Exploring learning processes and social capital in community urban agriculture projects in Bogotá, Colombia

Lily Begg

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Swedish University of Agricultural Sciences, SLU
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Exploring learning processes and social capital in community urban agriculture projects in Bogotá, Colombia

Explorando procesos de aprendizaje y capital social en proyectos de agricultura urbana comunitaria en Bogotá, Colombia

Lily Begg

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Abstract

As the world's population becomes increasingly urban, the social, economic and environmental living conditions of city-dwellers are under pressure. High levels of pollution, lack of transport links, informal housing, unemployment rates and increasing inequalities are just some of the challenges that rapidly urbanising cities face. Urban and peri-urban agriculture (UPA) is being promoted in many of the world's cities as a solution to some of these problems. Through case studies of different cities, UPA is proving to be increasingly multifunctional in its ability to tackle a holistic range of economic, environmental and social challenges.

This thesis analyses the capacity-building effect of community UPA projects in Bogotá, Colombia, and aims to give an in-depth insight into the learning and skill-sharing processes at work. In a context where UPA is valued for its ability to provide food security and secondary income to citizens, this thesis takes a different approach and instead sheds light on the potential for UPA projects to empower citizens and develop social capital in disadvantaged communities. The data were collected through a mixed-methods approach with questionnaires, focus group interviews and observations performed in six urban farm projects across Bogotá. These data were triangulated with a semi-structured interview with a technical assistant and literature such as official government documentation, reports and research papers relevant to the thesis topic. An agroecological perspective, a social capital framework and a selection of learning theories were used to structure the investigation, to inform the collection of data and to analyse the results.

The findings reveal that social capital-building and learning processes flourish when farmers, knowledge networks, advisory services, institutions, governments and policies are well-connected and directed towards the same aims. The investigation also reveals the strengths and weaknesses in the capacity-building processes in the context of UPA in Bogotá, which can be used to inform and shape future policy and UPA programs both in Bogotá and in cities across the world. By embracing the potential that community UPA has to build more resilient and empowered communities, cities can shape their UPA programs more around the soft skills needed in such projects to ensure their long-term success and positive outcomes.

Keywords: urban and peri-urban agriculture (UPA), social capital, social learning, knowledge transfer, capacity-building, agroecology, community UPA, Bogotá, huerta

The ultimate goal of farming is not the growing of crops, but the cultivation and perfection of human beings.

Masanobu Fukuoka,
The One-Straw Revolution

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Abbreviations

SLU	Sveriges Lantbruksuniversitet
UPA	Urban and Peri-urban Agriculture
JBB	Jardín Botánico de Bogotá
FAO	Food and Agriculture Organisation
SDGs	Sustainable Development Goals
UN	United Nations
UNDP	United Nations Development Program
GIS	Geographic Information System

Foreword

When I began the Agroecology master's program at SLU in September 2020, I was driven by the conviction that agri*culture* was deeply cultural, an ancient act that has co-evolved alongside humans as we have traversed the tides of history hand-in-hand. Just as we have shaped the land around us to suit our needs, the crops we produce, the environments we produce in and the methods we use to farm have shaped the great diversity of human cultures across the planet. These past two and a half years at SLU have taught me so much more about the complex relationship that we have with food. It has been a rollercoaster of systems-thinking that has been enlightening and sometimes frustrating. The course cast us through a myriad of different perspectives and subjects, one minute considering to what extent cows experience depression and the next analysing knowledge systems in rural Uganda. The Agroecology master's has definitely helped me to broaden my perspective on food systems, and to always challenge what I think that I know.

Much of my time at SLU has been dedicated to founding and running a farm on campus with my course colleagues. The project allowed me to delve deeper into the natural phenomena around me as I became more aware of the subtle effects of our actions on our crops. By closely observing the effect of changing the irrigation patterns during the dry summer months, the early signs of nutrient deficiency in tomato plants and the beautiful diversity of insects hiding in the flower patch, I learned so much about the art of cultivating. At the same time, I became even more philosophical about the effect of this farm on *us*. The demanding physical and psychological aspect of running a farm business was changing us. We were no longer an ideological group of agroecology students; we were becoming more practical and realistic as each new obstacle that emerged knocked the wind out of our sails. Our friendships were stretched and forced to mature into truly collaborative and supportive bonds. The little farm quickly grew into an enthusiastic, passionate and diverse group of individuals who were united by a common love of producing sustainable and delicious food. I watched the farm blossom into a social space, a kind of tribe that was endlessly inclusive and creative. On my last night in Sweden in September 2022, I sat by the firepit on the farm, looking around at all the smiling, glowing faces of the friends that I had made there. Once again, I felt comforted by the idea that the crops we had set out to cultivate had themselves ended up cultivating a dedicated and loving group of humans.

The topic of this thesis came from this same endless curiosity about how the act of farming changes us, as individuals and as a society. I was inspired to investigate how knowledge-sharing and learning in agriculture can impact the future of communities. At the end of 2021 I was lucky enough to travel to Colombia for the first time to visit my partner who was working here. While staying in the capital, Bogotá, I came into contact with a network of urban farmers and I was blown away. The city is home to thousands of urban farmers, who have made it their mission to improve the environment, their health and their community through growing food. Here, agroecology thrives as a movement, uniting citizens of all walks of life and

guiding them towards a healthier, happier and more peaceful urban life. Actions such as exchanging native seeds or collecting banana skins for the compost pile are so much more than farming practices. For many, these actions are spiritual, life-giving and hopeful. One Sunday, I was invited to an agroecology network event in the south of the city, in the neighbourhood of Ciudad Bolívar. It was there, sitting next to an urban compost heap, drinking physalis tea from a communal *olla* (cooking pot), watching almost one hundred university students, professionals, families and pensioners discuss how urban agroecology had changed their lives, that I knew what I wanted to write my master's thesis about. This was agri*culture*, and it moved me very deeply.

With this master's thesis, I hope to successfully combine my passion for agroecology and agri*culture* with the skills that I have acquired from the master's program and the new experiences that I have had in Colombia. It has been a pleasure to complete this project, and I hope that my contributions will be of interest to the research community.

1. Introduction

This section introduces the identified problems in the studied system and describes the aims of the investigation. Four research questions are established and the investigation is considered within a wider scope in order to understand its potential significance on a local, regional and global level.

1.1 Problem statement

Community Urban and Peri-urban Agriculture (UPA) has existed since the beginning of human civilisation. It has been relied upon throughout human history as a response to economic crises, war and climate disasters. It is a bastion of resilience, not only for its ability to provide food to citizens but also for its ability to bring communities closer together through exchange (Van Veenhuizen, 2014). In 2022, UPA and community UPA are considered to be part of the solution to the social, ecological and economic issues created by the industrialised agricultural model that is the main model of production worldwide. Government agencies, NGOs, civil society and grassroots organisations around the globe are promoting UPA practices and are gradually building the knowledge-base and skill-sets required to implement UPA projects in the most sustainable way.

Specifically, community UPA has great social potential in cities worldwide. As urbanisation rates continue to sky-rocket, the social challenges that cities face in the 21st century are of a greater scale than ever. Ever-increasing social inequalities, access to affordable housing, unemployment, crime rates, access to food and education are just a handful of these social problems (De Bon et al., 2010). Decision-makers must strategise in order to reverse the current trend of increasing urban inequalities around the world. One identified path for improving the quality of life is through encouraging the implementation of urban agriculture initiatives. Grassroots community-based projects have been shown to increase perceptions of safety, trust and empowerment in disadvantaged neighbourhoods of the world's cities (Wanda & Lindsey, 2018; Kanosvamhira, 2019; Nazuri et al., 2022). Community urban farming projects have the additional bonus of solving some of the economic and environmental problems in these areas, too: increasing access to fresh foods, saving money on grocery expenditures and decreasing levels of air pollution through carbon sequestration. Many governments are increasingly understanding the multidimensional potential of community UPA to tackle many of the issues that prevail in urban environments.

However, research into community UPA in the Global South is still predominantly oriented around traditional measures of success, such as food security and secondary income provision, rather than amplifying the scope of investigation to

accommodate other social and economic benefits of the practice (Battersby & Marshak, 2013). Meanwhile, in the Global North, in countries such as France, Germany and the US, community UPA has explored the benefits of the practice on skill-sharing and community-building. These effects of community UPA have been heralded as essential 'civic tools' in such cases, as individuals build social as well as practical and intellectual skills through community-based farm work (McIvor & Hale, 2015). Research into the same topics in the Global South is much less abundant and in 2022, there is lacking data and evidence of the capacity-building effects of community UPA. The way in which research is skewed towards investigating food security and income generation has an effect on how policy is written in these regions; although these perspectives are of course of utmost importance, the wider benefits of UPA are being overlooked. As quantifiable measures of success, such as yield and profit, dominate how UPA is managed and implemented, the non-quantifiable benefits of the practice, such as effect on social cohesion, empowerment and sense of belonging, are disregarded.

More research is needed on the topic of capacity-building in community UPA in the Global South in order to understand the full potential of these social practices. A more in-depth understanding across different contexts will help to build a clearer strategy for how to implement and support UPA on a policy level. More holistic policies will ensure that the multi-functional potential of UPA is achieved, which in turn will make them more suited to respond to the various needs of the farms and communities that they serve.

This thesis will use existing theoretical frameworks for social capital and learning processes in order to investigate in depth how capacity is built in a selection of community urban farms in Bogotá, Colombia. It contributes to the burgeoning field of farmer-orientated research that investigates capacity-building in community UPA of the Global South.

1.2 Research questions

The overarching research question of this paper is: *What is the relationship between the different learning types and levels of social capital in community-driven farm projects?*

The following sub-questions have been developed to shape the data collection the analysis:

1. To what extent are the different learning types and processes occurring in the studied farm projects?
2. How do the strengths and weaknesses in social capital vary between farms and across different social groups (bonding, bridging and linking)?
3. What are potential solutions to the current weaknesses in the learning processes and social capital-building mechanisms of the studied farms?

The learning processes analysed in this thesis are social learning and knowledge transfer. These processes are identified as the two main means of capacity-building in the urban farms of Bogotá. Social capital is an outcome of successful capacity-building; a multidimensional concept that consists of the social relationships, shared norms, trust levels and empowerment of individuals and communities.

The assumption of this investigation is that the studied community UPA projects in Bogotá are effectively building social capital through different learning processes. The choice of the word "relationship" in the overarching research question is a conscious one: since the directionality between learning and social capital is difficult to prove, the aim of this thesis is to understand both how social capital is influenced by learning and how learning is influenced by social capital. The combination of these processes is what ultimately builds or decreases capacity in the communities. The hypothesis is that both social learning and knowledge transfer are crucial to building social capital and vice versa, but that certain weaknesses exist in the current system. By identifying both the strengths and weaknesses of the capacity-building processes in the case studied, it will be possible to suggest improvements to the studied system and indeed inform the implementation of community UPA projects in other cities.

1.3 Scope and significance

This thesis will investigate the capacity-building processes at work in a selection of six community urban farms in the city of Bogotá, Colombia. The empirical data will be gathered through questionnaires, interviews and observations conducted in the six urban farm groups and with a technical assistant who works with UPA in Bogotá. The number of studied cases was limited by the need to collect in-depth data in line with the multidimensional agroecological perspective, which necessitates a focus on social capital and learning processes. The timeframe was also a limiting factor, as the research was conducted abroad during the master's thesis semester in April 2022. Theoretical data will come from wider reading of scientific papers on capacity-building, social capital, learning processes, community UPA and agroecology. Government and media sources will provide context-specific information, such as demographic and historical facts. The analysis will subsequently be situated on the levels of the individual farmers, farming groups, technical assistants and the local municipality. It will not analyse UPA on a national or international level, but the findings will be contextualised in a national and global context. Since UPA is a worldwide practice, the findings of this thesis will be relevant to the development of policy and programmes for UPA around the world.

Much research on UPA has concluded that greater institutional support for such projects is necessary in order to maximise the social benefits for communities. Projects that are well-supported by local governments, facilitating access to land and discussing community challenges are often longer-lasting and wider-reaching

(Smit & Bailkey, 2006). In Bogotá, there has been increased institutional support since 2004 and especially since 2020 with the implementation of UPA-specific programmes, policies and funding. It is relevant to study the effect of this support on UPA projects and its potential to build community capital in the city. The case study of Bogotá is worth bringing to international attention, as lessons can be learned from it for the development of UPA policy around the world. Analysing the contexts in which social capital is built is relevant on a global level because of how community capacity has a spill-over effects into other areas of civic life, such as building relationships across societal power differentials, which empowers communities to shape their own futures (McIvor & Hale, 2015). Especially in the Global South context, where traditional measures of success in UPA are focused on food security and economic opportunities, expanding the knowledge base on community capacity-building will help shape more multi-dimensional UPA policies. Understanding the processes that build or diminish community capacity will help society on all levels, from decision-makers to citizens, to create and support contexts that build capacity. Finally, analysing learning processes will contribute to the literature about the role of advisors and social learning environments in such capacity-building contexts. These findings will have implications for the practitioners of community UPA as well as advisory services that assist them.

2. Context

This chapter establishes the context for the investigation. The role of UPA worldwide is discussed, followed by the context of Bogotá, Colombia and how different historical events, policies, institutions and citizens have shaped the reality of UPA in Bogotá.

2.1 Urban and peri-urban agriculture

This subsection considers UPA on a global level, describes the main characteristics of community UPA and outlines the paradigm fracture between UPA practices in the Global North and South.

2.1.1 UPA worldwide

Urban and peri-urban agriculture (UPA) is defined as agricultural practices that take place in and around cities that yield food and other outputs (FAO, 2022a). UPA can take many different shapes and have multiple functions. An urban 'farm' can be as small as a balcony garden in Sweden or as large as paddy fields in the suburbs of Kerala. An estimated 800 million people worldwide are involved in UPA and it is present in every city in the world (idem). UPA is a practice as old as human civilisation and has been a vital food source for people from the rooftop gardens of ancient Mesopotamia in 4000 BC to the 'chinampas' or floating crop islands of the Aztec city of Tenochtitlan (Dieleman, 2017; Urban Design Lab, 2022). During the First World War, city-dwellers in the West were encouraged to pick up their spades and start cultivating their own 'victory gardens' in an effort to win the war (Maltz, 2015). However, it was only in the 1990s that international organisations such as the United Nations (UN) have actively engaged with the important role of UPA in cities (Taguchi & Santini, 2019). Following the 1996 Conference on Housing and Sustainable Urban Development, the UN published its first report that highlighted the benefits of UPA, examined the challenges that it faced and proposed solutions for improving the practice worldwide. In 2022, agencies such as the Food and Agriculture Organisation (FAO) and the United Nations Development Programme (UNDP) promote the practices of UPA worldwide and assist cities in shaping policy and implementation programmes. The benefits of UPA are promoted as such:

UPA is a vital strategy for building the resilience of cities' food supply, reducing poverty and increasing employment, improving nutritional outcomes, and mitigating environmental degradation of urban spaces.
(Erwin, 2022)

The importance of UPA is also framed in terms of the Sustainable Development Goals (SDGs) and its contribution to goals 2, 3, 10, 11 and 13 (Hernandez & Manu, 2018).

Figure 2.1: *The SDGs relevant to UPA. Source: Hernandez & Manu, 2018.*

Despite these global organisations putting UPA on the agenda for sustainable development, unfortunately not all countries and cities prioritise it. Urban agriculture projects often exist in spite of a lack of supporting policy and legitimization (Halloran & Magid, 2013). On the other hand, countries such as Cuba have had urban agriculture high on the agenda for decades. The US blockade starting in 1962 forced the Cuban government to prioritise UPA, making Cuba one of the first countries in the world to develop an urban agroecology program (Chan & Roach, 2013).

The challenges that UPA faces worldwide are significant and appropriate support is needed for urban farmers to overcome them. The main challenges include food contamination, water availability, land tenure and productivity (Erwin, 2022). Despite the fact that UPA has been promoted for its potential to increase food security in urban neighbourhoods, many UPA settings suffer from low productivity (Altieri & Nicholls, 2018). This is mostly due to low-input systems and soil deficiencies. Lack of knowledge about urban growing methods has also emerged as a reason for low productivity (idem). In some urban areas, there is a risk of producing unsafe foods due to soil or water contamination (Battersby & Marshak, 2013). Urban farmers need the support of the municipalities in which they live in order to have a better chance at overcoming all of these hurdles. Research that investigates farmers' perspectives often comes to the conclusion that a more holistic range of obstacles and objectives needs to be acknowledged by local governments and taken into account when designing UPA programmes and

policies (Malan, 2015; Battersby & Marshak, 2013). Especially when it comes to land tenure, municipal support in leasing space is essential. When it comes to technical assistance, governments can also revolutionise the success of UPA projects: well-designed and well-managed urban gardens can be 15 times more productive in terms of total output than rural farms (Altieri & Nicholls, 2018). Tests for soil and water contamination are subsidised and provided by public services in some cities, which increases the food safety of UPA production.

2.1.2 Community UPA

Community UPA is defined as urban farming projects that are run by a group of people who live in the same neighbourhood or city (Smit and Bailkey, 2006). Although they are not always location-determined, it is the case for the majority of community UPA projects. In the context of this research paper, community UPA occurs on areas of land which are owned by the local municipality and are intended for shared public use. These farms are located in urban and peri-urban areas and consist of both in-soil and above-soil cultivation techniques. Community UPA takes place both in the Global North and South and usually has the same aims as individual/household UPA: food provision, connection to rural roots and identities, income generation and local environmental improvement. However, community UPA has additional goals and consequences that are of a social nature: community cohesion, creating spaces for socialising, social integration and organisation (Smit & Bailey, 2006; Nazuri et al., 2022; Gallaher et al., 2013). The very nature of community UPA involves citizens having to self-organise to coordinate activities as simple as a watering schedule or tasks as complex as writing applications to city planning departments. These skills build capacities in individuals and communities which can then feed into other areas of civic life. Capacity-building is defined as: "the process of developing and strengthening the skills, instincts, abilities, processes and resources that organisations and communities need to survive, adapt, and thrive in a fast-changing world" (UN, 2022). Crucially, capacity is best built from within, by those who are benefitting from the process. The processes by which capacity is built are long-term and do not rely upon external forces to be maintained: it is a tool of independence. The role of capacity-building in community UPA has been recognised for decades and researchers have used the term 'food democracy' to refer to the civic skill set that community urban farmers build through their projects (McIvor & Hale, 2015). This kind of capacity-building is especially important to recognise in contexts where inclusion, integration or female empowerment is low, or where crime and violence divide neighbourhoods, as it can create opportunities for inhabitants. Community farms have become part of the strategy for some NGOs to combat youth delinquency: groups of community farms in San Francisco provide youths with alternatives to drugs and violence (Ferris et al., 2001) and similar schemes are emerging in the Colombian city of Cali.

Community UPA therefore has many purposes beyond food security and income provision. Proponents of community UPA often refer to this multifunctionality as a "cheap producer of a public good" (Moustier & Danso, 2006) for this reason. Not only does community UPA result in quantifiable deliverables, such as money saved

on grocery shopping or kilos of food produced, but also to the soft social and political skills that communities rely on for their survival.

2.1.3 The North-South divide

Despite the coining of terms such as 'food democracy' and the research that has been published on the role of community UPA in inclusion, integration and capacity-building, there is still an overwhelming focus of this research on the Global North. Community UPA research in the Global South is much more concerned with its role in food security and income generation; and quite justifiably so, as rates of malnourishment and poverty are far higher in these regions (Battersby & Marshak, 2013). The efforts of governments worldwide to meet the 2030 SDGs increases the research, policy and investment concentration on these topics in the Global South. Policies supporting UPA in cities such as Kuala Lumpur and Cape Town place food security and income generation as main objectives of their UPA programmes and often directly quote the SDGs (Nazuri et al., 2022; Kanosvamhira, 2019).

Although it cannot be ignored that food insecurity and poverty are serious threats to human rights in cities, capacity-building is nonetheless a "survival skill" just as necessary to these communities as to those in Europe and the US. Urban communities in the Global South share many of the social needs of their Northern counterparts: the desire to self-organise, to make their voices heard, to feel empowered and to strengthen bonds between their members. This dichotomy of how community projects are valued differently in the North versus the South skews governments' measures of success. Since the focus in the Global South is so heavily oriented around food security and income provision, other measures become deprioritised and forgotten, which can be to the detriment of the program. A well-known and identified challenge for community UPA is having a sufficient harvest for all of the participants to enjoy (De Bon et al., 2010). Once the produce of the week has been divided up amongst participants, there is hardly enough produce for each family to make a whole meal. When reports come back showing that UPA activities have low productivity and a minor effect on household income, there is the perception of failure. However, these measures do not tell the whole story: they do not measure the effects of neighbours sharing harvest, cooking together, organising a planting calendar, propagating seeds etc. From the perspective of the urban farmer, the process is oftentimes more important than the result (Battersby & Marshak, 2013) and many continue farming urban land for decades despite low productivity. The social benefits of community farming, such as new friends, parties and farm-cooked meals, are often greater drivers for the farmers than the economic promises of UPA (Dunn, 2010).

Much research has concluded that a more integrated approach to UPA policy around the world with broader measures of success - social, economic and environmental - is needed (Ferris et al., 2001; Battersby & Marshak, 2013). When factors such as female empowerment, social integration, skill-sharing and knowledge transmission are considered just as valuable as productivity and

profitability, UPA policy more closely reflects the reality and needs of urban farmers.

2.2 Bogotá, Colombia

Bogotá is the capital of Colombia and in 2022 it counted with a population of 11.4 million people living in the metropolitan area, making it the 29th most populated city in the world (Population Stat, 2022). Bogotá is positioned at 2,600m above sea level on an altiplano in the Andes mountain range, which makes it one of the highest cities in the world. The city is divided into 20 localities over an area of 1,500km^2.

Bogotá, like many Latin American cities, has faced rapid urbanisation since the 1960s. Five decades of internal armed conflict and guerrilla occupation in rural areas has led to massive rural-urban migration. This migration has been further accelerated in Colombia due to the decline of the agricultural sector, rural poverty and the concentration of land ownership (UNFPA, 2007). Furthermore, in recent years, migration from Venezuela has impacted population growth in the capital. An estimated 2.5 million Venezuelan migrants are based in Colombia, 20% of which (500,000) are living in Bogotá (Migración Colombia, 2022). All of these factors have led to an increase in Bogotá's population from two million in 1972 to 11.4 million in 2022 (Population Stat, 2022). This rapid urbanisation has put enormous pressure on the city's ability to provide infrastructure and employment for its citizens and thus much of the city has developed informally. It has been estimated that more than 50% of the city has been developed with informal practices (Martin-Molano, 2000) and that the majority of these inhabitants are internally displaced victims of conflict. Although various mayors and governments have attempted to even out inequalities, stark differences remain. However, the informal settlements of Bogotá have been seen as a demonstration of self-initiated practices, where rural traditions and initiatives have been brought to urban areas as a way for displaced internal migrants to connect to their past (Hernández-García & Caquimbo-Salazar, 2018).

***Figure 2.2**: Position of Bogotá, Colombia. Source: Maps Database Source, 2020*

***Figure 2.3**: A map showing the 20 localities of Bogotá. Source: Tierra Colombiana, 2023*

2.2.1 Socio-economic strata

The 'Estratificación socioeconómica' (socioeconomic stratification) system in Colombia is a nation-wide metric used to assess the economic capacity of

residential properties (DANE, 2022). It is an indirect indicator of income, as individuals who reside in the same building are classified in the same stratum. Often, the socio-economic stratum of a building is similar to the other buildings on the same street, but it is not necessarily the case. The strata are graded from 1-6 and are defined as such:

Table 2.1: *The Colombian stratification system. Source: DANE Gobierno de Colombia, 2022.*

Stratum	**Percentage of Colombian population**	**Characteristics**
1. Low-low	15.9%	Properties have significant deficiencies in the quality of infrastructure and public services. Its inhabitants usually have a high level of monetary poverty.
2. Low	28.9%	Properties have basic or adequate infrastructure to guarantee a minimum quality of life. Individuals suffer from moderate levels of monetary poverty.
3. Low-average	34.4%	They usually see their basic services supplied and consist of middle class families with a certain degree of vulnerability. They are often old neighbourhoods that have gone through a gentrification process or that adjoin stratum 1 and 2 neighbourhoods.
4. Average	11%	The families that inhabit these properties usually consist of professionals who earn salaries to enjoy a comfortable standard of living without suffering necessities.
5. High-average	7.1%	In these sectors there are high-level private schools, restaurant squares, parks with spaces such as tennis courts and shopping centres. The families that inhabit this stratum usually enjoy high incomes and have several vehicles.
6. High	2.7%	This stratum usually categorises condominiums located in rural areas with wide recreational spaces, their own streets and luxury apartment buildings. The wealthiest families are located in this stratum.

The stratification system is used to charge residential public services differently by strata, allocate subsidies and set local tax brackets (DANE, 2022). It is also a commonly used economic indicator for other services such as health and education, and individuals are accustomed to sharing their stratum bracket with authorities and private individuals. In this investigation, socio-economic stratification data will be collected from every participant in the study and will be taken into consideration in the discussion.

2.3 UPA in Bogotá, Colombia

As of 2023, there are 2,555 registered urban farms in Bogotá (Jardín Botánico de Bogotá, 2023). The urban farms in Bogotá are known as *huertas*, and the term will appear frequently throughout this thesis. The first huertas in the city date back to the 1960s, when mass rural-urban migration started. UPA activity in Bogotá can take the form of gardens on balconies, terrasses, rooftops, courtyards, roadsides, school yards, parks, abandoned building sites, private green spaces and public areas. The majority of these farms are managed privately by individuals or families for personal consumption (Hernández-García & Caquimbo-Salazar, 2018; Jardín Botánico de Bogotá, 2023). Community-organised UPA farms are slightly less numerous, but generally occupy larger spaces in public areas. As Figure 2.4 shows, community farms account for 10.88% of projects in Bogotá.

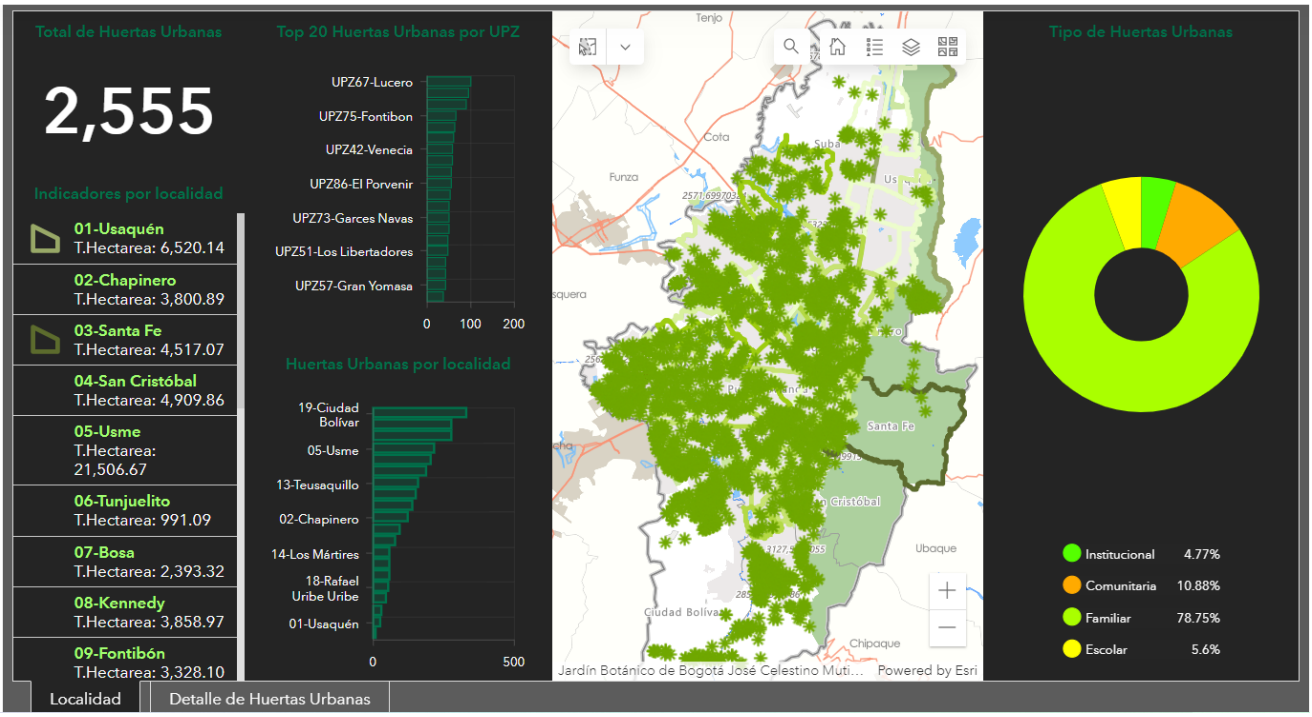

Figure 2.4: *GIS directory and map of all registered urban farm projects in Bogotá. Source: Jardín Botánico de Bogotá, 2023 © Jardín Botánico de Bogotá*

One challenge that UPA in Bogotá faces is a changing climate. The climate is described as a moderate oceanic climate, with an average annual mean temperature of 14.5 degrees Celsius (Weather and Climate, 2022). On average, there is 1020 mm of rainfall each year. The year is characterised by two dry seasons and two wet seasons, known as summer ("verano") and winter ("invierno"). However, in recent years, the dry seasons have become increasingly dry. This has presented a challenge to many urban farms, as most rely on rainwater irrigation. During the summer months, there is not enough rain to supply farms and the yield suffers greatly. Some

farms are able to invest in rainwater collection systems, but most cannot cover this cost.

