GROWING RESILIENCE:

UNDERSTANDING MOTIVATIONS IN THE MICROCOSM OF A COMMUNITY GARDEN IN HUNGARY

By

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Rapid urbanization is leading to the expansion of urban land cover, catalyzing the impact of various crises faced by cities. Community gardens, as a type of nature-based solutions, contribute not only to food provisioning but also provide multiple benefits that can tackle urban challenges in several dimensions. Despite these advantages, community gardens are often still overlooked in urban planning. Therefore, this thesis focuses on understanding what enables community gardens to function over time, develop and maintain capacities, and deliver multiple benefits, thereby contributing to increasing resilience in cities. Given that humans are key to functioning community gardens, understanding different actors' motivations is essential for creating conditions that indeed meet their expectations. There is no one-size-fits-all solution as each case is unique and given the limited research on this topic in Central and Eastern Europe, the Hungarian community garden "Málnakert" was chosen for thorough study. Qualitative research methods were used, with findings analyzed and presented using the Environmental Stewardship Framework's key elements, complemented by Self-Determination Theory. The findings identify organic food production and connection to nature as primary motivations. The research highlights that the garden has strong foundations due to initial external funding, secured land, adopted best practices from other successful community gardens and capitalized on stakeholders' supportive attitude. These factors facilitate a continuous capacity development leading to an aim of becoming self-sustainable. While the overall conditions ensure the fulfillment of two basic psychological needs, *autonomy* and *competence*, the garden still faces challenges regarding the third need, *relatedness*. Finally, the thesis highlights the importance of improving these conditions to enhance motivation. This improvement might substantively contribute to community gardens' long-term success and urban resilience.

Keywords: environment, nature-based solutions, community garden, urban resilience, capacity development, motivation

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1. INTRODUCTION

1.1 Problem definition

World-wide urbanization is rapidly growing, standing at 55 per cent in 2018 compared to 30 per cent in 1950, and projected to reach 68 per cent by 2050. Regarding Europe, the level of urbanization is expected to be at least 60 per cent in almost all European countries by 2050 (United Nations Department of Economic and Social Affairs 2019). In addition, the urban land cover is continuously expanding (Egerer et al. 2024), and cities are threatened not just by climate change, heat waves, air and water pollution (McPhearson, Kabisch, and Frantzeskaki 2023), water scarcity, and other potential crises, but they continue to grow which might further advance the above mentioned issues (Emilsson and Ode Sang 2017).

Due to urbanization, the cultural diversity is increasing while biodiversity is declining with negative impacts on ecosystem services (Colding and Barthel 2013). In addition, Colding (2011) claims that urbanization leads to sprawl land-use which means that citizens have access to significantly less land. Citizens' exposure and connection to nature decreases and as the decline in ecosystem services is accelerated, managing these systems becomes even more challenging given limited knowledge about nature and ecosystems (Colding 2011).

To tackle these issues, nature-based solutions (NBS) might provide multiple benefits: economic, environmental, and social. The European Commission (2015) highlights that "they have tremendous potential to be energy and resource-efficient and resilient to change, but to be successful they must be adapted to local conditions" (4). Among many types of nature-based

solutions, community gardens provide multiple benefits including the provisioning of food in many local contexts, which in aggregate, makes a significant contribution to food security challenges at higher, regional, national and ultimately global scales. Over the past 50 years, urban dependency on globalized food supply chains has increased mainly due to technological development, for example transport and communication make it possible to source food from great distances (Barthel, Parker, and Ernstson 2015). In addition, trade policies played an even more significant role in food security, as trade liberalization was viewed primarily as a beneficial action with only a few exceptions with manageable negative side effects (Brooks and Matthews 2015). Furthermore, social memory and knowledge about food production, and the available land for cultivating have decreased; however, as it is clear particularly during food crises, these two resources have to be preserved (Barthel, Parker, and Ernstson 2015). Consequently, among the growing support for NBS, the emergence of community gardens are of particular interest, and promoted by municipalities across Europe. Holland (2004) argues that community gardens might serve as a model for implementing multiple policies locally: social, economic, and environmental, and may also be an effective example for grassroot initiatives of community development especially with regards to sustainability by involving local people.

However, community gardens are still overlooked in urban planning as there is a large competition for urban land, real estate prices are increasing, and in addition, the lack of financing and that they are sometimes against political and economic will further question their legitimacy (Egerer et al. 2024). The success of creating and sustaining this type of nature-based solutions and thus realizing their multifunctional benefits depends on many factors, including technical, legal, financial, organizational, institutional, and political. If these are ensured, community gardens may become

more resilient and robust in handling change (Quested et al. 2018), thereby contributing to their long-term sustainability. Therefore, it is essential to understand the role of general support required for successfully creating and maintaining community gardens (Jacob and Rocha 2021). However, ultimately, the heart and soul of community gardens are individuals, whose vision, leadership, persistent dedication and hard work makes gardens happen and keep them flourish. According to Deci, Ryan, and Williams (1996), if diverse reasons and outcomes behind different activities are understood it can lead to an overall better experience with regards to the specific activity. Furthermore, Quested et al. (2018) argue that there is limited research about how basic psychological needs, which enhance especially intrinsic motivations, work in less hierarchical environment like community gardens. It is also noted that conditions can both enhance and undermine these basic needs (Deci, Ryan, and Williams 1996). Therefore, understanding motivations and different factors behind community gardens is needed to ensure appropriate conditions for existing or future initiatives, that would lead to realizing their multiple benefits and contributing to urban resilience.

Finally, in order to further enhance the chances of their establishment and impact, the role of local conditions have to be studied and better understood. There is no one-size-fits all solutions, since the acceptance and success highly depend on local conditions (van der Jagt et al. 2017; Dorst et al. 2019; Kabisch et al. 2016). Most of the research on community gardens is from the US, and according to several research recommendations, there is a need for more research from other countries and regions (Cepic and Tomicevic Dubljevic 2017; Guitart, Pickering, and Byrne 2012).

1.2 Research aim and questions

The main objective of this research is to explore the presence, nature, and role of personal motivations behind the establishment and maintenance of a community garden microcosm in Győr-Ménfőcsanak, Hungary given the relatively limited literature on the subject within the country (Bársony 2020). The garden has been established recently, and has not been researched yet, thus understanding its context, characteristics, benefits and challenges, and overall conditions behind motivations can enhance the better acceptance, greater support and more robust functioning of community gardens. Results are expected to be context-specific but given the role of motivation in community gardens as an example of food system-related, multifunctional nature-based solutions in urban areas, the findings may highlight the importance of understanding these motivations to better support similar initiatives. This understanding can provide valuable insights that can also help to promote and sustain community gardening efforts in other contexts, and potentially lead to more resilient cities to better deal with changes.

In line with these research aspirations, the thesis investigates six research questions (one main and five sub-questions) about a community garden in Győr-Ménfőcsanak, called "Málnakert":

1. What motivates citizens to organize and to be involved in urban community gardening and other stakeholders to support such initiatives? (Main question, RQ1)
2. What is the status of community gardening in the case study area, and what are some of the most prominent initiatives? (RQ2)
3. How did these initiatives as institutions emerge, and what are their main characteristics? (RQ3)

4. What is the role of agency, what benefits do stakeholders expect from involvement in community gardening? (RQ4)
5. What are the key challenges and successes, and how are they perceived by stakeholders? What are the implications for their capacity and capacity development? (RQ5)
6. How do stakeholders view the contribution of their involvement in community gardening to resilience at present and in the future? (RQ6)

1.3 Outline

The second chapter of the thesis reviews the foundational literature to support addressing the research questions about understanding motivations of different actors involved in community gardens and factors that contribute to the effective functioning of these initiatives. First, it presents a general introduction to nature-based solutions, narrowing down to community gardens, followed by main motivations, barriers and enablers. In addition, it provides an overview of governance structures, capacity development and resilience building related to community gardens, and finally Hungarian community gardens and their main patterns are reviewed. The third chapter introduces the Environmental Stewardship framework, complemented by Self-Determination Theory, which was used to analyze and present results. The fourth chapter explains why qualitative research method was chosen, detailing the process of data collection and analysis, as well as addressing limitations, and ethical considerations. The fifth chapter presents results based on the elements of the framework and main patterns identified through open coding. The sixth chapter discusses results, highlighting interesting findings and concerns with regards to motivations and the long-term maintenance of community gardens. The final chapter concludes the thesis, complemented by future research recommendations.

2. LITERATURE REVIEW

The literature review discusses mostly peer-reviewed articles introducing the main elements necessary for understanding the significance of nature-based solutions and community gardens in a global context. Following this, the review covers topics such as motivation, enablers and barriers, governance structure, capacity development and resilience which provide conceptual foundations for addressing the research questions. Finally, it ends by narrowing its focus to Hungary, exploring general patterns, motivation, and various aspects and comparing them to global trends to better understand the context of the specific case study.

2.1 Nature-based solutions

Growing urbanization causes various problems in cities, and Europe is prone to several natural and technological threats such as rising temperatures, storms, drought. Nature-based solutions (NBS) provide multiple benefits, and have become widely researched and used in Europe as well and seem be to be effective solutions to these challenges (Guitart, Pickering, and Byrne 2012).

The most extensively used definition of nature-based solutions is by the International Union for Conservation of Nature (IUCN), according to that NBS are "actions to protect, sustainably manage and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits" (Cohen-Shacham et al. 2016, 5). Another frequently referenced description is provided by the European Commission which is relatively similar in terms of its main elements to that of the IUCN: "nature-based solutions aim to help societies address a variety of environmental, social and economic

challenges in sustainable ways. They are actions which are inspired by, supported by or copied from nature" (European Commission 2015, 5). Albert et al. (2019) use a more specific definition, highlighting green and blue infrastructure and the concept of viability. They describe nature-based solutions as "actions that alleviate a well-defined societal challenge (challenge-orientation), employ ecosystem processes of spatial, blue and green infrastructure networks (ecosystem processes utilization), and are embedded within viable governance or business models for implementation (practical viability)" (Albert et al. 2019, 12).

With regards to benefits, economic growth can be increased by for example using vacant areas that might make the neighborhood more attractive, thereby providing higher property values and increasing well-being of residents living nearby (Guitart, Pickering, and Byrne 2012). In terms of environmental benefits, according to the European Commission (2015), nature-based solutions equip cities with better adaptation to climate change, and increase ecosystem restoration, therefore also urban resilience. In addition, NBS can attenuate or decrease the extent of hazards cities facing, can result in increased well-being, and allows citizens to socialize and live an active life (European Commission 2015). The interest in nature-based solutions is also reflected in platforms that collect NBS cases extensively, showcasing the great number of current solutions worldwide. Examples of these initiatives are the Urban-Nature Atlas (https://una.city/) and Oppla (https://oppla.eu/).

2.2 Community gardens

After an overview of key definitions and types of community gardens, this chapter will introduce their multifunctional benefits, highlighting the reasons behind their growing importance in urban environments and the need for their increased recognition.

Colding and Barthel (2013) define urban green commons as "physical green spaces in urban settings of diverse land ownership that depend on collective organization and management and to which individuals and interest groups participating in management hold a rich set of bundles of rights, including rights to craft their own institutions and to decide whom they want to include in such management schemes" (159). Urban green commons include community gardens, allotment gardens and collectively managed parks.

Jacob and Rocha (2021) define community gardens simply as "a space involving a group of people taking care of plants and/or animals in a space collectively operated" (557). One of the most often cited definition of community gardens is attributed to Glover (2003) who defines community gardens as

> "plots of urban land on which community members can grow flowers or foodstuffs for personal or collective benefit. Community gardeners share certain resources, such as space, tools, and water. Though often facilitated by social service agencies, nonprofit organizations, park and recreation departments, housing authorities, apartment complexes, block associations, or grassroots associations, community gardens nevertheless tend to remain under the control of the gardeners themselves" (264-265).

This definition well-covers the elements found in most community gardens described in international literature, as well as Hungarian cases. These elements are growing plants for both individual and collective consumption, utilizing shared resources and involving different stakeholders in the initiative with the gardens maintaining more control.

Private and public gardens have been playing an important role in Europe for a long time due to various reasons including growing food, well-being and social connections (Ioannou et al. 2016). Moreover, as introduced in the "Problem definition" sub-chapter, in times of various crises especially in the 20th century, for example in times of war, devastating environmental impacts,

economic and financial crises enhanced their emergence (Barthel, Parker, and Ernstson 2015; Glover, Shinew, and Parry 2005). To overcome food shortages, allotment gardens were established which served as a source of resilience in urban areas especially in Europe (Barthel, Parker, and Ernstson 2015). According to Caputo et al. (2016), allotment gardens are "portions (i.e. allotments) of green land, part of a wider site within the urban fabric, usually owned by the local government, specifically allocated for gardening purposes for the wider community and rented to individuals on a temporary basis" (232).

Another type of urban garden is community garden, which initially emerged in response to urbanization and land property rights issues according to Colding (2011). In the past decades, particularly in more recent years, municipalities have struggled in managing land and as a result, they often lease or sell vacant lands to private actors to generate profit and reduce their responsibilities. This practice limits citizens' opportunities to own land or access natural spaces and contributes to rising land and real estate prices. Thus, urban lands are usually owned by municipalities and private actors. As a solution, community gardens might release municipalities' burden to maintain land, and contribute to educating citizens about the environment and environmental stewardship as well (Colding 2011). Additionally, transforming unused urban land into community gardens might be a response to give life and reclaim urban spaces and contribute to creating a better neighborhood (Glover, Shinew, and Parry 2005). Three main dimensions of goals behind community garden establishment were identified by Ioannou et al. (2016), which are social (for example community building), political (such as alternative economies) and environmental (growing organic food). Goals and main motivations will be further elaborated on, and other categories are introduced in the "Motivations" sub-chapter.

Therefore, the establishment of allotment and community gardens is driven by different goals, and in addition, their governance structures also vary significantly. While allotment gardens are top-down (Caputo et al. 2016), community gardens are often considered to be grassroot initiatives, usually started by local groups and later involve other actors for sourcing financial and other resources (Ioannou et al. 2016). However, the governance structures of community gardens are more complex and multifaceted, which will be discussed in the "Actors and governance structures" sub-chapter.

Location of gardens can vary widely, usually they arise in densely populated areas lacking other gardens (van der Jagt et al. 2017). As a general pattern, most community gardens, such as those in Toronto, Canada, avoid using synthetic fertilizers and other chemicals (Jacob and Rocha 2021). Interest in urban gardens is also relatively diverse, in Western European countries there are often long waiting lists especially for allotment gardens, whereas in some Eastern European countries vacant plots are still widely available (Calvet-Mir et al. 2016). However, beyond certain patterns behind the formation of urban gardens such as the above-mentioned crises or citizens claiming their right to urban land, their development significantly and primarily depend on the local context (Ioannou et al. 2016). In contrast to allotment gardens, usually there are no strict or specific regulations related to community gardens on a country level, but local regulations regarding land use, different permissions, actors' responsibilities might occur (Ioannou et al. 2016).

Similarly to other nature-based solutions, urban community gardening is getting popular in Europe (van der Jagt et al. 2017). Even though the largest impact on climate mitigation among all nature-based solutions is not attributed to community gardens, given their multiple benefits they are very effective (Cabral, Costa, et al. 2017). Community gardens provide several ecosystem services, for

example regulating and provisioning through which they have a significant potential to climate mitigation and adaptation (van der Jagt et al. 2017). There are various goals behind their emergence such as improvement of biodiversity and well-being of citizens, growing food and flowers, improving awareness around environment, and sometimes even creating jobs and involvement of unemployed immigrants (van der Jagt et al. 2017). Mitigating the urban heat island effect, supporting water retention thus ensuring water and local climate regulation, providing places for local plants and habitat for animals are further environmental benefits of community gardens (Cabral, Costa, et al. 2017). In addition, community gardens might have an important role to enhance urban agriculture and thus decrease transportation routes, cost and emissions (Colding and Barthel 2013).

A systematic literature review about community gardens (Guitart, Pickering, and Byrne 2012) predominantly identified social benefits as most frequently mentioned. These are social development such as community building and social connections, increased well-being, education, and directly available fresh vegetables and fruits. Stronger social connections between citizens and an increased well-being were confirmed by other studies as well (Egerer et al. 2024; Cabral, Costa, et al. 2017). Moreover, having more urban gardens contribute to a higher food security, allowing human-nature reconnection and learning (Egerer et al. 2024). Diversity may also be enhanced through the establishment of gardens, as they have the potential to bring various people together with different backgrounds, ages and cultures. This interaction might foster knowledge sharing, for example exchange of recipes (McVey, Nash, and Stansbie 2018). However, it might also happen that not the diversity of people, but different programs organized in the garden attract a relatively heterogeneous group of residents for example community cooking and barbeque parties

(McVey, Nash, and Stansbie 2018). Economic benefits might be money saving by producing food on individual plots, which was also one of the main reasons found by Guitart, Pickering, and Byrne (2012). Among the less frequently mentioned benefits were the reduction of crime and enhancement of safety, environmental awareness, preservation of cultural heritage, increased life satisfaction and biodiversity (Guitart, Pickering, and Byrne 2012), which all show that these initiatives have an impact on the neighborhood as well.

Overall, based on literature, community gardens provide a range of ecological, social, economic benefits out of which many of them are recognized, however, the extent to which urban gardens contribute to ecosystem services depends on the local context and management intensity (Cabral, Keim, et al. 2017; Ioannou et al. 2016). Recognizing the importance of these multifunctional benefits within local context is crucial for better understanding, supporting and sustaining community garden initiatives.

2.3 Motivations

Each community has a different focus, and in addition, local conditions also distinguish communities, thus understanding community needs, cultural traits, and overall local context are crucial (Holland 2004). Since humans are in central to the initiation, establishment and operation of community gardens, learning about their needs and motivations can contribute to encourage local participation (Holland 2004) and support the sustainability of these initiatives locally and even gaining more acceptance beyond city boundaries. Therefore, in this section after a general introduction to motivation, different motivations behind community gardens will be discussed

based on literature which will provide a foundation to address the main research question about citizens' motivations for involvement in community gardens.

According to Ryan and Deci (2000), "to be motivated means to be moved to do something" (54). Motivation can differ based on the level (extent) and orientation (type), and the latter determines which goals primarily urge one to act (Ryan and Deci 2000). Despite the existence of different categories for motivation, such as intrinsic and extrinsic, applying these classifications can be challenging due to the diversity of human behavior (Reiss 2004). In addition, it is important to note that not every individual is motivated by the same task and outcome to the same degree (Ryan and Deci 2000).

The role of nature as a source of motivation is extensively studied. For example, according to Hartig, Kaiser, and Strumse (2007), "the use of nature for restoration may have both direct and indirect motivational effects on ecological behaviour" (297). This was reflected in a Norwegian research where actions such as recycling and striving for more sustainable modes of transport were observed (Hartig, Kaiser, and Strumse 2007). Similarly, motivations of forming and maintaining community gardens are highly researched (Fox-Kämper et al. 2018; Guitart, Pickering, and Byrne 2012; Bonow and Normark 2018; McVey, Nash, and Stansbie 2018), and there are various reasons behind establishing and joining community gardens which may dynamically change over time (Calvet-Mir et al. 2016).

Frequently, the greatest importance is attributed to growing fresh vegetables when it comes to community gardening which consequently contributes to increasing food and nutrition security (McVey, Nash, and Stansbie 2018; Jacob and Rocha 2021). However, among many researchers,

Holland (2004) found that producing food is not the primary and sole reason of community gardens, even if it was established with that purpose, but there are other desires tied to it showing that these initiatives have multiple benefits. Various motivation factors are highlighted by several authors (for example Kirby et al. 2021), and according to a systematic literature review (Guitart, Pickering, and Byrne 2012), the main drivers of community gardening are growing and eating fresh plants, building social cohesion, increasing well-being, generating revenue or saving money by growing vegetables for self-consumption. Other reasons frequently mentioned by gardeners are the enjoyment derived from gardening, the contribution to biodiversity and environment consciousness, increasing mental and physical health (Bonow and Normark 2018; Kirby et al. 2021), providing a relaxing activity, and learning about the environment, new skills (van der Jagt et al. 2017) and gardening (Jacob and Rocha 2021; Doyle 2022). A direct connection to nature helps garden members to decrease anxiety and the overall stress level (McVey, Nash, and Stansbie 2018). Some consider this initiative a chance to claim their right to land (McVey, Nash, and Stansbie 2018) and foster civic engagement (Jacob and Rocha 2021), while others see it as an opportunity to be involved in sustainability related activities (Calvet-Mir et al. 2016). In addition, the fact that growing locally reduces the long-distance travels of vegetables and thus contributes to sustainable development were also highlighted (Bonow and Normark 2018). Calvet-Mir et al. (2016) notes the importance of individuals being attracted to activities that were part of their childhood or witnessed in their parents' experiences such as those who grew up in the countryside are more open towards gardening.

Kingsley and Townsend (2006) explicitly researched social aspects of community gardens in Melbourne and found increased social cohesion, support, and connections which points were

strengthened by Calvet-Mir et al. (2016) as well. Gardeners often emphasize that the garden provides a chance to connect with people whom they might not otherwise encounter, particularly for those who are new to a city or feeling generally isolated, making these connections even more valuable (Kingsley and Townsend 2006). Thus, social connections may emerge, and community gardens may function as a bridge allowing social bonding among isolated residents. Social interactions were also confirmed by other authors, for instance Doyle's research (2022) in Ireland.

Less frequently found, but still important motivations were for example connection to nature and land, environmental sustainability, increasing spiritual and cultural practices (Guitart, Pickering, and Byrne 2012). Money saving and gaining employment skills were also less prioritized, but still occurred (Kirby et al. 2021). Knowledge sharing about gardening and other related activities such as recipes were found to have an added value as well (McVey, Nash, and Stansbie 2018). In addition, Holland (2004) presents that economic development and benefits are also less addressed, although the researcher recommends that they should be considered equally important alongside social and ecological aspects. For example, providing jobs through community gardening, fostering partnerships with the private sector, or enabling individuals to acquire skills in the garden that they might profit from in the job market in the future would enhance economic development (Holland 2004).

Specifically with regards to motivations of city administrators, Bonow and Normark (2018) found that they support implementing community gardens because it provides an opportunity for socializing, contributes to park improvements and overall green areas, moreover the aesthetic value of the city increases. Other reasons are more environmentally-driven, as community gardens

highly contribute to biodiversity, have climate benefits and allow residents to grow locally without using heavy transport (Bonow and Normark 2018).

There are several categories of motivations, for example Kirby et al. (2021) differentiate four types of motivations in their study: overall well-being benefits, nutritional health benefits, financial interests and community building. Whereas Calvet-Mir et al. (2016) came up with the following five categories "1) food production and sovereignty, 2) psychological and physical health, 3) urban environment/politics/economics, 4) socio-cultural relations, and 5) learning and education" (323), these encompass the grouping proposed by Kirby et al., with one additional category, namely learning and education. According to Calvet-Mir et al. (2016), these can be linked to Maslow's five basic needs meaning that one motivation can be associated with one or multiple basic needs. These needs are "physiological, safety, love, 'esteem, and self-actualization (Maslow 1943, 394). An illustration of this concept is the act of producing food might fulfill physiological needs, while the success of growing food might be linked to esteem (Calvet-Mir et al. 2016). With regards to the first category by Calvet-Mir et al. (2016), some motivations might be good quality of food, food security, higher organic food awareness. The second category, psychological and physical health might allow older people to feel alive and stay active for longer time and given that gardening is considered to be a relaxing activity it might provide a feeling of being on holiday with a goal of spending time outside. The third category, urban environment/politics/economics, appears for example in both top-down or bottom-up initiatives of making urban areas greener. In addition, it equips gardeners with the feeling that they are doing something actively for their city. Sometimes even expressing a right to land might appear among politics-related motivations. Socio-cultural relations are mainly about strengthening community connections and community building,

and this can be linked to love and belonging from Maslow's pyramid. Finally, learning and education includes learning new skills, knowledge sharing and experiments, and providing educational programs for children and adults. For example, bringing children closer to nature and gardening equips them with new skills to apply in practice that might lead to self-realization (Calvet-Mir et al. 2016). Based on this, although grouping motivations makes them slightly rigid, but it well illustrates the range of motivations and thus the various benefits community gardens can provide (Calvet-Mir et al. 2016). The fact that a broad range of motivations implies several benefits and barriers is also confirmed by van der Jagt et al. (2017).

