainable in the long term (Diekmann, 2020, p. 17). This can also be confirmed by CSA members, emphasising that CSAs only function well if they have a business model and strategy. Since the financing of CSAs is not always working well, this might be a point for further development. Furthermore, CSAs in both regions can learn from each other. In Berlin, many network structures are planned on how CSAs can make themselves heard on a political level and enable economic collaboration. In Vienna, there is currently only one network organisation. Access to land is a common problem

in Vienna and Berlin, which CSAs agree to be solved on the regime level by the political side as soon as CSAs find land. While the cooperative purchase of land is still uncommon in Berlin, the Munus Foundation in Vienna has been established to secure land for certain purposes, such as community-supported agriculture, taking the land off the market. These two areas might be points for development and best practices where both cities can learn from each other.

6. Conclusion

A common saying amongst CSAs, recited from Wolfgang Stränz from the CSA Buschberghof, is the following: **“The food loses its price and regains its value”** (IB4, translated from German³⁵).

This study contributes to understanding how community-supported agriculture contributes to urban sustainability transitions of the food system today and in the future. The case study comparison offers the first comparative analysis of CSA in Vienna and Berlin. Subsequently, suggestions for necessary changes to integrate CSA into the current food system are made. In addition to comparing the case studies, the focus is on deriving recommendations for practical action. Like every study, this research work has limitations, described below in Chapter 6.2.

6.1 Summary of Findings

Agri-food systems worldwide face several challenges that require action and innovation on different levels. At the same time, the world's cities are growing and have a crucial role in driving urban sustainability transitions, such as in the food system. In addition, civil society actors are increasingly involved in driving innovation and becoming active members of sustainability transitions, for example, through community-supported agriculture. Current developments such as climate change and environmental awareness are putting pressure on the existing food system, emphasising that continuing with business as usual would lead to an unsustainable development and a transformation is urgently required.

“... the transition to sustainable agriculture might be understood as a complex of interactive processes leading to a series of adaptive changes, rather than as regime change” (Ingram et al., 2015, p. 55). The food system will not be transformed into a sustainable system from one day to another, but there is a lot of potential to transform

³⁵ „Die Lebensmittel verlieren ihren Preis und erhalten so ihren Wert zurück“ (IB4, recited from Wolfgang Stränz).

the existing structures. Community-supported agriculture is one niche, among other possible and necessary innovations, with a lot of potential to contribute to this. “The leverage effect of CSA to make progress is probably not enough. There are many small drills that are now on the hard boards” (IV3, translated from German³⁶).

As already stated in the methodology part of Chapter 3 and in Figure 7, this case study design follows a linear-analytic structure. It starts with the issue or problem being laid out and a review of the relevant literature, followed by the methods, the data collection and analysis. It ends with the collection of findings and a conclusion (Yin, 2018, p. 229). To summarise the findings, Figure 15 shows the case study design again and includes the main findings of each step, also including the research question each part mainly focused on. It needs to be added that the research questions were answered with the interaction and findings of all steps of the research, however, some phases focused more on specific research questions. Figure 15 shows the main findings in a simplified version since the findings were already discussed in detail in Chapter 5 and are summarised below.

³⁶ „Der Hebel, über die solidarische Landwirtschaft um etwas weiterbringen ist wahrscheinlich zu wenig. Es sind viele kleine Bohrer, die jetzt an den harten Brettern dran sind“ (IV3, original).

