



# Urban farming as a driver of sustainable development

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## List of abbreviations

CSA	Community supported agriculture
FAO	Food and Agriculture Organization
NVWA	Nederlandse voedsel en warenautoriteit
PBL	Planbureau voor de Leefomgeving
SDGs	Sustainable Development Goals
UNDP	United Nations Development Programme
UN-HABITAT	United Nations Human Settlements Programme
UNICEF	United Nations Children's Fund

## Abstract

The popularity of urban farming has been rising in the last decade. From global to local, urban farming has the capacity to contribute to the local economic growth, poverty reduction, social inclusion and greening of the city (The RUAF Foundation, 2018). For this reason, urban farming could be used as a tool to work towards sustainable development. To understand the correlation between urban farming and sustainable development, urban farming will be related to the Sustainable Development Goals (SDGs) proposed by the United Nations. Further, this research will analyze how place-based approach can enhance the positive impact urban farming has on communities by focusing on the bottom-up initiatives. Place-based approach as a long-term strategy has the capacity to help increase the potential of urban farming initiatives as it focuses on the importance of geographical context and the values the people involved give to the initiative and the location (Barca, 2009; Barca, Mccann and Rodríguez-Pose, 2012; Horlings, 2015). This thesis aims to examine how place-based approach can enhance urban farming's potential to contribute to the sustainable development of cities. The research will also focus on the social, economic, environment, and governance challenges that can be encounter in this process. The research concludes that the drivers for a place-based approach for sustainability are not present. Better performance of the bottom-up urban farming initiatives can be achieved if the initiatives were to be better informed of the possibilities of place-based approach.

Keywords: Urban farming, Sustainable Development, Sustainable Development Goals, Place-based approach

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# 1. Introduction

## 1.1. Area of research

The popularity of urban farming increased in the last decade. From global to local, urban farming has the capacity to contribute to the sustainable development of cities as its effects can have an impact on global food production (Clinton *et al.*, 2018). Clinton *et al.* (2018) argue that between 80% and 87% of the world's available natural capital could be used for urban farming. As planners, these numbers tell us that incorporating urban farming into global food production is viable. At the local level, urban farming can provide even more positive results.

Many cities in the world deal with urban poverty and urban food insecurity. Furthermore, they also face difficulties creating formal employment for the poor, problems with disposal of urban waste and wastewater, and maintaining air and water quality (The RUAF Foundation, 2018). Urban farming has the capacity to work towards a solution for the above-mentioned problems. The costs of supplying and distributing food to the urban areas are significantly lower than from rural agriculture production. In addition, bottom-up urban farming initiatives contribute to local economic growth, poverty reduction, social inclusion and greening of the city (The RUAF Foundation, 2018). Looking at what urban farming can provide, it is clear that it touches on the social, economic and environmental sectors. Therefore, urban farming could be used as a tool to work towards sustainable development. To understand the correlation between urban farming and sustainable development, in this thesis urban farming is related to the Sustainable Development Goals (SDGs) proposed by the United Nations. The aim of the SDGs is to provide a framework to achieve sustainable development.

To discover how to achieve sustainable development through urban farming, this research utilizes a place-based approach. George and Reed (2017) explain that place-based governance provides a framework to achieve sustainable development. Furthermore, Barca, McCann and Rodríguez-Pose (2012) state that place-based approaches have two aspects. First, the geographical context is important. This is understood as the social, cultural, and institutional characteristics of the place. The second aspect is knowledge of policy intervention. This refers to whether the people involved know what to do, and where and when to do it. For these reasons, local knowledge is the starting point for the place-based approach as it is used to grow the potential of the place by building on that knowledge. In addition, the values and the sense of community also play a role that the place-based approach builds on (Barca, McCann and Rodríguez-Pose, 2012). The values could then be used to mobilize and develop a collective impact to create the desired changes to the community, in this case, local sustainable development (George and Reed, 2017). Horlings (2015) adds that it is important to take into consideration the values, beliefs, worldviews and paradigms that influence the attitudes and actions of people to enhance sustainable development instead of only focusing on practices and political structures. The place-based approach uses the resources, capacities and characteristics of a place to achieve sustainable development (Horlings, 2015).

This research also analyzes how a place-based approach can enhance the positive impact that urban farming has on communities by focusing on the bottom-up initiatives. As a long-term strategy, the place-based approach has the capacity to help increase the potential of urban farming initiatives as it focuses on the importance of geographical context and the values the people involved give to the initiative and the location (Barca, 2009; Barca, McCann and Rodríguez-Pose, 2012; Horlings, 2015). Furthermore, place-based approaches can help initiatives make better use of their resources and so increase their efficiency. This approach also has the capacity to reduce social exclusion of minorities, such as migrants, people below the standard income, and the elderly (Barca, 2009). More importantly,



place-based approaches give a central role to the citizens, making the interventions transparent and verifiable as the citizens are able to scrutinize the approaches (Barca, 2009).

## 1.2. Contextual background

This thesis investigates the role of bottom-up urban farming initiatives in the Netherlands, how they contribute to the SDGs and consequently to sustainable development in the country. The first form of urban farming in the Netherlands started in the Middle Ages, when only the nobility and clergymen grew vegetables (Zeevat and Berendsen, 2001). In the 14<sup>th</sup> century, other population groups started to grow vegetables in “coelgharden” or “coeltunen,” which comes from one of the most popular crops of the time: “kool” (cabbage) (Zeevat and Berendsen, 2001). During the Industrial Revolution, the industrial workers were given the opportunity to grow vegetables to help ease their living conditions. The coelgharden or coeltunen are also known in the Netherlands as “volkstuinten” (people’s gardens). The first volkstuinten in the Netherlands were meant for charity purposes to help the poor population (Zeevat and Berendsen, 2001).

In 1784, the Maatschappij tot Nut van het Algemeen organization was founded. Its goal was to help increase the population’s happiness by improving material and moral conditions, especially of the workers class. Since 1838, this organization has helped with the founding of different “arbeidstuinten” (workers’ gardens) in the north of the country. Bruinwold Riedel, a secretary within the organization for 25 years (Pflug and Groninger Archieven, 2017), believed the volkstuinten were a way to combat poverty, increase work productivity, and improve the moral condition of the workers (Zeevat and Berendsen, 2001). It is important to highlight that it was organizations like Maatschappij tot Nut van het Algemeen that provided the plots of land for the volkstuinten. These volkstuinten were located mostly on the outskirts of the cities (Zeevat and Berendsen, 2001).

By the end of the 19<sup>th</sup> century, the charitable volkstuinten started to come to an end as the “volkstuinters” or gardeners founded their own garden associations. Garden associations were part of the workers’ emancipation and the labor movement. At the same time, the industrial sector saw the benefits of providing volkstuinten to their workers. By 1911, the central government was also aware of the benefits of volkstuinten, adopted a law that made possible the development of organized volkstuinten (Zeevat and Berendsen, 2001). Similar to the U.S. or the UK, the Netherlands also made use of the volkstuinten to combat hunger among citizens during both World War 1 and World War 2 (Zeevat and Berendsen, 2001). Currently, urban farming in the Netherlands is not only done in volkstuinten; these gardens can also be found within the city center as private gardens or community gardens (Eetbaar Groningen, 2019a; Stadslandbouw Gemeente Den Haag, 2019). In contrast to the economic role of volkstuinten in the past, urban farming and volkstuinten today are considered as a hobby or pastime for the communities involved (Zeevat and Berendsen, 2001).