In addition, benefits might be perceived based on the strength of motivation, for example in Kirby et al.'s study (2021), in case of stronger motivation towards gardening, gardeners feel higher fulfilment than those who are not that motivated. Another intriguing observation indicated that those who cultivate on commonly shared areas reported experiencing higher social benefits compared to those who work on individual plots (Kirby et al. 2021). Finally, gardeners who strive for social connection and are strongly tied to the plot (for example by operating or owning it), generally report higher well-being impact (Kirby et al. 2021).

As it was presented, motivations are very diverse covering food production, social, economic, environmental and educational interests. According to Kirby et al. (2021), city planners and municipalities have to take into consideration that there are different motivations and goals depending on the local context and urban agriculture type. In addition, Calvet-Mir et al. (2016) suggest that different motivations can lead to the formation of different garden types, and highlight that gardens have an important role in allowing gardeners to express their motivations and remain flexible when these motivations change. Consequently, considering and adapting to diverse

motivations are essential for meeting gardeners' expectations, which might result in fostering better and more robust garden operations.

2.4 Enablers and barriers

Fox-Kamper et al. (2018) highlight the importance of understanding barriers and enablers that might have an impact on urban garden development throughout the different phases: design and planning, construction or implementation, and management. In addition, enablers and barriers are interrelated, the presence of a certain aspect is an enabler, while its absence is regarded as a barrier. This sub-chapter will support to address research question 5 about key challenges and successes, and similarly to other sub-chapters, serve as a foundation for the discussion section.

Before introducing enablers and barriers with regards to community gardens, it is important to note that the broader context has to be considered as well. According to Homsy and Warner (2015), multilevel governance, where frameworks are initiated at higher governmental levels, plays a crucial role in promoting environmental policy options at the local level. This is particularly important when municipalities lack the capacity or motivation to undertake certain action independently. In addition, the government might offer several incentives, initiate or facilitate knowledge sharing or provide other support to enhance the process (Homsy and Warner 2015).

During the planning phase, the most common aspect is usually related to access to land (Fox-Kämper et al. 2018; van der Jagt et al. 2017; Guitart, Pickering, and Byrne 2012). In all cases, the existence of secure land is crucial, as otherwise insecurity can lead to uncertainties and may undermine the development of the given community garden (Holland 2004). Stable tenure tends to result in greater dedication in terms of time and effort invested in growing vegetables (Ioannou

et al. 2016). Another important consideration is to have a common vision and overall community interest (Fox-Kämper et al. 2018). In addition, Jacob and Rocha (2021) found that certain essential materials are needed to kick-start a garden, such as the previously mentioned land, as well as water supply and different tools. Moreover, a solid foundation of planning is inevitable, meaning setting goals, guidelines and different rules, along with professional advice related to gardening knowledge and people management (Jacob and Rocha 2021).

During the management phase, engagement of volunteers and paid professionals can contribute to the longevity of the garden (Fox-Kämper et al. 2018). Especially during this stage, there is a need for educating members about conflict prevention and resolution as they occur on a regular basis. Also, organizing workshops for education purposes is valued, such as composting, pruning, seedling (Jacob and Rocha 2021). Furthermore, a study conducted in Stockholm (Bonow and Normark 2018) found that annual lease agreements might limit the variety of crops to grow, as for example leafy greens were often favored while trees were not planted that much.

During all of the phases the availability of funding is a key enabler, especially in case of a bottom-up approach (Fox-Kämper et al. 2018; van der Jagt et al. 2017). Regarding funding, a broad range of sources are available, including grants, corporate social responsibility initiatives, for example financial support and volunteer programs (van der Jagt et al. 2017). A membership fee can also contribute to maintaining the garden, although this might potentially exclude certain citizens as well. This issue can be overcome, as for example in Lisbon, where the yearly fee was significantly decreased in poorer neighborhoods (van der Jagt et al. 2017). In addition, donations and simply involving volunteers might also contribute to the finances (Jacob and Rocha 2021).

Another essential capacity of successful community gardens is having dedicated gardeners with diverse skills and knowledge on board to ensure planning based on the community gardens' needs, negotiating effectively with members and external stakeholders, and the continuity of operating the garden (Doyle 2022). In addition, having more experienced members might enhance the knowledge sharing process (Doyle 2022). However, without cultivating experience, gardeners might underestimate the complexity of the task, which can lead to a loss of motivation over time (Bonow and Normark 2018). This is also confirmed by McVey, Nash, and Stansbie (2018), arguing that despite the acknowledgement of physical health benefits of gardening, if the activity itself is too demanding and challenging it might easily turn into a burden.

A collective leadership might be more effective by involving members, dividing tasks with a focus on conflict resolution and collaboration (Doyle 2022). Similarly, Kingsley and Townsend (2006) also highlights clarifying the common tasks as otherwise it can lead to conflicts within the community. It is well illustrated by watering, as if the responsibility for watering common areas is not well-distributed and the importance of sourcing water is diminished or neglected that might cause challenges for the whole community (Bonow and Normark 2018). With regards to gardeners, there are significant differences between people living in various parts of the city, and some cultures tend to be relatively individualist, thus acknowledging and addressing these differences and effectively managing diversity become important (Doyle 2022). The nature of management also plays a crucial role, as a case in Melbourne shows that where the change in management and having a more energetic and caring team resulted in socially more connected members (Kingsley and Townsend 2006). Also, planning ahead with a solid leadership is important, for example by

involving younger members as well, and having an effective new gardeners' recruitment process in place (Doyle 2022).

In most of the studied community gardens in Sweden (Bonow and Normark 2018), one or two individuals were responsible of coordination in their free time. This arrangement often caused heavy burdens on them and thus uncertainty in terms of the longevity of the garden if they became unable to sustain their level of dedication. There is a range of tasks they might be responsible for, such as transmitting knowledge of cultivation, keeping in contact with municipality, raising funds, and community education. Overall, having a dedicated garden coordinator with clearly defined responsibilities can contribute to the stability of community gardens (Bonow and Normark 2018).

The design of the place also highly contributes to strengthening social connections. For example, the "Dig-in" garden in Melbourne is situated in a public park, thus allowing gardeners to connect not just with community gardeners but also with other residents. Having a dedicated social area within the garden such as benches and tables is also crucial for fostering these connections (Kingsley and Townsend 2006). In addition, not having a safe environment might lead to theft of tools and vegetables, vandalism and other safety issues (Guitart, Pickering, and Byrne 2012).

Finally, a good relationship with local people and cooperation with authorities can ensure the garden's succession and continuity of operations (Doyle 2022). Especially in suburbs, the involvement and education of residents, as well as the encouragement of civic action, are more likely to occur (Homsy and Warner 2015). It is confirmed by Ioannou et al. (2016), as they highlight that the presence of active local social groups, opportunities for informal discussions, and collaborative planning among different stakeholders are all essential factors in facilitating the

formation of community gardens. In addition, Bonow and Normark (2018) stress the importance of the fact that different actors might have different motivations, however, in order to deliver and maintain successful community gardens they have to collaborate.

2.5 Actors and governance structure

Behind the formation of community gardens, diversity is present not only in motivations, enablers and barriers, but also in actors involved and the governance structures applied which according to literature usually depend on the local context (Calvet-Mir et al. 2016; Ioannou et al. 2016; Fox-Kämper et al. 2018). Several actors are involved in such initiatives, and these can change throughout the planning, implementation and maintaining phases (van der Jagt et al. 2017; Fox-Kämper et al. 2018). In this chapter, exploring different governance structures and their main characteristics will contribute to addressing research question 3 concerning the emergence of gardens as institutions, and research question 4 about different actors and expectations related to community gardens.

As already introduced in the "Enablers and barriers" sub-chapter, the presence of multilevel governance plays a crucial role in facilitating the establishment and support of community gardens. According to Ioannou et al. (2016), the main groups primarily initiating garden establishment are garden members or local gardening groups either formally or informally organized, and they take part in all of the life-cycle phases of gardens from the initiation phase. The second main group includes local authorities who set the legal framework, NGOs and other organizations, and private actors who might provide funding and other resources. Finally, landowners constitute the third group who usually enable land use (Ioannou et al. 2016). Based on a systematic literature review

by Guitart, Pickering, and Byrne (2012), community gardens were most often managed by non-profit organizations, and second in the list were schools. In many cases, the responsibility for running gardens was shared by at least two organizations. To simply put, initiatives might either start as bottom-up, or first top-down and then continued by an already existing or newly formulated local group which is established for this purpose (Ioannou et al. 2016).

Grassroot initiatives with sustainable development aims have been gaining space recently (Adams, Scott, and Hardman 2013). According to Ioannou et al. (2016), although municipalities seem to be increasingly open towards bottom-up urban initiatives, it does not mean that all of them get supported. The public interest in community garden establishment has to be well assessed especially compared to other potential projects. Authorities usually require a legal form of organization to ensure that the group is reliable, for example to avoid some sort of political demonstration, have plans in the long-term, and to make contracting and other administrative activities easier (Ioannou et al. 2016).

With regards to changes in actors throughout the different phases of the garden, Van der Jagt et al.'s (2017) findings about European cases show that even if community gardening projects are initiated by non-governmental actors, municipality is significantly involved in the projects throughout the initiation and implementation phases for example by providing land, legal permissions, financial support, and training. Moreover, Jacob and Rocha (2021) found that even if the project was initiated by the municipality, after the planning phase, the role of community started increasing. The changing role of actors is well identified in McGlone (1999) five different types of project structure and organization. First, “Top-down managed and run by professionals” (17). Regarding this format, involving professionals —such as garden designers— at the first phase

is especially advantageous in terms of the longevity of the garden. However, this form of governance does not seem to be that frequent anymore (Fox-Kämper et al. 2018). Second, "Top-down managed by professionals but run by paid workers/volunteers" (McGlone 1999, 18), in this form of governance a sort of flexibility and limitation are both present. In practice it means a top-down approach during the first two phases and community-involvement from the management phase. This might contribute to the longevity of the garden due to engagement of community and a strong relationship with external actors (Fox-Kämper et al. 2018). In case of the third one, "Bottom-up managed and run by community with support of professionals" (McGlone 1999, 18), most frequently, professionals are involved at the initial phase and then in later stages community has more responsibility. Professional support might come from carpentry work, paid garden coordinator during the last phase, paid administrator financed by governmental support and public funding (Fox-Kämper et al. 2018). The fourth, "Bottom-up managed and run by communities with informal support from professionals" (McGlone 1999, 19) depends on goodwill. For example, informal support might include university researchers' advice, fruit tree donations and volunteer work of accountants (Fox-Kamper et al. 2018). Finally, the fifth one, "Bottom-up managed and run by communities" (McGlone 1999, 19) means that full ownership is at the local community, and community members learn the relevant skills to manage tasks, and from time to time they involve professionals.

In addition, Fox-Kämper et al. (2018) added a sixth category which is "Bottom-up with political and/or administrative support (PAS)" (62), which is defined as "the planning, implementation and/or management of gardens by a community with government support. Support included land tenure, funding and consultancy by council staff or community advisers" (62). Based on cases in

Fox-Kämper et al. (2018) research, this was the most frequently used form of governance in the first phase of community gardens. The range of support is quite diverse, for example free use of government or municipality-owned lands, donations of materials and plants, public funding for employing garden coordinators, or ensuring free water supply. This mode of governance has several benefits for both the community garden and municipality, as gardeners receive support to overcome barriers and community members are actively involved thus it might be advantageous for municipalities to have a strong social cohesion (Fox-Kämper et al. 2018). Furthermore, Bende (2021) complemented the sixth category by Fox-Kämper et al. (2018) with a seventh one which is formed as a bottom-up initiative, but due to lack of administrative and financial support municipality is involved in the initial process, and then later transitioned into a top-down approach. Based on this review, the diverse governance structures illustrate the complexity and dynamic nature of community gardens, which might potentially influence other factors and capacities.

In order to prevent conflicts with city planners and municipalities, community garden organizers do not usually initiate discussions with them (Adams, Scott, and Hardman 2013). It might happen that even funding is considered to be a source for conflict, as for instance gardeners in Scotland believe that the more they receive, the more they depend on the source, and in addition it causes additional administrative burden as well (McVey, Nash, and Stansbie 2018). However, instead of avoiding discussions, an emphasis should be placed on strengthening trust in cooperations (Adams, Scott, and Hardman 2013). Partnerships and discussions between different stakeholders is essential in terms of acceptance and success in a long-term (van der Jagt et al. 2017; Jacob and Rocha 2021).

According to Jacob and Rocha (2021), involving community members in all stages of community gardens is crucial even if it was started as a top-down project. By this, community members are

encouraged to have a more active role and thus, might support the project better. Moreover, a flexible approach of organizers might make the whole process organically evolving, meaning that interactions and events are optional, even fostering socializing and learning from each other (van der Jagt et al. 2017). In addition, by "making the information about common good land more transparent" (McVey, Nash, and Stansbie 2018, 54) and providing adequate funding for projects like community gardens, the government and municipalities might enhance a more efficient and well-accepted process (McVey, Nash, and Stansbie 2018). In general, a good and supportive relationship between garden communities and local municipalities is important, first by understanding the needs of gardeners, and in a long-term to solve complex issues more effectively and thus prove that these initiatives are possible to realize not just on a local, but national level as well (McVey, Nash, and Stansbie 2018). This good collaboration is also emphasized by Fox-Kämper et al. (2018) to ensure the longevity of the garden.

Regarding the efficiency of different structures, the literature presents varying perspectives. According to Fox-Kämper et al. (2018), well-managed garden with bottom-up approaches with combination of public support and funding is more likely to become successful. However, van der Jagt et al. (2017) did not find a difference in the success between top-down and bottom-up approaches that might have arisen from the different context. A more crucial factor is that top-down initiators should be more flexible and less autocratic, emphasizing fewer regulations and greater appreciation for the overall benefits and long-term impacts. Building on this, conditions should be established to encourage experimentation with different new projects initiated by citizens (van der Jagt et al. 2017). In addition, garden coordinators have an essential role throughout all of the phases such as setting solid and participative rules, organizing community

events, sharing recipes, building effective communication (Jacob and Rocha 2021). Finally, a common decision-making process makes it possible to equally involve gardeners thus enhances the group and overall social cohesion, and make them more committed towards common goals (Glover, Shinew, and Parry 2005).

Although it might be challenging, ensuring an environment for grassroot movements is important, and that requires a diverse institutional and governance structure to accommodate different goals and motivations considering local conditions. An example of this is to give management access to lands owned by the municipality (Colding and Barthel 2013), and allow long-term land leasing (Colding 2011). In order to dedicate time and effort to grow vegetables, a balanced, more stable governance structure is important (Ioannou et al. 2016). Moreover, multilevel governance might ensure that different stakeholders can collaborate effectively across different levels.

2.6 Capacity development

Delshammar, Partalidou, and Evans (2016) suggest that being involved in urban gardens contributes to capacity building on both individual and group levels, potentially expanding its benefits to closer social groups and the broader society as well. Examples are enhanced social connection between members, organizations being involved in the activity, members and other actors such as authorities (Delshammar, Partalidou, and Evans 2016). Moreover, community "gardens have the potential to integrate diverse ethnic and social groups" (Cabral, Costa, et al. 2017, 14), and might have a larger influence on gardeners' daily lives beyond the fences of community gardens (Cabral, Costa, et al. 2017). Capacity development is highly related to motivations, enablers, barriers and different actors participating in such initiatives, and similarly

to these factors, it can significantly impact the sustainability of the garden and potentially even beyond. The introduction of capacity development will support answering research question 5 about how different challenges and successes have an impact on capacity development. In addition, it provides foundations for the next sub-chapter which is about resilience.

According to Barthel, Parker, and Ernstson (2015), running a community garden involves multiple actors, and the capacity to navigate these relationships and function the garden well is essential. It can be vested with the main initiator, municipality and others involved in the project. There are various skills and resources which are necessary to well-position these green spaces, for example human skills, property rights, well designed legal structures (Barthel, Parker, and Ernstson 2015), knowledge and time (Glover, Parry, and Shinew 2005), tools, water and land, thus a sort of cooperation is required to accomplish successful gardening (Glover, Shinew, and Parry 2005). Resources can be sourced within the community in case of stronger relationships and access to resources, whereas with looser ties between members sourcing from outside provides a solution to maintain the community garden (Glover, Parry, and Shinew 2005). In other words, with more social interaction and common activities, thus stronger relationships between members, the more resources participants share with each other (Glover, Shinew, and Parry 2005). Sharing resources is enhanced not just by gardening-related activities, but so-called "leisure episodes" (468) for example cooking or simply chatting about different topics in the garden. These episodes are defined as "moments during which the participants open themselves up to the possibility of relationship building" (Glover, Parry, and Shinew 2005, 468), and needed to build and strengthen connections and therefore, social capital can be enhanced (Glover, Parry, and Shinew 2005).

However, without leisure episodes, gardening and sharing resources might feel like an obligation (Glover, Parry, and Shinew 2005).

In addition, having good leadership with diverse responsibilities in place is important, such as good planning, conflict resolution, negotiation and communication skills (Doyle 2022). With regards to general activity level, in a study by Glover, Shinew, and Parry (2005) leaders proved to be more active than non-leaders, which might have happened due to their increased responsibilities, and as a result they were more committed to gardens. However, given that leaders do not own sufficient resources often they have to involve other people to support the operations such as fence building and weeding (Glover, Shinew, and Parry 2005).

Glover, Shinew, and Parry (2005) suggest that as community gardening is considered to be a civic activity, it provides space for both social and civic activities, as for example concerns and issues about the neighborhood can be discussed in the garden as well. Community gardens have to be easy to access and provide a common space for example a table with benches for meetings and general discussions (Delshammar, Partalidou, and Evans 2016). Sometimes, relationships formed in the garden might expand to outside of the garden as well (Glover, Parry, and Shinew 2005). Thus, community gardens serve as a valuable location for relationship building.

As introduced earlier, urbanization also leads to loss of citizens' connection to nature. Building on this, Colding and Barthel (2013) raise the question whether despite this fact, citizens might consider preserving green spaces important and acknowledge their dependence on ecosystem services at all. As urban population is constantly growing, contemplating this question seems to be necessary. Urban gardens can contribute to forming new values, environmental consciousness

as for example producing local food reduces impact arising from transportation and production (Colding and Barthel 2013). Overall, being involved in community gardens contributes to acquiring knowledge about gardening, but also other skills can be learnt such as managing, problem solving, conflict resolution, communication with authorities (Delshammar, Partalidou, and Evans 2016). A suitable environment for learning and knowledge sharing between gardeners and other actors is necessary to foster mutual understanding and better cooperation (Ioannou et al. 2016). Delshammar, Partalidou, and Evans (2016) suggest that, involving children to educate them about environmental awareness, growing food and reconnecting them to nature are also added values of urban gardens. Furthermore, given that having connections with surrounding actors in inevitable, such as municipality and neighbors, it contributes to a broader knowledge sharing for example about organization and producing food (Delshammar, Partalidou, and Evans 2016).

The existence and further development of shared resources, such as websites and blogs, would increase diversity of participating stakeholders (Barthel, Parker, and Ernstson 2015). Learning and knowledge sharing might happen in various ways, internet search, emails, blogs, and even in-person contacts such as learning from more experienced elderly, or involve NGOs for knowledge sharing (Delshammar, Partalidou, and Evans 2016). In addition these platforms can be used for general communication within and outside the community, and consequently they also support social bonding (Delshammar, Partalidou, and Evans 2016; Jacob and Rocha 2021).

In terms of structural capacity, the presence of supportive authorities is crucial to support the garden potentially with land and other assets (Doyle 2022). Regarding cultural capacity, those values which appear in community gardens, for example environmental aspects, should be

complemented with other important ones such as solidarity (Doyle 2022). Finally, having access to secure land is the most important factor of infrastructural capacities (Doyle 2022).

Reflecting on the governance structure, and how these different sub-chapters are interconnected, a more decentralized approach would allow certain action groups to work in a more flexible and autonomous way (Barthel, Parker, and Ernstson 2015). Based on Bendt, Barthel, and Colding (2013), too strict and formalized garden structures result in lower boundary activity, meaning that more self-organized and collectively managed gardens allow higher learning.

2.7 Building resilience in community gardens

According to Folke et al. (2002), community gardens equip individuals and communities to enhance their resilience and adaptive capacities in case of changes and crises, for example increasing food security by producing fresh vegetables for own-consumption and providing an environment for socializing and learning. “Resilience is the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks” (Walker et al. 2004). The complex and dynamic considerations of ecosystems lead to the concept of Social-ecological systems (SES). In terms of resilience, SES are “related to (i) the magnitude of shock that the system can absorb and remain within a given state; (ii) the degree to which the system is capable of self-organization; and (iii) the degree to which the system can build capacity for learning and adaptation” (Folke et al. 2002, 438). Batty (2008) suggests that cities are “complex systems” (769) with competition for land and vast amounts of energy for maintenance. Therefore, as cities are prone to several challenges introduced in the “Problem definition” sub-chapter, it is crucial to allow resilient SES to be formed.

In a rapidly changing world, these systems are essential for dealing with surprising and complex events, requiring an environment that is open to flexibility and learning.

According to Krasny and Tidball (2009), both civic ecology and environmental education have high potential in enhancing urban resilience. The reason behind is that they foster biological diversity, enhance ecosystem services and involve active citizen participation. By implementing and supporting community gardens, it might be possible to realize that "community gardens grow much more than just food, they grow community" (McVey, Nash, and Stansbie 2018, 40). This is strengthened by Delshammar, Partalidou, and Evans (2016) as well, arguing that mostly strangers come together who have to interact regularly, solve conflicts, and essentially form a community in the end.

Most often resilience is linked to diversity – for example in terms of nature, humans and economy –, and these factors all foster adaptation and learning which consequently leads to a more resilient system capable of withstanding changes (Folke et al. 2002). Colding and Barthel (2013) also highlight the importance of diversity in community gardens which they define as "key for dealing with disturbance and change in productive ways, with self-organization and the capacity for learning and adaptation constituting important resilience characteristics" (158). With regards to community gardens, diversity appears in several areas as it gathers diverse people with different cultural, social and professional backgrounds (Krasny and Tidball 2009), sometimes even enabling them to socialize with individuals they might not otherwise encounter, thus fostering a sense of connection within the same community (Glover, Parry, and Shinew 2005). Although occasionally gardens are formed with the purpose to gather people with diverse background and culture, it might

happen that similar people are interested in the initiative (Delshammar, Partalidou, and Evans 2016) and in that case diversity is less present.

According to Krasny and Tidball (2009), diversity appears in the variety of plants in the garden as well. In addition, people being involved in community, apart from learning about plants, they attain a basic knowledge of different urban infrastructure such as water lines, local governance, and natural resources, thus by allowing environmental learning it contributes to resilience as well. Disturbing events might be food insecurity, floods or other crises when a more resilient social-ecological system can react better. In terms of self-organization, it involves a significant level of citizen engagement (Krasny and Tidball 2009). However, it is also important to note that diversity can cause complications in communities as it can lead to group members being dissatisfied and have conflicted views (Colding and Barthel 2013).

Finally, Colding and Barthel (2013) define cognitive resilience building as the "mental processes of human perception, memory and reasoning that people acquire from interacting frequently with local ecosystems, shaping peoples' experiences, world views, and value towards local ecosystems and ultimately towards the biosphere" (162). The fact that people are rapidly getting disconnected from nature, especially in urban areas leads to less chances to build cognitive resilience (Colding and Barthel 2013). However, being involved in community garden leads to experiencing benefits of such activities and realizing the impact they make on the environment (Krasny and Tidball 2009). Overall, community gardens might have a crucial role in enhancing urban resilience given the high levels of diversity promoted by such initiatives, fostering social connections and sense of community, and different skills learnt through being a garden member. These factors all contribute to a community's ability to better respond and adapt to urban disturbances.

