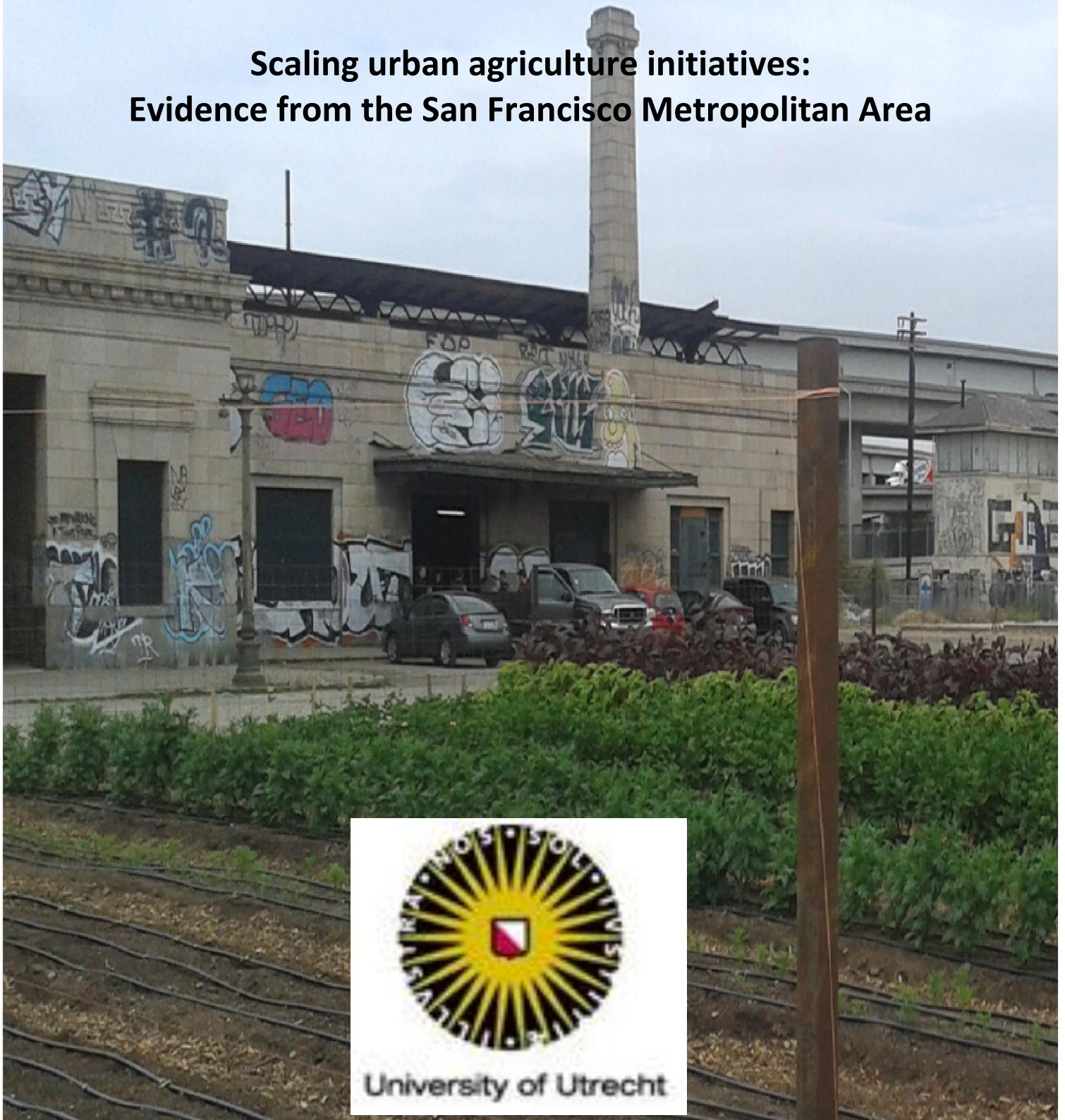


URBAN AGRICULTURE

'hype or reality?'

**Scaling urban agriculture initiatives:
Evidence from the San Francisco Metropolitan Area**



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Scaling urban agriculture initiatives: Evidence from the San Francisco- Metropolitan Area

Master thesis Economic Geography

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Preface

Here is it, the final piece of my Master Studies Economic Geography. To be honest, writing this thesis was the most difficult part of my entire study time. It was a painstaking process to investigate a new and fragmented topic which consumed a lot of my time and energy. However, during this process I have also learned a lot about myself and about conducting an explorative research. What is at the end, in my opinion the most important outcome of this thesis process.

My internship at the Netherlands Office for Science Technology (NOST) in San Francisco from February till Augustus 2014 was a good a starting point for this thesis research. During this time I was able to get a better picture of the current developments of urban agriculture in general and in the San Francisco Bay Area and other cities in the United States and Canada (Portland, Seattle and Vancouver) in particular. Through all the urban farms tours, and subject related events, (informal) meetings, Skype calls and roundtables I got more feeling with this very diverse and complex subject. I would like to thank all the people in the Unites States and The Netherlands who provided me input for this thesis research during my internship, including the respondents of the surveys.

Additionally, I would like to thank all the people of the Dutch Consulate who made this internship unforgettable and a special thanks to my supervisor in San Francisco: Natasha Chatlein for all her enthusiasm and support during my stay in beautiful San Francisco.

Furthermore, I would like to thank my supervisor in Utrecht: Veronique Schutjens for all her critical and supportive feedback and mental support during this entire process. I would also like to thank Jan Maarten de Vet for helping me out in critical times. Our Skype sessions and your helpful feedback have regained my confidence again. Additionally, without the encouragement and help of my lovely parents, sister and dear friends I wouldn't have survived this tough time. They were willing to hear all my stories and helped me out when it was necessary. Thank you all!

And last but not least, I would like to thank the *UB Tijgers*: Jopy, Inge, Rosie, Stefan, Thomas and Tom for all their advice, (mental) support and the fun we had during these last couple of months. Our time at the library together and the other activities beyond has brought us closer together, which makes it surely a pleasurable end of being a Geography student at Utrecht University.

Summary

Today, urban agriculture initiatives are flourishing in cities in the Global North. The increasing population in cities including concerns about food security and the growing pressure on natural resources, has moved urban agriculture from an issue at the edge of public to once at its center in the past few years.

To understand of social innovations as urban agriculture hold promise and can tackle these growing concerns in our society, this thesis research aims to get a first impression of the scaling of urban agriculture initiatives and the mechanisms behind this process is by focussing on a leading local food in the world: the San Francisco Metropolitan Area.

This is first done by conducting a literature study to understand how food-producing activities in and around cities take place and are manifested in initiatives in the Global North today. And second by conducting a literature study to understand how initiatives within a social innovation could theoretically scale. And third by conducting an exploratory case study in the San Francisco Metropolitan Area to get some first insight in to what extent urban agriculture initiatives are trying to increase impact (scaling) and what this influences.

The outcomes of the literature studies show that urban agriculture is really divers and that urban agriculture initiatives are manifested in various types of initiatives, both inside and outside the traditional market, in the Global North today. Subsequently, the still limited literature of scaling shows that scaling is a broad concept whereby social initiatives increase impacts in both a quantitative and qualitative manner by growing their organizations and/or spreading the idea (social innovation) further. This process is the outcome of different factors related to the organization of the social initiative, the leading individuals and the environment in which the initiative operates.

The empirical analyses have shown that urban agriculture initiatives in the San Francisco Metropolitan Area scale in all the different ways as founded in academic literature. All the urban agriculture initiatives surveyed are trying to increase the impact of urban agriculture by scaling up and to a lesser extent by scaling deep, both through spreading the idea further and to a lesser extent in growing their organizations.

In addition, the empirical analyses gave little insights into the factors that influence how urban agriculture initiatives scale. Only a weak relation has been found between the market engagement of urban agriculture initiatives and the way scaling is conducted via spreading the idea or growing the organization. However some relations between the scaling of urban agriculture initiatives in general and the characteristics of leading individuals have been founded. Based on this, it can be tentatively concluded that the motivation, capacity and relationships of leading individuals influences or urban agriculture initiatives scale.

Furthermore, it became clear that the external environment plays an important role in the scaling of urban agriculture initiatives. Urban agriculture initiatives in the Global North are (still) small in scale and most activities are not self-sustaining and are depending of non-paid efforts and financial support. The environment thus both facilitates and constrains the scaling of urban agriculture initiatives by the (lack of) provision of resources and support.

Based on this status quo of urban agriculture and the initiatives in the San Francisco Metropolitan Area, it seems to be plausible that feeding a significant amount of the urban population is rather a hype than reality today. However, through the scaling of urban agriculture initiatives that see food provision rather as a mean to tackle other social (urban) issues, urban agriculture holds more promise in tackling social (urban) issues and in creating more liveable and sustainable cities.

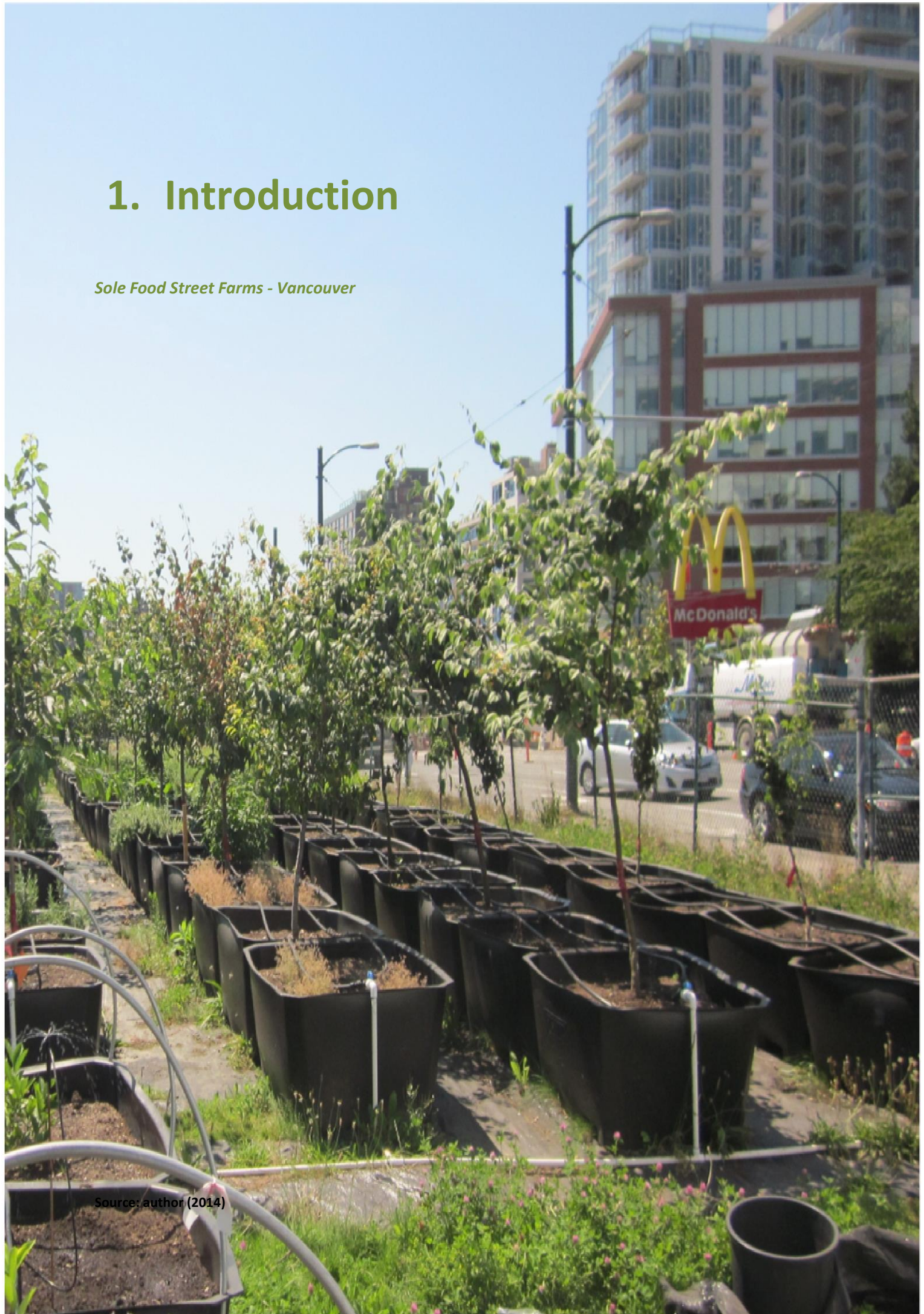
Content

- 1. Introduction.....7
 - 1.1. Societal problem..... 8
 - 1.2. The research framework 9
 - 1.3. Relevance 10
 - 1.3.1. Societal relevance..... 10
 - 1.3.2. Scientific relevance..... 11
 - 1.4. Outline of the thesis 11
- 2. Exploring urban agriculture(initiatives): a theoretical overview13
 - 2.1. A brief history of food production in cities 14
 - 2.2. Exploring urban agriculture today..... 16
 - 2.2.1. Economic activities 16
 - 2.2.2. Location 16
 - 2.2.3. Areas..... 17
 - 2.2.4. Scale..... 17
 - 2.2.5. Products..... 18
 - 2.2.6. Destination 18
 - 2.3. Urban agriculture initiatives today..... 19
 - 2.3.1. Residential gardening 19
 - 2.3.2. Community gardening 20
 - 2.3.3. Guerrilla gardening 20
 - 2.3.4. Non-profit and institutional gardening 21
 - 2.3.5. Green infrastructure..... 21
 - 2.3.6. Commercial/ for-profit farming..... 22
 - 2.4. Conclusion 22
- 3. Scaling social initiatives: a theoretical overview23
 - 3.1. Exploring the scaling concept..... 24
 - 3.2. Understanding the mechanisms behind scaling: Gartner's conceptual framework of venture creation 26
 - 3.3. The role of the organization in scaling social initiatives..... 27
 - 3.4. The role of leading individuals in scaling social initiatives 29
 - 3.5. The role of the environment in scaling social initiatives 29
 - 3.6. Conclusion 30
- 4. Methodology31
 - 4.1. Research design..... 32

4.2. Location & research population	32
4.3. Data collection.....	34
4.4. Operationalization.....	35
4.4.1. Dependent variable	35
4.4.2. Independent variables.....	35
4.4.3. Additional (control) variables	37
4.5. Method of analysis	38
4.6. Validity and reliability.....	38
5. Scaling urban agriculture initiatives: case study evidence from the San Francisco – Metropolitan Area	41
5.1. Scaling urban agriculture initiatives	42
5.2. Organizational characteristics of urban agriculture initiatives	43
5.3. Relating organizational characteristics of urban agriculture initiatives to the scaling of urban agriculture initiatives.....	46
5.4. Characteristics of leading individuals of urban agriculture initiatives	46
5.5. Relating characteristics of leading individuals to the scaling of urban agriculture initiatives ...	47
5.6. Conclusion	48
6. Accelerators and barriers in the scaling process of urban agriculture initiatives: case study evidence from the San Francisco - Metropolitan Area.....	49
6.1. Accelerators in the scaling process of urban agriculture initiatives.....	50
6.2. Barriers in the scaling process of urban agriculture initiatives	50
6.3. Conclusion	52
7. Conclusion	53
7.1. Urban agriculture hype of reality?	54
7.2. Discussion.....	55
7.3. Future research recommendations.....	56
7.4. Policy recommendations.....	56
References.....	58
Appendix.....	66

1. Introduction

Sole Food Street Farms - Vancouver



Source: author (2014)

1. Introduction

1.1. Societal problem

By 2050, the earth's population is expected to grow to almost 10 billion people according to the United Nations Department of Economic and Social Affairs (United Nations, 2012). Thereby, an increasing percentage of this population will be living in urban areas. While in 1950 only 30 per cent of the world's population was urban, by 2050, the world's population residing in urban areas is expected to swell to circa 66 per cent of the total world population. This historic shift in population crossed a threshold in 2008, when more than 50 per cent of the urban population for the first time lived in cities (United Nations, 2015).

This population growth will make the challenge of feeding the (urban) population in both developing and developed countries much more difficult (Cargill, 2014). The United Nations Food and Agriculture Organization (2011) suggested *'that the most pressing and immediate issue facing the world community is the problem of ensuring safe, adequate, timely, and affordable food for a growing and increasing hungry population'* (as cited by Besthorn, 2013 pp. 187-188).

First, a growing number of people in cities will also see an increase in urban poverty and urban food insecurity. Especially in developing countries in Africa and Asia, where the strongest urbanization will take place in the future, ensuring food security for urban households are hampered by issues such as high rates of unemployment, overcrowding and lack of infrastructure (FAO 2008; United Nations, 2015). However, cities in developed countries (Global North) are also increasingly confronted with the problems of urban food security, normally associated with their poorer counterparts in the Global South (Morgan, 2014). In the United States for example, USDA's Economic Research Service (2009) estimates that 23.5 million people live in so-called urban *food deserts*. The often low-income residents of these neighborhoods have limited access to healthy and affordable food, because fast food restaurants and convenience stores are far more prevalent and sell less healthy, affordable food options than the limited supermarkets and grocery stores do.

Second, the increase in food demand, also related to the increased welfare levels and changes in diets (Godfray et al., 2010; Odegard & van der Voet, 2013) is putting increasing pressure on conventional models of agriculture and natural resources (Foley et al., 2011). According to the United Nations Environment Programme (2015), agriculture accounts for more than 70 percent of global freshwater withdrawals, contributes for more than 30 percent of total global greenhouse gas emission, while 80 per cent of deforestation is caused by agriculture expansion. Based on these statistics, expanding agriculture is thus neither possible nor desirable (Rizzo et al., 2013). To avoid growing pressure on agriculture and natural resources, innovative solutions or approaches are thus necessary to feed the growing (urban) population in the future in a sustainable way.

To avoid growing pressure on agriculture and natural resources, sustainable urban food production has recently received a great deal of attention across a range of academic and professional disciplines (Caplow, 2009). In 1987 the Brundtland Report first mentioned the importance of sustainable development as a global task (Gibbs & Jonas, 2000). In this report one of the advices are that governments should also consider supporting urban agriculture for feeding the urban population: *'It could become an important component of urban development and make more food available to the urban poor (...) and urban agriculture can also provide fresher and cheaper produce, more green space, the clearing of garbage dumps and recycling of household waste'* (United Nations, 1987, p.174).