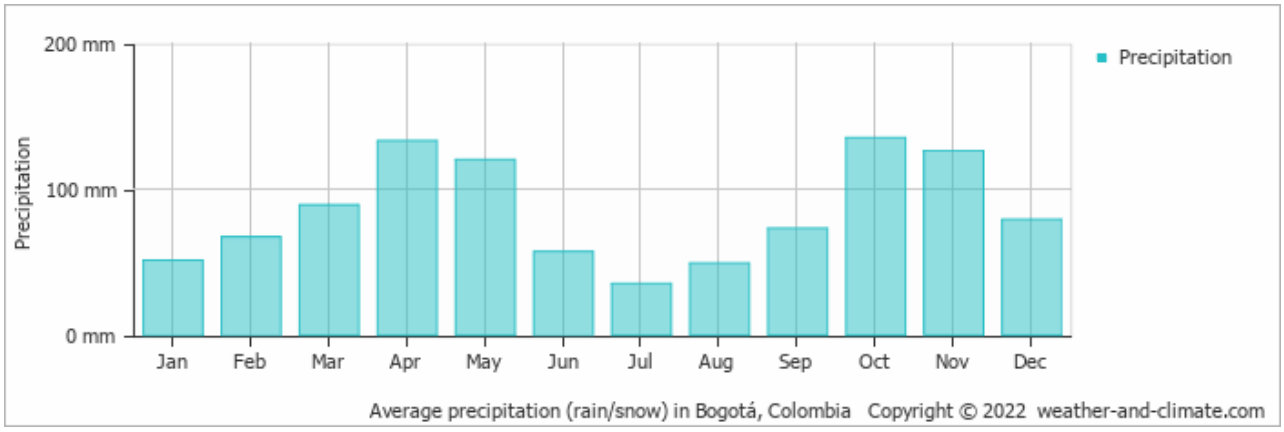

Figure 2.5: *Average annual precipitation in Bogotá. Source: Weather and Climate, 2022*

Previously, a challenge that urban farms faced was lack of municipal support. Before 2004, there was no public policy or programme that recognised or supported the existence of urban farms. In the previous century, many urban farm projects were brought to an end mostly because of land use change. Because of the rapid urbanisation of the city, green spaces which used to characterise fringe neighbourhoods such as Bosa, Suba and Ciudad Bolívar, were developed. However, in 2004, urban agriculture was included in a development plan for Bogotá published by the city's municipal office. In the protocol entitled 'Bogotá without indifference: a social compromise against poverty and exclusion', urban agriculture is mentioned:

Networks of producers and consumers and the potential of urban and ecological agriculture as a socio-environmental alternative will be promoted.
(Alcaldía Mayor de Bogotá, 2004)

After this initial inclusion of UPA in Bogotá's public policy, many more protocols and development plans were released over the years. The main government bodies responsible for overseeing support and development of urban agriculture came to be the Jardín Botánico de Bogotá (Bogotá's Botanical Gardens) and the Secretaría del Ambiente (Ministry of Environment). More of this will be discussed in the subsequent section 2.3.1.

Finally, a key characteristic of UPA in Bogotá in 2022 is the formation of several agroecology/urban farm networks. These networks ("redes") meet regularly to exchange ideas about farm practices, to exchange seeds ("el trueque") and to organise events and workshops. Some of the networks have a political role and organise marches and protests, campaigning for the right to local, healthy food and against the agrochemical industry. Thanks to online platforms such as 'Bogotá es

mi huerta' (Bogotá is my urban farm), social media and other digital networks, producers in Bogotá are well-connected.

Figure 2.6: *A photograph of one of Bogotá's agroecology network banners, taken at an event in February 2022. Source: own photo*

2.3.1 El Jardín Botánico de Bogotá

The Jardín Botánico de Bogotá (JBB), is a public institution that is responsible for research, conservation and education about ecology in Bogotá, with an emphasis on the flora of the altiplano and páramo that surround the city (Jardín Botánico de Bogotá, 2022a). It was founded in 1955 by the priest Enrique Pérez Arbelaez and is located in the Engativá neighbourhood of Bogotá. Since the beginning of the 21st century, the institution has become increasingly involved in climate and sustainable development research, policy writing, implementation and education. Their aim is to become a worldwide leader in research regarding climate change adaptability, ecosystem restoration and urban sustainability in the high Andes region. The botanical gardens are open to the public and they regularly organise workshops, events, markets, conferences and tours. The gardens boast a collection of 46,645 plant species, 5,000 of which are orchids (Jardín Botánico, 2022a). The gardens are currently rated as the 12th most popular tourist attraction in Bogotá (Tripadvisor, 2022).

Since the 2004 development plan 'Bogotá without indifference', the JBB has had the official assignment of assisting and supporting UPA projects in the capital. This assistance started out as workshops and events held in the botanical gardens to educate citizens about urban agriculture. After 2004, numerous agreements and

protocols were signed in order to increase funding and implementation of UPA in Bogotá. In 2015, a UPA programme in Bogotá was officially institutionalised:

"District Agreement 605 of 2015 By which the guidelines are formulated to institutionalise the Urban and Periurban Agroecological Agriculture Programme in the city of Bogotá."
(Concejo de Bogotá D.C., 2015)

This programme has become a reference in Latin America for UPA programs as few cities have developed such extensive programmes. According to the JBB's webpage, the UPA programme has three main axes:

1. ***Technical assistance in urban agriculture***. *"Technical assistance activities in agroecological techniques and technologies. Promote the processes of application of knowledge in urban and peri-urban agriculture for the implementation of huertas and the promotion of agrobiodiversity, through the accompaniment, advice and monitoring of the application of agroecological techniques in practice of agriculture, to ensure production, crop health, inputs and products."*
2. ***Training***. *"With the aim of diversifying food patterns and increasing the use of flora species with sustainability criteria, the Urban Agriculture project develops its training and education processes aimed at the identification, cultivation and consumption of non-traditional plant species, which have characteristics of interest (including high nutritional value, food, medicinal and industrial uses). This places them as promising Andean native species, which require recognition of their cultivation and uses. Within the training processes, specific modules are established for the implementation of farms, planting and propagation, identification of soils and substrates to be used, integrated management of the farm in plant health issues, harvesting, transformation and conservation processes. All this among other topics are executed through theoretical-practical workshops for the promotion of agriculture."*
3. ***Strengthening of urban and peri-urban farms***. *"The strengthening of gardens begins with the initial technical assistance visit where the technician or professional determines what supplies (organic inputs, tools, etc.) a gardener requires to improve the production process of their garden. To this end, the JBB delivers some basic urban agriculture kits according to the type of garden, whether home or community, considering technical criteria such as the implementation of gardens on hard or soft soils, lots, patios or gardens, number of participants and other aspects."*

(Jardín Botánico de Bogotá, 2022)

The programme suffered from some financial struggles around 2016, which slowed down the progress of the UPA program. However, since the current mayor, Claudia López Hernández, was elected in 2019, the programme has again been prioritised and invested into. Perhaps the most important public policy decree supporting UPA was published in 2020:

Resolution No. 361 of December 30, 2020 "By which provisions are established regarding the regulation of urban and peri-urban agroecological agriculture activity in the public space of the Capital District of Bogotá, regulated by Decree 552 of 2018."
(Jardín Botánico de Bogotá, 2020)

This resolution protects the right of community huertas to legally occupy public space. Gardeners must apply to the municipality for a UPA permit, with a description of how they intend to run the community project. The municipality must consider whether the project will contribute positively to the environment and to its neighbours (Jardín Botánico de Bogotá, 2020). Once the permit is signed and a farm is registered with the municipality, it is legally much more difficult to remove the farm as long as the project's participants are active. The agreement was written as a result of the large numbers of urban farmers who struggled to defend their gardening practices in public spaces against competing interests. The Jardín Botánico de Bogotá and the District Ministry of Environment (DME) are the two government bodies that manage the registry of UPA projects in the public space.

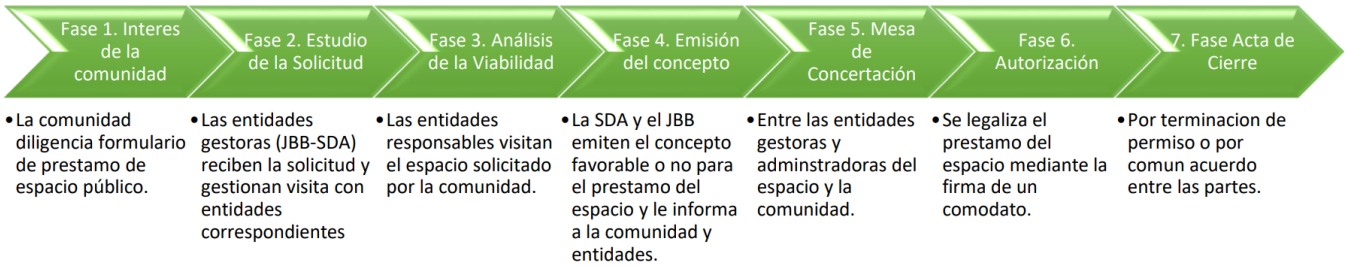

Figure 2.7: *The process for requesting space for UPA in Bogotá. Source: Jardín Botánico de Bogotá, 2020. Translation into English is in the paragraph below.*

Phase 1. Declaration of interest of the community
The community submits a form for borrowing public space.
Phase 2. Evaluation of the request
The managing entities (JBB-DME) receive the request and arrange a visit with corresponding entities.
Phase 3. Viability analysis
The responsible entities visit the space requested by the community.
Phase 4. Issuance of the concept
The DME and the JBB issue a concept note, in favour or not, for the borrowing of the space and informs the community and the entities.
Phase 5. Consultatory roundtable
Roundtable between the managing and administrating entities of the space and the community.
Phase 6. Authorisation
The loan of the space is legalised by the signing of a commodatum.

Phase 7. Closing

By termination of the permit or by common agreement between the parties.

In 2022, the JBB is the main source of technical support and knowledge for urban farmers. It employs in total 70 technical assistants who work across all 20 localities of the city. Many of these technical assistants are agronomists with expertise in agroecology. These assistants provide training, workshops, advice and resources such as soil, seeds, young plants and tools to any group of gardeners who apply for their help. The service is entirely free for the gardeners and indiscriminate in which kind of project they support, from the smallest balcony garden run by one individual to the biggest community garden occupying an entire public park. Between 2020 and 2024, 15.8 billion Colombian pesos of public funds are to be invested into the program via the JBB; around 3 million euros (Alcaldía Mayor de Bogotá, 2021). In the context of this study, the JBB will be the main reference for technical advice and knowledge transfer, as it is the most commonly used source of advice for urban farmers in Bogotá. This paper will most often refer to the institution using the acronym 'JBB', and occasionally as the 'Jardín Botánico'.

2.3.2 Rutas agroecológicas

One of the activities that the JBB runs in collaboration with Bogotá's urban farmers are the 'rutas agroecológicas', or 'agroecological routes'. These routes are open to the public and visitors pay a fee to be taken on a tour through the huertas of a certain neighbourhood (JBB, 2022c). The tour not only consists of farm visits, but also of educational activities and workshops hosted in each farm on the route. The JBB launched this project with the aims of increasing opportunities for secondary incomes for farmers, boosting social organisation of farm groups and encouraging the educational potential of urban farms on the topics of environment and health. One of the farm groups in this study was the initiator of the first ruta agroecológica and its role in knowledge-sharing capacity-building will be discussed in this paper.

3. Theoretical frameworks

This chapter describes the three main theoretical pillars that have shaped this investigation: agroecology, social capital and learning processes (Figure 3.1). These three theoretical pillars have been selected based on their effectiveness in informing the research questions, achieving the aims of this thesis and their suitability to the context of the investigation. This chapter will explain and justify these choices.

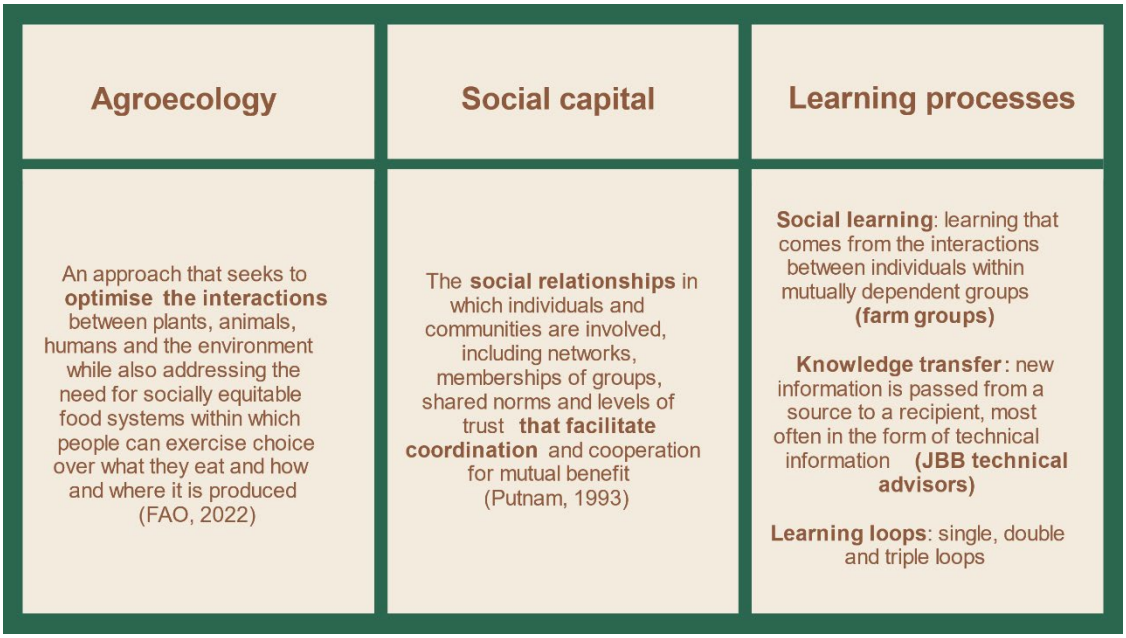

Figure 3.1: *The three theoretical pillars of this investigation: Agroecology, social capital and learning processes. Source: own graphic, contains references to authors listed in the bibliography*

3.1 Agroecology

Agroecology is the basis of the theoretical structure of this thesis. It is a holistic perspective that encompasses the ecological, socio-political and practical dimensions of the food system. The FAO defines agroecology as an approach that seeks to "optimise the interactions between plants, animals, humans and the environment while also addressing the need for socially equitable food systems within which people can exercise choice over what they eat and how and where it is produced" (FAO, 2022b). Due to its holistic vision, agroecology is widely recognised as a science, a movement and a practice (Wezel et al., 2009). Researchers, practitioners and citizens worldwide engage with agroecology in different ways: from researching the beneficial effects of intercropping and farmers

diversifying their cultivation systems for more stable income, to citizen protests against the agro-chemical industry. Placing this work within the scope of agroecology contributes important aspects to both the form and content of the study.

In terms of the form, an agroecological research approach encourages a mixed methodology approach. What are traditionally separated as natural and social science methods are combined in the agroecological approach in the pursuit of painting a holistic, transdisciplinary picture of the studied topic (Ruiz-Rosado, 2006). This paper will use both quantitative and qualitative methods to collect and analyse data in order to generate a comprehensive understanding of social capital-building in community UPA in Bogotá. In terms of content, the role that agroecology plays in driving community UPA is central. Practitioners and proponents of UPA worldwide have integrated the principles of agroecology into the implementation of urban agriculture, such as food sovereignty, nutrient cycling, complex rotation systems and the creation of local food circuits. Worldwide, rapid urbanisation has led to the phenomenon of cities becoming intensely demanding on their surrounding environment, as the consumption needs of millions of people require thousands of tonnes of food to be produced and transported every day (Altieri & Nicholls, 2018). Furthermore, distribution inequality in cities leads to 'food deserts' and poor access to fresh and healthy ingredients in low-income neighbourhoods (Krishnan, 2016). UPA provides an alternative to this phenomenon as citizens take food access into their own hands by producing fresh food at low cost. It has been estimated that UPA could supply between 30% and 100% of vegetable demand in cities around the world (Siegner et al., 2018). For example, in 2018, the highly productive UPA systems in Dar es Salaam supplied 90% of the city's leafy vegetable consumption (Altieri & Nicholls, 2018). Furthermore, UPA performs many ecosystem services in cities, such as increasing insect biodiversity, CO_2 sequestration and cooling down heat islands (idem). Most often, UPA in developing countries is performed with few inputs and so the use of pesticides and fertilisers is rare; rather, complex cropping systems and rotations act as the main protection against pests. All of these characteristics of UPA resonate with the social, economic and ecological dimensions of agroecology, and so the term 'urban agroecology' is often used interchangeably with UPA.

In the context of Bogotá, Colombia, the links between UPA and agroecology are explicit. The JBB describes the technical assistance they provide as 'urban agroecology' (JBB, 2022b). The UPA knowledge-sharing networks that exist in the city are referred to as 'agroecology networks' and the markets that are hosted for UPA producers are called 'agroecology markets'. However, on the wider institutional level, Colombia only established a national strategy to promote agroecology in 2021, with the introduction of the 'law on agroecology' (Cámara de Representantes, 2021). This law forms a basis for the scaling-up of agroecology in both rural and urban agriculture in Colombia, which will be consolidated by the creation of a new commission in the year 2023.

Finally, the agroecological perspective is a relevant theoretical basis due to the investigation's intention to broaden understandings of the multifunctional benefits of UPA in the Global South. Traditional measures of success in the policies of this

region have been criticised for their narrowness; engaging with a more holistic range of social, economic and environmental benefits will reveal the true potential of UPA (Battersby & Marshak, 2013). An agroecological approach opens up the researcher to a form of systems-thinking, where many different factors are taken into account in order to better understand the whole picture (Checkland, 1999). The holistic, agroecological perspective therefore justifies the choice of the following multidimensional framework on social capital to investigate the extensive effects of capacity-building in Bogotá's community UPA projects.

3.2 Social capital

Social capital theory has been chosen as the primary analytical framework for this paper, as it allows for the analysis of linkages between community, capacity-building, individuals and institutions. The impacts of UPA on social capital have been extensively explored in the Global North context (Van Veenhuizen, 2014; Wanda & Lindsey, 2018; McIvor & Hale, 2015) and this paper intends to extend this body of work into the Global South context. Social capital theory was first developed in the field of sociology, to examine the impact of human relationships on society. The political scientist Robert Putnam (1993 & 2000) investigated 'communities of knowledge' through social capital theory, and sociologists such as James Coleman (1988) used the theory in the area of education. The definition of social capital has been expanded and elaborated upon in many different contexts, but this study will adopt one of the most widely accepted definitions of social capital:

The social relationships in which individuals and communities are involved, including networks, memberships of groups, shared norms and levels of trust that facilitate coordination and cooperation for mutual benefit (Putnam, 1993).

Three different social groups where social capital exists have been developed in the literature: bonding, bridging and linking (Putnam, 2000). These social groups define the social circles and groups which an individual belongs to within society. Within the context of UPA, these social groups have different impacts on the knowledge and resources that urban farmers have access to. The three social groups are defined as such:

Bonding: *the building of relationships between community members in homogenous groups. For example, community members participating in the same project, attending the same church or socialising in the same circles.*

Bridging: *building communication between distinct groups in the same community. These members do not know each other as they engage in different activities and do not socialise in the same circles.*

Linking: *creating links to institutions and organisations outside of the community, or with other communities. These are defined as extra-communitarial relationships.* (Kanosvamhira, 2019)

Developing social capital in all three social groups is important for individuals and groups to obtain different types of information and relationships. Developing the bonding level brings community members closer together. Activities such as community theatre productions, urban farms, neighbourhood watch groups and book clubs all develop the bonding level. These relationships give individuals access to local resources such as knowledge from a neighbour, support and friendships. Developing the bridging level trains cooperation skills, as reaching individuals from different social groups requires more organisation and communication. This level develops trust between individuals who would not necessarily be associated, despite living in the same neighbourhood. Having a well-developed bridging level leads to more cohesive neighbourhoods where trust between neighbours is high (Forrest & Kearns, 2001). Finally, developing the linking level leads to a greater connection between individuals and the institutions around them. Developing this level requires individuals to feel as if these institutions support them and have their best interests as priority. Strong relationships on this level can open up many opportunities to citizens: training, job opportunities and even policy development. Much research has concluded that the onus is on the institutions to develop this level and earn the trust of their citizens (Nieman, 2006). In this thesis, all three levels of social capital will be investigated. Often, bridging and linking will be grouped together for the sake of comparing in-farm relations and external farm relations.

The concept of social capital must also be broken down into more specific indicators in order to be investigated in the context of research. Many researchers have attempted to define the nature of social capital, and how exactly it impacts the individual and communities. Social capital is often explored through concepts such as trust, empowerment, norms and networks (Falk & Harrison, 1998). Depending on the research context, different indicators of these concepts are used. For example, empowerment can be investigated by asking individuals whether they feel as if they have a voice in their community, and whether they feel confident to use it. In this research paper, a social capital framework will be borrowed from two researchers in urban studies: Ray Forrest and Ade Kearns (2001). They have defined eight different domains of social capital which can be used as indicators for neighbourhood cohesion and capacity. Their collaborative framework was applied

to deprived urban areas of Scotland and was used as a basis to inform policy on social capital. The authors conclude that more in-depth studies of social capital are needed, and must be investigated on a global scale in order to be better understood. Their framework, minus the policy suggestions for the Scottish context, will be used to structure the investigation and analysis in this paper (Table 3.1).

***Table 3.1**. The eight domains of social capital. Source: Forrest & Kearns, 2001*

Domain	**Description**
Empowerment	People feel they have a voice which is listened to; are involved in processes that affect them; can themselves take action to initiate changes
Participation	People take part in social and community activities; local events occur and are well-attended
Associational activity and common purpose	People cooperate with one another through the formation of formal and informal groups to further their interests
Supporting networks and reciprocity	Individuals and organisations cooperate to support one another for either mutual or one-sided gain; an expectation that help would be given or received from others when needed
Collective norms and values	People share common values and norms of behaviour
Trust	People feel they can trust their co-residents and local organisations responsible for governing or serving their area
Safety	People feel safe in their neighbourhood and are not restricted in their use of public space by fear
Belonging	People feel connected to their co-residents, their home area, and they have a sense of belonging to the place and its people

These eight domains give a broad insight into the different aspects of building social capital. Each domain can be investigated from a bonding, bridging and linking level, which is suitable for this research paper. A difficulty in research on social capital has been to define indicators that point to high or low levels of social capital (Falk and Harrison, 1998). Since it has been widely acknowledged that social capital belongs to groups as well as individuals, it is a challenge to identify how individual experiences feed group capital and vice versa (Baker, 2006). Participation rates and feelings of empowerment have been most often used as key indicators of social capital (Nazuri et al., 2022), (Kanosvamhira, 2019). These two domains have been identified as the most significant for understanding an

individual's relationship to their community. In this research paper, all eight domains of social capital will be investigated, but empowerment and participation will be the most extensively investigated for this reason.

3.2.1. Social capital and UPA

The success of UPA projects is closely linked with the development of social capital across bonding, bridging and linking groups. Since UPA is a grassroots activity, it depends heavily on the ability of urban citizens to self-organise and access the necessary resources, such as land and seeds (Caldas & Christopoulos, 2022). UPA at once draws on the existing resources of social capital in a community and also builds upon it. Starting a UPA project requires a certain level of trust between neighbours, some empowerment to have the confidence to change the local area and a feeling of belonging and caring about the neighbourhood. Thereafter, the process of managing the project continues to build social capital as collaborating on a successful common project requires common purposes, participation from members and strong trust networks. As participants seek support from local municipalities, universities and knowledge networks such as agroecology hubs, they develop the bridging and linking levels of social capital.

As influential as UPA projects can be in developing social capital, one must be wary about assuming that it is always the case. It has been observed that bottom-up projects are vulnerable to strong characters taking control and suppressing the opinions of others in the community (Travaline & Hunold, 2010). This can reinforce existing power dynamics and create undemocratic behaviour. Leaders are always needed for group projects, but overly strong leaders can cause problems of exclusion, hinder self-empowerment and increase feelings of mistrust (Pretty & Smith, 2004). It should therefore not be assumed that all community-based projects build social capital, and case-by-case studies are always necessary to analyse the dynamic of individual projects.

However, when UPA projects do succeed in engaging a broad group of community members, collective organisation can facilitate lobbying for desired developmental change. The unified voice of urban farmers helps to inform clear policy change (Kanosvamhira, 2019). This collective organisation can spill over to wider societal contexts, as has been the case in Bogotá with the various protests organised by the agroecology networks. However, some research has shown that low-income communities often lack the feeling of empowerment necessary to organise themselves and express their needs to local authorities (Forrest & Kearns, 2001). The linking level is most often lacking in these contexts and is the primary reason why empowerment is low. Therefore, the importance of understanding exactly how capacity is built and identifying the weaknesses in capacity becomes crucial. The

third and final theoretical pillar of this thesis is therefore learning processes, as they are the very mechanisms that build or destroy social capital in community UPA projects.

3.3 Learning processes

The final theoretical perspective that will be used in this thesis is a learning processes framework. Learning is a central part of capacity-building, as individuals build and refine skills through learning processes. Studies in social capital have sought to identify links between how communities learn and the effect of this learning on capacity. Mostly, learning occurs through interactions between participants in the garden, but there are many other types of learning that are at work in UPA contexts. In this paper, the focus will be on two main types of learning that are well established in the literature: social learning and knowledge transfer. The effectiveness of these two learning types in building social capital will be assessed through a learning loop framework.

3.3.1 Social learning

Social learning is defined as learning that comes from the interactions between individuals within mutually dependent groups of common or divergent interests, whether in person or at a distance. In sustainable development, it has been identified as an essential learning approach in order to solve problems between multiple stakeholders (Schusler et al., 2003). By working collectively through challenges, individuals learn more about the needs of others at the same time as exchanging knowledge and new ideas within a group. It is a type of learning that is often linked directly with collective action, due to the fact that individuals who learn in a group are more likely to transform that learning into driving change in their relations or surrounding environment (Keen et al., 2005). The influential education theorists Alice and Daniel Kolb concluded that, for the same reason, social learning represents a concrete, "experiential" form of learning, "whereby knowledge is created through the transformation of experience" (Kolb & Kolb, 2005). A social learning context is also conducive to developing soft skills such as listening skills, communication, conflict management and group organisation. Social learning can enable community members to achieve the outcomes that they aim for and work towards their collective well-being, resilience and stability (Kenyon & Black, 2001).

Social learning can be identified through three main indicators:

1. *A change in understanding has taken place in the individuals involved;*
2. *This change goes beyond the individual and becomes situated within wider social units or communities of practice;*
3. *The change occurs through social interactions and processes between actors within a social network.*

(Reed et al., 2010)

In the context of UPA, social learning is the most common form of learning due to the nature of how knowledge is shared between community members. However, although participatory processes may spark and facilitate social learning, it cannot be assumed that participation alone is sufficient for social learning to occur. As discussed in the previous section on social capital, pre-existing power dynamics and personality types can affect the level of learning within a group, and thus the ability to build social capital in all individuals in a group.

3.3.2 Knowledge transfer

Knowledge transfer is defined as a learning process where new information is passed directly or indirectly from a source to a recipient. It is most often in the form of technical information and is necessary for individuals or organisations to develop the ability to do things differently and improve their practices (De Luca, 2018). This is a more formal style of learning, while social learning is most often informal as it occurs in social settings. In the agricultural industry, knowledge transfer often occurs between a technical assistant or advisor and a producer or worker. The form of learning can be indirect, for example in the shape of books, videos and guides, or direct, in the form of face-to-face interactions between teacher and learner.

In recent decades, knowledge transfer processes have come under criticism in social science research. Traditionally, they have been carried out in a formal way where the information is delivered to the recipient in standardised packages which are not adapted to individual cases and their unique social dynamics. “Soft” skills such as trust building, good dialogue and adaptability have often been deprioritised in knowledge transfer processes. Social research has shown that these soft skills are in fact necessary for a successful uptake of technical information in the learner (Acquaye-Baddoo, 2010). This is especially important when the knowledge transfer processes aim to incite change and build capacity in the recipients. In particular, trust is essential to successful knowledge transfer and capacity-building. The level of trust that a recipient feels towards the advisor has a direct correlation with learning effectiveness: trusting a source of knowledge will make a learner more likely to implement what they learn from that source (De Luca, 2018), thus reducing the knowing-doing gap that can emerge in advisory contexts (Pfeffer & Sutton, 2000). More personal, stronger ties between recipients and advisors also create more effective learning experiences as the knowledge transfer can be more personalised to the recipient’s needs. When an advisor invests time into getting to know the context, whether there is a culturally-preferred form of learning, and attempts to understand the power dynamics present in the community, they are more likely to design an advisory process that results in a more effective knowledge uptake and implementation.