2.8 Community gardens in Hungary

To contextualize the community garden in Győr-Ménfőcsanak and support its comparison with local examples in the "Discussion" chapter, this sub-chapter will present main patterns, motivations and governance structures of Hungarian community gardens found in the relatively limited literature.

Hungary has been regarded as an agricultural country, especially in the 19th century and until World War II, approximately one-third of population relied on agriculture (K. Lányi 1999). Afterwards, while small-scale producers targeted local markets and produced for their own use, plants cultivated on a larger-scale in the region, such as wine-grapes and vegetables, were exported (Burger 2012). It has also an enduring and rich gardening tradition, rooted in its culture and history. Home gardens have played a significant role in Hungary's history, especially during the 20th century. They not just provide gardeners additional income and improve food security, but enhance biodiversity by increasing the variety of crops and plants, and help preserve and transmit agricultural knowledge (Birol, Bela, and Smale 2005). Currently, according to Ioannou et al. (2016), Eastern European countries continue to show interest in maintaining allotment gardens, despite that these gardens are sometimes overregulated. Similarly to other countries in the region, the modern community gardens movement has only appeared in Hungary recently, the first community garden was formed in 2011 in Budapest (Közösségi Kertek, n.d.a).

The Contemporary Architecture Centre has started an initiative to collect and map all community gardens in Hungary and provide basic descriptions to show the emerging network of Hungarian community gardens with an intention to serve as a knowledge-sharing platform (Közösségi Kertek,

n.d.a). Based on their database, at the time of the thesis writing there are 86 active community gardens in Hungary, out of which more than 40 percent being in the capital, Budapest. Furthermore, 16 gardens stopped operating in the past years, however, reasons behind it are not mentioned (Közösségi Kertek, n.d.c). There are various other websites showcasing good examples, for example The Urban Nature Atlas is a database of nature-based solutions primarily in Europe, but the list has been extended to other continents as well. In addition to the “Közösségi Kertek” database, one more garden was found in the UNA database (Urban Nature Atlas, n.d.-b), and one other in the "Városi Kertek" (n.d.), thus based on the currently available online data there are approximately 88 active community gardens in Hungary.

2.8.1 General patterns

Most of the Hungarian community gardens are established in apartment building areas due to the high number of vacant plots and residents, and the relatively poor quality and functionality of green areas (Bende 2021). Some of the main features of Hungarian community gardens identified by Bársony (2020) are that gardens have equally allocated plots which can be used by gardeners for their own use, and a commonly cultivated area from which the harvested vegetables are equally distributed. The extent to which they have common areas and community approach differ from garden to garden. All Hungarian community gardens are fenced, and the gate and lock guarantee the safety of these areas. They have opening hours and if the gardens are open, everyone can go in (Bársony 2020).

In terms of diversity, most of the community gardens are considered to be relatively diverse given being situated in urban settings (Bársony 2020); however, there are several different patterns

between gardens even in the same city. Overall, based on perception, people are well-situated with at least high-school degree and stable standards of living (Bársony 2020). However, it is important to note that in contrast to some community gardens in the Global North (Cabral, Costa, et al. 2017; Jacob and Rocha 2021), Bende (2021) found that none of the Hungarian community gardens focus on integrating disadvantaged people. In addition, it was observed that throughout the years community gardens contributed to the general gentrification in some areas, for example in the case of the VIII. district in Budapest (Bende 2016). In most gardens, there is a wide range of ages, starting from students to pensioners (Bársony 2020). A common difference between gardeners in the capital and countryside was that in the countryside gardeners are mostly elderly who would like to connect to nature and spend their time in community (Bársony 2020), and families with small kids (Bende 2021).

2.8.2 Motivations

The main motivations of gardeners are self-fulfillment, and gardening as it is considered a meaningful, relaxing activity which contributes to better connection to nature, enhancing self-development by being able to cultivate (Torok et al. 2020). The same findings about relaxing activity (Bende 2021) and opportunities for self-expression (Bársony 2020) were found in other studies. For elderly, the main motivations are about connecting to nature and building on their previous gardening experience (Bende 2021) even resulting in a nostalgic feeling (Torok et al. 2020), to transmit knowledge to younger generation who in exchange can support older people with sharing knowledge about more sustainable cultivation practices, such as mulching and composting (Bársony 2020). However, younger people who grew up in houses with garden or were connected to gardening for example through their parents might have similar longing for

gardening (Torok et al. 2020). A general trait observed with regards to gardeners was their passion for gardening and spending time in the community garden in their free time (Bársony 2020).

Building community is not the primary reason to start gardening; however, gardeners value the evolvement of stronger community cohesion (Bársony 2020; Torok et al. 2020). Some consider cultivating for own-use very important, and others are more committed to sustainability. Overall, motivations are quite diverse, similarly to other European countries (Bársony 2020), but are rather complex and can change over time. For example Bende (2021) found in a garden in the countryside that even if the primary motivation behind joining the garden was not to build community, after a while two groups were formed, one sticked to their original motivation and the other eventually considered forming relationships more essential. Although most of the gardeners were regarded to be passive when it came to community garden programs, some missed the presence of community events. In addition, informal meetings outside of the garden were uncommon (Bende 2021). Motivations are not just complex and differ on the individual level, and might change throughout the process, but they can vary based on roles, such as garden organizers and gardeners. This can be illustrated by Bende's research (2021) in which garden coordinators' main motivations are community development and not food production. In contrast, as introduced earlier, the key driver behind gardeners' intention to join a garden is to start cultivating and recreation probably because gardening is considered to be an individual task rather than a community activity (Bende 2021).

Moreover, gardeners might perceive that community gardens have a positive impact on the general appearance and aesthetic of the neighborhood by adding a little bit of green to the area and improving the overall public security, as happened in the VIII. district in Budapest, as before it was mainly used for littering and other illegal activities (Bende 2016).

2.8.3 Governance structure

There is a significant difference in patterns depending on the geographical location of the area. In the capital, most gardens are owned by the municipality, or civil organizations with municipality involvement, resulting in mainly top-down or top-down with community involvement initiatives (Bende 2021). In addition, only in the capital a special form of gardens was observed, owned by civil organizations with private sector involvement (Bende 2021). According to Bársony (2020), gardens might be also in the hands of private companies. An example of this is a community garden in Budapest where the construction company granted rights to use the land until the construction begins. The community explicitly wanted to remain independent from the municipality, however, it also comes with uncertainty about when they have to move or stop their activities. In contrast, the role of municipalities is even more significant in the countryside, and only in these areas, bottom-up up initiatives appear with municipality support (Bende 2021). The rare case of grass-roots initiatives is strengthened by Bársony (2020), as based on her research, community gardens are usually initiated by the municipality and civil organizations specifically established for gardening or garden establishment. As it can be seen, municipalities and civil organizations have a key role in organizing community gardens, mostly to outsource maintaining public areas, and usually those areas are given to gardeners which are less attractive, more difficult to maintain and probably it would not have a long-term function in a foreseeable timeframe (Bende 2021).

According to Bársony (2020), typically, the governance is autonomous despite the commonly used top-down approach. In contrast, Bende (2021) found that communities have limited decision-making rights in municipality-led gardens as usually the place and garden design are managed by them, however, occasionally with slight involvement of future gardeners. Conflicts are not that

significant between municipality and gardeners, if it happens they can be quickly resolved (Bársony 2020). In addition, given the top-down nature of gardens, there is no real community aspect behind it, thus communities are not equipped by planning, discussing and acting together as a community, and as a result the sense of ownership is also weakened by it (Bende 2021).

2.8.4 Community gardening as an autonomous social network action

In contrast to other countries where community gardens are often driven by political motivations, meaning that people claim their right of place in urban areas (Ioannou et al. 2016), Hungarian community gardens are not motivated by such intentions (Bársony 2020). Illegal land squatting is not observed either, most gardens strive for positive collaboration with municipalities, landowners and stakeholders (Bársony 2020). However, some local politicians might use gardeners as a social group to gain power by inviting them to public events (Bende 2021).

Based on Bársony's findings (2020), surprisingly, Hungarian community gardens did not consider sourcing funding as an issue, which usually comes from the municipality or other actors. In addition, grocery shopping is usually not replaced by cultivating in community gardens due to the small and limited size of individual plots. However, gardeners might experience the self-sustaining life and can gain practical experience (Bársony 2020). A need to share the experience with the neighborhood was formulated, most of the gardens are open to show and involve kinder garden and school groups (Bársony 2020).

According to Bende (2021), issues that might play against becoming a good community and result in power related conflicts might arise from missing control, including for example lack of organization structure, well determined roles and good management practices. Furthermore, a

missing common goal can also result in community fragmentation. Solidarity might appear when gardeners assist each other with different tasks, such as watering during longer absence or offering planting advice. Community cohesion can also be strengthened by a strong attachment to place. For instance, a long waiting list or cultivating one's bed as personal property might enhance feelings of belonging, thereby the community cohesion (Bende 2021).

The garden can gain support from residents if there is direct communication between gardeners and the neighborhood according to Bende's findings (2016). For example, in Budapest's VIII. district, this was achieved through an online platform and on-site discussions where residents asked gardeners to show them around and they admired the enhanced biodiversity such as bees, flowers and vegetables in an urban environment. Thus, gardens might have a positive impact on residents, not just gardeners. Moreover, despite several initial conflicts between gardeners and residents, these conflict might calm down once a general acceptance of the garden is attained (Bende 2016).

The literature review supports the dynamic interplay and complexity of factors influencing community gardens, including diverse motivations, enablers, barriers, and different forms of governance structures. These elements depend on the local context, illustrating the unique nature of each community garden and the critical role of local conditions in their acceptance and support. Recognizing and understanding these factors and conditions are crucial for enhancing capacity development and building resilience.

3. THEORETICAL FRAMEWORK

The basis of this research is the Environmental Stewardship framework as it has all the elements necessary to address most of the research questions. As the main research question is related to motivation, the framework's motivation element, which already includes self-determination has been further complemented by the Self-Determination Theory to ensure a thorough examination. This framework also guides the primary data collection and analysis process.

3.1 Local Environmental Stewardship introduction

Bennett et al. (2018) created a framework of environmental stewardship to be able to understand how elements of different initiatives can be supported, and their effectiveness assessed. It has been widely used with regards to different actions such as establishing community gardens, planting trees, and limiting air pollution on local and global levels as well, just as in less and more densely populated areas (Bennett et al. 2018). Furthermore, based on their recommendation, the framework can be applied to describe and evaluate different case studies to further understand how to plan with them in the future and what actions need to be taken. By understanding cases, it can help accelerate the implementation of future initiatives in different contexts. Thus, this sub-chapter will be built on Bennett et al.'s framework (2018) which will serve as an effective tool for this thesis to understand different elements within and around the garden and how they relate to each other.

Bennett et al. (2018) define local environmental stewardship as "actions taken by individuals, groups or networks of actors, with various motivations and levels of capacity, to protect, care for or responsibly use the environment in pursuit of environmental and/or social outcomes in diverse

social-ecological contexts." (599). The main elements of this framework are actors, motivations and capacity. Social-ecological context has an impact on these elements resulting in environmental and social outcomes. Figure 1 shows the exact elements in detail that will be presented in the next sub-chapters.

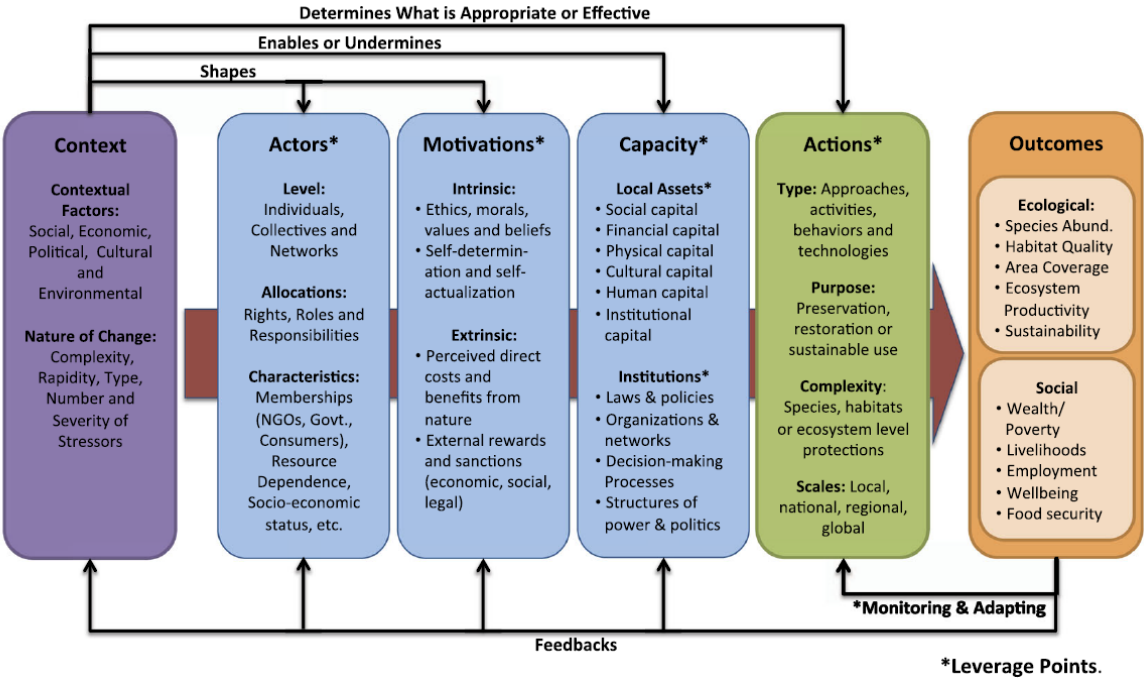

Figure 1. "Analytical framework for the elements of local environmental stewardship". Source: Bennett et al. 2018, 605. The "article is distributed under the terms of the Creative Commons Attribution 4.0 International License (http://creativecommons.org/licenses/by/4.0/)" (609), no changes were made to the original version.

3.2 Context, outcomes and actions

Bennett et al. (2018) define social-ecological context as "the broader set of social, cultural, economic, political and biophysical factors occurring beyond the local system of study" (604). The broader context can strengthen or weaken local capacity and influence which actions are feasible, powerful and should be taken. In terms of outcome, besides ecological, social goals are also realized. In addition, authors highlight that it should be also understood whether the outcome is in

line with the planned goals. Actions are defined as “the suite of approaches, activities, behaviors, and technologies that are applied to protect, restore or sustainably use the environment” (Bennett et al. 2018, 603). Furthermore, they can arise in both informal and formal ways, with direct or indirect goals, can appear on both local and global levels, might tackle issues with diverse complexity and taken by individuals, or groups and networks. Intrinsic and extrinsic motivations, capacity, and different contexts have an impact on stewardship actions at both individual and group levels. Moreover, actions change throughout the process, as several other factors in the context might change such as availability of resources, norms, and rights (Bennett et al. 2018).

3.3 Actors and capacity

Based on Bennett et al.'s framework (2018), actors can be “individuals, groups or network of actors” (597). With regards to motivation, if the right capacity is available, motivation can still have an impact on stewardship. Thus, different driving forces and incentives of actions are important to understand which further supports the relevance of this research. Capacity means whether one is able to act, and “local community assets” and “broader governance factors” (600) have significant impact on this ability. The framework differentiates six capacity assets, “social capital, cultural capital, financial capital, physical capital, human capital, and institutional capital” (Bennett et al. 2018, 600).

3.4 Motivations

Bennett et al. (2018) build the motivation element on intrinsic and extrinsic motivation. Intrinsic motivation is defined “as the doing of an activity for its inherent satisfactions rather than for some

separable consequence" (Ryan and Deci 2000, 56). It happens due to the enjoyable, challenging, or interesting activity, the reward is the activity itself (Ryan and Deci 2000), and it makes one fully autonomous who acts on a voluntary basis (Deci, Ryan, and Williams 1996). Intrinsic motivation leads to "learning and creativity" (Ryan and Deci 2000, 55), so it is crucial to understand the different factors having a negative or positive impact on it. In contrast, extrinsic motivation targets a specific outcome (Ryan and Deci 2000), for example reward and approval, and usually the activity itself is not spontaneous (Deci, Ryan, and Williams 1996). With regards to environmental stewardship, Bennett et al. (2018) define two sub-categories for intrinsic motivations: "(a) underlying ethics, morals, values and beliefs and (b) a need for self-determination or self-actualization." (602). Intrinsic physical needs appear at the individual level, and thus, Bennett et al. (2018) introduce similar factors for communities: "desire for community agency, collective solidarity, empowerment, identity or pride in collective achievements" (602). For extrinsic motivations, two subcategories are highlighted which are "(a) the perceived balance of direct costs and benefits of stewarding natural resources and (b) externally provided rewards or sanctions which can be economic, social, physical or legal" (Bennett et al. 2018, 602).

Overall, both intrinsic and extrinsic motivations have an impact on actions taken by stewards to different extents (Bennett et al. 2018). A few other studies related to community gardens (Quested et al. 2018; Sachs et al. 2022) have already found the Self-Determination Theory (SDT) useful, and since the framework by Bennett et al. (2018) does not cover it in detail, it will be introduced in the next section and used along with the other elements of the framework to analyze findings.

SDT is a psychological theory mainly used in educational settings (Ryan and Deci 2020). It is "concerned with the nature, structure, and functioning of a person in action, including the person's

inherent proactive capacities to selectively engage, interpret, and act on external environments" (Ryan and Deci 2017, 8). The sources and impacts of motivation are very diverse, the goal and action might arise from intrinsic and extrinsic factors, and can be present at the same time to different extent (Deci, Ryan, and Williams 1996; Ryan and Deci 2017).

As Ryan and Deci (2020) argues, "SDT assumes people are inherently prone toward psychological growth and integration, and thus toward learning, mastery and connection with others" (1). Furthermore, SDT focuses on understanding which social, cultural, biological factors support or undermine fulfilling the basic psychological needs (Ryan and Deci 2017) which trigger activity. These needs are competence, autonomy, and relatedness (Ryan and Deci 2000). Autonomy means a "sense of initiative and ownership in one's actions" (Ryan and Deci 2020, 1), while competence refers to feeling capable to function and succeed. Relatedness is more about belonging to a social group and connecting to others (Ryan and Deci 2017; 2020). Moreover, the activity itself has to be enjoyable, challenging or provide another novel value (Ryan and Deci 2000). If these needs are satisfied and one fully enjoys the given activity it enhances intrinsic motivation and that can contribute to fulfilment of competence and autonomy (Quested et al. 2018). According to Ryan and Deci (2000; 2017; 2020), fulfillment results in better self-regulation, higher self-development, resilience, and well-being, and ensures a healthy development. Overall, it leads to strengthening "intrinsic motivation and internalization of extrinsic motivation" (Deci, Ryan, and Williams 1996, 165). In contrast, if they are hindered, it can lead to a changed, non-optimal behavior, and can harm overall motivation and well-being. In addition, "extrinsically motivated behaviors become self-determined through the closely related developmental processes of internalization and

integration" (Deci, Ryan, and Williams 1996, 167), and in order to increase intrinsic motivation, one has to self-determine one's behavior (Ryan and Deci 2000; 2017; 2020).

However, the two major development processes, meaning enhancing intrinsic motivations and integrating and internalizing external motivation, can only emerge if a supportive environmental is ensured (Ryan and Deci 2000; 2017; 2020). Elements which might facilitate adequate conditions for increasing intrinsic motivation are for example positive feedback in an autonomy encouraging way, less control, the freedom of choice, whereas diminishing factors might be deadlines, rewards and negative feedback (Ryan and Deci 2017; Deci, Ryan, and Williams 1996; Ryan and Deci 2020). In addition, an activity has to provide optimal challenges, meaning it has to be challenging to the right extent, still manageable, but not too easy to complete (Deci, Ryan, and Williams 1996). With regards to community gardens, being involved in a garden does not automatically contribute to the fulfilment of the three basic psychological needs (Quested et al. 2018). For example, at the beginning, the feeling of incompetence might appear especially without prior gardening experience as previous habits might fade away and new skills acquired such as producing vegetables instead of buying them and spending leisure time differently (Quested et al. 2018). Similarly to Deci, Ryan, and Williams (1996), Quested et al. (2018) claim with regards to community gardens, providing opportunities for competence nurturing is important such as an environment to experience success. Knowledge sharing in both ways might enhance competency, such as learning about how to implement more environmentally conscious activities. Furthermore, gardeners might support using the garden for educational purposes as well, for example involving student groups which might further encourage the feeling of competence. If conditions allow the freedom of choice, involvement in decision-making, and no pressure then it can enhance feeling

of autonomy (Quested et al. 2018). Ryan and Deci (2020) claim that enhancing optimal conditions for basic psychological needs is also important because of the high diversity of individuals. Autonomy has a key role in building an inclusive environment as it needs a respectful and caring atmosphere (Ryan and Deci 2020).

If the circumstances allow the above mentioned satisfaction, the learning experience and overall engagement are deeper and more dedicated (Deci, Ryan, and Williams 1996). A self-regulation action happens when one does that with full intention and internal willingness. Thus, the more enjoyable and interesting the activity, the higher the self-regulation level (Deci, Ryan, and Williams 1996). Moreover, it is claimed that intrinsic motivation is an essential factor of learning (Deci, Ryan, and Williams 1996) and the higher the self-determination, the higher the creativity, learning, overall well-being and social bonding levels (Ryan and Deci 2017).

Sachs et al. (2022) used Self-Determination Theory for studying the motivation of community garden newcomers and found that relatedness was the major motivation factor which is strongly connected to competence and autonomy. Gardeners who spent more time in the garden demonstrated higher levels of competence, leading to better individual gardening results. Quested et al.'s research (2018) also confirmed that the highest importance was associated to relatedness. Based on Sachs et al.'s research (2022), newcomers who received support from the garden, whether informal (such as bed preparation for planting) or formal support (such as workshops and events), and more experienced gardeners generally felt more satisfied and autonomous, and tackled challenges more easily. Furthermore, the more related gardeners felt to others (for example, by receiving informal support and sharing food), the more competent, autonomous, and generally motivated they became. However, those who did not receive or were unable to ask for support

(perhaps due to their personality), or could not dedicate enough time to learning, felt less connected, competent, motivated, and successful (Sachs et al. 2022).

Being member of a community garden might already contribute to relatedness as obviously it assumes a certain level of collaboration with other members (Quested et al. 2018). Gardening makes it possible to meet other people who they might not encounter otherwise. Growing their own food contributes to feeling more autonomous. In addition, a formalized way of supporting newcomers (such as regular events) is important for them to deal with challenges, and foster motivation (Sachs et al. 2022).

3.5 Summary

The Environmental Stewardship Framework provides key elements essential for understanding conditions of the current state of the community garden. Although the main motivations might not be entirely environmentally driven, the framework remains valuable for addressing the research questions. Despite that the framework lacks a timeline and a scoring or evaluation for the different elements, Bennett et al. (2018) list interventions which might be initiated by other actors such as private and public organizations with the intention to enhance environmental stewardship actions and outcomes. These are leverage points which mean a place in a system "where a small shift in one thing can produce big changes in everything" (Meadows 1999, 1). The authors (Bennett et al. 2018) identified five leverage points which are "(1) introduce new actors, (2) provide incentives, (3) augment local capacity or institutions, (4) promote or support the implementation of specific actions, or (5) monitor and evaluate the outcomes of stewardship to facilitate adaptive management" (607). The idea of these leverage points will be revisited in the "Discussion" chapter.

4. METHODOLOGY

As it was introduced in the "Problem definition" sub-chapter, cities are prone to several challenges due to rapid urbanization and various crises. Community gardens provide multifunctional benefits, and while their implementation is becoming increasingly popular, their benefits are still not entirely acknowledged. More research is needed to understand the specific context of each solution, including the conditions provided, needs, barriers and enablers, and from the perspective of the thesis most importantly, motivations to better support and advance such initiatives. To thoroughly understand the factors that enhance and undermine a recently established community garden in Győr-Ménfőcsanak, Hungary, the following methods were used for this thesis: 1. literature review, 2. semi-structured interviews with key actors involved in the community garden to explore their perceptions (Patton 2002), 3. analysis of the interviews and 4. document review.