In the past few years, this advice has captured the attention of many people in the Global North, including that of urban farmers, city residents, entrepreneurs, non-profit organizations and city governments and *urban agriculture* has moved from an issue at the edge of public discourse to one at its center (Bohn and Viljoen, 2011). With as result, urban agriculture initiatives are flourishing in cities in North America, Western Europe and developed parts of East Asia today.

According to Van Der Schans et al. (2014), urban agriculture is for several reasons innovative compared to more conventional models of agriculture. Firstly, it takes place in and around urban areas instead of rural areas. Secondly, urban agriculture is generally characterized by shorter supply chains and directed to the demand of nearby consumers instead of serving the global markets. Thirdly, in line with these two reasons urban agriculture is integrated in a wider urban system instead of being spatially segregated from the city which means that urban agriculture is also feeding on cities, by using or reusing its urban green waste and waste energy (*urban metabolism*) and is integrated in urban design and planning.

As part of the urban system, a growing number of actors, such as city governments and scholars (e.g. Deelstra and Girardet, 2000; Mougeot, 2006; Wageningen UR 2015), see urban agriculture as an effective strategy to tackle urban needs and improve the sustainability of the city as a whole. They argue that urban agriculture can, for example, improve the health of the urban population by increasing the availability of healthy food (people) and can create habitat for (agricultural) biodiversity (people) and new local employment (profit) (WUR, 2015). Urban agriculture can thus even be characterized as a *social innovation* because it acts like '*a novel solution to social problems that is more effective, efficient and sustainable than existing solutions and for which the value created accrues primarily to society as a whole rather than to private individuals*', as defined by Phills et al. (2009).

1.2. The research framework

There is a broad consensus amongst practitioners, activists and scholars that social innovations such as urban agriculture only hold promise and could tackle problems entrenched in our societies (e.g. food security, sustainability) when urban agriculture initiatives are able to continue in the future and operate at the current or increased level (Gabriel, 2014; FAO, 2007; Nugent, 1999; Specht et al. 2014).

In line with the latter, this thesis research aims to get a first impression of the *scaling* of urban agriculture initiatives and the mechanisms behind the process by conducting a case study research in the San Francisco Metropolitan Area. Scaling referring to the expansion of social innovations, has increasingly become a 'holy grail' and an indicator for success in the field of social innovation (Davies & Simon, 2013). The San Francisco Metropolitan Area is thereby one of the leading local food producing areas in the world and hosting a growing number of urban agriculture initiatives since 2008 (Zigas, 2014), what makes it an interesting area to get some first understanding of scaling of urban agriculture initiatives.

The central research question of this thesis research is therefore formulated as follows:

'To what extent do urban agriculture initiatives in the San Francisco Metropolitan Area scale and what influences this?'

Before it is possible to answer this question, it is first necessary to take a closer look to how urban agriculture has been manifested in initiatives - actions at particular places (Fraisie, 2011) - in the Global North today and second, to understand the scaling concept and the mechanisms behind this process.

The growing literature on scaling in the social innovation field shows that scaling is a complex process, manifested in different strategies, and the outcome of internal factors related to the *organization* and leading *individual(s)* as well as the outcome of the interaction with the external *environment* (Bloom & Smith, 2010; Blundel & Lyon, 2014; Dees et al., 2004; Westley & Antadze, 2010).

Therefore the following the sub-questions are formulated:

1. What is urban agriculture and how is it manifested in initiatives today?
2. How could urban agriculture initiatives scale and how is this process affected by the characteristics of the organization, leading individuals and the environment according to the scaling literature?
3. To what extent do urban agriculture initiatives in the San Francisco Metropolitan Area scale and how is this related to the characteristics of the organization and the leading individuals of the urban agriculture initiatives?
4. How does the environment facilitate or constrain the scaling process of urban agriculture initiatives the San Francisco Metropolitan Area?

To answer these questions, two extensive literature studies have been conducted to understand urban agriculture as a phenomenon and its initiatives today (question 1), as well as the scaling concept within the social innovation context including the factors that affect this process (question 2). In addition, explorative fieldwork in the San Francisco Metropolitan Area from February until Augustus 2014 was carried out to gain a better understanding of the development of urban agriculture in the case study area. Subsequently, an exploratory case study of fourteen urban agriculture initiatives in the San Francisco Metropolitan Area were conducted to obtain empirical insight in the scaling of urban agriculture initiatives and the factors that affect this process (question 3 and 4). Building on these outcomes the central research question can be answered.

1.3. Relevance

1.3.1. Societal relevance

As mentioned above, urban agriculture is a response to social challenges and needs as feeding the growing population and improving the sustainability of cities in the world. Investigating urban agriculture and the scaling of urban agriculture initiatives in particular are thus relevant because it provides more insights in the potential of urban agriculture in tackling these challenges and needs.

Furthermore, the subject of this thesis research is relevant in the context of growing concerns about negative and environmental impacts of the dominant industrial global agri-food system. Issues such as genetically-modified (GM) crop contamination, poor working conditions of farmers due to the unprecedented power of consolidated corporations, a lack of transparency and trust between producer and consumer and growing obesity levels have brought the dominant industrial global agri-food system into a negative public spotlight (Jarosz, 2008; Odegard & van der Voet, 2013; Scrinis, 2013). In response, an increasing urban demand of alternative food products as seasonal and organic produced grown 'close to home' is visible, especially in cities in the Global North (Donald & Blay-Palmer, 2006; Jarosz, 2008).

And finally, studying the scaling of urban agriculture initiatives and the role of the external environment is also relevant in line with the 'greening agenda's' of cities in the Global North today and the growing attention of local planning departments and policy makers to investigate and support urban agriculture practices (Tornaghi, 2014). In the Netherlands, the Green Deal has been introduced in 2012 by the Dutch government together with the University of Wageningen and some private stakeholders.

The aim of this Green Deal is to investigate and professionalize urban agriculture with a focus on qualities of urban fallow, earn- and investment opportunities, closing loop recycling and sustainability (Rijksoverheid, 2015). And today several Dutch cities, like Almere and Rotterdam, experiment with urban agriculture and support different initiatives with subsidies (Nicis Institute 2012). Also, in cities across the United States and Canada a range of local governments efforts to stimulate and support urban agriculture practices have emerged (Hodgson et al., 2011). The city of Seattle for example introduced the *P-Patch Program* to oversee and manage community gardens across the city (Seattle Department of Neighborhoods 2015).

1.3.2. Scientific relevance

Recently, urban agriculture has also gained interest amongst scholars to better understand this phenomenon in cities including its definition, causes, consequences and potential. Most of the urban agriculture literature is still focused on cities in the Global South, where urban agriculture traditionally is a more common practice than in the Global North (Tornaghi, 2014). However, research on urban agriculture in cities in the Global North is also growing, conducted by a range of academic perspectives such as food and health, sustainability and geography.

There seems to be a broad consensus among scholars that urban agriculture has many social, economic and environmental benefits through which it may contribute to sufficient and sustainable urban food production in the future, allowing it to increase the sustainability of the city as a whole (FAO 2007; Lovell, 2010; McClintock, 2014; McClintock & Simpson, 2014). Explorative and descriptive studies have been published which have built an overview of the current developments of urban agriculture in the Global North. Much has been written about different types and scales at which urban agriculture manifests itself, the actors that are involved, and the wide range of beneficial functions it provides (e.g. Lovell 2010; McClintock 2014; Rogus & Dimitri, 2014; Hardman & Larkham, 2014). Also, a number of studies have been conducted to quantify the production potential of urban agriculture in particular cities (Grewal and Grewal, 2012; McClintock et al., 2013). However, some critical studies have contradicted such conclusions as well. A couple of studies point out how urban agriculture is entangled with multiple processes of neo-liberalism and not always succeeds in achieving predefined goals or ideals such as improved food security (see Alkon & Mares, 2012; McClintock, 2014; Tornaghi, 2014).

In addition, as urban agriculture grows in popularity, questions arise amongst policy makers, practitioners, and investors on how to support initiatives effectively to further develop a local food system. A growing body of empirical research focuses on the urban agriculture initiatives themselves to understand the barriers and opportunities those initiatives face during their development process and which resources and efforts are required to ensure the viability of initiatives (e.g. Cero 'n-Palma et al., 2012; Cohen & Reynolds, 2014). This thesis provides a contribution to this understanding by focusing on the scaling of urban agriculture initiatives, which has to my knowledge never been conducted before. In addition, it provides a better understanding of the role of geography in urban agriculture. Firstly, by looking into the geographical spreading of urban agriculture in cities (scaling) and secondly, by examining the role of the external environment in the development process of urban agriculture initiatives.

1.4. Outline of the thesis

The structure of this thesis research is as follows: chapter 2 starts with exploring the phenomenon of urban agriculture and the different types of urban agriculture initiatives contemporarily and gives answer to the first research question.

Chapter 3 sets out the theoretical framework of this thesis, which is necessary to understand the scaling of urban agriculture initiatives, and addresses the second research question. In this chapter, insights from the scaling literature within the social innovation context are used to understand how urban agriculture initiatives theoretically scale and which factors affect this process.

Next, chapter 4 describes the methodology, including the research design, research location and population, method of data collection and analysis, the operationalization of the relevant concepts and the validity and reliability of this research.

Subsequently, chapter 5 is the first empirical chapter and zooms in on the scaling of urban agriculture initiatives in the San Francisco Metropolitan Area and relates this to the organizational characteristics of the urban agriculture initiatives surveyed and the characteristics of the leading individuals to give answer to the third sub-question.

In chapter 6, the self-reported accelerators and barriers in the development process of the urban agriculture initiatives surveyed are explained to understand how the external environment facilitates and constrains the development of urban agriculture initiatives and the scaling process in particular, which addresses the last sub-question.

Finally, in chapter 7, the conclusions of the thesis research are presented by answering the central research question, followed by the discussion which includes the limitations of the thesis research, the suggestions for further research and a number of policy recommendations based on the results of this thesis research. This chapter is followed by a list of references and an appendix.

2. Exploring urban agriculture (initiatives): a theoretical overview

UBC Farm - Vancouver



Source: author (2014)

2. Exploring urban agriculture (initiatives): a theoretical overview

This chapter answers the first sub-question: *‘What is urban agriculture and how is it manifested in initiatives today?’* To allow a better understanding of urban agriculture today, a brief history of food production in cities and a theoretical understanding of food production related to cities (Von Thünen model) is provided (paragraph 2.1). Subsequently, a summary of how scholars and professionals across a wide range of disciplines have defined and characterized urban agriculture recently is considered (paragraph 2.2). Based on these insights, an overview of the most common types of urban agriculture initiatives is given (paragraph 2.3). The chapter ends with a conclusion and answer to the first-sub-question (paragraph 2.4).

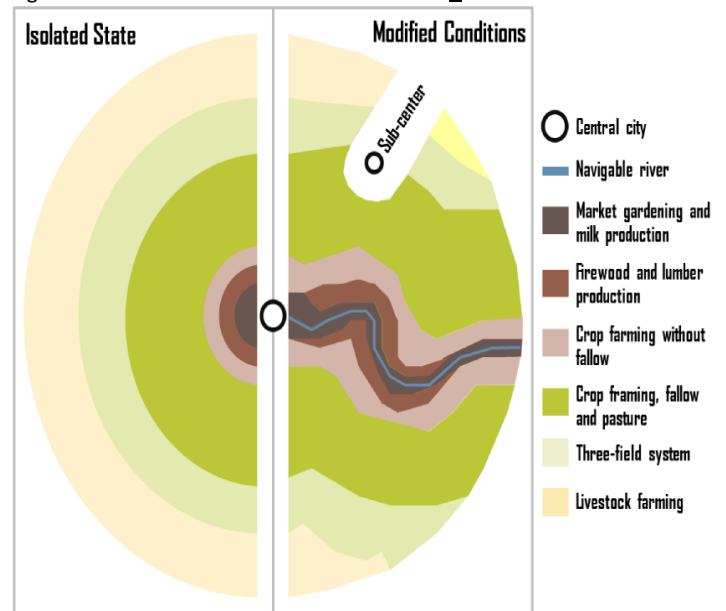
2.1. A brief history of food production in cities

Although urban agriculture is increasingly considered as a potential innovative way to feed the growing urban population, the phenomenon of producing food in and around cities focused on serving the nearby consumers is not new. In fact, producing food in and around cities has always existed as long as there have been cities (Kostof, 1991).

Throughout history and around the world, urban food production has taken many different forms depending on the climate, cultural preferences and available technologies (Lovell, 2010). During Greek, Roman and Medieval times, food-producing activities were at the core of the cities themselves in both Mediterranean and Middle Eastern societies (Kostof, 1991). Also societies at the other side of the world incorporated farming activities. For example, Machu Picchu is a 16th century city constructed physically through the Incas' to support food production, including critical infrastructure such as terraces and irrigation, as well as management systems for waste, microclimate control, and food storage (Lovell, 2010). Due to the lack of technologies and transportation as we know it today, the incorporation of food into urban systems was the conventional way to feed the urban population during these centuries.

The first scholar who developed an analytical model to understand how agriculture activities are spatially related to urban markets is the German economist Johann Heinrich Von Thünen. In 1826, he described the relationship between the spatial patterns of the surrounded rural land-uses and economic laws in his book “Der isolierte Staat”. By reducing reality to an ‘Isolated State’ of self-sufficiency and no external influence in which the city (the market) is centrally located, Von Thünen concluded that spatial patterns of agriculture activity can be explained by three different factors. First, by the shelf life of produce - in the sense of being able to preserve food in a state fit for human consumption; second, by the transportability of produce; and third, by the profit margins on produce. This led to the visualization of concentric rings of increasing distance from the city in which different agricultural commodities are located (figure 2.1).

Figure 2.1: Illustration of the Von Thünen model



Source: Rodrique (2015)

During the industrial revolution, however, this model lost much of its relevance. Through innovations in transport facilities and food conservation technologies, the shelf life and transportability of food and the proximity of agriculture to the urban market became less important (De Graaf et al., 2011; Van der Schans 2010). With as result, large-scale agriculture moved far beyond the city's sphere of influence and became part of the global industrialized food system as we know it today.

Although intensive farming moved to rural areas (Van der Schans & Wiskerke, 2012), food production in and around cities has never totally disappeared. Especially in cities in the Global South, growing your own food has always been a common practice and an important source of food for the urban poor (Rogus & Dimitri, 2014; Tornaghi, 2014). In addition, urban agriculture has also returned during crisis times. For example a city like Havana in Cuba has a well-developed urban agriculture system because of the loss of earnings from their exports after the collapse of the Soviet Union (Lovell, 2010). Also during World War I and II and Depression time in the beginning of the twentieth century, citizens in the United States were encouraged to produce to offset shortages (figure 2.2) (Miller, 2003). With as result, the so-called 'Victory Gardens': vegetable, fruit and herbs gardens planted at private residences and public parks, produced around 40% of the vegetables of the United States in 1944 (The National WWII Museum, 2014). Aside, from this, there has always been a segment of the urban population engaged in producing their own food in the city, largely out of idealistic or recreational motives (Roemers, 2014).

Figure 2.2: "Uncle Sam" tending to a garden, promoting Victory Gardens, 1917.



Source: United States Department of Agriculture (1917)

2.2. Exploring urban agriculture today

Today, due the growing interest in urban agriculture again across a range of academic and professional disciplines, many definitions of urban agriculture have been developed. To start with, a frequently cited article that pays attention to the concept development of urban agriculture is that of Mougeot (2000) (see e.g. Colasanti, 2009; Redwood, 2012; Roemers, 2014). He provides in his article the common conceptual building blocks of current definitions (figure 2.3). These building blocks serve as a guide to understand the different aspects of urban agriculture today and are therefore further explained clockwise:

2.2.1. Economic activities

Some simple definitions of urban agriculture delimit urban agriculture to the growing and raising of food (Kaufman & Bailkey, 2000; RUAFA, 2015). Other scholars and professionals (e.g. Lovell, 2010; Smit & Nasr 1996) define urban agriculture broader than that and include all the economic activities from field-to-fork, the growing/raising, processing, distribution and the selling of food. Sometimes additional services such as marketing and service delivery activities (e.g. animal health service) are included as economic activities as well (RUAFA, 2015).

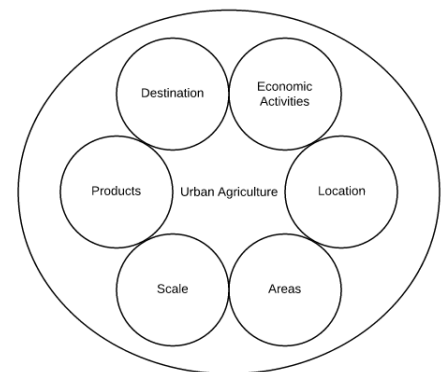
2.2.2. Location

As cited from Mougeot (2000, p.6): *'by far the element most common to reviewed definitions is location "in (within) and around" cities or urban areas'*. Some definitions delimit urban agriculture primarily to the boundaries of the city. The Dutch Ministry of Agriculture for example, use the administrative city limits as locational boundaries (Van der Schans, 2010). Maxwell & Armar-Klemesu (1998) on the other hand, use the municipal boundaries of the city as demarcation criteria while Aldington (1997) defines the geographical boundaries of urban agriculture to the area within legal and regulatory purview of local authorities.

Other definitions retain a broader locational focus and highlight that producing food for the urban population does not necessarily indicate that activities only take place within the city boundaries but also nearby urban areas. For example according to McEntree (2010)'s definition, urban agriculture activities take place in close geographical proximity to urban consumption, which also includes the *peri-urban area*: the urban periphery, the fringe of the city (FAO, 2007) as location of urban agriculture activities.

Including the peri-urban area in the definition of urban agriculture is however problematic for several reasons. Firstly, according to Mougeot (2000), peri-urban locations are in closer contact with rural areas and tend to undergo, over a given period of time, more dramatic agricultural changes than do locations in more central and built-up parts of the city. This leads to difference in agriculture activities in urban and peri-urban areas - making it more difficult to amalgamate the two. Secondly, through the variation in size and scale of cities and countries worldwide the boundary between the urban fringe and rural area is sometimes arbitrary, which has implications for the agriculture activities that are included in the definition of urban agriculture. Many Dutch conventional farmers for example, would be classified as practicing urban agriculture because of their close proximity to cities (Van der Schans, 2010). In the Netherlands, the Dutch innovation program *Transforum* (2011) has therefore clearly distinguished urban agriculture- agriculture IN the city- from agriculture AROUND and FOR the city, which are all three covered under the term *metropolitan area*.