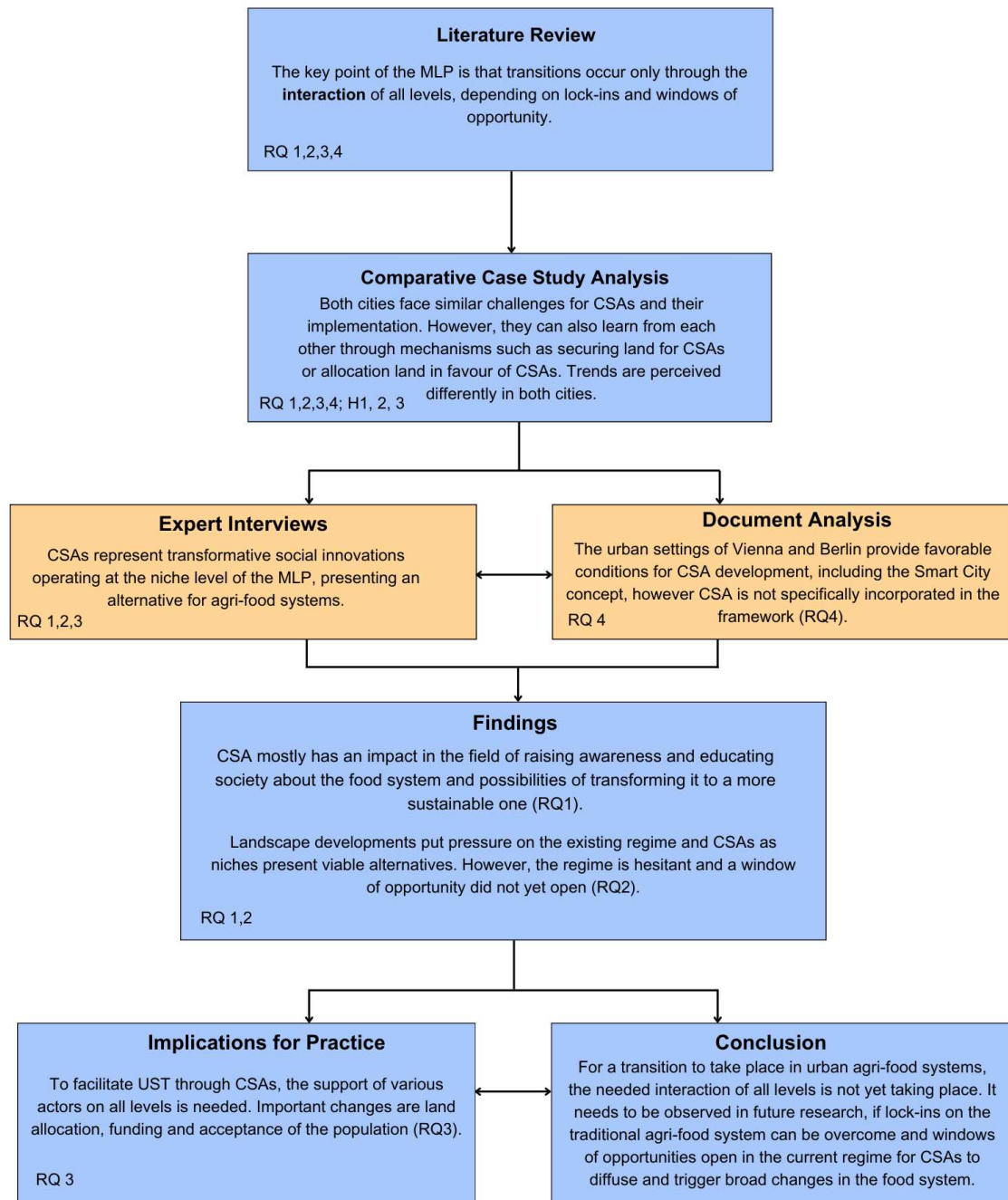


Figure 15: Main Findings Along the Case Study Design (Source: Own visualisation, 2024)

To sum up the findings, currently, mainly large-scale farms which are trying to improve the dominating food system, such as regional and organic production amongst traditional farms, are being supported. Meanwhile, community-supported agriculture presents an entirely new way of farming to transform the food system and decouple it from market mechanisms to achieve long-term sustainability. Due to the lack of support in terms of acceptance, promotion, and funding for these transformative

projects, a general hesitation towards such solutions is observed. While the developments on the landscape, such as environmental awareness, climate change, and the political situation, are putting a lot of pressure on the current system and the demand for regional, sustainable products in cities is constantly increasing, there is a lack of openness to change, especially at the regime level, from the political side as well as the mindset of consumers. Therefore, in the current food system, there are lock-ins and path dependencies, not opening windows of opportunities for innovative niches such as CSA. Important aspects to enable CSA to diffuse would be funding, especially in the start-up phase, and considering them in land allocation processes. Even if some actors have the will to support CSAs, they lack the legal base and the resources to do so. However, at the niche level, CSAs currently experience a decline or stagnation of their growth, which is why there is room for change as well. For example, rethinking the business model could make the concept more appealing to a broader target group. Hence, the change is needed on both levels to enable a transition towards a more sustainable food system in Vienna and Berlin.

Currently, CSAs mostly have an impact in the field of raising awareness and educating society about the food system and the possibilities of transforming it into a more sustainable one. The environmental impacts are negligible regarding the current size and diffusion of CSA in Vienna and Berlin. Although CSAs are currently small in numbers and not in a position to challenge the dominating food system, these initiatives are still important. “Their transformative power lies in the interplay with mainstream development once their time has come” (Schermer, 2015a, p. 130). All interviewees agree on the high potential of community-supported agriculture to contribute to the transition to a more sustainable food system in the future, despite the current niche status. In addition, a spillover effect from CSA to other sustainable practices is observed amongst members. It is also acknowledged that CSA is not the only component in this transition but an interplay of different innovative forms of producing and distributing agricultural products. Especially with the combination of different concepts, such as market gardening, CSA has the potential to actively contribute to agricultural production that is environmentally friendly. The adaption of the CSA concept to other areas and systems, called CSX approach, is another potential that could be realised.