The "Literature review" chapter introduces the most fundamental concepts necessary to establish a basis for the qualitative research and to address the research questions based on mostly peer-reviewed articles. Keywords used to collect these articles included: "community garden motivation", "urban garden motivation", "community garden motivation capacity", "community garden resilience". The qualitative method enables an in-depth exploration of the research questions (Patton 2002) covering both interviews and document review. The main driver for conducting interviews, one type of qualitative research, is "an interest in understanding the lived experience of other people and the meaning they make of that experience" (Seidman 2006, 9). In addition, documents were reviewed to ensure better reliability of data gathered throughout the interviews and contribute to better understanding of the community garden in Győr-Ménfőcsanak.

Building on this, qualitative research is the most suitable method to explore the case study area and different elements in detail to be able to address the research questions and thus achieve the research aims.

4.1 Sample selection and data collection

Based on literature, there is a need to research community gardens in other regions than the US as well (Cepic and Tomicevic Dubljevic 2017; Guitart, Pickering, and Byrne 2012). Given the limited literature on this topic in Hungary (Bársony 2020) and the researcher's origin made the choice clear and Hungary was selected for the study. Based on current web searches, no research has been conducted on the community garden, called "Málnakert" (meaning "raspberry garden" in Hungarian) in Győr-Ménfőcsanak. This is probably due to garden's relatively new establishment, although it has been running for at least a year which was an important factor in the selection as it allowed to gather more detailed insights about the garden's specific context, establishment conditions, and the experiences of its gardeners. These are all necessary to be able to address the research questions, thus, the garden was purposefully selected.

The interviews conducted were semi-structured with mainly open-ended questions to better understand perspectives and perceptions "as seen by the respondents" (Patton 2002, 21). This approach provided the possibility to flexibly introduce new questions based on interviewees' responses, enabling dynamic interaction between interviewer and interviewees that facilitated the emergence of their perceptions, examples, and new insights (Merriam and Tisdell 2015). Overall, this method ensured a deeper understanding of the stakeholders' perspective especially regarding

the main objective of learning about different motivations and related conditions within the chosen community garden.

Interview participants were informed about the research goal and briefed on the relevant sections of the Central European University's ethical research guidelines at the beginning of the interview including for example the research aim, the possibility of withdrawing their participation, and voluntary participation. The interviews were audio-recorded which started only after the interviewee gave verbal consent. After introducing the ethical guidelines, they were given the opportunity to ask questions.

Overall, 8 people were interviewed between April and May 2024. One interview was performed on-site combined with a garden visit, one via telephone due to technical difficulties, and the rest was conducted online with cameras. The average interview length was approximately 40 minutes. The sample is relatively diverse including both female and male participants, gardeners who had been involved from the beginning and those who joined more recently, as well as individuals with various living distances from the garden were interviewed.

The Interview guide mainly followed the elements of the Environmental Stewardship Framework and research question topics, for example there were questions about motivations behind joining the garden, challenges they face, community and learning experiences. The guide for gardeners can be found in the Appendix.

As recommended by Merriam and Tisdell (2015), data gathering and analysis were usually conducted simultaneously. Following each interview, a refinement process was implemented based on the interview experience. Thus, if it was necessary, questions were added, deleted or only

reformulated. Given that one garden was selected and the main aim was to understand the community garden in depth, purposeful sampling was applied (Merriam and Tisdell 2015). The first respondent was the founder of the community garden who shared my research invitation in their private Facebook group, the main communication channel. After this, a few garden members contacted me to participate in the research. Due to the low number of responses, I asked the founder to repost the invitation, and in addition, an email was sent to former and current members. Meanwhile, one wave of snowball sampling was started, where interviewees referred other potential participants. As I could not contact them directly due to data protection reasons, the community garden founder, who in this case can be considered as a gatekeeper (Seidman 2006), privately reached out to them to share my invitation again. There are 23 individual plots in the garden, thus, due to the limited number of potential participants there was no criteria applied to select participants, only that they had to apply voluntarily. The following table provides details about interview dates, format and gender.

Table 1. Information about respondents and interviews. Source: author

ID	Role	Parcel ID	Gender	Date	Format
1	Founder	1	Female	22 April 2024	In-person
2	Gardener	2	Female	14 May 2024	Online
3	Gardener	3	Male	14 May 2024 (Gardeners 3 and 4 were interviewed together)	Online
4	Gardener	3	Female	14 May 2024 (Gardeners 3 and 4 were interviewed together)	Online
5	Gardener	4	Female	23 May 2024	Online
6	Gardener	5	Female	23 May 2024	Online
7	Gardener	4	Male	29 May 2024	Online
8	Gardener	6	Female	30 May 2024	Telephone

Document review (Merriam and Tisdell 2015) was also performed as the "Garden Use Contract" and "EU funding draft application" form were purposefully asked for and obtained from the garden founder in online format. The main goal of reviewing these documents was to complement interviews and ensure validity and reliability to a certain extent. The originality of documents is ensured as the garden leader provided them. In addition, desk research was conducted to gather information for the context element of the Environmental Stewardship Framework. Keywords were used to look for data, for example (translated from Hungarian): "Győr community garden", "Ménfőcsanak community garden", "Málnakert" (the name of the garden), and in addition purposefully the municipality website were checked for further information such as policies and news about the garden.

4.2 Data analysis

Interviews were audio-recorded, which then were transcribed verbatim. Anonymity was ensured by using coding system, ID ranging from 1 to 8 as it can be seen in Table 1. Initial categories were formed based on the Environmental Stewardship Framework elements (context, actions, outcomes, actors, capacity, motivations) and another category, challenges and successes, was added to address the relevant research questions. In addition, transcribed data was processed using open coding to find recurring patterns that might complement and support the Environmental Stewardship Framework, which were then used to form categories and sub-categories (Merriam and Tisdell 2015). "Open" refers to being open towards data and thus, the findings (Patton 2002; Merriam and Tisdell 2015). Overall, the "Results" chapter is structured based on this procedure: elements of the framework, challenges and successes, and summary of key patterns identified during the open-coding process which all contribute to address research questions. Quotes were

identified and grouped by the above mentioned main themes. In addition, internal documents and relevant news articles after the desk research were reviewed, and results were complemented with these insights. Due to the nature of the data and the small sample size, no statistical analysis was performed.

4.3 Limitations

The thesis has some limitations which primarily are related to the short time available to conduct the research. Given this, one case offered a limited pool of potential interviewees who in general seemed to be very busy, and relatively passive, or just simply unmotivated to allocate time to this research. It is assumed that primarily the more active community members responded to the invitation. In addition, due to data protection, it was the founder of community garden who shared the interview invitation with all potential respondents, thus not being able to directly distribute the invitation might have further reduced the chances of receiving more applications. It cannot be declared clearly that the number of interviews is sufficient (Seidman 2006). In addition, the original aim was to interview different stakeholders, however, the municipality representative and another core staff member from the initial phase were unavailable for participation in the research. Thus, it only allowed to gather insights from the founder and gardeners, and consequently it limited to provide a broader context with different stakeholders' perspectives.

Diversity within the selected community garden is introduced in a previous sub-chapter. Seidman (2006) suggests that in an in-depth interview, "representativeness and generalizability are replaced by a compelling evocation of an individual's experience" (51). Accordingly, in this case due to the nature of the above-mentioned limitations, purposeful sampling (Seidman 2006) was applied,

meaning that gardeners who responded to the invitation were those motivated and willing to participate in the research. Consequently, given the nature of qualitative data, it may raise questions about generalizability. With regards to reliability, according to Merriam and Tisdell (2015) "replication of a qualitative study will not yield the same results" (250) given the nature of dynamic worlds and views, therefore reliability is not ensured when only conducting interviews. To overcome this to a certain extent, document reviews and interviews were performed. Aiming for triangulation (Merriam and Tisdell 2015), thus adding another method such as observation to increase the sources of data would have ensured a better validity and reliability. Another method, "Member checks" (Merriam and Tisdell 2015, 246) meaning to validate preliminary data with respondents, to increase validity and reliability was not feasible either, both due to the short time available. Overall, in the end it resulted in a small number of participants, to whom I am extremely grateful for their contribution. Despite the limited sample size, the interviews provided interesting results with clear main patterns observed across all cases, which might also partially fulfill the requirement of "saturation of information" (Seidman 2006, 55).

In addition, most of the interviews were conducted online, which happened to remain flexible on both sides throughout the interview organizing process and save time that would have otherwise occurred due to travelling. Based on assumption, having a few interviews on-site in the garden would have provided even more concrete examples. Finally, based on the difficulties with organizing interviews, complementing the research with quantitative methods would have provided more answers. However, this approach might have offered less in-depth insights, which was a primary objective of this research.

5. RESULTS

This chapter presents findings based on the interviews, document review of the "Garden Use Contract" and EU funding draft application form (in text "Application form"), and web search. It presents the city-related context of the community garden in Győr-Ménfőcsanak, called "Málnakert", with a detailed introduction to the community garden using the Environmental Stewardship Framework, covering context, outcomes and actions, actors and capacities which are all important factors to understand the emergence of this specific community garden. Next, motivations are explored, including conditions that foster or undermine these motivations, followed by main challenges and successes. Finally, as a summary the main patterns are presented based on the previous sub-chapters and open-coding interview analysis. All these sections will address the research questions, except research question 6, which will be covered in the "Discussion" chapter.

5.1 Introducing the community garden

In this chapter, after a general introduction to Győr-Ménfőcsanak, a brief overview of the main relevant policies and initiatives in Győr are discussed. These will all support to address the second research question regarding the status of community gardening in the area and highlight the most prominent initiatives, RQ2: "What is the status of community gardening in the case study area, and what are some of the most prominent initiatives?". Following this, the context, outcomes and actions using the Environmental Stewardship Framework (Bennett et al. 2018) will be presented.

This will contribute addressing research question 3: “How did these initiatives as institutions emerge, and what are their main characteristics?”

Győr-Ménfőcsanak is situated on the outskirts of the regional urban center of Győr, it was originally composed of three villages, Csanakfalu, Csanakhegy and Ménfő, and it was known for its vineyards and viticulture (Győr-Ménfőcsanak, n.d.). Recently, environmental protection and sustainable development have become key concerns for the municipality of Győr. In 2020, the Environmental Committee was established (Universitas-Győr Nonprofit Kft. 2021, 2023), followed by the creation of the Climate Strategy 2021-2030 (Universitas-Győr Nonprofit Kft. 2021) which aligns with the county’s Climate Strategy, and the Sustainable Energy and Climate Action Plan 2023 (Universitas-Győr Nonprofit Kft. 2023), which builds on the Climate Strategy (Universitas-Győr Nonprofit Kft. 2021). From 2013 to 2021, the overall green areas in the city increased by 3.6%. A decree accepted by the municipality aims to protect green areas such as public parks and forests, and maintaining and developing green spaces are in focus. The Sustainable Energy and Climate Action Plan 2023 (Universitas-Győr Nonprofit Kft. 2023) emphasizes climate-resilient city planning, including the flexibility of urban infrastructure and decisions to adapt to climate change, and should be realized by the end of 2024. The initiative aims to reduce the heat-island effect, prevent flash floods, and increase biodiversity. Proposed measures include avoiding open lawns, implementing green roofs, vertical gardens and walls, and maintaining and developing existing forests, greenbelts and parks. The establishment of community gardens is also mentioned in the document. In addition, the creation of a database of green surfaces and trees is planned to better protect and maintain these vital areas (Universitas-Győr Nonprofit Kft. 2023). There is limited information on how these actions will be realized, but

the municipalities' news portal provides information about the already completed projects. The ones which are relevant to this thesis are a raised bed in a nursery home (Győr+ 2022), and raised beds in the downtown to demonstrate that cultivating plants is possible even in limited spaces (Győr Megyei Jogú Város 2020b), both were initiated by the municipality. In addition, besides regular tree planting, there is a special program aiming to plant a tree for each child born in the city also supported by the municipality (Győr Megyei Jogú Város 2020a), making these projects top-down initiatives.

Győr was a case study in Naturvation, a Horizon 2020 project, showing some track record of work and interest in nature-based solutions (Naturvation, n.d.). The Urban Nature Atlas (UNA) developed as part of Naturvation, highlights 11 NBS in Győr, including diverse cases such as tree planting which has been already mentioned previously, lake rehabilitation, and park renovation. Almost all of them were led by the municipality. Two cases applied co-governance, and the two most relevant projects were led by non-government actors although none of them are community gardens. These are a beekeeping project of Audi Hungaria and "The School Garden of Széchenyi István University, Apáczai Csere János Faculty" (Urban Nature Atlas, n.d.-a). The former was initiated by AUDI AG, aims to increase biodiversity and provide a habitat for bees while serving as a biomonitoring site for the University of Sopron's Forestry Faculty. Moreover, the income from the honey produced is allocated to nature conservation efforts (Urban Nature Atlas 2021a). The latter was initiated by the Vice Dean of the Faculty with educational purposes for both university and elementary school students (Urban Nature Atlas 2021b). Both are non-government-led initiatives, indicating a strong interest from both the university and the private sector in engaging in such projects.

In addition, the Közösségi Kertek website (n.d.c) lists a total of four community gardens in the county which can be seen in the image below.

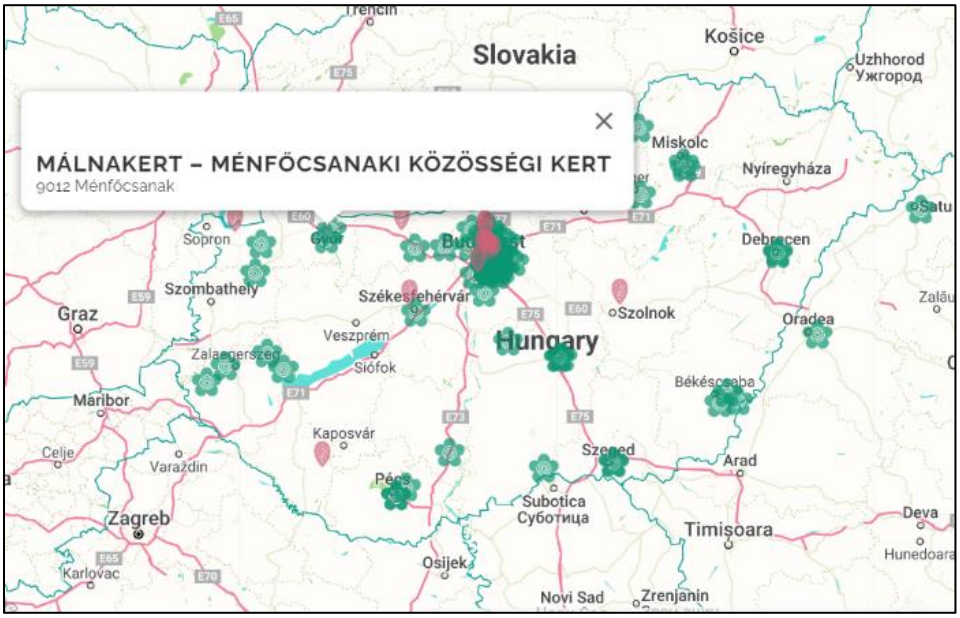

Figure 2. Community gardens in Hungary, with displaying "Málnakert" in Győr-Ménfőcsanak. Source: https://kozossegikertek.hu/kertek/. Accessed 12 June 2024.

Apart from "Málnakert", the community garden in Győr-Ménfőcsanak, there is Sziget – Kék Élőkert, located in Győr and established in 2015 by a social organization with support from Audi Hungaria (Közösségi Kertek, n.d.e), making it a non-governmental project. The community garden is Kapuvár, initiated in 2019 (Közösségi Kertek, n.d.b) by an organization closely related to the municipality which provides several social services (Nyitott Kapu-Vár 2020). Finally, there is a community garden at a nursing home in Répceszemere, established in 2014 (Közösségi Kertek, n.d.d). After thorough web searches, no further information was available about these gardens making it difficult to verify whether they are still active. Overall, the ones apart from "Málnakert", are managed by social service providers and likely do not accept applications from residents to cultivate individual plots.

A few other initiatives and civil organizations were identified through desk research, the most relevant one is the “Garden-friendly circle” in Győr-Ménfőcsanak, organizes programs on a monthly basis for hobby gardeners (Dr. Kovács Pál Könyvtár és Közösségi Tér, n.d.-a). These events cover topics such as raised beds, different plant protection methods in response to climate change, and fruit tree plantations (Dr. Kovács Pál Könyvtár és Közösségi Tér, n.d.-b).

To summarize addressing research question 2 and 3 (the latter will be complemented with the “Context” sub-chapter of the selected community garden), there are a few NBS in the area. Apart from “Málnakert” there is a lack of community gardens that meet the definition by extent Glover (2003) including aspects such as allowing residents’ individual and communal plant cultivation, ensuring shared resources and maintaining community control to a certain extent. The inclusion of NBS and mentioning community gardens in the climate strategy of Győr suggests that these solutions will be advanced in the future and shows the presence of multilevel governance due to following regional guidelines. Most of the projects are top-down, with a few started by university, civil organization or private company.

Following the successful establishment of “Málnakert”, which will be introduced in the following sub-chapters, two other local community garden initiatives failed due to several reasons, including the lack of available suitable land and resident protests. Most interviewees mentioned these challenges and were deeply surprised by the resistance to such beneficial initiatives. While further details cannot be publicly disclosed, it is important to mention that the need and motivation for such projects exist and are strong.

"Málnakert" is located in Győr-Ménfőcsanak, on the outskirts of Győr in apartment houses area where mainly families live (Kisalföld 2021). Based on my observations during the visit, it is a relatively calm neighborhood, with space for parking cars and convenient access to public transportation. Next to the garden, a large playground and apartment buildings can be found. The exact location can be seen in Figure 3.

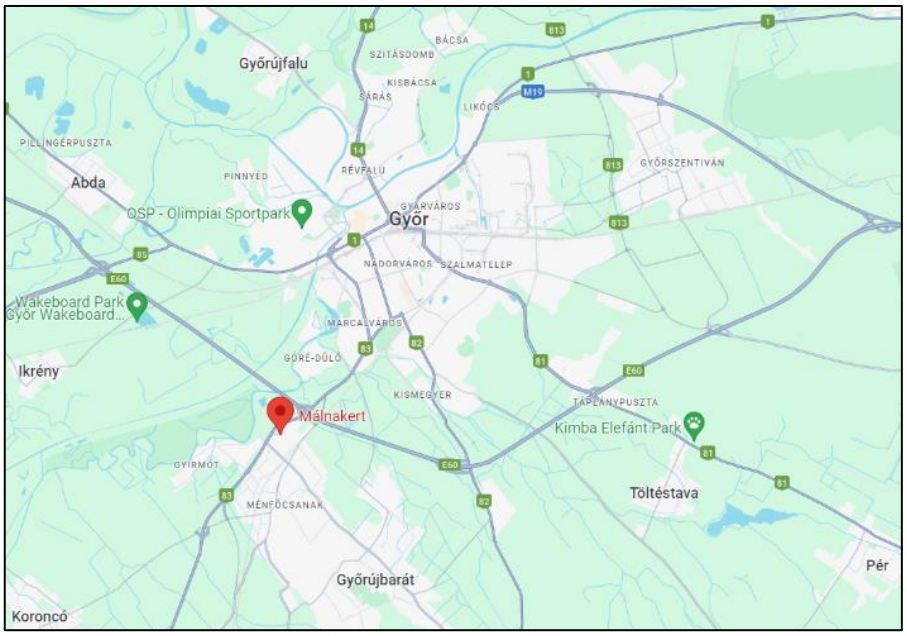

Figure 3. Location of "Málnakert" in Győr-Ménfőcsanak on Google Maps. https://maps.app.goo.gl/cYeRSyppqF1ETndF8, Accessed 4 June 2024.

5.1.1 Context

The broader context of the community garden was presented in the previous sub-chapter, this section builds on it and complements it by a brief introduction to the garden which will contribute to addressing RQ3 about emergence and characteristics of community gardens in the area. "Málnakert", established in 2021, was a project long envisioned by the leader of a civil organization, Muszáj Egyesület, from now on "Muszáj". The aim of the organization is nature

protection and environmental education, different programs are organized to achieve these goals such as children's camps and guided tours to experience seasonal changes (Muszáj Természetvédelmi Koordinációs Egyesület 2020). "Muszáj" also initiates the green Győr-Ménfőcsanak program, organizes for example car free days and programs against food waste (Győrplusz TV 2022a). For a long time, the garden's realization was not possible due to the lack of resources. Finally, an EU funding opportunity made it possible to establish the garden (Interview 1), making it the first of its kind in Győr-Moson-Sopron County (Kisalföld 2021). The primary purpose of the garden was to provide land for gardening and connect people with nature in an urban environment while promoting environmental consciousness and thus, fostering attitude formation ("Garden Use Contract"). According to the leader of "Muszáj", this initiative was especially important given the area's historical focus on cultivation (Győrplusz TV 2021a, Interview 1). Not only grapes and raspberries were grown, but every household also had a vegetable garden for personal consumption and sometimes to supply the local market (Muszáj Természetvédelmi Koordinációs Egyesület, n.d.). However, this habit had changed primarily due to urbanization (Győrplusz TV 2021a, 1). The garden also aims to serve as a model for implementing similar initiatives in urban settings ("Garden Use Contract"). Another key goal of the garden is to build connections between diverse groups of residents, particularly between new and long-standing inhabitants, and thus strengthen a community ("Application form"). Extending this impact beyond its physical boundaries is emphasized as well. In addition, members are encouraged to initiate small new projects as part of the garden and support each other in realizing them as well as learning and knowledge sharing are also important aims. Finally, political activity cannot be practiced in the garden ("Garden Use Contract").

Private owners let the garden for free as otherwise it would not be utilized, their role will be presented in the "Actors" sub-chapter. The EU project was approximately 1.5 years long, started in spring 2021 and ended at the end of August 2022 (Muszáj Természetvédelmi Koordinációs Egyesület, n.d., Interview 1). Based on the interviews, during this period a more structured support was provided in terms of tools and knowledge sharing and educational events, which will be presented in the following chapters. After the official EU funding period, the community garden aimed to become self-sustainable. With regards to the environmental aspects of the garden, a composting area was established where green residues have to be collected. There is no communal trash collection, instead, everyone is responsible for their own waste ("Garden Use Contract", Interview 1). Only organic gardening can be practiced, and the cultivation of illegal plants, as defined by law, is prohibited ("Garden Use Contract", Interview 1). Furthermore, using environmental-friendly materials to construct furniture and other structures within the garden was important, for example used pallets and demolished construction materials were repurposed at the beginning (Kisalföld 2021, "Application form").

5.1.2 Actions

The garden is 1500 square meters. The main action is individual gardening on 23 plots, one bed being 7.5 square meters. In addition, a few commonly cultivated raised beds with herbs, flowers and raspberries, and a hill bed with squash are available. Pictures of the garden taken by the author can be seen below:

Figure 4. "Málnakert" picture 1. Source: author, taken on 22 April 2024.

Figure 5. "Málnakert" picture 2. Source: author, taken on 22 April 2024.

It is important to distinguish the EU funding period and the transition time that followed. At the very beginning, external funding made it possible to buy tools and other useful resources to ensure gardening. Based on recommendations by community gardens in Budapest, Hungary, many activities were done together mainly to establish a community feeling, and foster community bonding. Examples for these activities are building the fence, raised beds, establishing a common area and filling the water tank (Győrplusz TV 2022b, Interview 1).

An excel table was created to allocate common tasks (Győrplusz TV 2022a, 1), and each gardener is required to sign up. One gardener noted that for her it is difficult to sign up in time due to her hectic working schedule (Interview 6), but even if reminder from coordinators is necessary, in general the system works well as everyone relies on the activities and outcomes which are filling up the water tanks, mowing grass, maintaining common beds and the composting area.