Figure 2.3: Building blocks urban agriculture



Source: Mougeot (2000)

2.2.3. Areas

The area includes the sites where urban agriculture is practiced. The RUAF foundation – resource centres of urban agriculture & food security (2015) concludes that urban agriculture activities may take place on residential areas (on-plot), or on land away from the residence (off-plot), on private land (owned, leases) and on public land (parks, conservations areas, along roads, streams and railways), or semi-public land (schoolyards, grounds of schools and hospitals). Thereby, from the urban agriculture literature it becomes clear that urban agriculture activities often rise on underused space in the city as urban fallow and vacant lots (McClintock et al., 2013). In addition, urban agriculture is not only related to land areas but also to the incorporation of activities in and of buildings. Specht et al. (2013) mention in their overview article of urban agriculture of the future that activities can take place on rooftops, indoors and vertically integrated in buildings.

This last option, also known as *vertical farming*, has gained more attention since the introduction of the concept of the "The Vertical Farm" in 1999 by the American ecologist Dickson Despommier. This concept promotes the mass cultivation of plant and animal life for commercial purposes in skyscrapers (figure 2.4). Although vertical practices have indeed been launched in the past few years, this way of food production is today still in its infancy (Specht et al., 2013).

Figure 2.4: The vertical farm concept of Dickson Despommier

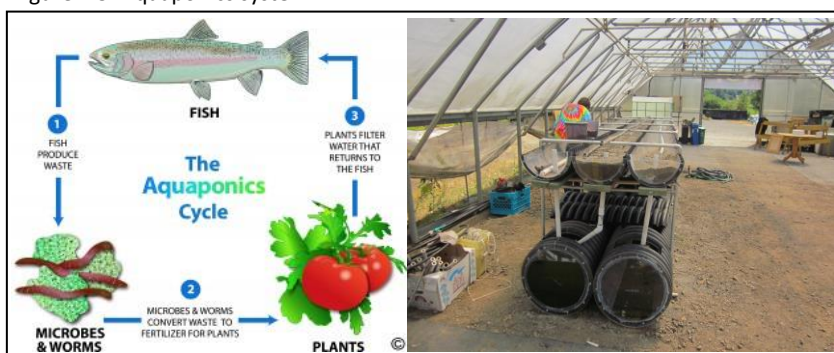


Source: The Vertical Farm (2015)

2.2.4. Scale

According to the urban agriculture literature urban agriculture can take place at multiple scales (not to be confused with scaling as in increasing impact) (McClintock, 2014, RUAF, 2015). These scales range from micro and small to medium-sized and large scale activities providing food for individuals (self sufficiency) and for communities of various sizes both through and outside the traditional market mechanisms (McClintock, 2014). This level of scale coincides with the application of production technology. Production techniques as *aquaponics* for example are often applied for small-scale (family) food production (FAO, 2014). This technique makes it possible to cultivate plants and fish together in one simple integrated closing-loop system without the use of soil (figure 2.5). The plants provide a natural filter for the water the fish live in and the fish waste is an organic food source for the growing plants - very useful in areas with limited space (Bernstein, 2011; Sheikh, 2006).

Figure 2.5: Aquaponics system



Source: The Aquaponic source(2015) & author (2014)

Furthermore, more high-tech technologies such as LED light are recently developed to produce food indoors on a large scale (figure 2.6). Over the past few years, the Dutch company Philips has been at the forefront of this LED technology, what makes it possible to produce food in cities in a controlled environment without the use of natural sunlight and minimal use of resources as water (Yeh & Chung, 2009). Today, due to the infancy of this technology only a couple of companies have been founded worldwide applying this technology (e.g. Plantlab, Green Sense Farms).

Figure 2.6: Indoor farming with LED light



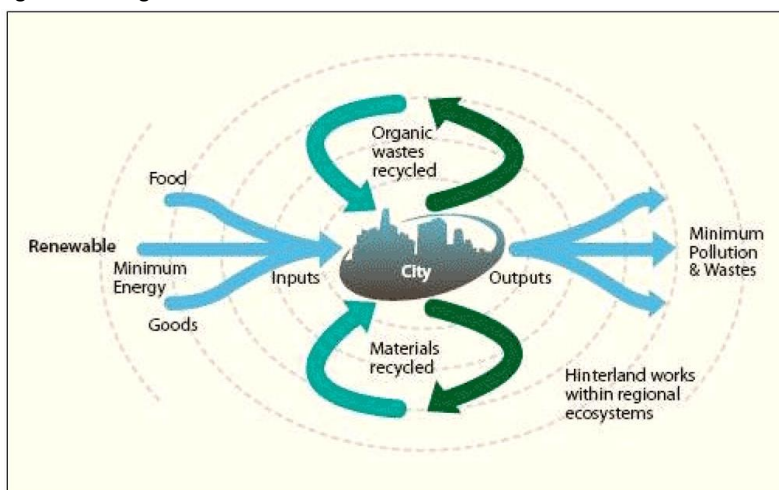
Source: Kleurenlicht (2012)

2.2.5. Products

While some of the urban agriculture products have already been discussed under the previous building blocks, it is still useful to consider which products are included under the term urban agriculture according to different scholars and professionals. The emphasis is clearly on fresh and perishable products instead of prefabricated foods. Most definitions embrace diverse agriculture products as a number of crops (fruits, vegetables, grains, root crops, mushrooms etc.) and animals (bees, goats, sheep, poultry, rabbits, cattle, fish etc.) (e.g. Kaufman & Bailkey, 2000; RUAF, 2015; Smith et al. 1996). A small number of definitions also deal with non-food products such as aromatic and medicinal herbs, ornamental plants and tree products (e.g. Mougeot, 2006; RUAF, 2015).

Furthermore, products also refer to inputs, outputs and services to the city. As mentioned by Van der Schans et al. (2014) urban agriculture is integrated into the wider urban ecosystem and (re)uses local urban resources as organic waste in a circular manner (urban metabolism) (figure 2.7.). In return, agriculture is associated with the additional services to the city and its inhabitants as urban greening, community socialization and human health (Lovell, 2010; Wageningen UR 2015).

Figure 2.7: Diagram of circular urban metabolism



Source: Lehmann et al. (2013)

2.2.6. Destination

Finally, urban agriculture is intended to serve the urban population in different ways. First, by self-consumption, whereby urban residents produce and consume their own food. Second, by some trade manifested in non-financial transactions such as gifts and barter and financial transactions as sales (market engagement) (McClintock, 2014; Mougeot, 2000; RUAF, 2015). Thereby, the destination of urban food is often related to a specific target group.

Urban agriculture is frequently associated with food production for the urban poor (McClintock, 2010; Tornaghi, 2014). Having said this, since the growing criticism against the dominant industrial global food system and the increasing demand for organic and local products amongst the urban elite (Donald & Blay-Palmer, 2006), middle-to-upper class urban residents are also a destination for urban agriculture. For example, Zahina-Ramos (2013)'s case study in South Florida about backyard food gardening shows that the demographic groups that were most likely to food garden were those in long-term relationships, higher income brackets, those with college education and residents over 50 years old.

2.3. Urban agriculture initiatives today

How are all these aspects of urban agriculture manifested in initiatives - actions at particular places (Fraise, 2011) - in the Global North today? There is a broad consensus among scholars and professionals that urban agriculture is more diverse than ever before (Hodgson, 2011; Michaels, 2005). In line with this, drawing on existing literature and fieldwork in Oakland, McClintock (2014) explains that urban agriculture in the Global North arises from different counter movements and that the differentiation of urban agriculture's various forms today is important because it delivers insights in how urban agriculture addresses its impacts. Therefore, he created a typology of urban agriculture initiatives today.

Partly based on this work, the explorative fieldwork in the United States and additional literature, various types of urban agriculture have been distinguished for this thesis research that will be further explained below. While these types are created as common for urban agriculture in the Global North it seems to be plausible that differences exist in urban agriculture initiatives in cities across these developed countries. However, a detailed discussion of differences between and within countries lies outside the scope of this thesis. By explaining the different types, the emphasis is often put on the United States, where a lot of academic research has been conducted and where the empirical part of this thesis research took place.

Finally, as with any typology, not every urban agriculture initiative fits perfectly into a single category and in some cases, there may be overlap. Despite these inherent shortcomings, this typology reveals the diversity of urban agriculture in how initiatives are structured, managed and institutionalized. The various types are structured and explained along the destination line: from self-sufficiency to serving others.

2.3.1. Residential gardening

Residential gardening is the most traditional and primitive form of urban agriculture conducted on private spaces as backyards (figure 2.8.). Individuals and households aim to produce food for own household consumption. Thereby, food provision is not always the most important for the residential gardeners; landscaping, enjoyment, relaxation, recreation but also the reconnection with food are important motives for individuals to engage in urban food production (McClintock 2014; Zahina-Ramos, 2013). It is difficult to quantify how many households are involved in both residential gardening and community gardening today, however some attempts have been made. A study of the National Gardening Association (2014) for example found out that in the United States from 2008 to 2013 the number of home gardens increased by 4 million to 37 million households, which indicates that 31% of all households in the United States are growing vegetables, fruits, berries and/or herbs at home.

Figure 2.8: Backyard gardens - Arbor Lodge neighbourhood Portland



Source: author (2014)

2.3.2. Community gardening

Community gardening refers to the collective form of food production within neighborhoods. On vacant lots and parks, often public and semi-public spaces, food production activities are taken place to provide food for urban and neighborhood residents (figure 2.9). In terms of ownership, access and management these initiatives are publicly functioning and are often managed by a community garden program and a garden manager (Ferris et al., 2001). Individuals can rent a plot to recreate and produce food for own household consumption and for other community members. Sometimes occasional sales take place to sell some food surplus (McClintock, 2014). In addition, according to many scholars this type of urban agriculture performs numerous other functions such as neighborhood improvements and developing a stronger community (see e.g. Hanna & Oh 2000; Wakefield et al., 2007). And finally, looking to the quantity of this type of urban agriculture, the same study of the National Gardening Association (2014) shows that from 2008 to 2013 the number of community gardens within the United States tripled from 1 million to 3 million gardens on a population of 120 million people in 2013.

Figure 2.9: P-Patch Community gardens - Seattle



Source: author (2014)

2.3.3. Guerrilla gardening

Guerrilla gardening is the radical grass-root type of urban agriculture whereby activists and volunteers aim to valorise and transgress landscape norms. Those guerrilla gardeners often colonize abandoned land (plants and bets) without permission and integrate food plants within an ornamental or decorative setting (edible landscaping) to fight against dominant power and reclaim the commons (Crane et al., 2013) (figure 2.10). According to Reynolds (2008) and Harutyunyan et al. (2009) this type of urban agriculture is growing across cities around the world due to the popularity of social networks.

Figure 2.10: Guerilla gardening in LA



Source: Wikipedia, 2015

2.3.4. Non-profit and institutional gardening

The *non-profit and institutional gardening* type aims at food security, food justice, education and the rehabilitation of people by serving institutional members as students and marginalized groups. On both public and private spaces, staff and volunteers of non-profit organizations, charities and institutional or contracted organizations are working together with students, refugees, prisoners, etc. to grow healthy and culturally acceptable food (figure 2.11). Thereby, the emphasis is on reconnecting these groups with nature and healthy food production and on teaching them gardening skills. Sometimes occasional sales take place to sell some food surplus (McClintock, 2014).

Figure 2.11: Edible schoolyard - Martin Luther King Junior Middle School Berkeley



Source: author (2014)

2.3.5. Green infrastructure

Green infrastructure is a type of urban agriculture that is - just like the guerrilla gardening type - focused on edible landscaping but is often part of broader urban development projects and urban design strategies. Green infrastructure also theoretically mentioned as Continuous Productive Urban Landscapes (CPULs) (Viljoen et al., 2005) represent the idea that growing food is manner of creating productive spaces in economic, sociological and environmental terms that improve the overall character of the urban living environment. Both urban planners and architects are involved in this type of urban agriculture by transforming vacant lands and old industrial infrastructure into edible landscapes (figure 2.12) and by designing new buildings that integrate the production of food (see o.a. Van Bergen Kolpa Architects and Mithun's architects .

Figure 2.12: The High Line New York



Source: Rogers (2013)

2.3.6. Commercial/ for-profit farming

Finally, *commercial/ for-profit farming* aims at food provision for the urban population by focusing on commercial applications, including food production, processing, distribution and/or selling activities for the urban market. This type of urban agriculture is run by business owners and/ or managers and relies on the efforts of employees. Thereby, food-producing activities are often taking place on larger parcels or are incorporated in and on buildings (rooftops) (figure 2.13) (McClintock, 2014). According to Rogus & Dimitri's (2014) census data analysis, urban farms in the United States that grow food on land are more likely to be located in the peri-urban areas than in the very populated urban core because of high land values and lack of space. In addition, to make quantification of this type of urban agriculture possible in the future, in the United States efforts are made by the USDA Census of Agriculture to gather statistical information about commercial urban farms on the country-level for the next census of 2017.

Figure 2.13: Brooklyn Grange Farm: A commercial rooftop soil farm in NYC



Source: Brooklyn Grange (2015)

2.4. Conclusion

The chapter has provided some insights into the phenomenon of urban agriculture by discussing some history of food production in and around cities and by exploring the aspects of urban agriculture and different types of initiatives today. Referring to the sub-question; *what is urban agriculture and how is it manifested in initiatives today?*, it can be concluded that food production in and around cities for the urban population is really diverse in their forms and outcomes in the Global North today. Urban agriculture initiatives are both bottom-up and top-down initiated with different intentions and are operating on different scale levels, in and outside traditional market mechanisms. Thereby, the provision of food is not always the main goal but often rather a manner to tackle other social and environmental related issues. This diversity of initiatives is important to recognize when attempting to understand how urban agriculture initiatives could scale – which will be explained in the next chapter.

3. Scaling social initiatives: a theoretical overview

Beacon Food Forest - Seattle



Source: author (2014)

3. Scaling social initiatives: a theoretical overview

This chapter gives answer to the second sub-question: '*How could urban agriculture initiatives scale and how is this process affected by the characteristics of- the organization, leading individuals and the environment according to the scaling literature*'? Therefore, this chapter takes a closer look at the available scaling literature within the context of social innovation to understand how initiatives that anticipate social issues and challenges scale and to get insights into the mechanisms behind this process.

For answering the first part of the sub-question the scaling concept is explored and defined (paragraph 3.1.). Furthermore, *Gartner's framework of new venture creation* is introduced as conceptual framework to understand the mechanisms behind scaling (paragraph 3.2). Subsequently, along the dimensions of this framework an overview of the available literature is given to understand how scaling is affected by factors related to the organization (paragraph 3.3), leading individuals (paragraph 3.4) of initiatives and to the environment in which these initiatives operate (paragraph 3.5). Building on these insights, the chapter ends with the answer to the second sub-question and a conceptual framework (paragraph 3.6).

3.1. Exploring the scaling concept

Today, there is an increasing recognition amongst scholars and professionals that social innovation at scale is needed to tackle problems entrenched in our societies as food security and sustainability (Gabriel, 2014). What is exactly understood by scaling and how can it be achieved through initiatives that anticipate on these social issues according to the academic literature?

Looking to origin of this term, scaling is a concept borrowed from the mass production age and is traditionally associated with *economies of scale* (Murray, 2014). Economies of scale, as in increasing production of a good (product) to get a lower average costs for each item (Daniels et al, 2008, p.466) were fundamental to Henry Ford's revolutionary assembly line and were the main driver of corporate factories during the 20th century to minimise the production costs and maximise financial profits (Hindle, 2012).

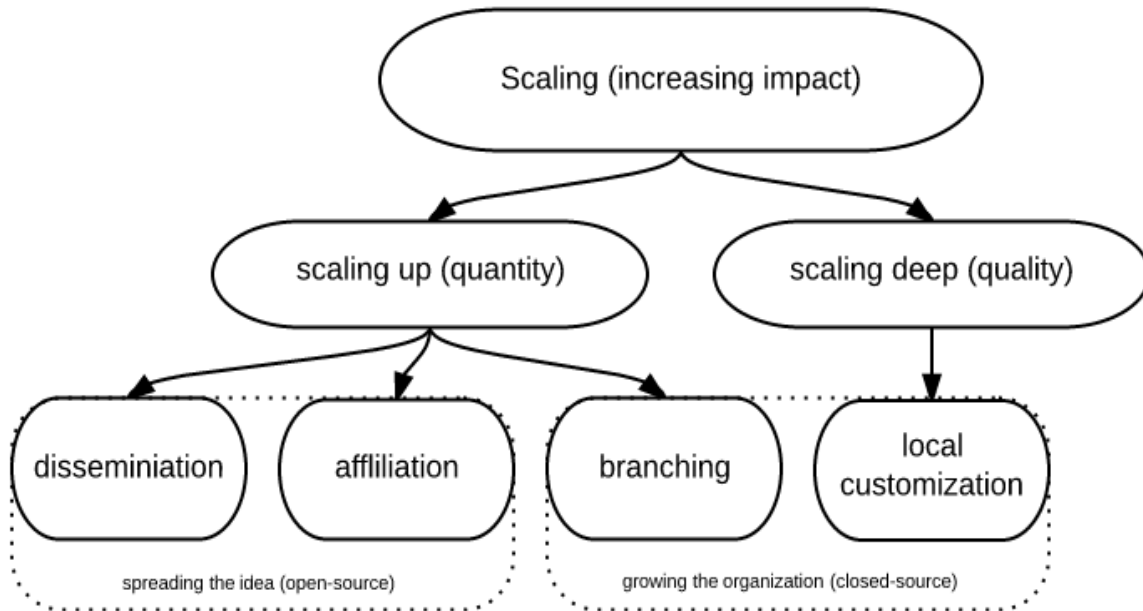
Building on this idea of increasing production to maximise profits, in the social field scaling has been linked with the expansion of social innovations (Davies & Simon, 2013). Dees (2008) provides a definition of scaling within the context of social innovation based on extensive interviews, observations and active participants in the field for some time. He defines scaling as: '*increasing the impact of a social-purpose organization produces to better match the magnitude of the social need or problem it seeks to address*'. This definition illustrates that scaling is primarily oriented around social missions and that profit is manifested in creating value primarily to society rather to financial gain.