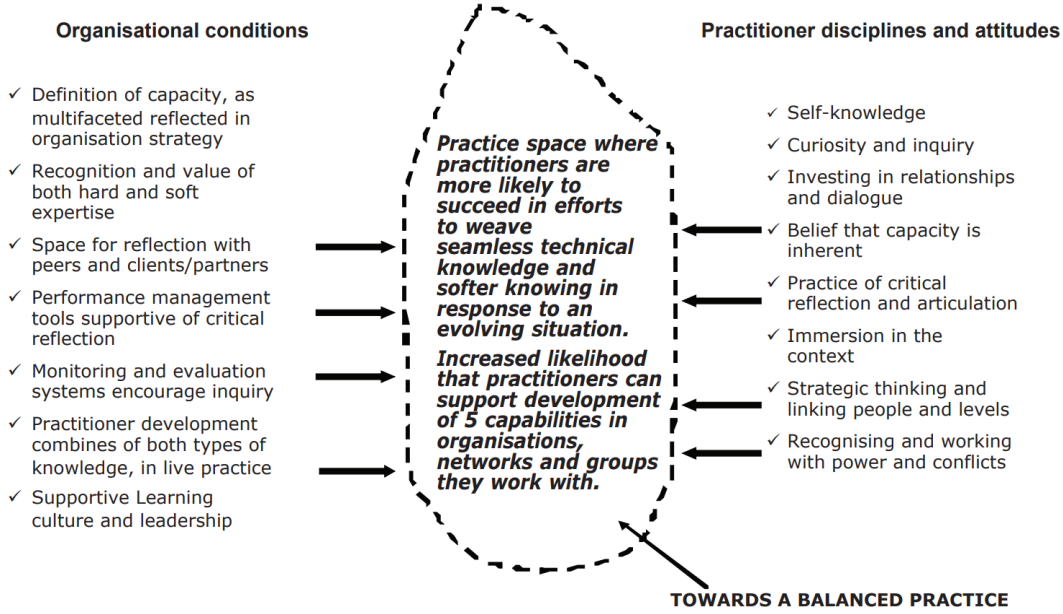

Figure 3.2: *Connecting organisation and practitioner. Illustration taken from: Acquaye-Baddoo, 2010.*

Figure 3.2 depicts the elements that a "balanced practitioner" should implement in their advisory work. Despite the fact that it has been shown that technical advice is better received when practitioners use their soft skills to adapt to each context, most advisors are not encouraged to use these skills. Organisations such as consultancy firms or advisory services often focus on short-term results, such as number of clients or amount of information transferred (Acquaye-Baddoo, 2010). There is a lacking emphasis on longer-term results, or on the process of learning itself, such as how the knowledge was implemented by the recipients and how their project evolved as a result of the advisory process. A process-oriented approach is one which focuses on the quality of the process, rather than on deliverable outcomes that can be easily reported on. However, such an approach is unpopular with for-profit organisations who are under pressure to deliver results. Practitioners who manage to balance soft and hard advisory skills by building trust and reflecting critically upon the power dynamics present between them and their clients are most often doing this because of their own conviction that it will improve the uptake of knowledge, rather than because of an established working framework taught in their organisation (idem).

In the context of this research paper, knowledge transfer is a key source of new information for urban farmers. Even if farm participants have established successful social learning cycles, they are still limited to the knowledge that each individual can contribute to the project or what they can learn collectively. Knowledge coming from the outside allows participants to access information that was previously lacking and resolve challenges that they were facing. It can also help to motivate participants, as new information can lead to new opportunities for projects to develop and improve. In the specific context of the community UPA projects in

Bogotá, the majority of external knowledge comes from the JBB technical assistants and agroecology networks.

3.3.3 Learning loops

In order to assess the effect of the different types of learning on social capital in this study, it will be important to understand to what extent the learning processes are occurring and how effective they are. Although learning as a process is impossible to quantify as it is an internal, unconscious activity, there are certain indicators that can be used to ascertain how deeply an individual integrates what they have learned. In the field of organisational learning, various learning 'levels' or 'loops' have been defined by researchers. This thesis will investigate three levels of learning, where each level corresponds to the depth of the learning experience: single-, double- and triple- loop learning. The three levels in this framework will allow for a close analysis of the extent to which farm participants pick up and integrate knowledge. The loop learning framework has been developed over several decades, and this paper will rely upon the definitions of the three learning levels provided by Chris Argyris and Donald Schön (1978), John Tagg (2010) and Paul Tosey (2012). The different levels are known as 'loops', a term borrowed from the field of biology and the study of biological feedback mechanisms (Argyris & Schön, 1978). Just as living organisms adapt to changes in their environments in order to survive and evolve, learning processes drive humans to change their behaviour in order to flourish. The three levels of loop learning are defined as such:

Single-loop learning
Single-loop learning is the first step of any learning process as it involves the entry of new information into an organisation and the change that occurs from implementing this new information. However, this kind of change is a first-order change which does not deal with the underlying problems that may be holding an organisation back in the long-term (Tagg, 2010). As Argyris (1999) defined it: "Whenever an error is detected and corrected without questioning or altering the underlying values of the system". In the context of UPA, an example of single-loop learning would be for the farmers to observe that during the dry season there is not enough rain to water the crops and so they solve this by bringing water from the municipal taps to irrigate.

Double-loop learning
Double-loop learning occurs when an organisation rethinks the system that they are working with or within. It requires insights and reflections such as: what is the purpose of this system and is it achieving what it aims to do? It challenges the core, or the 'governing values' of the system (Tagg, 2010). As defined by Argyris (1999): "When mismatches are corrected by first examining and altering the governing

variables and then the actions". Double-loop learning has the ability to occur when the learning focus is on the long-term outcomes. In situations of profound change in the surrounding environment, double-loop learning is necessary to help an organisation evolve and adapt. Following on from the previous example, on observing that there is not enough rain water during the dry season, the farmers question the sustainability of fetching water from the municipal taps. They realise that it is not in line with their self-sufficiency principles and so instead they learn to make the most of the wet season by collecting water in rain butts and digging irrigation ponds, so that they can supply their crops with their own water in the dry months. This method is more in line with their ultimate goal of becoming independent in their food production.

Triple-loop learning

Triple-loop is the deepest level as it refers to a learning experience which revolutionises the learner. It goes a step beyond double-loop learning, as core values and paradigms are altered in irreversible ways. It concerns whatever governs the 'governing values' of double loop learning (Tosey et al., 2012), where the learner experiences a paradigm shift in their own value system. The triple-loop learning process makes profound changes in the organisation which stem from profound changes in the individuals within the organisation. In the irrigation example, the farmers would question why they depend so much on manual irrigation during the dry months. They would reflect that it would make more sense to adapt their cultivation techniques to the climate in order to reduce their reliance on collecting water. By using mulch and selecting more native crops, the farmers have switched mentality from "what do we want to grow" to "what is best to grow here in this context". The mentality switch has led the farmers to understand the importance of using native seeds and cultivation techniques, which was not something they understood the value of previously.

Most often, learning levels are examined on single- and double-loop levels, as the third level is considered unnecessary by many learning theorists (Tosey et al., 2012). However, in the scope of this project, a third level is important to consider. In order to explore how learning can evolve individuals within an organisation to change how they perceive themselves in society, it is necessary to examine the paradigm shifts and changing values that the learner has experienced. It will be important to distinguish between the double-loop changes that occur within the organisation - making deep changes and adaptations in the farming methods or system - and the triple-loop changes that motivate the evolution of the project, or that alter core values of the participants. The transformative effect of triple-loop learning is precisely what builds social capital.

All three learning levels can occur in both social learning and knowledge transfer contexts. Social learning settings have proven to be most conducive to triggering triple-loop learning, as the "experiential" nature of learning by doing, observing and reflecting in action tends to affect the learner on deeper levels (Wang & Ahmed, 2003). Although knowledge transfer processes are expected to produce single- and double-loop learning in the learner, when technical knowledge is delivered by a practitioner who seamlessly balances soft skills with hard skills, triple-loop learning is entirely possible.

3.3.4 Learning and social capital

Previous research has shown that it is very difficult to prove directionality in the relationship between social capital and learning (Baker, 2006). It is most often concluded that the relationship is reciprocal, as a community with high social capital as a starting point will usually lead to more successful learning processes. Figure 3.3 illustrates this reciprocity: that learning processes build social capital and that social capital strengthens learning. It can be difficult to show whether the high social capital or the successful learning cycles came first (Baker, 2006). However, it is acknowledged that one rarely exists without the other, and that there is a clear relationship between the two. In their 1998 paper on social capital and learning processes, Falk and Harrison asked "Can something be created out of (seemingly) nothing?". Research in the following decade has come to the conclusion time and time again that there is always a starting point, whether it is a high level of social capital or a successful learning environment.

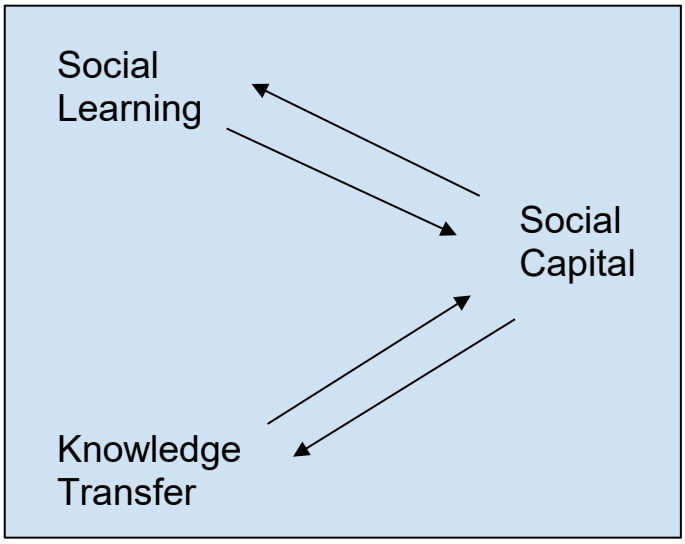

Figure 3.3: *The directionality of learning and social capital is hard to prove as most often they feed into each other. Source: own graphic*

Social learning is closely tied to social capital-building, because of the very nature of how learning in social groups creates networks of cooperation, trust and shared values (Baker, 2006). Development work increasingly relies upon social learning settings in order to drive long-lasting change in communities. For example, in biodiversity management (Pretty and Smith, 2004), transition management (Loorbach, 2007) and natural resource management (Schusler et al., 2003). The

age-old proverb “Give a man a fish and you feed him for a day; teach a man to fish and you feed him for a lifetime” summarises this approach. By facilitating communities to build skills and social capital, they will be equipped to adapt and deal with challenges that they face, rather than delivering technical packages that are destined to solve just one type of problem through short-term solutions.

However, that is not to say that knowledge transfer processes do not have an impact on social capital. In fact, it is quite the opposite: if advisors succeed in building relations of trust and dialogue with the recipients of the knowledge, then the potential for social capital-building is great. A skillful advisor understands how to enhance the skills and knowledge of the learner, rather than imposing a new system on them (Yachkaschi, 2010). This builds self-empowerment in the learner, which is a crucial starting point for broader social capital-building. A successful advisory relationship can also lead to participants feeling more confident in reaching out to organisations and institutions as they have more trust that they will be listened to and receive the help that they need (Falk & Harrison, 1998).

By using a combination of the learning theories, the Forrest & Kearns (2001) social capital framework and an agroecological approach, the investigation aims to provide deep insights into the nature of community capacity-building in the UPA projects studied. The following Chapter (4, Methodology) will describe how these frameworks have been used to design the methods and research tools for the data collection and analysis.

4. Methodology

This chapter will describe and justify the research approach, methods and tools used for this investigation. It will also consider the validity, reliability and generalisability of these choices.

4.1 Research approach

There is no consensus in other research on the best way to assess social capital, since it is influenced by so many factors and depends upon structures such as human relationships and perceived levels of trust that are hard to measure (Gallaher et al., 2013). In many cases, questionnaires have been used as a main source of data relating to how citizens perceive their empowerment, level of participation and trust in community networks. However, these studies have acknowledged the reductionist tendencies of the questionnaires and often conclude that more qualitative research needs to be done on the topic. Learning processes are equally challenging to assess, since it is a difficult exercise for a learner to perceive their own levels of learning. It is even hard to recognise the sources of learning, since much of the way humans learn is unconscious, especially in social learning settings where learning and socialising are seamlessly blended. Most research about learning takes a qualitative approach, with long-term observations and interviewing being the main sources of data.

For this paper, a mixed methods approach was taken due to a number of considerations. Firstly, a mixed methods approach was chosen because of the agroecological framework of this thesis. Gaining a holistic understanding into socio-environmental systems requires a diverse approach, where both quantitative and qualitative factors are taken into account. Secondly, since the research aims require data on both learning processes and social capital, a wide range of data was needed. A quantitative data element (a questionnaire) was important to be able to make finer distinctions between levels of social capital between the participants and the projects so that an analysis could potentially reveal patterns and correlations. On the other hand, a qualitative data element (focus group interviews) was equally important because it allowed for free-flowing thought and conversations, which could bring up information in a more spontaneous way, as participants have space to reflect and express themselves more freely (Bryman, 2016). The quantitative and qualitative collection methods were used concurrently, so that the data collected could be analysed comprehensively (Creswell & Creswell, 2003). Both social capital and learning processes were investigated through the quantitative and qualitative methods in order to enrich the kinds of findings that arose from both subjects. In some cases, the data was triangulated; the same questions phrased differently were asked both in the qualitative interviews and quantitative

questionnaire. This method allows for participants to reflect in different ways on how they perceive their learning and social outcomes. Triangulation creates the opportunity to see perceptions of the self as dynamic, and how a participant's answer might develop when they have the opportunity to discuss questions verbally in a group interview (Bryman, 2016). It also prevents the researcher from making overly clear-cut conclusions from the questionnaire data because it brings to light certain topics that participants may be uncertain about, or have evolving opinions on.

4.1.1 Research ethics

An ethics approval was not deemed to be necessary for this study. Firstly, this was because participation was voluntary for the urban farmers. For those who did choose to participate, all data collected were anonymised and informed consent was obtained from each participant prior to responding to the questionnaire. Furthermore, sensitive data such as religious or political data were not collected in the study.

4.2 Case studies

The research strategy was to investigate case studies of community urban farms in Bogotá. Having case studies of farm groups as the main source of data provided results that reflected the perspective of farmers, thus aligning with the intentions of this thesis to give farmer-orientated conclusions (Bryman, 2016). A small selection of case studies allowed for a more in-depth investigation, where the researcher could spend several days with the participants and become acquainted with them. It allowed the researcher to fully explain the aims and methodology of the study, the context of the focus group interviews and it also created the opportunity to make observations of the community. These case studies were assembled during an exploratory phase, which took place from January 3rd until February 1st 2022. The exploratory phase was necessary to become acquainted with the context and the challenges of the situation. By meeting with producers in the early stages, the researcher was able to shape the research questions and aims around the needs of the urban farmers. This allowed for a more pragmatic approach to the investigation (Creswell and Creswell, 2003), so that the research outcomes would be relevant and useful within the context.

4.3 Sampling

This research was conducted in six community huertas across Bogotá. The projects were not randomly selected, due to the in-depth nature of the mixed methods research and the fact that not all projects in the city were easy to contact as a non-local. The projects were selected based on the requisites of: having four or more

active farmers, leasing public land for the purpose of running a community garden and willingness to participate in the study. These farms were found either through Facebook searches of farms with an active project page or through the recommendation of the technical assistants of the JBB.

4.4 Data collection

The data for this investigation were collected through two main sources: questionnaires and focus group interviews. Additional primary data were collected through a semi-structured interview and observations. Secondary data were collected through a literature review. The following subsections will explain how the different theoretical frameworks were applied to the data collection techniques in order to inform the research questions.

4.4.1 Questionnaire

As discussed previously, in order to generate quantitative data relating to learning and social capital on the farms, a questionnaire was used for data collection. The questionnaire was constructed based on notes from the exploratory phase, and the literature review on social capital, learning processes and UPA in Bogotá. The questionnaire was build around the social capital domains framework (Forrest and Kearns, 2001), social learning and knowledge transfer definitions (explained in section 3.3. Figure 4.1 illustrates the percentage of questions on the questionnaire that related to each of these theoretical frameworks. The choices behind this weighting and how the questions were designed will be explained in this subsection. The full questionnaire can be found in Appendix One.

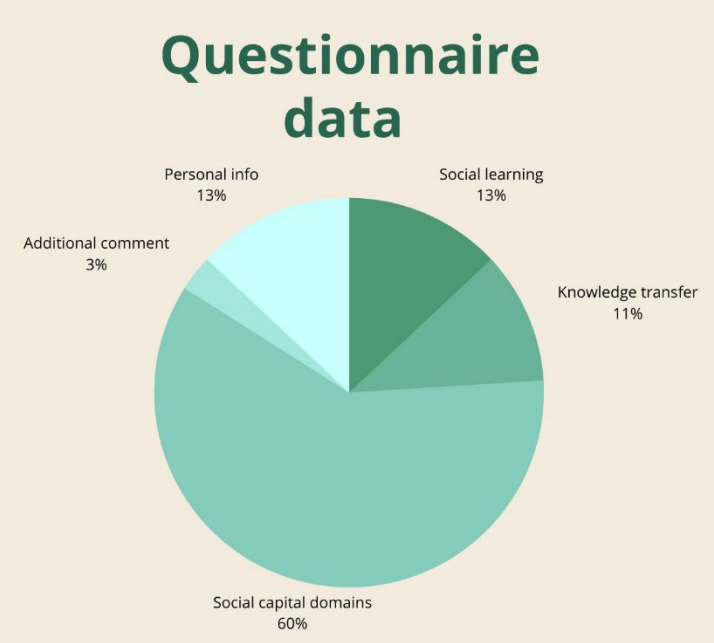

Figure 4.1: *A pie chart illustrating the number of questions relating to the different theoretical frameworks of this thesis in the questionnaire. Source: own graphic*

A pilot was sent out to one of the participants three weeks before data collection began in order to assess comprehensibility, allowing for some changes and clarifications to be made ahead of the investigation. The questionnaire had 38 questions and the Spanish version was sent out to every active farmer involved in the studied projects (n=45). The questionnaire took roughly 20 minutes to complete and was available through either an online form or a printed version, depending on how the participants preferred to answer. All participants were made aware that their responses would be anonymous and after reading the consent section they ticked a box to give consent. The researcher was available to answer any questions or uncertainties about the questionnaire from participants.

Part One of the questionnaire collected basic personal information about the participant such as age and years involved in the project. It also asked the respondent to state their socio-economic stratum, which is a widely used and accepted national measurement of economic capacity of residents according to their place of residence (DANE, 2022).

Part Two investigated how participants perceived their learning on the farm from their peers and from the technical services. Each question was linked to a learning type (social learning or knowledge transfer) to collect data about the success and reliance upon different learning types in the farms. There were five questions relating to social learning and four relating to knowledge transfer. These learning questions were formulated around the social learning and knowledge transfer indicators described in the Theoretical frameworks chapter (3). The social learning questions investigated the effectiveness of the learning environment on a bonding level, through questions such as *'I learn a lot in the garden through listening to and observing other participants'*. The knowledge transfer questions focused on the learning interactions with the JBB technical assistants and other farm groups on a linking level, through questions such as: *'I implement knowledge in the garden that we learned from technical assistants'.* The questions were answered on a 5-point Likert scale. The 1-5 scale either corresponded to agreement (1 = strongly disagree, 5 = strongly agree) or frequency (1 = never, 5 = always/once or twice per month). The midpoint was always the neutral response (not sure). In this study, any response above 3 was considered a positive response, and anything below 3 was negative. The Likert scale-type of questionnaire was chosen because composite scales allow for greater subtlety in responses and facilitates comparisons between respondents (Bernard, 2006). However, it is important not to read too much into the distinction between a 4 or 5 response, because of how different individuals vary in how enthusiastically they express themselves. Rensis Likert invented the scale to better investigate the opinions, feelings and perceptions of people (Likert, 1932). Since this investigation revolves around the perceptions that farm participants have of their learning environment, their peers, their wider community and the external technical help, the Likert scale was considered to be a suitable way to extract this information.

In Part Three, 23 questions were also answered through a 5-point Likert scale, collecting data about (perceived) social capital. Each question acted as an indicator for the eight different domains of social capital (see Table 4.1 below). The domains

of Empowerment and Participation were investigated at greater depth by having more questions acting as indicators for them. This was the case since these domains are considered most important to building social capital in social research, as discussed in the previous Chapter of this thesis (Putnam, 1993). Furthermore, each question in Part Three was also related to the 'bonding' and 'bridging and linking' groups of social capital. Bridging and linking were grouped together for the questionnaire since they were both considered as the external relations of the farm group, while the bonding level was considered as the internal relations. In the Discussion section of this paper (Chapter 6), social capital in extra- and inter-farm relations ('bridging and linking') will be compared to social capital in intra-farm relations ('bonding'), hence why the social groups were linked in this way. Ten questions related to the 'bonding' level and 13 questions related to 'bridging and linking'.

Not all domains could be assessed through questionnaire-style questions: domain three - Associational Activity and Common Purpose required a longer and more explanatory answer. Similarly, domains four and five (Supporting networks and reciprocity, Collective norms and values) were investigated at greater length through the interview questions. It was considered that the group dynamic would enrich the answers to such questions. These dimensions were therefore investigated through the focus group interviews, explained in section 4.4.2. Table 4.1 shows the matrix for how the questionnaire questions relate to social capital domains and groups.

Table 4.1*: The matrix for how the questionnaire questions relate to the eight domains of social capital and the different social groups ('bonding' and 'bridging and linking').*

Domain	Questions relating to Bonding	Questions relating to Bridging and Linking
1 - Empowerment	2	4
2 - Participation	4	3
3 - Associational Activity and Common Purpose	0	0
4 - Supporting Networks and Reciprocity	1	1
5 - Collective Norms and Values	0	1

6 - Trust	1	1
7 - Safety	1	0
8 - Belonging	1	3
Total	**10**	**13**

The final question in Part Three was an optional question for participants to leave 'any other comments'. It was not included in the data analysis as it was unquantifiable data, and it was instead woven into the Discussion section where necessary.

4.4.2 Focus group interviews

Focus group interviews were conducted with participants from each farm project. This style of interview was selected in order to encourage a variety of viewpoints and experiences to be discussed among individuals of the same group (Kvale & Brinkman, 2015). The interviews took between 35 minutes to 1 hour, involved 3-9 participants and always took place in the huertas. The interview length was influenced by interruptions to the discussion, time constraints of the participants and a conscious effort to keep interviews shorter than one hour out of respect for the participants' time. All of the interviews were recorded both via an external microphone attached to a laptop and on a mobile phone to ensure that all voices would be picked up. The invitation to join the interview was open to all farm participants, but the maximum number of participants was limited to nine. This was based on research recommendations about limiting group sizes to increase the chances of all participants entering into the discussion and voicing their opinions (Bryman, 2016). At the start of every interview, all the participants read a consent form which ensured their anonymity and their group leader signed it on their behalf.

The questions for the interviews were written based on the remaining domains of the Forrest and Kearns (2001) framework that were not investigated in the questionnaire; for example, domain three, Associational activity and common purpose. The majority of the questions in the interviews investigated the social learning, knowledge transfer and learning loop processes to supplement or triangulate with the questions in the questionnaire. Figure 4.2 illustrates the percentage of questions that related to the different theoretical frameworks described in Chapter 3. However, the order and number of these questions asked in the interviews was not fixed in order to allow for a more free-flowing discussion in which the participants were only guided into the next question when necessary. Nonetheless, the questions were prioritised to ensure that at least one question per topic was asked during the interview time. This allowed for the possibility for longer, more dynamic discussions to take place spontaneously, while ensuring that

the key interview questions would be answered in the timeframe. All the questions were open-ended and designed to spark a discussion between the participants. See Appendix Two for the focus group interview guide. The transcripts of the focus group interviews are available upon request.

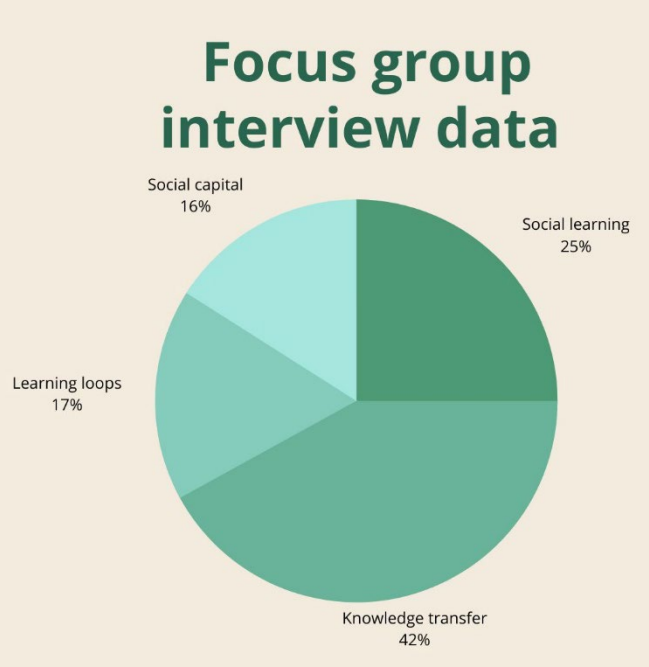

Figure 4.2: *A pie chart illustrating the number of questions relating to the different theoretical frameworks of this thesis in the focus group interviews. Source: own graphic*

The interview questions were designed in a way to both reinforce information obtained from the questionnaire and to add new information useful to the research questions. For example, the interview question: *'What are the most important objectives of the farm for you',* allowed the researcher to understand how much of a common purpose the participants had, since this domain of social capital was not investigated in the questionnaire. Learning loops were also investigated via the interview, through the question: *'How have your values changed since being involved in this project?'* This question aimed to reveal the depth of learning processes, indicating whether triple-loop learning was occurring in the group. There were several interview questions that reinforced the questionnaire. For example, the interview question: *'Do you feel like the technical services are customised to your needs? What could be improved?'* was triangulated with question 32 of the survey: '*I don't feel like the advisors listen to our needs and they only teach us what they want to implement'*.

The focus group interviews also provided an opportunity for researcher observations. As participants respond to questions as a group, social dynamics are in action and the researcher is able to observe how the group members listen to each other, manage disagreements and whether there are clear leader types present (Bernard, 2006). In the case of urban farms, focus groups interviews provide a good setting to make these observations, because it closely reflects how group discussions take place on a farm. The observations made during the focus group interviews were handwritten in a field notebook so that these reflections could be woven into the Discussion (Chapter 6).

An intervention and facilitation strategy was formulated before holding the interviews, setting the ground rules for the participants and establishing the conditions under which the researcher had the right to intervene. It is a fine balance for a researcher to achieve, as they must be able to keep the conversation on track in order to collect data on all the established themes, but also must avoid controlling the direction of the discussion (Bryman, 2016). In order to help keep enough structure while allowing for free-flowing dialogue, the researcher established a plan consisting of *ground rules* and an *intervention strategy* (See Appendix Three). In every interview, this strategy was used as it was common for the participants to speak over one another or for some participants to stand too far away from the microphone when they spoke.

4.4.3 Semi-structured interview

One semi-structured interview was held with a technical advisor from the Jardín Botánico de Bogotá. They are an advisor for some of the farms interviewed and have worked for the JBB urban agriculture advisory programme since 2020. The advisor was selected to interview because they were a key informant from the JBB during the exploratory phase for this paper. For the purpose of this research, they were kept anonymous in the data analysis. The interview was designed to ascertain how advice and knowledge is delivered to the different farm projects and to understand the strategies in place to optimise the learning experience for urban farmers. There was also a discussion about the limitations of the advisory service and the opportunities for improvement. The interview was included in the analysis to shed light on the advisor's point of view of the learning processes that take place on urban farms. The format of a semi-structured interview was chosen to allow for certain topics to be covered but also for more free-flowing thoughts from the interviewee around the topics (Brinkman & Kvale, 2015). The interview was transcribed in its original language (Spanish). See Appendix Four for the semi-structured interview guide. The transcript is available upon request.

4.4.4 Literature review

A literature review was performed of useful documentation relating to each farm project, which was gathered from the project leaders. The review also includes official documents relating to the JBB, who administer UPA projects in the city and provide the technical assistance. These references are woven into the context and discussion chapters of this thesis. Finally, a review of wider literature on social capital, UPA, community capacity-building and learning theory provides the basis of the theoretical framework and methodology of this paper.

4.4.5 Observations and field notes

Hand-written notes were taken during visits to the huertas in the exploratory phase, focus group interviews and time spent with the participants at the urban farms. There were conversations and events that occurred off-mic and so a notebook was

kept close to hand to record information that would be relevant to the investigation (Bernard, 2006). When necessary, additional questions were asked to the different project leaders to obtain more information about the history and context of the farm. Some of these notes were woven into the discussion (Chapter 6) to provide clarifications or further insights on the research topic.

4.5 Data analysis

Two types of data were collected in this research paper: quantitative data (questionnaire) and qualitative data (interviews).

4.5.1 Quantitative data

The questionnaire responses were entered into Excel (Version 2211 for Microsoft 365, 2018). Means and standard deviations were calculated for each farm group for every question, and then by category: for example, social learning, knowledge transfer. This produced results on an individual, group and intra-group level, showing both the average across all levels as well as the variations between these levels. This allowed for outliers to be identified in the analysis, as well as group trends. These calculations were done using the Excel functions 'AVERAGE' and 'STDEV'. Means and standard deviations were also calculated for each domain of social capital on both bonding and bridging/linking levels. These data were transformed into visual representations in the form of bar charts in Excel.