## 1.3. Most relevant findings

Since the 1960s, the scientific community has contributed several publications on urban farming. Geographers first showed interest, studying how rapid urbanization, rural exodus, and urban farming were linked to each other. These studies were especially interested in African towns and cities as urban farming was a survival strategy during postcolonial times. During the 1980s, international institutions such as United Nations Children's Fund (UNICEF), Food and Agriculture Organization (FAO), United Nations Development Programme (UNDP), the World Bank, and the United Nations University began to promote urban farming in developing countries as community gardens and home gardens by. These institutions also supported scientific research and pragmatic programs for technical training and funded different initiatives. In the 1990s, most of the publications on urban farming concluded that it contributes to “social sustainability while increasing ecological sustainability through the

transformation of waste, natural resources saving, soil erosion prevention, greening and reduction in pollution” (Madaleno, 2000, p.74).

When searching for who is practicing urban farming, there are some differences between countries. For example, in Belém, Brazil, poverty levels are high, which is an incentive to practice urban farming. However, it is the most affluent families, not the poorest in the city, who are able to be serious growers (Madaleno, 2000). In contrast, in Tamale, Ghana, urban farming is practiced by lower-income households, with some middle-class households starting to get involved in the movement (Nchanji, 2017). Urban farming takes place in different forms, including on rooftops, in greenhouses, and in gardens on vacant land (Poulsen, Neff and Winch, 2017; Glatron and Granchamp, 2018).

Policy proposals and guidelines for urban farming have been formulated with the help of various organizations such as UNDP, United Nations Human Settlements Programme (UN-HABITAT), FAO, and the African Network of Urban Management Institutions. Policy framework and urban farming research tend to focus on three dimensions: social, economic, and ecological (Dieleman, 2017; Nchanji, 2017). Figure 1 presents an example of the topics a policy framework for urban farming considers. Policy strategies have mainly been focused on policies that support urban farming and on participatory planning (Schmidt, Magigi and Godfrey, 2015; Dieleman, 2017) but not on a place-based approach. Participatory planning is the focus of some studies as one of the known challenges for urban farming initiatives is the lack of participation in the decision-making process that could influence policies (Nchanji, 2017).

Just as there has not been any research on place-based approaches to urban farming initiatives, the connection between urban farming and sustainable development could benefit from more research. For instance, only limited research has been conducted on the significance that urban farming can have for developed countries. Mok *et al.* (2014) provide an overview of the past and present forms of urban farming in developed countries including US, Canada, UK, Australia, and Japan. Even though these countries represent geographical regions (Mok *et al.*, 2014), it is interesting to research the Dutch case as it is the second largest agricultural exporter in the world (Wageningen University & Research, 2019) despite being such a small country.

- 
- **SOCIAL AND CULTURAL POLICY DIMENSION**
    - Capacity building
    - Participatory planning and governance
    - Equity in gender and for disadvantaged groups
    - Food sovereignty
  - **ECONOMIC AND FINANCIAL POLICY DIMENSION**
    - Microcredit
    - Marketing and safeguarding the sector
  - **INFRASTRUCTURAL AND ECOLOGICAL POLICY DIMENSION**
    - Management and planning of urban spaces for agriculture
    - Recycling organic wastes
    - Treatment and use of wastewater
- 

Figure 1 Types of policies focused on urban farming (source: Schmidt, Magigi and Godfrey, 2015; Dieleman, 2017)

#### 1.4. Research problem

Communities all around the world are facing difficulties to meet basic standards of living. The world is growing so fast that it is challenging to provide work opportunities for everyone. This leaves a large part of these communities living in poverty. Even in the cases that people do find jobs, the income they receive is not enough to live above the poverty line. As it becomes more difficult to escape poverty, access to healthy food will be a privilege for a small part of the population.

In addition, by decentralizing governments hoped they would create societies with more civic responsibility and are “self-reliant, self-motivated and do voluntary work,” which would result in creating a responsibility for the common good and people being involved and in charge of their urban areas (Boonstra, 2016). However, by moving the decision-making process to the lower levels, situations where government officials may not have enough resources or may not include minority communities in the decision-making process may arise. This can create situations where people cannot wait for their representatives to help them find solutions or to be included in the decision-making process. Bottom-up initiatives such as urban farms have emerged in communities where the residents have taken matters into their own hands to gain food security.

To close the gap of accessibility to quality goods in society, it is important to emphasize access to healthy food for every citizen. If planners want to work on ending hunger, they should focus not only on ending visible hunger but also on ending hidden hunger, which occurs when people do not get the required vitamins and minerals with their food (Zaken, 2014). Most of the urban farming initiatives in developing countries have arisen as a way to resolve not only hunger but also provide work, education and an opportunity for the economic growth of the communities. This gives people a chance to work to rise above the poverty line. Most of the communities that resort to urban farming have similar characteristics: poor, no work or not enough income, food deserts, minorities, and/or no education.

These characteristics suggest that urban farming has originated because people believe it will help their situation. Examples of urban farming initiatives in Cuba, Brazil, and even in Nigeria, reveal that their aim is mainly for food security (Madaleno, 2000; Organizacion de las Naciones Unidas para la Alimentacion y la Agricultura, 2015b; World Economic Forum, 2018). Urban farming can be perceived as a response to food insecurities due to poverty, food deserts, or governments not being able to deliver solutions. However, even as people are seeking urban farming as a way to help their situation, there are scholars who argue that urban farming as a bottom-up initiative is not enough for poor people to make a living and help them alleviate food insecurity (Clinton *et al.*, 2018). It could be argued that this is the result of inadequate governmental support. As planners work under a variety of uncertain circumstances, it is important to have the correct tools to support emerging possibilities and to prevent or reduce unwanted situations (Rauws, 2015).

As most of the research available focuses on developing countries, it is interesting to research the role urban farming has on sustainable development in a developed country. For this reason, the objective of this thesis is to examine how a place-based approach can enhance urban farming’s potential to contribute to the sustainable development of cities. The thesis specifically focuses on how a place-based approach may help to give more decision-power to the people.

#### 1.5. The objective of the thesis

The aim of this thesis is to examine how a place-based approach can enhance urban farming’s potential to contribute to the sustainable development of cities. The research also focuses on the social, economic, environmental, and governance challenges that can be encountered in this process. To help analyze how bottom-up urban farming initiatives can serve as a driver for sustainable development in the Netherlands, the following research question will be answered:

*How can a place-based approach help enhance the positive impacts of urban farming so it can be used as a driver for sustainable development in the Netherlands?*

To help answer the research question, the following sub-questions were formulated:

1. How does urban farming contribute to achieving Sustainable Development Goals 2 (zero hunger), 8 (no poverty), and 11 (sustainable cities and communities) in the Netherlands?
2. What is the role of a place-based approach in achieving sustainable development?
3. How does a place-based approach enhance urban farming's positive impact in the Dutch context?
4. What are the challenges (social, financial, environmental, and governance) associated with improving the performance of urban farming initiatives in the Netherlands?