In analogy to the digital transformation (DB1) the food transformation requires far-reaching changes to existing structures and processes. Ultimately, this means a cultural change that affects all administrative departments and social sectors. Innovative solutions from urban society, administration, science and research, business, and civil society significantly contribute here. While the science and research sector and pioneers from civil society are already working on their levers, what is needed above all is the general approval of society for new alternatives and the support of the administration and politicians who are still holding on to old structures.

6.2 Limitations of the Study

Comprehensive frameworks such as the multi-level perspective provide structure for macro analyses of a socio-technical system. It is argued that there should be more detail given to the micro-level investigations of underlying actors, technologies, infrastructures, and institutional contexts, such as how the functional socio-technical spaces of niche, regime, and landscape relate to other dimensions of space, such as territorial, administrative and communicative spaces (Köhler et al., 2019, p. 18; Smith et al., 2010, p. 446). Due to the limited scope of this thesis, the aim is to provide a macro-analysis of the three levels of niche, regime, and landscape. Therefore, a detailed investigation of each level leaves room for future research.

Furthermore, there is a lack of attention to social differences, such as ethnicity, class, and gender, in sustainability transitions research (Köhler et al., 2019, p. 13). In this thesis, it has become evident that there is a discourse about the diversity of members of CSAs. While some argue that the member composition is quite heterogeneous, others admit that the homogenous composition of members is a problem that CSA currently faces and creates a fear of becoming an exclusive movement for wealthy and educated people. Due to the limited scope of this thesis, this phenomenon has been given little attention and leaves room for further research.

In addition, while the MLP is an abstract analytical framework that identifies relations between general theoretical principles and mechanisms, there is room for analysing precise interactions between technology, culture, politics, economics, science, and more. Therefore, the MLP needs to be complemented with more specific theories (Grin et al., 2010, p. 19). Hence, there is room for analysing CSA in Vienna and Berlin in different contexts than the MLP, complementing the research of this thesis.

6.3 Outlook on Future Research

There are several directions in which future research could go and which topics need to be further observed. Currently, CSA members argue that the support and acknowledgement from the research and science sector is high and legitimises CSA in political contexts. However, this development has only been recent (Köhler et al., 2019, p. 2), which is why it is important to continue to observe this development and if other actors are raising awareness of this topic in the future. Furthermore, as both cities describe the current political and economic situation as tense and overshadowing other trends such as environmental awareness, it needs to be observed in which direction these trends are further developing and if there is more room for environmental debate in the future. In Austria, CSA is only in its infancy. Therefore, research is needed on how CSA is being transformed mid to long-term (Plank et al., 2020, p. 64). In Germany, CSAs appeal to an increasing number of consumers. Therefore, further growth is expected in the coming years. Due to its growing popularity, the CSA concept is expected to become increasingly important and widespread (Wellner & Theuvsen, 2016, p. 9). The general development and spread of the CSA concepts in both cities and countries, as well as the achievement of their demands, need to be observed in the future.

Furthermore, the CSX sector, which is presenting a further development of the CSA context in other systems, leaves room for research in the future. In addition, the topic of funding, for example, the current debate on the future direction of EU agricultural funding that aims to include small-scale agricultural and horticultural measures in an urban context, needs to be further observed in the future, analysing how the funding

situation is developing in favour of or against CSAs in Vienna and Berlin. Since CSAs in Vienna and Berlin share many of the same challenges, especially in funding, it could be further studied if a common EU funding system for CSAs would be a solution to support community-supported agriculture.

The plural form of transitions recognises the diversity of options towards sustainability (Hinrichs, 2014, p. 152), moving “beyond single innovations towards (complementary and competing) interactions between multiple emerging and existing technologies” (Köhler et al., 2019, p. 6). Interviewees also confirmed this, saying that CSA is only one of many components of a sustainable food system in the future. Therefore, other upcoming approaches or innovations in the food sector, as well as the interaction and possible cooperation with CSA, need to be researched.

Furthermore, several authors demand multi- and trans-disciplinary research in transitions towards sustainability in the food system on the MLP applicability. Research should move from focusing on a single system, such as food, to multi-sector transitions, such as the agriculture and transport system. MLP research should focus more on how to manage those transitions instead of “just” analysing transition dynamics (Köhler et al., 2019, p. 21; El Bilali, 2019, p. 17).