> "There are a lot of tools, everyone cleans them after themselves. What we discuss is the way it is, the grass is cut, the water is sourced. Then you know that there is such a table of who does what when. I think everything works fine there." (Interview 2)

With regards to the individual gardening, organic method has to be followed and other than that gardeners have the freedom to choose what and how to plant ("Garden Use Contract", Interviews). According to the "Garden Use Contract" gardeners have to remain active, meaning that the plot cannot go fallow, become unused or neglected. If this happens anyway, the gardener receives a warning from coordinators, and after 7 days of the second warning, the plot is offered to the next one on the waiting list.

Apart from the usual gardening activity, semi-mandatory programs were organized during the EU funding period explicitly for garden members, such as opening and closing events, workshops to

ensure learning and knowledge sharing ("Application form"), garden grilling and cleaning (Interview 7). However, some other programs were also offered for members and the wider public, hiking tours, a so-called open garden program which made residential gardens open to the public to visit and learn about gardening with the aim to build a bridge between residents who cultivate, new residents and ones without a garden. Moreover, seed and seedling exchanges were also available for everyone ("Application form"). In 2023, after the EU funding period, opening and closing events usually focus on maintaining common infrastructure, with 1-2 community events organized in between (Interview 1). In addition, gardeners are allowed to initiate programs involving the whole community or use the land for private events which should not interfere with regular programs and organizers hold responsibility ("Garden Use Contract").

5.1.3 Outcomes

Both individual plots and commonly cultivated areas contribute to food production and thus, increasing the food security of 23 families. This initiative ensures independence from food markets to a certain extent as it varies how much gardeners can cultivate. Occasionally it might lead to cost savings, which is an economic outcome, highlighted by two gardeners:

> "[...] from May to October, we often do not buy vegetables at the store. [...] Even in a very small space with two gardeners, on 7 square meters, you can produce as much as you consume." (Interview 5)

> "[...] in the first summer, when there were only cherry tomatoes, we harvested nearly 40 kg. So now, if you look at the economic part of it, how much you save with it [...]" (Interview 3)

In terms of ecological outcomes, land is utilized that would otherwise lie fallow, thereby increasing local biodiversity. In addition, only organic practices are allowed which might further contribute

to providing habitats for various animals and plants. Although most members follow traditional gardening practices, some experiment with companion planting, and other alternative approaches (Interview 1) which might further enhance ecological diversity. Producing and consuming local products also decrease emissions arising from production and transportation, this locality was highlighted by the founder as well:

> "At least you will need to buy that many fewer Spanish strawberries" (Interview 1)

Events organized in the garden aim to produce zero waste, as well as not having bins and collecting green residues for composting all result in a slow environmental attitude formation and awareness raising (Interview 1).

With regards to social outcomes, based on the research, some sort of bonding has been formed between members, and relationships with several stakeholders were established and work effectively for example with the municipality, while also an improving relationship with neighbors can be observed as it will be introduced in the next chapter. Furthermore, one gardener particularly emphasized the garden's role in stress relief, showing an overall contribution to well-being.

> "[…] you walk away into the silence among the birds. It's actually a huge stress reliever for me [...]. I'm talking from the point of view of relaxation, and the fact that I can really spend some time alone there quietly, and I don't have to be in the crowd or among people for that little time." (Interview 6)

In addition, consuming healthy and fresh vegetables and fruits was expressed by gardeners which further enhances well-being.

> "I know what's in it, I trust it's healthy. I know we don't use chemicals." (Interview 5)

These outcomes align with the main founding purpose of the garden of enabling gardening and connecting gardeners to nature in an urban setting, as introduced in the "Context" sub-chapter. However, the intended bridge between new and long-standing residents, emphasized in the "Application form", has not yet been realized according to the research findings.

5.2 Actors

This section introduces the different actors involved or just slightly related to the establishment and maintenance of the community garden, along with their expectations, therefore this will address research question 4: "What is the role of agency, what benefits do stakeholders expect from involvement in community gardening?"

First, as already introduced, the leader of "Muszáj" initiated the entire project, including submitting the EU fund application, communicating with stakeholders, and overall holding the garden together. The main current plan is to continue the project as long as possible without major changes to serve as a role model showing that it is possible to establish and maintain an urban community garden (Interview 1).

The garden has four private owners and due to land legislation, they are unable to build on it. Therefore, the garden also gives life to land that would remain unused otherwise (Interview 1). "Muszáj" is the intermediary actor, has a rental contract with the owners, and "Garden Use Contract" with gardeners ("Garden Use Contract", Interview 1). Thus, another major factor is the generosity of private landowners who provide the land free of charge which made the project feasible apart from the EU funding. Based on the result, they do not have specific expectation, however, gardeners highly value their contribution as the below quote shows:

> "The owners are so supportive that we put together 3-4 baskets of vegetables every year, and this is the thank you and the price for using the land." (Interview 4)

Furthermore, gardeners believe that utilizing the land results in reduced maintenance work for the owners, which might lead to a long-standing support from them.

> "[...] since they cannot develop this plot of land into a building area or a plot of land… they don't have that much trouble of mowing the grass. I don't think there will be any obstacles on their part to use it as a community garden in the future either." (Interview 4)

As part of the EU project requirements, local civil organizations were included in the application, and at the beginning they somewhat supported the project by their knowledge, received a plot ("Application form", Interview 1), and helped to decide about some garden structures together with other actors (Kisalföld 2021). As civil organizations are not currently involved in the community garden, no expectations regarding their role emerged during the research.

With regards to the municipality, before the implementation the local representative helped to connect "Muszáj" with the four owners (Interview 1). Overall, municipality plays a key role emphasized by both gardeners and the founder, by providing free access to water and helping with fencing of the land at the beginning (Győrplusz TV 2021a). The local representative's supportive attitude was also highlighted several times.

> "The municipality is extremely supportive, I think, if only we get access to water. Absolutely, the representative supports the operation of the garden." (Interview 4)

> "We are lucky with the local representative here. It is obvious that she is working to create a community here, in this part of the city." (Interview 3)

During the first year of the project, in the EU funding phase, a professional gardener and another coordinator highly contributed to the success of establishing the garden through their expertise, for example organizing workshops and deciding about the details of building the garden in terms of

the storage house and community area (Kisalföld 2021, Interview 1). The former coordinator was unavailable for an interview, thus their expectations could not be explored. However, since they are no longer associated with the garden, understanding the current actors' expectations is more crucial. Every year volunteer coordinators are selected, currently 3 members support the garden with operational work as coordinators.

Some other actors who have an impact on the garden are the direct neighbors. Most of the gardeners mentioned that initially they were resistant, most probably due to unexpected change and had conflicts over parking, weed and mowing and criticized that some gardening features blocked their advertisement billboard (Interview 5). These are well-illustrated by the below quotes:

> "There is a gym next to us, and we had a very hard time getting to agreement with them, but they were not happy with us, and they expressed that." (Interview 5)

> "[...] in the beginning I know that the immediate residents, who live next to the garden, that they didn't like it very much, that it would be noisy next to them." (Interview 8)

After continuous discussions and proving that the overall presence of the garden did not negatively affect them, their attitudes shifted to neutral acceptance with still a few minor and ad-hoc issues. Based on the interviews, the founder had a key role in settling the conflict, and another gardener mentioned that some discussions initiated by her as well mitigated the problems.

> "At that time, the founder actually mediated, and then finally discussed with them that it is possible to put that billboard somewhere else, and now there are absolutely no such debates." (Interview 4)

> "[...] I go there to talk, there were times when I invited them into the garden to look around, so that they could accept it a little better, there were times when I offered them something, so to help the relationship a little, so that's all I could help with. They just recently told the founder that gardeners should mow the grass at the back, not just half as far as the plots, so that's why there is still as if it were a thorn in the flesh." (Interview 8)

In addition, the neighborhood's perceptions are more challenging to capture. Based on an interview with the initial coordinator by Győrplusz TV (2021b), most likely local people were first surprised as having a community garden in town was unusual. Some apprehensions were expressed in the non-closed Facebook group before opening the garden, as mentioned by one gardener:

> "There were concerns from the neighbors about how large the weeds would be, and where we would collect the compost, because it would rot there, and they thought the worst, and that we would be noisy, and all that. The birds are louder than we are out there, I think." (Interview 5)

However, at the same time, a relatively high interest was indicated by approximately 100 people who had joined the Facebook group before the garden was established, and 20 people participated at the first online meeting (Győrplusz TV 2021b). Children from the playground are usually interested, which is indicated for example by standing at the fence and asking for cherry-tomatoes (Interview 4). Interviews conducted for this thesis show that the current attitude of the neighborhood is neutral, as they see that the garden is usually well-maintained. However, one gardener mentioned that sometimes residents perceive it as rather chaotic from a distance (Interview 6). Occasionally passersby stop to learn about the garden and then they are even shown around (Interview 5).

> "So, the residents of the area are already used to the fact that yes, the garden is here. They walk next to a fence, then they look to see who is growing what. I think it's because we've been here for a couple of years, so it's getting more and more positive acceptation from the residents." (Interview 7)

The below quote also shows how one gardener would perceive the garden if she were living in that neighborhood without being a garden member.

> "I think they're used to us being there, and if I were a resident there, I'm sure I'd see it as someone finally maintaining this land." (Interview 5)

Furthermore, the gardeners themselves are also crucial actors in the gardens' functioning. In terms of decision-making, they have equal say when it comes to voting and overall involvement ("Garden Use Contract"). The majority highlighted gardening and producing food for personal consumption as their main expectations when the garden was established. In addition, some emphasized the desire to belong to like-minded people as a secondary expectation, while for two gardeners this sense of community was an unexpected but an added value. In addition, a few gardeners did not have specific expectations. Motivations will be detailed in another chapter.

> "Gardening and having my own chemical free vegetables and fruits [...]. It is also my expectation and hope that there are many people with whom we think alike and understand each other even with half words." (Interview 2)

> "The basic expectation was to have some vegetables, so we didn't expect more than that in the first round. The bonus point is that there are people with whom we have really gotten better or have been doing well ever since." (Interview 3)

> "Well, what we expected was to have a land that we could really use to our liking [...] We were afraid that they might want to regulate us a lot, that we wouldn't have a choice, or maybe, I don't even know, that they would force the community part too much." (Interview 5)

Finally, voices were articulated about the government's role of supporting similar initiatives with better involvement which will be further detailed in the "Summary and main patterns" sub-chapter.

> "I think it would be hell of a lot of contribution, if the municipality, the state, or someone took it into their hands and supported it with something, because then they [community gardens] might emerge better if the organizers didn't always run into difficulties." (Interview 5)

Overall, the leader of "Muszáj" has a key role of keeping the garden together and diverse actors show a general acceptance towards the garden which has evolved from a slight skepticism to better acceptance over the past years providing a general good feeling for gardeners.

5.3 Capacity

There are various categories for capacity, but in this chapter they will be presented based on the framework's categories, which are "social, financial, physical, cultural, human, and institutional capital" (Bennett et al. 2018, 606).

As introduced in the "Actors" sub-chapter, there are diverse actors associated with the community garden to varying extents making the garden nested in a loose and supportive network. In addition, the garden is listed on the Közösségi Kertek website (Közösségi Kertek, n.d.c) which aims to collect community gardens in Hungary, thus integrating it into a broader network is a social asset. Before the implementation phase, the founder sought guidance from already existing community gardens in Budapest that shared their best practices and even their "Garden Use Contract" (Interview 1). In addition, the School Garden Association, as one of the civil organizations in the EU project application supported the establishment with their experience and some field work (Interview 1). According to the founder, these supports combined with EU funding facilitated the formation phase without any major crises (Interview 1). Furthermore, as previously discussed, various programs were organized that were open to the public as well, such as seedling exchange (Győrplusz TV 2022b), making the garden connected to the neighborhood. "Muszáj" can also benefit and build on its experience gained through being involved in other programs and projects listed on their website (Muszáj Természetvédelmi Koordinációs Egyesület, n.d.) to support the garden's development and maintenance. Not just open events, but closed community events were also organized which were more formalized at the beginning that contributed to strengthening the community and thus relationship building. In addition, having common tasks and organizing those also requires a sort of coordination and communication with each other.

At the initial phase, the EU funding, approximately 20.250 EUR, provided the necessary financial capital (Muszáj Természetvédelmi Koordinációs Egyesület, n.d.) for physical resources and human capital which will be introduced in the next paragraphs. Starting from the second year, as the garden aimed to become self-sustainable, a membership fee of approximately 2.6 EUR per year per individual plot was collected which is usually spent on replacing tools and purchase petrol for the mower (Interview 1). However, in 2024, this fee was increased threefold from its original amount as members collectively decided to buy a mower, confirmed by all interviews. Gardeners perceive membership fee with the same positive attitude as articulated by one of them:

> "I wouldn't call it realistic, nor friendly, but it's symbolic. Symbolic, yes. Even if it were multiplied, it would still be okay." (Interview 2)

The most important physical capitals are infrastructure, as land was available to use, and during the implementation phase fence, storage shed and raised beds were built, seeds, seedlings and other tools were bought from the EU funding (Kisalföld 2021). In addition, benches and tables are also available to freely use in the garden. Water tanks, hose, wheelbarrow and a mower make it easier to take care of individual plots and maintain common areas. Currently, all these things are accessible for members, except seeds and seedlings which they have to buy individually each year. In addition, a composting area ensures collecting green residues within the garden. Technological elements, such as a private Facebook group and email are also important in terms of regular communication between members. In addition, common tasks are coordinated in a shared Excel table as previously mentioned.

With regards to human capital, building on already existing gardening skills and knowledge were emphasized by almost all gardeners. Also, regular harvest serves as evidence of gardeners'

adequate gardening skills. In addition, acquiring knowledge and knowledge sharing were supported more formally during the EU funding phase in the form of workshops, but currently it is more informal and ad-hoc. The diversity of members has also enriched the gardening community, for example there are gardeners who are more and less experienced, every year 5-6 new members join the garden, and it is also diverse from which part of the city and urban setting they come from. At the beginning, paid staff ensured structured and efficient implementation and establishment of the garden, which was emphasized by the founder:

> "[...] since it was a tender that involved wage, that is why there was capacity for it, which I think is very important, so that starting on your own, as a volunteer, is not a one-man job." (Interview 1)

This fact was also highlighted by long-standing gardeners as a good practice and a desire to restore. Currently the founder of the garden is a constant and reliable member, each year supported by a few volunteer coordinators.

> "[...] in the first year, […] there were mandatory things, and more helpers and coordinators, so then it all went much more flexibly, much more goal-oriented and tightly controlled, [...] it was very organized. After that the number of coordinators decreased, now it's the case that the community shapes itself, there is still plenty to polish on this, to clarify expectations, and the needs, it is still in development." (Interview 7)

In terms of cultural capital, all gardeners built on their prior direct or indirect experiences with gardening, all emphasized their longstanding connections to gardens. For example, many recalled that their parents (Interview 2, 4) or grandparents (Interview 7) maintained vegetable gardens. This will be further elaborated in the "Motivations" sub-chapter.

The institutional capital was detailed in the "Context" and "Actors' sub-chapters. In general, the garden has freedom in their functioning with democratic decision-making. In addition, it is

important to highlight that there is an option for continuous improvement of their processes, usually discussed at the closing event or annual evaluation (Győrplusz TV 2022a, Interview 1) and implemented in the following year. For example, filling up the water tank proved to be difficult, thus the number of people being responsible for it was increased (Győrplusz TV 2022a). Then, as it was still challenging, a flexible hose was acquired, intending to make filling water tanks more manageable for individuals and overall quicker. In addition, a recent purchase of a new mower aimed to make easier common tasks for everyone as the below quote shows:

> "At the end of last year, we had a closing picnic, and we discussed what should be changed, and then the idea of the lawnmower came, [...] because until now we only had a grass trimmer. Along with this, a flexible hose and new tools came, and then this actually happened a few days ago." (Interview 3)

5.4 Motivations

In this chapter, the primary motivations for involvement in the community garden will be explored, using the Environmental Stewardship framework which was complemented with the Self-Determination Theory. As introduced in Chapter 3, if the basic psychological needs of autonomy, competence and relatedness are fulfilled, they enhance intrinsic motivations and contribute to internalizing extrinsic motivations (Ryan and Deci 2000). Furthermore, according to Ryan and Deci (2000; 2017; 2020), understanding conditions is important as they can both foster and undermine intrinsic motivations, thus these conditions will be also introduced. Overall, this chapter will address the main research question (RQ1): "What motivates citizens to organize and to be involved in urban community gardening and other stakeholders to support such initiatives?"

5.4.1 Overview of main motivations

Almost all gardeners mentioned producing food for personal consumption and connecting to nature as their primary motivations. Without any exceptions, gardeners had some previous connection to gardening, either through relatives or personal experience, such as growing up in a family house. Many emphasized that the lack of their own garden in the city, or space for gardening made them long to engage in gardening and producing fresh vegetables and fruits. Even in one case carrying the memory of a family member who was a horticultural engineer appeared (Interview 6). The value of fresh food and gardening is well-articulated in the following quote:

> "Well, for me, that's food. So that we produce this, I absolutely believe that there is nothing more delicious than what you produce. I know what's in it, I trust it's healthy. I know we don't use chemicals. I know it's sustainable, because it is as we don't use pest control or anything like that." (Interview 5)

It is important to note that the garden was established right after the first waves of COVID, thus some felt even more urged to spend time in nature and revalue its benefits.

> "And we didn't have a balcony, nor did we have any opportunity to be outdoors like that, and it was COVID, so we would have liked even more to have a hobby or something similar that could be done in the open air. And I liked gardening anyway." (Interview 5)

Some other main motivations less often mentioned as primary motivations are building connections and stress release (Interview 6).

> "[...] and I hoped to meet people there, because we are a little separated, [...] I missed the company of adults so much." (Interview 8)

Overall, the average gardener joined to do some basic gardening and produce fresh, trustworthy and organic food.

> "[…] I don't often hear people say, wow, I want to make new friends, or something like that, but it's really more about gardening itself, and more about the fact that if you don't have an area, here you get a small plot." (Interview 5)

5.4.2 Autonomy

According to the "Garden Use Contract", everyone is responsible for their own plot which empowers gardeners with some sort of autonomy. Furthermore, the fact that focusing on individual plots rather than collectively managed areas was articulated (e.g. Interview 3, 5, 7). Moreover, with a few exceptions, such as using organic practices and the prohibition of illegal plants, gardeners have the freedom to choose what and how to plant ("Garden Use Contract"). This is well-expressed by a gardener:

> "What I put where is my decision. And it's my responsibility, so I'm my own boss." (Interview 2)

Another important factor is that gardeners can decide when to visit the garden, which is usually every two or three days with more frequent visits in drier periods, reinforcing a sense of care and responsibility associated with having their own plot (Interview 6). The freedom of visiting the garden was emphasized by the founder as well:

> "[...] everyone comes when they want, everyone has a key, and when it fits into their life, they come here. We make sure that the plot is in order, so first, we usually ask the person if nothing happens for weeks if they need help. And then we tell them that it is not okay like that, because there is a waiting list." (Interview 1)

In addition, the flexibility to choose the time of day for gardening is also valued, as some prefer to be there alone from time to time:

> "I also like to be alone in nature, and if I feel like I don't want to meet others, I go out at six in the morning and dig around there, quietly in my garden and enjoy nature, chirping and sunshine." (Interview 2)

Thus, gardeners have a relatively high level of autonomy due to the freedom to manage their individual plots, choose what and how to plant, and decide when to visit the garden, also independently from the landowners and municipality. This autonomy contributes to both feeling responsible and a sense of ownership, while gardeners can enjoy gardening at their own pace.

5.4.3 Competence

Individual plots also enable gardeners to directly experience the success of their efforts, as they can individually harvest plants from their own plots:

> "The harvest is the most enjoyable part. For example, last night we also picked some radishes and had them for dinner." (Interview 4)

> "I consider it as a huge success if anything survives that I planted." (Interview 6)

In addition, it was also highlighted as a sense of fulfilment when harvested plants were shared with family members or friends:

> "I also like that I have already picked chive, spinach, and sorrel, which I planted, so I succeeded in having my own and chemical-free stuff. In fact, I was able to bring it to my children, so I was very proud of myself." (Interview 2)

The fact that individual plots are relatively small was also considered to be a benefit by one gardener, as her previous experience with a larger family land was too demanding. Thus, while smaller plots can limit the choice of what to plant, it is also more pleasurable, easier and still provides success (Interview 2).

As previously discussed, all gardeners build on their prior gardening experience to a certain extent which further contributes to feeling competent. It was also emphasized that acquiring basic gardening skills is relatively easy (Interview 2) and based on the interviews gardeners can ask from

each other. In addition, knowledge sharing is present to a certain extent. However, the relation towards common tasks has to be highlighted here, as some consider them slightly challenging which might undermine their feeling of competence, such as mowing if they have not previously used the machine (Interview 2). One gardener, although did not consider herself highly knowledgeable and often seeks advice from others, still highlighted her ability to harvest successfully (Interview 6).

Regarding experimenting, most gardeners tend to plant crops that have been proven successful in previous years:

> "We don't try new things much anymore, now we know what works, and we stick to a few things. And the area is also finite, so we don't experiment. This year we planted the same as last year." (Interview 4)

However, some members still try new things, but the emphasis on cultivating plants that provide a sense of achievement was mentioned repeatedly:

> "[...] one has a desire to plant what one sees something of and feels successful that the harvest is beautiful." (Interview 8)

Moreover, the hill bed with squash, although relatively debated by members whether it is a good initiative at all, is a commonly cultivated area by a few members. According to one long-standing member it provides a sense of success as well especially for beginner gardeners:

> "I think that we plant easier plants because we need the feeling of success, especially for the new ones, [...]. If something doesn't work out, they don't like it, and they really don't see the results, they can quickly give up. […] I think the pumpkin is so good in such a hill bed, because it is one hundred percent that something will become of it, and one can say that it was cultivated by themselves." (Interview 5)

5.4.4 Relatedness

The interviews did not fully confirm that members feel a strong sense of belonging to a social group, and community bonding was not that significant either. In addition, most members indicated that they do not meet outside of the garden, but spontaneous discussions occur.

As previously mentioned, individual plots receive more focus than common areas. Sometimes members spend only a few minutes in the garden to quickly water plants and complete necessary tasks due to very hectic days and busy schedule (Interview 6), and usually those who live farther away spend more time there (Interview 2, 5, 7). One gardener's observation highlights that although individual gardening works well there is a perceived weakness in community engagement:

> „Because they come to the garden, they maintain their own plot, but the common areas, the common tasks, so they don't get involved in these so much, they don't even speak about it, they don't oppose it, and they don't really do anything." (Interview 7)

As mentioned in the "Actions" sub-chapter, following good advice, at the beginning many foundational activities were carried out together to foster a sense of community among members (Interview 1). In addition, regular programs were organized as part of the EU project and currently with only volunteer coordinators it has become challenging to motivate and involve community members and the enthusiasm decreased (Interview 1, 3, 4, 5, 7). A lower participation rate was articulated by some gardeners in the annual evaluation as a result of not having dedicated and more importantly paid coordinators responsible for community building. However, according to the founder everyone is very busy, and it is hard to motivate to attract even more people to community events.