### 1.6. Research method in brief

The first step in this research is an analysis of regulations and policies implemented in the Netherlands to understand which support urban farming. Then, qualitative secondary data was analyzed to determine the degree to which the SDGs have been achieved in the cities included in this research. Next, interviews were conducted with people directly involved in the urban farming movement and from the government to understand how each party perceives the successes and challenges of the movement. These interviews also highlight the motivation behind participation in urban farming and the value that is given to this practice. Furthermore, an analysis will be conducted to determine if urban farming has been a driver for sustainable development since its beginning in the Netherlands. Finally, recommendations for the place-based approaches that have the capacity to increase the performance of urban farming in the Netherlands will be provided.

### 1.7. Structure of the thesis

Chapter 2 presents a literature review of urban farming as a sustainable development driver, and the SDGs are introduced. In addition, this chapter discusses how urban farming can contribute to achieving three of the SDGs. The chapter also examines small-scale urban farming as a bottom-up initiative and how this type of initiative developed. This is followed by examples of the practice of urban farming. Furthermore, the link between place-based approaches, urban farming initiatives, and sustainable development is explained. Chapter 3 discusses the research methodology, including the research approach and design, data collection, analysis method, ethical issues and limitations of the study.

Chapter 4 presents the findings of the research. It explores how urban farming as a bottom-up initiative has contributed to sustainability in the Netherlands, the government's and initiators' opinions and the response towards urban farming. Finally, Chapter 5 presents the conclusions and discusses what place-based policies can be derived from this specific case study to improve the performance of urban farming as a bottom-up initiative in the Netherlands and so support sustainable challenges.

## 2. Literature review

### 2.1. Urban farming as a driver for sustainable development

#### Sustainable development

The concept of sustainability has its roots in the 1960s and 1970s, originating as a debate on what the consequences and implications of continued growth would be. As part of this debate, the Club of Rome, as one of the initiators, wrote the book “Limits to Growth.” The intent of their project was to examine complex problems found in all societies. These were: “poverty in the midst of plenty; degradation of the environment; loss of faith in the institutions; uncontrolled urban spread; insecurity of employment; alienation of youth; rejection of traditional values; and inflation and other monetary and economic disruptions” (Meadows *et al.*, 1972, p.10). Even after so many years of different innovations in technology and regulations to protect the environment, the intent of the Club of Rome is still relevant today.

Another report that influenced the change towards sustainable development is “Our Common Future,” which was published in 1987. Brundtland was commissioned to propose long-term environmental strategies for achieving sustainable development (Brundtland, 1987). They describe sustainable development as: “Development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland, 1987, p. 43). The UN adds that it is important to interconnect three elements – economic development, social inclusion and environmental protection – to achieve the wellbeing of individuals and societies (United Nations, n.d.). Although this definition is not specific and does not provide clear steps to develop sustainability, it does provide the opportunity to adapt it to any context or circumstances.

In 2015, the UN adopted seventeen goals to this definition of sustainable development (United Nations Department of Economic and Social Affairs, 2015):



Figure 2 Sustainable Development Goals. Source: United Nations Department of Economic and Social Affairs, 2015

With these goals, the 193 member countries pledged to end poverty, fight inequalities and injustice, and tackle climate change. The goals serve as a guideline or to-do list for the countries on to how to achieve sustainable development. As urban farming relates to issues such as “urban rehabilitation, sustainable development, health, access to safe food, water and waste management, social stability, better integration among generations and cultures, city resilience and also new forms of economic

engagement” (Cina and Iacovo, 2015, p.10), the next section will touch on how and if urban farming could be used to achieve three of the sustainable goals (zero hunger, decent work and economic growth, and sustainable cities and communities) and so work towards sustainable development of cities.

## Goal 2: Zero hunger

Goal 2 of the SDGs is zero hunger. The targets are to ensure people will not suffer from hunger, food insecurity and/or malnutrition, and to promote sustainable agriculture. The UN agrees that investments are needed in the agriculture sector, including government spending and aid, to increase the productive capacity (United Nations, 2015). Currently, large cities access their food from the global food system, which can have destructive impacts on the environment (Barthel and Isendahl, 2013). Negative impacts that come from unsustainable farming practices include (WWF, 2017):

1. Land conversion and habitat loss (clearing natural habitats for agriculture)
2. Wasteful water consumption (unsustainable water use is leaving rivers, lakes and underground water sources dry)
3. Soil erosion and degradation (caused by fertilizers, pesticides, and other agrochemicals carrying away fertile soil)
4. Pollution (caused by toxic pesticides and excess of nutrients)
5. Climate change (agricultural practices are responsible for 14% of global greenhouse gas emissions)
6. Genetic erosion (agricultural crops have lost 75% of their genetic diversity due to the use of genetically uniform modern crops).

To achieve food security, people need to have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs (Barthel and Isendahl, 2013). Urban farming may help to achieve this goal. Agriculture within the city can help increase urban food security and nutrition by lowering supply and distribution costs as well as distributing the products more evenly (Veenhuizen, 2006). It is important to move away from modern agriculture, which degrades the environment, as pests, viruses, fungi, bacteria and weeds are adapting to chemical pest management faster than ever (Frison, 2017). Urban farming may also contribute to the mitigation of the negative impacts of modern agricultural methods. For example, “increasing resistance leads to increasing pesticide use, generating mounting costs for farmers and further environmental degradation” (Frison, 2017). Compared to agriculture production destined for international commerce, urban farming has tended to be more diverse in its production and farmers tend to be more sustainable in their practices. However, it is still important to pay attention to the kind of agricultural practices being undertaken in the urban arena because if conventional practices are used with no regard for the community, there is no point in continuing as there will be no benefit for the citizens. Overall, urban farming has great potential to contribute to sustainable development.

In the following section, the targets of the zero hunger goal are presented, along with examples to illustrate how they are being met and if urban farming on its own can help achieve this sustainable goal.

### *Urban farming paving the way towards zero hunger*

To achieve the goal of zero hunger, the UN has set eight targets (see Table 1) (United Nations, 2015). These will be compared with some examples of urban farming practices to see how far urban farming can contribute to each goal.

Table 1 – Goal 2: Zero hunger; targets to achieve zero hunger (United Nations, 2015).

1	End hunger and ensure access to safe, nutritious and sufficient food all year round
2	End all forms of malnutrition, including achieving the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons
3	Double the agricultural productivity and incomes of small-scale food producers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment
4	Ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality
5	Maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species
6	Increase investment in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks to enhance agricultural productive capacity in developing countries, in particular, least developed countries
7	Correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with equivalent effect
8	Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market information, including on food reserves, to help limit extreme food price volatility

\*For a complete version of the targets please consult the source.

A few examples from Africa emphasize the benefit of urban farming. Urban farming has been able to provide 90% of Dar es Salaam’s (a city in Tanzania) leafy vegetables and more than 60% of its milk. In Yaoundé, Cameroon, traditional leafy vegetables have provided 8% of the protein and 40% of the calcium consumed (Lee-Smith, Diana and Lamba, 2015). From a statistical analysis conducted by Lee-Smith, Diana and Lamba (2015) it can be seen that keeping livestock in urban areas makes animal source foods more accessible for children to consume and so improve their health and nutrition intake. Although no country in Africa has reached what Brazil’s zero hunger program has reached, such as providing land access for urban farming, some countries now have departments in charge of food and agriculture within local government. For example, Kampala, Uganda, created an Agriculture Department in 1990 after the decentralization and in 2006 passed urban agriculture and livestock ordinances. Other cities with agricultural departments include Cape Town (South Africa), Addis Ababa (Ethiopia) and Nairobi (Kenya) (Lee-Smith, Diana and Lamba, 2015).