4.5.2 Qualitative data

The five focus group interviews were codified to allow for some quantification of the qualitative data as a means to understand the content of the discussions. This form of content analysis was used for the purpose of identifying patterns, occurrences and themes in the interview data in order to make sense of its richness (Mohajan, 2018). The semi-structured interview with the technical assistant was the only interview that was not coded; only salient quotes from this transcript were used in the Discussion (Chapter 6) to contribute to the analysis.

The focus group interviews were transcribed in their original language (Spanish) and were then coded in English. The codes were initially established using an open coding approach and codes were created line-by-line, summarising the content of each line (Creswell & Creswell, 2003). This approach prevented the researcher from importing foregone conclusions about the content of the interview and instead allowed for the themes to emerge from the text themselves (Strauss, 1987). The codes were then grouped in a second round of coding and reduced to 49 main codes. The 49 main codes were then classified as being either positive, negative or neutral. For example, *'Challenges of working together'* was classified as a negative code, and *'Generating income from farm'* was considered a positive code. These 49 main codes were sorted into nine themes, which generated the thematic framework for

the interview data: Community, Finance, Environment, Learning and knowledge, External support, Food and health, Agricultural context, Politics, and Farm-specific. In the Results Chapter of this thesis (5), a table showing the coding themes and a table showing occurrences of themes is used. Data such as code occurrence per farm were excluded from the Results (Chapter 5) since they were too specific in their disaggregated state to provide any meaningful insights. Although not included in the final analysis, the coded data allowed for a better understanding of the content of the focus group interviews. This contributed towards giving a more comprehensive response to the research question in the discussion (Chapter 6). The interview data also enriched the discussion with salient quotes and opinions voiced during the interviews. A total of 56 quotes are included in the discussion.

4.6 Validity, reliability and generalisability

The main and supplementary research questions were carefully chosen to respond to the aims of this research. These were:

Main research question: *What is the relationship between the different learning types and levels of social capital in community-driven farm projects?*

Sub research questions:

- *To what extent are the different learning types and processes occurring in the studied farm projects?*
- *How do the strengths and weaknesses in social capital vary between farms and across different social groups (bonding, bridging and linking)?*
- *What are potential solutions to the current weaknesses in the learning processes and social capital-building mechanisms of the studied farms?*

The first two sub research questions were designed to separately investigate learning processes and social capital, so that the different frameworks could be applied clearly to each topic. For example, the first sub question calls for an analysis of the different learning processes and an evaluation of the effectiveness of those processes. Only once learning and social capital have been discussed separately is it possible for the main research question to be answered. It will be clearer to see the areas where learning and social capital processes interact and influence each other the most. However, since learning and social capital are so deeply interconnected, there will be some difficulty in separating the concepts and so the discussion will have to acknowledge this challenge.

The choice of a questionnaire for the quantitative part of the data collection is a fitting research tool, as it allows for the individual to respond anonymously without the social pressure of responding in front of a group. Since some of the questions investigate issues such as trust in the group, this privacy is crucial for yielding honest answers. The use of the 1-5 Likert scale in the questionnaires is also a suitable tool, as it allows for some subtlety in the agreement, disagreement or neutrality of respondents, while still generating quantitative data. The focus group

interviews were chosen as the qualitative data collection method because group learning and capacity-building dynamics are at the core of the investigation, and performing interviews in a group setting will give a live insight into those dynamics. Finally, the mixed methods approach will make it possible to both triangulate data (since some questions overlap) and create a broad wealth of data that will help give a more holistic response to the research questions.

Because of the small sample size, it was not possible to use the quantitative data to generate results of statistical significance. This is a limitation of all case studies, as empirical data cannot necessarily be generalised to larger populations. However, the results will provide useful insights which can guide further research. Additionally, the sample chosen was not a random one, it was a sample of convenience (Bryman, 2016) as the farms were identified through various sources: Facebook pages and recommendations from the JBB advisors.

The data in this study were collected using two widely used methods: questionnaires and focus group interviews. In the questionnaires, the number of data points was relatively small and the Likert scale responses were unambiguous. The majority of the questionnaires were completed on-site in the presence of the researcher and handed back on the same day. Some questionnaires were distributed by group leaders directly to each participant and there was not evidence of any interference in the responses received. Only four questionnaires were completed online and they had been sent directly to the participants' phone numbers. The interviews were all conducted, transcribed and coded by the researcher, without interference of anyone else. The quotes used in the discussion were also translated by the researcher, who is fluent in Spanish and English. The data were captured and analysed on Excel and no other software was used.

The theoretical frameworks used to form the research methodology were taken from other studies in social capital (Forrest & Kearns, 2001; Kanosvamhira, 2019; Baker, 2006) learning types and learning levels (Tagg, 2010; Argyris, 1999; Tosey et al., 2012). Therefore, the theoretical structure of this study is replicable in other contexts where community learning processes are in action. The questionnaire and focus group interviews could be repeated and performed with more urban farm groups across Bogotá. The questions are not tied down to a specific time period and will remain relevant beyond the timeframe of this research. In fact, replicating this exact investigation in the coming years would continue to collect useful data for the research question because it would give a long-term perspective on how processes change over time. The framework is not even restricted to UPA contexts, and can be easily adapted to other types of community projects. In the questionnaire and the focus group interviews, some of the questions are specific to the UPA context in Bogotá and so are not directly repeatable in other cities. However, it would be possible to adapt the location-specific questions to a new context, as the frameworks and learning theory are suitable for use in both northern and southern global contexts.

4.7 Reflections on researcher's role

There were some ethical considerations to take into account over the course of this investigation. Mainly, the ethical issues stemmed from the educational, class and economic differences between the researcher and the research subjects. As a white, European academic there were many inherent power dynamics between the researcher and the urban farmers in Bogotá that inevitably affected the study (Sultana, 2007). Many of the interviewees had experienced interrupted education and so meeting with a highly-educated foreigner in the context of a research project might have been intimidating. This likely affected how openly participants gave responses, or conversely, made them feel like they should participate in this project, even if they did not necessarily want to or have time to. The researcher made a clear effort to emphasise that participation was voluntary and that participants could withdraw at any time (Bryman, 2016). Another observed effect of class and educational differences was that the participants treated the researcher with great respect, always using formal language and being accommodating to the researcher's questions. Culturally, Colombians generally use more formal language than English-speakers do, and so the researcher decided to adapt to the context and use the same formal language with the participants, to show the same level of respect. Since many of the participants were elderly, using formal language was even more important in this context. Although the researcher's instinct was to ask participants not to address her in such a formal way, she accepted that this would not be appropriate in the context and that it would be better accepted to replicate the same level of respect. For example, using the formal "usted" for "you", and the especially Colombian "su merced", another formal way to express the "you" form.

Another ethical consideration was that of arriving with preconceived ideas about the context. The exploratory phase served as a way for diminishing imported ideas and conclusions into the study context. The research topic of this thesis was derived from conversations with urban farmers and advisors, and then the research questions were refined and supported by previous literature on the subject. This "grounded theory" approach forced the researcher to drop preconceived ideas and foregone conclusions and instead design the research from the participants' perspectives (Creswell & Creswell, 2003). The exploratory phase also allowed for plenty of time for the researcher to discuss the aims of the research and for the potential participants to ask questions before deciding whether they wanted to take part.

There were also linguistic considerations to take into account, since the researcher is a native English speaker researching in a Spanish-speaking context. Although the researcher is a competent Spanish speaker, she is not completely bilingual and so it is likely that some words and linguistic subtleties were missed (Bernard, 2006). The researcher tried to counter this by learning context-specific vocabulary ahead of the investigation, such as the names of local fruit and vegetable cultivars, growing methods, Colombian references, historic events and figures and place names in Bogotá. There was no interpreter present during the interviews as the researcher felt comfortable to hold the interviews in Spanish without assistance. It was also a

strategic decision as more than one 'outsider' present might have affected the dynamic of the interviews, such as putting the interviewees under more pressure and feeling observed by multiple researchers. Translations of the transcript quotes from Spanish-English were done by the researcher herself, with the occasional help on specific words and phrases from contacts in Colombia.

There were also some cultural considerations, beyond the Colombian use of formal language, to take into account. The exploratory trip was an opportunity for the researcher to familiarise herself with both the verbal and non-verbal elements of the context. Close personal connections in Colombia helped the researcher to develop a richer understanding of the context. However, there were certainly things that the researcher was unaware of, due to the nature of not sharing a cultural history with the research subjects. When designing the questionnaires and interviews, the researcher considered some contextual and cultural factors that could have an impact on the research, for example: gender dynamics, and the current and past political context of Colombia.

Despite all these clear differences in culture and power dynamics between the participants and the researcher, there was some meaningful common ground. The researcher's personal experience as market gardener fostered a different level of relationship beyond researcher-research subject. The researcher spent a lot of time outside of the research communicating with the project members about general gardening advice, experiences, passions and curiosity. A WhatsApp group was started by the researcher to share videos of different gardening processes and ideas from all of the projects, including the researcher's own farm. There was also the opportunity to share seeds on the focus group interview days. It was a fun addition to the research project for all involved, and it added more depth and meaning to the topic at hand since it promoted another kind of social learning. It also helped to build trust between the researcher and the participants, and the feeling that the researcher was not just there to extract information, but was also willing to share information, listen to the ideas of the gardeners and engage in an equal way over a shared passion.

Finally, an important element of the research was to share as much information with the research subjects as possible. The researcher took the time to follow up with all of the project leaders and discuss the significance of the results in relation to their project. The results were discussed in a format that was digestible and relevant to them, rather than academic. The popular science summary was also translated into Spanish and sent to all of the participants. At the moment of submitting this paper, the researcher had moved to Bogotá to live and was looking for opportunities to present her thesis findings publicly in the city.

5. Results

This section describes and demonstrates the results from the data collection of this investigation, both from the questionnaire and from the focus group interviews. Additionally, there is a description of the case studies investigated.

5.1 Research questions

The following section will provide the data to respond to the main research question and two of the sub questions in this paper. The third and final sub question will be addressed in the discussion. The main research question is:
What is the relationship between the different learning types and levels of social capital in community-driven farm projects?

The three sub questions are:

1. To what extent are the different learning types and processes occurring in the studied farm projects?
2. How do the strengths and weaknesses in social capital vary between farms and across different social groups (bonding, bridging and linking)?
3. What are potential solutions to the current weaknesses in the learning processes and social capital-building mechanisms of the studied farms? (To be addressed in *6. Discussion*).

5.2 Description of case studies

This section gives descriptions of the six investigated farm projects in this research. The information comes from the preliminary meetings with the farm groups in January 2022, conversations held outside of the recorded focus group interviews and other documentation and exchanges from the projects. Table 5.1 shows the short descriptions that outline the main characteristics of each project, such as number of participants, founding year, main objectives and challenges. This information will be useful in the discussion where a close analysis of the different farm projects will take place.

***Table 5.1**: Description of farm groups studied.*

Huerta	Year founded	Area	Description
Chihiza ie	2000	1,500m^2	This community garden consists of vegetable beds, medicinal herb beds, a traditional round hut, compost toilets, a plant nursery, an outdoor kitchen and rainwater collection butts. There are 6 active members who regularly host lessons for children from two local schools, organise workshops on ecology and chamanistic ceremonies are organised in the round hut every month. The participants are also involved with designing and building an ecological corridor in the neighbourhood and they propagate the trees and bushes for this community program. Native seed exchange and ancestral knowledge about farming are important topics in this farm.
Años Dorados	2002	2,000m^2	A group of pensioners built this farm on the upper levels of the neighbourhood Ciudad Bolívar under the name of 'Años Dorados' (Golden Years). The founders wanted to use their skills from their rural youth after a life of working in the city. Access to healthy food was, and still is, an important motivation. Medicinal plants are also of great interest to the members of this farm, who exchange tips and advise for using plants to soften the effects of ageing. The participants invested several years of work and money into building an irrigation well, since drought can be a severe problem in the dry months. This project hosts many tours and is a meeting point for the local agroecology network.
Huerta la Vid	2021	150m^2	Also in Ciudad Bolívar, the cultivated area is relatively small and as of 2022 consisted of just 4 consistent members. For a small group, the age demographic is one of the most diverse out of the interviewed groups, ranging from 25-66. The focus of the first year was to prepare the soil, as the farm is positioned in the heights of Ciudad Bolivar, on a steep slope and with poor soil. Drought is a challenge here and so establishing an irrigation pond and other water collecting features is a priority. Local schools have so far been involved with the decoration of the farm and the founders are well connected to the local agroecology network.
Fontihuerta	2021	500m^2	This project was founded by the cycling collective 'Fontirueda' in the neighbourhood of Fontibón. The farm is dedicated to a deceased member of the collective who tragically died in a road accident in 2021. The collective meet on the farm at least twice per week as it has become routine to do the gardening work before departing for the evening cycling trips that they organise. Dinners, bonfires, markets and parties are regularly organised on the farm. There is currently no fence around the farm and so theft and vandalism are a major problem despite the great number of supporters in the neighbourhood.
Fundación Monterrey	2007	300m^2	The project was started initially as a solution to clean up the neglected public spaces in the neighbourhood. As of 2022, there are 10 committed members in the project and a husband and wife are the main leaders. They have collectively helped the establishment of 4 other farms in the municipality and are part of a city-wide composting movement known as 'Paca Digestora'. The neighbours are very involved with donating organic waste and attending workshops, tours and other events. The

			vegetables are for personal consumption only and the project is financed by its members. They are a registered NGO and have a clear vision statement and 10 year plan.
Guerreros y Guerreras unidos en acción	2004	2,000m^2	In 2022, there were 17 active participants in the project. A key characteristic of this farm is that each participant is responsible for their own vegetable bed, and the project leader has the power to remove members if they leave their cultivation area unattended for more than three months. This farm project has struggled with land ownership over time because of various construction projects. The participants sell a portion of their harvest in order to generate a secondary form of income for their households. The farm hosts several workshops, tours and interviews every month.

5.3 Questionnaire data

This section describes the data obtained from the questionnaire and graphs have been used to illustrate these data.

5.3.1 Demographics and response rates

Out of the seven farm groups invited to participate in this study, six responded to the questionnaire component of the research. One individual of the seventh farm responded, but their response was excluded from the final results since it was not considered meaningful in the context of this research paper investigating group dynamics and learning. In the six groups who responded to the questionnaire, 33 out of the total 45 individuals who received the questionnaire responded (73% overall response rate) and gave their consent to be used in the study. One farm group, ‘Huerta La Vid’, had a 100% response rate. The farm group with the lowest response rate was ‘Fontihuerta’, with a 40% response rate. The demographics of the groups are shown in Table 5.2.

Table 5.2: *A demographics table describing the individuals of the six farm groups who responded to the questionnaire, including the response rate for each group.*

Huerta	**Neighbourhood**	**Response rate**	**Age Range**	**Average socioeconomic stratum**	**% Men**	**% Women**
Chihiza ie	Tunjuelito	83%	43-71	3.0	40	60
Años Dorados	Arborizadora Alta	78%	63-74	1.0	43	57
Huerta La Vid	Candelaria la Nueva	100%	25-66	1.75	50	50
Fontihuerta	Salamanca	40%	32-45	3.25	50	50
Fundación Monterrey Ecohídrico	Monterrey	83%	26-71	2.0	20	80
Guerreros y Guerreras unidos en acción	Bilbao	53%	37-68	2.38	0	100
Overall response rate		***73%***				

In total, 13 questions were left unanswered across all of the 33 respondents' questionnaire sheets. Since there were 38 questions per sheet, out of a potential 1,254 answers there were 1,241 completed answers (99%).

The average socio-economic strata of each farm will be salient in the discussion when factors affecting social capital are considered in relation to the research question: *How do the strengths and weaknesses in social capital vary between farms and across different social groups (bonding, bridging and linking)?*

5.3.2 Learning processes

Twelve questions on the questionnaire corresponded to information about learning and learning types: five of which related to social learning processes and seven related to knowledge transfer processes. See Appendix One, questions 6-14 and 30-32. As defined in section 3.3.1, social learning refers to learning that comes from the interactions within mutually dependent groups of common or divergent interests. Knowledge transfer refers to contexts where external actors provide new information or technical knowledge to individuals or groups which is then implemented to greater or lesser extents.

Figure 5.1 below provides insight to the first research sub question: *To what extent are the different learning types and processes occurring in the studied farm projects?* Standard deviation error bars are included in the graph.

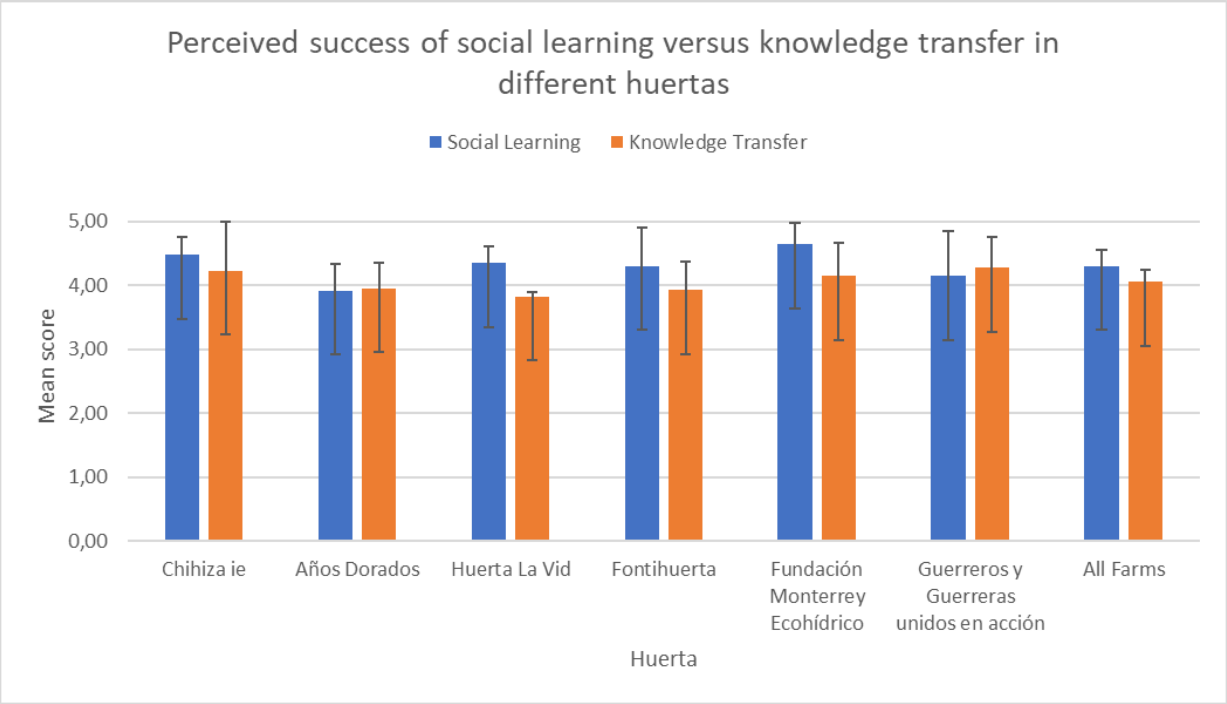

Figure 5.1: *Perceived success of social learning versus knowledge transfer in different huertas.*

Figure 5.1 is relevant to the discussion about how different farm groups access and integrate new forms of knowledge. Looking at the error bars also gives an insight into how much variation there is between how individuals in each farm learn; largely overlapping error bars indicate little variation. Overall, social learning is perceived to be more successful across almost all farms, yet both learning types score highly.

5.3.3 Social capital domains

Twenty-three of the questionnaire questions related to the different domains of social capital, as defined by Forrest and Kearns in their 2001 paper: *Social Cohesion, Social Capital and the Neighbourhood*. As explained in Chapter 3, not all domains were investigated through the questionnaire as they were deemed too complex to ask on an individual basis through a numbering system. Presented in the bar charts below are the results for social capital levels for individuals in different farm groups. The bar charts are entitled 'perceived sense of X indicator'

since the form of data collection consists of individuals responding subjectively to how they feel or perceive things.

Each farm group's data was divided up into 'bonding' (blue bars) and 'bridging and linking' (orange bars) categories. As defined in section 3.2, 'bonding' is the building of relationships between community members in homogenous groups. 'Bridging' consists of building communication between distinct groups in the same community and 'linking' relates to the creation of links to institutions and organisations outside of the community, or with other communities. In the questionnaire, 'bridging and linking' were combined into one group, as they represent the relations of individuals to communities external to the farm. It will make comparisons in the discussion between farm community and wider community clearer and more distinct. The following bar charts will inform the second research sub question: *How do the strengths and weaknesses in social capital vary between farms and across different social groups (bonding, bridging and linking)?* Standard deviation error bars are included in all of the bar charts.

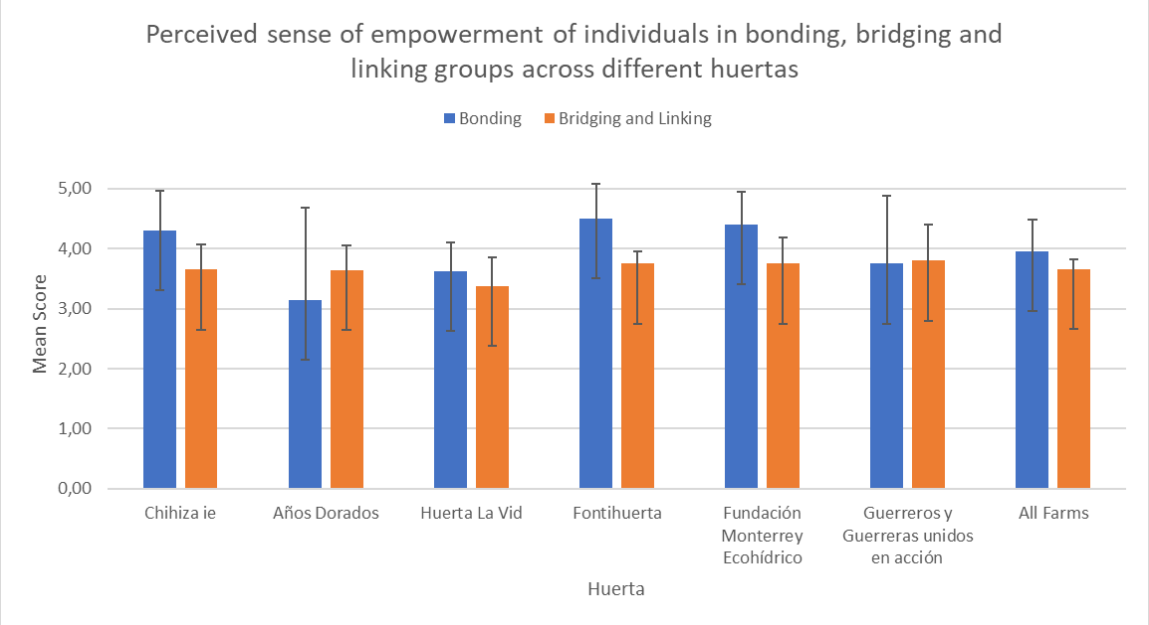

Figure 5.2: *Perceived sense of empowerment of individuals in bonding, bridging and linking groups across different huertas. Empowerment is the first domain of social capital.*

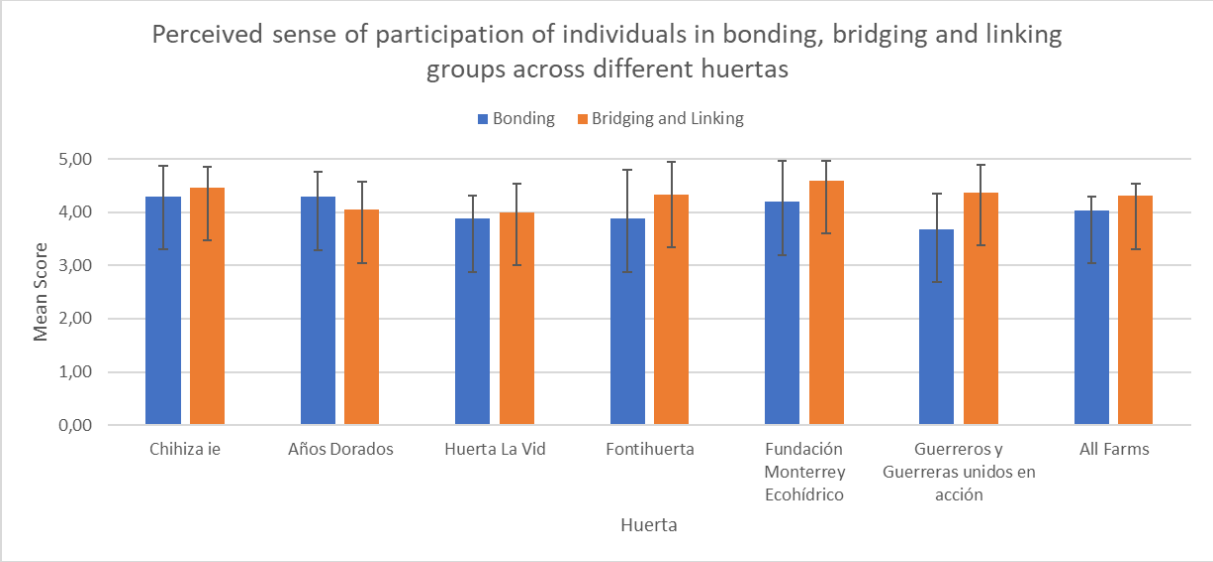

***Figure 5.3**: Perceived sense of participation of individuals in bonding, bridging and linking groups across different huertas. Participation is the second domain of social capital.*

Figures 5.2 and 5.3 show the mean scores for sense of empowerment and participation. It is noteworthy that the scores were high across all domains (no score below 3 and several scores close to 5). Particularly salient to these domains is how individuals see their empowerment/participation within their farm group versus in the community external to the farm. These results help to understand whether the farm members only benefit from high levels of social capital within the group or whether they generally benefit from these levels in other spheres of society. It is especially important to notice that in Figure 5.3, the farm groups overall scored more highly in bridging/linking participation than bonding participation. It is one of the only domains where bridging and linking score more highly than bonding.

The following figures (5.4 and 5.5) for social capital both display generally high scores and low variability across all farms. They represent the domains of Supportive networks and reciprocity, and Collective norms and values.