To date, the scholars who investigate scaling within the social field are typically concerned with unpacking how what scaling might look like in different contexts and strategies for achieving more impact for the society. From the available literature it becomes clear that increasing impact is manifested through different paths and that there various mechanisms exist to scale.

Firstly, various scholars have distinguished two ways of scaling: *scaling up* and *scaling deep* (Gabriel, 2014; Smith & Stevens, 2010; Taylor et al., 2002). Scaling up refers to widen the impact into new areas through increasing the number of people who benefit from the activities (geographical expansion).

In contrast, scaling deep means addressing more aspects of a single problem and deepening the impact on the existing home community. This indicates that scaling is both a process in quantity (by serving more people) but also a process in quality (by serving people better) (figure 3.1).

Figure 3.1: The paths to scale



Source: Dees et al. (2004); Dees et al. (2008), Gabriel (2014), Heinecke & Mayer (2012), Taylor et al. (2000).

Subsequently, the literature also shows that scaling up and scaling deep are reflected in multiple scaling strategies that social initiatives can implement (figure 3.1). Dees et al. (2004) formulated three general scaling up strategies, after years of interviewing social entrepreneurs and other experts in the field, which are subsequently cited by many other scholars (see e.g. Davies & Simon, 2013; Heinecke & Mayer, 2012, Smith & Stevens, 2010). These strategies are based on different levels of central coordination and investment in resources. From an increasing degree of central coordination and requirement of resources the following strategies are defined: *dissemination*, *affiliation* & *branching*.

Dissemination implies actively providing information and sometimes technical assistance to others looking to bring an innovation to their community. Affiliation includes the forming of formal relationships to be part of an identifiable network, ranging from a loose coalition of organizations committed to the same goal to tighter systems operating similar to business franchises. And finally, branching is the creation of more local sites centrally coordinated through the organization, much like the company-owned stores in the business world (cited from Dees et al., 2004, p. 28).

Building on these insights, dissemination and to a lesser extent affiliation can be categorized as *open-source approaches* as those strategies are more focused on spreading the social innovation whereby the original social initiative has little control over the implementation of the social innovation somewhere else (Dees et al., 2004; Heinecke & Mayer, 2012). On the contrary, branching is a more *closed-source approach* whereby the original social initiative holds control on the expanding social innovation by growing their own organization.

And finally, scaling deep is primarily associated with the *local* customization strategy, as in improving the quality of services and finding new ways to serve the target group (local community) on site (Koenig, 2015; Taylor et al., 2000). This strategy also implies the central coordination of the original social initiative in increasing impact and is just like branching a more closed- source approach.

3.2. Understanding the mechanisms behind scaling: Gartner's conceptual framework of venture creation

Building on the scaling concept, what determines to what extent social initiatives growth their organizations and/or spread the social innovation to reach more people and/ or to serve people better (scaling strategies)? The theoretical and empirical work to answer this question is still limited and descriptive in nature due the novelty of this subject. Especially, there is not so much knowledge about the mechanisms behind dissemination and affiliation (open-source strategies) (Waitzer & Paul, 2011). The growth of organizations in a business context is however more frequently studied. Scholars that have attempt to understand the mechanism behind scaling have approached scaling from different perspectives:

For example Bloom & Chatterji (2009) and Bloom & Smith (2010) are approaching scaling from the organizational level of analysis focused on the capability of organizations to create and develop different forms of capital. Smith & Stevens (2010) on the other hand, in their attempt to understand the choice of scaling strategies, focus on the role of the leading individuals (entrepreneur) and the social relations in which these persons have become embedded. Contrarily, Westley & Antadze (2010) for example, try to understand the scaling process from market forces - the interplay of “effective demand” (the “pull” factor) and “effective supply” (the “push” factor).

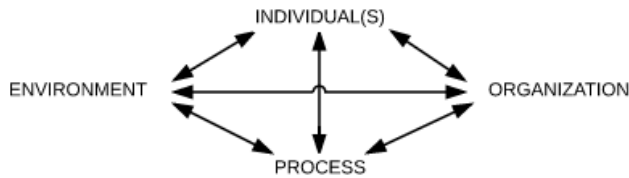
This diversity in perspectives and the fragmentation of academic literature makes it hard to integrate all the different insights. A clear conceptual framework is therefore useful to get an overview of the different studies and to get a better understanding of various mechanisms behind scaling. The *Garter's conceptual framework of venture creation* is therefore applied in the rest of this chapter. To understand the advantage of using this particular conceptual framework in this context, this framework is first briefly discussed below.

Gartner (1985) developed a conceptual framework to illustrate the wide variations in the kinds of new ventures that are created. Drawing on several fields of research such as strategy, personality psychology and economics (Mitchell et al., 2002), Gartner argues that new venture creation - the organizing of new organizations (p.697) - is difficult to understand from solely on perspective:

'many different researchers palpating different parts of the elephant and reaching reductive conclusions, at least all will know the name, if not the nature, of the beast with which they are dealing (p.696)'

He explains that new venture creation is the outcome of the interaction of four different dimensions (figure 3.2): 1) *Individuals (s)* including the person(s) involved in starting an organization; 2) *organization* entailing the kind of firm that is started; 3) *environment* as the situation surrounding that influences the new organization and 4) *process* including the actions by individuals to develop the venture.

Figure 3.2: A framework for describing new venture creation

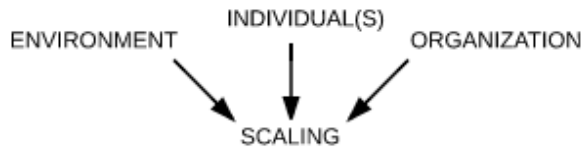


Source: Gartner (1985)

Although this framework has been developed to understand the development of for-profit organizations (ventures), this conceptual framework is also applied into a broader context. For example, Braunerhjelm & Hamilton (2012) and Hoogendoorn (2011) use this framework to structure the various components of social entrepreneurship research to get a comprehensive understanding of the development of new organizations primarily oriented around social missions.

In line with this and the interaction between the different dimensions (figure 3.2), the framework offers the possibility to understand how scaling, as a process variable (see Braunerhjelm & Hamilton, 2012; Hoogendoorn 2011), is the outcome of factors from different dimensions (figure 3.3.). Applying this framework in this context, gives thus the opportunity to take the diversity in perspectives on the mechanisms behind scaling into consideration.

Figure 3.3: Conceptual framework for understanding the scaling of social initiatives



The rest of this chapter is structured along the lines of these three dimensions. In every sub paragraph the dimensions are shortly explained in the context of the social initiatives. Subsequently, an overview is given of the insights from the scaling literature within a social innovation context.

3.3. The role of the organization in scaling social initiatives

In terms of Gartner's framework organization refers to the characteristics of a firms as in the activities and strategies they choose (Gartner, 1985). Within the context of social innovation, organization refers to the characteristics of social initiatives. Building on this, what does the scaling literature say about the role of the organization in scaling social initiatives?

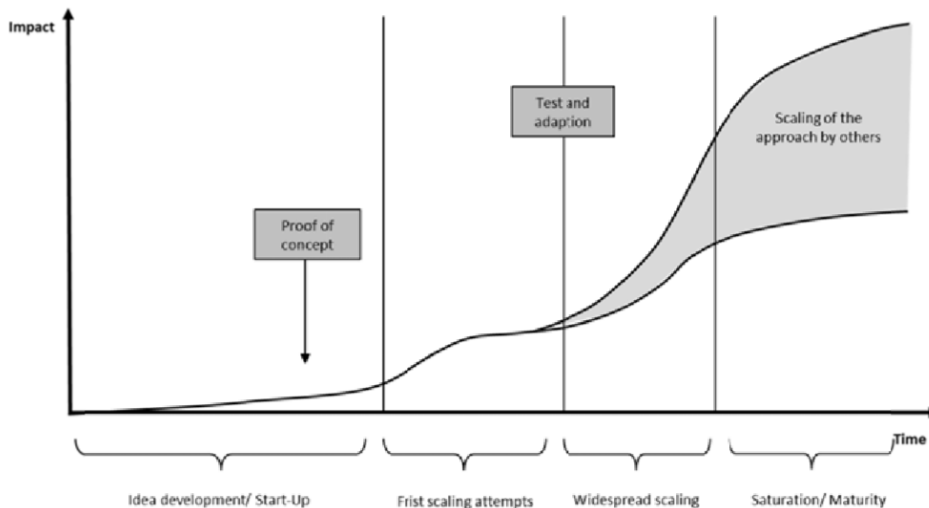
Firstly, different scholars have linked scaling in terms of growing organizations (figure 3.1) with *market engagement*. The exploratory work of Anderson & Dees (2006) provides some arguments and examples why high levels of earned income make it easier to grow organizations. The argument that earned income gives an organization more freedom and independency of external resources and unlimited opportunities to expand is given. Sharir and Lerner (2006) support this with the notion that foundations and investors that do invest in social non-profit initiatives primarily fund new and innovative initiatives instead of scaling processes of existing initiatives. Dependency of external resources makes initiatives thus vulnerable. In addition, if initiatives need (extra) investment to scale, financiers are potentially more interested in earned income and profitability in case of investments as mentioned by Mulgan et al. (2007) & Farias & Farias, (2013).

These observations give some support to the notion that social initiatives that generate earned income and profit have more potential to grow their organizations than those without market engagement. However as mentioned by Anderson & Dees (2006) more thorough research is needed to explore the hypothesis that greater reliance on earned income makes it easier to grow the organization.

Besides earned income, the literature also shows that the *legal structure* of organizations as an important determinant in how social initiatives scale. Heinecke & Mayer (2012) and Davies & Simon (2013) both theoretically argue that non-profit initiatives, primarily focused on creation value for society, are inclined to increase impact rather than growing in organization size. In contrast, privately owned businesses also strive for value appropriation for the owners (Santos, 2009) and are therefore more likely to hold control on spreading the social innovation by growing their own organization (closed-source strategies) instead of spreading the idea (open-source strategies). These observations give some support to the fact that not all scaling strategies are appropriate for every social initiative to increase their impacts.

And finally, another characteristic related to scaling is *age*. Heinecke & Mayer (2012) have linked scaling, in terms of increasing impact in both in a quantitative (up) a qualitative (deep) way, to the life cycle of social initiatives (figure 3.4). This figure illustrates that scaling occurs in a later stage after the idea development and start-up phase when initiatives are more mature in time. While many initiatives do not develop in a purely linear fashion and some innovations jump faster into scaling than others, surviving this start-up phase is not a prerequisite for every initiative (Murray et al, 2010). Before scaling is possible the 'proof of the concept' is important to emphasize the relevance of scaling in front of stakeholders to obtain acceptable to scale (Roob & Bradach, 2009). This makes it plausible that the older the urban agriculture initiatives are the more likely the concept is proven and thus the more likely the initiatives are scaling in a quantitative and/or qualitative manner.

Figure 3.4: Life cycle of social initiatives



Source: Heinecke & Mayer (2012)

3.4. The role of leading individuals in scaling social initiatives

Put within Gartner's framework, individuals refer to the characteristics of entrepreneurs in terms of demographics and motives (Gartner, 1985). In this context, individual refer to the characteristics of leading individuals of social initiatives which can be social entrepreneurs but also the leading actors of established (public) organizations. Building on this, what does the scaling literature say about the role of leading individuals in scaling social initiatives?

Firstly, different scholars mention the *motivation* of leading actors as an initiating condition to scale (e.g. Gabriel, 2014; Heinecke & Mayer, 2012; Westley et al., 2014;). Without the intention of leading individuals to increase impact by reaching more people and/or serving the local community better, the leading individuals will not even apply scaling strategies.

Building further on motivation, Smith and Stevens (2010) theoretically argue how the *types of social networks of leading individuals affect* scaling. Drawing on the typology of social entrepreneurship of Zahra et al. (2009), Smith and Stevens (2010) discuss how the geographical scope and scale of the motivation of leading individuals (entrepreneurs) to tackle social problems influence the types of networks in which they are embedded. Subsequently, they theorize about how these networks may affect scaling. For example they argue that the so-called *Social Bricoleur* type focused on local concerns and relying on local networks is more likely to scale deep - into their communities - rather than to other scales. While the *Social Constructionist* type tries to find gaps in the social market and relying on a broader dispersion of network contacts is more likely to scale up.

And finally, scaling has also been related to the *education and skills* of leading individuals. Bloom & Smith (2010)'s initial empirical test of the SCALERS model - a model of seven different potential drivers of scaling- shows that individuals (human capital) with necessary skills, education and training is positively related to scaling. Although Bloom & Smith (2010) take the quality of the entire labour pool into account, they mention also the importance of the skills and education of the managing individuals in particular. In addition, some scholars and professionals have specified the particular skills and expertise needed for scaling, to wit, the managerial capabilities (Heinecke & Mayer, 2012; WHO, 2010) and skills in advocacy (WHO, 2010).

3.5. The role of the environment in scaling social initiatives

In the terms of Gartner's framework, this last dimension acknowledges that firms do not operate in vacuums but are pushed and pulled through external factors (Gartner, 1985). In the context of scaling social initiatives, the environment refers to the external context wherein social initiatives are operating. Building on this, what does the scaling literature say about the role of the environment in scaling social initiatives?

Recently more attention is given to how scaling interact with their external ecosystem (Sharir and Lerner, 2005; Grant and Crutchfield, 2007). As pointed out by Hoogendoorn et al. (2011) in their analysis of empirical research, the scaling of social initiatives took quite slowly in past due the perceived barriers in access to finance and human resource mobilization. Building on this, Bloom & Smith (2010) recognize that the external ecosystem is important in facilitating *resources*. The industry context affects thereby the scaling of social initiatives through munificence and competition for available resources.

And furthermore, the significance of *political support* in specific in scaling social initiatives is recognized (Bloom & Smith, 2010; Davies & Simon, 2013). As observed by Tonkinwise (2010) writing about design for social innovation, every type of social initiative, even if they are far removed from political sphere, need to interact with government in order to scale. Current legislation is often not attuned to social innovations and new laws, regulations and or entitlements are needed to facilitate scaling.

3.6. Conclusion

The chapter provided an overview of the scaling literature within a social innovation context focused on exploring the scaling concept and the mechanisms behind scaling. Referring to the sub-question; '*how could urban agriculture initiatives scale and how is this process affected by the characteristics of- the organization, leading individuals and the environment according to the scaling literature*' the following answers can be given:

Firstly, the academic literature has shown that scaling is a broad concept whereby social initiatives increase impacts in both a quantitative and qualitative manner by growing their organizations and/or spreading the social innovation further. These paths to scale are manifested in different scaling strategies.

Secondly, building on the still limited and fragmented literature that tries to understand the mechanisms behind scaling, it can be concluded that to what extent social initiatives scale is the outcome of different characteristics related to the organization of the social initiative, the leading individuals and the environment in which they operate.

All these insights from the literature can be summarized as follows (figure 3.5):

Figure 3.5: Conceptual model



To understand to what extent urban agriculture initiatives actually scale and how this is affected by these different factors, chapters 5 and 6 will discuss the empirical outcomes of this thesis research. Though first chapter 4 provides insight into how the empirical part of this thesis research was conducted.

4. Methodology

Adas Lodge Urban Farm - Portland



Source: author (2014)

4. Methodology

The previous chapters have resulted in a typology of urban agriculture initiatives in the Global North today (chapter 2) and a conceptual model in which the insights from the available scaling literature within the context of social innovation has been summarized (chapter 3). To get some first insights into what extent urban agriculture initiatives actually scale in the San Francisco Metropolitan Area and what this influences (central question), this chapter discusses how the empirical research is conducted.

This chapter will first turn to the research design of this study (paragraph 3.1). The next paragraph goes into the location and the research population of this thesis research: the San Francisco Metropolitan Area and urban agriculture initiatives (paragraph 3.2). Subsequently, the data collection process is explained to understand how the information for the empirical research has been gathered (paragraph 3.3.). Then the operationalization of the key factors derived from academic literature is presented to understand how these factors are measured (paragraph 3.4). Followed by the method of analysis, which discusses how the collected data have been analysis (paragraph 3.5). This chapter finish with a critical reflection on the research methodology by explaining its validity and reliability (paragraph 3.6).

4.1. Research design

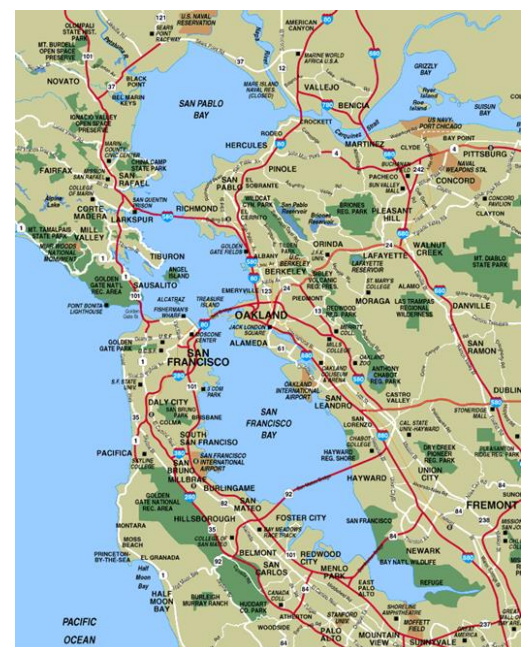
The aim of this research was to get a first impression to what extent urban agriculture initiatives scale and understanding the mechanisms behind this process by zooming in on the San Francisco Metropolitan Area. Therefore, an *exploratory case study design* has been applied for the empirical part of this thesis research. This type of design is appropriate for investigating ‘*a distinct phenomena characterized by a lack of detailed preliminary research, especially formulated hypotheses that can be tested, and/or by a specific research environment that limits the choice of methodology*’ (as cited from Streb, 2010, p. 372). In addition, it is primarily concerned with discovery and with generating or building theory and developing a proper foundation for conducting detailed future research (Davies 2006; Sreejesh et al., 2014) and does not aim to provide the final and conclusive answers to research questions by merely explores the research topic with varying levels of depth (Brown, 2006).

4.2. Location & research population

The case study conducted is the San Francisco Metropolitan Area (figure 4.1) officially known as "San Francisco-Oakland-Hayward, CA Metropolitan Statistical Area". This metropolitan area with a land area of 2,474 squares miles (6,410 km²) and 4.5 million habitants, is located on the on the West Coast of the United States in the state California and includes a number of core cities and counties (United States Census Bureau, 2015). The city San Francisco is the traditional focus point of this area, as a popular tourist destination and the closest major hub in the Silicon Valley - the cluster of the world's largest high-tech corporations and thousands of tech startups.