All these examples demonstrate that urban farming has the capacity to achieve most of the targets, but they also indicate that it cannot be done without the help of governments. Support is needed through land policies that allow people access to land within the urban area to grow food. Clearly, this depends on the type of city and how compact it is, but vertical farming incorporated within buildings is a good option. However, there is a need for government control to ensure the quality of the produce, even when incorporating farming into buildings. A good example of a country that has thrived and is in its way to food security is Antigua and Barbuda in the Caribbean. In 2007, 28% of the country’s population was living in extreme poverty, poverty, or was at risk of falling into an economic crisis or natural disaster. By 2008 both the economic crisis and natural disaster occurred: global inflation on

food increased food prices in the country and in October, hurricane Omar caused floods, damaging large quantities of agricultural produce. The government's response was to introduce a zero hunger program. The agricultural produce grown in rural areas increased by 60% and in urban and peri-urban areas by 80%. Home gardens were able to produce 7% of the country's production (Organizacion de las Naciones Unidas para la Alimentacion y la Agricultura, 2014).

#### Goal 8: Decent work and economic growth

The aim of this goal is to increase labor productivity, reduce the unemployment rate, and improve access to financial services and benefits (United Nations, 2016). Approximately half of the world's population lives on two dollars a day and even having a job does not guarantee people staying out of poverty. Ensuring sustainable economic growth for the future requires the creation of quality jobs that stimulate the economy but do not harm the environment. This is important because, as Meadows *et al.* (1972, p.46) mention in "Limits to Growth," to sustain growth, two things are needed: *physical necessities* (which we get from the environment), and social necessities. Social necessities are more complex, since creating quality jobs is not enough as a solution. The current conditions faced by 780 million workers need to improve because they do not earn enough to be out of poverty. This also means that the work field and job opportunities need to become equal for both women and men (United Nations, 2016).

Urban farming has multiple functions beyond food production in cities. It is argued that urban farming contributes to economic development through the development of human and social capital, the relationship between and among people that enables a society to function (Mayer, 2003), not through traditional economic results such as job creation or increased property values (Poulsen, Neff and Winch, 2017). However, it does have the power to stimulate the creation of micro-enterprises such as the production of compost or earthworms, or services such as animal health services, transportation or bookkeeping (Veenhuizen, 2006). The development of human and social capital can stimulate neighborhood revitalization from within (Poulsen, Neff and Winch, 2017). Urban farming has the ability to provide part-time income for low and middle-income households and therefore save money without the need to go through the formal economy (Veenhuizen, 2006). In addition, homes that farm save on expenses by growing their own food, which can help low-income homes since they spend between 60 and 80% of their income on food (Veenhuizen, 2006).

#### *Urban farming as a means to improve income*

Zeza and Tasciotti analyzed the performance of urban farms that earn an income in 15 countries (Zeza and Tasciotti, 2010) and found the participation rate and shares vary from 11% to almost 70% (Zeza and Tasciotti, 2010 p. 268). In addition, they found that only five countries have an income share higher than 10%: Ghana, Madagascar, Malawi, Nepal and Nigeria (Zeza and Tasciotti, 2010 p. 268). In their investigation, they concluded that while there is a good percentage of citizens practicing urban farming, it is not a major urban economic activity. However, it does demonstrate that no matter the income that urban farming produces, people rely on the production, either crops or livestock, for their subsistence (Zeza and Tasciotti, 2010).

Conversely, a study conducted by the World Bank about urban farming summarized data on jobs created by urban farming in addition to growing crops and breeding animals. According to the study, jobs created through urban farming include: production and sale of processed products such as meals, jams, street food, and other products; and production and sale of agricultural inputs, such as the production of compost or animal feed from collected organic waste, irrigation equipment from recycled materials, and provision of services such as transport and animal healthcare (World Bank's Urban Development and Resilience Unit, 2013 p. 6).



One example that illustrates how urban farming has contributed to job creation is Cuba. Cuba shifted from a country in economic crisis and poor agricultural practices, to a country where agriculture is completely organic with a stable production. In 2012, Havana produced “63,000 tonnes of vegetables, 20,000 tonnes of fruit, 10,000 tonnes of roots and tubers, 10,5 million liters of cow, buffalo and goat milk, and 1,700 tonnes of meat” (Organizacion de las Naciones Unidas para la Alimentacion y la Agricultura, 2015b). In addition, urban farming has been able to create 117,000 direct and 26,000 indirect jobs in the city of Havana (World Bank’s Urban Development and Resilience Unit, 2013). From this, we can conclude that even though urban farming does not contribute significantly to the economic growth of the whole country, it does help communities with the creation of small jobs.

When undertaken resourcefully, urban farming has the ability to create job opportunities, generate income and provide a safety net for poorer groups within the city (Veenhuizen, 2006). As an income source, urban farming has provided enough for basic food, housing, clothing and schooling expenses (Veenhuizen, 2006).

#### Goal 11: Sustainable cities and communities

A sustainable city or community must be inclusive, safe, resilient and sustainable. Today, half of the world’s population lives in urban areas and this will increase to almost 60% by 2030. It is important that we focus on developing sustainable cities and communities to ensure that all people live a decent life. Currently, 828 million people are living in slums and the number is expected to continue to rise. Rapid urbanization puts pressure on freshwater supply, sewage, the living environment and public health (United Nations, 2015a). A UN report from 2013 states that sustainable cities can be achieved by integrating four pillars: “social development, economic development, environmental management, and urban governance” (United Nations – Department of Economic and Social Affairs, 2013).

According to Cohen, a sustainable city (Cohen, 2018):

Minimizes its emissions of air pollutants and greenhouse gases; uses as few nonrenewable resources as possible; discharges effluents into waterways after treatment that removes the most harmful pollutants; uses energy and water as efficiently as possible, and attempts to reduce and recycle waste and minimize the impact of whatever waste disposal is needed (p.4).

Together, Cohen’s definition and the United Nations’ description of what a sustainable city does and is provides an opportunity to incorporate urban farming into sustainable cities. First, we need to change how agricultural activities are conducted. The system has become superficially stable and predictable, which is only possible because of the use of unsustainable inputs and emissions such as the use of chemical inputs for hydroponic systems or the use of pesticides. By using these unsustainable inputs and emissions, the system loses its resilience and adaptive capacity (Biel, 2016).

As noted previously, urban farming has the capacity to be more diverse and sustainable in its production, both on a small and a large scale (e.g. Havana, Cuba and AeroFarms in New York). What these cases have achieved can be implemented in an urban area to help ensure a city’s food system is more resilient. The example of Nigeria reveals how urban farming has been used as a social tool to support poor families and especially women and children through school. Supporting minority communities has the capacity to help cities become more inclusive, healthy and safe. Safety is important as it helps create a sense of community.

In the following section we compare the targets set by the UN with some case studies that have implemented urban farming to see how it can be used to achieve sustainable cities and communities.

### *The sustainable city and urban farming*

In this part of the research, we focus on comparing examples of urban farming practices that work and do not work to achieve Goal 11 of the sustainable goals. Targets set by the UN to achieve sustainable cities and communities are listed in Table 2.