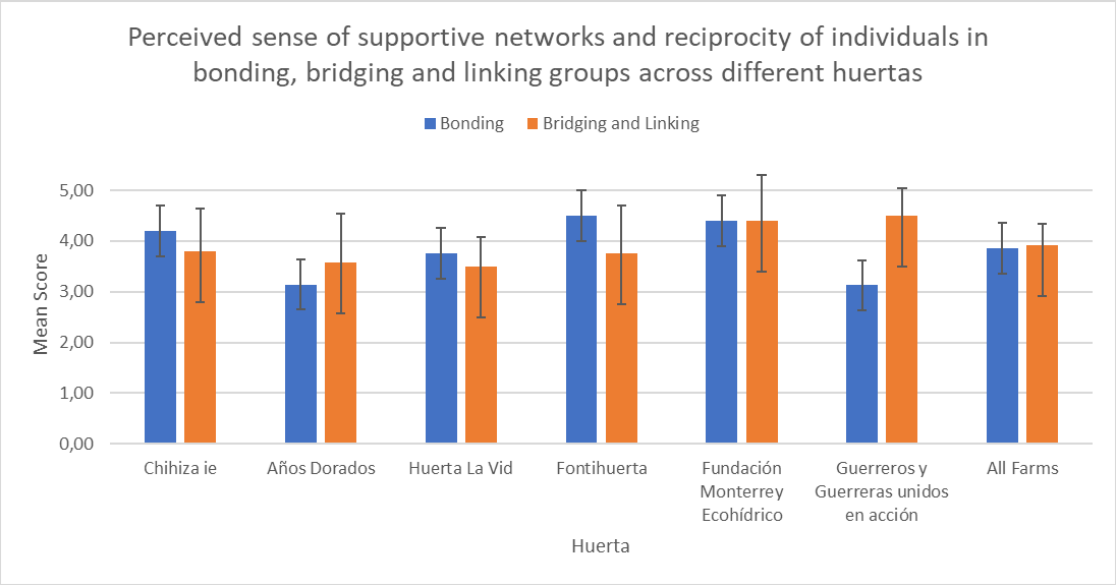

***Figure 5.4**: Perceived sense of supportive networks and reciprocity of individuals in bonding, bridging and linking groups across different huertas.*

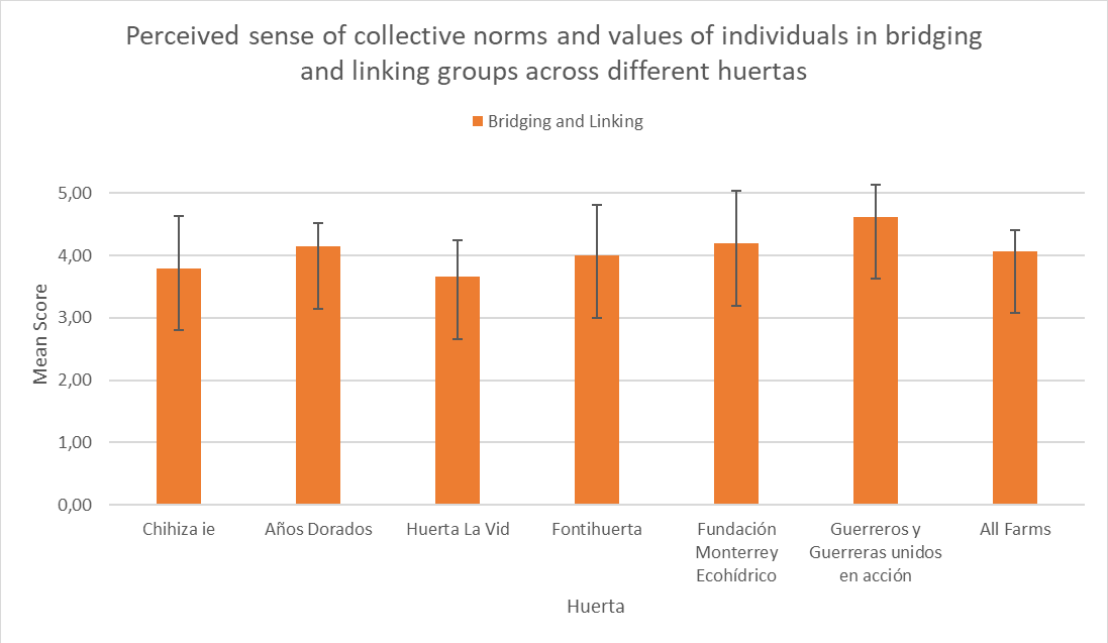

***Figure 5.5:** Perceived sense of collective norms and values of individuals in bridging and linking groups across different huertas. Collective norms and values is the fifth domain of social capital.*

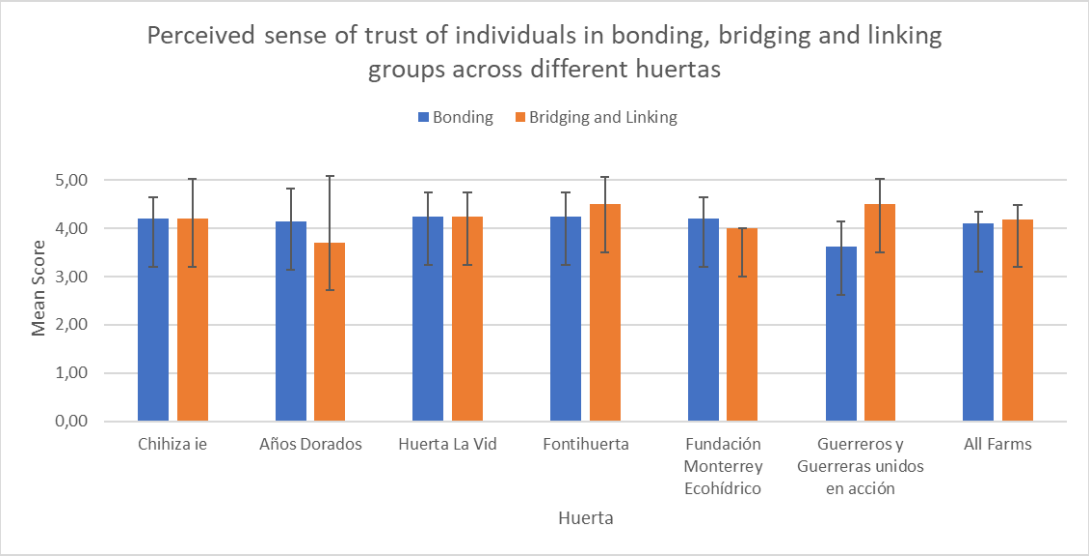

***Figure 5.6**: Perceived sense of trust of individuals in bonding, bridging and linking groups across different huertas. Trust is the sixth domain of social capital.*

The domain of trust (Figure 5.6) is an important domain to consider in the analysis of how social capital and learning types interact. Trust between farm participants will influence how they learn from each other, and trust of external actors will influence how participants learn from technical advisors. Scores were particularly high across all farms (only two results below 4) with little variability, which indicates high levels of trust in all social groups.

The final two bar charts (Figures 5.7 and 5.8), displaying results for sense of safety and belonging, follow the trend of high scores and low variability.

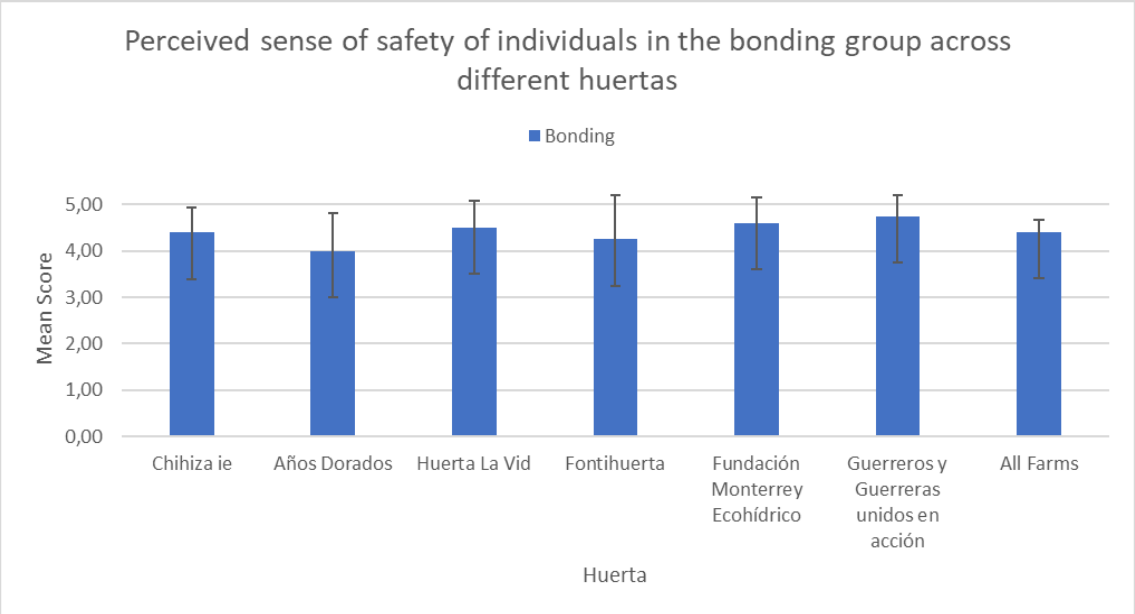

Figure 5.7: *Perceived sense of safety of individuals in the bonding group across different huertas. Safety is the seventh domain of social capital.*

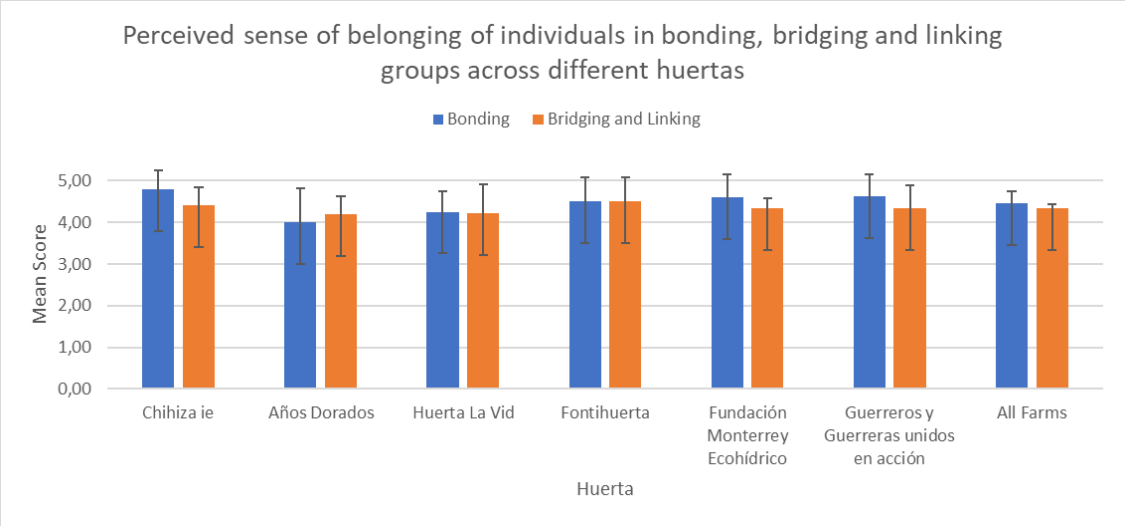

Figure 5.8: *Perceived sense of belonging of individuals in bonding, bridging and linking groups across different huertas. Belonging is the eighth domain of social capital.*

5.3.4 Totals for all farm groups

The bar charts below display the aggregated data for all farms. Figure 5.9 shows the levels of bonding and of bridging/linking for each farm. It gives an overview of the strongest relationships for each farm and whether they are working harder on close, internal relationships or investing more into their wider, extra-farm relations.

Figure 5.10 shows the totals for each domain of social capital across all farms. It gives an indication of which domains of social capital are highest in the studied farm groups, which will especially inform the main research question of this paper: *What is the relationship between the different learning types and levels of social capital in community-driven farm projects?*

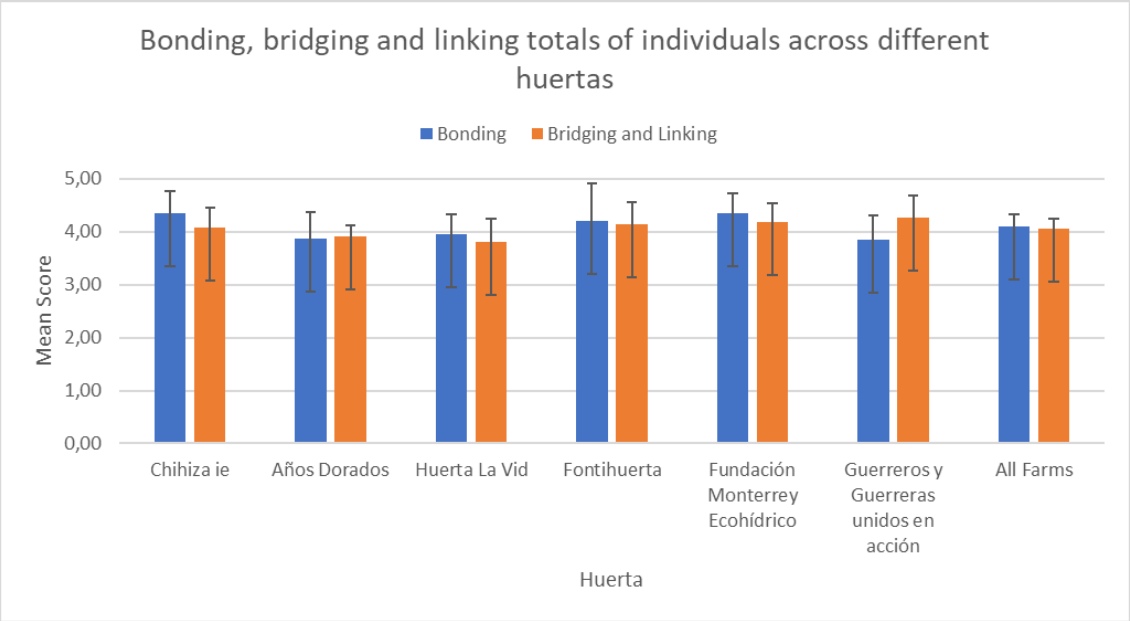

Figure 5.9: *Bonding, bridging and linking totals of individuals across different huertas.*

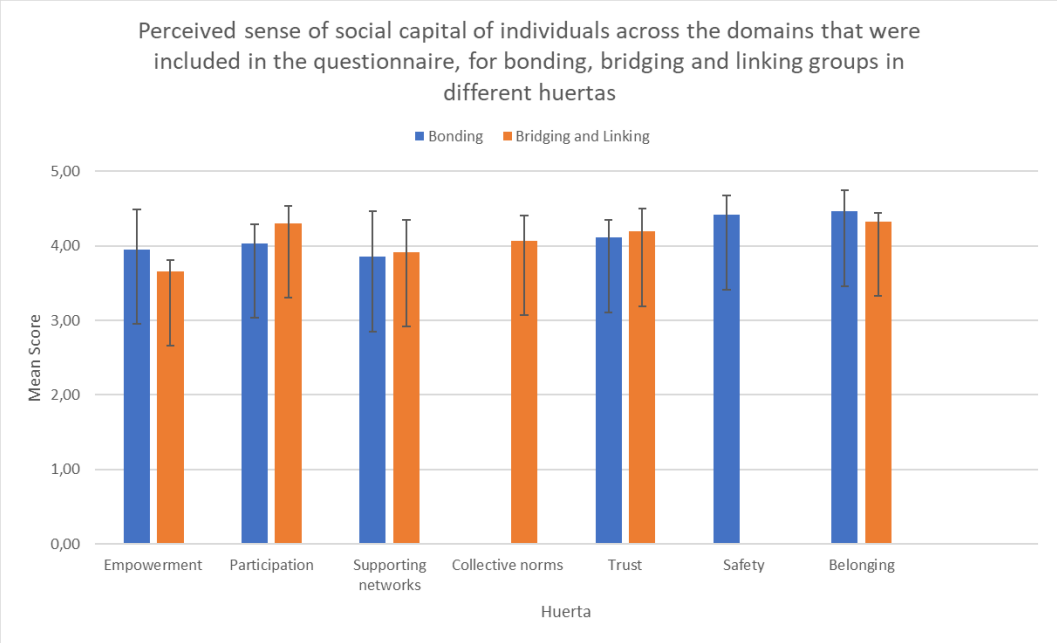

Figure 5.10: *Perceived sense of social capital of individuals across the domains that were included in the questionnaire, for bonding, bridging and linking groups in different huertas.*

**Values are missing for 'Collective norms - bonding' and 'Safety - bridging and linking' because they were not investigated in the questionnaire. Additionally, the domain 'Associational Activity and Common Purpose' was not investigated via the questionnaire at all, rather it was explored in the focus group interviews.*

As expected, the aggregated data follow the trend of high scores and low variability.

5.4 Interview data

This section shows the results of the coding process that was applied to the focus group interview data.

5.4.1 Interviews and transcripts

Out of the six farm groups who participated in the questionnaire, five participated in the focus group interviews. The interview recordings ranged between 35 and 62 minutes in length. The one-to-one semi-structured interview held with the technical assistant lasted 63 minutes. All transcripts will be available upon request, but are too lengthy to include in the appendices. The interview data will provide information to respond to the main research question and the first two sub questions.

5.4.2 Codes and themes

Forty-nine main codes were established from the five focus group interviews, which were then sorted into nine themes. Table 5.3 shows how different codes were organised into different themes. Beyond reflecting the main themes of investigation (learning and community), which are expected to appear in the themes, the table shows which other topics were raised during the interviews. Other themes, (e.g. finance and environment) were not raised by the interview questions, rather they emerged through discussion. Codes in green were classified as having ‘positive’ orientation, codes in red were ‘negative’ and codes in black were ‘neutral’.

Table 5.3: *Thematic coding framework. All 49 codes were sorted into nine themes.*

Theme	Codes within theme
Community	Community building and social cohesion on farm, Self-organisation, Working together, Farm benefitting the local community, Importance of community support and networks, Openness to new participants/wider community, Strengthening local networks and economy, Lack of community/integration in area before the farm, Challenges of working together, Commitment issues, Problems in neighbourhood
Finance	Generating income from farm, Financial pressures, Need to improve economic aspect
Environment	Environmental benefits of farming activity, Organic waste, Recycling, Environmental threats
Learning and knowledge	Individuals sharing their knowledge, Knowledge about cultivation techniques, Technical assistance and knowledge from institutions, Learning through doing, Educational value of the farm, Need for technical input, Exchange with other farm groups, Knowledge from workshops, Combining practice and theory, Learning through observation, Rural knowledge
External support	Support and collaboration with institutions (public and private), Importance of officialising project, Problems with collaborations, Problems with authorities
Food and health	Improving human health, Food sovereignty, Learning to appreciate food, Nature as therapy
Agricultural context	Rural-urban migration, Criticising agro-chemical industry
Politics	Changing individual mentalities and values, Political agendas, Problems in rural Colombia
Farm-specific	Project continuity, Desired improvement to farm project, Water management/system, Successful growing outcome, Passion for the project, Lack of productivity, Challenges starting the farm

The nine themes that were identified were then quantified through calculating their occurrence. Table 5.4 shows the occurrence of themes across the different farm interviews. Although the occurrence table gives an insight into which topics were commonly raised in the interviews, it does not provide a quantitative assessment of their relative importance. For example, in the interview with Fundación Monterrey, the high score in politics was due to a lengthy conversation on that topic which generated numerous mentions of political themes. This does not necessarily mean that politics assumes a particular importance over other topics.

Table 5.4: *Occurrence of themes per farm interview transcript organised by most occurring in total for all farms.*

Themes	Fundación Monterrey Ecohídrico	Chihiza ie	Fontihuerta	Guerreros y Guerreras unidos en acción	Años Dorados	Total for all
Community	47	27	85	51	131	**341**
Learning and knowledge	74	82	61	55	59	**331**
External support	55	47	16	35	49	**202**
Farm-specific	71	73	12	36	60	**252**
Politics	48	17	3	26	24	**118**
Environment	19	21	14	8	14	**76**
Finance	23	2	11	18	6	**60**
Food and health	20	3	12	11	12	**58**
Agricultural context	8	16	0	22	2	**48**

6. Qualitative analysis and discussion

This section presents the most salient findings from the focus group interviews and technical advisor interview that shed light on issues relevant to this thesis. The questionnaire data from the previous chapter will be triangulated and compared with the interview data. The first part of this chapter will be divided up by the themes established in the theoretical frameworks chapter of this thesis, as well as by the research questions. Section 6.1 will analyse responses relating to learning types, processes in order to respond to the first research subquestion. 6.2 will investigate the 8 domains of social capital, relating to the second subquestion. Section 6.3 will answer the overarching research question: *What is the relationship between the different learning types and levels of social capital in community-driven farm projects?* Finally, section 6.4 will respond to sub question three, suggesting potential solutions to improve the current situation in the cases studied.

The second part of this chapter will consider the wider significance of these results and evaluate the methodology and data collected by this investigation. Section 6.5 will consider the relevance of these findings in the wider Colombian and global context, section 6.6 will evaluate the methodology and 6.7 will identify other limitations to the research project. Finally, section 6.8 will propose recommendations for future research.

6.1. Learning types and processes

This section will inform and respond to the first research sub question:
To what extent are the different learning types and processes occurring in the studied farm projects? To support and analyse the data collected, references from the theoretical frameworks in section 3.3 will be used.

6.1.1 Social learning

The first question of every focus group interview was: *When you are uncertain about how to do something in the garden, what do you do? Who do you ask for help?* Every group had a slightly different answer to this but mostly the groups named sources of social learning: relying on knowledge learned from their childhood, asking their friends, observing others or asking a network. In the case of Chihiza ie, their main resource for gardening knowledge was themselves, since they have the common experience of growing up in the countryside. Failing that, they turn to other urban farmers with similar roots:

We all have rural peasant origins, as it is something innate that we bring and we always contribute some kind of knowledge. Always. It's the same when we are in contact with other urban farms. And other rural people come here too and help us out.
(Chihiza ie)

Learning through observing their gardening colleagues also came up across the farm interviews. In the interview with Años Dorados, the answer to the first question was that observing each other was their main way of learning new things:

B: Observing. Observing.
C: Yes, always watching
B: How every individual works the land
(Años Dorados)

In the group Fundación Monterrey, they reflected that each new member to the project brings new knowledge and has something to teach the group:

Each person brings different knowledge. And so we learn from everyone.
(Fundación Monterrey)

For the group Guerreros y Guerreras, the participants responded that they relied upon the project's founders, since they are the ones who had received the most knowledge from courses and training from the Jardín Botánico. This was a key example of how knowledge transfer generates more social learning, as information is passed on through urban farm groups:

Thanks to the support of the ladies who started the garden, who have been in constant training with the Jardín Botánico and other entities, we can ask them questions when any of us have uncertainties.
(Guerreros y Guerreras)

Not every group has participants who are connected to a rural source of knowledge. For example, the group Fontihuerta is made up of a group of cyclists who started gardening only in 2021. They rely heavily on contacts in their local agroecology network for advice on gardening. This group also expressed a more experimental approach to learning. They described themselves as being open to making mistakes and learning from them:

It's a living school, an opportunity to learn and try things out. And to damage! Damaging seedlings, because yes, once we wanted to transplant at a time contrary to the planetary rhythm as we did it at midday! Oh well, like that we learned that one should never transplant at midday.
(Fontihuerta)

In the questionnaire, responses to the questions about social learning revealed a similarly high reliance upon learning from each other, observation and asking other experienced gardeners. In Figure 5.1 in the Results chapter, it can be seen that all group averages apart from one scored above 4 for perceived levels of social learning. However, the questionnaires also revealed that despite the fact that the group averages for social learning were high, there were certain outlying individuals: in the farms Años Dorados and Guerreros y Guerreras, there were individuals who perceived their social learning experience to be 3 or below. This would imply that not everyone in the farm group was a part of the social way of learning, either through their own choice or through the fact that they were not as included by the rest of the group in the learning processes. These differences did not emerge in the group interviews, only when individuals responded to the questionnaire.

For all of the interviewed farms, social learning occurs not only as a knowledge input, but also as a knowledge output. This is because they are all involved in teaching new members, neighbours or visitors who set foot in the gardens. Even in Fontihuerta, where the participants expressed that they had very little experience, they still focus on teaching their surrounding community whatever they can about gardening, especially to children from local schools and families. In the case of projects that have existed for several years and therefore have a lot of experience and knowledge to share, one of their main focuses is to teach others about food, nature and the environment. Notably, the project Guerreros y Guerreras explained in the interview that they continually run workshops, host schools, universities and other gardening groups. In this way, they become a source of knowledge transfer themselves:

Here, it's a school… It's a true agroecological school. We want this to be the school of what we leave to future generations.
(Guerreros y Guerreras)

Summary
Many different forms of social learning are present in the farm projects and it is the main way of learning for these farms. Social learning is encouraged by successful knowledge transfer; farm participants pass on what they learn from workshops and courses to their other farm colleagues. However, it is important to note that social learning is not always a totally inclusive process: the questionnaires revealed that not all individuals felt part of a social learning process.

6.1.2 Knowledge transfer

Although social learning was always referred to as the primary source of learning in the focus group interviews, all the farms interviewed acknowledged the need for technical advice in their project. Fundación Monterrey and Guerreros y Guerreras were the two projects that spoke at most length about their reliance on technical advice and the great benefits that they experienced as a result of this input:

If we need help with something specific, we go to certain institutions. For example, we collaborate a lot with the Jardín Botánico, the Ministry of Environment, and other institutions.
(Fundación Monterrey)

D: They (Jardín Botánico) have given us training and done collaborations. They give us technical advice that we can easily share with others.
(Guerreros y Guerreras)

However, despite their connectivity with the Jardín Botánico (who they described as their "right hand"), the participants of Fundación Monterrey still felt that lacking technical knowledge was a major limiting factor to their progress. In particular, when it came to topics such as installing an irrigation system they expressed the need for more specific advice from experts and that the Jardín Botánico was limited in advising on such topics.

The group Chihiza ie were not so keen on receiving technical advice. Mostly due to their personal experiences of 'campesino' (peasant, rural) life in the Colombian countryside, they had reservations about technical advice. Although their criticism was not always targeting the advisory services they had used in Bogotá, it revealed the distrust that they felt towards external advisors in general. Mainly, in the interview they criticised technical advice for being generic and not specific enough to individual farms:

C: I noticed many times in the countryside back in the days.... The engineer would come, and he would tell us what he learned at university.
…
B: No. It should start from here… It doesn't work to bring knowledge from elsewhere.
(Chihiza ie)

Remarks from participants about how they felt that technical advice was inferior to practical experience and knowledge of a specific site also came up elsewhere in the focus group interviews. In the Guerreros y Guerreras group, who were generally very positive about the advice they received from the Jardín Botánico advisors, one participant raised an anecdote where the reality of gardening proved the technician's advice to be incorrect:

B: I brought that banana tree from Santander. And every technician who came here before seeing it told me that it would never produce fruits.
C: And the same with the avocado
B: And there's the tree. And we've already eaten bananas from it.
(Guerreros y Guerreras)

Some of the farms discussed sources of knowledge transfer other than the JBB that they received: YouTube videos, university researchers and online courses. Since these sources were mentioned more casually, they were likely not the most

significant sources of technical input, but rather served occasionally in the learning processes of the farms.

In the questionnaire data, the perceived success of knowledge transfer was on average almost as high as social learning success across all farms. In Figure 5.1, knowledge transfer for all farms scored 4.06, while social learning scored 4.3. For the farms Guerreros y Guerreras and Años Dorados, knowledge transfer success scored on average slightly higher than social learning, which indicates that the individuals in those groups perceived that they learned more from technical sources than from their peers. Even the individuals in Chihiza ie, who had discussed mostly negatives about technical knowledge in the interview, responded positively about it in the questionnaire. They had an average perception of the success of knowledge transfer of 4.23 (Figure 5.1). There was not a single individual who scored 3 or below for perception of knowledge transfer. This reveals that although the technical advice was not always felt to be correct or adapted to them, the participants overall acknowledged that it was useful and contributed to the advancement of their knowledge about gardening.

Summary
Technical advice was acknowledged to be necessary in all focus group interviews. However, the participants had varying opinions about the quality of the technical advice they had received in the past. There were remarks made in a few of the interviews that practice was always the best teacher and thus more valuable than technical advice. Taking into account the questionnaire responses, it can be said that overall, technical advice was felt to be necessary and useful by all farm groups.

6.1.3 Learning loops

As discussed in section 3.3.3 of this thesis, identifying and distinguishing the different learning levels of the farm participants is a central component of the study. Defining differences between how individuals implement knowledge in order to change the farm and how that knowledge affects the individual on a deep, personal level is significant because of the cross-over it has with social capital. Individuals who learn on a 'third-loop level' are evolving in their values, their perceptions of themselves and their sense of purpose (Tosey et al., 2012). There was one key question which was asked in all of the focus group interviews that specifically investigated whether third-loop level learning was occurring in the farm groups: *'How have your values changed since being involved in this project?'*. This question was one of the most revelatory questions of the interviews, as in most groups all of the participants were eager to express themselves individually. Every participant who volunteered an answer to this question confirmed that being involved with the farm had changed their values, often profoundly.

Before this, I worked on about 30 engineering projects in different departments of Colombia and also abroad. I felt empty. Really being here in this space fills me up… Being with the plants has changed me a lot. Knowing, understanding that everything is connected, right? That we are part of a whole, and that we do not own anything.

(Chihiza ie)

In the garden, we change, don't we? It changes the way we think about ourselves.
(Fundación Monterrey)

Not only have the farm projects caused participants to change the way they see themselves and their purpose, but it has also changed the way they see other people:

Here, the idea is to be in a space of love, fraternity, of love. Optional because we opted for this. It makes us have a higher level of awareness towards the other.
(Fontihuerta)

Another indicator of triple-loop learning is when habits change, because it indicates that an individual's way of doing things has been reconsidered and changed as a result of new values (Tosey et al., 2012). Several participants referred to a change in their values or ways of being:

All of this the garden has taught me. It has expanded my sense of self... Before I was more shy and introverted. And I have learned so much here, participating actively alongside those people in the garden. So that part has changed me a lot.
(Chihiza ie)

In many of the focus group interviews, the example of organic composting came up in relation to changing habits. Not only had the farms' participants learned to recycle organic waste by building compost, but one of the farm groups had managed to educate and change the habits of their surrounding neighbourhood:

It is about changing one's habits: simply sorting out the organic waste in order to return it to the cycle of life. All of this makes for a change not only in the individual mentality but also in the collective. Just by consolidating this change in our daily routine.
(Fundación Monterrey)

Aside from investigating the triple-loop level of learning, important indicators of double-loop learning also emerged during the interviews. Double-loop learning is significant to analyse because it is an indicator of the organisation itself and how new knowledge has a lasting impact on the management of the farms (Wang & Ahmed, 2003). All farms interviewed revealed that at some point they had significantly changed their methods or processes on the farm, either to increase productivity or organisational efficiency. What was especially significant from these discussions was that most farms admitted to being in a constant state of improvement and evolution:

We very much like theory - results, practice - results.
(Guerreros y Guerreras)

B: Every day we learn more… This never ends. Each time we learn something more. And every day it's something new.
(Fundación Monterrey)

This way of learning continuously as a group is essential in organisational learning theory (Wang & Ahmed, 2003). By learning together, correcting mistakes and innovating, groups can build a collective knowledge base that drives the system they are creating. The building of it is a continuous process which is never completely over if the group remains open-minded and willing to adapt. In the interview with Fontihuerta, a participant described their way of learning as "the building of a collective consciousness", which summarises what successful organisational learning is about.

Finally, it can be concluded that single-loop learning is occurring in the interviewed farm groups. The farm participants explained that they made small changes to the farming system all the time. It has been easy to integrate small changes along the way, such as the position of the raised beds, which tools they use and how they compost. However, the interview with the technical assistant from the JBB revealed that often it was a problem that the farm projects did not make small changes. This may not be the case with the selection of farms that were interviewed, but it reveals that some urban farm projects have a hard time overcoming the first level of organisational and individual learning.