The San Francisco Metropolitan Area has been chosen as case study area because of its growing urban population (United States Census Bureau, 2015) and its strong connection with (local) food and farming and urban agriculture in particular:

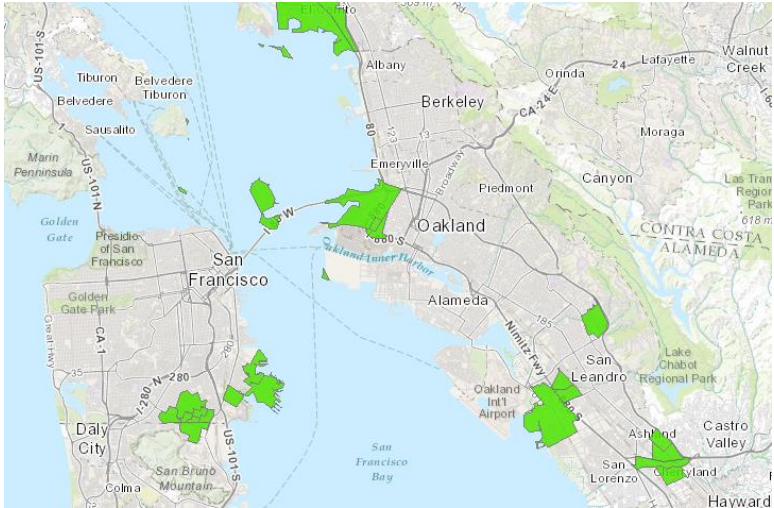
Figure 4.1: San Francisco Metropolitan Area



Source: Pinder, 2011

As located in one of the most productive and innovative agriculture states in the world, the area is known for its history of trendsetting in food and its efforts focused on alternatives to the conventional food system, manifested in a *growing food justice movement* and *sustainable or slow food movement* today (Edwards, 2013). The former movement refers to solving the systemic problems of reduced access to healthy affordable food associated with economic and geographic barriers in this so called urban deserts in this area (figure 4.2). The latter movement includes the growing demand of locally produced high-quality organic food for the purposes of creating a more ideal and sustainable world (California Department of Food and Agriculture, 2015; Edwards, 2013; Guthman, 2003). In line with these movements, urban agriculture has captured the attention of many actors in this area including: urban citizens, entrepreneurs, policy makers etc. Which have resulted in a growing number of urban agriculture initiatives in this metropolitan area since 2008, largely concentrated in the cities San Francisco and Oakland (SPUR, 2012; Zigas, 2014).

Figure 4.2: Urban deserts in the San Francisco Metropolitan Area (low income census tracts where a significant number or share of residents is more than one mile from the nearest supermarket)



Source: United States Department of Agriculture (2015)

Furthermore, to take the diversity of urban agriculture initiatives in the Global North today into account, the research population of this research is limited to all the different types of urban agriculture initiatives as founded in the urban agriculture literature (chapter 2) (table 4.1.), with the exception of the residential gardening type. This type has not been included because it is restricted to individual food engagement and it is from a pragmatic point of view hard to consider which households grow a considerable amount of food for own households consumption.

Table 4.1: Research population

Type of urban agriculture initiatives
Community gardening
Guerrilla gardening
Non-profit and institutional gardening
Green infrastructure
Commercial and for-profit farming

4.3. Data collection

To understand how the different types of urban agriculture initiatives scale and how this process is affected by the characteristics of- the organization of urban agriculture initiatives and the leading individuals (sub-question 3) and by the external environment (sub-question 4), online-self complementation questionnaires have been sent to the leading individuals (e.g. owners, managers) of urban agriculture initiatives in the San Francisco Metropolitan Area (see appendix 1).

A self-completion online questionnaire was in the first place a pragmatic choice to reach the respondents at the other side of the world. But more important, this instrument has an easy-to follow design to minimize the risk that the respondent fails in answering all the questions (Bryman, 2012, p. 233). And besides that, it is an easy instrument to get proper insights into the different characteristics of- the organization of urban agriculture initiatives, the leading individuals and the facilitating and constraining role of the external environment in scaling urban agriculture initiatives. However, to ensure the *suitability* of the research method as much as possible, some open questions and space for adding options and comments are added as well in the online questionnaires to take the explorative status of this thesis research and the doubtful comprehensiveness of the theoretical insights of the scaling literature within the social innovation context into account.

The presence of various types of urban agriculture initiatives in the San Francisco Metropolitan Area was unknown beforehand. In order to reach as many urban agriculture initiatives within the research population and do the exploratory study as methodically as possible (Nargunkar, 2003, p. 41), a *snowball sampling* method has been conducted to gather data. This non-probability sampling technique in which initial contact with a small group of relevant people gave further access to populations which are hidden or hard-to-reach (Bryman, 2012), is frequently presented as a strategy to be employed when probability sampling is impossible or not feasible (Noy, 2008).

An internship at the Netherlands Office for Science and Technology in San Francisco from February to August 2014 gave initial access to the research population. During this time, desk-research was carried out via Internet and Social Media (Twitter, Facebook etc.) to understand the local development of urban agriculture and to detect the urban agriculture initiatives that are operating in this area. However, because it was difficult to obtain a clear and unambiguous picture of urban agriculture initiatives in the San Francisco Metropolitan Area through desk research alone additional activities 'in the field' have been taken place:

Informal talks with different key stakeholders of umbrella organizations as the Urban Agriculture Alliance in San Francisco and the Food Policy Council in Oakland, topic-related lectures at Berkeley University, events in and around the metropolitan area, and different site visits gave the opportunity to map urban agriculture initiatives including its leading individuals in the San Francisco Metropolitan Area. These activities have result in an overview of 153 urban agriculture initiatives in this area, whereby the lion's share of these initiatives are community gardens and the so-called non-profit and institutional gardening initiatives (table 4.1) (see appendix 2).

Subsequently, a total of 79 urban agriculture initiatives received twice an invitation by email between January and March 2015 to fill in the online questionnaire. It was not possible to contact the other 70 urban agriculture initiatives because of the lack of contact information.

In addition, the survey link has also been shared twice during the same period amongst the San Francisco Urban Agriculture Alliance (SFUAA) Yahoo member group to reach more urban agriculture initiatives, that may not have been identified via the former approach. This online group, established in 2009, functions as online platform where group members (urban agriculture practitioners and other interested people) can share questions, notes, events etc. It was unknown beforehand to what extent the leading individuals of urban agriculture initiatives were represented in this online member group.

At the end, the questionnaire was completely returned by 14 leading individuals of different types urban agriculture initiatives (respondents) in the San Francisco Metropolitan Area. 10 of these respondents were approached by email, what indicates a response rate of 13%. The other 4 respondents were reached out via the Yahoo Member Group. This high percentage of non-response can be explained through the incorrect and outdated contact information and by the lack of time of the leading individuals to complete the online questionnaire. Two leading individuals sent an email back with the message that they did not have the capacity to complete this online questionnaire. How these 14 cases represent the different types of urban agriculture initiatives will be further explained in the next chapter (paragraph 5.2).

4.4. Operationalization

4.4.1. Dependent variable

The dependent variable of this research is scaling. As already mentioned in chapter 2, the two ways of scaling: scaling up and scaling deep are manifested in multiple scaling strategies that initiatives can implement to increase impact. Those strategies give also insights into what extent scaling is conducted via spreading the idea or in growing the organization (see figure 3.1.). For each strategy its content and measurement are presented in table 4.2:

Table 4.2: Operationalization dependent variable

Strategy	Content	Measurement
Dissemination	Actively providing information and technical assistance to others (Dees et al., 2004)	- Considered and/or involved according to the respondent? - Yes/No
Affiliation	Forming of formal relationships to be part of an identifiable network (Dees et al., 2004)	- Considered and/or involved according to the respondent? - Yes/No
Branching	Creation of other local sites (Dees et al., 2004)	- Considered and/or involved according to the respondent? - Yes/No
Local customization	Finding new ways to serve the target group (Taylor et al., 2000)	- Considered and/or involved according to the respondent? - Yes/No

4.4.2. Independent variables

Based on the theoretical insights of scaling within the social innovation context (chapter 3), this study makes use of eight independent variables related to the organization, leading individual(s) and environment. Along these dimensions, for each depend variable its content and measurement are presented in table 4.3:

Table 4.3: Operationization independent variables

Dimension	Independent variable	Content	Measurement	
Organizational	Market engagement	Sales	Number of transactions per month and year	
		Importance of free gifts and activities instead of commercial activities	Likert scale from 1 to 5 (strongly disagree- strongly agree)	
	Legal structure	Type of management and organization	a) individual household b) collective c) community garden program d) institutional or contracted organization e) non-profit organization d) business owner(s) and or manager(s) (related to the types of urban agriculture initiatives as discussed in chapter 2)	
		Ownership	a) privately b) publicly	
	Age	Number of years operating	Start year	
Leading individual(s)	Motivation	Personal ambition is tackling larger social/urban needs related to urban agriculture (e.g. food security)	- Main reason to start/join this urban agriculture initiative - Main reason for continuing this urban agriculture initiative today - Likert scale from 1 to 5 (totally not important - very important)	
		Type of social network	Strong relationships with other organizations etc.	Long time-frames, high resource commitment and tight interpersonal relations (Capaldo, 2007, p.589)
			Weak relationships with other organizations etc.	Short time-framers, low resource commitment and tight interpersonal relations (Capaldo, 2007, p.589)
		Scope of relationships with other organizations etc.	a) in the neighborhood b) in the city c) in other cities or rural areas	
	Education/skills	Educational attainment	a) less than high school b) high school graduated (includes equivalency)	

			c) some college or associate's degree d) bachelor's degree or higher (United Census Bureau, 2015)
		Educational background	Degree in farming, food and/or management related studies - Yes/No
		Skills	Practical experience in farming, food and/or management activities - Yes/No, since when...
Environment	Availability of resources	<i>Human resources:</i> paid staff and volunteers (Bloom & Smith, 2010)	- Mentioned by the respondent as barrier and/or accelerator
		<i>Financial resources:</i> funding & investment (Bloom & Smith, 2010)	- Mentioned by the respondent as barrier and/or accelerator
	Political support	Legislation, laws and entitlement (Davies & Simon, 2013)	- Mentioned by the respondent as barrier and/or accelerator

4.4.3. Additional (control) variables

Based on the theoretical insights of the urban agriculture literature (chapter 2), this study makes also use of additional (control) variables related to urban agriculture initiatives (paragraph 2.3) to get a more comprehensive understanding of the role of organization and the different types (table 4.1) in scaling urban agriculture initiatives. For each factor its content and measurement are presented in table 4.4.

Table 4.4: Operationization additional (control) variables

Additional (control) variables	Content	Measurement
Main activities	Food and farming (related) activities	a) growing food b) keeping livestock c) processing food d) distributing food e) selling food f) education g) community building h) events i) others,....
Target group	The people they serve in terms of delivery of products and services	a) low-income residents b) middle-to-upper class income residents c) city residents d) neighborhood residents e) institutional members f) ethnic minorities g) others,...

Place of operation	City	Address
	Type of space	a) yard b) vacant lot c) park d) plant e) greenhouse f) rooftop e) other, ...
	Size of space	In acres of square feet
	Ownership	Public or private
	Labor force	People who provide their time and efforts to urban agriculture initiative
	Volunteers	- Estimated number of people - ... % full-time involved -...% non-paid labor
	Trained and qualified	-...% in possession of farm, food and/or managerial knowledge and/or practical experience
	Origin	-...% from the neighborhood itself -...% city -...% outside the city

4.5. Method of analysis

The questionnaire used in this study contains questions concerning the indicators shown in table 4.2, 4.3 & 4.4. The data obtained from these questionnaires is analyzed by means of the *exploratory data analysis (EDA)* approach. EDA is characterized by informality and flexibility and relies heavily on graphical and pictorial representations of the data. This method is suitable for the checking of assumptions and the determination of relationships among the explanatory variables, especially by a low number of cases (Seltman, 2015). This approach has been applied by using the *Statistics software* program to create cross-tables and discover clues, structures and patterns between the dependent variable on the one hand, and the independent and additional (control) variables on the other hand.

4.6. Validity and reliability

The quality of this study can be assessed on different criteria in social research (Bryman, 2012). These types of criteria are: *internal validity, external validity and reliability*.

Firstly, internal validity is concerned with the question of whether a conclusion that incorporates a causal relationship between two or more variables holds water (Bryman, 2012, p.47). Through the *exploratory* status of this study and the first attempts to get an understanding of the factors that influence the scaling of urban agriculture initiatives, the internal validity of this research is low. Interrelations between the tested variables could exist as well.

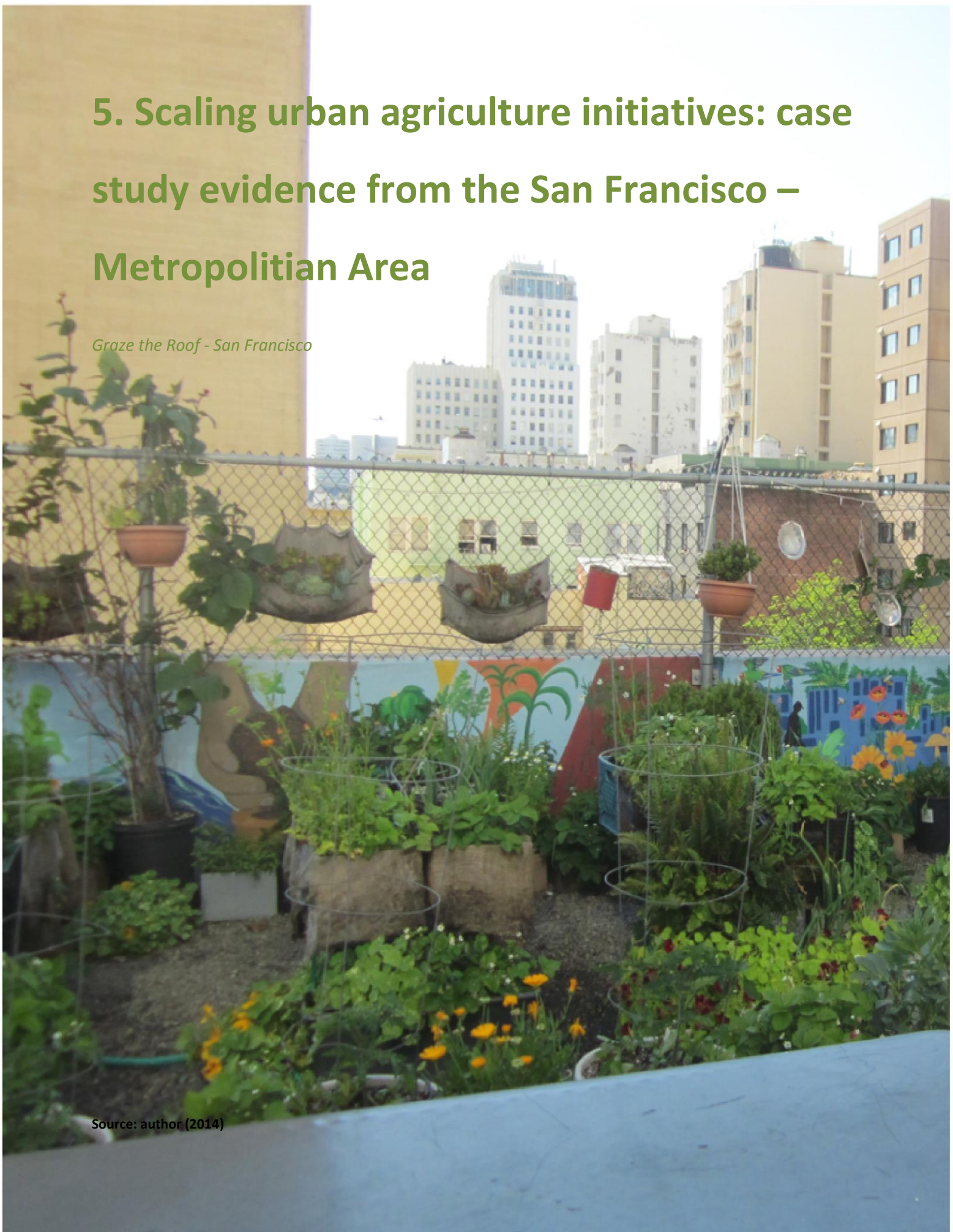
Secondly, external validity is concerned with the question of whether the results of a study can be generalized beyond the specific research context (Bryman, 2012, p. 47). The external validity of this research is also low because the snowball sampling method did not allow to do a random selection of the different types of urban agriculture initiatives (research population).

This makes it difficult to generalize the outcomes of this thesis research and to draw general conclusions of scaling urban agriculture initiatives. However, despite these limitations this thesis research may provide some first insights in the scaling of urban agriculture initiatives and the mechanisms behind.

And finally, the reliability of this study is concerned with the question of whether the results of a study are repeatable (Bryman, 2012, p. 46). In case the procedures applied in this study will be repeated, then the same outcomes should be generated provided that the context has not changed. The methods of this study are discussed in detail above, enabling the repetition of this study in the same way.

5. Scaling urban agriculture initiatives: case study evidence from the San Francisco – Metropolitan Area

Graze the Roof - San Francisco



Source: author (2014)

5. Scaling urban agriculture initiatives: case study evidence from the San Francisco - Metropolitan Area

This chapter discusses the first part of the outcomes of the empirical analyses and gives answer to the third sub-question of this thesis research: *To what extent do urban agriculture initiatives in the San Francisco- Metropolitan Area scale and how is this related to the characteristics of the organization and the leading individuals of the urban agriculture initiatives?*

The chapter will first turn to the scaling of urban agriculture initiatives (dependent variable), in terms of how urban agriculture initiatives scale (1: scaling up versus scaling deep and 2: spreading the idea versus growing the organization). This is done by looking to the implementation of scaling strategies of urban agriculture initiatives (paragraph 5.1). The next paragraph describes the organizational characteristics of the urban agriculture initiatives surveyed (independent and additional control variables) (paragraph 5.2). This is followed by the paragraph that discusses the relation between the scaling of urban agriculture initiatives and their organizational characteristics - in the order of the different pathways to scaling (paragraph 5.3). Subsequently, the next paragraph goes into the characteristics of the leading individuals (independent variables) (paragraph 5.4), followed by the paragraph that discusses the relation between the scaling of urban agriculture initiatives and the characteristics of the leading individuals – this time in the order of the different pathways to scaling (paragraph 5.5). This chapter finishes with the answer to the sub-question and a comparison between the empirical outcomes and the insights from scaling literature within the social innovation context (chapter 3) (paragraph 5.6).