*Table 2 Targets set by the United Nations to achieve sustainable cities and communities (United Nations, 2015a).*

1	By 2030, ensure access for all to adequate, safe and affordable housing and basic services, and upgrade slums
2	By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons
3	By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries
4	Strengthen efforts to protect and safeguard the world's cultural and natural heritage
5	By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations
6	By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management
7	By 2030, provide universal access to safe, inclusive and accessible green and public spaces, particularly for women and children, older persons and persons with disabilities
8	Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning
9	By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans for inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015–2030, holistic disaster risk management at all levels
10	Support least developed countries, including through financial and technical assistance, in constructing sustainable and resilient buildings utilizing local materials

It is clear that not all these targets can be achieved by implementing urban farming in the cities. To be a sustainable city or community, there needs to be an integration of different sectors, which can be possible through policy integration. As this research focuses on the implementation of urban farming to achieve sustainable development, in this section we only examine the targets that we see urban farming can contribute to achieving: 3, 4, 6 and 7.

From the examples we saw cases ranging from illegal gardening of vacant urban space, such as in Cuba at the beginning of the movement and now in Detroit, to farming in designated community gardens or owned plots of land. The UN suggests that there needs to be a participation structure of civil society in urban planning to achieve target number 3 (UN, 2017). Urban farming will keep happening with or without local governments involvement and regulations. It is important to regulate farming within the city to ensure that unsustainable practices do not flourish. It is not only important to focus on the contaminant possibilities of unsustainable practices, but also on the benefits of government involvement in this movement.

One example is how the zero hunger program has been able to “reduce the city’s under-5 child mortality rate by 72 percent between 1993 and 2005” in Brazil (Organizacion de las Naciones Unidas

para la Alimentación y la Agricultura, 2015a). The city of Belo Horizonte has worked to ensure that the poorest communities have access to food, and urban farming has played a significant role in this work. Part of Belo Horizonte's success has been the incorporation of urban agriculture in its zoning plan. With law 9959/2010, which is part of the city's zoning plan, the municipality of Belo Horizonte classifies two uses for the land: residential and non-residential. The non-residential classification has an option for urban agricultural use (Belo Horizonte, 1976).

For target number 4, urban farming is a good way to maintain cultural heritage because certain forms "display a social organization that focuses on creating stronger urban communities" (Veenhuizen, 2006, p.200). Cuisine and farming are valued elements in the heritage of many cultures. Therefore, incorporating farming in urban areas will intensify people's ties to their past and present traditions (Veenhuizen, 2006). In addition, urban farming brings people together because it generates interaction, either as seller-buyers or through courses. An example of community integration and maintenance of cultural heritage is Detroit. Keep Growing Detroit is one of many organizations that contribute to the social and cultural capital of the city. They provide courses to teach about farming and also create events to connect food makers, processors and distributors to urban gardeners and farmers (Keep Growing Detroit, 2018).

Finally, urban farming not only provides green areas, but can also be used to recycle organic waste within the city. Sustainable management of waste is still a challenge, especially in developing countries, but if done correctly, recycled organic waste can be turned into compost for agriculture. Most of the challenges developing countries face to recycle organic waste are linked to insufficient financial, technical and institutional capacity. Cuba has been able to fertilize agricultural land through its system of *organopónicos*, which uses organic waste and animal manure to create organic substrate.

As with goal 2 and goal 8, urban farming has the capacity to contribute to the achievement of sustainable cities and communities, but on its own is not possible. Urban farming must be part of a policy integration towards sustainable development. Policy integration has the ability to connect the broader sustainable development objectives (Lafferty and Hovden, 2003).

## 2.2. Small-scale urban farming as a bottom-up initiative

### Self-organized and self-governance initiatives

Bottom-up initiatives originate within the society and without government control (Boonstra and Boelens, 2011). They originate through "autonomous community-based networks of citizens" (p. 99) who work together for urban development. Rauws (2016) adds to this definition by stating that the involvement of citizens can be at different levels, "for example, the level of neighborhood, villages or cities" (p. 339). These types of initiatives seem to be a response to disappointment in participatory planning results and the inability of governments to adapt to the changing needs of citizens (Boonstra and Boelens, 2011). However, in some countries, including the Netherlands, the government sees it as an opportunity to involve citizens in urban development as part of a multi-actor approach to planning (Boonstra and Boelens, 2011).

In the literature, bottom-up initiatives are known by different terminologies including "grassroots initiatives, civic initiatives, tactical urbanism" (Rauws, 2016), and "citizens' initiatives" (Bakker *et al.*, 2012). Citizens' initiatives refers to hybrid participation where the citizens are the initiators and collaborate with the government (Bakker *et al.*, 2012). For consistency, the term bottom-up will be used throughout the rest of this thesis. According to Boonstra and Boelens' (2011) definition, a requirement of a bottom-up initiative is that it is organized by a network of citizens in the community, which also implies collective thinking and planning. Kooij *et al.* (2018) emphasize that these initiatives "are self-organized and transformational (p. 52). Rauws (2016) explains that bottom-up initiatives can

be developed through self-organization or self-governance and that knowing the difference influences the type of policy recommendations that planners need to take into consideration.

It is important to understand the difference between self-organization and self-governance as this will help us to better understand how and why bottom-up initiatives form, and what policies governments can implement to help facilitate these (Rauws, 2016). Different authors (Kooij *et al.*, 2018, Boonstra and Boelens, 2011, Bakker *et al.*, 2012) use the concept of self-organization to explain bottom-up initiatives. However, as Rauws (2016) discusses, self-organization comes from complexity theory, where it explains that self-organization is the “spontaneous formation of patterns or structures at a global level out of the interactions between agents at the local level” (p. 340). He further explains that the self-organized initiatives imply that there is no collective planning to realize “urban transformation.” The urban transformation happens due to different individual actions by different actors (Rauws, 2016).

Self-organization initiatives create urban development through the sum of the individual actions, which are triggered by the actors’ necessities. An example could be the spontaneous formation of a path through a grass field to shorten the walking distance. It is an urban transformation implemented by different people without any form of cooperation. While these transformations can be traced back, they cannot be predicted (Rauws, 2016). This definition contrasts with the community-based network work of citizens (Boonstra and Boelens, 2011). What Kooij *et al.* (2018), Boonstra and Boelens (2011) and Bakker *et al.* (2012) consider to be self-organization, Rauws (2016) describes as self-governance.

Self-governance initiatives are characterized by a network of citizens that acts without the intervention of governments. These can be rebellious actions as a response towards an unwanted situation (e.g. guerrilla gardening) where the government does not provide for the citizens’ needs (Rauws, 2016). It is important to distinguish self-governance from other types of governance. In self-governance, it is the citizens and non-governmental actors (e.g. NGOs) that organize the initiative, in contrast to full governmental decision-making (hierarchical governance), or where governments and non-governmental actors work together (co-governance) (Rauws, 2016).

In his article, Rauws (2016, p.345) provides a table (see Table 3) with similarities and differences in what characterizes self-organization and self-governance initiatives. He also mentions that, because bottom-up initiatives have the capacity to change over time, self-organization initiatives may develop into self-governance initiatives.

Table 3 Similarities and differences between self-governance and self-organization in urban development. Source: (Rauws, 2016, p.345).