Summary
Single-, double- and triple-loop learning are active in all of the interviewed farm groups. Triple-loop learning is indicated by the altered values and habits of the participants. The responses about changed values were the most evocative of the interviews, revealing the extent to which the participants felt that their involvement in the farm had been life-changing. Double-loop learning has occurred in all of the projects, as methods and processes have been improved over time. The interviewed projects mentioned small changes that they made constantly, which indicates that single-loop learning is also occurring successfully in the interviewed farms. However, the technical assistant raised the point that not all farm projects in Bogotá are capable of implementing single-loop learning as often the advice is not implemented.

6.1.4 Response to research sub question one: To what extent are the different learning types and processes occurring in the studied farm projects?

Linking the findings of section 6.1 to the first research question; *To what extent are the different learning types and processes occurring in the studied farm projects?*, it can be concluded that both social learning and knowledge transfer are highly relied upon by the interviewed farm groups. Although social learning is the most common form of learning, it was not always found to be a perfectly-executed practice. Some questionnaire results revealed that not all participants felt included in the learning process, which constitutes a long-term threat to learning cycles. In organisational learning research, there is consensus that in a group, no individual can be left behind when it comes to organisational learning (Wang & Ahmed, 2003). While traditional hierarchical structures expect leaders to learn and implement top-down improvements, modern organisational theory has shown that team learning is a more efficient strategy for improving an organisation (idem). A community farm is very much a learning organisation, as new knowledge enters, is tested, refined, evaluated and integrated all the time. By including as many farm members as possible in every stage of the learning process, the social learning environment is improved. When only a few of the farm members are included in the continued learning process of the organisation, the social learning environment will diminish over time and may eventually threaten the success of the project.

From a knowledge transfer point of view, all interviewed farm groups acknowledged that technical support is crucial to increasing their productivity and efficiency. They had all been in contact with either the Jardín Botánico de Bogotá or local agroecology networks for this technical advice. Even groups that had lengthy experience in cultivating due to a rural upbringing were aware that a constant flow of new knowledge is essential to improving practices. Indeed, in groups where there was a constant inflow of technical advice received through knowledge transfer, new social learning opportunities were created as group members shared their learnings with their colleagues. However, many groups expressed that they need more technical support than they currently receive and that the knowledge of advisors from the JBB was not always sufficient. There were also complaints about how the advisors often give generic advice that is not tailored to the specific context, aims or challenges of each farm. This is not uncommon feedback; in fact, the greatest criticism of advisory services is that support is too untailored (Champion et al., 2010). This is down to the time constraints of individual advisors who are usually assessed on the number of clients reached (Acquaye-Baddoo, 2010). It is nonetheless one of the main reasons why farmers can lose trust in advisors and become less motivated to seek their advice. Out of the five interviewed groups, two described themselves as disappointed in the advice

they had received from the JBB. The knowledge transfer process is therefore at some risk of losing credibility in the studied system, and so the reasons for which will be analysed in the following subsections 6.2.9, 6.3 and 6.4.

Despite the weaknesses in the social learning and knowledge transfer processes, it can be concluded nonetheless that the learning that does occur is very transformational, triple-loop level learning. The numerous exchanges in the interviews revealed that most participants had experienced significant changes in their views, values and habits due to their involvement in the community farm project. This transformational kind of learning is a very individual experience, as it comes down to the values of each person within the organisation, but it is facilitated and encouraged by the learning environment (Wang & Ahmed, 2003). Social learning settings which are inclusive, immersive and reflective are fertile ground for triple-loop learning (idem). Double-loop and single-loop learning cycles were also identified as active through the focus group interview discussions. However, information from the interviewed technical assistant revealed that many farm groups struggle to make even small changes in the farming and learn from their mistakes, despite the support from advisors. Despite the best intentions of the advisor and the willingness of the farmers to tend to their gardens, there exists a knowing-doing gap (Pfeffer & Sutton, 2000). Just because someone knows what to do to improve the system does not mean that they will actually implement those changes. This anecdote serves as a reminder that the studied groups in this paper were not necessarily representative of all farms, which will be discussed at greater length in section 6.6.3.

6.2 Social capital

This section will answer the research question: *How do the strengths and weaknesses in social capital vary between farms and across different social groups (bonding, bridging and linking)?* The theoretical frameworks of the 8 domains as established by Forrest and Kearns (2001) and the groups for social capital as described by Kanosvamhira (2019) relating to social capital in Chapter 3 of this thesis will guide the analysis. The three groups for social capital are defined as follows: bonding (community members in homogenous groups), bridging (community members in heterogeneous groups) and linking (extra-communitarial relationships). Both the focus group interviews and questionnaire data will inform this part of the analysis.

6.2.1 Empowerment

This indicator of social capital is defined by Forrest and Kearns as ‘people feel listened to, involved in processes that affect them and can take action themselves to change things’. Across the focus group interviews, participants expressed how

they felt as if their voice was important in the project and that their ideas were taken into account. In the interview with Fundación Monterrey, the first participant to speak highlighted how every new person who accompanies the project is valued for what they know and are listened to:

Every person who joins us in the garden brings new ideas: how to sow, what we should sow, when we have to sow.
(Fundación Monterrey)

Being open to learning from others and implementing new ideas was expressed across the interviews. Although it cannot be assumed that these statements are followed through with in practice, the openness to including new people into the project and implementing their ideas is a clear indicator of community empowerment. In the Guerreros y Guerreras interview, their attitude to learning and applying knowledge was also expressed to be a source of empowerment:

The farmer's proverb that really hits home with us is that to find the solution, don't give someone a fish, but instead teach them how to fish.
(Guerreros y Guerreras)

This interviewee referenced the familiar proverb: "Give a man a fish, and you feed him for a day. Teach a man to fish, and you feed him for a lifetime." The expression summarises what is empowering about learning: equipping people with skills allows them to empower themselves and to create opportunities. In the case of Guerreros y Guerreras, their group consists of mostly women living in an average socio-economic stratum of 2.38, classified as 'Low' (Table 5.2). The discussion revealed that many of the participants were displaced victims of rural conflict who were forced to leave their homes in the countryside behind and find a new life in the suburbs of Bogotá. The context for empowerment is unfavourable to say the least, yet their farm is unquestionably building their sense of empowerment and ability to empower others:

Here we are all leaders!
(Guerreros y Guerreras)

Similarly, in the farm group Años Dorados, the farm is positioned in one of the most disadvantaged districts of Bogotá, Ciudad Bolívar. The participants all live in this neighbourhood and they were recorded as having the lowest average socio-economic stratum of any of the interviewed groups - 1 ('Low-low'). Furthermore, the participants were all over the age of 60 and lived on their pensions, if they had one (Table 5.2). Despite this context, one of the participants expressed the sense of empowerment that they promote within the group:

G: There are no power dynamics in this space. They are free to say "I sow this way, I do it like this, I do it that way". They have that freedom in this space and the

autonomy to do this.
(Años Dorados)

The questionnaire responses about perceived sense of empowerment on the bonding level reveal variations between the groups. Although all groups averaged above 3, only half of the groups averaged above 4 (Figure 5.2). Años Dorados averaged the lowest score in this category at 3.14. This can be explained by the fact that two individuals in the group gave the response of 1 to the two questions that were indicators for bonding empowerment: *18. If I have a new idea for the garden, I feel confident to express it to the others in the group* and *19. In general, since joining this project I feel more confident about expressing my opinions* (see section 4.4 for the questionnaire matrix which describes how the different questions were shaped according to the social capital framework). Although the general message of the group was that everyone was free to do as they will without "power dynamics", in practice, this was not the case for everybody. The specific reasons behind this were not revealed by the study, but it can be concluded that not everyone in the farming group felt equally empowered to propose ideas and share their opinions with the group.

On a bridging and linking level, the sense of empowerment varied across projects. For Fundación Monterrey, their relationship with the JBB and other governmental agencies was an essential component in being able to push forward their project and fight for change in their neighbourhood. The support they received was empowering to their ideas and for them as individuals. Similarly, for Guerreros y Guerreras, the support they had received from the JBB and other public authorities was crucial to feeling empowered within their project:

D: No institution tries to change this (our autonomy). And thank God, the institutions have been very respectful in that sense... They have been cooperative and respectful with us in that.
(Guerreros y Guerreras)

However, not all farms experienced the same kind of empowering support. For Años Dorados, they had very mixed experiences with institutional support. Although the municipality had facilitated their expansion by allowing them to use more public space, the participants expressed their disappointment and frustration that the JBB had not been active in supporting them in the last few years:

At the moment, the institutional support that has been provided is minimal.
(Años Dorados)

Looking at the questionnaire data about empowerment on the bridging and linking levels in Figure 5.2, all farms scored above 3 in this category. In four out of the six groups, participants expressed that they felt more empowered within the bonding group than in the wider bridging and linking groups. The farms Guerreros y Guerreros and Años Dorados were the two groups that scored higher on bridging and linking empowerment than bonding empowerment. The questions asked as

indicators for bridging and linking empowerment were mostly to do with how the participants felt about the relationship they had with technical advisors, for example q.30: *I feel confident to reach out to the technical services and ask for help*. Q.34 pushed the respondents further by asking the crucial question: *As a result of the contact with the technical services, I feel more confident about contacting other services, organisations and government agencies*. This question revealed whether the relationship with the JBB had made the farm participants feel like their needs were listened to on a municipal and governmental level, which is a key indicator of empowerment on the linking level. On this particular question, all farm groups scored an average of 4 or above, which is very high. This would indicate that the support that farms receive from the JBB overall improved the relationship that these citizens had with governmental departments. This topic was also discussed in the interview with the technical assistant. The assistant's reflection was that perhaps the farm participants generally felt more empowered to reach out to other services because of the fact that the different departments had become more aligned in their goals in recent years, creating a sense of coherence:

I think that right now an integration is taking place, a coordination that was not so evident before. The challenge between all the institutions is always to come together, join forces... And now there are interests and resources directed to the same actions... For me that is coherence and I think that this definitely has to generate trust, not only towards the Jardín Botánico and the city hall but also towards the other district departments.

(JBB technical assistant)

Summary
Empowerment across farms and across social groups is generally high. There are some threats to empowerment, such as the sometimes inconsistent support from institutions such as the Jardín Botánico and occurrences of empowerment not reaching everyone in the groups. However, in the majority of the farm interviews, the support received from institutions is empowering and facilitates the progress of urban farm projects.

6.2.2 Participation

This domain of social capital is defined by Forrest and Keans as: 'People take part in social and community activities; local events occur and are well-attended'. Due to the fact that all individuals who were interviewed or who responded to the questionnaire were part of an urban agriculture project, it can be said that the starting point for participation is already high. However, the investigation aimed to go further than this by analysing to what extent each respondent participated in the projects and how. Bonding level participation in this study was investigated through questions relating to how much each individual participated in the decision-making, organising and evaluating of the farm project as well as their participation in events on the farm. For example: q.15 '*I participate in the decisions about the planning (what to grow, how to design the garden)'* and q.27 '*I attend the social or educational events in the garden when they happen'*. Bridging and linking level participation was investigated through questions relating to how much the wider

community is involved in the farm project and whether the farm participants attend events organised by institutions. Although participation was mostly assessed through the questionnaire, additional information often emerged through the interviews and also through the observations made by the researcher. All three sources will be taken into account in this section.

Figure 5.3 shows the questionnaire data for participation. In this domain, the bridging and linking group scored on average more highly than the bonding group. This may be explained by the fact that most of the farms interviewed had a strong focus on outreach and educating about urban farming. Especially the question: '*I am interested in attending events organised by the Jardín Botánico or other government services that we are in contact with'* was answered with high scores, the lowest farm average being at 3.86. This reveals the farm groups' strong interest in participating in urban agriculture events in general and being connected to a wider network beyond their own farm group. Although the bonding level category on average scored lower than the bridging and linking category, the difference was only slight; the average for all farms was still over 4 (4.04). On the questions relating to bonding participation that focused on how much each individual contributed to the planning and implementation of ideas in the garden, there were consistently one or two individuals in each group who scored lowly on this. This can be explained by how each farm is managed. In most cases, only a few participants made crucial decisions about planning, implementing and evaluating. This was usually due to the fact that each project had one or two leaders who knew the most about gardening and who committed the most time and energy to the project. This often came through in the interviews, where participants said that they turned to a particular knowledgeable person in the group for advice. Decisions are most often made by these 'leaders' because the rest of the group trusts their opinions. In one interview, a farm participant explained why not every member of the farm team gets to implement their ideas:

Sometimes working in a pair is complicated. And to work in a group of twenty, much more. Because we've already tried it. It gets a little more complicated because everyone brings their own ideas. And bringing something to fruition is complex.
(Chihiza ie)

However, not all farms were managed by just one or two leaders. In the interview with Guerreros y Guerreras, it was explained that each participant managed and was responsible for their own vegetable bed. Each participant had full control over which vegetables to grow and how to grow them.

Everybody works in their garden, their area, and every one is responsible for their own garden. So, for me it's beautiful… Each member has their own area and takes care of it themself.
(Guerreros y Guerreras)

Similarly, in Años Dorados, each member takes care of their allocated area. In both projects, however, there are common tasks which are shared by participants - especially the watering - and harvest is exchanged between them. In terms of levels of bonding participation, it cannot be concluded that one form of management is superior to another. Each farm and its management system has been developed according to its individual context and needs. Just because an individual does not contribute to implementing their own ideas does not mean that they are excluded, and similarly, just because all participants implement their own ideas does not mean that they are more included. What is important is that all members are made to feel included and valued, no matter what they can contribute. This came through in the interview with the cyclist-gardening group Fontihuerta, which is composed of many participants with varying levels of gardening knowledge:

C: Each person is contributing their art. Finding out what they like best
...
D: The most beautiful and most important thing about this place is that it is an anarchic exercise. There are of course some implicit rules. In general, in every urban farm there are implicit rules. But each farm has its own rules. Yes? And the members pick them up as they participate.

Summary
This domain of social capital scored more highly in the bridging and linking categories, which reveals a common enthusiasm of urban farmers to be connected to and participating in a wider network. The lower score for bonding participation is due to the fact that not all gardeners participate in implementing their own ideas, rather they put their trust in more knowledgeable leaders in the project.

6.2.3 Associational activity and common purpose

The third domain of social capital is defined by Forrest and Keanes as: 'People cooperate with one another through the formation of formal and informal groups to further their interests'. There were no questions in the questionnaire which related to this indicator and so this section will take into consideration the responses in the interviews and the researcher's own observations. Similarly to the previous category, the fact that all participants are involved in urban agriculture projects is evidence that the people in the study are successfully furthering their interests by forming groups around farming. However, there are of course differences between the 'interests' of the farm groups, which will be explored in this section.

In most of the farm groups interviews, a clear common goal was communicated. One farm, Fundación Monterrey, even has a mission board in the garage of one of the project leaders with the mission statement, values and aims printed out on a poster. Their unity in vision came across clearly in the interview:

The main objective in our organisation is to fight for the environment. So that we can enjoy a pleasant environment, a healthy environment, a habitable environment.
(Fundación Monterrey)

In the farm group Fontihuerta there are two main interests that bind their group together and build community: cycling and agroecology.

So the farm already has its community. Thanks to 'Fontirueda', the community of urban cyclists that we belong to, the community has been strengthened, in our case. There is a differentiator in each and every garden that has built up the community around it.
(Fontihuerta)

This "differentiator" for the group Chihiza ie revolved around preserving native seeds and ancestral knowledge. Their mission to save seeds and pass on knowledge was brought up by several members during the interview. Although it was clear throughout the interviews that each group united over a particular vision and all individuals were committed to that shared vision, it became apparent that individuals still maintained their personal goals and purpose. Each individual had their own reasons for joining the gardening project and for committing so much of their energy to it. For many of the participants, their reason to join the farm was because of their need to be connected to their past life in the countryside, for some it was curiosity to learn about agroecology for the first time, and for others it was the desire to improve a public area of their neighbourhood which had become a "basurera" (a dumpster). Although many different individual purposes could be harmonious within the farm group, it was also expressed in the interviews that there is always a limit to this. Too much diversion of objectives had proven to be a problem in the past and was especially mentioned in the interviews with Años Dorados and Guerreros y Guerreras. In the group Años Dorados, there had been disputes in the past about the fact that some individuals wanted to make a profit from vegetable sales, while the founding members saw the garden's products as the community's property:

Although this is not private property, they began to sow here and sell their produce. They abused the trust that us founding women gave them. Well, thank God, we got rid of them and now the farm and its produce once again belong to the community.
(Años Dorados)

On the bridging level, the urban agroecology networks are a clear example of sharing a common purpose. These networks serve to connect farming groups, share knowledge, and seeds towards the common goal of spreading urban agroecology. All of the interviewed groups mentioned these networks at some point in the interview. On the linking level, these common goals are echoed by institutions such as the JBB as their purpose is to spread the practice and support of urban agroecology in Bogotá. Across all three social groups, there is collaboration to organise events together, in particular the 'rutas agroecológicas' (agroecological routes). These guided tours give the opportunity to other gardeners and citizens to discover the urban farms of a neighbourhood, while generating some revenue for

the visited gardens through a small entry fee.

Summary
By definition, the interviewed groups can automatically be considered to fulfil this domain of social capital: they consist of neighbours coming together around the common interest of gardening. However, on a deeper level, individuals can still maintain their personal goals and purposes to a certain extent. As long as they remain within the implicit rules, diversity is a strength. In some cases, conflicts in purpose have caused ruptures in the past.

6.2.4 Supporting networks and reciprocity

This domain is defined as: 'Individuals and organisations cooperate to support one another for either mutual or one-sided gain; an expectation that help would be given or received from others when needed' (Forrest & Kearns, 2001). In this investigation, this domain was investigated through both the questionnaire and the focus group interview.

The questionnaire data for this category scored on average more highly for the bridging and linking group than the bonding group. On the bonding level, the questionnaire asked: *I feel like my fellow gardeners in the project would help me in my personal life if I were to encounter difficulties*. In two of the farms (Años Dorados and Guerreros y Guerreras), there were individual results of 3 and 2 which pulled down the farm averages (Figure 5.4). This result could be seen to be contradictory to what was said in the interviews: the word 'family' was used to describe the relationships in those same farms.

I have many problems going on in life: with my health and my family. But here I feel like this is my family. Everyone accepts me as I am.
(Guerreros y Guerreras)

However, it is possible that not everyone in the same project felt as if they were part of a family and that these disagreements were not vocalised during the focus group interviews. On the bridging and linking level, the focus group interviews revealed the importance of local farming networks not only as sources of knowledge, but also as a supportive network. In the absence of the JBB's support, the participants of Años Dorados turned to their local urban agroecology network for advice, seeds, support and inspiration:

And it was then that the Southern Agroecological Network was formed, because we thought "well, they (Jardín Botánico) did not come back, but we have knowledge, we have seeds, and we can help each other"... And the Agroecological Network was born precisely because we did not have that institutional support.
(Años Dorados)

In the interview with the group Fontihuerta, the gardening knowledge that they received from the beginning from their local network was a critical element to their success, since they started with so little knowledge. One participant explained that the different farms share common tasks, such as compost-making, and even

workforce, in order to lighten the burden of individual groups. Although the JBB was not considered to be a reliable network for farms like Años Dorados, for other farms interviewed, the service was a crucial support network:

Honestly, for us, the Jardín Botánico has been our right hand since we founded our urban farm.
(Fundación Monterrey)

The protocol of 2020 protecting the right to use public space for urban farm projects (Jardín Botánico de Bogotá, 2020) contributes significantly to the feeling of supportive networks on a linking level. All interviewed farms were registered under the protocol. Farms that had existed before the protocol especially saw this policy change as a pivotal moment in the institutional support they received. The protocol serves as a commitment from the municipality to protect registered urban farms against threats such as vandalism and hostility:

This type of protocol is used for, for example, what sometimes happens, if someone wants to come and destroy the community process. In that situation they can support you and you can ask for their protection. If you already have that documentation, you have the right to continue doing that community work.
(Fundación Monterrey)

Summary
Supportive networks on a bridging and linking level scored highly. This is mostly due to the protocol in place that protects urban farms and the strong connectivity of the agroecology networks. On the bonding level, some urban farmers referred to their group as "family" while others did not see the group as a supportive network for them. This is a crucial domain for effective learning, as supportive and effective networks are multipliers for knowledge transfer and social learning.

6.2.5 Collective norms and values

This domain is defined as: 'People share common values and norms of behaviour' (Forrest and Kearns, 2001). This category differs from the third domain (Associational activity and common purpose) in that it focuses on the value systems that individuals live by. The participants of the interviewed projects defined several core values that they share: protecting the environment, growing healthy chemical-free foods and building community. These values were touched upon in all of the interviews:

Firstly, we are helping to clean up the planet... so that the earth is more fertile. And secondly, we want to eat healthy food, because the motto of agroecological gardens is that we can produce food without using chemicals!
(Años Dorados)

Our activity is especially important in the aspect that there is a participation of the community. And that is our main objective: that other people also participate.

(Fundación Monterrey)

Not only did the participants of the interviewed projects share such values, many of them also expressed how being a part of the farm had changed their core values. In particular, participants' relationship to food and how they valued good food was a key value that had changed due to their involvement with urban agroecology.

On the bridging level, most of the farm groups interviewed spoke about how the existence of the farm had contributed to changing some values and behaviours of the neighbourhood. The most prominent example of this is the kitchen waste composting. All interviewed farms use a fermented composting technique known as 'Paca digestora' (fermentation blocks) which involves layering brown organic matter and organic kitchen waste. Large quantities of kitchen waste are needed in order to produce a sufficient amount of compost. The farm groups have needed to rely upon their neighbours to bring their organic waste and mostly have an efficient system in place for building compost piles in their local area. However, it was a process to educate their neighbours and eventually instil new habits - in Bogotá there is no domestic organic waste separation system and so citizens are accustomed to throwing food scraps into the general waste. On the farm of Fundación Monterrey, they have even developed a bucket system where residents collect their kitchen waste in sealed buckets and deliver them to the farm gate. In the interview with Años Dorados, a participant expressed that they still have to teach neighbours that kitchen waste can be used to make compost:

It's interesting because many people don't know - they don't know that waste can become compost!
(Años Dorados)

On the linking level, question 36 investigated how participants saw the values of the JBB and other technical services: *'I feel that these technical services share our values about urban gardening'.* The average score across all farms for this question was 4.07 (Figure 5.5), indicating a strong sense of shared values between the urban farmers and the advisors. It was confirmed in many of the interviews with the farmers that they shared important values such as composting, recycling, agroecology, native seed heritage, and skill sharing.

However, the interview with the technical assistant from the JBB revealed that the values of the organisation are not always aligned with what the farmers ask of them. The aims of the JBB are to spread agroecology as widely as possible through the city by training as many new farmers as possible and constantly establishing new farms.

Right now it's a huge challenge to meet the very high goals that have been set, and I think it is too much... Twenty thousand urban farms to be supported and forty thousand people to assist with technical advice.

(JBB technical assistant)

The timeframe for these aims is four years, between 2020-2024. In the interview, the technical assistant acknowledged that this aim conflicted with their values about educating urban farmers:

If I am going to assist an urban farm project, it is my responsibility that that farm still exists and is well-maintained after the four years. But it's not easy because if I have to look for new farm projects all the time, how am I going to do that judicious and guaranteed assistance, and have enough time to do it properly?

(JBB technical assistant)

Indeed, the lack of follow up and continued assistance from the JBB were criticisms raised in the interviews with Años Dorados and Chihiza ie. The farmers who expressed themselves said that they valued more long-term support and "constant feedback" (Chihiza ie).

Summary
Values about food, environment and community are what drives the participants of these urban farms. These shared values also connect them to a wider network across the city of urban farms. Interestingly, the farms also have an impact on the values and behaviours of their neighbourhoods, fuelled mainly by the education around composting. On the linking level, there is some mismatch between how institutions value quantity of projects rather than quality of advising. This domain has a significant impact on learning, as the farm projects often cause a change in the values of their participants, which reveals that a deep learning process is at work (Tosey et al., 2012).

6.2.6 Trust

This domain is defined as: 'People feel they can trust their co-residents and local organisations responsible for governing or serving their area'. This domain was investigated both through the questionnaire and focus group interviews. On a bonding level, the farm groups scored highly, with the lowest farm average at 4.00 and not one individual scored below 3 in any of the groups (Figure 5.6). This reflects the high level of trust that the participants form through working together. Despite differences in backgrounds, family, social circles and age, having to rely on one another in the context of the farm has built trust between community members who might not have even met without the garden project.

On a bridging level, there were some issues with trust raised during the interviews. Some farm groups spoke about ongoing or past problems with vandalism and theft by neighbours. Especially in the case of Fontihuerta, which has an ongoing problem with a homeless person who sleeps in the same park as their garden:

Because he takes any tool that we leave out here. Since he has been doing that, we take the tools home with us.
(Fontihuerta)

The farms that are more established and have existed for several years have invested in a tall fence encircling the garden and a proper lock. Although this was often the most expensive investment made by the farms, it was seen as the most necessary. Chihiza ie, Fundación Monterrey, Guerreros y Guerreras and Años Dorados have all invested in a secure fence. Outside of the interviews, the project leaders described the various break ins, theft and vandalism issues they had had before the fence. In some cases, these events used to occur every week. Another threat to trust on a bridging level was that many of the studied farms were not welcomed when they first started out in their neighbourhoods. In the case of Fundación Monterrey, their disapproving neighbours even called the police:

When we started the farm, we had a lot of problems. They even called the police on us. That was really difficult.
(Fundación Monterrey)

However, in most cases, time, patience and hard work had changed the relationship of trust between the farm participants and their neighbours. In the case of Fundación Monterrey, the same community that called the police on them now supports them:

The people who once upon a time didn't accept the existence of the farm, today they accept it and defend its existence.
(Fundación Monterrey)

From the observations made of this farm group, it was clear that it had taken the great patience and open-mindedness of the farm participants to continue to be welcoming towards their conflictual neighbours. Similarly, the participants of Fontihuerta showed great tolerance when it came to the people stealing from them:

When we face an obstacle like this guy, we do not seek confrontation as is often the case in other places... Here, the point is to be in a space of love, fraternity and trust.
(Fontihuerta)

On a linking level, the questionnaire data shows that on average, the farms scored more highly in this category than on the bonding level and just one individual responded with a score lower than 3 (Figure 5.6). The trust that the farm participants have in the advice and service of the JBB is high. Thanks to the consolidation of the protocol in 2020, urban farmers can trust that their farm will be defended on an institutional level. Indeed, all the farms who spoke about the protocol praised how it gave them a reassurance that they did not have before. As previously quoted, the technical assistance confirmed that in recent years the trust of citizens towards the entity had increased as public policy from different departments linked up and became more coherent. This coherence and trust generated by public institutions is crucial in building the linking level of social capital.

However, there are threats to the trust that the farm participants have in the JBB. One topic that emerged in a few of the interviews was the lack of productivity of

seeds donated by the JBB. The participants reported that often these seeds did not not germinate or survive transplantation. These incidents had caused the gardeners to have doubts about the quality and origin of the donations from the JBB:

Some things that they gave us, like seeds, never produced their fruits! I mean, there are many things about those seeds that we don't know... like what their origin was. But... It's very strange, isn't it?
(Fundación Monterrey)

Whether there was some problem with the seeds' origin or not, these incidents had provoked a feeling of mistrust towards the entity:

So personally I began to have a certain… predisposition towards them. I no longer believe so much in their…. What they tell us.
(Chihiza ie)

Summary
Trust has been a challenging topic on a bridging level, as the farm participants have had to work hard to build trust with their neighbours. Unfortunately, it is still a predominant issue and the farms have to rely on secure fencing to protect against theft and vandalism. Trust towards public entities such as the JBB has been aided by following through with public policy, but threatened by incidents such as faulty seed donations. Trust on a bonding level is high within the studied groups.

6.2.7 Safety

This domain is defined as: 'People feel safe in their neighbourhood and are not restricted in their use of public space by fear' (Forrest and Kearns, 2001). This domain has some crossover with the previous domain, trust, as the same issues of neighbourhood theft and security affect the participants' sense of safety. In the questionnaire, the indicator for the bonding level of this category was q.24 '*I feel safe when I am in the garden'*. This domain scored highly, with all farm averages scoring 4 or above (Figure 5.7). Especially in the interview with Fontihuerta, the importance of the farm as a safe space was expressed:

The extensive care that the plants and the garden give us… they create a safer environment for us, as inhabitants of this neighbourhood. And in particular, for the gardeners.
(Fontihuerta)

This sense of safety contrasted to the feeling of insecurity in the neighbourhood:

We suffer here from a lack of safety, and so we have to make these open public spaces safer.
(Fontihuerta)

Unfortunately, the existence of the farm in the neighbourhood did not necessarily

have a spillover effect into making the neighbourhood a safer place overall. Similarly to the domain of trust, the bridging level for safety scores lowly. In the interview with the technical assistant, it emerged that sometimes the existence of urban farms in the public space can even aggravate conflict in neighbourhoods and lead to making "enemies" (JBB technical assistant).