> "[…] So that there was actually no person whose job was to motivate people to come together. [...] So I don't know how to make this attractive. After all, everyone comes here primarily to have a small garden, which they can take care of at their own pace, according to their own wishes." (Interview 1)

Thus, satisfaction with current community activities and levels of engagement are very diverse. One gardener observed (Interview 7) that those involved from the initial phase remain active and participate in most common events, and new members also tend to be motivated and enthusiastic. However, members who have been part of the garden for 1-2 years appear somewhat less engaged. Other members also confirmed that mainly the same members participate in such events, and level of activity varies:

> "What is difficult about the community is that it is difficult to mobilize people. So, there are the core members, who come when there is a work assignment. But it is difficult to get the others to do the community tasks as well, not just their own plot. [...] Then there are people who come, they just don't take the initiative, they have to be told what to do, and then they do it. However, there are people who are completely left out of the community." (Interview 4)

Another long-standing gardener noted that although there were more programs at the beginning, she now would find it difficult to allocate even more time for such events due to work commitments and other reasons (Interview 8). Some gardeners believe that besides the current events, it is almost impossible to do more in this fast-paced world (Interview 6, 8), while others believe that by acknowledging the challenge of bringing 23 plots together could lead to organizing more programs and attract more members (Interview 5, 7). The challenge of not meeting each other that regularly is also visible in the following quote:

> "To me it appears that the point here is the garden, and that the community is the tolerated part. So here it is better for everyone to be responsible for themselves and other than that leave me alone. Maybe I'm seeing it wrong anyway, because there are currently a lot of gardeners that I haven't even met yet, even from last year, because somehow, we always ended up being in the garden at different times." (Interview 5)

Each year there are 5-6 new members, meaning that some members leave due to moving away or other reasons. One member highlighted that dealing with these sorts of changes can be challenging:

> "Well, now the members have changed quite a bit, several have moved, so I'm sorry for losing contact with many of them, because really, such a good small community of friends has been formed." (Interview 8)

This year, new members were introduced in the Facebook group and there was no event where everyone could get to know each other (Interview 5). While it was not noted as a difficulty by a new gardener (Interview 2), long-standing members highlighted that such events make it easier to recognize people in the garden (Interview 5), and others partially participate in regular events to get to know new members as well (Interview 8):

> "Well, I also try to participate in such events, also in order to meet new people." (Interview 8)

The following quote summarizes the current state of the community aspect of the garden:

> "I'm not saying that we are the most active garden, unfortunately not so socially. But it's live and let others live, that works very well for us." (Interview 5)

From time to time, being alone in the garden is valued as a contrast to everyday busy life, providing a calm environment (2, 6). During one interview, a gardener realized that some people might be less active in community events as they want to be alone and just immerse themselves in a meditative activity.

> „[...] I also understand that you go out to your little garden and you don't want to talk, you don't want anything with anyone, but to be by yourself, in silence, in peace, that if you live in an apartment, how much you miss being in such a place, and maybe you really want to just dig into the ground, and that's it. So, I never thought about that, maybe that's what drives them." (Interview 5)

However, relying on others in case of small tasks, exchanging seeds, seedlings and best practices, as well as supporting each other by watering each other's plots during absences, were highlighted in all cases. For example:

> "If someone goes on vacation in the summer, there is surely someone who can be asked to water their plot, or we used to say when we go away for a longer period of time, that you can harvest whatever grows, so that the tomatoes don't rot there, or something like this." (Interview 4)

> "Even if you don't meet anyone in person, the group has so much benefit that if you write that someone should water once or twice or while you are away, there were always applicants for that. So, there was never a problem that someone's plot dried up, that no one took it." (Interview 3)

> "In fact, there were times when, [...] they had say, a lot of zucchini, and […] none for me, and then they were cute, because before they were leaving the garden, they put a zucchini next to my plot." (Interview 6)

In addition, beyond strictly garden-related knowledge and plants, other things were also shared such as recipes:

> "[...] it was a picnic party, and then I also took some of my wild sourdough bread, made my red lentil pâté, and then a few people asked for the recipe." (Interview 2)

During the EU project period, several events aimed to equip members with gardening skills, and a dedicated professional gardener supported them from the basics. According to the founder, based on a survey there is no need for such events currently (Interview 1). As highlighted earlier, most gardeners strive to plant those which proved to be successful previously, however, they face challenges from time to time. The sources of gathering knowledge and information are quite diverse, but most importantly gardeners rely on their personal experience. Then, discussing questions in the garden was emphasized by all gardeners which usually happens spontaneously for example about companion planting, starter plants, replanting, and diseases.

> "When we meet in the evenings or when watering, we usually talk about who has what problem. Now, for example, yesterday, when we met [a gardener], or the day before yesterday, I told her that we have lizards, she said that she has ants. Then we share what we know […]" (Interview 4)

> "I usually do it, but only when I see that someone's plot is doing well […] there was a time when I asked her, and then she also said that she also asked something like that from her female colleague [...]." (Interview 6)

Although the enjoyment of learning something new or sharing knowledge was not very often mentioned, but a long-standing member still emphasized it:

> "And it's good to chat and get to know each other, you always learn something new, because I still don't feel like I'm a professional in gardening anyway, there's still a lot to learn. Who has a beautiful crop, why, where did he buy it, etc., but also private life. [...] I was surprised because an older person asked me who didn't know as much as I did so I could help him." (Interview 8)

In addition, although not very actively, but the Facebook group and direct online reach-out to each other are also main channels of sharing best practices. This activity is usually facilitated by the founder and new volunteer coordinators and the latter perceived that due to more discussions started and questions answered, there is a higher activity (Interview 5). The main sources gardeners use for acquiring knowledge are a local gardening shop, gardening books and newspapers, personal events such as herbal tour (Interview 2) and most often internet search.

Overall, community engagement and satisfaction with the current level vary. The founder noted that in other gardens, where members live mutually closer to the garden, it might be easier to bring people together (Interview 1). However, small connections and mutual support are present. Initially formal, currently informal knowledge sharing in the garden is also common. Finally, two gardeners noted that being inactive and only focusing on their own plots and overall tasks without caring about the community might reflect a broader social issue (Interview 4, 5).

5.4.5 Conditions

As introduced in Chapter 3, a supportive environment might enhance intrinsic motivation, facilitate the internalization of extrinsic motivation (Ryan and Deci 2000; 2017; 2020), and can strengthen learning and overall engagement (Deci, Ryan, and Williams 1996). Building on this, this chapter aims to provide a brief overview of the conditions of "Málnakert" to better understand the context in which members showed relatively a high level of autonomy and competence and varying level of relatedness.

The "Autonomy" sub-chapter already detailed that gardeners have significant freedom in choosing what and how to plant, with only a few rules listed in the "Garden Use Contract". There is limited control practiced by coordinators, as only those get warning who neglect their plot or break the very few rules. The founder also mentioned that organic practices are not controlled, they trust that everyone understands those rules which provides further autonomy and a sort of loose control over practices (Interview 1).

With regards to positive feedback, being able to cultivate is manifested in successful harvesting which was emphasized by all members. As elaborated in the "Competence" sub-chapter, most gardeners choose plants with higher likelihood of success or those that have previously worked well. Usually, those gardeners whose plots show good results are approached for advice, and the tips provided typically lead to improved, nicer and healthier plants. Thus, in a way not just harvesting, but receiving positive encouragement also contributes to a supportive environment.

While the small plot size in a case was considered to be beneficial, as highlighted in the "Competence" sub-chapter, they can also cause limitation in terms of what and how much can be planted, potentially even hindering experimentation:

> "[...] the other thing that holds me back a bit is the size. I like to use it very economically, and there is no place for something to take up space when I can produce more from something else." (Interview 5)

According to the "Garden Use Contract" anyone can initiate programs and use the garden for private events with an agreement. This flexible condition along with the availability of furniture was emphasized by a gardener:

> "[...] a table and bench are available, […] anyone can take them out if anyone wants anything there, even a more private event, a fireplace can be assembled quickly, […] so that every opportunity is given to make use of it." (Interview 7)

Another gardener recalled a memorable moment when she used the garden with her children a few years ago:

> "[...] there were stones and pallets, and then we went out one evening, and I roasted bacon there with three children, of course we packed up after ourselves, but it was nice that there was such an opportunity, [...] we could do it nearby." (Interview 8)

Finally, the improving acceptance by neighbors and supportive attitude of municipality both provide an adequate environment for fulfilling basic psychological needs. In terms of decision-making, it is quite democratic according to the "Garden Use Contract", giving members an equal say in the garden's operational mechanism. Overall, conditions are relatively supportive for fulfilling the three psychological basic needs, autonomy, competence and relatedness, which consequently contribute to increasing motivation.

5.5 Challenges and successes

Several challenges and successes have been touched upon in previous chapters, however, this section will provide an overview by complementing them with findings that have not been covered yet. Overall, this chapter addresses research question 5: „What are the key challenges and successes, and how are they perceived by stakeholders? What are the implications for their capacity and capacity development?"

The three main success factors identified are the secured land, initial EU funding, and a relatively high level of acceptance from other stakeholders. While these factors have been elaborated on previously, it is important to note that they had a key role in ensuring the successful implementation and maintenance of the garden.

Regarding challenges, as it was emphasized in the "Relatedness" sub-chapter, community building, and overall bonding have received mixed perceptions. A more individualistic approach is present, with a focus on individual plots and secondary emphasis on community events. It was noted that recognizing each other and knowing others' names is essential for initiating conservations, and again it is important to highlight that having regular events at the beginning fostered familiarity among members.

> "[at the beginning] more people came much more often, and precisely because it was more comfortable to go among acquaintances. But currently whoever has the desire, the time should come. Well, no one prioritizes hanging out in the garden before their family […]" (Interview 5)

At the beginning dedicated coordinators played a crucial role in bringing people together, and the desire for someone responsible for this role was articulated. Also, some gardeners suggested

having stricter rules in the “Garden Use Contract”, for example being present at community events would foster participation. Although the contract includes completing common tasks, these tasks are not detailed, thus according to a gardener it would be beneficial to include them (Interview 7).

Despite improvements in managing common tasks such as filling water tanks and mowing, some members still find these tasks demanding. According to a long-standing member (Interview 5), gardeners can choose other tasks and if these people seek support and articulate their need these would be discussed. However, sometimes gardeners just keep the problems to themselves and then it is difficult to address them.

It was noted by a few members (Interview 3, 5) that some infrastructural facilities are missing, such as a toilet and direct water supply which would further enhance the quality of time in the garden and eventually organize more events.

> „ […] it would also help if there was really drinking water in the garden, or even a toilet, and then we could really do community programs there.” (Interview 3)

In addition, although sourcing water 150m away from the garden thanks to the municipality is resolved, some gardeners show high dedication and usually start preparing beds and planting before the water is officially opened (Interview 3, 4, 5, 7). Previously it happened at the beginning of May, this year due to the warm weather the water was opened slightly earlier. A few members mentioned that even without municipality water they started gardening and brought their own water because they wanted to start the process well in time to utilize the plot to its maximum, thus for them it is a difficulty that the official opening is in May.

A few gardeners live relatively far from the garden, it even takes 40-50 minutes to get there. Although they were aware of this when joined the garden (Interview 2) or moved away but still

wanted to remain members due to the lack of other opportunities nearby (Interview 5, 7), it is still challenging.

Finally, one gardener expressed her need to have more knowledge sharing events mainly with external presenters to enhance their basic and more advanced knowledge.

> "The great majority are absolute laymen, [...] So we can't learn that professionally from each other [...] a complete presentation, to show that you have to plant this deep [...] it is different than the fact that one person at a time goes there and asks one question, because it doesn't reach the others yet." (Interview 6)

Overall, the EU project had a significant impact on capacity development, especially human and physical capacity, as introduced in the relevant chapter. A strong foundation was ensured, however, currently it is unsure how the social capacity will be developed, if at all.

5.6 Summary of main patterns

As a summary of the results, this section recaps the main patterns which were identified during the open coding process. Gardening activities primarily focus on individual plots, while common tasks are less emphasized currently. Compared to the initially more active garden, which was mainly due to the EU funding period, with the aim to make it self-sustainable and relying on its members, the maintenance of this engagement seems to be challenging.

Producing fresh, organic vegetables and fruits, and connecting with nature are the primary motivation of gardeners, which is in line with the original purpose of establishing the garden. In addition, belonging to a community and general socializing are mentioned to a certain extent, with only one member emphasizing the stress release factor of gardening. Not only producing food but sharing it with others such as family members and friends made members proud and contributed

to their sense of competence. Another main pattern identified is that all members build on previous gardening skills or experience coming from family traditions.

Referring again to the community part, the system of signing up for community tasks in an Excel table works well. Feelings of autonomy and competence are relatively high due to the supportive environment, mainly arising from being responsible for individual plots, and successful harvests, while the sense of relatedness varies. Another factor that was emphasized by every gardener is mutual support, which appears in activities such as watering each other's plots, exchanging plants, for example raspberry, tomatoes, and sharing advice. The overall perception of the gardening opportunity itself is well-described by a gardener:

> "This opportunity is still a gift. From the beginning. To use that little land. One can feel a sense of ownership and that is very good." (Interview 8)

Stakeholders, introduced in the "Actors" sub-chapter, have a general acceptance. Furthermore, owners, municipality and "Muszáj" provide a supportive environment for gardening. Building on this, most gardeners plan to continue their membership in "Málnakert", considering leaving only if moving to a family house or if new community gardens emerge closer to their residence. There is more uncertainty about staying or leaving in case of a longer-distance move, but generally, it will depend on the circumstances. These are supported by the below quotes:

> „I will be her until the end of my life. Or as long as the garden lasts or the owners sell it, I don't know to an investor. But I don't even think about that, because I hope that symbiosis lasts a long time. I plan to do so for a long time." (Interview 2)

> „But in the meantime, I have no other option. So, if there was an option nearby, I would leave this place, because it is neither sustainable nor environmentally friendly to travel this much. But for now, I have no other option." (Interview 5)

Finally, the last main pattern is related to advancing community gardens and increasing their number in cities so that others can also experience its benefits. Even the need for larger gardens in Győr or Győr-Ménfőcsnak is articulated, as there is currently a waiting list.

> „So, there would definitely be a demand for it, even a much bigger one, it would definitely have a more transformative impact." (Interview 3)

> „I think that it is more missing, say around the block of houses. More of these would be needed." (Interview 6)

Another gardener mentioned that her colleagues would also appreciate a similar initiative in their districts (Interview 4). In addition, the involvement of an educational component was also emphasized, so children can acquire basic gardening skills, understand where vegetables and fruits come from, and experience nature. One couple highlighted that their child also has a small area in the garden where she cultivates a few basic vegetables such as tomatoes, peas and onions, and indicated that they would like to show her the gardening processes:

> „We also try to raise her in such a way that there are real ones and the ones in the stores. She knows the real taste and knows that it won't just be there automatically on the table." (Interview 3)

Another gardener also emphasized the importance of educating children about gardening:

> "It wouldn't hurt if children didn't just really believe that tomatoes grow in foil on Tesco shelves." (Interview 6)

Finally, one gardener articulated a broader mission of ensuring community gardens in every city:

> „It would be nice if a generation would grow up for whom the existence of a community garden would not be a miracle, but such a basic, I don't know, possibility everywhere." (Interview 5)

The founder emphasized that they hope that the garden can serve as a role-model, and they are willing to support other initiatives with their knowledge.

> „[...] it can also be done this way, if you only have a plot of this size, how much can you do with it. If you do not buy this much vegetable in supermarkets, you've already done a lot. And that you are out in the open air, and when you go home you don't end up in front of the TV. [...] This is an example for children." (Interview 1).

6. DISCUSSION

The main focus of this research was to understand what makes community gardens work and deliver multiple benefits often mentioned in the literature (Cabral, Costa, et al. 2017; Guitart, Pickering, and Byrne 2012). Through realizing these benefits, community gardens contribute to resilience in cities, for example by strengthening social networks, delivering various ecosystem services such as food security and enhanced biodiversity. However, in order to contribute to resilience, they have to function as robust institutions over time, develop, maintain and reorganize capacities to adaptively respond to multiple challenges. Thus, community gardens have to be resilient as well. The key assumption is that different actors are at the heart of this system who all contributed to their implementation and maintenance. Therefore, their motivations have to be understood as preconditions of realizing multiple benefits and contributing to resilience.

Based on the above assumptions and arguments, this chapter will first discuss resilience with regards to "Málnakert", the community garden in Győr-Ménfőcsanak, in relation to concepts covered in the literature review which will help address the last research question (RQ6). Then identified main enablers and barriers will be introduced to explain how they contribute to capacity development and enhance or undermine the sustainability of the community garden, which will be facilitated by a diagram created by the author based on the Environmental Stewardship framework (Bennett et al. 2018). Finally, the main findings will be reflected on through insights from the international and Hungarian literature, with emphasis on conditions necessary for motivations to play their role in sustaining community gardens.

As a general pattern, confirming Bársony's (2020) findings about the arrangement of Hungarian gardens, “Málnakert” is fenced, with individual plots of equal size and commonly used areas. In contrast to other countries (Calvet-Mir et al. 2016), gardeners are not driven by political motivations and land squatting, instead, “Málnakert’ strives for a collaboration with the municipality which is also consistent with other Hungarian gardens (Bársony 2020).

6.1 Resilience in community gardens and beyond

Folke et al. (2002) suggest that community gardens contribute to increasing resilience by better reacting in case of changes, for example by producing fresh vegetables and providing a place for social connections. The last research question (RQ6) explores this resilience aspect that interviewees address directly and indirectly: “How do stakeholders view the contribution of their involvement in community gardening to resilience at present and in the future?”.

Diversity

Colding and Barthel (2013) claim that diversity is necessary to be able to deal with changes and disturbance. Given that members cultivate primarily individual plots, and they have the freedom to choose what and how to plant, a diversity of plants can be found in the garden which resonates with findings in international literature (Krasny and Tidball 2009). Although determining the level of plant diversity was not a focus of this study, gardeners mentioned growing a range of crops, such as tomatoes, onions, strawberries, raspberries, peas and spinach. On the jointly cultivated plots raspberries, herbs and squash are also grown. Additionally, some members even experiment with companion planting and other alternative gardening techniques, which might further enhance diversity. Furthermore, given that “Málnakert” is the only community garden in the district, its

mosaic of small plots creates greater ecological diversity compared to the larger private gardens in the area.

Similarly to other Hungarian gardens, diversity among members is present (Bársony 2020; Bende 2021), although demographic diversity was not explicitly explored. However, it was noted that nine out of twenty-three plot owners are long-standing members from the beginning, with five-six new members each year. Gardeners come from several parts of the city. According to an interview with the founder (Győrplusz TV 2021a), gardeners' ages range from 1 to 70. It was also highlighted that despite their diverse background, gardeners have a common goal which is plant cultivation (Győrplusz TV 2021b). This shared passion aligns with Bársony's finding (2020) about Hungarian community gardens. Overall, diversity among gardeners might also enhance resilience as gardens provide a place for socializing, bringing residents together with different backgrounds (Krasny and Tidball 2009).

Learning

According to Folke et al. (2002), diversity might also enhance adaptation and learning which is present in "Málnakert" to a certain extent. Each year, new members learn about rules, acquire or refresh skills on how to cultivate in a limited space. Those who leave the garden will carry with them valuable knowledge that they can rely on, even if they do not practice gardening in the near future. In addition, the importance of memories of earlier gardening experience, especially from childhood, was highlighted by current members as part of their motivation for their membership. Overall, all gardeners gain basic knowledge about plants, water resources, participating in communal tasks, and relationships with immediate neighbors and municipality. This is also

emphasized by Colding (2011), arguing that being involved in community gardens allows individuals to learn about nature and different ecosystems.

As highlighted by Colding and Barthel (2013), community gardens might contribute to increased learning, flexibility and capacity to deal with changes. Initially knowledge-sharing events in the garden were formal, but currently are more ad-hoc and informal. Gardeners commonly approach each other when facing similar issues like pest control, and in addition, often find solutions and information for example about different plants from various sources. To illustrate it, small changes and crises occurred, for example when gardeners had to react to invasions of ants or problems with lizards, and they discussed good techniques spontaneously in the garden. Also, they had to adapt to drier periods and decided to fill up water tanks more frequently. While most gardeners currently follow traditional techniques, they might slowly learn new approaches by seeing or talking with those experimenting with more alternative, climate-friendly practices. For example, the founder occasionally posts information about permaculture in the Facebook group, encouraging members without pressuring them, and gardeners often reach out to those whose plots are recognized as well-managed to learn about new and alternative best practices. In addition, another form of adaptation is transitioning from the EU funding period to becoming more self-sustainable. Initially, more capacity was accessible, with a high importance on psychical and human resources. Currently, the garden must rely on those established resources, supplemented by a small membership fee and members' personal resources to support their gardening activities.

The purpose behind not having a bin in the garden also contributes to environmental consciousness, along with community events aiming to produce zero waste. In addition, while the garden's food production does not entirely eliminate members' need for buying food, it contributes

to acquiring knowledge about self-sustainability and gardening, similarly to other Hungarian community gardens (Bársony 2020). According to Krasny and Tidball (2009), community garden members learn to value the environment, and this is supported by Colding and Barthel (2013) suggesting that connection with nature might increase the chances to build cognitive resilience. To summarize, experiencing food security and attaining basic skills and knowledge, community gardens might increase the potential to respond better to disruptions related to food crises.

Despite the attributions mentioned, the community growing is not particularly strong currently, in contrast to the initial phase. However, they can still rely on each other through regular mutual support, and the presence of more active gardeners who often initiate collaborative actions. Although the extent of benefits beyond the garden (Delshammar, Partalidou, and Evans 2016) was not explored, the idea of broader impacts is supported by the interviews. Members enjoy consuming and sharing their own food with family members and friends, and they are aware of different and changing relationships with neighbors, the wider neighborhood and the municipality. Some gardeners expressed interest in involving educational elements and sharing knowledge with youth, especially by introducing children to the garden. Similar interests were found in a Hungarian study (Bársony 2020). Implementing educational and social programs potentially could strengthen community building. Furthermore, environmental education, emphasized by Krasny and Tidball (2009), might enhance urban resilience.

In summary, the above examples show that there is a basic structure that can deal with small changes and can potentially ensure the long-term sustainability of the garden. However, whether they handle more significant crises is untested and uncertain.

6.2 Key determinants of community gardens' capacity

Various capacities have a high impact on community gardens' functioning, as similarly for example to motivations, they can strengthen or eventually undermine their sustainability. The diagram below was created by the author based on Bennett et al.'s (2018) Environmental Stewardship analytical framework to provide an overview about local conditions of "Málnakert". It builds on elements introduced in Chapter 3 and 5 to present results by using the same categories for capacity, "social, cultural, financial, physical, human, and institutional capital" (Bennett et al.'s 2018, 606). The figure was complemented by a timeline showing permanent elements, and ones established during the EU funding phase and more recent ones. In addition, in order to better differentiate between factors that enhance or potentially undermine the sustainability of the garden, different signs were applied, "+" for enablers, "-" for challenges, and "?" for uncertain or questionable elements. The items without a sign are usually beneficial to have, but according to this research, they do not significantly impact the current questions and concerns surrounding capacity development. Results based on the different elements (context, actions, outcomes, actors, capacity and motivations) have already been presented. In this sub-chapter mainly actors and capacity will be discussed, while the next sub-chapter is dedicated to motivations given its high importance to the research.