	<b>Urban self-governance</b>	<b>Urban self-organization</b>
Focus of analysis	Urban transformation led by citizens and non-governmental actors	Urban transformation as a result of adaptive behavior of urban systems and networks
<b>Characteristics</b>		
Actions by actors	Internally coordinated, no external control	No coordination or external control
Intent	Collective	Individual
Source of the reconfiguration of the urban system	Resulting from deliberative action towards a common goal	Spontaneously emerging from a set of independent changes at a lower scale
Predictability of the outcome of the transformation process	Some degree of predictability	Unpredictable
Point of engagement of enabling and constraining institutional forces	Individual and collective activities	Individual activities

#### Bottom-up urban farming initiatives

As mentioned in the previous section, there are two ways that bottom-up initiatives can be formed: self-organization and self-governance. In this section, the theory is merged with characteristics of urban farming initiatives, such as its initiators and their reasons, and how they access the land. There are three categories: the individuals who are involved in this practice; why they had the need to start farming within the urban area; and where they find the space to practice it.

Glatron and Granchamp (2018) divide the initiators into two types: the individual and the collective. These can be connected to Rauws' (2016) self-organization and self-governance. The first can be distinguished as private gardeners and legal entities. Collective gardens are varied in their form and function; they are places where people come together but the status of ownership is often questioned. It is interesting to understand the objectives the actors of the farms pursue. Glatron and Granchamp (2018, p.10) present the different objectives between which the urban farms may oscillate (see Figure

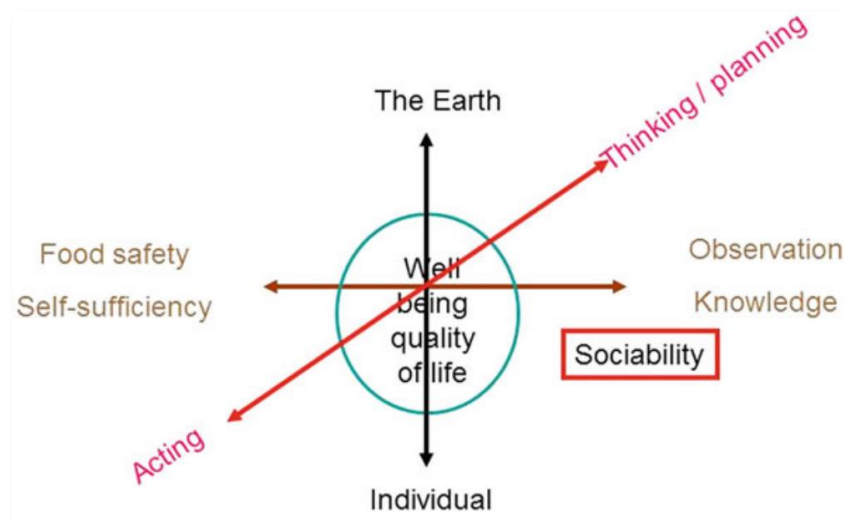


Figure 3 Possible variations in the aims and objectives of urban farming (Glatron and Granchamp, 2018, p.10)

3). These can be from a food security objective, which is the aim of most city dwellers, or food programs on a global scale. At the other end of the spectrum, food gardens and amenity gardens have intentions beyond the production of food (Glatron and Granchamp, 2018).

As a civic initiative, urban farming draws attention and is separated from other types of social initiatives as it has the capacity to contribute to the sustainable development of cities. According to Seyfang and Smith (2007), grassroots initiatives work towards solutions for sustainable development. They argue that by viewing these initiatives as innovative niches, planners can get a better understanding of “the potential and needs of grassroots initiatives, as well as insights into the challenges they face and their possible solutions” (Seyfang and Smith, 2007, p.585).

To get a better understanding of the bottom-up urban farming initiatives, this research follows the steps of categorization of the initiatives into who is involved, why they are involved, and where the urban farming is practiced. Each of the categories is explained in the next section.

**Who are the initiators:** As previously mentioned, Glatron and Granchamp (2018) divide initiators into two categories, individuals and collectives, but also knowing characteristics such as the gender of those involved can tell us more about the influence that urban farming has on the community. For example, Glatron and Granchamp (2018) explain that women play a role in the culture of the community. In addition, how heterogeneous the people involved in the urban farming initiatives are may tell us if the initiative is helping with inclusivity of minorities and how accessible it is for everyone in the community to participate or make use of the services provided by the urban farming initiative.

**Why are they involved:** The decision to get involved in urban farming is influenced by different city dynamics such as rapid urbanization, growing urban poverty and food insecurity, urban sprawl, and city renewal (as cities go through a process of building and decay). Other city dynamics that influence why, how and where urban farming is practiced are: urban traffic and the negative impact of the industry on the soil and water, need for recreational spaces or new products, changes in the zoning policies and related regulations (Veenhuizen, 2006). In addition to these city dynamics, self-sufficiency or food security are two of the main reasons for people, NGOs, and even governments in developing countries, to start urban farming initiatives (Glatron and Granchamp, 2018).



*Figure 4 Three different types of urban farming, on balconies, rooftops, and by recycling plastic bottles. Bottom-up urban farming initiatives do not necessarily need to have land available to practice urban farming. Source: google search*

**Where is the farming practiced:** Land is highly contested within the urban arena, which is why it is important that it is part of the portfolio of urban planning. Urban farming within cities takes place in different types of locations. Wasteland is often taken by citizens for urban farming (Glatron and

Granchamp, 2018), also known as “guerrilla gardening” (Hardman and J. Larkham, 2014). However urban farming is also carried out on the urban infrastructure, including on rooftops and balconies, or against facades (see Figure 4). Finally, the morphology of cities will influence where these urban farming initiatives take place. For example, if the city has many empty lots, it is easier for people to make use of these. The opposite also applies: if it is a high-density city, the initiatives are more likely to be on rooftops, balconies or facades (Glatron and Granchamp, 2018).

### 2.3. The role of a place-based approach in sustainable development and urban farming

#### Place-based approach

The place-based approach consists of two aspects. First, the geographical context matters. This is understood as the economic, social, cultural, and institutional characteristics of a place. Second, knowledge of policy intervention so that people involved know what to do, where to do it, and when to do it. For these reasons, local knowledge is the starting point for the place-based approach as it is used to grow the potential of the place by building on that knowledge (Barca, McCann and Rodríguez-Pose, 2012). For the place-based approach, place and people play an important role as its focus lies in developing human capital and social inclusion of locations (Mirti Chand, 2018). It is used to understand places through human behavior, experiences, and socio-ecological relations, as these influence the creation, innovation, and maintenance of spaces (Mirti Chand, 2018). This information, together with people’s wishes for their place, is used to transform the place to serve and benefit the community (Mirti Chand, 2018).

The place is central in the place-based approach as it focuses on people’s sense of place. Sense of place is described as having a sense of community and cooperation that is shaped by the geographical setting. This includes characteristics such as the natural and built environment, culture and history. As the sense of place is location-specific, behavior not only creates a sense of place, but provides returns from the sense of place. Returns from having a sense of place are a general sense of security, and security associated with being able to engage in a familiar environment and trust in the people living in it (Bolton, 1992). The place-based approach can also be used to connect people to their locations.