5.1. Scaling urban agriculture initiatives

Based on the descriptive analysis of questionnaires, urban agriculture initiatives in the San Francisco Metropolitan Area (N=14) scale to better match the magnitude of the social need(s) or problem(s) it seeks to address. Looking to the implementation of the four scaling different strategies, as derived from the academic literature (table 5.1); every urban agriculture initiative has implemented at least one scaling strategy and the majority (N= 10) of the urban agriculture initiatives surveyed have implemented more scaling strategies.

Table 5.1: Scaling strategies derived from the scaling literature

	Scaling up	Scaling deep
Spreading the idea (open-source)	<i>Dissemination</i> - actively provide information and technical assistance to others	
	<i>Affiliation</i> - forming of formal relationships to be part of an identifiable network	
Growing the organization (closed-source)	<i>Branching</i> - creation of other local sites	<i>Local customization</i> - finding new ways to serve the community

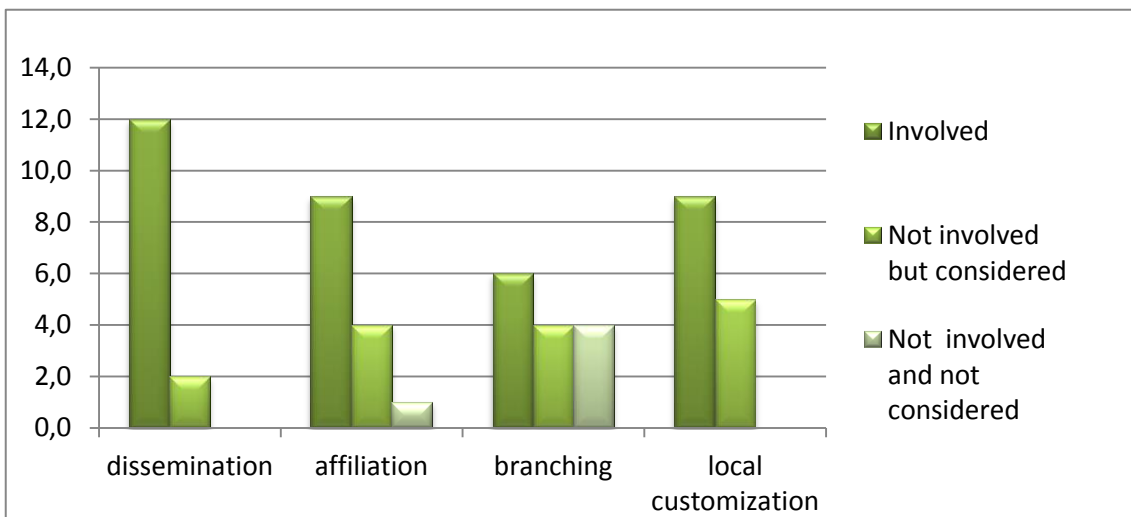
Source: Dees et al. (2004), Taylor et al., (2000)

Furthermore, urban agriculture initiatives in the San Francisco Metropolitan Area scale both in a quantitative and qualitative manner. Looking to the implementation of the four different scaling strategies (table 5.1), every urban agriculture initiative has scaled up and has been involved in widening their impacts into new areas. Besides, more than 60% (N=9) of the urban agriculture initiatives have also scaled deep and try to address more aspects of a single problem to deepen the impact on the existing home community by finding new ways to serve the target group (figure 5.1).

Finally, urban agriculture initiatives increase their impact both via spreading the idea of urban agriculture (N=13) and to a lesser extent by growing their organizations (N=10). Looking to the implementation of the four different scaling strategies (table 5.1); *dissemination*, the strategy that requires relatively the least amount of central coordination and resources (Dees et al., 2004), is most frequently applied (N=12). This is followed by the other open source approach: *affiliation* and the closed source approach *local customization* (N=9). *Branching*, the closed source strategy that requires the highest organizational commitment and investment of resources compared to the other scaling up strategies (Dees et al., 2004), has been applied to the least by the urban agriculture initiatives surveyed in the San Francisco Metropolitan Area (n= 6). In addition, this strategy is also the least considered for implementation (N=4) (figure 5.1).

How the scaling of urban agriculture initiatives is related to the different types of urban agriculture initiatives will be further discussed in paragraph 5.3. Therefore, the organizational characteristics of the urban agriculture initiatives will be first explained below.

Figure 5.1: The implementation of scaling strategies by urban agriculture initiatives (N=14)



Source: empirical data (2015)

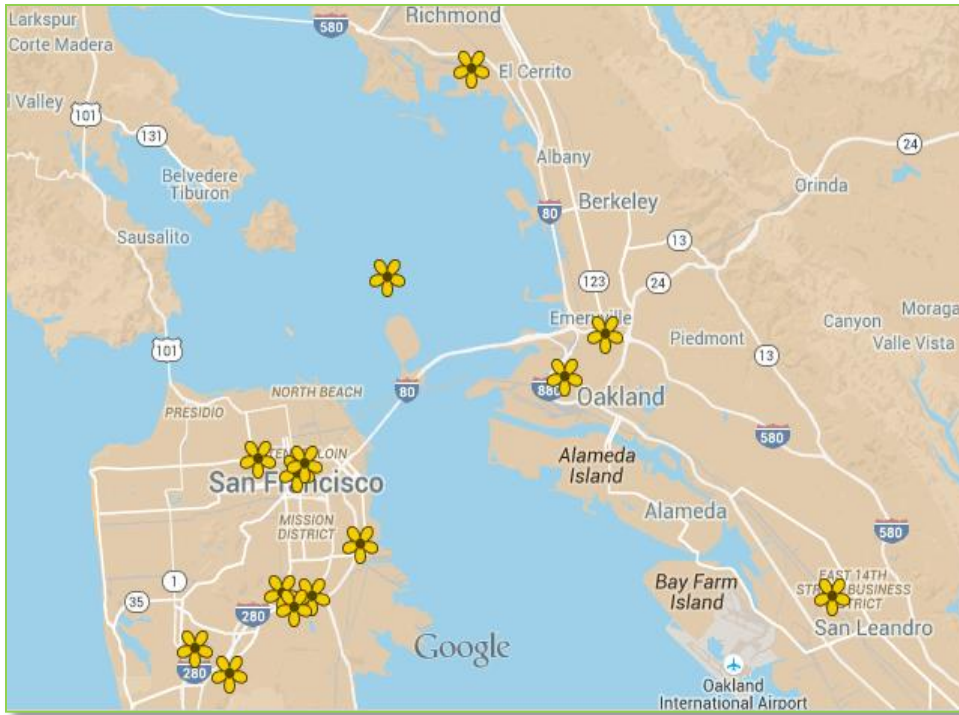
5.2. Organizational characteristics of urban agriculture initiatives

Based on the descriptive analysis of the questionnaires, the majority of the urban agriculture initiatives in the San Francisco Metropolitan Area (N=14), have started after 2008 (N=9), the period that gardens and farms have sprouted across the metropolis and urban agriculture has experienced a wave of interest in the San Francisco Metropolitan Area (SPUR, 2008; Zigas, 2014). The other initiatives are older and date from before 2008 (N=5) and some even from before 2000 (N=3).

The urban agriculture initiatives surveyed (N=14) are randomly spread throughout the San Francisco Metropolitan Area (figure 5.2). The majority (n=9) are located within the San Francisco City boundaries and the others in the East- Bay; in Oakland (n=3) and Richmond (n=1). Only the *Guerrilla Grafters* initiative (N=1) is not located on a specific location but plants food in public spaces and streetscapes everywhere across the metropolitan area.

The activities of the urban agriculture initiatives are carried out on both public and private spaces in the metropolitan area; ranging from yards to vacant land and from parks to indoors in a warehouse. The size area of these locations ranges from 0,07 to 7 acres and most of the plots are under the 1 acre threshold. It goes without saying that, compared to the average farm size of 374 acres in California (American Farmland Trust, 2015), these urban agriculture initiatives are indeed very small in size.

Figure 5.2: Locations of the research cases: urban agriculture initiatives (N=14) ¹



Source: empirical data (2015)

¹All the flowers are the location of the urban agriculture initiatives.

However, the flower symbol in the water (bay) refers to the Guerrilla Grafters urban agriculture initiative, not located on a specific location but operating in public spaces and streetscapes everywhere across the metropolitan area.

Looking to the main activities of the urban agriculture initiatives surveyed, all of them are involved in growing food (N=14), often supplemented by other farming related activities such as keeping livestock (N=2), processing - (N=3), distributing -(N=5) and selling food (N=2). Referring to the latter (selling food), not every urban agriculture initiative sells food to the urban population through a market mechanism. In contrast, most urban agriculture initiatives surveyed (N=10) consider activities and gifts for free as more important than commercial activities.

In addition, food and farming related activities are not the only main activities conducted by the urban agriculture initiatives. Social and environmental related activities such as education (N=9) and providing habitat for urban wildlife (N=1) are carried out by the urban agriculture initiatives as well. This supports the notion that urban agriculture initiatives are not solely restricted to (commercial) food provision as theoretically concluded at the end of chapter 2 (paragraph 2.4).

Thereby, the focus of the urban agriculture initiatives surveyed is to provide their products and services to city (N=14) and neighborhood residents (N=13) and also to specific groups of the urban population. The majority of the initiatives are focused on serving low-income residents (N=11) and in serving specific institutional members such as students and people with disabilities (N=9). Additionally, a couple of urban agriculture initiatives also provide their products and services to ethnic minorities (N=6) and to middle-to-upper class residents (N=6).

Furthermore, the people who provide their time and efforts to the fourteen urban agriculture initiatives are to a large extent volunteers without possession of relevant (farming) knowledge and practical experience. Some urban agriculture initiatives are entirely run by volunteers (N=7), and even a couple of initiatives (N=3) are fully operated by people that only produce for their own food consumption. Only *Green Skies Vertical Farm* is entirely run by paid workers. However, some others employ at least some staff: taken together, the urban agriculture initiatives that offer paid jobs employ between 1 and 8 well-qualified, often part-time, workers. As an exception, *People's Grocery Garden at the California Hotel* initiative pays 80% of the 100 people who provide their time and efforts. Of all the people who provide their time and efforts to the urban agriculture initiatives surveyed, 48% lives in the same neighborhood as the urban agriculture initiative, 37% within the city boundaries and 14% outside the city. This shows that urban agriculture is embedded in the urban system by using to a large extent local human resources (as already mentioned in paragraph 2.2.5).

Lastly, as outcome of the descriptive analysis of the questionnaire, urban agriculture initiatives in the San Francisco Metropolitan Area (N=14) are organized and managed in multiple ways. For example, some urban agriculture initiatives are collective and publicly organized (N=5) while others are privately run by a business owner and/or manager (N=2). Based on this diversity and the other organizational characteristics of urban agriculture initiatives surveyed as discussed above, the fourteen cases can be categorized into different types of urban agriculture initiatives (table 5.2). And as with any typology, not every urban agriculture initiative fits perfectly into a single category and in some cases, there may be overlap. However it provides an overview of the diversity of urban agriculture initiatives surveyed. The next paragraph will further discuss how urban agriculture initiatives are related to scaling.

Table 5.2: Types of urban agriculture initiatives surveyed (N=14)

Type of urban agriculture initiative (research population)	Urban agriculture initiatives surveyed (research sample)
Community gardening	Brook Park Environmental Work Group
	Ogden terrace Community garden
Community gardening (+green infrastructure)	Arlington Community garden
	Progress Park
Guerrilla gardening	Guerrilla Grafters
Non-profit and institutional gardening	Gateway High School Urban Garden
	Stonehurst Edible Schoolyard
Non-profit (and institutional gardening)	Please Touch Community Garden
	Demonstration Gardens
	Friends of Alemany Farm
	People's Grocery Garden at the California Hotel
	Growing Up Farms
Commercial/for-profit farming	Sunnyside Organic Seedlings llc
	Green Skies Vertical Farm

5.3. Relating organizational characteristics of urban agriculture initiatives to the scaling of urban agriculture initiatives

Based on the exploratory analysis of the questionnaires, a first outcome is that the scaling of urban agriculture initiatives in general is not related to specific organizational characteristics of urban agriculture initiatives (see paragraph 5.2). As previously mentioned (paragraph 5.1), all the urban agriculture initiatives surveyed (N=14) have implemented scaling strategies and thus scale to better match the magnitude of the social need(s) or problem(s) they seek to address.

A second result is that the scaling up of urban agriculture initiatives in the San Francisco Metropolitan Area is not related to specific organizational characteristics of the initiatives either. As illustrated above (paragraph 5.2.), all the urban agriculture initiatives surveyed (N=14) have implemented scaling up strategies.

A third result is that scaling deep takes place across the various organizational types. Although not all urban agriculture initiatives surveyed are involved in finding new ways to serve their target group, the initiatives that try to deepen the impact on the existing home community (N=9), do not have common organizational characteristics and do not belong to a specific type of urban agriculture initiative (figure 5.2). Both commercial/for-profit farming-, non-profit (and institutional gardening)-, and community gardening (+green infrastructure)- initiatives scale deep.

A fourth outcome is that scaling via spreading the idea (open source approach) is conducted by all the urban agriculture initiatives except the one's engaged in the market mechanism and/or offering gifts and activities for free (N=13). To illustrate this finding, only *Green Skies Vertical Farm* - a commercial/for-profit farming type that charges target groups for the products and services it provides - does not actively provide information and technical assistance to others and is not part of an identifiable network.

Finally, a last result is that scaling via growing the organization is not related to specific organizational characteristics of the urban agriculture initiatives in the San Francisco Metropolitan Area (N=14). This also applies to the urban agriculture initiatives that have been involved in growing their organization by the creation of new local sites in particular (branching). Based on the exploratory analysis of the questionnaires, all the types of urban agriculture initiatives (table 5.2) have been involved in the geographical expansion of their organizations.

To understand to what extent the scaling of urban agriculture initiatives is related to the leading individuals, the next paragraph will first discuss the characteristics of leading individuals of urban agriculture initiatives.

5.4. Characteristics of leading individuals of urban agriculture initiatives

Based on the descriptive analysis of the questionnaires, the leading individuals of the urban agriculture initiatives in the San Francisco Metropolitan Area (respondents) (N=14) are involved in these initiatives as owner, initiator, founder (N= 6), and/of (executive) director (N=5), and/or program manager (N=7) , and/or in another leading function (N=4). The majority of these people (N=9) were involved in the idea generation and start-up of the initiative and the leading individuals spend 20 hours on average (range 3 - 60 hours) per week to run this urban agriculture initiative.

The motivation of the leading individuals to start and/or join the urban agriculture initiative is really diverse. On the one hand, some motives are very personal as for example *'I was tired of working for corporate non organic farmers'* and *'retired, looking for enjoyable volunteer activities that make use of my skills and experience'*. On the other hand, most leading individuals are driven by social and environmental (urban) issues. For example the owner of *Growing Up Farms* has started an innovative indoor vertical aquaponic food growing system with as main reason *'to find innovative ways to solve issues in the current food system and improve access to healthy food in urban neighborhoods'*. And a leading 'grafter' of *Guerrilla Grafters* is driven by *'reducing the carbon food print, free food and reclaiming the commons'*. And besides, all the urban agriculture initiatives (N=14) were started and are continued today to help in tackling a diversity of (larger) social and environmental (urban) issues – such as for example food justice. The common driver behind all initiatives is community building. Only the commercial and for-profit farming initiatives (N=2) have also been driven by profit making.

Furthermore, all the leading individuals have connections with other organizations (e.g. other initiatives, policy makers) within the neighborhood. Ranging from strong connections (N=6) to both strong and weak connections (N= 5), however only few have weak connections (N=2) . In addition, these individuals are also, to a lesser extent, embedded in relationships with a greater geographical scope. The lion's share of the leading individuals have weak connections within the city (N=6) and the others have strong connections (N=4), or a combination of both (N= 3), or no connections (N=1) at the city level. And lastly, 50% of the leading individuals of urban agriculture initiatives have weak connections outside the city (N=7), while others have no connections (N= 4), a combination of weak and strong connections (N=2) or strong connections (N=1) with other organizations outside the city.

Finally, the leading individuals engaged in the urban agriculture initiatives (N=14) are relatively high educated and skilled. The majority of these people have a bachelor's degree or higher (N=12) and fewer people have also a degree in food, farming and/or management related studies (N=5). In addition, the lion's share of the leading individuals have also obtained practical skills through at least two but sometimes more than 50 years of experience in the field (N=11).

The next paragraph will address the question how all these characteristics of the leading individuals are related to the scaling of their initiatives.

5.5. Relating characteristics of leading individuals to the scaling of urban agriculture initiatives

Based on the exploratory analysis of the questionnaires, a first outcome is that the scaling of urban agriculture initiatives in general is related to the motivation of the leading individuals of the urban agriculture initiatives. To illustrate this point, all the urban agriculture initiatives in the San Francisco Metropolitan Area scale (N=14) (paragraph 5.1) and all these urban agriculture initiatives are driven by a diversity of (larger) social and environmental (urban) issues such as food security and community building (paragraph 5.2).

Furthermore, a second outcome is that the scaling of urban agriculture initiatives in general is related to the skills and education level of the leading individuals of the urban agriculture initiatives. All the urban agriculture initiatives in the San Francisco Metropolitan Area scale (N=14) (paragraph 5.1) and all the leading individuals engaged in the urban agriculture initiatives (N=14) are relatively high educated and skilled (paragraph 5.2).

A third outcome is that the scaling of urban agriculture initiatives in general is related to the fact that all leading individuals have relationships with other organizations (e.g. other initiatives, policy makers). To illustrate this point, all the urban agriculture initiatives in the San Francisco Metropolitan Area scale (N=14) (paragraph 5.1) and all the leading individuals of these urban agriculture initiatives are embedded in a social network (paragraph 5.2).

However, how urban agriculture initiatives scale, in terms of scaling up versus scaling deep and via spreading the idea versus growing the organization, is not related to the type of networks in which the leading individuals are embedded. To illustrate this point, the leading individuals of urban agriculture initiatives that scale deep are not necessarily and solely embedded in strong local (neighborhood) networks.