However, the threats and fear created by neighbours did not prevent any of the interviewed projects from using the public space. In some cases, the police and local municipality intervened and increased the sense of security for the farms on a linking level. For example, the authorities in Ciudad Bolivar intervened when a group of homeless people were occupying space by the Años Dorados plot and causing problems.

Summary
Safety and trust are closely related as indicators of social capital. The farms are often oases in unsafe neighbourhoods and unfortunately the farms do not have enough of a spill-over effect to increase safety in their neighbourhoods. Sometimes, the farm projects aggravate tensions due to the fact that they occupy public space.

6.2.8 Belonging

The final domain of social capital is defined as: 'People feel connected to their co-residents, their home area, have a sense of belonging to the place and its people' (Forrest and Kearns, 2001). In the questionnaire, belonging was investigated on the bonding level (belonging within the farm group), bridging level (belonging in the neighbourhood) and linking level (belonging in the urban farm networks across the city). Belonging also emerged as a topic in the focus group interviews. On a bonding level, the questionnaire asked: Q.25 *'Since being part of the project, I have a stronger sense of belonging in this community'.* This question scored very highly, with all farms averaging above 4.25, with just one individual with a response of 3 (Figure 5.8). In the interviews, this very strong affirmation about the sense of belonging in the farm group came across several times. The act of building a project around common interests was a powerful context for creating a sense of belonging:

Belonging, the sense of belonging.
(Fontihuerta)

For some individuals, being a part of the farm had been fundamental to their sense of belonging in Bogotá. One person opened up about their traumatic past as a displaced victim of rural conflict and how the farm project had been a way to heal their trauma:

For me, this is my life. It's the truth... It gives me motivation. My husband kept believing that he was going to be able to return to his farm... And that's really difficult, you know? ... So for us it has given us a new lease of life as displaced persons.
(Guerreros y Guerreras)

Others also spoke about their experiences of moving to Bogotá and feeling lost in

the city after a childhood in the countryside. For them, the farm project reminded them of their childhood and brought great reassurance and a sense of belonging to them.

I come from peasant parents... 7 years ago I left that place. And it was hard… And now I am connected to this space here, and I can identify with the knowledge I brought with me, and with what I used to feel.
(Chihiza ie)

On a bridging level, there is mixed sentiment about sense of belonging. Due to the issues raised in previous sections about safety and trust within the neighbourhood, the sense of belonging to a neighbourhood is often challenged. However, questions 22 and 23 on the questionnaire revealed that individuals had made new friends in the neighbourhood thanks to the project, and that they did feel more connected to their neighbours - just one individual scored below 3 on these questions (Figure 5.8). It came across that the existence of the farm had created opportunities for socialising in the neighbourhood, for hosting events and workshops and especially involving children from local schools. In the case of Fundación Monterrey, the farm was one of the only spaces in the community that allowed for neighbourhood socialising:

A: If this epicentre did not exist, we would all live our lives separately.
B: Yes, it is a meeting point for the whole community.
(Fundación Monterrey)

On a linking level, many participants of this study expressed the importance of their involvement in the various agroecology networks across the city. As part of the preparatory research, the researcher attended a 'ruta agroecológica' event that took place on the studied farm Años Dorados, in Ciudad Bolivar. Ninety people from all over Bogotá participated and the purpose of the event was to visit urban farm initiatives in the area, share tips, ask questions, eat and drink around a fireplace and exchange numbers. As discussed in the previous domain sub-sections, the strong common purpose of promoting urban agroecology connects citizens across social barriers such as age, class and education. This like-mindedness and openness creates a strong sense of belonging, and indeed is one of the reasons why the average for bridging/linking sense of belonging score so highly on the questionnaire (Figure 5.8).

Summary
Being involved with the farm gave the participants a sense of belonging. The act of coming together over a common project creates a space that individuals can belong to. Each individual had a reason to seek out this space and often it increased the general sense of belonging in the neighbourhood, despite other challenges such as trust and safety. Being a part of urban farm/agroecology networks helped individuals feel like they belong to a greater circle and can have connections across the city.

6.2.9 Summary of response to research sub question two: How do the strengths and weaknesses in social capital vary between farms and across different social groups (bonding, bridging and linking)?

The previous sub-sections 6.2.1-6.2.8 have analysed the interview and questionnaire data relating to all eight domains of social capital as established by Forrest and Kearns (2001). The questionnaire data provided quantitative information about the perceived levels of social capital in the community farm participants. The 1-5 Likert scale revealed strengths and weaknesses on an individual level and this data was then collected into farm groups. Section 5.3.4 of the results shows a clear overview of the questionnaire data for all farms: Figure 5.10 presents the data for all farms across the eight domains of social capital, and Figure 5.9 presents the aggregated scores for bonding, bridging and linking categories for all farms. These figures show that the variation between farms is very little: in the bonding, bridging and linking dataset, the lowest farm average is 3.80 and the highest is 4.34 (Figure 5.9). In the social capital domains dataset, the lowest farm average is 3.66 and the highest is 4.46 (Figure 5.10). Since in the Methodology chapter (4) it was established that any score above 3 was to be considered as a positive result, the questionnaire data set thus revealed that there are no major weaknesses in social capital across farms and social groups.

The interview data has been crucial in this study to shed more light on the subtle differences in perceived social capital across farms. There were certain strengths and weaknesses in social capital identified across the different social groups. On the bonding level, there were threats to participation in some of the farm groups because of the fact that not all members were active in the planning or evaluation of the farming activities. Although this is to a certain extent natural, as some group members were more knowledgeable about gardening or more confident as leaders, there is a long-term risk that the less engaged members will lose interest and drift away from the project. It has been identified that in urban agriculture projects, participation in the evaluation stages is crucial for long-term commitment and for building social capital (Nazuri et al., 2022). Dominant characters can sometimes reinforce the hierarchical structures of society (Light, 2001) and become a limiting factor to the group effectively building social capital. Lack of participation has also had an effect on the social learning environment for some of the farmers, as discussed in section 6.1.4. This was the main weakness that was identified in social capital on a bonding level. Supportive networks and reciprocity were also challenged on a bonding level in some groups, where a few individuals expressed through the questionnaire that they did not feel like they could turn to their fellow gardeners for personal matters. Although it was not discussed in depth during the group interviews, two of the groups did express that internal conflicts and

disagreements were a challenge. Conflict that is not resolved over time will decrease an individual's sense of being supported by the group and so it is likely that this is the cause of sometimes weak support links within the farms. Indeed, internal conflict is most often the reason for community urban agriculture projects to fail (Kanosvamhira, 2019). Otherwise, the bonding level was characterised by well developed indicators of social capital: trust and safety were high on this level, as the farm participants had built trusting relationships through working together over time. Belonging was also high as the farm consistently provided a safe haven for participants to be themselves. Finally, common values, vision and goals performed highly, as the farm participants united over important life issues such as human health, nature and culture.

The bridging level was well developed across most domains of social capital, with just a few weaknesses identified. Safety and trust were in particular an issue, mostly due to the nature of the surrounding neighbourhoods. The investigated farms were all in low-income neighbourhoods of Bogotá, where vandalism and street crime rates are high compared to higher-income neighbourhoods (Infobae, 2021). Most of the trust and safety issues raised by the participants related to the vandalism, theft and hostility that the farm had been subject to. Some neighbourhoods are more cohesive than others, due to many contextual and historical factors that were too extensive to investigate within the scope of this study. In some cases, the farm group itself had worked hard to build trust and safety within the surrounding neighbourhood; such as the group Fundación Monterrey. However, this was not possible in all the farm groups, despite their best efforts. It often emerges in UPA studies that although social capital is built effectively within the farm group, there is a limited spill-over effect into the rest of the community (Forrest and Kearns, 2001). Unfortunately, the reach of the farming activity is rarely wide, as it remains a niche interest group in the city environment.

The social capital domains on a linking level proved to be overall better developed than the bridging level, but still less developed than the bonding level across the farms. Associational activity and common purpose was a strong domain in this social group, mostly due to the cross-city agroecology networks and the lining up of public policy in recent years. The introduction of the protocol in 2020 is a clear reflection of the fact that local policy-makers responded to the urban farmers' needs to have more support from the government and the guarantee that their projects would be protected. The protocol thus brings together urban farmers and local government under the common purpose of expanding and supporting urban agroecology. The creation of this protocol as well as the upscaling of the Jardín Botánico's role as advisor and provider to urban farms has also contributed to the domain Supportive networks and reciprocity on a linking level. Participation is also a high-performing domain on the linking level, which is due to the high levels of

involvement of farmers in cross-city agroecology networks and events. The agroecology networks make the farmers feel like they are a part of a bigger movement that has an effect wider than that of planting seeds in their community garden. The meetings, tours and visits organised by these networks allow farmers to meet and discuss challenges, share tips and discuss issues such as child nutrition, indigenous seeds, environmental pollution and community engagement. Many of these networks also have a political dimension and organise protests against the agrochemical industry in Colombia, biopiracy and indigenous rights (Red Agroecológica del Sur de Bogotá, 2022). The farmers' participation in these kinds of networks is thus a gateway to participation in wider society and politics: an activation of their 'effective citizenship' (McIvor and Hale, 2015). Although this is not necessarily a conscious act, the high participation of farmers in such networks transform them into agents of change as the mass organisation across a city is an essential civic skill (Light, 2001) that can be used to unite otherwise distant groups over the same issues.

Despite the high levels of social capital in many domains on the linking level, some weaknesses were nonetheless identified. In particular, trust was a threatened domain when it came to the relationship with institutions. Although there was much positive feedback about the Jardín Botánico, the ministry of health and local municipalities, certain challenges to trust were mentioned in all farm interviews. The Jardín Botánico was criticised for being inconsistent with long-term support and some of the interviewed farms felt abandoned by the advisory service. Furthermore, recent incidents with faulty seeds had led some farm groups to have doubts about the integrity of the service. The technical assistant mentioned in their interview that the discontent with and mistrust of the JBB has even led to protests being organised in some parts of the city. So, although trust is built through the protocol, the support of the 'rutas agroecológicas' and other collaborations, it is at the same time threatened by a lack of consistency. Since trust is crucial to build other domains of social capital, such as supportive networks, associational activity and empowerment, continued inconsistency could risk diminishing social capital on a linking level within the farm groups. Trust takes time to build, but much less time to destroy (Kanosvamhira, 2019).

In conclusion, there were subtle variations between the different farms in social capital, but across all farms and all social groups, high levels were recorded for all eight domains. The interviews shed more light on the fact that social capital was highest on the bonding level, then on the linking level and then least well developed on the bridging level. These results reflect what previous research on social capital-building has uncovered, in so much as the conclusion that social capital is most effectively built from within the group that will directly benefit from it (Feola et al., 2020), (Nazuri et al., 2022), (Kanosvamhira, 2019). However, in order for these

capacity-building processes to be amplified, encouraged from the beginning and strengthened into the long-run, strong ties with external support - in this case from the JBB and agroecology networks - is essential.

6.3 Response to the overarching research question: What is the relationship between the different learning types and levels of social capital in community-driven farm projects?

As established in section 3.3.4, it can be hard to be conclusive about the directionality of the relationship between social capital and learning due to the way in which they feed into one other. High levels of social capital lead to the establishment of successful community learning projects, and vice versa. However, it did emerge in this research that there were certain linchpins for effective learning and social capital building which are crucial to the relationship between the two. Firstly, in the analysis in section 6.2.2 it emerged that Participation was an important domain for effective learning in both social learning and knowledge transfer contexts. On the bonding level, social learning was successful because participation levels were high amongst farm members. Organising team meetings, participating in the planning and evaluation and participating in teaching events are all settings where social learning is fostered.

On the linking level, the interactions that farmers had with technical assistants and urban agroecology networks influenced their access to new knowledge and learning opportunities. Farms, such as Guerreros y Guerreras, which regularly seek advice from technical services are constantly integrating new information and improving their practices. They have invested a lot of time over the years into participating in the events and workshops of the Jardín Botánico and building an agroecology network around them. They are now considered as a flagship project that acts as a multiplier of knowledge in both the local community and in Bogotá. The recognition that they have as a model urban agroecology farm in Bogotá is not down to some special knowledge that the founders initially had, rather it is down to the time investment into building an active relationship with the Jardín Botánico and establishing an agroecology network in their locality. Participation on the linking level was therefore crucial to their success as an effective learning organisation, in both social learning and knowledge transfer settings. In highly interactive exchanges, people are more likely to be open to being influenced by others (Baker et al., 2002) and so farms that build a culture around being curious and discussing ideas are creating effective learning spaces.

Social capital learning research has pointed to trusting relationships as being crucial to effective learning (Baker, 2006) (Putnam, 1993). This conclusion can also be made in this research project, as discussions around trust often crossed over with discussions about learning. The high levels of trust that characterised the bonding level across all farms created the base for successful social learning. Because the group members trust one another, they are more likely to listen to one another and trust each other's knowledge. In the group Chihiza ie, the farm participants expressed that they listened to each other's advice on different areas in order to make adjustments over the years. They were able to make these adjustments because they trusted each other and were willing to risk change. In groups where trust was slightly lower, for example Años Dorados, participants tended to work on their own part of the garden and not invest a lot of time listening to each other. Where levels of trust are higher, the learning environment is more open, exchanges occur more frequently and individuals feel more comfortable sharing what they know. Trust also creates a space where people feel freer to make mistakes, to challenge each other and repair the consequences of those mistakes and challenges (Baker, 2006).

Similarly, trust is a crucial base for successful knowledge transfer. Trusting an advisor to visit the farm and give good advice must happen even before the advisor sets foot on the farm: their reputation precedes them. The responsibility is with the advisory institution, in this case, the JBB, to build trust. Providing a reliable service which supplies high-quality advice is essential to building that trust. In the interviews, it was revealed that both reliability and quality of the advisory service had been questionable at times. The incidents with faulty seeds had brought the quality of the service into question, and in the case of Chihiza ie, it had given them a "predisposition" towards the technical service and the advice it had to give. As a result, they were not in active contact with the service and sought new knowledge elsewhere. In the group Años Dorados, the unreliability of advisor visits had diminished their trust in the service, and pushed them to seek out knowledge from other farms by forming the agroecology network. To a certain extent, this is no bad thing - a lack of trust in a service has led to its users building up a knowledge network that they can trust and use to build their own effective form of learning. This positive outcome was also noted in the research by Forrest and Kearns (2001); an environment of distrust forges groups of trust. However, from a knowledge transfer point of view, this lost trust is a failure as it reduces the desire of the learner to seek out new, technical knowledge that could be of use to them.

Another domain of social capital which is a gateway to successful learning is the fourth; Supportive networks and reciprocity. These supportive networks are born out of the trust that is built across different social groups. Once this trust is established, long-lasting trust networks can form. These networks provide on-going

interactions over time, which have a cumulative effect on learning (Baker, 2006). Fontihuerta, the cycle collective urban farm, invested a lot of their time early on in being active in their local agroecology networks. They seek knowledge from these networks to do with pests, native crops, water retention and other technical issues. The good advice that they have received reinforced these trust bonds, which reinforces their sense of having a supportive network. It has also made them more likely to reciprocate; they have already become key actors themselves in that network by supporting new participants to learn about urban agroecology. From a knowledge transfer perspective, the supportive network of advisory institutions also fosters better long-term learning. Farms such as Fundación Monterrey that see the JBB as their "right hand" are an example of how supportive institutions can provide continued learning opportunities for farm participants.

Finally, from a learning-loop perspective, triple loop learning has proven to be instrumental in this study for building social capital. The triple loop level indicates a transformational dimension of learning, and this transformation has an influence on social capital (Tosey et al., 2012). The interviewed participant who said that the project has changed them from being "shy and introverted" to being active and social is a key example of this. Their effective social learning environment transformed who they were by building up capital such as empowerment, participation and belonging. In this kind of learning, the learner is empowered to change and develop skills that can be applied to other areas of life outside of the farming project, or as Falk and Harrison (1998) put it: "Learning is the mechanism which facilitates development and change of individuals, work, organisations and institutions."

To conclude, we return to the question of directionality. The response to the research question in this section has shown that the 'starting point' for capacity-building is dependent on both the learning environment and social capital. For example, there can be no triple loop learning without an environment of trust, and there can be little progress in an individual's sense of empowerment without a transformational learning experience. What *can* be said is that both social learning and knowledge transfer learning processes are both important in building social capital; each learning process builds social capital on different levels: bonding, bridging and linking. Achieving effective learning environments for both social learning and knowledge transfer is key to stimulating powerful social capital and capacity-building processes. Indeed, something cannot be created out of nothing, and a starting point must be established before the positive feedback loop of learning and social-capital building can succeed (Falk and Harrison, 1998).

6.4 Response to research sub question three: What are potential solutions to the current weaknesses in the learning processes and social capital-building mechanisms of the studied farms?

Based on the weaknesses identified in sections 6.1.4 and 6.2.9, this section will make some suggestions for improvement of the studied system. To answer this final research question, suggestions will be made for both social capital and learning processes from bonding, bridging and linking perspectives. These improvements will to a certain extent be relevant for advisors and practitioners in other contexts, but that will be covered more in the following section of this discussion (6.5).

Firstly, on the linking level, weaknesses in trust and supportive networks were identified as barriers to the knowledge transfer process between the JBB advisors and the farmers. The criticisms that were raised in the interviews were either that the visits of the advisors were inconsistent and not frequent enough, or the past incidents of faulty seeds. In the JBB technical advisor interview, it was explained that one of the main objectives of the organisation was to provide technical assistance and capacitation to as many new urban farmers as possible, with the precise target of "twenty thousand farms accompanied and forty thousand people technically assisted" in a four year period. The advisor admitted that not even half of these numbers had been achieved in a three year period. Clearly, these aims are creating a strain on both the advisors - there are approximately 70 of them across Bogotá - and the farmers. While the farmers have the aim of creating long-lasting projects, the advisory service prioritises the short-term results of assisting a certain number of new farmers. This is not an uncommon phenomenon, in fact, mismatched objectives of farmers and advisory services are often at fault for the lack of trust towards advisors (Acquaye-Baddoo, 2010). Most organisations are results-driven and use indicators such as number of clients reached as markers of success. This is mostly down to the fact that advisory organisations have to justify funding and report statistics about the success of the programme (idem). The advisors themselves are often caught in a trap where their organisation demands numerical results, while they know that high quality support is down to providing long-term assistance and building trust. This is part of the "balancing act" that Acquaye-Baddoo (2010) describes and that the interviewed technical assistant expressed. Indeed, in the JBB's annual report in 2021, some of the main failures that they identify in the spreading of UPA knowledge are: "insufficient technical assistance to farms" and a "lack of spaces that encourage social participation" (Alcaldía Mayor de Bogotá, 2021).

One clear solution to this is to include 'soft' targets in their aims as well as the hard statistical ones. For example, soft aims in this context could be: long-term durability of urban farm projects, consolidation of skills over time, continued learning of participants. Although these aims may be difficult to quantify compared to hard parameters, frameworks can be created by the organisation which are similar to the social capital and learning levels frameworks used in this thesis. Building in more time for discussion and evaluation between advisors and their organisation will also

improve the understanding of these soft targets. It will not be so simple to publish a graph on a parameter such as 'continued learning of participants', rather it will need to be described with words. Once the paradigm for success is altered to include both hard and soft targets, more attention will be given to 'the process' (Acquaye-Baddoo, 2010) of building trusting, long-term advisory relationships. Indeed, the onus is on the advisory organisation to change its parameters in order to improve the relationship of trust with the farmers (Nieman, 2006).

Another way to meet the challenge of the advisory organisation's hard targets is to delegate the work of the advisors by allowing the student to become the master. As described in this study, there are well-established urban farms in Bogotá that are brimming with knowledge and the desire to teach. Naturally, many of these farm participants have become teachers in their local communities by organising workshops about composting, educating school children about biodiversity and hosting university students. These farmers are great multipliers of knowledge for urban agroecology who would have a much greater reach if they were given the platform of the JBB to continue spreading that knowledge. The participants of Guerreros y Guerreras do already collaborate with the JBB as multipliers of knowledge, and they have been trusted as an educational centre where the first 'ruta agroecológica' was created. It is a successful example of the student becoming the master, where advisors have allowed for the empowerment of the farmers to such an extent that they are trusted to become teachers themselves. This multiplier-effect should be a priority for the JBB and educational hubs like Guerreros y Guerreras should be validated and encouraged across the city. By training farmers to be teachers, a domino effect will result in a higher number of "new farmers assisted", which helps meet the hard targets of the JBB. By trusting and collaborating with farmers, the JBB's advisors will be under less pressure to meet such ambitious targets and instead focus more on quality, long-term and tailored accompaniment of already existing projects.

Furthermore, the already-existing urban agroecology networks across the city are effective structures for knowledge multiplication. Rather than these structures having to form *despite* the absence of the JBB, which was the case for Años Dorados, they could be fortified and assisted by the JBB. Indeed, the JBB themselves reported a need to empower "organisations and networks to potentialise UPA across the city" in response to a "lack of knowledge about UPA in the urban population" (Alcaldía Mayor de Bogotá, 2021). Collaborating with these structures will also help to increase the reach of the Jardín Botánico's service, as currently a shortage of advisors in peri-urban areas diminishes the trust towards it in areas such as Ciudad Bolívar. The capacity-building function of the JBB should become in itself a form of knowledge passed onto the leaders of these networks, so that they also become capacity-builders. After all, the most effective form of capacity-building comes from the inside; when participants drive the process themselves,

projects are longer-lasting and more effective at building social capital. Research has shown that the more reliance there is on external services, the weaker the internal processes become (Light, 2001) and (Feola et al., 2020). Rather than focusing on top-down advisory goals, by engaging the farmers and training them to become teachers, a bottom-up effect will strengthen the sense of trust and supportive network between the practitioners and advisors (Kanosvamhira, 2019). It is a balancing act between top-down and bottom-up action that relies upon the idea that "practitioners must believe that local people, organisations and wider systems are capable of developing and demonstrating capacity in the first place" (Acquaye-Baddoo, 2010).

As of 2022, the 'capacitation' strategy of the JBB consists of technical 'kits' for training farmers in urban agriculture (Jardín Botánico de Bogotá, 2022). The content of these kits includes: garden design, propagation, seed saving, composting, lombriculture, pest control, fertilisation, harvest and post-harvest (JBB technical assistant interview). Their 'strengthening' strategy consists of assisting farmers with inputs (soil, seeds, tools) and further technical advice that they may need. However, there is no focus on soft skills education: teamwork, communication, leadership, etc. This is not unusual, as agricultural extension services rarely consider it their responsibility to teach these kinds of skills (McMahon, 2010). In the community-based urban farm projects of Bogotá, training in these skills is essential for the long-term success of projects as well as for promoting a healthy learning environment. Teamwork and communication skills would resolve many of the problems to do with internal conflict and participation. The participants of Guerreros y Guerreras mentioned in the interview that the JBB once intervened when they were having "organisational issues," but that this was not the usual role of the JBB. The project Años Dorados admitted in the interview that the history of their project was characterised by conflict after conflict, and that even today, arguments about responsibility were problematic. Community-run projects ultimately need soft skills in order to achieve their aims successfully while including members of the community. Indeed, in the 2021 JBB annual report, the "weaknesses present in the processes of social organisation" were partly responsible for the failure of UPA projects in Bogotá (Alcaldía Mayor de Bogotá, 2021). Participants in UPA projects may already have well-developed soft skills, but knowing how to apply them to the project at hand is not always automatic. The advisory services need to acknowledge that these soft skills are a crucial base for successful hard skills training. Although individual advisors, such as the one interviewed, understand the importance of soft skills and do their best to capacitate farmers in such skills, the JBB needs to explicitly integrate organisational training into their 'kits' and strengthening strategies. This also implies that the advisors themselves need to be trained in this, as many of them have a technical background in agriculture. Experts are often not accustomed to taking the role as a facilitator in

their work (Champion et al., 1990). By allocating time and attention to developing these soft skills, farm groups will become more self-aware of the organisational challenges that they have to overcome. Knowing how to tackle these challenges will ultimately lead to longer-lasting, more learning-friendly projects. Beyond the project at hand, social capital will be built through greater empowerment, trust and supportive networks thanks to the increased soft skills inside the organisation.

There are improvements that can be made on farm-level in order to improve learning processes and social capital building. Just as the advisory services should include soft skills in their vision to strengthen capacity in farm projects, the participants themselves need to be aware of the importance of such skills. This study has shown that although overall bonding social capital is highly developed, there are weaknesses in participation and sense of supportive networks. This often came down to problems with internal conflict, lacking communication and low participation in evaluation of practices. Community farm groups need to nurture their organisation just as much as their garden, and allocate time to deal with internal issues. Disputes can be resolved by taking time to come together and communicate so that a peaceful compromise can be found. Lacking participation can be tackled by meeting to talk and giving each farm member the opportunity to make reflections and suggestions. Being a part of the implementation stages is not sufficient to keep people engaged over the long term (Nazuri et al., 2022) and so involving members in the evaluation and planning stages is key. By recognising that soft skills are just as important as hard skills, these farm groups can benefit from thinking like an organisation and strengthening their project management over time (Wang and Ahmed, 2003). Although sharing a common vision, values and sense of belonging in the project are very powerful motivators, developing participation and a supportive team network are crucial to long-term success.

Finally, increasing the awareness of social capital as a resource will increase the farmers' ability to build and implement it. As much social research around community-based projects has shown, social capital is a resource that is built unconsciously, the potential of which is rarely fully exploited (Baker, 2006) and (Forrest and Kearns, 2001). Domains such as empowerment and participation are fundamental democratic skills that citizens can use to fight for change in their political, social and economic lives. Having an awareness that community capacity-building in an urban farming project is building such skills on an individual level, will in turn help that individual tap into those skills in other areas of life. As Forrest and Kearns concluded, "Social capital is important not for its own sake, but for what one does with it, or can attain by it" (2001).

6.5 Implications and relevance in the wider context

This thesis aimed to investigate how social capital is built in community urban agriculture projects as well as the learning processes that maintain these projects. The field of research surrounding urban agriculture in the Global South has predominantly focused on the importance of food security and the potential for secondary income (Feola et al, 2020), (Kanosvamhira, 2019), (Nazuri et al., 2022) and (Battersby and Marshak, 2013). While the debate still continues about how much urban agriculture truly contributes to healthier diets and access to food, UPA projects in the Global South are proving to have a big impact on community capacity-building in cities. Especially in Bogotá, it has long been recognised that urban agriculture projects have come out of the need for rural migrants to use their agriculture skills, create an identity in the city, build social networks and establish a sense of belonging (Hernández-García and Caquimbo-Salazar, 2017). Since 2004, local public policy in Bogotá has been supporting the development of urban agriculture and has recognised the central role that it has in building community. As of 2022, the city has one of the most well-developed UPA policies in Latin America and has become an example for the whole continent (Observatorio Ambiental de Bogotá, 2022). At this point, research is needed to demonstrate the effect that urban farms and their supporting policies have on social capital and community-building in Bogotá. Research from other countries has called for a more sophisticated and profound analysis of such social indicators in order to help shape public policy in other Global South regions (Nazuri et al., 2022) and (Battersby and Marshak, 2013). This research paper has used social capital and learning frameworks in order to give this more in-depth analysis of the social impact of community UPA in Bogotá. Although it is based on case studies and empirical results cannot be generalised, there are some significant findings that are relevant for other contexts. This section will relate these findings to a global context for community UPA.

6.5.1 Social capital and learning in community UPA

The findings of this thesis served in part to demonstrate the social capital-building power of community urban agriculture projects. It has built on existing research to give an in-depth insight into the different social processes that are at work and build capacity in community projects. The group of farms that took part in this research brought to light key vital areas of capacity-building that have a transformational effect on society. Firstly, the high levels of individual empowerment that the interviewed projects exhibited are significant in both a local and international context. Low-income neighbourhoods are not usually associated with empowerment and are often assumed to lack the tools required to build it (Forrest and Kearns, 2001). Community-based projects such as farms provide the environment to build community empowerment through social learning processes.

Low-income neighbourhoods in Bogotá struggle with social issues such as unemployment, lack of infrastructure such as transport links and criminality, and so empowerment-building processes are essential in creating opportunities for individuals. This is especially relevant for women, who are traditionally disempowered in such communities and who constitute over 80% of urban farmers in Bogotá (Bernat, 2018). Across the Global South, the importance of empowering women to become leaders and active participants in society is high on the agenda of organisations such as the UN, NGOs and governments. The role of urban agriculture in empowering people, especially women, should not be underestimated, rather it should be included in the agendas of these entities.

The domain of belonging is especially relevant in the context of this study. The Registro Único de Víctimas RUV (Unique Registry of Victims) has calculated that during the fifty years of internal conflict that Colombia experienced between 1960 and 2016, 9.4 million people became internally displaced victims of the armed conflict (Unidad Victimas, 2022). The majority of these people migrated towards cities, and of those cities, mostly to the capital, Bogotá. The rural-urban migration of Colombia has been one of the largest migratory movements of Latin America. Sense of belonging, therefore, is a complex social issue. The fact that participants in this research expressed a constantly high sense of belonging on a bonding level is testament to the effect that community-based farm projects have a significant effect on this domain. The group Guerreros y Guerreras in particular is a project consisting mainly of women who are displaced victims of the rural conflict in Colombia. The farm project has allowed these women to build a supportive network with others who share the same values and who have the same needs to connect to their rural roots. Not only that, but the farm has become a platform for building wider networks across the city to deepen the sense of belonging in Bogotá, not just their immediate neighbourhood. This example is one of many in Bogotá. Rural-urban migration is a major force of movement globally: in 2018, 55% of the world's population lived in cities, and in 2030 this figure is set to increase to 60% (Migration Data Portal, 2022). Factors such as conflict, poverty, climate change and famine push people into cities to find work and stability. Community urban agriculture projects are an important part of a social integration process that rural-urban migrants have been creating for millennia. Migration and social integration/inclusion agencies worldwide should be valorising urban agriculture as a facilitator and platform for increased integration into cities. National and local governments should acknowledge the effects of integration and sense of belonging that UPA has in their cities. As the results of this thesis show, alongside much other research on the social effects of UPA, urban farm projects are "cheap providers of public goods" (Moustier and Danso, 2006) as well as a form of "quiet sustainability" (Feola et al., 2020); UPA projects have been generating ecosystem and social services in cities for hundreds of years.