The place-based approach requires strong local partnerships to be created by local governments collaborating with the communities and local stakeholders who work to resolve social issues (Mirti Chand, 2018). This interaction between the local government and the geographical context delivers tools for the development of policies, which in turn guide the development of the area (Barca, McCann and Rodríguez-Pose, 2012). For the place-based policies to work, there is a need for multi-level governance collaboration and engagement, vertically through all levels of government and horizontally between the public and private sectors, and from the nonprofit initiatives (Barca, McCann and Rodríguez-Pose, 2012).

The aim is to empower the local communities and initiatives to mobilize change. According to George and Reed (2017), as place-based governance is a concept rather than an approach, local identities are used to address local level challenges. By addressing the local challenges, desired changes can be created for the community (George and Reed, 2017). As a place-based approach requires the collaboration of all parties, governmental and non-governmental, public interventions remain transparent and are verifiable by citizens. The risks can then be identified and addressed by focusing on the objectives and results, the evaluation, the credibility of an external authority, and the open debate over the choices made. Giving space to experiment with different place-based approaches while mutually monitoring is also important (Barca, 2009).

Barca, McCann and Rodríguez-Pose (2012, p.148) present three elements to ensure that incentives for all stakeholders match:

1. Create binding agreements that sustain the relationship between the stakeholders;
2. Define the objectives and intended outcomes in terms of wellbeing and the socio-economic progress of the interventions, and have clear outcome indicators to assess whether the results and goals have been achieved;
3. A system to promote a space for public debate for all stakeholders to coordinate and collaborate between the different levels of governance and institutions.

The World Bank, the International Monetary Fund and the European Commission have used these principles to promote sustainable and inclusive development (Barca, McCann and Rodríguez-Pose, 2012). Those developing place-based policies should focus on building on the local strengths and promote the innovation of ideas through interaction between the different stakeholders with the purpose of creating a network (Barca, McCann and Rodríguez-Pose, 2012; George and Reed, 2017).

#### *Achieving sustainable development through a place-based approach*

This section discusses using place-based approaches to achieve sustainable development. Sustainability requires focus on three pillars: economic, social, and environment (Horlings, 2015; George and Reed, 2017). As place-based approach focuses on the sense of place people experience and use to transform places, the approach can be used to develop these places sustainably. Moreover, adaptations to more sustainable development “requires the use of local resources, capacities and distinctiveness of a place” (Horlings, 2015).

This section is divided into two parts: how the value people give to a place has an influence on sustainable development, and a place-based framework developed by George and Reed (2017) to achieve sustainable development focuses on how initiatives can be organized to achieve sustainable development.

#### *The role of values in sustainable development*

It has been suggested that culture, as part of society, influences sustainable development (Horlings, 2015). In the context of sustainability, culture implies a sustainable way of life and the ethical choices people make in their everyday life. These choices have an impact on the geography of a place and its sustainability. The ethical choices can also be understood as values people place on their locations. To understand the motivational value that people have when involved with their surroundings, Horlings (2015) presents three different approaches that also help understand how values are important for place-shaping processes to achieve sustainable development. The approaches are economic, intentional and symbolic. This research focuses on the intentional approach, which aims to understand why people participate in “place-shaping processes” (p. 264).

The intentional approach seeks to understand what motivates people to make changes to their life and participate in changing their places. People’s choices and motivations play an important role in a long-term commitment to sustainable development (Horlings, 2015). Brown (2004) offers a framework to understand the motivational values. The framework is a quadrant where four perspectives are analyzed (see Figure 5). The first quadrant, the I, explains the personal values, and the links under the WE quadrant explain the shared values.



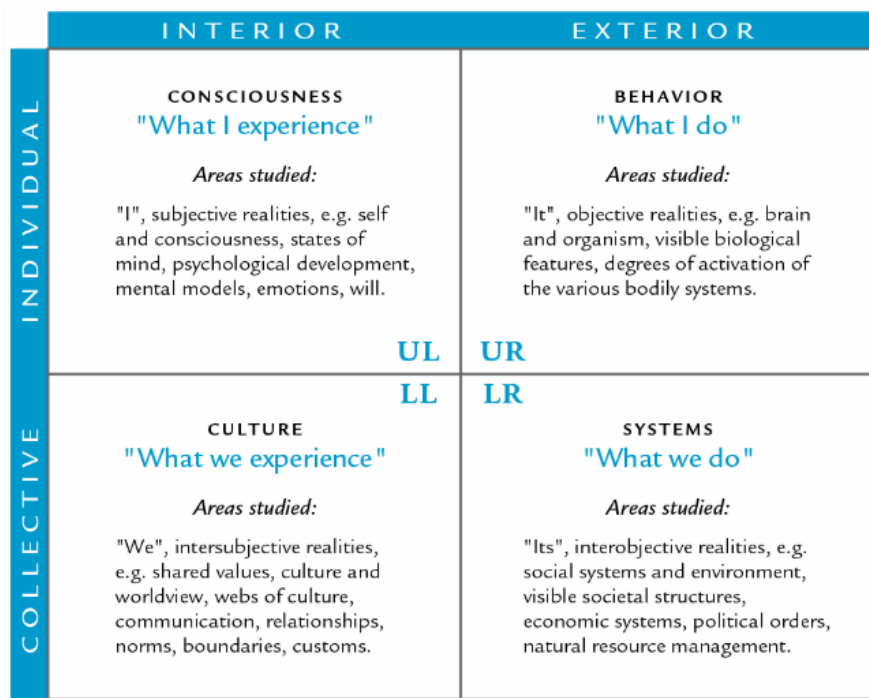


Figure 5 Four Quadrants of the integral framework with respect to humans and the physical environment. Developed by Brown (2004, p.11)

The four quadrants can be summarized as the "I," "We," and "It" dimensions. They represent the perspectives of being in the world, such as self (I), culture (We), and nature (It). The point is that an integral inform approach should take these three dimensions into account (Brown, 2004).

#### *Place-based governance framework for initiatives and local organizations*

George and Reed (2017) developed a framework for place-based governance to help local initiatives implement strategies for sustainable development. The aim is to create a shared sense of purpose through collaborative research that helps people understand their community. Local initiatives must meet three requirements to achieve sustainability: comprehensive understanding, community empowerment, and community-based outcomes. Initiatives that aim to achieve comprehensive understanding need to consider the community's desires, concerns, and priorities (George and Reed, 2017).

To achieve community empowerment, initiatives must look for strategies to empower the different groups within the community, raise participation, establish local leadership, and create community control and ownership of the initiatives (George and Reed, 2017). Finally, to develop community-based outcomes, there should be a focus on what the community stakeholders consider important for their social, economic, and environmental wellbeing (George and Reed, 2017). To achieve these three requirements, George and Reed (2017, p.1117) identify five drivers: local leadership, networks, diverse community engagement, learning together, and information sharing (see Figure 6).

