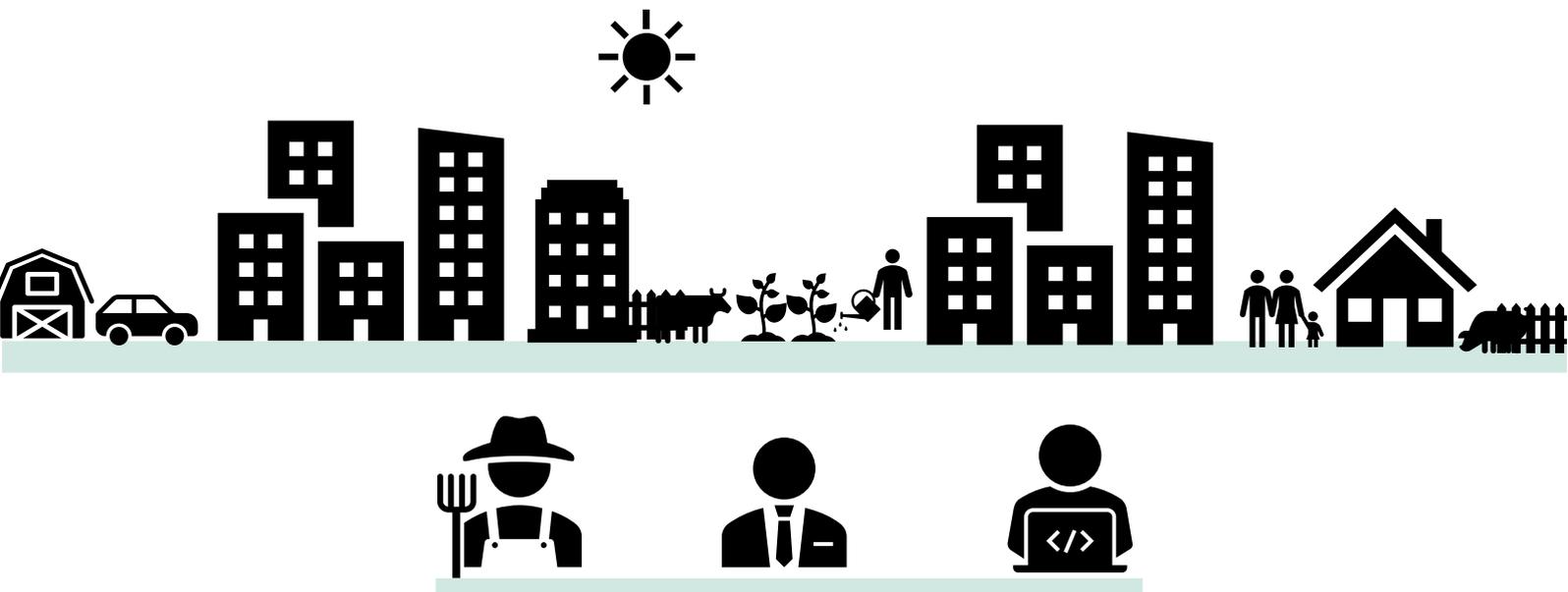


Master Thesis Society, Sustainability and Planning
Multifunctional Urban Agriculture in Local Policies –
Amsterdam Case Study

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Abstract

Urban agriculture has in recent years developed a new range of functions for neighbourhoods and communities. This multifunctional use of urban agriculture can have educational, environmental and social benefits for communities. However, the emergence of multifunctional urban agriculture is a rapid one and institutional frameworks have been developed quickly to regulate this trend. Moreover research on the influence of multifunctional urban agriculture is still relatively new and there seems to be a gap between theory and practise regarding the effects that additional functions in urban agriculture have on different environments. However, the multifunctional features of urban agriculture should be integrated in policy to ensure appropriate and efficient decision-making. Furthermore, governance structures influence the priorities and values that the multifunctional urban farming initiatives receive and the complexity of these structures in urban agriculture can lead to unfair and inaccurate decision-making. This research thesis focusses on the integration of the multifunctional features of urban agriculture in the policies of the municipality of Amsterdam. A textual analysis of the current policies on urban agriculture in Amsterdam and in-depth interviews with urban farming initiatives in Amsterdam provided the findings of this research.

The multifunctional features of urban agriculture are to a degree integrated in local policies. However, when comparing the policies to data and theory gaps and unclear definitions can be found, specifically regarding the social and economic functions that multifunctional urban agriculture can have on neighbourhoods and environments. Furthermore, the current communication and collaboration structures cause uneven representation and the general descriptive framework for urban agriculture in Amsterdam contributes to an inaccurate evaluation of the multifunctional features of urban agriculture. This research calls for more research into the effects that multifunctional features of urban agriculture can have on the municipality, the urban farming initiatives themselves and the environment as a whole. Furthermore, the development of a clear institutional framework that includes the missing effects of multifunctional urban agriculture in policy is highly important as this creates a more accurate and efficient base for both the municipality and the urban farming initiatives to base decisions upon.

Urban agriculture, local policy, governance, multifunctional urban agriculture

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Chapter 1: Introduction

Urban agriculture has largely been researched in developed countries to provide food security to growing city populations (Safayet et al., 2017). However, as Duchemin et al. (2009) state, urban agriculture can help facilitate sustainable development in both developing and industrialized countries as it can the multifunctional features of urban agriculture influence citizens. Urban agriculture and more specifically Urban farming initiatives can be a holistic approach to food security as it can influence people's daily lives through healthier diets and better knowledge about healthy food (Dixon et al., 2009). Urban farming can encompass a variety of different activities and functions next to the primary function of agriculture (Poulsen et al., 2017). It has been proposed by different researchers as a multifunctional tool to incorporate sustainable living in cities (Duchemin et al., 2009; Prove et al., 2016; Vandermeulen et al., 2006). Poulsen et al. (2017) state that urban farms can have multiple functions in addition to agricultural outputs within communities and that identifying these functions is important in understanding how urban farming can be used in urban development. However, the rise of multifunctional urban agriculture is quick and theory and policy struggle to keep up with the developments (Sonnino, 2009).

However, urban agriculture has been argued to be a multifunctional tool that can incorporate significant and social properties as well as agricultural properties (Prove et al. 2016; Cohen and Reynolds, 2014). This is also mentioned by Feenstra (1997), arguing that citizens initiatives can revitalize neighbourhoods and enhance social equity and democracy in through education in healthy living and strengthening communities. Urban agriculture often combines environmental, economic and social aspects in one initiative. Prove et al. (2016) also stress the potential of the multifunctional features of urban agriculture adding that urban agriculture can improve communities' health through food and physical activity and integrate excluded social and cultural groups, while also being useful as a tool to manage stormwater, mediate the urban heat island effect and create more green spaces in cities (Prove et al., 2016).

However, a critical knowledge gap remains both in policy context and in academic research. As stated by Dixon et al. (2009), urban agriculture has received little attention from policymakers in developed countries. Even though, when given a broad perspective, urban agriculture has great potential as a local food source (Dixon et al., 2009). The multifunctional nature of urban agriculture presents challenges in policymaking and governance. According to Poulsen et al. (2017), the multifunctionality of urban farming should be integrated in policymaking to improve assessment of the potential influences on communities. They state that public authorities and investors are often focused on traditional economic development and that other benefits or functions can remain underrepresented (Poulsen et al., 2017).

Furthermore, Specht and Sanyé-Mengual (2017), found that policymakers often have misconceptions on the environmental, economic and social outputs of urban agriculture and remain reserved in trying out new policy constructions for urban farming. Their research stated that policymakers often expressed that they did not want to invest in urban agriculture because they thought the costs would be too high or that citizens would experience nuisance caused by the urban agriculture (Specht and Sanyé-Mengual, 2017). These assumptions, however, were largely untrue and they argued that inhabitants of the neighbourhoods often did want more green initiatives (Specht and Sanyé-Mengual (2017).

In addition to this, Cohen and Reynolds (2014), discuss in their research that conventional policy mechanisms lack the adaptiveness needed to deal with urban farming initiatives. They also mention that urban agriculture's diversity and multifunctionality causes it to be very difficult to handle through policies and regulations because the topic of urban agriculture is often divided into different sectors within the local authority. This, according to them creates a complicated governance structure that influences the evaluation of urban agriculture in policy (Cohen and Reynolds, 2014). Cohen and Reynolds (2014), thus argue that the multifunctionality and diversity of urban agriculture has to be addressed in the policymaking process. Lovell (2010) also supports this approach, stating that a

multifunctional lens for urban agriculture is necessary as more and more urban farms are adopting these new functions for a variety of different reasons such as financial or environmental ones. Prove et al. (2016) also emphasize the importance of a framework for multifunctional urban agriculture and add that research gap remains in urban agriculture governance and policymaking. This research gap was also revealed by the research of Specht and Sanyé-Mengual (2017) and Campbell and Rampholdt (2021) both concluding that basic knowledge of urban agriculture is lacking at a municipal level and that the perceptions that policymakers have of urban agriculture are not always correct.

To bring out the potential environmental, social and educational benefits of the multifunctional features of urban farming initiatives the integration of these features in policy has to be understood. Insights of practitioners provide much needed information and are of substantial importance in urban agriculture policymaking as the practitioners of multifunctional urban agriculture experience the effects of their added functions first-hand (Prove et al., 2016). This research thesis thus aims to answer the research question; *To what extent are the multifunctional features of urban agriculture integrated in Amsterdam's local policy?*

To answer this question;

1. What are the current local policies on urban agriculture in place?
2. What multifunctional features are integrated in urban agriculture policies?
3. What are initiatives perceptions on the integration of UA's multifunctionality in current food policy?
 - 3.1. What are the functions that the multifunctional features of the urban farming initiatives have?
 - 3.2. What benefits and disadvantages do the initiatives experience because of their multifunctional characteristics?
 - 3.3. How do the current institutional relations influence developments of multifunctional urban agriculture?

To understand the integration of multifunctionality in Amsterdam's policy the functions of urban agriculture have to be researched. Interviews were conducted with four local urban farming initiatives to shed light on the different functions and roles that urban farming initiatives have in the city of Amsterdam. The current policies were analysed and compared to the different functions and roles that arise out of the data. As the governance structure in place can significantly influence the development of the multifunctional urban farming initiatives (Cohen and Reynolds, 2013), the collaboration and communication characteristics between the initiatives and the municipality will also be researched to provide more insight into the full integration of multifunctional features of urban agriculture in policy.

The municipality of Amsterdam has been chosen as a geographical scope for this research thesis because of their integrated food policy. Amsterdam's food policy aims to provide an integrated approach to food and they try to promote and enable urban agriculture as much as possible (Wiskerke, 2014). Amsterdam also is home to a large number of urban agriculture initiatives. For these reasons Amsterdam has been chosen for analysis in this research thesis.

The results of this study can be valuable for policymaking on multifunctional urban agriculture in other locations as it critically assesses the integration of multifunctionality in policy. Outcomes of this research can thus be evaluated and used for development of future food policies. Furthermore, urban farming has large environmental and social benefits and when done efficiently can be profitable (Specht and Sanyé-Mengual, 2017). However, features of urban agriculture that manifest itself as other outputs than agricultural are often undervalued in policy (Vandermeulen et al., 2015; Poulsen et al., 2016). Moreover, policy makers often have misconceptions about the potential uses of urban agriculture (Specht and Sanyé-Mengual, 2017). This statement was also made by Campbell and Rampold (2021) arguing that policymakers in urban agriculture often lack basic knowledge of the urban farming initiatives and that this can also influence the development of multifunctional urban agriculture. It is important to understand the possible uses of multifunctional urban agriculture and their integration in policy to improve current policies to reflect and represent multifunctional urban agriculture more accurately.

Chapter 2: Theory

Introduction

As framing urban agriculture as a multifunctional tool is fairly new, concept definitions and theories have to explain the boundaries of this research thesis. This research thesis focusses on urban farming initiatives in Amsterdam and is based on the concepts of multifunctionality and urban agriculture governance. To answer the research question urban agricultural activities that are relevant have to be defined and current applicable policies have to be analysed.

2.1 Defining urban agriculture

Urban agriculture has been gaining attention in developed countries in recent years as a possible social and sustainable way of producing food (Lovell, 2010 and Specht and Sanyé-Mengual, 2017). Urban agriculture can take on many forms and operate in various different policy areas (Mansfield and Mendes 2012). Urban refers to the location in which the agricultural activities take place. As stated by Lawson, (2005), the urban refers to “the city, its suburbs, and the urban edge”. These areas in and around the city often have limited access to green space and are places where urban agriculture can manifest (Lawson, 2005). Still, agriculture in the city remains a broad concept. As described by Turner et al. (2011), urban agriculture encompasses a broad range of projects that differ from entrepreneurial urban agriculture to community farming initiatives.

Urban agriculture is usually described in theory as the production, processing and distribution of food locally within the boundaries of an (peri-) urban area (Lawson 2005, Turner et al., 2011, Cabannes and Marocchino, 2018). However, urban agriculture can encompass a variety of different activities and forms and definitions of urban agriculture vary throughout theory. As mentioned by Campbell and Rampholdt (2021), the definition of urban agriculture varies in theory dependent on space and place and field of study. Lovell (2010), also highlights this stating that urban agriculture can exist on many different scales and that the format can differ from city to city. Brodt et al. (2006) state that the variety of different goals and management styles of urban agriculture should be understood to ensure better design and development of the initiatives.

Piso et al. (2019) identify three different management roles in urban agriculture; *environmental stewards*, *production maximisers* and *networking entrepreneurs*. The different definitions refer to the focus that the practitioners take in their initiative and outline the variety of possible definitions of urban agriculture. Environmental stewards apply a main focus to their impact on the environment and prioritize sustainability over other goals (Piso et al., 2019). Production maximisers have a more distinct focus on optimizing the production process and network entrepreneurs focus on building relationships within the agricultural community (Piso et al., 2019). These different focusses are an example of how broad the range of possible structures is within urban agriculture and illustrate the multifunctionality that is inherently connected with urban agriculture. The roles that Piso et al. (2019) describe explain the importance of acknowledging the multifunctionality of urban agriculture. Because of the different roles the goals that the practitioners have are also different the tools and support needed from the municipality might differ. As stated by Piso et al. (2019) the range of motivations, values and expectations and understandings that the different owners of the initiatives have should be included in the institutional design for urban agriculture. The general descriptions present in today's policy might result in urban farming initiatives that do not work at their most effective or cannot pursue their goals because the regulatory system does not fit their structure.

2.3 Multifunctional Urban Agriculture

Urban agriculture is often used in developing countries help mitigate problems with food security (Duchemin et al. 2009). However, in developed countries it has often evolved into a concept that encompasses a lot more than urban agriculture. This development from strictly agriculture to added other activities has spiked a debate in theory as to whether urban agriculture should be seen through a multifunctional lens. This section discusses the ongoing debate on multifunctional urban agriculture and how it is perceived in theory.

Over the years urban agriculture has been defined by agricultural activities such as growing and producing food near or within cities (Lovell, 2010). However, urban agriculture's function within cities is most often not only producing food. Since urban farming initiatives have started adopting new functions on their properties the debate has not only been focussed on the added benefits of these functions but also on the definition of multifunctionality. As Lovell (2010) argues, adopting only the function of food production in urban agriculture nowadays can actually be difficult because of the steep property prices and competition from rural agriculture. Therefore, urban agriculture within cities often takes on additional roles from ecological to economic and cultural functions and does not have one function in today's cities (Lovell, 2010). The role of agriculture within cities differs from the role of agriculture in rural areas as the role of urban agriculture often encompasses much more than the production of food (de Rooij et al., 2016). Urban farming can serve as a connection between the rural areas and the city as it combines agricultural activities with social, educational or environmental activities for citizens (Lovell, 2010). Lovell (2010) states that because urban agriculture today is not only fulfilling an agricultural role in cities it should be viewed through a multifunctional framework.

Urban agriculture, according to Lovell (2010), should be viewed as multifunctional urban agriculture as it inherently also serves other functions in neighbourhoods. The practise of agriculture in cities leads to greater biodiversity and can bring recreation and visual improvement to neighbourhoods. All of these functions are not directly agricultural although they do result from the agricultural activities. Lovell (2010) argues that a framework for multifunctionality is needed so that these added activities can be given meaning to in policy.