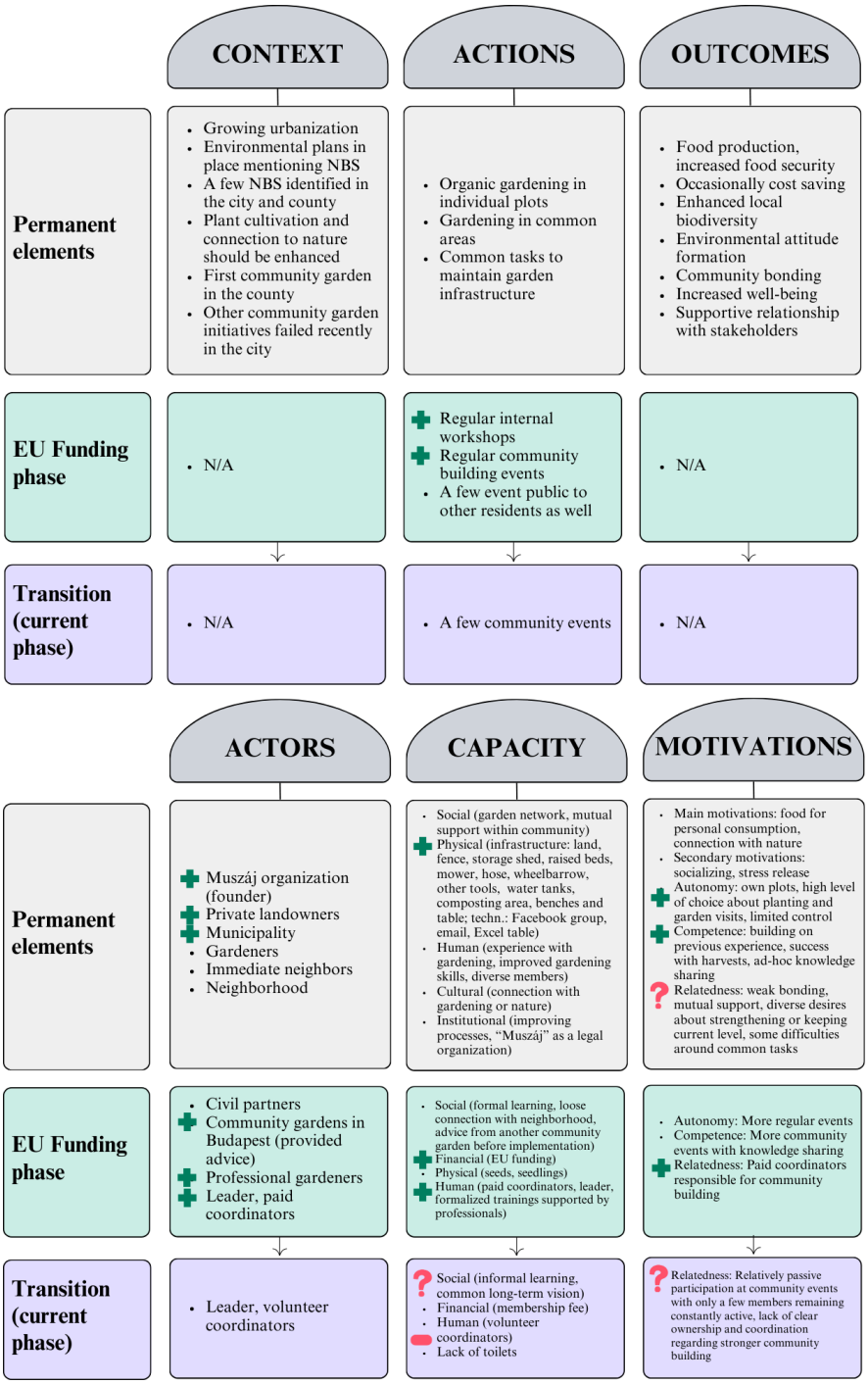

Figure 6. Main local conditions of "Málnakert", created by the author based on Bennett et al.'s (2018) "Analytical framework for the elements of local environmental stewardship" (605). The "article is distributed under the terms of the Creative Commons Attribution 4.0 International License (http://creativecommons.org/licenses/by/4.0/)" (609). *Significant changes have been made to the original version: it is now tailored to the local conditions of "Málnakert" with a focus on intrinsic motivations. Three phases have been added to indicate and emphasize the timeline and changes, and success factors and challenges are marked with icons. Relationships between different elements (arrows) have been removed and the design has been altered.*

Main enablers: EU funding, water supply, materials and tools, best practices and good relationship with stakeholders

The main enablers, and thus success factors presented in the "Challenges and successes" sub-chapter align with international literature. During the preparation and implementation phases, all necessary resources identified in the literature were provided. The most crucial factor is securing land (Fox-Kämper et al. 2018; van der Jagt et al. 2017; Guitart, Pickering, and Byrne 2012; Doyle 2022), which is provided by private landowners. Although it still uncertain how long the land will be available, it is not perceived as a drawback by gardeners as suggested by Ioannou et al. (2016). Necessary tools, the materials and water supply were available right at the beginning, thanks to the EU funding and the municipality, and capacity buildings workshops were conducted, which are all essential for implementation according to Jacob and Rocha (2021). Thus, funding had a key role in enabling the establishment of the garden and to acquire all the necessary resources. Currently the membership fee contributes to sustaining the garden which despite van der Jagt et al.'s (2017) suggestion, does not undermine involvement of diverse gardeners due to its very symbolic amount. In addition, building on the advice from community gardens in Budapest, members were involved in different common tasks right from the beginning of the implementation phase. This was also recommended by Jacob and Rocha (2021), suggesting that this might foster commitment and activity.

During the maintenance phase, the common tasks were worded in an Excel table with a process continuously improved, facilitating the identification of potential difficulties that would arise from uncertain and unclear tasks (Bonow and Normark 2018). Benches and tables are available for community and private events to allow socializing (Delshammar, Partalidou, and Evans 2016),

and as the garden is next to a playground and easily accessible, these might foster gardeners connection with the neighborhood in the future (Kingsley and Townsend 2006). Apart from the basic capitals listed above, continuous knowledge sharing, and a vision are important in terms of longevity (Bonow and Normark 2018), which are just partially fulfilled as currently the main goal is to maintain the current activities in the garden. All capacities listed in the relevant "Results" chapter are essential to function the community garden. At the beginning, resources were sourced externally due to the availability of funding. Members did not have to contribute financially, and "Muszáj" built on its project experience and network. However, according to Glover, Parry, and Shinew (2005), spontaneous discussions in the garden contribute to better resource sharing which can be observed in the garden, as best practices are regularly discussed informally, and members exchange plants and even recipes. As mentioned during the interviews, usually those who are involved from the beginning, or newer members are the most active ones. According to Glover, Shinew, and Parry (2005), leaders are usually more active and play a crucial role, which is also the case in "Málnakert" as well as the founder has more responsibility and can involve others to seek support if needed.

Stakeholder relationships and impact on the neighborhood

Good relationship with authorities, in this case between local representative at the municipality and "Muszáj", has an essential role in operating effectively in a long-term, and maybe advancing similar initiatives locally and beyond the city as suggested by McVey, Nash, and Stansbie (2018). Community gardens appear in Győr's Climate Strategy, and according to McVey, Nash, and Stansbie (2018), municipal support and even providing funding for community gardens would improve the acceptance by residents and other stakeholders. Therefore, when realizing the strategy,

it is assumed that even better acceptance will be expressed towards such initiatives. Often, non-profit organizations operate community gardens, as suggested by a systematic literature review (Guitart, Pickering, and Byrne 2012), which was also the case of “Málnakert”. In addition, similarly to other European cases (van der Jagt et al. 2017), the municipality was somewhat involved, although not with land, training and other support, but water.

Regarding the impact on the neighborhood, in contrast to Bende's findings (2016), in general gardeners appreciated utilizing the land instead of leaving it fallow. However, since the land was green before, in terms of aesthetics, no significant differences were mentioned. This study did not explore the wider impact on other residents, only interviews with gardeners shed light on the general supportive attitude of passersby, friends and colleagues. Based on Bende's (2016) recommendation, regular interaction between gardeners and other residents might be strengthened to enhance support. This was apparent when conflicts arose with the immediate neighbors, and general interactions, proving that the garden does not have a negative impact on their lives improved the relationship. In contrast to early-stage practice, when regular events also aimed to involve residents, currently there is no exact desire or capacity to establish and maintain such relationships.

Good relationship with the neighborhood and municipality also contribute to continuity and success of the garden (Doyle 2022). However, based on the results, the need for an individual responsible for community building was articulated by some gardeners. While the garden has a relatively strong connection with the municipality, it is less tight with immediate neighbors and the broader neighborhood which would be needed to be strengthened to enhance knowledge sharing beyond the garden (Delshammar, Partalidou, and Evans 2016).

Governance structure

As Ioannou et al. (2016) suggest, authorities expect to have a legal organization behind forming a garden as they are considered to be more reliable, show long-term commitment, administrative tasks also become more straightforward. “Muszáj” fulfilled this role. EU funding initially required a more formal structure, which was valued and still would be preferred by the founder and members in terms of the community building impact especially. However, as van der Jagt et al. (2017) suggests, a loose and flexible approach at the beginning would results in organically forming social connection and learning. Depending on the main goal, the initial success of the garden suggests that in gardens where the focus is on food production, formality might be necessary especially at the beginning.

Initially, the garden followed a mix of “Bottom-up managed and run by the community with professional support” (McGlone 1999, 18) and “Bottom-up with political and/or administrative support (PAS)” (Fox-Kämper et al. 2018, 62). The former, because a local civil organization started the project, and EU funding made it possible to involve paid coordinators and a professional gardener. The latter because although municipality did not have a crucial role, their support with water supply is highly valued. These structures might change over time (Fox-Kämper et al. 2018), and as the authors highlight some sort of collaboration between municipality and community is necessary to ensure long-term success. Currently this relationship works efficiently based on the results, however, aiming to transition to a more self-sustainable approach to have more community responsibility over time while still relying on the municipality and landowners. In contrast, based on literature, most Hungarian gardens are top-down initiatives (Bársony 2020; Bende 2021), as usually municipalities or organizations formed for garden establishment initiate the project.

"Málnakert" employs democratic decision-making processes, which according to Glover, Shinew, and Parry (2005) ensures engaging members on the long-term. In addition, it has a less strict structure compared to the mixed findings in Hungary. Bársony (2020) noted that gardens generally have relatively high autonomy, while Bende (2021) found that gardens operate under more strict rules. Conflict between the garden and municipality was not observed, most likely because of the bottom-up approach and loose connection. Bende (2021) suggests that in order to build a well-functioning community, some sort of control, clearly defined tasks and management practices are needed. While these elements were more present in the garden's initial phase, their current absence might hinder community building in the longer run. In contrast, Bendt, Barthel, and Colding (2013) suggest that less strict structure allows more self-organization and learning.

The role of volunteers and paid staff is emphasized in the literature (Bonow and Normark 2018; Fox-Kämper et al. 2018; Jacob and Rocha 2021), and it was significant at the beginning, currently relying on volunteer coordinators, which might cause some uncertainty. Moreover, the initial involvement of a professional gardener and dedicated leaders also facilitated the process, whose importance is also highlighted by Doyle (2022).

6.3 Motivations of community gardeners

The main motivations mentioned by gardeners were food production and connection to nature, with secondary focus on social connections and well-being. These are in line with the systematic literature review by Guitart, Pickering, and Byrne (2012) who also highlight all these, supplemented by revenue generation and money saving, the latter is also confirmed in this research. Gardeners expressed their enthusiasm about growing their own crops and trusting the

source which is also highlighted by other researchers (Delshammar, Partalidou, and Evans 2016). This study confirms the Hungarian pattern that those who grew up in a family house or had a previous connection with gardening tend to maintain an interest (Torok et al. 2020; Bende 2021), which might be due to the deeply rooted horticultural tradition (Burger 2012). Contrary to Hungarian literature, the main motivation is not attributed to self-fulfillment and relaxation (Bársony 2020; Bende 2021), however, similarly to other Hungarian gardens (Bársony 2020; Torok et al. 2020), cultivation is more important than social aspect. Although connecting diverse people in the city was one of the goals of the garden, this was not highlighted during the interviews, possibly because individual cultivation is in focus. In contrast, in other international community gardens with a more social focus, the opportunity to connect with residents they would not otherwise meet is usually emphasized (Kingsley and Townsend 2006; Doyle 2022).

Conditions for motivations

As Kirby et al. (2021) suggest, considering motivations in local contexts is important to ensure suitable conditions for meeting expectations and this should be considered in the future. Based on this research, adequate conditions for fulfilling gardeners' primary intrinsic motivations are ensured due to a loose structure, autonomous decision-making process, relatively high level of freedom, and allowing to experience success (Ryan and Deci 2017; Deci, Ryan, and Williams 1996; Ryan and Deci 2020). These factors contribute to fulfilling two of the basic psychological needs, feeling autonomous and competent. However, the third basic psychological need, relatedness, is currently present only to a limited extent when members cooperate around common tasks, mutually support each other, and spontaneously start discussions in the garden. Another pattern related to social connections is that gardeners rarely meet on purpose beyond the fence,

similar to other Hungarian gardens (Bende 2021), and in contrast with the findings in the international literature (Glover, Parry, and Shinew 2005). Given that gardening is perceived as more an individualistic activity, that might explain the focus on cultivation over community building which well aligns with Bende's observation (2021). Furthermore, the thesis findings also confirm Bende's (2021) study that once community bonding becomes visible, it is valued, but it is still not the primary purpose of joining a community garden.

Is there a need for change?

Based on the above, sufficient capacity was ensured to develop the garden until a phase when basic needs behind main motivations were fulfilled. In light of motivations and conditions surrounding the garden, the question arises whether maintaining the current state ensures the garden's resilience in times of change, or is there a need for change? According to Deci, Ryan, and Williams (1996), if all three basic psychological needs are fulfilled, that might result in more dedication and overall better learning experience. Despite the literature (Torok et al. 2020), while motivations of gardeners have not appeared to fundamentally change over time, this does not imply that such changes will not occur in the future.

Given EU funding, secure land and sufficient capacity, the implementation in the earlier formal phase was successful and fulfilled the main purposes of the garden. However, it also resulted in a slightly rigid structure including fixed programs. The garden depended on external funding and on the good relationship with the landowners and municipality, which dilutes overall autonomy. However, it also leads to the question of whether the aim to make the garden self-sustainable is realistic at all. While the current motivation level seems to be adequate to practice gardening and

spend time in nature, and thus fulfill the primary motivation, gardeners also articulated a few challenges and directions for future improvements, mainly around social connection, basic infrastructure and children's education. These three aspects will be discussed in the next section.

Firstly, opinions on social interaction are mixed as initially, they were much stronger due to regular and more formalized events. Some gardeners want to emphasize it more, some doubt that it can be improved due to limited capacity, and some do not feel any need for change. Since more frequent events have been tried before, it is assumed that it could support building better cohesion, and more importantly, it would not significantly undermine autonomy. However, the literature review provided mixed perspectives about the desired structure to enhance learning, community building and self-organization (Bende 2021; Bendt, Barthel, and Colding 2013). Based on some members' recommendations, the "Garden Use Contract" could be stricter, for example requiring participation in at least one community event per year and detailing the frequency of exact community tasks. While it is uncertain whether these activities would really foster community bonding, complementing the contract with slightly more social expectations meanwhile organizing the same events would not demand excessive human capital. However, more semi-mandatory events might result in increased limitation by new members.

Secondly, the lack of common infrastructure, such as toilets, was also articulated as a challenge during the interviews, which is closely related to the social aspect. Building a compost toilet, potentially as a community activity, might further enhance longer stays in the garden, allow more chances for spontaneous discussions, and contribute to higher-quality and more active community events while requiring human resources to plan, implement and maintain the facility.

Finally, with regards to education, although based on the interviews, a high level of competence is present, Quested et al. (2018) suggest that sharing knowledge within the community garden and incorporating educational purposes into the activities might further increase the feeling of competence. Furthermore, Colding and Barthel (2013) also emphasize the importance of learning to increase adaptative capacity. Although gardeners have a sufficient foundation of gardening skills due to their prior experience and learning during the EU funding period, one gardener highlighted the need for more formalized learning. If this need is present in the case of other gardeners who did not participate in the research, fostering knowledge sharing first internally might be beneficial without requiring significant additional resources, but it would contribute to more frequent and intensive learning experience. Furthermore, the desire to educate children in the garden was expressed by half of the interviewed members, indicating openness towards accelerating competency, which might further enhance the level of motivation. However, the question whether sharing knowledge externally is really needed and would be supported by most of the garden members is uncertain. The garden would clearly need at least human capital to plan and coordinate the educational project, thus sourcing resources for that is important to sort out. Also, some gardeners may be satisfied with the current state, and implementing this angle might potentially limit their feeling of autonomy.

Overall, adequate conditions are ensured for the primary motivation. However, this discussion aimed to raise questions whether maintaining the current state is sufficient in the long-term, or fostering a better fulfillment of all three basic psychological needs is necessary. The above mentioned initiatives might gradually improve relatedness and competency, which would consequently enhance intrinsic motivation based on Self-Determination Theory (Deci, Ryan, and

Williams 1996). These align with some of the leverage points mentioned by Bennett et al. (2018), which are supporting new actions such as education, and involving other actors for example someone responsible for community building or coordinating the educational program. However, it remains uncertain how these changes might impact autonomy and other aspects, and in addition, how the necessary resources for the potential changes would be secured.

7. CONCLUSION

The purpose of this thesis was to understand the primary motivations of stakeholders involved in community gardening, as the main assumption is that human agency is key to functioning community gardens. Thus, conditions which enhance or undermine the fulfillment of human desires have an essential role in maintaining such initiatives. The assumption is that if these conditions are ensured, then gardeners' expectations are bound to be met. Beyond motivation, it is important to have the right capacities to build on or even develop. This might consequently contribute to realizing community gardens' multifunctional benefits in practice, tackle various challenges that cities face, and enhance resilience on a local and potentially on a wider scale. Therefore, research questions were aimed at understanding what makes community garden work as well as remain sustainable with a key emphasis on some key dimensions of motivations.

The literature review provided the foundation for addressing the research questions, guiding the research and the discussion. After a general introduction to community gardens, multiple motivations, barriers and enablers were presented along with an overview of different governance structures, capacity development and resilience building related to community gardens, followed by a review focused on Hungarian community gardens. Qualitative research involved interviews with the founder and gardeners, a review of internal documents, and desk research. The Environmental Stewardship Framework served as a foundation for analyzing results and addressing the research questions focusing on context, actions, outcomes, actors, capacity and motivation, which latter was complemented by the Self-Determination Theory.

While there are many nature-based solutions in the area, “Málnakert”, a community garden in Győr-Ménfőcsanak is the only one in Győr-Moson-Sopron County aligning with the community garden definition. Apart from a few exceptions, most of the other nature-based solutions, such as tree planting and raised beds, are top-down initiatives. Residents are generally interested in new community garden initiatives; however, their realization faces challenges in terms of secured land and citizens’ support (addressing RQ2 and RQ3). The findings revealed that “Málnakert” is similar to other Hungarian gardens in terms of structure. However, unlike other national initiatives, this garden was not developed through a top-down approach, but was founded by local NGO “Muszáj”, which still maintains the highest capacity among all stakeholders. The garden’s establishment was facilitated by land made available by private landowners, external funding to finance essential tools and human resources, including a professional gardener and coordinators dedicated to community building (addressing RQ3). In addition, best practices shared by other community gardens contributed to a smooth start, while the municipality provided access to water. The garden has two main phases in its operation, a first phase that involved external funding with solid access to capacity, and a second transitional period, when “Málnakert” aimed to become self-sustainable. Regarding actors, the NGO “Muszáj” played a role in all phases. Private landowners and the municipality have demonstrated a supportive attitude, while the immediate neighbors’ slight resistance has shifted to neutral acceptance (addressing RQ4).

Main motivations identified included organic food for personal consumption and connection to nature, with secondary motivations of releasing stress and socializing (addressing RQ1). A common pattern is that most gardeners had some sort of earlier experience with gardening either directly or through family members. The thesis highlights that ensuring supportive conditions for

fulfilling the three basic psychological needs – autonomy, competence and relatedness –, is key for strengthening motivation (Deci, Ryan, and Williams 1996). Currently, conditions for two of these needs, autonomy and competence, are highly supportive as individual plant cultivation is in focus, there is a freedom of choice what and how to plant and when to visit the garden, autonomous decision-making is in place and successful harvest reinforces their competence. However, fulfillment of the third need, relatedness, has received mixed perceptions, with a general higher focus on individual activities and mostly passive participation in community events. Mutual support in the form of watering each other's plants, exchanging plants and best practices, and coordinating common tasks work relatively well. In general, community bonding was stronger during the EU funding period when more capacity was available for this purpose. While the current motivation level is sufficient to allow practicing gardening and thus, fulfilling the primary motivation, many gardeners expressed their need to have better organization of community events, for example by a dedicated person similarly to the initial phase which obviously requires additional resources and capacity. In addition, the "Garden Use Contract" could include more expectations regarding community involvement to encourage higher participation, and detailed community tasks to ensure a greater sense of responsibility. Also, improving common infrastructure, such as building a compost toilet would potentially enhance social connections (addressing RQ5).

In general, the gardening opportunity is highly valued, with members showing a strong sense of ownership and competence. Resilience is present through the diversity of plants and members, and small challenges are effectively managed. Gradual environmental education is taking place, and given that individual plots cannot be neglected, gardeners continuously develop and practice their gardening skills, also by substantively building on their previous gardening experience.

Furthermore, a need arose to incorporate an educational aspect to teach children about the origins of food, and basic gardening skills. This might be a potential synergy with locally active school gardens fostering early interest in gardening and sustainability. All these skills and diversity might contribute to the gardeners' and garden's potential to remain resilient and build on these capacities (addressing RQ6).

Overall, the garden has strong foundations which supported a continuous capacity development. However, challenges regarding infrastructure, community building, and recommendation for youth educational program should be considered to strengthen the fulfillment of basic psychological needs and thus further enhance intrinsic motivation and even the relationship with stakeholders. Understanding motivations and challenges faced by participants, and continuously improving the garden's conditions to fulfill the basic psychological needs were revealed, which consequently would require additional capacity. This might potentially enhance the overall community gardening experience, ensure their long-term success and ability to adapt to changes and urban disturbances. Moreover, by fulfilling their potential to deliver multiple, diverse benefits, resilience of community gardens and their wider environment might be enhanced.

In terms of the future, all gardeners plan to continue their membership, and only in case moving to a family house with its own garden or having a more closely knit community garden opportunity would change this. Apart from the educational aspect, a broader mission was also articulated, wishing to establish community gardens in every city. The founder of "Muszáj" expressed their motivation to support other community gardens with knowledge. Thus, although there are a few community garden networks already in Hungary, their activity with adequate capacity could be further strengthened to make them more visible and potentially engaging more stakeholders.

As there is no single solution, each case contributes to better understanding of what maintains and advances community gardens. Beyond its conceptual contribution, this thesis filled a research gap in terms of its geographical focus. A case of a community garden in Hungary was explored in detail by applying a novel approach, combining the Environmental Stewardship Framework with an elaborated Self-Determination Theory focusing on motivations. With regards to future research recommendations, identifying the main factors necessary for making community gardens sustainable in the long-term and how each garden approaches capacity would deserve further study. This research should involve a transdisciplinary approach, engaging more stakeholders, and potentially applying mixed research methods to reach more people to gather in-depth information. Furthermore, establishing a scorecard to evaluate current and needed capacities, and how basic psychological needs are fulfilled to identify what elements should be strengthened. Building on this, understanding when and how to implement changes to sustain community gardens would be beneficial. Finally, since two community gardens in the city failed to start, a detailed investigation into reasons behind these failures and researching why other initiatives did not succeed could also shed light on the main challenges and obstacles faced by community gardening projects, particularly at the initial phase.

APPENDIX

Interview questions for gardeners

The interviews aimed to explore primarily motivations, social connections and learning experience with a few additional questions. These were guiding questions usually asked from everyone, however given semi-structured interviews were conducted, spontaneous and follow-up questions came up.

Introduction, benefits and motivations:

1. When and why did you join "Málnakert"? How did you hear about the opportunity?
2. What was your relationship with gardening or gardens before?
3. What expectations did you have when you joined, and what to extent were these fulfilled?
4. What is the most enjoyable thing about "Málnakert"?
5. How many hours a week do you spend in the garden on average, and on which days do you usually visit the garden?
6. What difficulties and challenges do you encounter every day in connection with gardening or the community garden in general?
7. How do you perceive the current operations? (Is there something you would like to change?)

Relatedness (social connections)

8. What do you think about the community of the garden? How has the garden community changed since you joined the garden?
9. Are there community events? If so, how often and what are they like?
10. How do you participate in community life? (Would you change anything about it?)
11. Do you keep in touch with anyone on weekdays, do you also meet outside the garden?
12. Regarding the common tasks, how does it work, what is your opinion about it?

Autonomy and competence

13. What did others learn from you? (Were there any instances where you were able to share your knowledge with other members of the community?)
14. What did you learn from the other members?
15. What helps you in gardening, where do you acquire your knowledge from?

Other

16. How far do you live from the garden? How accessible do you think the location is?
17. What do you think about the amount of the membership fee?
18. What do you experience about the support of the community garden, whether from neighbors, the municipality, or other actors?
19. In your opinion, what is the importance of the community garden in the district?
20. What are your future plans regarding the community garden?
21. Do you have any other comments that you feel are important to share?