6.5.2 Impact of linked-up policy and municipal support

Research into UPA concludes time and time again that greater coordination between supporting organisations and more linked-up policy at governmental level are needed (Kanosvamhira, 2019), (Nazuri et al., 2022). Varying agendas amongst the different actors in a city leads to a lack of synergy which ultimately affects urban farmers' ability to seek guidance and support. This creates a feeling of distrust towards well-intentioned organisations and in the worst of cases, can be an obstacle to effective urban farming action. This case study of a selection of urban farms and their major supporting institution, the Jardín Botánico de Bogotá is a somewhat unique case in that UPA policy is coherent and the supporting organisations are well-connected. When in 2004 Bogotá municipality started integrating UPA into public policy, different governmental departments started coordinating their aims to create a coherent structure for urban farms to rely upon. The interviews with both the technical assistant and the farm groups themselves confirmed that this linking-up of policy and aims has increased the sense of trust of farmers towards institutions. According to the interviewed farmers, the issue of land tenure was a major concern for many years to the practitioners of UPA in Bogotá and so the 2020 protocol responded to this concern by guaranteeing land tenureship through a contract. By listening to the farmers' needs and implementing policies that respond to them, trust is built. This trust strengthens other domains in the linking level of social capital, as citizens feel that their voices may be listened to in society. It has a knock-on effect of increasing political participation, community and individual empowerment and the ability of citizens to build supportive networks across the city. Typically, in neighbourhoods where there is low connectivity to central governance, social groups feel ignored by and excluded from politics (McIvor and Hale, 2015). The power of UPA networks that connect producers with public services has the potential to overturn these typical dynamics. Other cities should focus their efforts on uniting the different UPA organisations and creating coherent policies to support UPA, by putting farmers' needs first.

Not only is coherent policy and support important in building trust: the continued collaboration between farmers, advisors and supporting organisations builds long-lasting trust relationships between these actors. The creation of 'rutas agroecológicas' in Bogotá is a prime example of how institutions and citizens can build collaborative relationships. The Jardín Botánico, local municipality and urban farmers work together to build these touristic routes, which are an opportunity to introduce new members of the community to their projects, to spread the farmers' knowledge about farming and bring in an additional source of income. In this process, the farmers are empowered to be proud of their work and recognise the value of it. By officialising these routes and promoting them on a city-wide level, the governmental institutions are facilitating this empowerment. Other cities should invest into such collaborations as they are relatively uncostly and give a high return

in trust, long-lasting action and meeting sustainability targets. Collaborations build bridges between citizens and institutions and confidence will grow in those citizens to reach out to other governmental services and make their needs heard.

This research has shown advisory services need to include soft skills in their teaching and include social parameters in their measures for success. Long-lasting community urban agriculture initiatives are maintained by a functional organisational core (Kanosvamhira, 2019). Organisational skills are not a given, and in most cases, must be learned. Focusing on teaching only technical skills such as composting and propagating does not necessarily lead to long-lasting projects. If municipalities want to integrate urban agriculture into sustainable development plans and targets, short-lived projects are not conducive to this vision. Having targets which prioritise reaching as many new farmers as possible rather than assisting projects to last longer and grow over time reinforces the focus on the short-term. By investing time into teaching social skills to project participants, municipalities are giving communities the tools to build resilient organisations which survive into the long-term. Finally, judging the success of these initiatives with social parameters such as continued learning and levels of community empowerment will switch the paradigm from short-term quantitative results to long-term qualitative results.

6.5.3 Effective urban farm networks

These case studies in Bogotá have revealed the potential of strong, supportive urban farm grassroots networks. The urban farm networks in Bogotá are multipliers of technical knowledge about agroecological farming, they increase linking social capital by connecting citizens with common interests across the city and they are effective social learning environments. Such networks should be supported, promoted and funded by the municipality. Active farmer networks help achieve goals that municipalities aim for, as they increase integration, cohesion and build civic skills. This civic potential of farmer networks, as well as other self-organised community-building networks, should be recognised and valued. Apart from municipalities, citizens around the world who practise or are involved with urban agriculture are also responsible for starting these networks. Investing time into building knowledge and support networks to connect with other projects will increase the long-term chances of survival, as isolated projects can easily lose momentum and sense of purpose.

6.6 Evaluation of methodology

This section will evaluate the approach, frameworks and representation of this research paper and make suggestions for how the methodology could be improved for further research.

6.6.1 Mixed methods approach

The mixed methods approach used in this study had two advantages. Firstly, it allowed for triangulation of data between the questionnaires and the interviews. Having two similar questions in the interviews and questionnaires allowed for validation of the reliability of the responses. Conversely, having questions posed differently between the questionnaire and the interview allowed for a broader and more insightful type of response. For example, in response to the question: *How have your values changed since being involved in this project?,* the interview context allowed for a range of responses and discussion that would not have been possible in the questionnaire. The single interview with the technical assistant from the Jardín Botánico de Bogotá provided a different perspective which allowed for further interpretation of the farm group data. For example, the questionnaires asked whether the farm participants implemented what they were taught by the technical assistant, and the technical assistant was asked whether the farm participants implemented what they taught them. The advantages of the focus group interview method were that the discussions that took place were free-flowing and natural, as the participants were more in control of the conversation than the interviewer. It allowed for agreements and disagreements to take place, which brought to light more subtleties than individual interviews would have. This was suitable for this particular study because analysing group dynamics was central to the final analysis. The disadvantages of this method were that it was difficult to organise time slots where the farm group members could be available at the same time, and it also made for difficult transcription work as the multiple voices, interruptions and distance from the microphone made the recording less clear to listen to.

6.6.2 Frameworks

The main strength of the Forrest and Kearns framework is that it is a multi-indicator framework. Some theoretical frameworks for social capital propose vague or restricted measures for areas of social capital. Often, empowerment and participation are the only investigated areas (Falk and Harrison, 1998). The eight domains of this framework provided a broad range of indicators for social capital, which allowed for a more holistic insight into the strengths and weaknesses at play. Another advantage of this framework is that it was possible to add the bonding, bridging and linking levels relatively effectively into the investigation. Most domains of social capital were investigated on two levels: bonding and bridging/linking.

A weakness of the Forrest and Kearns framework was that it was sometimes difficult to design the questionnaire matrix. In order to ask questions that were not leading, much thought had to be put into the question wording. For example, when asking about participation on a linking level, the following question was used: *I am*

interested in attending events organised by the Jardín Botánico or other government services that we are in contact with. Event attendance was used as an indicator for participation in this case. Furthermore, some domains had interdependencies, such as trust and safety, which made it difficult to investigate them independently. For example, a respondent who feels safe in their neighbourhood is more likely to trust their neighbour. A final weakness of the Forrest and Kearns framework is that it has not been described in great detail as of yet. Further experience of the framework will allow it to be further adapted and more clearly defined.

With respect to the learning frameworks, some sources of learning are more readily identifiable than others. Many learning processes are challenging to investigate, as learning is mostly not a conscious activity; it is 'tacit' (Murray and Hanlon, 2010). Therefore, asking questions about learning does not necessarily produce accurate results. As the investigation period was short it was not feasible to make long-term observations about the extent to which different learning processes were occurring.

6.6.3 Data representativeness

Although the sample size of this study was small, the respondents were diverse in terms of age (range 25-74), socio-economic strata (range 1-3.25), location (5 scattered localities) and gender. As such, the sample was likely to be representative of urban farm communities in Bogotá. Nevertheless, the data represented less than 1% of the community of registered urban farms in Bogotá. As such, the results only provided anecdotal information about learning processes and social capital. It was not possible to draw statistically significant conclusions, as acknowledged in section 4.6. Section 4.3 also acknowledged the fact that there was some selection bias with how the farms were sampled. All the projects were readily contactable due to either their social media presence or relationship with the JBB. These projects are thus examples of more established processes, driven by members who intend to build networks, be visible and ask for what they need. Therefore, these individuals have many of the dimensions of strong social capital, and so the results were influenced by this factor. For a more diverse range of results with less selection bias, the researcher could have spent longer finding projects that were not so confident in their outreach. Furthermore, all of these projects were in contact to a greater or lesser extent with technical services. In order to explore correlations between learning types and social capital more clearly, it would have improved the research to interview projects with no or very minimal contact with technical/advisory services. This would have enabled clearer comparisons between projects, whereas the data obtained with the studied group scored highly across social capital domains and learning processes with small differences in the results, thus it was not possible to make meaningful comparisons.

6.7 Other limitations

Another limitation of this study was that not all social capital domains were investigated to a detailed enough extent to provide a full analysis. Domains such as safety were only investigated in one social group, bonding, whereas a more in-depth study would also investigate the indicator in the bridging and linking categories. This would have allowed for a more detailed comparison between how the social dynamics are different within the farm group and with wider society. For the sake of keeping the questionnaire short and easy to fill within the time, the researcher limited the number of questions for each domain. A longer and more extensive study could, however, provide more data for all the domains in all social group categories. Finally, while the researcher is fluent in Spanish, they are not a native speaker and so some subtleties in the interviews may have been missed or misinterpreted.

6.8 Recommendations for future research

Firstly, in order to improve the research investigation at hand, some improvements could be made based on the evaluations in section 6.7. A larger sample size would have allowed for statistical analysis and potentially more meaningful conclusions. In addition, selecting the sample of farm groups randomly would include less developed projects and thus reduce the possibility of bias. Further questions relating to social capital domains could have provided more insights. A longer observation time would have enabled a more reliable investigation of learning.

This study provided insights into community UPA in one specific geographical location. Further research should be carried out in other cities in the Global South. This study has also shown that the social impact of community UPA can be greater than traditional measures of success of UPA programs (food security and secondary income). Therefore, future research should focus more on social capital and learning than on those traditional measures. This ultimately will help improve how policy is shaped to support UPA. Based on the point raised in section 6.2.9 about UPA remaining a niche activity in cities, another idea for further research would be to investigate how to incentivise a larger proportion of the local community to be involved in urban agriculture processes. This study touched upon some, namely community composting and workshops, but there is potential to investigate this topic more deeply.

Finally, Bogotá is a city that has invested millions of dollars over the course of a decade into developing UPA programs (Alcaldía Mayor de Bogotá, 2021). The majority of cities in the Global South have not developed such programs. This study describes the benefits and limitations of a model that could be used to inform the design of UPA programs globally. Similar research in other regions should be undertaken in order to accelerate the implementation of effective UPA programs and policies globally.

7. Conclusions

The mixed methods approach adopted for this investigation has given an in-depth insight into the learning and social capital-building processes at work in the community urban farms of Bogotá. The research questions were answered mostly by investigating the views and experiences of the urban farmers themselves, in order to give a farmer-oriented perspective. Although the investigation only gives a snapshot of the reality of UPA in Bogotá, it nonetheless portrayed a vivid picture of the various challenges and successes that are associated with community urban agriculture in the Colombian capital. It has also led to some relevant insights for UPA worldwide, especially when it comes to developing farmer-orientated UPA programs and policies.

The main contribution of this research paper is the finding that social capital-building and learning processes flourish when farmers, knowledge networks, advisory services, institutions, governments and policies are well-connected and directed towards the same aims. This case study of Bogotá has revealed the effect that such linking-up has had; the increasingly interconnected web of agroecology networks, "pioneer" farm projects, JBB advisors, 'rutas agroecológicas' and protocols protecting land rights all contribute to creating effective learning environments where capacity can be built successfully. Although there were weaknesses identified in the UPA program in Bogotá, it is nonetheless a trail-blazing example of how effective linked-up policies, farmers' needs and actions can be for an activity such as UPA. Not only is this linking-up significant for promoting UPA, but it also has a spill-over effect into other areas of civic life: when citizens feel listened to and that public programs and policies support their needs, it leads to a greater sense of empowerment and participation in the system that surrounds them.

Another key conclusion of this research is about the nature of social capital building itself. The investigation has shown that capacity is best built from the inside, as the bonding category consistently performed most highly across social capital domains in both the questionnaire and focus group interviews. The internal learning processes that take place in effective social learning environments are the most powerful in boosting domains such as empowerment, sense of belonging, participation, and supportive networks. However, these internal learning and capacity-building processes must be supported from the outside in order to be long-lasting and widespread. Bottom-up processes can only get so far without external support, and so the responsibility lies with institutions and governments to bridge the gap and support these capacity-building processes. A balance must be found between self-empowerment and empowerment-facilitation in order to optimise long-lasting capacity-building processes.

In this investigation, the continuous input of technical knowledge from external actors such as the JBB has been essential for the urban farm projects to develop,

improve and consolidate their practices. However, the farmers also need these knowledge transfer processes to include soft skills education. Two of the major threats to long-lasting UPA projects is internal conflict and deficiencies in team organisation. Advisory services often suffer from focusing too much on delivering technical 'packages' of hard skills, in this case, methods such as composting, rather than helping the social processes that ensure the survival of farm projects. Advisory bodies, both in this context and in other UPA contexts worldwide, need to include soft skills teaching, such as communication, team organisation and planning in their programs in order to help build long-lasting projects.

Finally, a more general public awareness and understanding of social capital is needed, both from an institutional point of view and from a citizen point of view. This investigation discussed how the UPA farmers in Bogotá were building high levels of social capital; but without an awareness of what social capital is, its full potential cannot be reached. One must be aware of the skills, contacts and power one has in order to be able to use them effectively. As for the institutional perspective, recognising the importance of social capital in providing "goods" to citizens will allow for soft aims to be included in public programs and policies. In the case of UPA, setting targets based on continued learning processes or levels of empowerment, would help institutions value the fruits of social capital building and focus their efforts more directly on improving it.

A future avenue for investigation that was suggested in this thesis was to continue to generate research on social capital building in UPA in other Global South contexts. If UPA programs and policies continue to be built upon the narrow objectives of food security and income generation, the multidimensional potential of urban agriculture will remain untapped. By understanding more about the potential for capacity-building through UPA, farmers, communities, cities and their municipalities will be able to support these processes and benefit from their consequences.

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Popular science summary

The Power of Farming in the City

What we can learn from the urban farmers of Bogotá, Colombia

In the city of Bogotá, the capital of Colombia, a green revolution is taking place. Around 20,000 citizens are involved in urban agriculture projects across the city and every day they fight for greener neighbourhoods, healthier foods and more peaceful communities. Many of these farms start out of the determination of a group of neighbours to clean up dirty, dangerous and decrepit public spaces. By planting vegetables, fruit trees and flowers, these community farmers bring life and beauty into even the most neglected areas. In their efforts to green their neighbourhoods and supply fresh food to their families, these citizens are building something very profound and powerful, that goes beyond what one sees with the naked eye.

This research paper revealed that urban farming in Bogotá has a significant impact on the fabric of communities and the empowerment of individuals. It also revealed that institutional and municipal support are very important to these processes.

The overall takeaway was that Bogotá's model for developing urban agriculture is a forerunner in the Global South and that the community-building processes that it nurtures are essential to the city's social development. But how to measure something as personal as empowerment, or as intangible as community building? This article will explore these complex social phenomena as well as the thought-provoking results of this study of urban farming in Bogotá.

The research was performed through group interviews and questionnaires in several farm groups scattered across the city in order to give a farmer-oriented perspective. This was important, so that the results can inform future decisions, policies and programmes in favour of the needs of the farmers. One technical assistant was interviewed to give a broader

perspective on how urban agriculture is supported in the city. The project focused on two main processes in the urban farms of Bogotá: knowledge-sharing and capacity-building. Capacity-building is defined as the process of developing and strengthening the skills, instincts, abilities and resources that communities need to survive, adapt, and thrive (UN, 2022). The impact of capacity-building processes is significant, as it can lead to more empowered community members, a greater participation of citizens in society and stronger collaborative ties between individuals. Grassroots community projects such as urban farms are fertile ground for these processes, because of the soft skills, relationships and knowledge that individuals acquire through participation. However, the potential for capacity-building is often curtailed by a lack of institutional support and recognition for grassroots projects. In order for citizens to experience the greatest benefits of capacity-building, local municipalities and other institutions need to recognise the importance of such grassroots projects for building more resilient and thriving societies.

In Bogotá, there has been increasing institutional support for urban agriculture projects since 2004, when the first protocol for supporting urban agriculture was introduced. From 2004 onwards, an urban agriculture programme was developed and gradually more funding was directed towards it. The programme is run by the Jardín Botánico de Bogotá (JBB); the Botanical Gardens of Bogotá, in English. Their advisory programmes, which is completely free for any urban farmer who applies for help, has become a reference-point for urban agriculture programmes in Latin America. Through collaborations with the urban farmers of Bogotá, the JBB has helped to strengthen the capacity-building processes at the heart of urban agriculture, as well as increasing the awareness of urban farming and the involvement of more citizens in the practice.

The study found that the most crucial indicators for successful capacity-building are high levels of community participation, sense of belonging in the community, supportive networks and relationships of trust. It confirmed what other research on capacity-building has found, which is that capacity is best built by the project participants within the community project, but that it is boosted by external support. The Jardín Botánico in many ways has a positive effect on capacity: it builds relationships of trust with citizens and it empowers them through initiatives such as the ‘rutas agroecológicas’ which is a touristic project for urban farmers to give guided tours to visitors for a fee. Furthermore, the JBB boosts citizen participation through the organisation of events, workshops and markets.

However, some areas for improvement were identified in the study. Firstly, the objectives of the JBB's urban agriculture programme are focused on results such as 'number of projects assisted' and 'number of new urban farms created'. These objectives are purely quantitative and force advisors to work towards statistical results rather than in a qualitative way. Yet capacity-building is about quality; how groups resolve conflicts, how individuals increase their sense of empowerment and how learning environments are inclusive and effective. It is by no means unusual that the JBB overlooks such qualitative aims; advisory institutions usually fall into the trap of creating hard targets in order to show clear results to financers. However, soft targets that analyse capacity are of utmost importance to ensuring the long-term success and social benefits of urban agriculture projects. This research study strongly urges the JBB, as well as other advisory institutions worldwide to recognise the importance of capacity-building, and to include qualitative, soft targets in their objectives so that the full scope of social benefits can be achieved.

One clear impact that the urban agriculture projects had on capacity-building that emerged in the study was how it increased the sense of belonging for participants. Many of the interviewed farmers were displaced people of rural origin, who had been forced to move to Bogotá due to the insecurity of the Colombian countryside. In a country where 9.4 million inhabitants are displaced victims of internal conflict, sense of belonging is a complicated topic (Unidad de Víctimas, 2022). It emerged several times in the various interviews that the urban farming activity had helped participants feel at home in the city, as they felt valued for their rural knowledge and because of the close friends they had made through the shared love of growing food.

So, what can we learn from the urban farmers and technical advisors of Bogotá? One important takeaway is that we need to recognise that urban farming is so much more than food or income provision. It is a generous provider of social goods and services, because of how it builds stronger communities, empowers individuals and improves relationships of trust with the municipality. As citizens we should recognise the power of participating in such grassroots projects, so that we can harness these benefits in our own communities. On a municipal and governmental level, recognising these broad social benefits is crucial to building more resilient cities. Including soft targets in programme and policy aims such as the creation of inclusive learning environments and empowerment of individuals will help local governments to maximise the social benefits of urban agriculture. As it stands, cities in the Global South

mostly develop urban agriculture policies and programmes around economic and food security motives. These are incredibly valid motivations, yet unfortunately reports often come back showing that urban agriculture makes a minimal difference to household food provision and family incomes in cities. In response to this, cities should widen the scope of aims and recognise that urban agriculture is useful for so much more than food provision. Much research has shown that many urban farmers continue cultivating for decades, despite low productivity and lack of economic reward. This research project confirms this conclusion, as social motivations such as community building and empowerment have emerged as major motivators for the communities and individuals that engage in urban agriculture.

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Appendix One: Questionnaire guide

(Translated from Spanish to English for purposes of reader comprehension)

Introduction

This research project explores different types of learning in community agriculture projects in Bogotá. It also explores the relationship between learning and community building. Please read each question carefully before answering and at the end make sure that you have responded to every question. The questionnaire should take around 20 minutes.

Consent

The responses that you give in this questionnaire will be recorded. Your recorded data will be totally anonymous as your name will not appear anywhere in the published research. The results of this investigation may be published in scientific journals or conferences and may be used in further studies. Nothing of the provided personal data will be handed out to third parties.

☐

Please tick this box to indicate that you consent to your answers being used anonymously in this research project

PART 1: General questions about me

1. Community Garden that I am a part of:
2. Man/Woman/Other/Prefer not to say
3. Age:
4. Socio-economic strata:
5. How many years I have been involved in the project:

PART 2: How I learn on the farm

Terms: technical assistance = individuals or organisations external to your farm project who give technical advice about farming methods, techniques,

organisation and management. For example, the Jardín Botánico de Bogotá, Universidad Minuto de Dios (...)
Please circle or underline **one answer per question** to indicate how strongly you agree/disagree with the statement.

6. I learn a lot in the garden through listening to and observing other participants

Strongly disagree - disagree - not sure - agree - strongly agree

7. I feel like I have useful knowledge to share with my fellow gardeners

Strongly disagree - disagree - not sure - agree - strongly agree

8. The project has taught me a lot about how to work together with others

Strongly disagree - disagree - not sure - agree - strongly agree

9. I participate in visits, tours and conversations with producers from other gardening projects

Never - hardly ever - sometimes - often - always

10. I have learned a lot from visiting other urban farming projects in Bogota

Strongly disagree - disagree - not sure - agree - strongly agree

11. I implement knowledge in the garden that we learned from technical assistants (see the terminology at the top of the section)

Never - hardly ever - sometimes - often - always

12. They have taught us things that none of us knew before

Strongly disagree - disagree - not sure - agree - strongly agree

13. This technical assistance makes me feel more confident in the methods we use for growing/building the farm

Strongly disagree - disagree - not sure - agree - strongly agree

14. We will continue to ask for help from the technical services in the future

Strongly disagree - disagree - not sure - agree - strongly agree

PART 3: How I feel about the farm

15. I participate in the decisions about the planning (what to grow, how to design the garden)

Never - hardly ever - sometimes - often - always

16. I participate in teaching others about growing/nature/the environment

Never - hardly ever - sometimes - often - always

17. I participate in the evaluation of the farming activities (what went well, what there is to improve)

Never - hardly ever - sometimes - often - always

18. If I have a new idea for the garden, I feel confident to express it to the others in the group

Strongly disagree - disagree - not sure - agree - strongly agree

19. In general, since joining this project I feel more confident about expressing my opinions

Strongly disagree - disagree - not sure - agree - strongly agree

20. My ideas have been implemented in the garden

Never - hardly ever - sometimes - often - always

21. Since I have been involved in the project, I have learned to trust members of my community more

Strongly disagree - disagree - not sure - agree - strongly agree

22. I have made **new** friends in my community thanks to being a part of the community garden

Strongly disagree - disagree - not sure - agree - strongly agree

23. The garden project has made me feel more connected to my neighbours

Strongly disagree - disagree - not sure - agree - strongly agree

24. I feel safe when I am in the garden

Strongly disagree - disagree - not sure - agree - strongly agree

25. Since being part of the project, I have a stronger sense of belonging in this community

Strongly disagree - disagree - not sure - agree - strongly agree

26. I feel like my fellow gardeners in the project would help me in personal life if I were to encounter difficulties

Strongly disagree - disagree - not sure - agree - strongly agree

27. I attend the social or educational events in the garden when they happen
Never - hardly ever - sometimes - often - always

28. I actively try to encourage other members of the community to participate in the garden project
Strongly disagree - disagree - not sure - agree - strongly agree

29. I feel more closely connected to other communities in Bogota because of the communication we have through urban gardening networks
Strongly disagree - disagree - not sure - agree - strongly agree

30. I feel confident to reach out to the technical services and ask for help
Strongly disagree - disagree - not sure - agree - strongly agree

31. I trust the advice that these technical advisors give us
Strongly disagree - disagree - not sure - agree - strongly agree

32. I don't feel like the advisors listen to our needs and they only teach us what they want to implement
Strongly disagree - disagree - not sure - agree - strongly agree

33. Before I joined the project, I did not feel confident about reaching out to these technical services
Strongly disagree - disagree - not sure - agree - strongly agree

34. As a result of the contact with the technical services, I feel more confident about contacting other services, organisations and government agencies
Strongly disagree - disagree - not sure - agree - strongly agree

35. I am interested in attending events organised by the Jardin Botanico or other government services that we are in contact with
Strongly disagree - disagree - not sure - agree - strongly agree

36. I feel that these technical services share our values about urban gardening
Strongly disagree - disagree - not sure - agree - strongly agree

37. If we really need the support of these services, I trust that they will do their best to give that support to us.
Strongly disagree - disagree - not sure - agree - strongly agree

38. Any thoughts or comments you would like to add?

……

……

……

……

Appendix Two: Focus group interview guide

(Translated from Spanish to English for purposes of reader comprehension)

Questions in bold are the "priority" questions. Must be asked before the end of the interview.

1. **When you are uncertain about how to do something in the garden, what do you do? Who do you ask for help?** Do you all contribute knowledge to the project?

2. What methods, processes and techniques have you changed or improved since you started the project?

3. **How have your values changed since being involved in this project?** Describe for me what your values are now compared to before the project. For example: do you value good health and the environment more than before?

4. **What are the most important objectives of the farm project for you?**

5. How do you organise yourselves to get all of the jobs done?

6. Tell me how it goes when the technical assistant comes to the garden - how do they teach you usually? Do they encourage you to learn independently over time?

7. What are the most useful things you have learned about from the technical assistant?

8. Do you always implement what the technical assistant suggests? Why/why not?

9. **Have they given you advice that really deeply changed or influenced the values or goals of this project?**

10. Do you feel like the technical services are customised to your needs? What could be improved?

11. What knowledge gaps are there about farming? Where could you get this knowledge from?

12. What competences and skills do you feel like you are lacking? Eg. communication skills, organisation, long-term planning?

Appendix Three: Interview ground rules and intervention strategy

Ground rules

These ground rules were given verbally to participants at the beginning of every focus group interview:

1. Do not interrupt others when they are talking. Wait until they have finished their point before speaking.
2. Think about keeping your answers shorter so that there is time for other participants to talk.
3. If you disagree with what another participant says, discuss in an open way and respect the opinions of others.
4. It is important to express your honest opinion, as this will give more accurate results for the investigation. Try to express yourself honestly in a way that is respectful towards others.

Intervention strategy

The researcher had the right to intervene when:

1. The topic of conversation moved outside of the decided theme.
2. Dominant characters interrupted others frequently.
3. When more timid characters did not volunteer their opinions, the researcher could encourage those participants to add comments to a discussion.
4. When time was running short, the researcher could bring a certain discussion to a close and move on to the next question.
5. If there were disagreements, the researcher could remind the participants to discuss openly and respect what each other had to say.
6. If disagreements got out of hand, the researcher could move the discussion onwards.
7. If a participant spoke too quietly or there was some interference with the recording, the researcher could ask participants to repeat themselves to ensure the quality of the recording.
8. If the researcher was unable to understand words or phrases, she could ask for clarification or explanation in other words. Uncertainties could be due to the language barrier or colloquial shortenings that the researcher was unfamiliar with.

Appendix Four: Semi-structured interview guide

(Translated from Spanish to English for purposes of reader comprehension)

1. Present yourself and your job

2. How do you go about advising the different farms? Explain the process of meeting a new participant and how you go about giving them advice.
    - How much do you adapt your advising style to each farm? What is the limit on adaptability?
    - How much do you listen to their ideas and help them with those?
    - How do you work with what they know already and try to enhance that with the knowledge you have? Have you learned from them?
    - How do you achieve good communication?
    - How do you build up trust?
    - Is it important for you that the participants relate to you in some way?
    - How do you limit how friendly you like to be with the participants?
    - How do you deal with power dynamics

3. For how long do you usually accompany a project?

4. What do you do when a project isn't implementing the suggestions you made to them?

5. Do you usually teach the project leader the most, or do you try to teach the whole group?

6. Do you try to encourage independent learning? How?

7. What is the attitude of the participants towards the JBB?
- Do you think that they trust other government services more as a result?

8. What are the main results that the JBB expects of you?

- Is it a challenge to have to meet these expectations considering the reality of your job?
- How could the objectives of the JBB be altered to create more effective technical assistance to the gardeners of Bogotá?

9. What do you personally consider as success with the work you do?

10. What is the main challenge you face in your job
- What could be done to help you overcome that challenge?

11. Have any of your ideas or values changed through doing this job?

12. Is there anything else that you would like to add?