However, multifunctional urban agriculture is also seen by some researchers as a simple way for the small-scale initiatives to keep operating when their agricultural activities do not support them well enough (De Rooij et al., 2013). As the Rooij et al. (2013) state multifunctional urban agriculture can offer more certainty to urban farming initiatives as it can help generate more income for example. Even so, urban agriculture is also has an influence on other parts of society. Duchemin et al. (2009) emphasize that urban agriculture should be seen as multifunctional as it provides different benefits than those that are strictly agricultural to neighbourhoods. Their research concluded that urban agriculture resulted in a social and educational environment that stimulated collective and individual development in economically disadvantaged populations (Duchemin et al., 2009). Orsini et al. (2020) also emphasized the multiple functions that urban agriculture has in stating that in addition to small improvements in food security, multifunctional urban agriculture can also be beneficial in promoting a reduced environmental footprint and improving social justice, ecology and biodiversity in a neighbourhood.

However, the exact definition of multifunctionality in urban agriculture remains open to debate. Multifunctional urban agriculture is described by Mazzocchi et al. (2020) as a dual concept as it has a commercial and non-commercial side. According to them the multifunctional features of the urban farming initiatives provide them with the ability to provide new sources of income (Mazzocchi et al. (2020). The other side of multifunctional urban agriculture exhibits itself in the production of non-commercial or non-commodity outputs. These outputs, according to Mazzocchi et al (2020) can for example shape the environment and influence the cultural system. They also argue that the definition given by the OECD (2001) explains the two different areas that multifunctional urban farming initiatives

operate in and is divided into two elements; “(i) the existence of multiple commodity and non-commodity outputs that are jointly produced by *agriculture*; and that (ii) some of the non-commodity outputs may exhibit the characteristics of externalities or public goods, such that markets for these goods function poorly or are non-existent. “ (OECD, 2001). This definition shows the dual nature of urban agriculture because they are often spaces that create output that is both commercial and non-commercial or even unintended by improving the social or educational standards in a neighbourhood (Mazzocchi et al., 2020).

Because of the broad nature of urban agriculture functions, it remains difficult to create an exact framework of the characteristics of multifunctional agriculture. The most common description of multifunctionality in theory on urban agriculture relates to the expansion to other activities than agricultural on urban farming initiatives. Still, urban farming initiatives nowadays often host a variety of different activities such as distribution of produced food and self-made products or environmental protection and improvement of health and biodiversity (Vandermeulen et al., 2015). For this reason classifying specific functions as part of multifunctional urban agriculture is difficult. For this research however, multifunctional urban agriculture is seen as the production of commodity and non-commodity outputs in addition to agricultural outputs on a property in an urban area.

Urban farming initiatives, as argued by Specht and Sanyé-Mengual (2017), can provide the surrounding community with social benefits as well as environmental and economic benefits. Social and environmental benefits such as improved participation and biodiversity are benefits for the community as a whole. Poulsen et al. (2017) describe multifunctional urban farming initiatives as tools to improve youth development, education and social connectedness. Duchemin et al.(2009) also describe these initiatives to have social benefits for the neighbourhood. He stated that urban farming initiatives can facilitate an improvement of sense of belonging and connectivity, not only within the initiative but also with the community around it.

However, not all of the influences of urban agriculture upon the environment are positive. As Orsini et al. (2020) mention, the development of urban agriculture can also lift property prices in neighbourhoods as it gentrifies the area. This was also mentioned by Poulsen et al. (2016) emphasizing that urban agriculture should not be viewed in only positive terms.

Still, this development of the surrounding environment cannot be explained in produce value or economic standards and are characterized as non-commodity goods. These outputs are often difficult to measure but are still relevant outputs in multifunctional urban agriculture. As mentioned by de Rooij et al. (2016), a combination of these outputs can more and more often be found on both small- and large-scale urban farming initiatives. Urban farmers are often adopting new functions to innovate or to help generate income for the initiative (de Rooij et al., 2016). In addition to the influence that additional functions of multifunctional urban agriculture can have on an initiative, allowing the farm to become more multifunctional, can also influence the non-commodity outputs as these added social, economic, environmental or educational functions often also influence the environment around the initiative (Vandermeulen et al., 2005) .

Because of the variety in output and activities urban farming initiatives often end up in different sectors of the local government. This can result in difficulties in policymaking and task division. As described by Cohen and Reynolds (2014), urban agriculture is often neglected in policy because it is dependent on multiple departments and policymakers. However, in recent years policy making has seen a small shift in focus regarding urban agriculture. As mentioned by Tornaghi (2017), urban farming initiatives have in recent years started to adopt more social roles in communities rather than a food production role. Because of this shift, urban farming initiatives have started to positively influence neighbourhoods and policymakers have started to notice (Tornaghi. 2017).

The multifunctional aspects of urban agriculture also attract a wide range of other stakeholders to the initiatives (Piso et al., 2019). The multifunctional features can be of interest for governmental institutions, environmental agencies, entrepreneurs and other stakeholders that see opportunities in multifunctional urban agriculture.

Stakeholders can be involved in a variety of different activities concerning the initiative ranging from the actual farming work to helping with financial support (Piso et al., 2019). An effective and clear institutional design is crucial when there are many stakeholders involved with different interests. As mentioned by Cohen and Reynolds, (2014), an institutional description and understanding of this variety of different goals is imperative to efficient and fair policymaking.

However, urban agriculture still lacks a steady platform in policy to receive attention (Cohen and Reynolds (2014). Vandermeulen et al. (2015) argue that as multifunctional urban agriculture becomes more popular the environmental and social benefits that multifunctional urban agriculture can have in sustainable development of urban areas should be recognized in policymaking before adequate decisions can be made. Poulsen et al. (2017) also strengthen this notation mentioning that, in recent years, urban farming projects have been gaining attention in society and policy and planning and that a multifunctional lens in policymaking is crucial as this allows urban agriculture practitioners to give appropriate value to the added functions that they have. Furthermore, the integration of a multifunctional lens in policy, according to Poulsen et al. (2017), would also allow researchers, stakeholders, authorities and citizens to understand urban agriculture better.

2.2 Policy in theory

As these multifunctional urban farming initiatives can serve multiple purposes and encompass a variety of different activities a clear institutional framework is of importance. In this section relevant theories and debates relating to the current developments in policy are discussed.

The integration of food belonging urban agriculture in municipal policies has developed gradually over the last years as feeding growing cities became more difficult (Sonnino, 2009). As Sonnino (2009) mentions, Amsterdam has been one of the first major cities to adopt a food strategy in their municipal plans and paved the way for other Dutch cities to also take on a more integrated approach. Urban agriculture is a part of this strategy and is greatly influenced by it. However, as argued Sonnino (2009) the cities are developing more quickly than research can keep up and although strategies have been made the scientific back up for these strategies is still underdeveloped. Campbell (2016) states that as the food system became part of the municipal agenda, the competence and knowledge to deal with cases like urban agriculture lagged behind. Councillors and civic officers often lack understanding of the characteristics of urban agriculture other than the agricultural ones and the projects were thus given a lower priority as municipal agendas grew and expanded (Campbell, 2016).

Urban food policies face additional challenges in the modern city. The recession forces municipalities to make choices and urban agriculture often takes this hit (Campbell, 2016). Benefits of urban agriculture are often hard to describe and the understanding of the specifics of urban agriculture is often not entirely complete within municipal authorities. As mentioned above, urban agricultures' possible uses can provide the city with environmental, social and economic benefits (Specht and Sanyé-Mengual, 2017). However, these are hard to categorize or frame properly. Lovell (2010) argues that the cultural and sustainable benefits that multifunctional urban agriculture can have remain underrepresented in policies, influencing the priority that urban agriculture gets in the planning system. Vandermeulen et al. (2005) also state that the influence that urban agriculture can have on making cities more sustainable is often neglected in theory. They add to this that the economic role that urban farming initiatives can have is also often undervalued as the potential for urban farming initiative to support agritourism is overlooked (Vandermeulen et al., 2005).

Cohen and Reynolds (2014) also emphasize in their research that urban agriculture policy can be vague and it can leave important functions underrepresented. These parts are often the aspects of the initiatives that are not easily expressed in economic revenue such as human, environmental and social development. However, as Poulsen et al. (2017) highlight, the activities that are present on the urban farming properties can improve social and human development that in turn can revitalise neighbourhoods (Poulsen et al, 2017). This however, as touched upon by Orsini et al., (2020) can also stimulate negative influences as successful urban agriculture can also gentrify areas and raise housing prices pushing people out of their living area. Furthermore, urban agriculture has been competing for space with housing for years (Cohen and Reynolds, 2014) and this is no difference for the municipality of Amsterdam as space is valuable and scarce within the city (Gemeente Amsterdam, 2011).

However, in order to get a complete and accurate understanding of the influence of urban agriculture the effects that the urban farming initiatives have on social, educational and environmental development in neighbourhoods should also be included in policy and a more inclusive multifunctional lens can account for these influences. Piso et al., (2019) add to the apparent gap between policy and theory stating that the relevance that urban agriculture can have in connecting social environments with positive ecological environments is not fully understood by policymakers. Prove et al., (2016) contribute an important note to this stating that as urban agriculture has gained popularity in such a short time the institutional frameworks that have been put into place have often been rushed resulting in an underappreciation for the social and economic potential that multifunctional urban agriculture can offer. Poulsen et al. (2017) also argue for a multifunctional lens towards urban agriculture in policy as this can

help the initiatives assess their impact on the community better. Furthermore such a lens would also allow the government to fully understand the effects that urban agriculture initiatives have on neighbourhoods (Poulsen et al., 2017).

A clear policy and institutional design are important for the initiatives as they are often still dependent on the municipality regarding certain aspects such as available space, financial aid and regulations. However, because of the focus on the agricultural food production function in policy the parts of the economic and social properties of multifunctional urban agriculture are often not fully accounted for (Poulsen et al., 2016). The projects are often governed and characterized by the municipality as short-term projects, with a long-term institutional framework being absent (Cohen and Reynolds, 2014). The disadvantaged position of urban agriculture in modern policies has been researched and acknowledged in recent years but urban agricultural policies remain general.

The municipality of Amsterdam recognizes themselves as having a highly integrated food policy, incorporating interconnecting parts of the food system in the policy (Gemeente Amsterdam, 2020b). However, as mentioned by Specht and Sanyé-Mengual (2017), the urban food policies often lack recognition of the environmental and social benefits of urban agriculture, often focussing on the economic value of the initiatives. In addition to these economic values urban agriculture can have many environmental and social benefits in improving the cities' air quality and improving participation in neighbourhoods (Specht and Sanyé-Mengual, 2017). These benefits are often neglected in food policy and thus create grey areas that can result in complex governance structures that negatively influence the justness of the institutional framework (Cohen and Reynolds, 2016).

Urban agriculture has gained more attention in policies as more and more urban farming initiatives are set up and more information is gathered about their influences on society. However, urban agriculture has often developed into multifunctional urban agriculture and policy and theory struggle to keep up with this quick development (Sonnino, 2019). Because of this policies and frameworks for urban agriculture remain vague and the value that the additional functions of urban agriculture get can be inaccurate (Cohen and Reynolds, 2014). Theory calls for the adoption of a multifunctional lens for urban agriculture in policy that accounts for the additional functions, that are not necessarily agricultural, that urban agriculture can have in today's cities. In addition to this good governance and communication are crucial in efficient policy making as the complex construction of the institutional system creates opportunities for inequalities (Cohen and Reynolds, 2014).

2.4 Urban Agriculture Governance

Urban farming can be a very helpful multifunctional tool in urban development. However, this very multifunctionality can also cause problems in policymaking. It is often unclear what effects urban farming can have on a neighbourhood and therefore policymaking becomes difficult. This is also concluded by, Prove et al. (2016), arguing that the effects of urban agriculture in a context-specific environment on a local level should be understood in order to use urban agriculture to stimulate positive development. If multifunctional urban agriculture is implemented properly, it can build communities, improve health through activities and education about healthy food and reconnect people to the agricultural sector and their food system (Prove et al., 2016).

Cohen and Reynolds (2014) also argue that collaborating in policy making on urban agriculture is essential to effective decision making and problem-solving. Furthermore, they state that urban agriculture calls for a more open and integrated governance approach where practitioners insights are taken into account. The multi-dimensional perspectives on urban farming could then develop into an initiative that is centered around more than just food production (Cohen and Reynolds, 2014). Lawson (2005) also stresses the importance of institutional design and a clear power division in urban farming. The multifunctional features of urban farming cause it to become a space for socialization, food production and urban ecology. According to her urban farming projects serve communities and environments best if the practitioners themselves have control of the programmers that they follow as the practitioners are the ones that know how the operation works (Lawson, 2005). Lovell (2010), however, states that urban farming should receive improved coordination and a clear framework for the multifunctional benefits if the initiatives were governed top-down.

However, the division of power within the urban farming scene can also become vague as urban farming practitioners often have different ideas on government interference in their projects. As Cohen and Reynolds (2014) argue, collaboration in urban agriculture is crucial in creating a space that is accessible to a broad range of citizens. They state that practitioners' insights in urban agriculture are essential in efficient policymaking (Cohen and Reynolds, 2014). Halloran and Magid (2013) also state the importance of a multi-stakeholder perspective in urban agriculture. They argue that policymaking should take on a holistic approach that includes the broad range of possible stakeholders and the functions that urban agriculture can now have in cities. Halloran and Magid (2013), argue that top-down management of urban agriculture can improve coordination, especially when it comes to available land for urban farming initiatives. However, they also emphasize that a broader more inclusive approach to urban agriculture should not mean that the decision makers can retract more power to them, but that a more inclusive framework will help form a clearer understanding of the involved stakeholders and effects of urban agriculture.

The importance of proper institutional design and policies is further stressed by Vandermeulen et al. (2016). They suggest that local policies greatly influence local farming choices and that the importance of this is often underestimated at policy level. However, local food and urban farms are increasingly gaining interest in urban policy environments since their social or environmental goals are often gaining relevance and interest in cities (Vandermeulen, 2016). The importance of the social benefits of urban agriculture is becoming more and more appreciated and are being incorporated in local food policies (Mazzocchi et al., 2020). However, as mentioned by Cohen and Reynolds (2014) urban farming also becomes threatened as municipal budgets get smaller. The actual benefits of urban farming for the people participating as well as the people living close by are not clear in policy and practice and therefore urban farming is often one of the concepts that receives little attention in times of economic strain (Cohen and Reynolds, 2014). They state that the value of urban agriculture in policy is not fully understood and this means that urban agriculture is one of the first sectors that loses financial aid in the form of for example subsidies when economic crises hit (Cohen and Reynolds, 2014).

Prove et al. (2016) also emphasize that urban agriculture is held back because it is often placed in policy fields relating to food production and agriculture, thereby often ignoring the social, economic and cultural sectors that urban agriculture influences. Urban agriculture, when treated as such can be a multifunctional tool in urban development. It can help stimulate healthy living environments by bringing more healthy food into the city and it can foster increased participation and democracy within food system in cities (Prove et al., 2016).

Though also acknowledging that urban farming has many environmental and social benefits, Specht et al. (2013) argue that urban farming still faces many challenges and has to be managed properly in order to be effective. Urban agriculture has developed into a broad concept of multifunctional urban agriculture very quickly and theory and policy struggle to keep up with the changes (Sonnino, 2019). Furthermore, many of the techniques are still unknown and will require new materials and further research, this however, requires proper management (Specht et al. 2013). Moreover, perceptions of policymakers are often not in line with the actual characteristics of urban farming as Specht and Sanyé-Mengual (2017) concluded in their analysis on the perceptions of policymakers in Barcelona and Berlin. Policymakers often had misconceptions about the economic, environmental and social benefits of urban agriculture and they concluded that these misconceptions are holding back the development of urban farms as policymakers refrained from considering urban agriculture as an option in urban development (Specht and Sanyé-Mengual, 2017). Policymakers stated in interviews that they for example thought urban farming was unwanted in the city because of the smell and that urban farming had no certain economic benefits. These misconceptions cause policymakers to refrain from seeing urban farming as possibly beneficial concept to the city and therefore policymaking remains vague and undefined (Specht and Sanyé-Mengual, 2017). Campbell and Rampold (2021) also strengthen this notion as they concluded in their research that policymakers often lack basic knowledge of the principles of urban agriculture and are thus often misinformed about the potential uses that urban agriculture has.