REFERENCE LIST

Adams, David, Alister J. Scott, and Michael Hardman. 2013. 'Guerrilla Warfare in the Planning System: Revolutionary Progress towards Sustainability?' *Geografiska Annaler: Series B, Human Geography* 95 (4): 375–87. https://doi.org/10.1111/geob.12031.

Albert, Christian, Barbara Schröter, Dagmar Haase, Mario Brillinger, Jennifer Henze, Sylvia Herrmann, Sarah Gottwald, Paulina Guerrero, Claire Nicolas, and Bettina Matzdorf. 2019. 'Addressing Societal Challenges through Nature-Based Solutions: How Can Landscape Planning and Governance Research Contribute?' *Landscape and Urban Planning* 182 (February):12–21. https://doi.org/10.1016/j.landurbplan.2018.10.003.

Bársony Fanni. 2020. 'Városi közösségi kertek Magyarországon'. *Tér és Társadalom* 34 (1): 140–59. https://doi.org/10.17649/TET.34.1.3071.

Barthel, Stephan, John Parker, and Henrik Ernstson. 2015. 'Food and Green Space in Cities: A Resilience Lens on Gardens and Urban Environmental Movements'. *Urban Studies* 52 (7): 1321–38. https://doi.org/10.1177/0042098012472744.

Batty, Michael. 2008. 'The Size, Scale, and Shape of Cities'. *Science* 319 (5864): 769–71. https://doi.org/10.1126/science.1151419.

Bende, Csaba. 2016. 'A közösségi kertek, mint a nagyvárosi dzsentrifikációs folyamatok produktumai - A budapesti Leonardo kert esete.pdf'. *Településföldrajzi Tanulmányok* 2016 (2): 38–52.

Bende, Csaba. 2021. 'A magyarországi közösségi kertek társadalomföldrajzi vizsgálata'. PhD, Szeged, Hungary: Szegedi Tudományegyetem. https://doi.org/10.14232/phd.10983.

Bendt, Pim, Stephan Barthel, and Johan Colding. 2013. 'Civic Greening and Environmental Learning in Public-Access Community Gardens in Berlin'. *Landscape and Urban Planning* 109 (1): 18–30. https://doi.org/10.1016/j.landurbplan.2012.10.003.

Bennett, Nathan J., Tara S. Whitty, Elena Finkbeiner, Jeremy Pittman, Hannah Bassett, Stefan Gelcich, and Edward H. Allison. 2018. 'Environmental Stewardship: A Conceptual Review and Analytical Framework'. *Environmental Management* 61 (4): 597–614. https://doi.org/10.1007/s00267-017-0993-2.

Birol, Ekin, Györgyi Bela, and Melinda Smale. 2005. 'The Role of Home Gardens in Promoting Multi-Functional Agriculture in Hungary'. *EuroChoices* 4 (3): 14–21. https://doi.org/10.1111/j.1746-692X.2005.00012.x.

Bonow, Madeleine, and Maria Normark. 2018. 'Community Gardening in Stockholm: Participation, Driving Forces and the Role of the Municipality'. *Renewable Agriculture and Food Systems* 33 (6): 503–17. https://doi.org/10.1017/S1742170517000734.

Brooks, Jonathan, and Alan Matthews. 2015. 'Trade Dimensions of Food Security'. OECD Food, Agriculture and Fisheries Papers 77. Vol. 77. OECD Food, Agriculture and Fisheries Papers. https://doi.org/10.1787/5js65xn790nv-en.

Burger, Anna. 2012. 'THE FATE OF HORTICULTURE IN THE EAST CENTRAL EUROPEAN (ECE) TRANSITION COUNTRIES: A CASE STUDY OF HUNGARY'. *Acta Horticulturae*, no. 930 (March), 61–68. https://doi.org/10.17660/ActaHortic.2012.930.7.

Cabral, Ines, Sandra Costa, Ulrike Weiland, and Aletta Bonn. 2017. 'Urban Gardens as Multifunctional Nature-Based Solutions for Societal Goals in a Changing Climate'. In

Nature-Based Solutions to Climate Change Adaptation in Urban Areas, edited by Nadja Kabisch, Horst Korn, Jutta Stadler, and Aletta Bonn, 237–53. Theory and Practice of Urban Sustainability Transitions. Cham: Springer International Publishing. https://doi.org/10.1007/978-3-319-56091-5_14.

Cabral, Ines, Jessica Keim, Rolf Engelmann, Roland Kraemer, Julia Siebert, and Aletta Bonn. 2017. 'Ecosystem Services of Allotment and Community Gardens: A Leipzig, Germany Case Study'. *Urban Forestry & Urban Greening* 23 (April):44–53. https://doi.org/10.1016/j.ufug.2017.02.008.

Calvet-Mir, Laura, Hug March, Helena Nordh, Jeanne Pourias, and Barbora Čakovská. 2016. 'Motivations behind Urban Gardening, "Here I Feel Alive"'. In *Urban Allotment Gardens in Europe, Edited By Simon Bell, Runrid Fox-Kämper, Nazila Keshavarz, Mary Benson, Silvio Caputo, Susan Noori, Annette Voigt*, 1st Edition. London: Routledge. https://doi.org/10.4324/9781315686608.

Caputo, Silvio, Eva Schwab, Kostas Tsiambaos, Mary Benson, Hervé Bonnavaud, Neslihan Demircan, Tim Delshammar, Frederico Meireles, Nerea Morá, and Jeanne Pourias. 2016. 'Emergent Approaches to Urban Gardening'. In *Urban Allotment Gardens in Europe, Edited By Simon Bell, Runrid Fox-Kämper, Nazila Keshavarz, Mary Benson, Silvio Caputo, Susan Noori, Annette Voigt*, 1st Edition. London: Routledge.

Cepic, Slavica, and Jelena Tomicevic Dubljevic. 2017. 'Urban Community and Allotment Gardens: Research Trends and a Look Ahead'. *The Journal 'Agriculture and Forestry'* 63 (4). https://doi.org/10.17707/AgricultForest.63.4.20.

Cohen-Shacham, E., G. Walters, C. Janzen, and S. Maginnis, eds. 2016. *Nature-Based Solutions to Address Global Societal Challenges*. IUCN International Union for Conservation of Nature. https://doi.org/10.2305/IUCN.CH.2016.13.en.

Colding, Johan. 2011. 'Creating Incentives for Increased Public Engagement in Ecosystem Management through Urban Commons'. In *Adapting Institutions*, edited by Emily Boyd and Carl Folke, 1st ed., 101–24. Cambridge University Press. https://doi.org/10.1017/CBO9781139017237.008.

Colding, Johan, and Stephan Barthel. 2013. 'The Potential of "Urban Green Commons" in the Resilience Building of Cities'. *Ecological Economics* 86 (February):156–66. https://doi.org/10.1016/j.ecolecon.2012.10.016.

Deci, Edward L., Richard M. Ryan, and Geoffrey C. Williams. 1996. 'Need Satisfaction and the Self-Regulation of Learning'. *Learning and Individual Differences* 8 (3): 165–83. https://doi.org/10.1016/S1041-6080(96)90013-8.

Delshammar, Tim, Maria Partalidou, and Evans. 2016. 'Building Trust and Social Skills in Urban Allotment Gardens'. In *Urban Allotment Gardens in Europe, Edited By Simon Bell, Runrid Fox-Kämper, Nazila Keshavarz, Mary Benson, Silvio Caputo, Susan Noori, Annette Voigt*, 1st Edition. London: Routledge. https://doi.org/10.4324/9781315686608.

Dorst, Hade, Alexander van der Jagt, Rob Raven, and Hens Runhaar. 2019. 'Urban Greening through Nature-Based Solutions – Key Characteristics of an Emerging Concept'. *Sustainable Cities and Society* 49 (August):101620. https://doi.org/10.1016/j.scs.2019.101620.

Doyle, Gerard. 2022. 'In the Garden: Capacities That Contribute to Community Groups Establishing Community Gardens'. *International Journal of Urban Sustainable Development* 14 (1): 15–32. https://doi.org/10.1080/19463138.2022.2045997.

Dr. Kovács Pál Könyvtár és Közösségi Tér. n.d.-a. ‘Ménfőcsanaki Kertbarát Kör’. Accessed 12, June 2024. https://www.gyorikonyvtar.hu/kertbarat_kor.
———. n.d.-b. ‘Rendezvényeink’. Accessed 12 June, 2024. https://www.gyorikonyvtar.hu/aktualis-rendezvenyek.
Egerer, Monika, Susan Karlebowski, Felix Conitz, Astrid E. Neumann, Julia M. Schmack, and Ulrike Sturm. 2024. ‘In Defence of Urban Community Gardens’. *People and Nature* 6 (2): 367–76. https://doi.org/10.1002/pan3.10612.
Emilsson, Tobias, and Åsa Ode Sang. 2017. ‘Impacts of Climate Change on Urban Areas and Nature-Based Solutions for Adaptation’. In *Nature-Based Solutions to Climate Change Adaptation in Urban Areas*, edited by Nadja Kabisch, Horst Korn, Jutta Stadler, and Aletta Bonn, 15–27. Theory and Practice of Urban Sustainability Transitions. Cham: Springer International Publishing. https://doi.org/10.1007/978-3-319-56091-5_2.
European Commission. 2015. *Towards an EU Research and Innovation Policy Agenda for Nature-Based Solutions & Re-Naturing Cities*. LU: Publications Office. https://data.europa.eu/doi/10.2777/765301.
Folke, Article Carl, Steve Carpenter, Thomas Elmqvist, Lance Gunderson, CS Holling, and Brian Walker. 2002. ‘Resilience and Sustainable Development: Building Adaptive Capacity in a World of Transformations’.
Fox-Kämper, Runrid, Andreas Wesener, Daniel Münderlein, Martin Sondermann, Wendy McWilliam, and Nick Kirk. 2018. ‘Urban Community Gardens: An Evaluation of Governance Approaches and Related Enablers and Barriers at Different Development Stages’. *Landscape and Urban Planning* 170 (February):59–68. https://doi.org/10.1016/j.landurbplan.2017.06.023.
Glover, Troy D. 2003. ‘Community Garden Movement’. In *Encyclopedia of Community: From the Village to the Virtual World Edited by K. Christensen & D. Levinson*, 1:264–66. Sage Thousand Oaks, CA.
Glover, Troy D., Diana C. Parry, and Kimberly J. Shinew. 2005. ‘Building Relationships, Accessing Resources: Mobilizing Social Capital in Community Garden Contexts’. *Journal of Leisure Research* 37 (4): 450–74. https://doi.org/10.1080/00222216.2005.11950062.
Glover, Troy D., Kimberly J. Shinew, and Diana C. Parry. 2005. ‘Association, Sociability, and Civic Culture: The Democratic Effect of Community Gardening’. *Leisure Sciences* 27 (1): 75–92. https://doi.org/10.1080/01490400590886060.
Guitart, Daniela, Catherine Pickering, and Jason Byrne. 2012. ‘Past Results and Future Directions in Urban Community Gardens Research’. *Urban Forestry & Urban Greening* 11 (4): 364–73. https://doi.org/10.1016/j.ufug.2012.06.007.
Győr+. 2022. ‘A Polgármesterrel Együtt Kertészkedtek Az Idősotthon Lakói’. Accessed June 13, 2024. https://www.gyorplusz.hu/gyor/a-polgarmesterrel-egyutt-kerteszkedtek-az-idosotthon-lakoi/.
Győr Megyei Jogú Város. 2020. ‘A Babaligetből Indult Az Idei Faültetési Szezon’. Accessed June 12, 2024. https://gyor.hu/a-babaligetbol-indult-az-idei-faultetesi-szezon/.
———. 2020b. ‘Magaságyás a Város Szívében’. Accessed June 12, 2024. https://gyor.hu/magasagyas-a-varos-sziveben/.
Győr-Ménfőcsanak. n.d. ‘Győr-Ménfőcsanak Történelem’. Accessed 12 June, 2024. https://www.gyor-menfocsanak.hu/index.php/tortenelem.

Győrplusz TV. 2021a. ‘Beérett a Ménfőcsanaki Közösségi Kert’. Accessed June 9, 2024. https://www.youtube.com/watch?v=m02HEirkcdE.
Győrplusz TV. 2021b. ‘Közösségi Kert Nyílik Ménfőcsanakon’. Accessed June 9, 2024. https://www.youtube.com/watch?v=TJRtQm3CdEk.
Győrplusz TV. 2022a. ‘Bio és bő termés a csanaki közösségi kertben’. Accessed June 9, 2024. https://www.youtube.com/watch?v=XMsRHcTLnwk.
Győrplusz TV. 2022b. ‘Újraéled a Csanak Közösségi Kert’. Accessed June 12, 2024. https://www.youtube.com/watch?v=ulHlCP3hO20.
Hartig, Terry, Florian G. Kaiser, and Einar Strumse. 2007. ‘Psychological Restoration in Nature as a Source of Motivation for Ecological Behaviour’. *Environmental Conservation* 34 (04). https://doi.org/10.1017/S0376892907004250.
Holland, Leigh. 2004. ‘Diversity and Connections in Community Gardens: A Contribution to Local Sustainability’. *Local Environment* 9 (3): 285–305. https://doi.org/10.1080/1354983042000219388.
Homsy, George C., and Mildred E. Warner. 2015. ‘Cities and Sustainability: Polycentric Action and Multilevel Governance’. *Urban Affairs Review* 51 (1): 46–73. https://doi.org/10.1177/1078087414530545.
Ioannou, Byron, Nerea Morán, Martin Sondermann, Chiara Certomà, Michael Hardman, Theodosia Anthopoulou, Bruno Notteboom, and Giorgia Silvestri. 2016. ‘Grassroots Gardening Movements - Towards Cooperative Forms of Green Urban Development?’ In *Urban Allotment Gardens in Europe, Edited By Simon Bell, Runrid Fox-Kämper, Nazila Keshavarz, Mary Benson, Silvio Caputo, Susan Noori, Annette Voigt,* 1st Edition. London: Routledge. https://doi.org/10.4324/9781315686608.
Jacob, Michelle, and Cecilia Rocha. 2021. ‘Models of Governance in Community Gardening: Administrative Support Fosters Project Longevity’. *Local Environment* 26 (5): 557–74. https://doi.org/10.1080/13549839.2021.1904855.
van der Jagt, Alexander P.N., Luca R. Szaraz, Tim Delshammar, Rozalija Cvejić, Artur Santos, Julie Goodness, and Arjen Buijs. 2017. ‘Cultivating Nature-Based Solutions: The Governance of Communal Urban Gardens in the European Union’. *Environmental Research* 159 (November):264–75. https://doi.org/10.1016/j.envres.2017.08.013.
K. Lányi. 1999. ‘THE TRANSFORMATION OF AGRICULTURE IN HUNGARY IN THE NINETIES’. *Acta Oeconomica* 50 (1/2): 119–50.
Kabisch, Nadja, Niki Frantzeskaki, Stephan Pauleit, Sandra Naumann, McKenna Davis, Martina Artmann, Dagmar Haase, et al. 2016. ‘Nature-Based Solutions to Climate Change Mitigation and Adaptation in Urban Areas: Perspectives on Indicators, Knowledge Gaps, Barriers, and Opportunities for Action’. *Ecology and Society* 21 (2): art39. https://doi.org/10.5751/ES-08373-210239.
Kingsley, Jonathan ‘Yotti’, and Mardie Townsend. 2006. ‘“Dig In” to Social Capital: Community Gardens as Mechanisms for Growing Urban Social Connectedness’. *Urban Policy and Research* 24 (4): 525–37. https://doi.org/10.1080/08111140601035200.
Kirby, Caitlin K., Kathrin Specht, Runrid Fox-Kämper, Jason K. Hawes, Nevin Cohen, Silvio Caputo, Rositsa T. Ilieva, et al. 2021. ‘Differences in Motivations and Social Impacts across Urban Agriculture Types: Case Studies in Europe and the US’. *Landscape and Urban Planning* 212 (August):104110. https://doi.org/10.1016/j.landurbplan.2021.104110.

Kisalföld. 2021. ‘Tavasszal Nyit Győr-Moson-Sopron Megye Első Közösségi Kertje – Fotók a Ménfőcsanaki Parcelláról’. Accessed June 9, 2024. https://www.kisalfold.hu/helyi-eletstilus/2021/03/tavasszal-nyit-gyor-moson-sopron-megye-elso-kozossegi-kertje-fotok-a-menfocsanaki-parcellarol.

Közösségi Kertek. n.d.a. ‘Community Gardens & KÉK’. Accessed 10 May, 2024. https://kozossegikertek.hu/en/angol-oldal-1/.

———. n.d.b. ‘Kapuvári Közösségi Kert’. Accessed 13 June, 2024. https://kozossegikertek.hu/garden/kapuvari-kozossegi-kert/.

———. n.d.c. ‘Kertek’. Accessed 10 May, 2024. https://kozossegikertek.hu/kertek/.

———. n.d.d. ‘Répceszemerei Idősek Otthona Közösségi Kertje’. Accessed 13 June, 2024. https://kozossegikertek.hu/garden/repceszemerei-idosek-otthona-kozossegi-kertje/.

———. n.d.e. ‘Sziget – Kék Élőkert’. Accessed 13 June, 2024. https://kozossegikertek.hu/garden/sziget-kek-elokert/.

Krasny, Marianne E., and Keith G. Tidball. 2009. ‘Applying a Resilience Systems Framework to Urban Environmental Education’. *Environmental Education Research* 15 (4): 465–82. https://doi.org/10.1080/13504620903003290.

Maslow, A. H. 1943. ‘A Theory of Human Motivation.’ *Psychological Review* 50 (4): 370–96. https://doi.org/10.1037/h0054346.

McGlone, Pauline. 1999. *Food Projects and How They Work*. York: York Pub. Services for the Joseph Rowntree Foundation.

McPhearson, Timon, Nadja Kabisch, and Niki Frantzeskaki, eds. 2023. *Nature-Based Solutions for Cities*. Edward Elgar Publishing. https://doi.org/10.4337/9781800376762.

McVey, David, Robert Nash, and Paul Stansbie. 2018. ‘The Motivations and Experiences of Community Garden Participants in Edinburgh, Scotland’. *Regional Studies, Regional Science* 5 (1): 40–56. https://doi.org/10.1080/21681376.2017.1409650.

Meadows, Donella H. 1999. ‘Leverage Points: Places to Intervene in a System’. The Sustainability Institute.

Merriam, Sharan B., and Elizabeth J. Tisdell. 2015. *Qualitative Research: A Guide to Design and Implementation*. Fourth edition. The Jossey-Bass Higher and Adult Education Series. San Francisco, CA: John Wiley & Sons.

Muszáj Természetvédelmi Koordinációs Egyesület. 2020. ‘Bemutatkozunk! GYŐR-MOSON-SOPRON MEGYEI CIVIL TÉRKÉP’. Accessed June 12, 2024. https://6583128063.clvaw-cdnwnd.com/20a4cfacff1562a9b900bebd209d972d/200000178-366a1366a4/A5%20Bemutatkozunk.pdf?ph=6583128063.

———. n.d. ‘Megvalósult’. Accessed 14 June, 2024. https://www.muszajegyesulet.hu/megvalosult/.

Naturvation. n.d. ‘Cities - Győr’. Accessed 18 June, 2024. https://naturvation.eu/location/europe/hu/gyor.html.

Nyitott Kapu-Vár. 2020. ‘Bemutatkozunk’. Accessed June 13, 2024. https://www.tszszk.hu/bemutatkozunk.

Patton, Michael Quinn. 2002. *Qualitative Research and Evaluation Methods*. 3 ed. Thousand Oaks, California: Sage Publications.

Quested, Eleanor, Cecilie Thøgersen-Ntoumani, Hannah Uren, Sarah J. Hardcastle, and Richard M. Ryan. 2018. ‘Community Gardening: Basic Psychological Needs as Mechanisms to

Enhance Individual and Community Well-Being'. *Ecopsychology* 10 (3): 173–80. https://doi.org/10.1089/eco.2018.0002.

Reiss, Steven. 2004. 'Multifaceted Nature of Intrinsic Motivation: The Theory of 16 Basic Desires'. *Review of General Psychology* 8 (3): 179–93. https://doi.org/10.1037/1089-2680.8.3.179.

Ryan, Richard M., and Edward L. Deci. 2000. 'Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions'. *Contemporary Educational Psychology* 25 (1): 54–67. https://doi.org/10.1006/ceps.1999.1020.

Ryan, Richard M., and Edward L. Deci. 2017. 'Self-Determination Theory'. In *Self-Determination Theory: Basic Psychological Needs in Motivation, Development, and Wellness*, 3–25. Guilford Publications.

Ryan, Richard M., and Edward L. Deci. 2020. 'Intrinsic and Extrinsic Motivation from a Self-Determination Theory Perspective: Definitions, Theory, Practices, and Future Directions'. *Contemporary Educational Psychology* 61 (April):101860. https://doi.org/10.1016/j.cedpsych.2020.101860.

Sachs, Ashby, Marion Tharrey, Nicole Darmon, Katherine Alaimo, Arianna Boshara, Alyssa Beavers, and Jill Litt. 2022. '"To Me, It's Just Natural to Be in the Garden": A Multi-Site Investigation of New Community Gardener Motivation Using Self-Determination Theory'. *Wellbeing, Space and Society* 3:100088. https://doi.org/10.1016/j.wss.2022.100088.

Seidman, Irving. 2006. *Interviewing as Qualitative Research: A Guide for Researchers in Education and the Social Sciences*. 3. ed. New York: Teachers College Press.

Torok, Anna, Ágnes Neulinger, György Pataki, Fanni Bársony, and Orsolya Lazányi. 2020. 'Quality. Local. Social. What Else? – Which Factors Motivate Consumers to Participate in Alternative Food Networks in Hungary?' *Revista Iberoamericana de Economía Solidaria e Innovación Socioecológica* 3 (November). https://doi.org/10.33776/riesise.v3i0.4543.

United Nations Department of Economic and Social Affairs. 2019. *World Urbanization Prospects: The 2018 Revision*. Statistical Papers - United Nations (Ser. A), Population and Vital Statistics Report. https://doi.org/10.18356/b9e995fe-en.

Universitas-Győr Nonprofit Kft., Széchenyi István Egyetem Alkalmazott Fenntarthatóság Tanszék. 2023. 'Győr Megyei Jogú Város Önkormányzata | Fenntartható Energia És Klíma Akcióterv 2023'. Győr Megyei Jogú Város Önkormányzata. Accessed June 12, 2024. https://gyor.hu/easy-docs/652fda19b7e9a.

Universitas-Győr Nonprofit Kft., Széchenyi István Egyetem Környezetmérnöki Tanszék. 2021. 'Győr Megyei Jogú Város Klímastratégiája (2021-2030 Időszak)'. Győr Megyei Jogú Város Önkormányzata. Accessed June 12, 2024. https://gyor.hu/easy-docs/615ffdac205c3.

Urban Nature Atlas. 2021a. 'Atlas - Beekeeping in Audi Hungaria'. Accessed June 12, 2024. https://una.city/nbs/gyor/beekeeping-audi-hungaria.

———. 2021b. 'Atlas - School Garden of the Széchenyi István University, Apáczai Csere János Faculty'. Accessed June 12, 2024. https://una.city/nbs/gyor/school-garden-szechenyi-istvan-university-apaczai-csere-janos-faculty.

———. n.d.-a. 'Atlas Filtered for "Győr"'. Accessed 12 June, 2024. https://una.city/front-search/city/536.

———. n.d.-b. 'Urban Nature Atlas. Nature-Based Solutions. Community Gardens'. *Urban Nature Atlas. Nature-Based Solutions. Community Gardens.* Accessed 10 May, 2024. https://una.city/front-search/ecological_domains_tid/47.

Városi Kertek. n.d. 'Városi Kertek'. Accessed 10 May, 2024. https://www.varosikertek.hu/varosi-kertek-egyesulet/.

Walker, Brian, Crawford Stanley Holling, Stephen R. Carpenter, and Ann P. Kinzig. 2004. 'Resilience, Adaptability and Transformability in Social-Ecological Systems'. *Ecology and Society* 9 (2): art5. https://doi.org/10.5751/ES-00650-090205.