5.6. Conclusion

Based on the outcomes of descriptive analysis and exploratory analysis of the questionnaires, and referring to the sub-question: *'To what extent do urban agriculture initiatives in the San Francisco-Metropolitan Area scale and how is this related to the characteristics of the organization and the leading individuals of the urban agriculture initiatives?'* the following conclusions can be summarized:

A first conclusion is that urban agriculture initiatives in the San Francisco Metropolitan Area scale in many different ways and increase their impacts in both a quantitative (up) and qualitative (deep) manner and both through spreading the idea further (open-source approach) and to a lesser extent in growing their organizations (closed-source approach). This evidence gives some support to the theoretical concept of scaling social initiatives and to the notion that social initiatives increase impact in multiple ways.

A second conclusion is that the scaling of urban agriculture initiatives is not related to specific organizational characteristics of (types of) urban agriculture initiatives. Only a weak link has been found between the market engagement of urban agriculture initiatives and the way scaling is conducted via spreading the idea or growing the organization. These outcomes give therefore only little support to the theoretical insights of how the scaling of social initiatives is affected by their organizational characteristics (chapter 3). The other organizational characteristics of urban agriculture initiatives as legal structure and age are not related to the scaling of urban agriculture initiatives. In addition, the so-called additional control factors such as target group and place of operation are not related to the scaling of urban agriculture initiatives either.

A third conclusion is that the scaling of urban agriculture initiatives is related to the motivation, education and skills of the leading individuals and the embeddedness of the leading individuals in social networks. These outcomes give thus more support to theoretical insights of how the scaling of social initiatives is affected by characteristics of leading individuals (chapter 3). To bear in mind, the conceptual model (paragraph 3.6.) illustrated that the scaling of urban agriculture initiatives could be influenced by the motivation, type of social network and education/skills of the leading individuals according to the scaling literature within the social innovation context.

Having said this, all outcomes should be interpreted with caution, considering the exploratory status of this empirical research. How the scaling of urban agriculture initiatives is affected by the external environment will be discussed in the next chapter.



6. Accelerators and barriers in the scaling process of urban agriculture initiatives: case study evidence from the San Francisco - Metropolitan Area

Sunol Ag Park - Sunol

Source: author (2014)

6. Accelerators and barriers in the scaling process of urban agriculture initiatives: case study evidence from the San Francisco - Metropolitan Area

This chapter discusses the second part of the outcomes of the empirical analyses and gives answer to the last sub-question of this thesis research 'How does the environment facilitate or constrain the scaling process of urban agriculture initiatives in the San Francisco Metropolitan Area?' To answer this question, the first paragraph discusses the perceived accelerators in the scaling process of the urban agriculture initiatives surveyed (paragraph 6.1.), followed by the paragraph that will turn to the perceived barriers in the scaling process of the urban agriculture initiatives surveyed (paragraph 6.2). Based on these insights, at the end of each paragraph is described how these accelerators and barriers are related to the external environment and to how urban agriculture initiatives in the San Francisco Metropolitan Area scale. This chapter finishes with the answer to the sub-question and a comparison between the empirical outcomes and the insights obtained from the scaling literature within the social innovation context (chapter 3) (paragraph 6.3).

6.1. Accelerators in the scaling process of urban agriculture initiatives

Based on the descriptive analysis of questionnaires, urban agriculture initiatives in the San Francisco Metropolitan Area (N=14), have faced various accelerators during their scaling process. Four common themes of main factors are clear that have supported the scaling process of these urban agriculture initiatives: 1) financial resources 2) human resources 3) social resources 4) impact creation.

First, almost half of the urban agriculture initiatives (N=6) received financial resources which have supported them to further increase their impacts. The *Gateway High School Urban Garden* for example won the *SF Grant Awards*. This award is part of *The San Francisco Community Challenge Grant Program* that provides funding to community groups, businesses, schools and non-profit organizations which make physical improvements to their neighbourhoods (SFGSA, 2015). Other urban agriculture initiatives received financial support from other resources such as private investors and angel donors. For *Progress Park* this financial capital was necessary to hire workers.

Second, the motivation, resilience, and time and efforts of the landlord, volunteers and neighbourhood residents have facilitated the scaling process of a couple of urban agriculture initiatives (N= 4). And besides, increasing the visibility of the urban agriculture initiative by building partnerships (N=3) and the use of (social) media (N=1) have supported the scaling process of some urban agriculture initiatives as well. Finally, impact creation in terms of mental and physical health decline have also facilitated the scaling process of some of the urban agriculture initiatives (N=2).

In sum, those outcomes show thus that the external environment have facilitated the scaling of urban agriculture initiatives in the San Francisco Metropolitan Area by providing financial resources and through the engagement of the local population. Thereby, no clear pattern has been discovered between how urban agriculture initiatives scale, in terms of scaling up versus scaling deep and via spreading the idea versus growing the organization, and the various accelerators mentioned above.

6.2. Barriers in the scaling process of urban agriculture initiatives

Based on the descriptive analysis of questionnaires, urban agriculture initiatives in the San Francisco Metropolitan Area (N=13), have also faced various barriers during their scaling process. Only the *Progress Park* initiative did not face any barriers during their scaling process.

Four common themes of factors have constrained the scaling process of these urban agriculture initiatives: 1) financial resources 2) human resources 3) political support 4) and location.

First, the majority of the urban agriculture initiatives (N=8) have faced financial barriers during their scaling process. Those urban agriculture initiatives were not able to secure enough funding from the City or from other financial institutions. To overcome these barriers the leading individuals of these urban agriculture initiatives sought funding from unorthodox resources (innovative fundraising), made money, and showed their persistence and diligence, or have built partnerships (with the City) to obtain the necessary financial resources to scale.

Second, a couple of urban agriculture initiatives (N= 4) have faced barriers in their scaling process through the lack of engagement of the local population. For example the respondent of *People's Grocery Garden at the California Hotel* mentioned the following barriers in keywords: '*community engagement, (...), staff capacity, staff turnover, community partnerships*'. To overcome these obstacles, this urban agriculture initiative outreached for volunteers, increased wages and provided staff training to get more dedicated people.

Furthermore, a few urban agriculture initiatives (N=4) have also been constrained during their scaling process through the lack of political support in terms of bureaucracy and lack of legislation. For *Green Skies Vertical Farm* in Oakland for example, the '*lack of municipal code for urban agriculture*' was an important barrier to further increase their impacts. To overcome these barriers, the leading individuals of those urban agriculture initiatives (N=4) have bypassed the bureaucracy and the lack of legislation by '*go ahead with permits*' (*Green Skies Vertical Farm*) and by continuing their activities to proof the concept.

And finally, a couple of urban agriculture initiatives (N= 4) have faced barriers during their scaling process related to their locations. For example the respondent of the *Brooks Park Environmental Work Group* initiative that is involved in the creation of other local sites (geographical expansion), mentioned the '*competition with housing developers*' as an important barrier.

In sum, those outcomes illustrate that the external environment also has constrained the scaling process of urban agriculture initiatives though the lack of- financial support, the engagement of the local population, political support and the competition of land. Thereby, no clear pattern has been discovered between how urban agriculture initiatives scale, in terms of scaling up versus scaling deep and via spreading the idea versus growing the organization, and the various barriers mentioned above.

Despite these barriers, the majority of the respondents of the urban agriculture initiatives in the San Francisco Metropolitan Area (N=13) believe that their urban agriculture initiatives will expand in the next five years in terms of larger organizations, which are no longer completely volunteer run, new locations and/or more farm technology. Thereby, more support of local policy and financial institutions is expected. However as mentioned by the respondent of *Please Touch Community Garden*,: '*(..)I think that the only reason why this won't be achieved is if the vacant lot on which the garden is situate is sold for development*'.

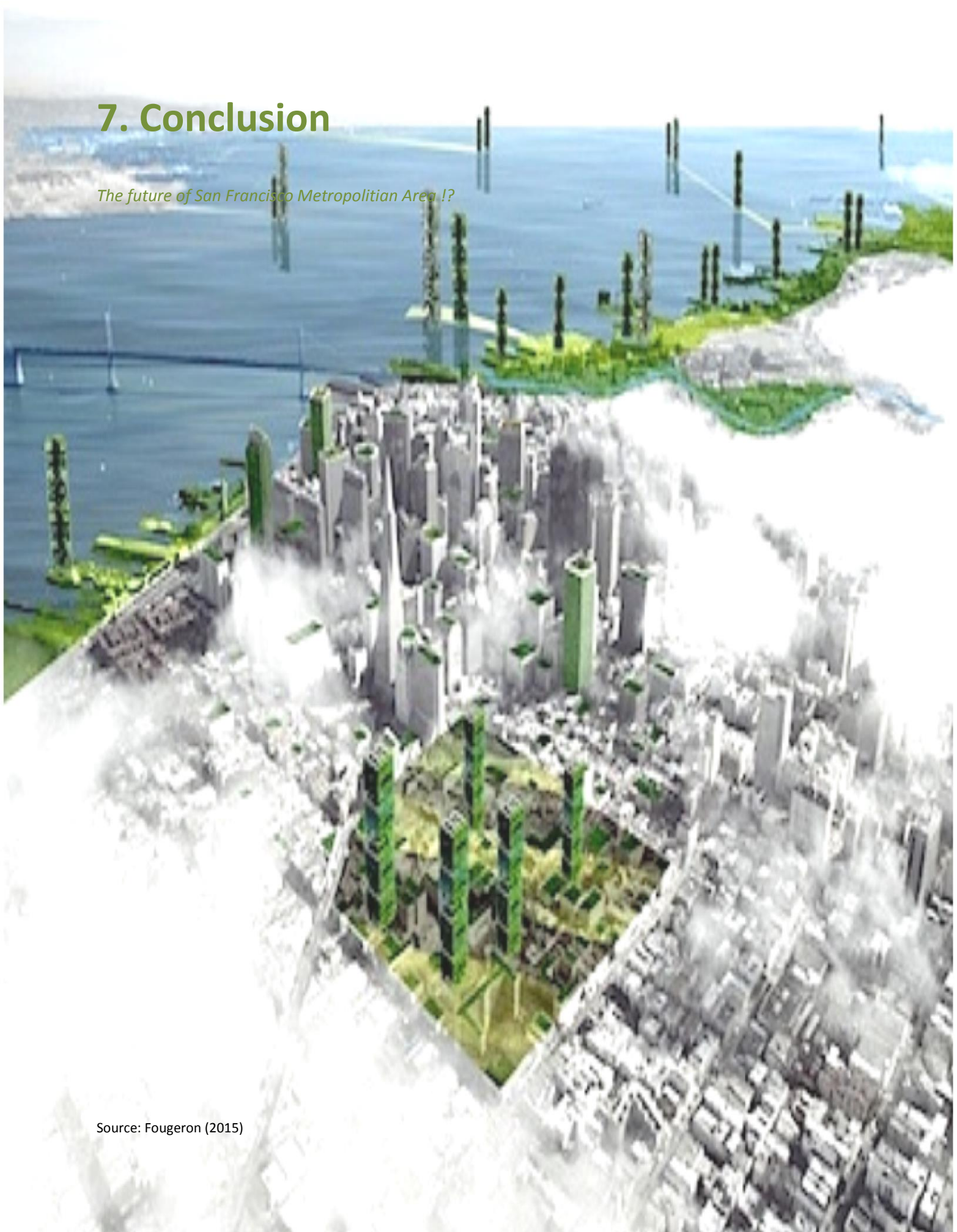
6.3. Conclusion

Based on the outcomes of descriptive analysis and exploratory analysis of the questionnaires, and referring to the sub-question: *'How does the environment facilitate or constrain the scaling process of urban agriculture initiatives in the San Francisco Metropolitan Area?'* the following conclusion can be drawn:

The external environment both facilitates and constrains the scaling of urban agriculture initiatives by the (lack of) provision of resources and support. This finding underpins the theoretical notion about the role of the environment in scaling social initiatives in terms of financial and human capital and political support (paragraph 3.5). However, the scaling of urban agriculture initiatives, especially in terms of the creation of new local sites, is also dependent on the availability of space in the area which is an outcome of land use competition. Having said this, all outcomes should be interpreted with caution, considering the exploratory status of this empirical research.

7. Conclusion

The future of San Francisco Metropolitan Area !?



Source: Fougeron (2015)

7. Conclusion

This last conclusive chapter answers the central question (paragraph 7.1) and discusses the research limitations and reflects on the approach of this thesis research (paragraph 7.2). Based on these outcomes, a discussion of future research and policy recommendations is presented subsequently (paragraph 7.3 & 7.4.).

7.1. Urban agriculture hype of reality?

Feeding a growing urban population in urban areas will be an increasing challenge in the coming decades. Urban agriculture has captured the attention of many people as entrepreneurs, scholars and policy makers as a potential innovative way to anticipate on this challenge. In this thesis research attempts have been made to understand of social innovations as urban agriculture hold promise and can tackle problems in our society, as in feeding the growing urban population in a more sustainable way. First, by looking at how food-producing activities in and around cities take place nowadays and second, by exploring how these urban agriculture initiatives scale by conducting an exploratory case study in the San Francisco Metropolitan Area.

The central questions of this thesis research was formulated at follows:

'To what extent do urban agriculture initiatives (UAI) in the San Francisco Metropolitan Area scale and what influences this?'

To start with, chapter 2 has shown that urban agriculture is manifested in various types of initiatives, both inside and outside the traditional market. Subsequently, chapter 3 gave an overview of the available literature on scaling within the social innovation context. In this chapter it became clear that social initiatives increase impacts in both a quantitative (scaling up) and qualitative (scaling deep) manner by spreading the idea further (open-source approach) and growing their organizations (closed-source approach). This process is the outcome of different factors related to the organization of the social initiative, the leading individuals and the environment in which the initiative operates.

The empirical analyses have shown that urban agriculture initiatives in the San Francisco Metropolitan Area scale in all the different ways as founded in academic literature. All the urban agriculture initiatives surveyed are trying to increase the impact of urban agriculture by scaling up and to a lesser extent by scaling deep, both through spreading the idea further and to a lesser extent in growing their organizations.

In addition, the empirical analyses gave little insights into the factors that influence how urban agriculture initiatives scale. Only a weak relation has been found between the market engagement of urban agriculture initiatives and the way scaling is conducted via spreading the idea or growing the organization. However some relations between the scaling of urban agriculture initiatives in general and the characteristics of leading individuals have been founded. Based on this, it can be tentatively concluded that the motivation, capacity and relationships of leading individuals influence or urban agriculture initiatives scale.

Furthermore, it became clear that the external environment plays an important role in the scaling of urban agriculture initiatives. Urban agriculture initiatives in the Global North are (still) small in scale and most activities are not self-sustaining and are depending of non-paid efforts and financial support.

The environment thus both facilitates and constrains the scaling of urban agriculture initiatives by the (lack of) provision of resources and support.

Based on this status quo of urban agriculture and the initiatives in the San Francisco Metropolitan Area, it can be concluded with caution that feeding a significant amount of the urban population is rather a hype than reality today. However this does not indicate that urban agriculture holds no promise. Urban agriculture initiatives try to increase their impacts by serving more people into new areas and by serving people of the existing home communities better. Besides, for many types of urban agriculture initiatives providing food is rather a manner, to tackle other (urban) social and environmental related issues, than a goal. Taking these two aspects together, urban agriculture is even more promising (reality) as a way to create more liveable and sustainable cities today. However, innovative larger-scale initiatives (e.g. vertical farming), which are still in its infancy, could be also promising in the future in providing a significant amount of food to the urban population in a sustainable way (Lawson, 2015).

7.2. Discussion

While the outcomes of this thesis research provide some insights into the scaling of urban agriculture initiatives the results of this empirical study should be interpreted with caution. First, the urban agriculture surveyed did not represent the research population adequately and the dominance of more social urban agriculture initiatives (e.g. community) instead of market oriented urban agriculture could have affect the outcomes of this research (bias). Second, through the small number and diversity of the cases surveyed in the empirical part of this study it was not possible to use a statistical test to determine the statistical significance of the findings and to get insights into the causal effects between the (in)dependent variables. Investigating a larger number of urban agriculture initiatives should have led to more proper insights of the scaling of urban agriculture initiatives and the influence of the organization, leading individuals and environment on this process.

Furthermore, as previously mentioned, the scaling literature within the social innovation context is still limited and barely theoretically grounded. As concluded by Davies & Simon (2014), who gave a critical review on the scaling literature for understanding the growth of a social innovation, the concept of scaling is not adequate to describe all the ways in which different social innovations grow, spread and become institutionalized. Studying urban agriculture initiatives more extensively, by qualitative research methods, could have led to better and new insights into how urban agriculture initiatives attempt to increase impacts and what this process affect .

Next, by conducting a case study research in only one metropolitan area, it is good to bear in mind that the conclusions and outcomes of this study must be interpreted carefully. According to Tausanowitch & Warshaw (2015)'s research to urban ideologies in the United States, San Francisco is characterized as the most '*leftie city*' with the highest rank in liberality in the United States and also an area with very limited land available and a high competition for land due the growing population (SF Planning Department, 2014). These specific area-related characteristics could ensure that urban agriculture practices may turn out differently, in terms of types initiatives and scaling, in other cities due to characteristics of urban the population and land availability. Grewal and Grewal (2012) for example, provides empirical support that significant levels of local self-reliance in food, the most basic need, is possible in post-industrial North American cities as the City of Cleveland. However, these cities are shrinking rather than growing and have a larger amount of vacant land. Conducting empirical research in two or more contrasting cities in the Global North could have made the outcomes of this research more reliable.

7.3. Future research recommendations

Based on these research limitations, several recommendations for future research could be formulated:

Firstly, to get a more detailed picture of the scaling of urban agriculture initiatives and the potential of urban agriculture in providing food for the urban population and tackling other social needs, in-depth interviews with leading actors of urban agriculture initiatives should be conducted. Thereby, more attention can be paid to the priorities of the different scaling strategies and the motivations behind the implementation of (different) scaling strategies. In addition, these in-depth interviews offer the ability to empirically 'test' the scaling strategies of Dees et al. (2004) by asking how urban agriculture initiatives increase their impacts. Furthermore, considering the diversity of urban agriculture initiatives in management, actors and drivers (radical, for-profit etc.), investigating the various types of urban agriculture initiatives separately is also an added value to get a more comprehensive understanding. In this way, the various types of urban agriculture initiatives could be studied in more detail.