Lawson (2005) states that only the practitioners truly know about their own initiatives and that they should thus be able to control their program development and resources. She argues that they themselves are serving the community directly through their work at the urban farming initiatives and they thus experience the full effects of their work. Cohen and Reynolds (2014) argue that as policy leaves gaps in management and is unable to resolve problems initiatives might take control in to their own hands and create “new political spaces”. These political spaces can be collaborations with governmental institutions or stand on their own with community-based interest groups (Cohen and Reynolds, 2014). One of such spaces could be seen in the Association of Urban farming initiatives (Gemeente Amsterdam, 2020c). Multiple initiatives can collaborate in order to gain one single voice to the municipality. However, as urban agriculture attracts the attention of so many different stakeholders these spaces can become places that reflect uneven information distribution and unequal representation as power relations are not framed by the institutional framework (Cohen and Reynolds, 2014). Especially when policymakers often lack the basic knowledge to make appropriate decisions on multifunctional urban farming these unequal power relations can greatly influence to actual integration of multifunctional urban agriculture in policy (Campbell and Rampold, 2021).

As stated by Campbell (2016) urban agriculture encompasses more than just governmental interfering. The institutional framework should offer a representation of the values of urban agriculture and should not have influences on the development of initiatives that are not able to find fair representation (Cohen and Reynolds, 2014). According to Campbell (2016), urban agriculture politics could be improved by incorporating more actors in the decision-making process and adopting more governance approaches that include insights from different perspectives and networks (Campbell, 2016).

Cohen and Reynolds (2014) state that research and policymaking in urban farming should include insights from people that are not directly involved in the policymaking process, but are involved in urban farming, to broaden the perspective and align municipal goals with the goals of practitioners and users. Including these perspectives in this research could provide more insight into the effects of urban

agriculture on neighbourhoods and could help create an understanding of how and if the different multifunctional features of urban farming are represented in policy.

2.5 Conceptual framework

2.5.1 Framework for multifunctional urban agriculture

This research focussed on the integration of multifunctional features of urban agriculture in local policies. In order to get a clear understanding of this integration first the discussed functions and their associated activities have to be clarified. Four overarching functions; Economic, environmental, educational and social were extracted from theory and used as guidelines for the framework and definitions of multifunctional urban agriculture (Table 1).

Function	Examples	Theory
Educational	<ul style="list-style-type: none"> - Education on the food system and ecological processes through agricultural activities. - Educational Programmes - Improved connections between the city and rural landscapes through nearby agriculture 	Prove et al. (2016); Cohen and Reynolds (2014); Duchemin et al. (2009); Specht and Sanyé-Mengual (2017); Poulsen et al. (2017);
Environmental	<ul style="list-style-type: none"> - Water conservation - Green spaces in cities - Increased biodiversity - Lower transportation distances - Composting - Increasing environmental awareness - Reclaiming lots - Climate change adaptation 	Prove et al. (2016); Lovell, (2010); Cohen and Reynolds (2014); Duchemin et al. (2009); Orsini et al. (2020); Vandermeulen et al. (2015); Specht and Sanyé-Mengual (2017);
Social	<ul style="list-style-type: none"> - Improving access to healthy food - Including excluded social groups - Connecting communities through social activities - Improvement of interracial relationships - Improving job readiness 	Prove et al. (2016); Lovell, (2010); Cohen and Reynolds, (2014); Duchemin et al. (2009), Orsini et al. (2020); Specht and Sanyé-Mengual (2017); Poulsen et al. (2017)
Economic	<ul style="list-style-type: none"> - Selling produce on-sight - Restaurants and accommodations - Creation of jobs 	Lovell (2010); de Rooij et al. (2013); Cohen and Reynolds (2014); Duchemin et al. (2009); Vandermeulen et al. (2015); Specht and Sanyé-Mengual (2017); Mazzocchi et al. (2020)

Table 1, Missing functions in policy

Educational

Multifunctional urban agriculture in theory is often credited educational properties. Multifunctional urban farming initiatives often adopt an educational role when they provide citizens with educational programmes (Poulsen et al., 2017; Specht and Sanyé-Mengual, 2017; Prove et al., 2016). However, as stated by Duchemin et al. (2009), urban farming initiatives can also take on an educational role through the activities that are done on the farm. They argue that urban farming initiatives offer educational potential through the experiences of working in the agricultural gardens. Cohen and Reynolds (2014), also emphasize this role stating that multifunctional urban agriculture can teach people about the food system and healthy living through the experiences on the farm. According to them the urban farming initiatives can improve the connection between the city and the rural landscapes and can thus help people understand the agricultural system better. The educational role that urban agriculture can have is an important function for urban farming initiatives as more and more urban farming initiatives adopt educational activities on their farms. According to Prove et al. (2016) this development occurs because urban farming initiatives have to find better and more relevant reasons to remain operational as municipalities only offer limited financial resources. Adopting additional functions in for example

teaching people about their business and ecology can help legitimize their operation for the municipality (Prove et al., 2016).

Environmental

The environmental benefits that urban agriculture can have are widely researched in urban agriculture theory. Increased biodiversity, environmentally friendly composting and improved water conservation are possible elements of urban agriculture that can positively influence the environment (Lovell, 2010, Prove et al., 2016). Orsini et al. (2020) also discuss the potential environmental functions that multifunctional urban agriculture can have in increasing biodiversity and facilitating climate change adaptation. However, multifunctional urban agriculture can also negatively affect the environment as it can introduce new species to urban environments that do not fit into the urban ecological system. Furthermore, intensive urban agriculture in urban environments can also negatively influence biodiversity (Orsini et al., 2020). However, when urban agriculture is implemented properly and with the ecological system in mind urban farming initiatives can be places that foster both healthy environmental spaces, through the activities and land use, and increased environmental awareness (Prové et al., 2016). Positive environmental movements and trends can be strengthened by introducing people to urban agriculture and teaching them about environmental awareness and about the sustainable production and consumption of food (Cohen and Reynolds, 2014). Furthermore, Specht and Sanyé-Mengual (2017) found that urban agriculture can be more environmentally friendly than conventional agricultural approaches as it cuts out a large part of the transportation cycle and often regulates the water cycle more efficiently. The environmental functions of multifunctional urban agriculture and the activities that form these functions can positively influence the environment and the attitude that people have towards the environment (Lovell, 2010).

Social

Multifunctional urban farming initiatives often take on a strong social role within communities and neighbourhoods as they are meeting spaces for social activities (Duchemin et al. 2009). The social function that urban agriculture can have translates for example into improved connections within neighbourhoods through social activities and increased job readiness through learning opportunities amongst youth (Cohen and Reynolds, 2014). Additionally, according to Lovell (2010) multifunctional urban agriculture can also improve interracial relationships as it offers a relatively relaxed space to meet. Prove et al. (2016) also mention this development in stating that multifunctional urban agriculture can help excluded social groups integrate into society. Furthermore, Orsini et al. (2020) also contribute a social function to urban agriculture stating that it can improve social justice through community building and cultural exchanges. Poulsen et al., (2016) enforce this statement through their research explaining that the presence of an urban farming initiative can improve a neighbourhood's reputation and create a sense of hope. However, a critical notation has to be made when considering this. As mentioned before, this improvement of neighbourhoods can also negatively affect social justice in areas as the improvements might gentrify the area and force low-income families to relocate (Poulsen et al., 2016; Orsini et al., 2020). However, the social functions that urban agriculture can have are very relevant for social urban development and the influences of the social activities should be taken into account when considering multifunctional urban agriculture (Poulsen et al., 2016).

Economic

The economic function of urban agriculture presents itself in two separate functions. At first there is the economic function for society. Multifunctional urban agriculture can create jobs and stimulate economic development through the commercial activities that take place on the urban farming initiative (Cohen and Reynolds, 2014). However, urban farming initiatives nowadays also adopt new functions to fulfil another economic role. Lovell (2010) states that urban agriculture initiatives often are forced to adopt new commercial functions as the competition from conventional large-scale farms is too steep. Adopting

new functions such as opening a restaurant or direct marketing can increase the value of the products that the urban farming initiative initially produces (Vandermeulen et al., 2015). De Rooij et al. (2013) add a critical note to this statement concluding that multifunctional urban agriculture is sometimes seen as the prolonging of unprofitable agricultural businesses. However, economic value in multifunctional urban agriculture does not account for the whole output that multifunctional urban agriculture generates as it can also manifest in increased human and social capital (De Rooij et al., 2014). Furthermore, as Orsini et al. (2020) state, the economic function of the initiatives is strengthened as the urban farming initiatives can often profit from the proximity of the costumers and can therefore use, for example, on sight shops to sell their produce and improve their financial status. Mazzocchi et al. (2020) also mention this economic function stating that diversifying into more economic activities such as agricultural tourism can help the urban farming initiatives form a firmer financial base for their project.

These four functions have been given significant value and properties in theory and are associated with a variety of different activities and processes (Table 1). However, as can also be gathered through theory, not all of these functions are always integrated in local urban agriculture policies as there is a lack of an accurate multifunctional framework for urban agriculture (Poulsen et al., 2016). This sometimes causes them to get lost in translation through policy and they then lose their value and power to influence decisions (Lovell, 2010). Furthermore, as is also widely discussed in theory the institutional relations and thereto belonging collaboration and communication processes can also greatly influence the process of decision-making on multifunctional urban agriculture. Campbell and Rampold (2020) describe that misperceptions and a lack of basic knowledge and understanding of the potential value of multifunctional urban agriculture amongst policymakers can influence the development of multifunctional urban farming initiatives. Furthermore, Cohen and Reynolds (2014) argue that the collaboration and communication process between the municipality and the urban farming initiatives is a crucial step in achieving effective decision-making. They state that the urban farming initiatives are influenced by the actions of the municipality in for example helping with certain management issues or financial processes but that there now is a distinct disconnection between the urban farming initiatives and the planners and planning process (Cohen and Reynolds, 2014). Because of this significant influence that the collaboration and communication process can have on the urban farming initiatives in addition to the influence of the institutional framework the institutional relations and their influence on the decisions were also taken into account.

2.5.2 Conceptual model

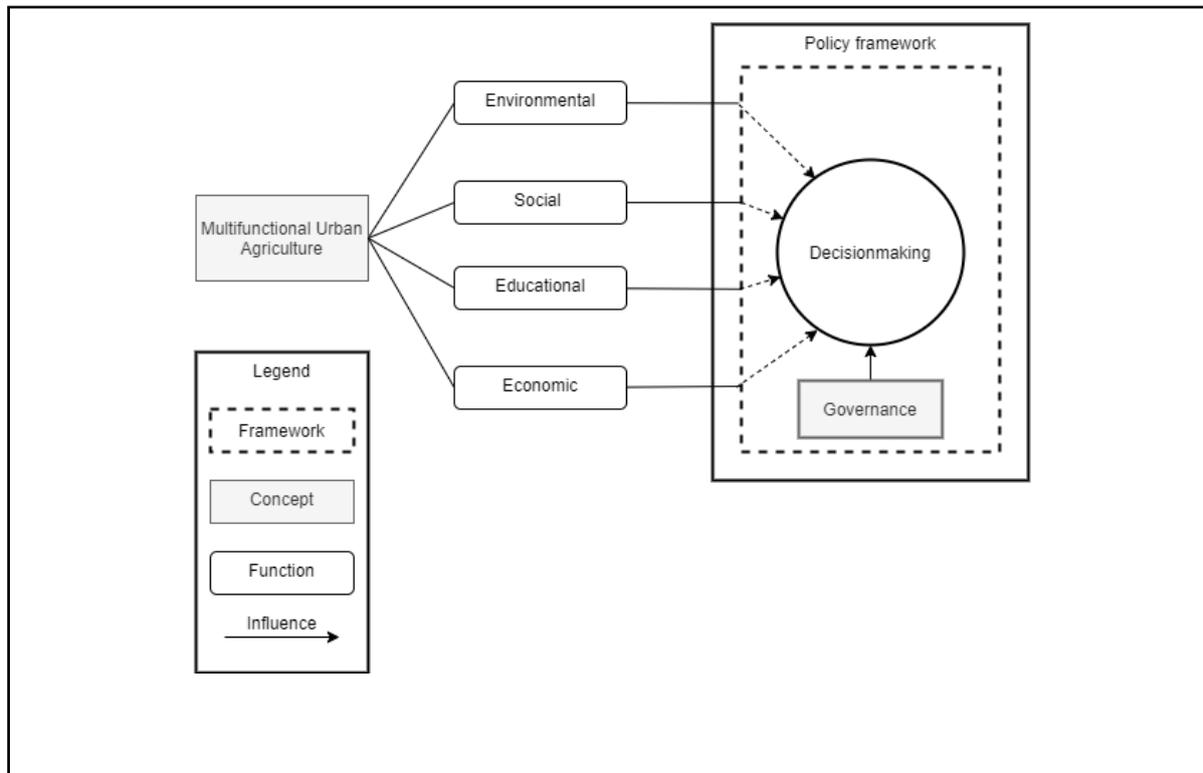


Figure 1, Conceptual model

As illustrated in the conceptual model (Figure 1) this research thesis identifies four different functions; Environmental, Social, Educational and Economic, that are linked to multifunctional urban agriculture in theory. These functions pass through the institutional framework and influence decision-making. However, as mentioned by Vandermeulen et al. (2005) and Lovell (2010) the lack of a multifunctional framework for urban agriculture in policy can leave some of these functions undervalued in policy. Lovell (2010) states that the environmental and social-cultural benefits that multifunctional urban agriculture can have are often neglected in theory. Vandermeulen et al. (2005) also conclude that the environmental and social properties of urban agriculture are underrepresented in policy and that the focus now lies on the production of food. Research into which of these functions and activities are represented in theory can offer insights into which parts are still missing or undervalued by policymakers. The latter, as Campbell and Rampold (2021) explain, is a result of a lack of basic knowledge of the functions of urban agriculture in policy. Yet the development of multifunctional urban agriculture relies on a fair representation of multifunctional urban agriculture both in policy and amongst policymakers (Campbell and Rampold).

The representation of multifunctional urban agriculture in policy is further influenced by the governance approaches within the institutional framework. Urban agriculture is often dependent on a large number of other sectors within the municipality and the priority that urban agriculture is given varies throughout these sectors (Cohen and Reynolds, 2014). However, multifunctional urban agriculture governance does not only include relations between the municipality and the urban farming initiatives but it also includes the influence of a broad range of stakeholders (Cohen and Reynolds, 2014). The municipality of Amsterdam names citizens initiatives, housing cooperation's, educational institutions and health institutions as the possible stakeholders in urban agriculture in Amsterdam (Gemeente Amsterdam, n.d.). As argued by Cohen and Reynolds (2014), the complexity of the involvement of this many stakeholders from outside and from within the municipality can have consequences for the justness of the decision-making process. The complex governance structures and relations that form from the

involvement of this many stakeholders can result in an institutional framework that is not based on fair judgement of cases (Cohen and Reynolds, 2014). This influence is also included in the research thesis as the integration of multifunctional features in policy documents does not necessarily mean that multifunctionality is integrated in the institutional framework that influences urban farming initiatives.

2.6 The Cases

As Reynolds and Cohen (2013) suggest, proper communication and collaboration between urban agriculture practitioners and authorities within urban agriculture is essential to reach effective problem solving. Insights from practitioners therefore are important to take into account. Prove et al., (2016) also stressed the importance of practitioners' insights as they open up a broad range of new ideas in urban agriculture. As this study aims to shed light on the integration of multifunctionality in current food policies it is imperative to include insights and perceptions of Urban farming initiatives in this research thesis.