Further attention should be given to the phase-out of the existing food system. “How should society re-configure existing socio-technical systems; which regime rules should be abandoned, which maintained?” (Köhler et al., 2019, p. 21). Also, the question of phasing out of existing technologies and how to make the transition to a new system with addressing social and economic sustainability as well as reducing environmental impacts is raised by Köhler et al. (2019, p. 21) and leaves room for further research in sustainability transitions in the food system.

7. References

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8. Appendices

Appendix 1: Interview Guide

INTERVIEW-LEITFADEN

(Anpassung / Auswahl der konkreten Fragestellungen je nach Interviewpartner:in)

1. EINFÜHRUNG

- Bedanken für die Zeit und Bereitschaft, kurze Erklärung wie das Gespräch ablaufen soll und wozu es genützt wird
- Liegt informed consent vor? Ja / Nein (erneute Betonung etwaiger Besonderheiten bspw. Anonymisierung etc.)
- Kurzer Bericht über Kontext der Masterarbeit

Einführungsfrage:

Welchen Bezug haben Sie zu solidarischer Landwirtschaft im urbanen oder stadtnahen Kontext?

TEIL A: GRUNDLAGEN & STÄDTISCHE NACHHALTIGKEIT

1a) Was verstehen Sie unter dem Konzept der Solidarischen Landwirtschaft (CSA) und wie wird es in Wien/ Berlin umgesetzt?

> Welche Stärken sehen Sie in Solidarischen Landwirtschaften?

> Welche Schwächen sehen Sie in Solidarischen Landwirtschaften?

2a) Welche Rolle spielen zivilgesellschaftliche Initiativen wie beispielsweise solidarische Landwirtschaft, Ihrer persönlichen Meinung nach in Wien / Berlin?

> Wie trägt Ihrer Meinung nach die Solidarische Landwirtschaft zur städtischen Nachhaltigkeit bei?

> Welche Potentiale sehen Sie im Hinblick auf solche Initiativen für die städtische Entwicklung?

> Können Sie konkrete Beispiele nennen, wie solch eine CSA Initiative die lokale Gemeinschaft oder die städtische Umwelt beeinflusst hat?

> Welche spezifischen umweltfreundlichen Praktiken werden in Ihrer CSA angewendet? (nur wenn Interviewpartner:in Mitglied einer CSA ist)

3a) Welche Herausforderungen sehen Sie bei der Umsetzung von CSA-Projekten in urbanen Räumen?

> Welche konkreten Schwierigkeiten hatten oder haben Sie bei Ihrer CSA? (nur wenn Interviewpartner:in Mitglied einer CSA ist)

TEIL B: Kontext der Multi-Level Perspective

1b) Was sind aktuelle Entwicklungen/ Trends, die CSA Initiativen in Wien/ Berlin begünstigen oder ihnen entgegenstehen könnten? (Landscape)

> Wie sehen Sie die Rolle globaler Trends wie Urbanisierung und Umweltbewusstsein in Bezug auf die Entwicklung von CSA in Wien/ Berlin?

2b) Inwiefern nehmen Sie die Unterstützung der Stadt/ Verwaltung im Hinblick auf CSA Initiativen wahr? (Regime)

3b) Inwiefern arbeiten private Akteure mit solidarischen Landwirtschaften zusammen? (Regime)

> Welche Formen der Unterstützung sind notwendig, um die Entwicklung von CSA Projekten bestmöglich zu fördern?

4b) Inwiefern beeinflussen Veränderungen in der Technologie oder in der Gesetzgebung CSA Initiativen?

TEIL C: ZUKÜNFTIGE ENTWICKLUNGEN

1c) Sie haben (*Beispiel*) als Trend genannt. Wie sehen Sie die weitere Entwicklung dieses Trends in Zukunft?

> Wird Solidarische Landwirtschaft Ihrer Meinung nach von diesen Trends profitieren oder darunter leiden?

2c) Im Hinblick auf die weiter wachsende Population in Städten, welche Herausforderungen und Chancen ergeben sich hier für solidarische Landwirtschaft?