Secondly, the scaling of urban agriculture initiatives should be investigated in different contrasting areas to discover the objective role of the external environment in terms of local regulations, the mindset of and demand of urban residents. This research can be conducted on the city scale level but also on a neighborhood scale level. Indeed, according to the empirical evidence urban agriculture initiatives are largely rooted in the neighborhoods by serving neighborhood residents and employing urban labour. By taking neighborhood effects into consideration, more insights could be provided about the role of the local community in driving urban agriculture forward.

Thirdly, to get a more sophisticated impression of the potential of urban agriculture, future research should also include urban agriculture initiatives that were not able to survive into their research samples. Getting more insights into the characteristics of these initiatives and the reasons for 'bankruptcy' gives a better understanding of why some urban agriculture initiatives scale and others do not even survive.

Fourthly, while the thesis research focused on the scaling of urban agriculture initiatives to understand to what extent a social innovation as urban agriculture holds promise in feeding the urban population and increasing the sustainability of cities and its inhabitants as a whole in the future, it does not necessarily indicate that scaling only creates positive social and environment impacts. Scaling urban agriculture initiatives and the expansion of food production in and around cities also raise questions about the growing pressure on the local environment and the urban land use competition. An interesting follow-up research subject could therefore be: the impacts of scaling urban agriculture.

7.4. Policy recommendations

Based on the outcomes of this thesis research the following policy recommendation has been formulated:

The recognition of the diversity of urban agriculture initiatives is very important. Urban agriculture operates at various levels not only through traditional market mechanism but also outside traditional market mechanisms. For some of these types of initiatives food production is not always the primary goal but rather an instrument for the education of students or the rehabilitation of marginalized people. Urban agriculture should therefore not only be seen by local policy makers as an aim in itself, but also as a means to achieve other goals – for example promoting social cohesion in neighborhoods. This means that the potential of the different types of urban agriculture should be brought to the attention not only

to specialized officials, but also to a broad range of policy officers, urban planners and developers, and social workers. However, when local governments would like to stimulate the creation of a local food system, the emphasis should be on the encouragement of market-oriented initiatives (urban farms) in and around cities instead of supporting the other types of urban agriculture initiatives.

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Appendix

1) Online questionnaire



Urban agriculture initiatives online questionnaire



Thank you for participating in this online research on the development of urban agriculture initiatives. It only takes a couple of minutes to fill out this questionnaire. Your answers will be completely anonymous and will be kept confidential. Please give answers for the urban agriculture initiative where you are most actively involved in. The structure of this online questionnaire is as follows:

1. Characteristics of your urban agriculture initiative
2. (Start-up) motivation for this urban agriculture initiative
3. Development of this urban agriculture initiative
4. Personal information

Definition of an urban agriculture initiative: projects involved in farming and food related activities in an urban area for urban populations

PART A: CHARACTERISTICS OF YOUR URBAN AGRICULTURE INITIATIVE

1a INITIATIVE INFO What is the name of your urban agriculture initiative?

1b In what year did this urban agriculture initiative start?

2a ACTIVITIES What are the main food and farming activities of this urban agriculture initiative? Multiple answers are possible

- Growing food (1)
- Keeping livestock (2)
- Processing food (e.g. making jam out of strawberries) (3)
- Distributing food (4)
- Selling food (5)
- Other, (6) _____

2b What are other food and farming related activities of this urban agriculture initiative? Multiple answers are possible

- Education (1)
- Community building (2)
- Events (3)
- Other, (4) _____

3a TARGET GROUP & DELIVERY CHANNELS How important are the following target groups for this urban agriculture initiative in terms of delivery of activities (products and/or services)?

	Totally not important (1)	Not important (2)	Neutral (3)	Important (4)	Very important (5)
Low-income residents (1)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Middle to upper class income residents (2)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
City residents (3)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Neighborhood residents (4)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Institutional members (e.g. students, patients) (5)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ethnic minorities (6)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other, (7)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3b How important are the following channels for this urban agriculture initiative to deliver activities (products and/or services) to the relevant target groups?

	Totally not important (1)	Not important (2)	Neutral (3)	Important (4)	Very important (5)
Internet (websites, social media) (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shop(s) or farmer market(s) in the neighborhood (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shop(s) or farmer market(s) in the city (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Direct delivery to urban residents/consumers (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other, (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4a MARKET ENGAGEMENT How frequent does this urban agriculture initiative sell their products and/or services to the relevant target groups? Please give an estimated number of transactions per month and per year and enter 0 when no market engagement exist

- Sales per month (1)
- Sales per year (2)

4b To what extent is the following statement applicable for this urban agriculture initiative: 'Free gifts and activities are more important than commercial activities'

- Strongly disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

5a PLACE OF ACTIVITIES What is the address of this urban agriculture initiative?

5b What is the place of production or operation of this urban agriculture initiative? More options are possible

- Yard (1)
- Vacant lot (2)
- Park (3)
- Plant (4)
- Greenhouse (5)
- Rooftop (6)
- Other, (7) _____

5c What is the estimated size of the place of this urban agriculture initiative? (in acres of feet)

5d Is this urban agriculture initiative on privately owned or public land?

- Private (1)
- Public (2)

6a YOUR INVOLVEMENT What is your function related to this urban agriculture initiative? Multiple answers are possible

- Owner, initiator, founder (1)
- (Executive) director (2)
- Program Manager (3)
- Employee (4)
- Other, (5) _____

6b How many hours on average do you spend on this urban agriculture initiative per week?

6c Were you involved in the idea generation and start-up of this urban agriculture initiative?

- Yes (1)
- No (2)

6d Since what year are you actively involved in this urban agriculture initiative?

6e What was for you the main reason for joining or starting this urban agriculture initiative?

7a TYPE OF MANAGEMENT & ORGANIZATION What is the type of management of this urban agriculture initiative? Multiple answers are possible

- Individual or household (1)
- Collective (organized by a group of city residents) (2)
- Community garden program (3)
- Institutional or contracted organization (e.g. school, hospital, church) (4)
- Non-profit organization (5)
- Business onwner(s) and/or manager(s) (6)
- Other, (7) _____

Answer If TYPE OF MANAGEMENT & ORGANISATION What is the type of management of this urban agriculture initiative? More options are possible Institutional or contracted organization (e.g. school, hospital, church) Is Selected And TYPE OF MANAGEMENT & ORGANISATION What is the type of management of this urban agriculture initiative? More options are possible Non-profit organization Is Selected

7b Which organizations(s) run(s) this initiative?

Answer If TYPE OF MANAGEMENT & ORGANISATION What is the type of management of this urban agriculture initiative? More options are possible Community garden program Is Selected

7c Which community garden program?

7d Is this a private or public organized urban agriculture initiative?

- Private (1)
- Public (2)
- Combination (3)
- Other, (4) _____

8a LABOR †Labor: all people who provide time and efforts for this urban agriculture initiative† - What is the estimated number of all labor involved in this urban agriculture initiative at this moment? - What percentage of all labor is full time involved at this moment? - And when relevant what percentage of all labor produces ONLY for their own (household/institutional) consumption at this moment?

Number of labor (1)

% full time involved (2)

% ONLY own produce (4)

8b What percentage of all labor involved in this urban agriculture initiative is paid and what percentage is unpaid at this moment? Please give an estimated percentage of each type with a total of 100%

_____ Paid (1)

_____ Unpaid (2)

8c What percentage of all labor involved in this urban agriculture initiative is well trained and qualified (possession of relevant farm, food and managerial knowledge and practical experience) for this work and what percentage is not or less trained and qualified at this moment? Please give an estimated percentage of each type with a total of 100%

_____ Well trained and qualified (1)

_____ Not or less trained and qualified (2)

8d What is the amount of training all labor involved in this urban agriculture receive at this moment? Please give a number between 1 (=no training opportunities) & 5 (= regular training opportunities for most of the labor force)

8e What percentage of all labor involved in this urban agriculture initiative lives in the neighborhood itself and what percentage comes from outside the neighborhood at this moment? Please give an estimated percentage for each type with a total of 100%

_____ Neighborhood (1)

_____ City (2)

_____ Outside the city (3)

9a FINANCIAL RESOURCESHow was the start-up of this urban agriculture initiative financed? Please give an estimated percentage of each type with a total of 100%

_____ Private capital (entrepreneur) (1)

_____ Intern budgets of organization(s) that run this urban agriculture initiative (2)

_____ (Bank)loans (6)

_____ Subsidies & grants (3)

_____ Gifts (4)

_____ Other, (5)

9b What are the annual sources of income for this urban agriculture initiative? Please give an estimated percentage of each type with a total of 100%

_____ Primary food and farming activities sales (1)

_____ Food and farming related activities (e.g. education, events, membership) sales (2)

_____ Personal capital (entrepreneur) (4)

_____ Intern budgets of organization(s) that run this urban agriculture initiative (6)

_____ Subsidies & grants (3)

_____ Gifts (7)

_____ Other (5)

10a COMMUNITY COHESION & CONNECTIONSWhat percentage of all people involved (managers, employees, citizen participants etc.) in this urban agriculture initiative know each other by name? Please give an estimated percentage

10b On a scale from 0-10, how do you rate the community cohesion (e.g. degree of trust, familiarity, values) of this urban agriculture initiative?

- 0 (0)
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)
- 9 (9)
- 10 (10)

10c To what extent does this urban agriculture initiative have connections with other organizations, businesses, initiatives and policy makers outside their own community in...?'Strong connections are characterized by long(er) time-frames, high(er) resource commitments and tight(er) interpersonal relations when compared to weak connections'

	No connections (1)	Weak connections (2)	Strong connections (3)	Combination of weak and strong connections (4)
...the neighborhood (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...the city (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... outside the city (other cities or rural areas) (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

PART B: (START-UP)MOTIVATION OF THIS URBAN AGRICULTURE INITIATIVE

11a What was the main reason for starting this urban agriculture initiative?

11b What is the main reason these days for continuing this urban agriculture initiative?

- Same as mentioned in the previous question (1)
- Other, (2) _____

11c How important were the following motives for the start-up of this urban agriculture initiative?

	Totally not important (1)	Not important (2)	Neutral (3)	Important (4)	Very important (5)
Making profit (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Food access (creating better access to diverse, fresh and nutritious food) (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Food justice (creating better access to nutritionally culturally acceptable and safe food) (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Education, recreation & exercise (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Building community (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improving relationship and a shorter distance between farmer/producer and consumer (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Saving energy and natural resources (e.g. reducing travel distance to food, less water) (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Providing green infrastructure and edible landscapes (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Creating local jobs (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rehabilitation for marginalized people (e.g. refugees) (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Catalyzing inside-out revitalization of distressed neighborhoods (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contributing in building an alternative urban food system (against the dominant industrial global system) (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11d Are these motives still important these days or has this changed? When this has changed became these motives less or more important?

	Less important (1)	More important (2)	No change (4)
Making profit (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Food access (creating better access to diverse, fresh and nutritious food) (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Food justice (creating better access to nutritionally culturally acceptable and safe food) (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Education, recreation & exercise (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Building community (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improving relationship and a shorter distance between farmer/producer and consumer (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Saving energy and natural resources (e.g. reducing travel distance to food, less water) (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Providing green infrastructure and edible landscapes (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Creating local jobs (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rehabilitation for marginalized people (e.g. refugees) (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Catalyzing inside-out revitalization of distressed neighborhoods (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contributing in building an alternative urban food system (against the dominant industrial global system) (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

PART C: DEVELOPMENT OF THIS URBAN AGRICULTURE INITIATIVE

12 DEVELOPMENT ACTIVITIES How do you and your team better reach the goals of this urban agriculture initiative? Please indicate to what extent this urban agriculture initiative has considered and has been involved in the following activities

	Not involved and not considered (1)	Not involved but considered (2)	Involved (3)
Increasing the number of people who benefit of this urban agriculture initiative (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Finding new ways to serve the target group (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Actively provide information and technical assistance to others (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Forming of formal relationships to be part of an identifiable network (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Creation of other local sites (geographical expansion) (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
More food production (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
None of these (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13a BARRIERS What are/were the most important barriers for the development of this urban agriculture initiative? Please give your answer in keywords

13b What has the urban agriculture initiative's main strategy been to overcome these barriers?

14 ACCELERATORS What are/were the most important accelerators ('help') for the development of this urban agriculture initiative? Please give your answer in keywords

15 NETWORK How important are the following relationships of your and other managing stakeholders' network in moving the development process of this urban agriculture initiative forward?

	Totally not important (1)	Important (2)	Neutral (3)	Important (4)	Very important (5)
Family and friends (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(Former) colleagues, business partners and formal relations (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Customers/target group (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community members (all people involved in this initiative) (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Neighborhood residents (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Managers or stakeholders of other urban agriculture initiatives (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other, (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16 FUTURE What do you expect this urban agriculture initiative to look like in 2020? Please describe your expectations in keywords

PART D: PERSONAL INFORMATION

17a EDUCATION & JOBS What is your educational background?

- Less than high school graduate (1)
- High school graduate (includes equivalency) (2)
- Some college degree or associate's degree (3)
- Bachelor's degree or higher (4)

17b Do you have an education background in farming, food and/or management related studies?

- No (1)
- Yes (2)

17c Did you have practical experience before you got involved? If yes, since what year?

- No (1)
- Yes, since (2) _____

18 LIVING PLACEDo you live in the same neighborhood as the location of this urban agriculture initiative? If yes, since when? (year)

- No (1)
- Yes, since (year) (2) _____

19 AGE What is your year of birth?

20 Additional comments/notes

xxxx Thank you very much for your participation in this research! If you are interested in the results of this research please fill out your email address so we can send the final report to you

2) List of urban agriculture initiatives found in the San Francisco Metropolitan Area

San Francisco City

NOMAD gardens	Fort Mason Community Garden	La Playa
Alemanya farm	Golden Date Senior Center Community Garden	Laguna Honda Hospital Therapeutic Farm & Gardens Project
Adam Rogers Farm	Good Prospect Community Garden	Little Red Hen Community Garden
Graze the Roof	Hooker Alley/ Nob Hill Community Garden	MacArthur Community Garden
Growing up Farms	Howard Langton Community Garden	Miller Memorial Grove/Dogpatch (aka Brewster Street) Community Garden
Little City Gardens	Howard Street Community Garden	Mission Branch Library
The Garden Project	Kidpower Park Community Garden	Mission Creek
The Free Farm	Ko Shland Park Community Learning Garden	Noe & Beaver Mini Park
Tenderloin People's Garden	La Grande Community Garden	Noe Valley / Sally Brunn Branch Library
Garden of the Environment	Lessing, Sears Mini Park Community Garden	Page and Laguna Mini Park
Growing home community garden	McLaren Park Community Garden	Please Touch Community Garden
Esperanza Gardens	Michelangelo Playground Community Grden	Portola Street Community Garden
City Grazing	Ogden Terrace Community Garden	Progress Park
Produce to the People	Park Street Community Garden	Quesada Gardens
Feel the Earth	Potrero Hill Community Garden	Southeast Community Facility
Friends of the Urban Forest	Rose/ Page Community Garden	South Baker Beach Community Garden
Smart Backyard	Sunset Community Garden	West Washington Community Garden
USF Community Garden	Telegraph Hill Neighborhood Center Community Garden	18th & Rode Island Permaculture Garden
Portero Del Sol Community Garden	Treat Commons Community Garden	3rd Street Youth Park
25th & Deharo Community Garden	Victoria Manalo Draves Community Garden	All Hallows Church
Alemanya RMC Garden	Visitacion Valley Greenway Community Garden	Bayview Mission
Alioto Mini Park Community Garden	White Creane Springs Community Garden	Booker T. Washington Community Center
All in Community Garden	Wolfe Lane Community Garden	Cornerstone Missionary Baptist Church
Agronne Community Garden	Page Street Garden	Krispy Korner Garden
Arkansas Friendship Community Garden	Bridgeview Garden	Willie Mays Boys & Girls
Arlington Community Garden	Broadway Tunnel East Mini Park	Bayshore and Salinas
Bernal Heights Community Garden	Eco SF School Farm	Bayshore and Key
Books Park Community Garden	Farm - Hooper Street & 8th	College Hill Reservoir
Candlestick Point Community Garden	Fort Scott Community Garden	Geneva Avenue Strip
Central YMCA Rooftop Community Garden	Veterans' Community Garden	Palou Community Garden
Clipper Street Community Garden	Gates Street Wildlife Garden	Hayes Valley Farm
Connecticut Friendship Garden	Golden Gate Park Senior Center	Florence Fang Asian Community Garden
Corona Heights Community Garden	June Jordan School for Equity	Urban Sprouts
Corwin Street Community Garden	Kezar Gardens	San Francisco Chronicle Rooftop Garden
Crags Court Community Garden	Kid Power Community Garden & Park	Sky vegetables
Crocker Amazon Community Garden	Koshland Park & Community Garden	SF greenhouses
Dearborn Community Garden		Community Grows
Double Rock Community Garden		

Oakland city

Farmscape	Funktown Farm Community Garden	King Estates Community Garden
City Slicker Farms	Growing Together	Verdese Carter Park Community Garden
People's Grocery	Lakeside Horticultural Center - Kitchen Garden	Rudsdale's Green Teens
Allendale Park Community Garden	Manzanita Recreation Center	Healthy Hearts Youth Market Garden
Bella Vista Park Community Garden	Marston Campbell Park	55th St. Spiral Community Gardens
55th Street Garden	Memorial Tabernacle Church Community Garden	Edible Parks Task Force
Acta Non Verba	North Oakland Land Trust	Lake Merrit Trials Garden
Allendale Park/ Receration Center	Oakland Roots	OBUGS Community Garden - West Oakland Elementary school
Arroyo Viejo Park	Park Community Garden	OBUGS Community Garden - Lafayette Elementary School
Biblioteca Popular Victor Martinez	San Antonio Park	OBUGS Community Garden - St. Martin de Porres Elementary School
Community Garden in Lakeside Park	Tassafaronga Park	OBUGS Community Garden - St. Patrick Middle School
Dover Street Park and Community Garden	Temescal Community Garden	
Durant Mini Park	Golden Gate Community Garden	
Fitzgerald and Union Plaza Parks	Mosswood Community Garden	
Freeing Land for Food: Urban Greening Project	Stonehurst Edible Schoolyard	
	Bushrod Park Community Garden	