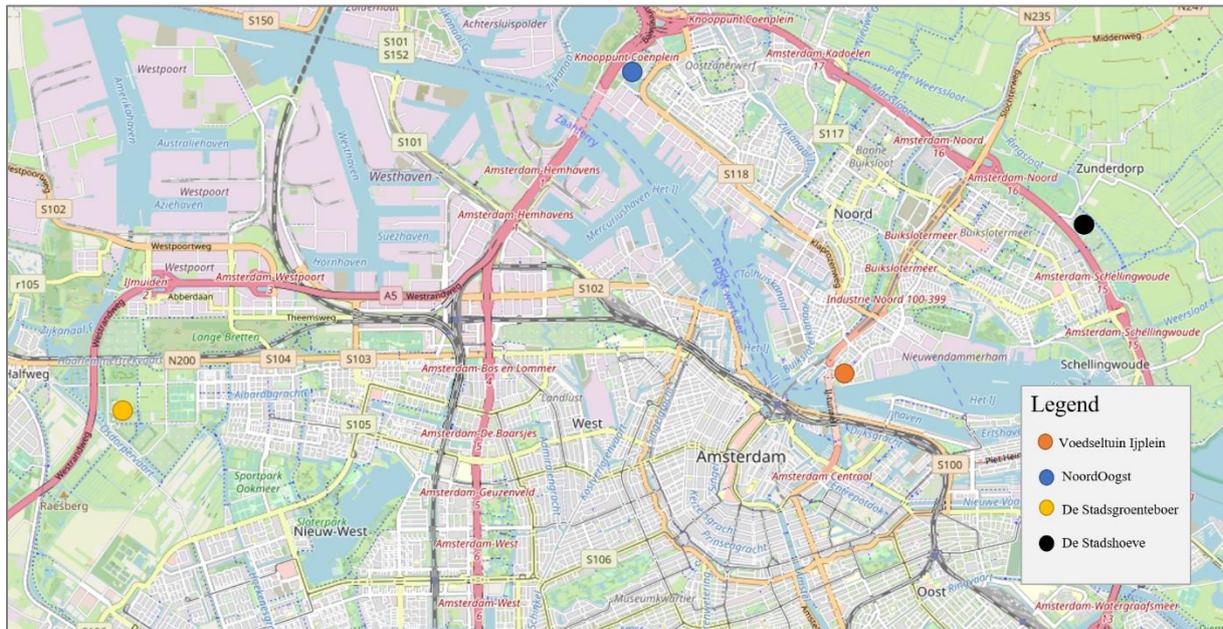


Figure 2, OpenStreetMap (2021), participating initiatives

Four active Urban farming initiatives in Amsterdam (figure 2) were interviewed to gain insight into their perspectives on the current local food policies. These initiatives have been chosen because of their focus on collaboration with the community and because their goals seem to be in line with the municipal goals of sustainable community building. All of the initiatives strive towards another goal next to producing food and are therefore multifunctional urban farming initiatives. An overview of the functions and activities of the initiatives can be found in the findings (Table 5).

Voedseltuin IJplein

Food garden IJplein is an Urban farming initiative in the neighbourhood IJplein in Amsterdam. The garden is completely run by volunteers and is accessible to everyone (Voedseltuin IJplein, n.d.). A board guides the processes in the Urban farming initiative. Food garden IJplein is supported by the municipality and several foundations (Voedseltuin IJplein, n.d.). In collaboration with these agents, they aim for multiple goals and organize a variety of activities (Jaarplan, 2020).

The garden collaborates with the Leefkringhuis, an institution that aids people through social work. The collaboration is aimed at connecting clients from the leefkringhuis to gardening and educate them about healthy foods (Jaarplan, 2020). Activities such as workshops, small markets and cooking lessons are organized to achieve this goal (Jaarplan, 2020).



(Figure 3, Voedseltuin IJplein, 2021)

The Urban farming initiative also collaborates with the school and the pre-schools in the neighbourhood so that the children can come to the garden to play and learn (Jaarplan, 2020).

Food garden IJplein is first and foremost an Urban farming initiative for the neighbourhood. Part of the produce is shared amongst everyone who participates but the majority of the produce is used in food packages for the food court in Amsterdam Noord and in a restaurant (Voedseltuin IJplein, n.d.). But aside from producing food they also strive to improve social cohesion in the neighbourhood IJplein. The neighbourhood has a very diverse population and relatively low socio-economic status compared to other neighbourhoods in the city of Amsterdam. The neighbourhood also has many flats with little green space (Allecijfers, 2020). Food garden IJplein provides gardening space in the Urban farming initiative to the families living in the nearby buildings without green space (Jaarplan, 2020).

De Stadshoeve

De Stadshoeve is located near the north eastern border of Amsterdam and was founded in 1861. The farm is managed and run within the family and is now operated by the mother and father, supported their children who help on the farm. The Stadshoeve aims to be biologically dynamic and they try to achieve this by growing flowers and herbs as well as other produce. This combination of different kinds of produce can increase the biodiversity of the area. The farm holds many different animals; cows, sheep, horses, bores and chickens. Vegetables and fruits are also grown on the farm and a part of the harvested produce is prepared and sold in the stable kitchen. The stable kitchen is a working kitchen next to the stables that is available to rent for parties or team building meetings and guests can prepare their own fresh food there. De Stadsboeren also offers a venue for weddings where guests are in between the



(Figure 4, Boerderij de Stadshoeve, 2021)

stables and the kitchen and are thus right next to the cows. The farm also has an apartment available for rent. Further activities that they offer are children's parties where children can play with and care for the animals and "lammetjes dagen". These are days on which people can visit the farm and play with the new-born lambs and can walk a scavenger hunt that is mapped out for them.

The Stadshoeve has an important connection to the city Amsterdam as they often organize days on which children going to school in Amsterdam get to work on the farm for a day. Furthermore, the day-care that is located on the property also offers children from Amsterdam the opportunity to experience a day on the farm.

Stadsgroenteboer

The Stadsgroenteboer is a community assisted agriculture initiative in west Amsterdam. the farm produces over 60 different kinds of vegetables that are sold in subscription packages to people in the in Amsterdam. The Stadsgroenteboer initiative was founded by 5 students after finishing their university and they wanted to see whether they could set up a farm that is centred around sustainable agriculture. The community farm is focussed on using bio-intensive techniques while also keeping the soil healthy and fertile (Stadsgroenteboer, 2021). People that have



(Figure 5, Stadsgroenteboer, 2021)

a subscription can either pick their own produce or order a box with fresh vegetables and with their subscription they sponsor the next season of vegetables. They aim to offer a change to the food system by producing and distributing food locally and strive to improve the quality of the soil with their techniques. In addition to the production and distribution of produce they also organize workshops, dinners and cooking nights for people that visit the farm. Harvested produce is also sold in a stand on the farm itself and used in the various workshops and activities. The Stadsgroenteboer strives to form a tight community surrounding vegetable consumption centred around sustainable farming.

Stadstuinderij NoordOogst

City garden Noordooft is an Urban farming initiative on the Noordooft property in Amsterdam North. The foundation Noordooft was founded in 2014 in collaboration with the municipality of Amsterdam and created the city farming project Noordooft (Noordooft, 2019). In 2016 the project signed ten-year leases for their working and gardening spaces. This guaranteed that the urban farming project can be carried through until 2026 (Noordooft, 2019). The initiative's main goal is to create social value in the community. A broad range of values are pursued in the urban farming project; economic, ecological, educational, recreative and social value (Noordooft, 2019). The initiative collaborates with various businesses, foundations and associations to manage achieve their goals and is a non-profit foundation. It is managed by four board members (Noordooft, 2019).



(Figure 6, Stadstuinderij Noordooft., n.d.)

People who visit the Urban farming initiative on the property can harvest their own produce and businesses can rent land and sell their produce in the commercial shops or restaurants (NoordOogst, n.d.). Various start-ups sell their services or produce on the property and in collaboration with the initiative they pursue a common goal of sustainability (Noordooft, 2019). The Urban farming initiative holds a broad range of different agriculture related activities. A small commercial pig farm is managed on the property as well as a commercial city vineyard. Children can play in a nature garden and the garden is managed through community supported agriculture (Stadstuinderij Noordooft, n.d.)

The different initiatives operating on the property also organize workshops and cultural activities to engage people in healthy living and in the community. Noordooft is a combination of commercial and non-profit initiatives centred around urban farming and promoting a healthy life style (NoordOogst, n.d.). This combination of facilities and characteristics causes the initiative to have many multifunctional aspects.

Chapter 3: Methodology

3.1 Research approach

This research thesis focusses on the integration of the multifunctional features of Urban farming initiatives on a local scale in Amsterdam. As elaborated upon in the research background Amsterdam has been chosen as geographical agent in this study because of their integrated approach to urban farming and the presence of active urban farming initiatives. The municipality of Amsterdam strives to accommodate urban farming as much as possible and aim to create sustainable living environments for their citizens (Gemeente Amsterdam, 2020a).

Data collection is aimed at providing answers to the research question: *To what extent are the multifunctional features of urban agriculture integrated in Amsterdam's local policy?* To answer this research question two data collection methods were combined.

Detailed research into the current policy documents of Amsterdam provided an insight into the descriptions and definitions used by the municipality. Descriptions of urban agriculture and the degree to which multifunctionality is attributed to urban agriculture in each policy was analysed (Appendix IV). The documents reflect the municipal plans for the near future of the city of Amsterdam (Gemeente Amsterdam, 2020a; Gemeente Amsterdam, 2020b; Gemeente Amsterdam 2020c) and focus on sustainability, circular systems and the food system. They also include visions for the development of urban agriculture in the municipality and are thus key factors in the institutional framework that the multifunctional urban farming initiatives operate in. In theory policy descriptions of multifunctional urban agriculture are deemed to be general and lacking proper descriptions for the multifunctional features (Lovell, 2010). The textual analysis of these policies in relation to the theory provided an understanding of the integration of multifunctional urban agriculture in current policies in Amsterdam.

In addition to the document analysis, in depth interviews were conducted with local urban farming initiatives in Amsterdam. This approach was taken because the practitioners' insights are crucial in this research as they may reveal the unnoticed multifunctional features of Urban farming initiatives. As Poulsen et al. (2017) argue, local authorities may focus on the perceived benefits of urban agriculture as a whole in economic development for the municipality and overlook the social and environmental benefits that Urban farming initiatives can bring. The practitioners of multifunctional urban agriculture experience first-hand what the effects of their initiative are for the surrounding area and the community. Interviews were therefore used to provide a better understanding of the functions of Urban farming initiatives and how well the multifunctional features are perceived to be integrated into the local policy of Amsterdam.

The perceived integration of the municipality can help shed light on the drawbacks and benefits that the current policy has for the multifunctional urban farming initiatives as the practitioners of the initiatives encounter these during the development of their multifunctional features. Interviews were conducted following a semi-structured guide to give participants the opportunity to tell information that might otherwise be missed but could nevertheless still be important for this research. This is important because the concepts of multifunctionality and governance encompass a broad range of aspects and a semi-structured interview approach allows data to be collected as complete as possible. Answers given by the respondents were based on concrete experiences and opinions and a semi-structured in-depth interview allows for the respondent to tell their story in detail. Achieving data saturation in this research is difficult as all of the multifunctional farming initiatives in Amsterdam would have to be interviewed to gain a complete understanding of their multifunctional features and the influence of the policies on them and the timeframe of this research does not allow for this. However, information given by the respondents can still illuminate current advantages and disadvantages of the policy as topics that continuously return

throughout the interviews can imply that these topics are important in the current climate of urban agriculture.

The interview guide provided the general structure of the interview and was used as a navigation guide throughout the interviews (Appendix II). Interviews partly focussed on existing functions of the initiative and processes of the municipality, and partly focussed on perceived possibilities for development and integration of multifunctional features for the initiatives and in policy (Appendix II).

Urban farming initiatives often have many stakeholders that have to collaborate in order to function properly. According to Cohen and Reynolds (2014), urban farming initiatives rely to varying degree on outside investments to finance their initiative because these stakeholders can help them get a more solid financial and political base. Health organizations, environmental agencies and social institutions often find common goals in urban agriculture and urban farming initiatives often cooperate with them to sustain their projects (Cohen and Reynolds, 2014). Because of the many stakeholders the management and decision making in urban farming can become complicated and sometimes unfair (Cohen and Reynolds, 2013). As the municipality aims to innovate urban agriculture initiatives in the upcoming years and has stated in strategies that they aim to do so while collaborating with the initiatives and associations (Gemeente Amsterdam, 2020c), including communication and collaboration with different stakeholders and groups in the research is important.

Collaboration and communication between the urban farming initiatives and the municipality specifically also cannot be ignored as theory (Cohen and Reynolds, 2013., Prove et al., 2016, Duchemin et al., 2009) argues urban agriculture governance is very complicated because of the involvement of many stakeholders and departments. This can leave power relations imbalanced as information might be shared unequally or initiatives might receive little representation. Proper collaboration and communication are therefore crucial. Because of the significant importance of collaboration and communication, these two processes were also discussed in the interviews to provide a better understanding of the actual integration of multifunctionality in urban agriculture policy.

	Role of the respondent	Focus multifunctionality	Examples
Initiative I	Project manager	Economic, environmental, educational, social	Restaurant, on-sight shop, recreational events, water filtration system
Initiative II	Board member and volunteer	Environmental, educational, social	Water conservation system, broadened hedges for biodiversity, educational programme with school, recreational events
Initiative III	Owner and farmer	Economic, educational, social	Rental spaces, educational programme with school, work along days, recreational events
Initiative IV	Owner and farmer	Economic, educational, social	On sight-shop, produce distribution points, workshops, recreational events

Table 2, overview of the respondents

Four urban farming initiatives in Amsterdam that have a primary agricultural function with additional other functions were chosen according to selective choosing and snowballing. Table 2 illustrates the roles of the respondents in the initiative and the multifunctional focusses that the urban farming initiatives have taken on in addition to the agricultural focus. The individual respondents were chosen according to the preferences of the initiatives as not all of the members of the initiatives were willing or could spare the time to participate in data collection. Only one respondent was interviewed from each initiative as the respondents all fulfilled a central role within the initiative. Furthermore, interviewing more than one person from each initiative proved to be difficult as the urban farming initiatives operated on a tight schedule within the timeframe of this research project and their workload did not allow for more practitioners to take time off for an interview. The participating urban farming initiatives were chosen following the selective and snowballing approach because they are often connected through the overarching associations and therefore often are connected through each other. Therefore this approach ensured the highest possibility of initiatives willing to participate. In depth interviews were fully

conducted online due to COVID-19 regulations and were recorded with consent of the participants (Appendix I).

Findings were transcribed and inductively coded using Atlas. An open coding system (Appendix III) was used to define important notations and quotes and compared and connected to the findings described in theory and to the local policy findings collected through the textual analysis. An overview of the research project is outlined in the research framework (Table 3).

Expected is that findings might provide missing functions and impacts of the multifunctional features of Urban farming initiatives and display areas that can be improved upon in future policy. The growing demand in theory for a multifunctional lens for urban agriculture (Lovell, 2010; Orsini et al, 2020; Poulsen et al., 2016; de Rooij et al., 2014) may indicate that non-commodity outputs such as improved social connections, environmental awareness and healthy consumption might not be taken into account in current local policies. As described in theory Piso et al. (2019) descriptions of current policies are often general and the expectation is that this is also true for Amsterdam's policy. The practitioners' insights are expected to reveal unnoticed or unvalued functions that the multifunctional urban agriculture initiatives have on the community. Furthermore, the complex governance structure is expected to have implications for initiatives that are unable to find representation.