ABSCHLUSS

- Kurze Zusammenfassung Interview
- Möglichkeit zu Rückfragen klären

- Dank für die Unterstützung

INFORMATIONEN ZUM INTERVIEW / GESPRÄCHSPROTOKOLL

- Datum
- Ort
- Dauer
- Gesprächspartner:innen (Name & Funktion, weitere Infos zur Person)
- Kontaktmöglichkeit
- Kurze Beschreibung der Gesprächssituation (Gesprächsatmosphäre, Reaktionen, Umfang der Beantwortung, Interviewverlauf)
- Weitere erhaltene Informationen
- Informed consent (Name oder Funktion)

Appendix 2: List of Interview Partners

Berlin:

- IB1_Frohlawi e.V.: Tilman Santarius, board member (Zoom, 13.9.2024)
- IB2_SpeiseGut: Milan Erlebach, member (Zoom, 20.9.2024)
- IB3_Helmholtz-Zentrum für Umweltforschung GmbH - UFZ: Lukas Egli, Scientific Assistant at the Department of Computational Landscape Ecology (Zoom, 24.9.2024)
- IB4_Spörgelhof eG: Annemarie Czaplinski, board member (Zoom, 24.9.2024)
- IB5_Netzwerk Solidarische Landwirtschaft e.V.: Simon Scholl, CSA founder and coordination of the network (Zoom, 30.9.2024)

Vienna:

- IV1_Ouverture e.V. & GeLa Ochsenherz e.V. & Munus Foundation: Lorenz Glatz, co-founder of Ouverture and GeLa Ochsenherz and board member of Munus Foundation (Zoom, 24.9.2024)
- IV2_GeLa Ochsenherz e.V.: Gioia De Cillia, member (Zoom, 25.9.2024)
- IV3_Stadt-Umland-Management (SUM): Andreas Hacker, Manager SUM-Süd (Zoom, 26.9.2024)
- IV4_Solawi Leben Netzwerk: Christoph Schabetsberger, network and CSA member (Alte Augasse 2-6, 1090 Wien, 26.9.2024)

- IV5_Solawi Waldgarten e.V.: Armin Aschenbrenner, founder (Zoom, 30.9.2024)
- IV6_GeLa Ochsenherz e.V.: Anna Pissarek, member (Zoom, 30.9.2024)

Appendix 3: Declaration of Consent/Data Protection Notice

Zustimmungserklärung/Datenschutzmitteilung

Herzlichen Dank, dass Sie sich bereit erklärt haben, als Expert/in für ein Gespräch für die Abfassung einer Masterarbeit an der Universität Wien zur Verfügung zu stehen.

Gemäß Datenschutzgesetz (§ 7 Abs 2 Ziffer 2 DS1) muss für ein derartiges Interview Ihre Zustimmung eingeholt werden, da die Aussagen unter Nennung Ihres Namens/Ihrer Position in der Masterarbeit verwendet (zitiert) werden.

Die Inhalte des Interviews werden transkribiert. Abschlussarbeiten müssen laut Universitätsgesetz veröffentlicht werden (durch Aufstellen in der National- und Universitätsbibliothek), sie sind üblicherweise auch online zugänglich.

Die Daten können von der Betreuerin bzw. der/dem Begutachter/in der wissenschaftlichen Arbeit für Zwecke der Leistungsbeurteilung eingesehen werden. Die erhobenen Daten dürfen gemäß Art 89 Abs 1 DSGVO grundsätzlich unbeschränkt gespeichert werden.

Sie können die Zustimmung zur Verwendung dieses Interviews jederzeit widerrufen, alle Aussagen, die bis zu diesem Zeitpunkt in der wissenschaftlichen Arbeit verwendet wurden, sind allerdings rechtskonform und müssen nicht aus der Arbeit entfernt werden.

Weiters besteht das Recht auf Auskunft durch den/die Verantwortlichen an dieser Studie über die erhobenen personenbezogenen Daten sowie das Recht auf Berichtigung, Löschung, Einschränkung der Verarbeitung der Daten sowie ein Widerspruchsrecht gegen die Verarbeitung sowie des Rechts auf Datenübertragbarkeit.

Wenn Sie Fragen zu dieser Erhebung haben, wenden Sie sich bitte gern an den Verantwortlichen dieser Untersuchung: Florentina Köck (01613307@univie.ac.at), Studentin

der Studienrichtung Global Change & Sustainability des Instituts Geographie an der Universität Wien.

Für grundsätzliche juristische Fragen im Zusammenhang mit der DSGVO/FOG und studentischer Forschung wenden Sie sich an den Datenschutzbeauftragten der Universität Wien, Dr. Daniel Stanonik, LL.M. (verarbeitungsverzeichnis@univie.ac.at). Zudem besteht das Recht der Beschwerde bei der Datenschutzbehörde (bspw. über dsb@dsb.gv.at).

Ich stimme der Verwendung meiner personenbezogenen Daten im Rahmen der wissenschaftlichen Arbeit hiermit zu.

Ort, Datum, Name