3.2 Research Framework

Phase 1	Literature research	Creating a theoretical framework based on triangulation (Clifford et al., 2016). This study used academic literature and a textual analysis to build a framework and create a clear understanding of known topical research.
Phase 2	Documentary analysis	Creating a database and framework for the cases through document analysis (Appendix IV) to form a clear understanding of context and relevant policies by doing desk research (Clifford et al, 2016). Sub-questions 1 and 2 were mainly answered by these sources of information. Throughout the timeframe of this study all data was effectively managed by date and phase of research. The data was stored in multiple locations (online and offline) to ensure safe keeping and preservation of the data (Clifford et al., 2016).
Phase 3	Data Collection	The primary data collection method for this study were semi-structured interviews. Semi-structured interviews allow for an open conversation while the interviewer is still able to control the topics that should be discussed (Clifford et al., 2016). These interviews were held with four discussed Urban farming initiatives and responsible local food policymakers. The interviews were conducted online (due to covid-19 regulations) and were recorded (with permission) (Clifford et al., 2016).
Phase 4	Data analysis	The interviews were transcribed and inductively analysed using an open coding system in Atlas. This way all the important information retrieved from the interviews was incorporated into the research outcomes (Bernard, 2006).
Phase 5	Formulating conclusions	Combining the findings and deriving conclusions from them by connecting them to existing theories of a more integrated and open food policy and the multifunctionality of urban agriculture (Cohen and Reynolds, 2013; Prove et al. 2016; Duchemin et al., 2009; Lovell, 2010; Orsini et al, 2020; Poulsen et al., 2016; de Rooij et al., 2014)

Table 3, Research framework

3.3 Units of analysis

The spatial boundary of this study are the municipal boundaries of Amsterdam. This scope has been chosen because of the importance of the local actors in urban agriculture (Cohen and Reynolds, 2013., Prove et al., 2016, Duchemin et al., 2009). As mentioned by Poulsen et al. (2017), urban farming initiatives can have a great impact on the surrounding neighbourhood and can be an important tool in local urban development. A local scale is effective in this case because the multifunctional urban farming initiatives mostly have a local influence and are mostly influenced by local policies.

The theoretical scope of this thesis is based on a literature study and is centred around the concepts: urban agriculture, local urban agriculture policy, local urban agriculture governance and the multifunctionality of urban Agriculture. These concepts form the foundation of this thesis and are further elaborated upon in the theoretical framework.

As municipal policies and governmental and social relations change over time it is important to take note of the timeframe of this study. This research was conducted between 11-2020 and 07-2021, with qualitative data collection from 03-2021 until 05-2021. Findings of this study are based on in-depth interviews and data collected in this period and are defined by the specific time in which research was done.

3.4 Framework of data collection techniques

This study used three different research methods. Literature research was conducted to create a theoretical framework of existing literature of Urban farming initiatives, Food Policies, Urban Agriculture Governance and the Multifunctionality of Urban Agriculture. Documentary research was conducted to provide context on the cases and form a clear database (Clifford et al, 2016). Qualitative research provided information for an empirical database based upon semi-structured interviews. Data collection techniques are clarified in the framework for data collection techniques (Table 4).

RQ	Relevance	Method information retrieval	Documentation	Method of analysis
01-2021 until 06-2021				
What are current Local Policies in place?	Local policies dictate the environment in which the initiatives operate and are thus frameworks for the multifunctional features of urban farming initiatives	Documentary research of municipal websites, emails and relevant other articles and reports.	Personal drive and laptop by date.	Retrieved information was combined and analysed by comparing them to existing theories of, local policies, urban agriculture, governance and the multifunctionality of urban agriculture.
What are the current Institutional and Social relations between the stakeholders (municipality and the Urban farming initiatives)?	As insights from practitioners have proven important in theory (Cohen and Reynolds, 2013., Prove et al., 2016, Duchemin et al., 2009) the relation between stakeholders and how their power is divided also has to be taken into account			
03-2021 until 06-2021				
How does policy integrate the multifunctional elements of urban farming initiatives in local policies?	How are the multifunctional features of Urban farming initiatives integrated into policy is the main question in this thesis. Current policies therefore have to be researched.	Qualitative research: Semi-structured interviews with urban farming initiatives	Interviews were held online and recorded. Raw data was saved for the maximum of two months and viewed only by the researcher.	Retrieved information from the in-depth interviews was transcribed and analysed using an open coding system in Atlas (Appendix III). Policy documents were analysed using defining theories on the definition of multifunctional urban agriculture and its effects and compared to the findings of the qualitative data collection.
What are initiatives perceptions on influences of the current local food policies on Urban farming initiatives?	The practitioners' insights into the multifunctionality of Urban farming initiatives is a crucial part of this research because they can offer a more direct explanation of the features. Their perceptions on the policy help elaborate upon the workings of the current policies.			
How do local urban farming initiatives experience collaboration in urban agriculture?	As the municipality is integrating new policies for the upcoming years emphasizing collaboration it is important to include how these collaborations work in this research			
What strengths and weaknesses do local urban farming initiatives experience in the current local policy system?	The information gathered on the perceived benefits and disadvantages in current policy helps provide a better understanding of the integration of the multifunctionality of urban farming initiatives in current policy.			

Table 4, Data collection techniques

Chapter 4: Findings

In the following chapter the findings of this research are discussed. Firstly the findings of the textual research concerning the policy documents from the municipality relating to Urban Agriculture in Amsterdam. Secondly the findings resulting from the interviews are discussed.

4.1 Textual analysis local food policies

As mentioned in the theoretical background multifunctional urban agriculture has various definition and encompasses a broad range of different activities. Most commonly mentioned are the environmental, educational, social and economic functions of urban agriculture (Lovell, 2010; Orsini et al, 2020; Poulsen et al., 2016; de Rooij et al., 2014). The broad range of activities and functions cause difficulties in setting boundaries as to how multifunctional agriculture should be described. However, in this analysis definitions and allocated functions of urban agriculture described in policy were analysed. Which exact definitions are given and how do they compare to the definitions in theory and what functions does the municipality give urban agriculture and how do they differ from the functions discussed in research?

Urban agriculture is discussed in Amsterdam's local policy to varying extents in multiple different strategic visions. As stated by Wiskerke (2014), the municipality of Amsterdam is one of the few municipalities in the Netherlands that aims to take an integrated approach to urban agriculture. This means that, according to Wiskerke (2014), the municipality acknowledges the added value of urban agriculture and also acknowledges the ecological, economic, social and health impacts that urban agriculture can bring. By including urban agriculture in their future plans for the city of Amsterdam for green space, food and recreation Amsterdam brings urban agriculture into the policy agendas of these sectors (Gemeente Amsterdam a;b;c, 2020). The municipality of Amsterdam has written three main strategic visions about sustainability in the future city of Amsterdam. These strategic visions each focus on different scales and sectors within the city. An overview of the main themes, the definitions and the expected effects that the municipality describes is portrayed in table 5.

Policy analysis	Core theme	Urban agriculture definition	Expected effects
Structuurvisie	General future of the municipality	-	Nature, recreational
Groenvisie	Green spaces in Amsterdam until 2050	Small-scale forms of agriculture and food initiatives in and around the city of citizens and entrepreneurs. The food production is often combined with activities that contribute to for example knowledge exchange, awareness, health, social cohesion, spatial design and recreation	Ecological, environmental, social and recreational
Amsterdam Circulair	A circular economy for Amsterdam	Producing, harvesting and distributing of food within or near a city in combination with activities for other societal values such as health, education, participation and nature management.	Raising awareness, creating a circular food system, participation, climate adaptation
Strategie Volkstuinen	Implementation strategy community gardens	-	Social, educational, additional green spaces

Table 5, General findings textual analysis

The first and overarching strategic vision, *Structuurvisie Amsterdam 2040*, was written in 2011 and encompasses a broad range of themes such as; housing, infrastructure, water management, energy and green space (Gemeente Amsterdam, 2011). The Structuur visie is a strategic vision for the economic and sustainable development of Amsterdam for the next twenty years and it presents several scenarios for climate adaptation and innovation of the city centre (Gemeente Amsterdam, 2011). The second and third strategic visions were written in 2020 and more specifically focussed on green space for citizens and on becoming a Circulair city by 2050. An additional implementation strategy, *Implemenatie strategie beleid Volkstuinen*, discusses the implementation of the development strategie for Urban farming initiatives in detail (Gemeente Amsterdam, 2020c). Urban agriculture is a present theme in all of these documents and in the following sections definitions, descriptions and application are discussed.

Definitions of Urban agriculture in policy

As mentioned by Lovell (2010), urban agriculture is now almost always multifunctional as small-scale operations often have to adopt new functions to finance their project and urban agriculture has increasingly adopted educational and social functions. For this reason the definition of urban agriculture (or stadslandbouw in Dutch policy) was analysed in the policy documents as in policy this often already includes the multifunctional aspects of urban agriculture that are connected to it.

In the main strategic vision, the Structuurvisie, central processes and themes are discussed in relation to each other and a broad vision for the future design of the city of Amsterdam is conveyed (Gemeente Amsterdam, 2011). Urban agriculture is discussed in this policy document but is not given a definition. However, the strategic vision does present referential projects describing the Tuinen van West and the development of the Amster-en Diemerscheg (Gemeente Amsterdam, 2011). These projects are examples of Urban agriculture combined with various other activities that allow citizens to find a connection between the green spaces that surround Amsterdam and the city itself.

The second document that briefly discusses urban agriculture is the Groenvisie (Gemeente Amsterdam, 2020a). The Groenvisie discusses the development of green space over the next thirty years. The document focusses on the accessibility of green space for citizens and a healthy living environment in relation to increased pressure of population growth and climate change (Gemeente Amsterdam, 2020a). In this document a definition for urban agriculture is given in the added list of definitions; “*Small-scale forms of agriculture and food initiatives in and around the city of citizens and entrepreneurs. The food production is often combined with activities that contribute to for example knowledge exchange, awareness, health, social cohesion, spatial design and recreation.*” (Gemeente Amsterdam, 2020a, p.75). Urban agriculture is further discussed as an activity where citizens can plant crops in city gardens or fallow properties. The stakeholders that are involved in this development are described as citizens initiatives, housing cooperation’s, educational institutions and health institutions (Gemeente Amsterdam, n.d.).

The third relevant policy document is the visie Circulair (Gemeente Amsterdam, 2020b). The Visie Circulair, focussed on circular creating a circular economy, explains the ambitions on the circular food chain of the municipality of Amsterdam. The strategy is centred around three fundamental valuable chains; food and environmental resource chains, consumption resource chains and the built environment (Gemeente Amsterdam, 2020b). In the strategic vision Amsterdam Circulair the definition given for urban agriculture is; *producing, harvesting and distributing of food within or near a city in combination with activities for other societal values such as health, education, participation and nature management.* (Gemeente Amsterdam, 2020b, p. 36).

Descriptions and application of Urban Agriculture in policy

In theory urban agriculture is often given a broad range of different functionalities. However, as Specht and Sanyé-Mengual (2017) argue, policymakers’ perceptions of the environmental, educational, social and economic properties of multifunctional urban agriculture can be misguided. In theory however, the

effects that urban agriculture can have on social, economic, environmental and educational development have been noticed and these additional functions might provide a clearer framework for urban agriculture (Lovell, 2010). Benefits that urban agriculture can have range from raising environmental awareness, to education and improved social ties (Prove et al., 2016). Descriptions of such effects of urban agriculture in policy were analysed and provided a better understanding of the framework that the municipality uses for urban agriculture. Furthermore, statements on collaboration and communication were also taken into account in the analysis and compared to existing explanations of the advantages and disadvantages of general policies in theory (Cohen and Reynolds, 2014).

Urban agriculture is described with various attributes and uses in the different policy documents. In the main strategic vision of the municipality of urban agriculture is described to contribute to the development of nature and recreation (Gemeente Amsterdam, 2011). The municipality notes in the policy document that urban agriculture is used in the “Groene Scheggen”, green spaces that surround the city of Amsterdam, to form a connection between these green spaces and the city and to create spaces of recreation for citizens. The implementation and stimulation of urban agriculture is used in the main strategy to form a stronger connection between agriculture and the city.

In the visie Circulair, urban agriculture is seen as a tool to shorten the food chain and stay true to current food consumption patterns. As healthy and sustainable food consumption are main goals in the visie Circulair, the municipality aims to use urban agriculture to raise awareness on healthy and sustainably living. The municipality strives to create improved infrastructure in the municipality to make better use of produce excess and urban agriculture plays an important part in this process. By improving the infrastructure and processing network that main food chains use for their residual resources the urban farming initiatives would be able to use excess resources and residual produce for composting and other agricultural activities (Gemeente Amsterdam, 2020). The municipality of Amsterdam mentions several other potential benefits of urban agriculture in the visie Circulair, stating that supporting the initiatives can lead to healthier lifestyles and more overall awareness and connection to the local food system (Gemeente Amsterdam, 2020b). The rise in environmental awareness in the population of the city of Amsterdam and the national and international climate goals are central themes throughout all of the strategies and in visie Circulair urban agriculture is defined as a multifunctional tool to increase appreciation for the food system and participation in communities, lessen food waste and adapt to climate change (Gemeente Amsterdam, 2020b). Important stakeholders acknowledged in the visie Circulair are educational institutions for research into produce, diet change, behavioural change and innovations in food.

Lastly, Amsterdam's Groenvisie describes that urban agriculture should be researched and innovated in the next thirty years. Research should specifically focus on urban rooftop agriculture, movable landscapes and forests for the production of wood and the storage of CO₂ emission gasses (Gemeente Amsterdam, 2020a). Furthermore, a brief description of the history of Urban farming initiatives is given in the Groenvisie stating that while urban agriculture was used to help strengthen food supplies during world war 1 now, they have ecological, environmental, social and recreational value (Gemeente Amsterdam, 2020a). The most pressing problem described in the Groenvisie threatening urban agriculture in Amsterdam is the available space within the city. Useable land for agricultural activities in Amsterdam is scarce and the municipality states as one of their goals for 2020-2050 that they aim to investigate the usage of both private and public spaces to implement new forms of urban agriculture such as the vertical gardens mentioned above (Gemeente Amsterdam, 2020a).

The implementation strategy

A more specific and in-depth explanation of the strategy is described in the strategic vision for Urban farming initiatives published in 2020. This document is an implementation strategy for the aims that are described in the other strategic visions (Gemeente Amsterdam, 2020c). The municipality states in the implementation strategy that urban agriculture is to be innovated in the next fifteen years. The strategy

focuses on the conservation of existing initiatives and the expansion of the range of activities present at the urban farming initiatives (Gemeente Amsterdam, 2020c).

No new land will be allocated to urban farming for the upcoming years. Instead, existing initiatives will be given a long-term assurance of their space and their user value has to improve for a broader range of citizens of Amsterdam (Gemeente Amsterdam 2020c). This innovation is meant to broaden the activities that take place on the Urban farming initiatives' properties and thus make the land more multifunctional (Gemeente Amsterdam, 2020c).

The multifunctional nature of urban farming can also be identified in the implementation strategy as the municipality states that urban farming initiatives serve as learning spaces and contribute to social development in the city and thereby putting the focus on the social role of urban agriculture initiatives rather than the role in food production (Gemeente Amsterdam, 2020c).

According to the implementation strategy the Urban farming initiatives can function as open social spaces for people who do not have such a green space or have little contact with others in the neighbourhood. The municipality of Amsterdam aims to use these urban agriculture initiatives as a tool to create more public green spaces that are used by more citizens of the city (Gemeente Amsterdam, 2020c). The goal of the implementation strategy to have modernised the urban farming initiatives by 2050 meaning that they would become accessible to everyone in addition to having a strong connection with the neighbourhood that it is located in by expanding the range of activities that are possible on the property (Gemeente Amsterdam, 2020c). To achieve this goal the strategy calls for more research on the initiatives specifically in to how these spaces can become more public and how they can be integrated in the ecological structure of the city. The most pressing problem stems from the scarcity of space mentioned above. To ensure that these Urban farming initiatives are able to stay in the city the municipality states that they aim to secure their position for a longer time and that they want to focus on the social and societal value of the initiatives (Gemeente Amsterdam, 2020c).

Furthermore, the implementation strategy states that the municipality offers a framework in which the initiatives should operate that leaves room for personal interpretation of the initiatives (Gemeente Amsterdam, 2020). The municipality of Amsterdam has approximately 40 Urban farming initiatives in and around the city that, according to the implementation strategy, should be protected and should take on a broader range of activities to open the spaces up to more people (Gemeente Amsterdam, 2020). The societal aspects, such as education, health, environmental awareness and sustainability should become more vital in these initiatives to ensure that more people can use these spaces (Gemeente Amsterdam, 2020).

The implementation strategy further explains how these innovations and developments are meant to be completed. The municipality has a "Development Perspective" for each initiative and states that the Urban farming initiatives can implement these perspectives however they want (Gemeente Amsterdam, 2020c). Each Urban farming initiative has to develop a long-term vision within the first two years of implementation of the municipal implementation strategy published in 2020. They can be assisted by the municipality and the Association of Urban farming initiatives, a bond that connects different owners of Urban farming initiatives and allows them to communicate as one (Gemeente Amsterdam, 2020). This bond is the primary communication vessel between most individual Urban farming initiatives and the municipality and encompasses 26 initiatives in the area of Amsterdam (Gemeente Amsterdam, 2020).

This approach to the implementation of the strategy calls for communication and collaboration between the initiatives and the municipality (Gemeente Amsterdam, 2020c). According to the implementation strategy the municipality lays a central focus on that management of the initiatives is done first and foremost by the initiatives themselves although the municipality can assist with this dependent on what each party involved is able to offer (Gemeente Amsterdam, 2020a). However, a notation is made in the

document that this potential assistance should stay within the general principles and rules that are applicable to every Urban farming initiative as the management concessions and appointments made might otherwise become too complicated (Gemeente Amsterdam, 2020a).

The implementation strategy focusses on three main areas of focus; *Policy, Finance and Management* (Gemeente Amsterdam, 2020c).

As mentioned before, each Urban farming initiative has to develop a strategic vision for the upcoming 10-15 years in accordance with the municipal plans. These plans include diversifying and opening up that Urban farming initiative areas so that more people will make use of the existing areas (Gemeente Amsterdam, 2020c). The municipality aims to achieve this goal by ordering the Urban farming initiatives to make parts of their garden open to public all year round, a maximum of 20 percent of the property would be open access and the gardens themselves can draw up plans on how to incorporate these public spaces and connections in their garden (Gemeente Groningen, 2020c). The “new” public spaces are managed and owned by the municipality and serve as public green spaces or biking and walking corridors through the city. The opening of the Urban farming initiatives to a wider range of citizens and possible functions is expected to increase the social and educational role that the urban farming initiatives can have in neighbourhoods. This development and innovation are meant to make urban agriculture initiatives more multifunctional and thus more accessible to groups of citizens that do not use the urban agriculture initiatives very often at this moment (Gemeente Amsterdam, 2020a). Whether an Urban farming initiative is expected to develop these public spaces depends on the strategic vision that each Urban farming initiative develops according to the implementation strategy and on the wishes of the municipality itself and should be managed in the upcoming 10 to 15 years (Gemeente Amsterdam, 2020c).

Financial effects and multifunctional features

The societal benefits serve as the focus of investment in the implementation strategy. To finance the new development in 2021 the municipality and initiatives rely on additional income from the initiatives themselves, public investments and investments by the initiatives themselves (Gemeente Amsterdam, 2020c). The public and private investments are expected to increase because of these new plans but the municipality states that this is justified because of the common benefits that the Urban farming initiatives bring to the city with their newly developed multifunctional features (Gemeente Amsterdam, 2020). The Urban farming initiatives are included in the investment plan for the vision green 2020-2050 mentioned above. This means that funding meant for the development of the green city could also be used to develop or improve these Urban farming initiatives as they are seen as spaces that have great societal value for the city of Amsterdam (Gemeente Amsterdam, 2020c).

Role of the municipality

The role of the municipality in the implementation strategy is described as one that directs and oversees. The land that is used for Urban farming initiatives is mostly property of the municipality, but the buildings and gardens are property of the initiatives themselves and therefore, the initiatives pay rent for land use through rental agreements with the municipality (Gemeente Amsterdam, 2020c). According to the strategy the initiatives should primarily be managed by themselves but the municipality does offer help if more knowledge or manpower is needed dependent on the agreement that is made between the municipality and initiative (Gemeente Amsterdam, 2020c). As mentioned above, the municipality has defined “development perspectives” for the Urban farming initiatives that serve as a framework in which the initiatives should work. The municipality of Amsterdam takes on the role of director and supporter in the process of innovation and the leading role in facilitating the organisation of investments (Gemeente Amsterdam, 2020c). Municipal investments can be attributed because the implementation strategy is a component of the vision green for the whole city and investments will be done to implement the whole Vision Green for the city of Amsterdam (Amsterdam, 2020c).

Cooperation and Collaboration

To achieve these goals with urban agriculture as a tool the municipality relies on cooperation with multiple actors in both businesses and the population of the city. As the circular strategy states, the municipality takes responsibility for the spatial planning of the city but is also a major stakeholder in many developments and thus only takes on the role of director in the development of the multifunctional features of urban agriculture in Amsterdam (Gemeente Amsterdam, 2020b). Cooperation with the different additional stakeholders is essential in achieving the municipal goals. The urban farming initiatives themselves are mostly responsible for this diversification but they are supported by the municipality. The initiatives are encouraged to find funding and possible partners themselves and they have to develop their own plan within the municipal framework themselves. If the goals and ambitions in increasing accessibility and multifunctionality are not met and there is no proof that this is because of external factors after ten years the urban farming initiative are at risk of their lease not being extended (Gemeente Amsterdam, 2020c). Thus proper relations and cooperation between the different agriculture initiatives and the municipality becomes increasingly important as they have to meet the municipal goals in diversifying their properties.

4.2 Findings in-depth interviews

For the purposes of this research thesis four urban farming initiatives operating in Amsterdam were interviewed in the next section findings from these interviews are discussed. The urban farming initiatives all performed other activities next to their primary function of urban agriculture on their properties. This combination of primary agricultural activities and additional other activities was chosen in line with theory on multifunctional urban agriculture. The interviews focussed on three main themes that are important to this research; I. The multifunctional features of the urban farming initiatives and their effects; II. The perceptions of the urban farming practitioners of the local policies; III. The collaboration and communication with the municipality regarding multifunctional urban agriculture. The initiatives have been given numbers to guarantee their privacy.

4.2.1 Multifunctionality of urban agriculture

As mentioned by Lovell (2010) multifunctional urban agriculture is more than producing food and additional activities can serve multiple functions within cities. Multifunctional urban agriculture nowadays is often used to generate extra income for the small-scale urban farming initiatives (Lovell, 2010). However the additional activities can also serve other functions such as increasing inclusiveness in the neighbourhood through activities on the property of the initiative (Duchemin, 2009). The additional activities were discussed in the interviews focussing on two main aspects; which activities are present on the property now and; what functions do these activities serve for the initiative itself and the surrounding area.

Firstly the multifunctional features present on the properties of the urban farming initiatives were discussed. All of the urban farming initiatives used a combination of agricultural activities and additional activities as shown in table 6.

Initiative	Activities	Function for initiative	Function for users	
I	Agricultural	Vegetable garden Wine yard Food forest Livestock farming (Pigs)	Production of vegetables Production of grapes Production of fruit Supply of fertilizer and meat	Food subscriptions Consumption Consumption / Recreation - / Consumption
	Other	Restaurant Hotel Butterfly garden Smokery Day-care Activity coach Water filtration Nature play yard Workshops Coffee roaster Vegan cheesemaker	Commercial Commercial Environmental Commercial Commercial Bridge to healthy food Environmental Reputation / Environmental Educational Commercial Commercial	Consumption Recreation Recreation / Environmental Consumption Education Health Environmental Recreation / Environmental Educational Consumption Consumption
II	Agricultural	Vegetable garden Composting	Production of vegetables (Commercial and non-Commercial) Supply of fertilizer	Consumption / Recreation -
	Other	Water conservation Events Play yard Excursions	Environmental Reputation Reputation Educational	Environmental Recreation Recreation Educational

		Bee keeping Insect conservation	Environmental Environmental	Environmental Environmental
III	Agricultural	Livestock farming (Cows, sheep, chickens)	Production of meat and dairy Supply of fertilizer	Consumption
	Other	Day-care Bed and Breakfast Events Lessons Rental spaces	Commercial Commercial Commercial Educational Commercial	Education Recreation Recreation Educational Recreation
IV	Agricultural	Vegetable garden	Production of vegetables	Consumption
	Other	Events Rental spaces Shop Lectures Workshops	Reputation Commercial Commercial Educational Educational	Recreation Recreation Consumption Educational Educational / Recreational

Table 6, Activities and functions of the respondent's initiatives

As illustrated in table 6. the initiatives used a variety of different ways to sustain themselves. As can be concluded from the findings the most reoccurring function of the additional features for most of the urban farming initiatives was to generate extra income. All but one of the initiatives performed other activities such as renting out spaces (Initiative III and IV) or selling additional products (Initiative I and III) to help finance other parts of the urban farming initiative. Initiative III stated that they thought that commercial small-scale farmers nowadays were forced to take on other functions next to agricultural ones as they would otherwise have difficulties keeping the initiative financed properly. These added functions fulfil a mostly commercial role to initiative.

However, to the neighbourhood that they are situated in they can also fulfil recreational or educational roles. Both initiative I and III facilitated day-care on their property and while it generated income for themselves it also served an educational function for the people that are using it as the initiatives both used their urban farming initiative to illustrate to children what agriculture looks like.

The initiatives all felt like the educational role is an important one in today's environment. Through either workshops, lectures or working day events the initiatives aim to educate people about their own initiative and about the food system and about the environment. One of the initiatives stated:

*"I think it is valuable for people that live in the city, they are so disconnected from the food system"-
Initiative VI*

The respondent felt that people living in the city of Amsterdam had been disconnected from the food system and did not know where their food came from. They aimed to try to educate people through organizing workshops and letting them help work in the garden. All of the respondents recalled this importance of the educational role to people that live in the city and mentioned the importance of educating people about agriculture as the climate changes. The urban farming initiatives felt that their presence in the community had a positive effect on the people living there as they increased awareness about the environment or because they helped people feel included in the community.

Next to the educational benefits that the initiatives experienced the social benefits were also mentioned by all of the respondents. Initiative I strived to make healthy food more available for low-income families through partly financed vegetable subscriptions to the vegetable garden and aimed to create save spaces for children to learn and play. The urban farming initiatives could also fulfil a social role in helping people that do not have a daily job, for example because of retirement, find activities and social contact in urban farming. Furthermore, respondent II explained that their urban farming initiative offered private small gardens to people living in flats nearby. This group largely consisted of people with a migration background that did not feel comfortable working in the garden

with the whole community but did want to grow their own crops. After they were given their own part in the garden, they automatically started connecting with other people that visited the garden.

Next to the educational and social benefits all of the initiatives expressed the importance of their environmental function in the neighbourhood. Raising environmental awareness and teaching people about sustainable living and agriculture was in each initiative's agenda. Initiative I created a water filtration system and conducted research into the water quality nearby the property. They found that during the years that they have been there the soil and water composition has improved because of their filtration system and land use. The respondent of initiative IV stated that they aim to use their own education in agriculture to produce as sustainably as possible and to expand other people's knowledge about the possibilities in agriculture.

However, according to two of the respondents the municipality was having difficulties in valuing these educational, social and environmental benefits to the neighbourhood and community. Though they did think that the municipality knows that these added functions have benefits, there is no economic value that can be given to certain social, environmental and educational benefits that the urban farming initiatives bring forth. The following quotes illustrate this concern;

They [the municipality] do not look at the societal value that is missing and they see in urban planning that it [the property] can yield a lot more money" – Initiative I

"The municipality is now doing quite well in promoting urban agriculture and they acknowledge that it is there, but not yet in financial means" Initiative II

The initiatives felt like the multifunctional aspects of urban agriculture that they possessed did benefit them but also the surrounding community. However, all of the urban farming initiatives operate within the institutional framework that is given to them by the municipality. This aspect of multifunctional urban agriculture was discussed next in the interviews.

4.2.2 Perceptions of local food policies

Local policies have a crucial influence on the development of multifunctional urban agriculture. As stated by Poulsen et al. (2017), urban agriculture can serve a variety of functions and these functions should be integrated in the policy framework so that multifunctional urban agriculture can be used to improve neighbourhoods. Prove et al. (2016) emphasize the importance of including the urban farming practitioners' insights in this process as they are the ones that know what effects the multifunctional features have on both the initiative and the community. Because of this, the perception that respondents have of the current policies were discussed in the interviews.

The most recurring theme amongst all of the initiatives was that the municipality did acknowledge their existence and importance. The respondents all felt that the municipality had changed its course over the last couple of years and that they now at least understood that multifunctional urban farming can have benefits for both the community and the municipality. Initiative II experienced that individuals from the municipality liked their initiative and that they appreciated their cause;

- > *“The municipality has, on policy level, portfolio holders, policy councilors and the municipality’s brokers all have a lot of appreciation for us, they also like to visit” - Initiative II*

However, though all of the initiatives explained that they thought that the municipality knew their added value existed, they did not always feel like the municipality acted upon this value. The respondents explained that they did not think the municipality was given multifunctional urban agriculture the priority that it deserves according to the values and opinions of the municipality. Initiative IV explained that they thought that they did add something positive to the community because of their educational programmers and sustainable production and they did think that the municipality knew this. However, they did not think that the municipality gave helped them sufficiently to develop these functions and they explained that there should be a central contact person within the municipality to help with aspects such as permits and questions that they might have. They stated that it could now be very difficult to find out what actions they were supposed to take and how they were supposed to do these actions.

Two of the initiatives explained that keeping a good reputation with the municipality is crucial for future development of the urban farming initiative. The time that they are allowed to operate on the property and the aid that they receive from the municipality could be stopped if they did not maintain this connection with the municipality;

- “You need the municipality and you should not stand in their way because then you will soon be gone” - Initiative II*

The initiatives all stated the importance of the municipality as they are all dependent on them regarding aspects such as usable space and permits. When asked what their opinions were on the current policy on urban agriculture initiative, I explained that though the value was mentioned in the policies it was not explicit enough and that this in practise would lead to problems;

- “ In the actual spaces in practise the forces and opinions from different visions come together. Then you can see that there are a lot of conflicting things” - initiative I*

Initiative II also mentioned problems in practise stating that the current regulations that are in place now are not always taken very seriously and that councillors would sometimes choose to ignore parts of the regulations in cases. Initiative I explained that the plans that the municipality now has are not indisputable and that when it comes down to the implementation certain inquiries could not be fitted into this. This left the plans, according to them, open to interpretation by the councillors. The respondents gave very different statements regarding the perceived position that the municipality took when considering their initiative and most of the initiatives felt that the position of the municipality was

not dependent on the policy itself, as this was already mostly in favour of multifunctional urban agriculture, but on individuals at the municipality. The collaboration and communication between the initiatives and the municipality was discussed next in the interviews.

4.2.3 Institutional design and relations

As frameworks for multifunctional urban agriculture are often very general and there remain to be misconceptions of multifunctional urban agriculture in policy (Campbell and Rampold, 2020) collaboration and communication between the municipality and the urban farming initiatives is crucial to efficient policymaking (Cohen and Reynolds, 2014). Furthermore, the complex governance structures impose even greater importance upon efficient and fair collaboration and communication (Cohen and Reynolds, 2014). The experiences of urban farming practitioners can offer insights into this process. The process of collaboration and communication between the urban farming initiatives and the municipality was discussed in the interviews to determine if these processes bring any disadvantages to the development of multifunctional urban farming initiatives.

The initiatives are very dependent on efficient communication and collaboration with the municipality because the future of their urban farm is often dependent on leases and permits from the municipality. Initiative II described this dependency as follows;

“If the municipality were to give permission to a property developer to build then we would be out” – Initiative II

Two of the initiatives mentioned that, because of this, they tried to either keep positive relations with them or they tried to avoid them. However, the most striking theme that kept returning in each of the interviews was that each time that the initiatives would have to communicate or collaborate with the municipality the individual that they would speak to would be the most important factor in the progression of their case. All of the initiatives mentioned that the progress and success of a new project was dependent on who they were communicating with within the municipality. Initiative III described this as follows;

“As soon as we want to do something new then it becomes difficult, then you really have to search and pull and then you have to find people that are enthusiastic about your plans” – Initiative III

The respondent (III) mentioned that there was no problem with the usual projects because they knew who to speak to with the municipality. However, with new projects respondents' experiences with the municipality were heavily dependent on the individuals that were working their case. Initiative I stated the following;

The municipality is both your friend and your enemy. Luckily the people there are recognizable, there are certain people that will represent certain projects” Initiative I

The respondent explained that they were dependent on the priorities of the individuals that were working at the municipality and their relations with them. The respondent of initiative II stated that they had good relations with councillors and that they would help them with projects and conservation of their property. They described their relations with the municipality as crucial because they are the owners of the property and the people that were working for the municipality would visit regularly. Initiative IV explained that they have a quite different experience in communicating with the municipality. They stated that they experienced broken promises and low priorities in the handling of their cases for development of the urban farming initiative. The priorities that their urban farming initiative was given would vary which each person that was their contact within the municipality. The respondent (IV) stated that;

“ it is difficult to know the priority of the municipality. There are a lot of different persons and you probably just have to get the right one” – Initiative IV

The experiences that the respondent had with the municipality were very different and the initiatives all experienced different communication and collaboration with the municipality. The difference can both

be found between the initiatives but often also between different projects within one initiative. One of the initiatives mentioned that some projects that they wanted to develop could go smoothly as they could find the right people quickly but other projects would take a lot longer as they could not find the right people to handle the case at the municipality. Most of the initiatives felt that a central contact person would solve the communication issues. initiative IV commented that they thought this would help because the urban farming initiatives would know who to speak to if they had questions about permits or practical issues. They stated that there is a need for one contact person and improved communication not only because of the questions that the initiatives might have but also because the municipality might then understand the initiatives better.

Throughout the interviews certain themes became clear. All of the urban farming initiatives felt that their presence in the community had positive effects on the surrounding area. They explained that their social, environmental and educational activities were contributing to varying degrees to a better community. According to them, the municipality knows that the multifunctional features of urban agriculture can bring educational, social and environmental benefits. However, the policy regarding multifunctional urban agriculture leaves priorities unclear and their success therefore is mostly dependent on their relations with different councillors. The initiatives had varying experiences when communicating or collaborating with the municipality and would experience shifts in priorities dependent on who was handling their project. Most of the initiatives felt that if the municipality would choose one person within the municipality as a central contact person that these problems in communication would be less.

Chapter 5: Discussion

This research was focussed on the multifunctional features and their integration in local policies. The research consisted of a textual analysis of the current policies on urban agriculture in Amsterdam and in-depth interviews. Four urban farming initiatives were interviewed about their multifunctional features, their perception of the local policies and their communication and collaboration with the municipality. In the following section the findings are discussed in relation to the theoretical framework. The discussion of the findings is divided into two sections; I. Multifunctionality in urban agriculture, II. The collaboration and communication process

5.1 Multifunctionality in urban agriculture

5.1.1. Multifunctional urban agriculture in policy

Multifunctionality of urban agriculture in theory is heavily debated. According to Lovell (2010), urban agriculture in policy should not only be described as production alone. Instead, the multifunctional features should also be accounted for as these additional features can help improve communities through for example increased biodiversity and improved recreational opportunities. The municipality describes urban agriculture in two of their policy documents and defines it slightly different in both documents. The definition that is given in both documents touches upon the multifunctionality of urban agriculture in acknowledging that it has activities that contribute to health, education social cohesion, recreation and the environment. The description of multifunctional urban agriculture given by the municipality is in line with theory on multifunctional urban agriculture as it illustrates the social, environmental and educational functions that it can have. This definition including the multifunctional features was also given by Poulsen et al. (2017) highlighting that urban farming initiatives nowadays can range from small scale community farms to entrepreneurial farms and that these different structures contribute to a variety of different forms of development ranging from social to educational and environmental. the municipality names these different structures in management in their definitions and recalls the effects that the initiatives have on their surroundings. Throughout all of the documents a variety of possible effects of urban agriculture are named. Urban agriculture in the policy documents is mostly seen as a tool to improve social standards and offer more recreational options to citizens. This social influence of urban agriculture is also described by Duchemin (2009) stating that urban agriculture can help people that have been excluded from society re-enter it. The educational role is also described both in theory and in policy. Orsini et al. (2020) highlight this educational role in stating that food production is not the only focus of urban agriculture anymore and that aesthetic, recreational and educational functions are also important aspects in modern day multifunctional urban agriculture. The municipality describes this educational role in policy as a societal value that the urban farming initiatives might improve. Furthermore, as described by Lovell (2010), urban agriculture can also contribute to environmental improvements through developments such as improvement of environmental awareness and biodiversity. The municipality of Amsterdam mainly focusses on the increased environmental awareness that the urban farming initiatives are expected to bring and includes urban agriculture in their plans in making Amsterdam a circular system. Urban agriculture is used here to absorb residual resource flows from the city of Amsterdam in order to make Amsterdam's food system more circular. This use of urban agriculture for municipalities to develop a circular system for the city as a whole has not been widely researched yet. Though Lovell (2010) does state that multifunctional urban agriculture can also have ecological benefits in for example nutrient cycling and increasing biodiversity. Renting and van der Ploeg (2010) also describe this environmental relevance in stating that the urban farming initiatives

that also pursue environmental goals do not only produce crops but also produce healthy and sustainable environments on a larger scale.

In addition to this variation in theory and practise the municipality of Amsterdam does not describe the economic role that urban agriculture can have for both the municipality and the initiatives. As mentioned by Lovell (2010) small scale urban farming initiatives often need additional sources of income to help them stay in business. The economic value that the additional activities can have for the urban farming initiatives is not accounted for in policy. Furthermore, the economic value that urban agriculture can have for the municipality has also been neglected in theory. This economic role is described by Poulsen et al. (2017) emphasizing that urban agriculture can offer job opportunities to for example older youth that have been excluded from society. However, as mentioned by Orsini et al. (2017) the influence on economic development that urban farming initiatives can have is dependent upon the scale of the initiative and the exact influence that urban farming initiatives can have on economic value is yet to be fully described in theory.

The municipality fully defines multifunctional urban agriculture in policy. However, regarding the effects that multifunctional urban agriculture can have on both the environment and the initiative itself there are some gaps in theory and policy. The wider influence of multifunctional urban agriculture on themes such as a circular city and the economy remain to be researched and the municipality of Amsterdam does not acknowledge the economic functions that urban agriculture can have for both the municipality and the initiatives themselves.

5.1.2 Multifunctional urban agriculture in practise; Practitioner's insights

The effects that the multifunctional features of urban agriculture have on their environment are first and foremost noticed by the practitioners on the urban farming initiatives (Prove et al., 2016). The respondents of the interviews cited a broad range of activities that were present on their properties and connected various functions to them. All of these functions have been given to multifunctional urban agriculture to some extent in theory. In the next section the practitioners' insights are discussed in relation to theories used in this research and the analysed policy documents of the municipality of Amsterdam.

Educational

The most prevalent role that emerged throughout the interviews is the educational role that the initiatives perceived to have. All of the initiatives stated that at least a part of their urban farming initiative was focussed on educating people about their initiative and sustainable farming. The educational benefits that urban agriculture can have are mentioned throughout theory (Cohen and Reynolds, 2014; Poulsen et al., 2017; Specht and Sanyé-Mengual, 2017). However, little research has been done as to what these educational effects are specifically (Duchemin et al., 2009). Duchemin et al. (2009) argued that the educational properties of multifunctional urban agriculture arise because the urban farming initiatives are often open learning spaces where people can work while learning. This way of educating people was also used by the initiatives as they organized days where people could work together or excursions where children could learn how the urban farm works. The educational role of urban agriculture has also been mentioned in one of the policy documents that the municipality has published on urban agriculture (Gemeente Amsterdam, 2020c). The municipality stated that the educational role that urban farming initiatives have is expected to grow because of the diversification in functions. There is, however, no research into the joint development of multifunctional features and its influence on the educational role of multifunctional urban agriculture.

Environmental

The environmental role that multifunctional urban agriculture can have in neighbourhoods has been researched more extensively. De Rooij et al. argue that multifunctional urban farming allows for more low intensity farming. This argument is supported by the findings of the analysis as one of the respondents mentioned that small scale farms are now almost always multifunctional farms to some extent. Moreover, the environmental benefits that urban agriculture can have on its environment are also mentioned throughout theory. Vandermeulen et al. (2006) stress the importance of the environmental benefits arguing that multifunctional urban agriculture can play an important part in protecting rural landscapes and increasing biodiversity. They also argue that these benefits should be included in the framework for urban agriculture on a local level as this would positively influence the development of other local initiatives in the urban environment. The activities benefiting the environment that are present throughout theory were also mentioned during the interviews. The initiatives themselves organize activities that contribute to these environmental benefits for the surrounding area. The urban farming initiatives aimed to produce sustainably and tried to close their nutrient cycle as much as possible. Furthermore, the initiatives also focussed on sustainable water usage and two of them did so by storing and filtering their own water supply. The municipalities description of the role of urban agriculture for the environment is relatively in line with both theory and practise. They aim to use urban farming initiatives to try to close the nutrient cycle in the food system of Amsterdam. Furthermore, the application that multifunctional urban agriculture can indirectly have on the environment by raising environmental awareness has also been discussed in theory and practise as well as in the policy documents on urban agriculture. Lovell (2010) states that urban agriculture can increase environmental awareness by reconnecting people to agricultural activities. The municipality also describes that they aim to use urban agriculture as a stimulant for environmental awareness (Gemeente Amsterdam, 2020a; b) and the initiatives also aim to help people understand the importance of sustainable living through helping them reconnect to the food system. The importance and presence of the environmental benefits of multifunctional urban agriculture has been included in theory, practise and policy. However, as also stated by Renting and van der Ploeg (2010) the environmental benefits of multifunctional urban agriculture are not clearly defined yet and future research into these effects should help form a clearer image of the impact of multifunctional urban agriculture on environmental awareness and other functions influencing the environment.

Social

The social influence that multifunctional features of urban agriculture can have on neighbourhoods has also been widely researched and proven (Prove et al. 2016; Cohen and Reynolds, 2014); Duchemin et al., 2009, explained that multifunctional urban agriculture can help strengthen social ties within communities. These social benefits have also been noticed by both the respondents of the urban farming initiatives as the municipality of Amsterdam. The respondents stated that people that they felt that their presence helped people feel included in the community through the social and educational activities. The social benefits to improved social connectivity in neighbourhoods is also emphasized by Orsini et al. (2020), mentioning that multifunctional urban agriculture can lead to a greater attachment to neighbourhoods and can improve social ties. The municipality of Amsterdam states in most of the policies that urban agriculture has social benefits for the municipality and its citizens (Gemeente Amsterdam 2020a ;c ; Gemeente Amsterdam, 2011). They state that urban agriculture can fulfil social roles in in communities but are mostly focussed on the recreational role that urban agriculture can fulfil for the citizens of Amsterdam (Gemeente Amsterdam 2020a; c; Gemeente Amsterdam, 2011). The general descriptions of the effects of the multifunctional features in policy can not sufficiently account for all of the influences that multifunctional urban agriculture can have on communities (Piso et al., 2019). The influence that the urban farming initiatives might have on their surroundings regarding social developments should be researched and taken into account in policymaking.

Economic

The economic function that multifunctional urban agriculture can have has a less pronounced outline in the municipal documents. However, as mentioned above, the economic value that a function can have to an urban farming initiative can crucial financial support for small-scale operations (Lovell, 2010). This importance was also stressed by the initiatives as one of them stated that small scale farms were often forced to adopt new commercial functions to help keep their agricultural business economically viable. Three of the farms used additional economic activities such as renting out spaces or selling additional products to help finance their urban farming initiative. One of the respondents explained that they did not need these extra functions because their initiative could generate enough income through subsidies and outside investments. The municipality however, fails to acknowledge the significance of the economic value that the multifunctional features can have for the initiatives and the municipality in policy. The recreational value that urban agriculture is given might portray some of the economic value to the municipality itself as these business can generate income (Gemeente Amsterdam 2011; Gemeente Amsterdam, 2020a ;c). However, as argued by Cohen and Reynolds (2014), the economic value of urban agriculture can also be expressed in job creation, a model for profitable food production and helping people get equipped for the working field. Including this value in policy making would create a more complete understanding of the influence that an urban farming initiative can have and the practitioners' insights form crucial additional input for policymaking (Duchemin et al., 2009).\

Though the municipality has given value to certain parts of the multifunctional features of urban agriculture in policy there are still large gaps that leave features unvalued or even unnoticed. The educational and environmental role of multifunctional urban agriculture described in policy closely resemble theories reviewed and findings found in this research. However, social and economic values that urban agriculture can have remain very general or absent. The social value of urban agriculture is described in policy as the opportunity for people to have more meeting spaces. The social influence that the urban farming initiatives can have on citizens and communities is not further described though in theory it is clear that multifunctional urban agriculture can impact communities through strengthened social ties and networks and that it can help people reconnect to society through social interactions (Duchemin et al., 2009). This effect on social connections and on individuals was also mentioned by the respondents and remains a crucial part of the goals of the initiatives. In addition to the social influence, the economic influence of the multifunctional features on the individual initiatives seems to be neglected in policy though theory and practise define the importance of the economic features as crucial for the existence of small-scale urban farming operations (Lovell, 2010). A complete understanding of these features and influences is crucial in effective decision making as in the current policies valuable functions remain underestimated or undefined.

5.2 Collaboration and communication

As Cohen and Reynolds (2014) argue, collaboration and communication in urban agriculture between the municipality and the urban farming practitioners is crucial as the practitioners offer insights that the municipality might not have a clear understanding of. Furthermore, when there are many stakeholders involved and the values of the properties of multifunctional urban agriculture are unclear, unfair distributions of power and uneven representations may influence the development of urban farming initiatives that are not able to find fair representation for their qualities. The collaboration and communication process were taken into account in this research as it ultimately influences the actual integration of the multifunctional features in urban agriculture (Cohen and Reynolds, 2014). As repeatedly argued in theory a multifunctional framework in policy for urban agriculture is necessary in attributing appropriate priorities and values to the different forms and functions of the initiatives (Cohen and Reynolds, 2014; Poulsen et al., 2017; Lovell, 2010; Specht and Sanyé-Mengual, 2017). The absence of a clear framework in policy lets councillors apply their own priorities and values to the cases they are handling and if their knowledge of the urban farming projects is not complete or fair this can result in an unjust decision-making process (Campbell and Rampold, 2021). The respondents all explained that the experiences when collaborating or communicating with the municipality differed through time and per project. This variation in aid or information given by the municipality was, according to them, dependent on which individual was handling their case and what their personal priorities and values were. The respondents stated that the progress of their projects and development of their new functions was mostly dependent on their relations with specific councillors. One of the initiatives stated that they experienced changes throughout projects, emphasizing that as an urban farming initiative it was important to find the right person to help in order to successfully communicate or collaborate. One of the respondents also mentioned that they sought help in investments and political relevance elsewhere. This development was also noticed by Cohen and Reynolds (2014) and creates a complex and large system of involved stakeholders that influence the urban agriculture initiatives. The uneven distribution of knowledge in this case results in an uneven representation for the urban farming initiatives (Cohen and Reynolds, 2014). As can be concluded from the findings of this research thesis, when an urban farming initiative is not able to find the right people that support their initiative or is not able to form favourable connections within the municipality the development of their initiative, and thereby the multifunctional features, is significantly impacted in terms of help they receive in progressing their initiative. An inaccurate framework for multifunctional urban agriculture and the complex governance system influence the complete integration of multifunctional urban agriculture in Amsterdam's policy. The initiatives stated that they felt the need for a central contact person within the municipality to help with questions and certain permits and subsidies. Such a connection could also help strengthen ties between the municipality and the urban farming initiatives and according to Cohen and Reynolds (2014), improved connections through communication and collaboration are an essential in gaining a more complete understanding of the priorities and values that both the municipality and the urban farming initiatives have.

Chapter 6: Conclusion and Reflection

6.1 Conclusion

The central question for this research thesis was; *To what extent are the multifunctional features of urban agriculture integrated in Amsterdam's local policies?*

Findings of this research conclude that the multifunctional features of urban agriculture in Amsterdam have been integrated in policy to some extent. However, critical gaps remain when the social and economic relevance of the additional functions are discussed in policy. The social values discussed in theory and mentioned by the respondents are not fully accounted for in policy.

However, these multifunctional features of urban agriculture can have a positive influence on communities and citizens. Throughout theory and data collection the social benefits that citizens and communities can experience manifest themselves in strengthened community ties and improved opportunities for excluded people to meet other individuals. These values are difficult to define and the municipality has not defined the actual social value that multifunctional urban agriculture can bring. Furthermore, the immense importance of the economic functions that the urban farming initiatives have also receives little to no value in the policies of the municipality of Amsterdam. For small-scale urban farming initiatives the commercial activities that they have adopted can be of great significance in keeping the initiative economically viable. This relevance is noticed in theory and has been supported by the findings of this research and including the value of the economic functions in policymaking is essential for effective policymaking.

The economic and social values that are underrepresented in policy cause an unjust representation for multifunctional urban agriculture. The findings of this research pose the general or absent descriptions of the multifunctional features of urban agriculture as a threat to fair and efficient policymaking. Data indicates that the guidance and collaboration from the municipality that the urban farming initiatives receive to expand functions is dependent on the relations that urban farming initiatives have formed with other stakeholders and the municipality. Initiatives felt that they should keep optimal connections with the municipality and if they did not sustain these then their development would be at risk. For some initiatives this meant that they started looking elsewhere to find support and this development, though it offers initiatives the opportunity to keep financially viable or politically relevant, creates an even more complex institutional system. In this complex governance system the urban farming initiatives that cannot find representation can experience significantly less support from the municipality, even though their functions might still have powerful positive benefits for citizens. Though the policy and a part of the individuals that operate within the current institutional framework give the multifunctional features of urban agriculture value to some degree, the priority that it is given in practise is still dependent on the relations that are kept between stakeholders instead of on the value that the urban farming initiative might have. Both in theory and by the data the importance of good communication is emphasized, especially when new stakeholders are also included. A central contact person appointed by the municipality to help ease collaboration and communication would help mitigate some of the problems that arise because of the different priorities and values within the municipality.

However, a more fitting solution would be to expand upon the knowledge of the effects of multifunctional agriculture in both theory and practise. The findings of this research support general theory in that a complete multifunctional framework for urban agriculture is necessary to provide clear values to the potential economic, social, environmental and educational benefits of urban agriculture. These categories can provide a more inclusive framework for multifunctional urban agriculture as it offers more room for additional uses of urban agriculture. More specifically the economic, social and environmental functions that multifunctional urban agriculture can have for different environments as these are now sometimes undervalued in the institutional framework for urban agriculture. Additional

research into the effects of multifunctional urban agriculture on both the urban farming initiatives themselves and the municipality as a whole can provide a better understanding of the broad range of influences that multifunctional agriculture can have and could help form this multifunctional framework that allows for all of the multifunctional features to be represented. This additional research would in turn benefit practice as decisions in policymaking can be based on more accurate values and priorities and urban farming initiatives would be able to form a clearer understanding of their own influences on the environment. Furthermore, the social and economic values that multifunctional urban agriculture has for the initiative itself and the community should be included in the plans to develop multifunctional urban agriculture further in Amsterdam. These values are crucial in understanding the working of multifunctional urban agriculture and a legitimate framework in policy should thus also include these aspects.

However, this recommendation does not mean that legislation becomes tighter or more rules would be instigated to enforce the development of these values as both the initiatives and the municipality do not wish that the municipality acts as a strict enforcer. Both theory and practice prove that urban agriculture governance is not benefited by very precise rules and regulations. However, a clear indication of all of the effects of the additional features of multifunctional urban agriculture would give both the urban farming initiatives and the municipality a stronger and more accurate framework to base decisions upon.

6.2 Reflection

When reviewing this research certain reflective statements should be taken into account. Only four initiatives were interviewed for the purposes of this research thesis. This low response rate is mostly due to the willingness to participate during the prevalence of the challenging COVID-19 virus and the regulations that came with it. However, the use of qualitative research methods has allowed for a more in-depth analysis of the cases and future research may be conducted to investigate the relevance of the findings on a larger scale. Furthermore, for a more complete recollection of the effects of multifunctional urban agriculture the municipality should also be included in data analysis. However, the scope and timeframe of this research project did not allow for an analysis that included these insights. Additional research should help form a better understanding of the influence of the multifunctional features for both the municipality and multifunctional urban agriculture.

A further limitation to this research is the exclusion of the additional stakeholders in data collection. Throughout theory and data collection the importance of additional stakeholders to the political position and financial situation of the urban farming initiatives became clear and the influence of these stakeholders on the initiatives' development should be included in future research.

This project has tested the overall ability of the researcher as it required the development of a broad theoretical framework focussing on multiple important concepts. Connecting the concepts to each other and forming logical relations between them has been a learning process throughout the project. However, finishing such a large project also teaches someone to take a step back and observe the broader position of urban agriculture in spatial planning forming a more complete understanding of the planning system.

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Appendices

I. Consent form

Agreement to participate - Research Ethics Committee (REC)

in Master thesis research project:

Multifunctional community gardens in policy

My research:

Urban agriculture is often seen as a multifunctional tool to stimulate urban innovation or development and community gardens are gaining functions within neighbourhoods. The aim of this research project is to understand how the multifunctional elements of community gardens in Amsterdam have been integrated into local policy. The questions in this interview will focus on the functions of your initiative in the neighbourhood, collaboration with stakeholders and the perceived integration of the multifunctional elements in policy.

Er wordt steeds vaker naar Stadslandbouw gekeken voor het stimuleren van stedelijke innovatie of ontwikkeling en volkstuinen krijgt daarbij steeds meer functies binnen een wijk. Het doel van dit onderzoek is om te bepalen hoe die multifunctionele elementen van stadslandbouw in Amsterdam opgenomen zijn in het lokale beleid. De vragen in dit interview zullen focussen op de functies van uw initiatief in de wijk, samenwerking met belangrijke partners of organisaties en hoe de integratie van de multifunctionele elementen in beleid volgens u verloopt.

- I have read and I understand the information sheet of this present research project.
- I have had the opportunity to discuss this study. I am satisfied with the answers I have been given.
- I understand that taking part in this study is voluntary and that I have the right to withdraw from the study up to three weeks after interview, and to decline to answer any individual questions in the study.
- I understand that my participation in this study is confidential. Without my prior consent, no material, which could identify me will be used in any reports generated from this study.
- I understand that all information I provide will be kept confidentially either in a locked facility or as a password protected encrypted file on a password protected computer.

Please circle YES or NO to each of the following:

I consent to my interview being audio-recorded YES / NO

I wish to remain anonymous for this research YES / NO

If YES

My first name can be used for this research YES / NO

OR

A pseudonym of my own choosing can be used in this research

YES / NO

“I agree to participate in this individual interview and acknowledge receipt of a copy of this consent form and the research project information sheet.”

Signature of participant: _____ Date: _____

“I agree to abide by the conditions set out in the information sheet and I ensure no harm will be done to any participant during this research.”

Signature of researcher: _____ Date: _____

Please fill in the following information. It will only be used in case you want to be sent a copy of interview notes so that you have the opportunity to make corrections.

Address:

Email:

Confidentiality and participant rights:

- The interviews will be audio-recorded and notes will be taken during the interview
- You have the right to ask to have the recording turned off whenever you decide and you may also end the interview at any time.
- If you wish so, you will be sent a copy of the interview notes, and you will have the opportunity to make corrections or request the erasure of any materials you do not wish to be used.
- The information you provide will be kept confidentially in a locked facility or in a password protected file on my computer up to one month after the interview. A confirmation of destruction of the raw files will be send via e-mail.
- The main use of the information you provide will help me towards my master thesis, which, upon completion, will be publicly available online.
- Unless you have given explicit permission not to do so, personal names or any other information, which would serve to identify you as an informant, will not be included in this research or in any future publication or reports resulting from this project.

As a participant you have the right to:

- Decline to participate;
- Decline to answer any particular question;
- Ask for the audio-recorder to be turned off at any time;
- End the interview at any time;
- Withdraw from the study up until three weeks after participation in the research;
- Ask any questions about the study at any time during participation; and
- Ask for the erasure of any materials you do not wish to be used in any reports of this study.

Once again, I thank you for taking the time to find out more about my Master thesis research. I am at your disposal for any questions you might have. My contact information is found below. My supervisors' contact information van be provided if needed.

Yours sincerely

Researcher contact details:

Ayleen Labee
Master Student

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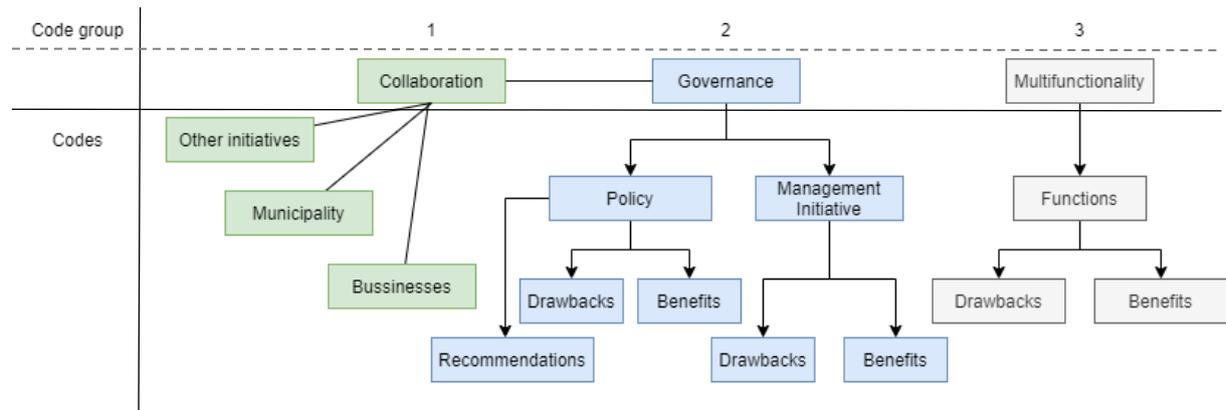
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II. Interview guide

General		<p>Hallo en dankuwel dat u de tijd heeft om dit interview te doen met mij. Het interview zal ongeveer 1 een duren met mogelijke uitloop tot 2 uur. Ik zal de informatie die u mij vandaag geeft gebruiken in mijn onderzoek om erachter te komen hoe de multifunctionele aspecten van volkstuinen in Amsterdam in het beleid van de gemeente zijn geïntegreerd. Daarvoor zijn de inzichten van initiatieven ook erg belangrijk en daar wil ik dan ook graag meer over horen vandaag.</p> <p>(Het consentformulier is eerder al gemaïld en ondertekend toegestuurd tegen de tijd dat het interview plaats vindt, als dit niet zo is kan het interview niet doorgaan)</p>
The initiative: functions and roles		
Urban farming initiatives	General information	<ul style="list-style-type: none"> - Hoe is dit initiatief tot stand gekomen? - Wat was het doel van het initiatief toen? <ul style="list-style-type: none"> • Is dat doel hetzelfde gebleven?
	Definition of Urban farming initiatives	<ul style="list-style-type: none"> - Hoe zou u het initiatief omschrijven? <ul style="list-style-type: none"> • Wat zijn de belangrijkste kernwaarden van deze volkstuin?
	Users	<ul style="list-style-type: none"> - Wie maken er gebruik van het gebied? <ul style="list-style-type: none"> • Verandert deze groep gebruikers door de tijd?
Multifunctionality	Functions	<ul style="list-style-type: none"> - Welke agrarische activiteiten worden er op het terrein gedaan? - Wat gebeurt er naast deze activiteiten op het terrein? <ul style="list-style-type: none"> • Hoe wordt dit gecombineerd? • Welke rol hebben deze activiteiten? (Educatief, Commercieel, Duurzaamheid, Sociaal) <ul style="list-style-type: none"> ..1. Voor directe gebruikers? ..2. Voor het initiatief zelf? ..3. Voor de omgeving?
	Effects functions	<ul style="list-style-type: none"> - Wat zijn de voordelen van de combinatie van activiteiten? <ul style="list-style-type: none"> • Voor de directe gebruikers? • Voor het initiatief zelf? • Voor de omgeving? - Wat zijn de nadelen van de combinatie van activiteiten? <ul style="list-style-type: none"> • Voor de directe gebruikers? • Voor het initiatief zelf? • Voor de omgeving?
	Potential functions	<ul style="list-style-type: none"> - Zijn er uitbreidingen van activiteiten mogelijk? <ul style="list-style-type: none"> • Zo ja, hoe zullen die uitbreidingen uitgevoerd worden <ul style="list-style-type: none"> ..1. Financieel ..2. Mankracht • Welke rol zullen deze activiteiten versterken of toevoegen?
The initiative: management		
Governance	Management	<p>Om deze functies en rollen te vervullen zullen er beslissingen worden gemaakt</p> <ul style="list-style-type: none"> - Hoe wordt het initiatief bestuurd?
	Collaboration	<ul style="list-style-type: none"> - Welke organen zijn verder belangrijk in besluitvorming? <ul style="list-style-type: none"> • Binnen het initiatief? • Over ontwikkelingen van het initiatief? <ul style="list-style-type: none"> ..1. Hoe zit die samenwerking in elkaar? ..2. Hoe verloopt contact met deze organen?
	Collaboration municipality	<p>De gemeente speelt een belangrijke rol in het schrijven van het beleid en ze geven daarbij aan dat communicatie erg belangrijk is met en tussen de initiatieven</p> <ul style="list-style-type: none"> - Is er contact tussen de gemeente en dit initiatief? <ul style="list-style-type: none"> • Zo ja, wat houdt dit contact in? • Hoe verloopt het contact? • Hoe zou het contact volgens u moeten zijn? • Zo nee, hoe zou u contact vormgeven?

	Power in practise "New political spaces"	- Wie hebben er invloed op het initiatief? <ul style="list-style-type: none"> • Over de algemene toekomst? • Op toekomstige uitbreidingen van functies? ..1. Waar ligt de macht om beslissingen te maken over het uitbreiden of onderhouden van functies? ..2. Wat zijn voordelen van deze constructie? ..3. Wat zijn nadelen van deze constructie? • Hoe zou dit volgens dit initiatief vorm moeten worden gegeven? -
Policy		
Policy	Current Policy	- Zou u mij iets kunnen vertellen over het huidige beleid omtrent volkstuinen? <ul style="list-style-type: none"> • Welke voordelen ondervindt dit initiatief van het beleid? • Welke nadelen ondervindt dit initiatief van het beleid? • Hoe staat dit initiatief tegenover het beleid? -
	Multifunctionality	- Wat voor invloed heeft het besproken beleid op uw initiatief? <ul style="list-style-type: none"> • Op de huidige functies? • Op toekomstige functies? • Op het bestuur van het initiatief? -
	Future Policy	- Hoe zou volgens dit initiatief het beleid er uit moeten zien? <ul style="list-style-type: none"> • Welke delen missen er? • Welke delen zouden er niet in moeten zitten? • Hoe zou de rol van volkstuinen in het beleid omschreven moeten worden? -
	Additions	- Heeft u nog toevoegingen die belangrijk zijn voor dit onderwerp?
Closing	Thanks and closing information	- Hartelijk bedankt voor uw tijd. Zoals besproken in het consentformulier zal ik toestemming vragen bij het gebruiken van quotes en zal ik een bewijs van vernietiging toesturen. Als u in de toekomst nog vragen heeft over het onderzoek of over uw deelname aan het onderzoek kunt u mij altijd bereiken op.... en via

III. Coding system interviews



IV. Textual analysis framework

	Document 1	Document 2	Document 3	Document 4
Definitions				
Comparison theory				
Descriptions				
Comparison theory				
Functions				
Comparison theory				
Statements on Governance, Collaboration, Communication				
Comparison theory				