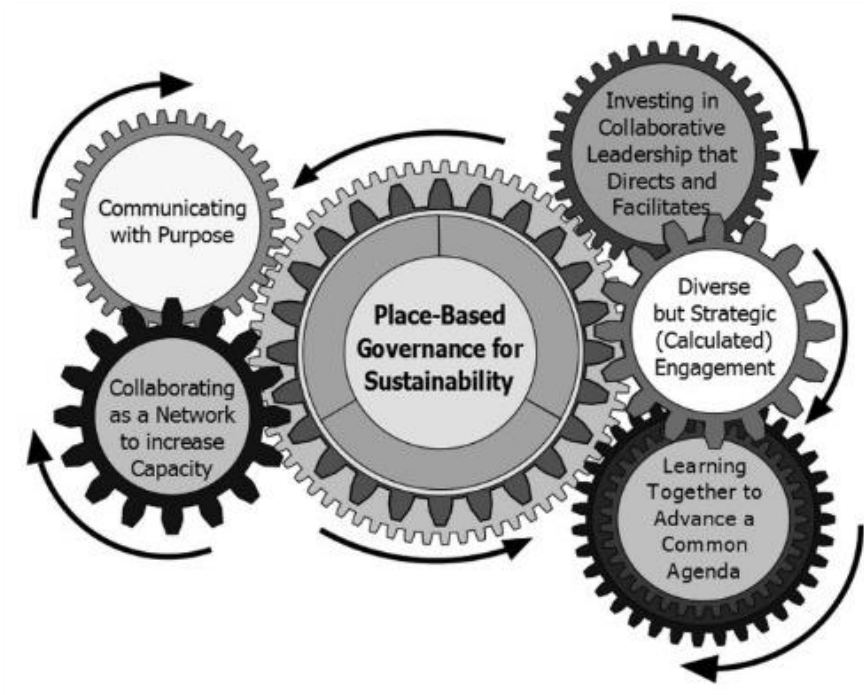


Figure 6 Framework for place-based governance for sustainability. Developed by George and Reed (2017, p.1117)

**Local leadership:** it is important for initiatives to have a leader, as leaders bring people together and can coach them through the collaborative process. Local leadership is important as it pools resources and mobilizes the community. Leadership does not necessarily need to be understood as one person in charge; it can be a collaborative leadership. When community leaders invest in social capital, a spiraling-up process occurs where more capital is created. George and Reed (2017) explain that because the leaders play the roles of steward, mediator, and catalyst simultaneously, local leadership is an important driver for place-based governance.

**Strong networks:** in addition to having leadership, it is important for the initiatives to have strong networks as these facilitate generation of knowledge, leverage resources, develop social capital, promote innovative solutions, and promote implementation. Networks attract internal and external support and resources. It is also important for networks to be able to encourage mutual exploration and develop relevant knowledge (George and Reed, 2017).

**Effective community engagement:** diverse engagement from the community is important to increase the effectiveness of place-based initiatives. Diversity should be in terms of age, gender, ethnicity, values, and interests and must reflect the community. Diverse engagement ensures inclusive and fair decision-making. To ensure that decision-making is constructive and accessible for everyone, initiatives should recognize the specific needs of the community and other involved stakeholders. In addition to

representing the needs of the community, the initiatives should also deal with regulating concerns and consider how to best engage members of the community (George and Reed, 2017).

**Learning together:** learning through interactions with other people or with social groups encourages people to have mutual understanding, collective goals, and innovative ideas. Allowing communities and initiatives to learn together is effective as it allows stakeholders to have a shared understanding of the community’s problems or goals and come together to address them. This emphasizes the importance of information sharing and dialogue among the stakeholders to achieve a common agenda (George and Reed, 2017).

**Information sharing:** effective communication within initiatives and governments is necessary to gain trust and legitimacy. A well-designed communication strategy offers a space where people can share information, debate, and give feedback. Information sharing enables initiatives and governments to gain knowledge of the opinion of the community and receive direct feedback on their work. Furthermore, it is important for initiatives and governments to communicate with a purpose, to engage with the community, receive feedback, and to the advertise goals pursued by the initiatives (George and Reed, 2017).

The five drivers above offer an arena for relationship building and conflict resolution, and also contribute to more robust and equitable decision-making. However, it is important to consider that competing values, perspectives and knowledge of the different stakeholders, uneven power relations and distrust can damage the positive processes. Likewise, positive efforts can be undermined by strong networks that prevent social change, and thus damage the efforts to achieve a sustainable agenda (George and Reed, 2017).

2.4. Conceptual model

Based on the literature review in the above sections, a conceptual model was developed. As previously stated, the objective of this thesis is to examine how a place-based approach can enhance urban farming’s potential to contribute to the sustainable development of cities, specifically focusing on how a place-based approach may help to give more decision-making power to the people. The conceptual model indicates that the values of the stakeholders must be in line with the desire to create sustainable development before attempting to work on it. In addition, the place-based approach guides the public administration and urban farming initiatives and creates a loop where both entities are working together to achieve sustainable development.

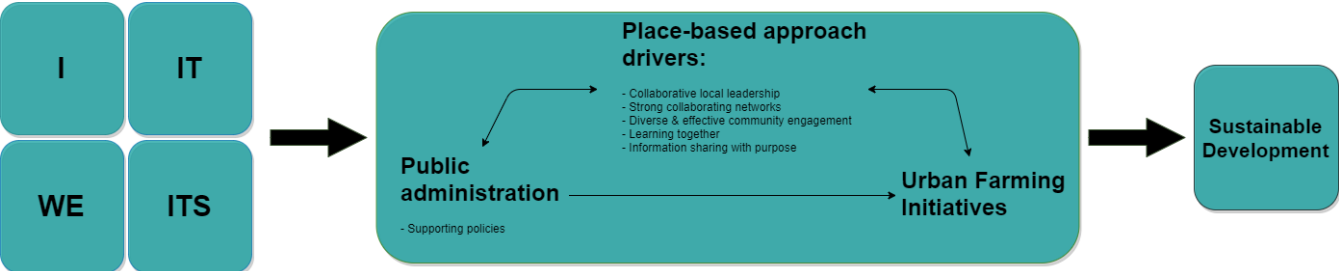


Figure 7 Conceptual model (developed by the author)

### 3. Research method

The following subchapters elaborate on the research approach, research methods and data analysis. The last section of this chapter describes the case study.

#### 3.1. Research approach

This research focuses on how a place-based approach can enhance urban farming’s potential to contribute to the sustainable development of cities, specifically focusing on how a place-based approach may help to give more decision-making power to the people. The research utilizes an exploratory case study design and focuses on the Netherlands as a single case study. Yin (2009) provides five reasons for choosing a single case for case study research:

- To test if a theory’s proposition is correct or another explanation is more relevant.
- If the case represents an extreme case or unique case.
- The case is representative or a typical case that captures the circumstances and conditions of an everyday or commonplace situation.
- The case is a revelatory case, where the investigator has the opportunity to observe and analyze a phenomenon previously inaccessible to social science inquiry.
- The case is a longitudinal case; the case study does research on two or more different points in time. The interest is on how the conditions change over time.

The Netherlands can be considered a unique case worth researching to understand the relationship between the initiatives and the local government. Furthermore, this research examines the global impact that urban farming has on the Netherlands. For this reason, a holistic approach is used. The research focuses on a longitudinal case study as the interest is determining how urban farming has impacted the Netherlands over time.

#### 3.2. Research data collection methods and strategy

The focus of this research is on the contributions of urban farming towards achieving the SDGs, the perceived challenges, and on the planning system in the Netherlands. A qualitative research method is used as it provides tools to explore attitudes, behavior and experiences. In other words, it provides an in-depth knowledge of the case study (Dawson, 2007). It is advisable to use different sources of evidence for case studies. The six major sources are documents, archival records, interviews, direct observations, participant observation, and physical artifacts (Yin, 2009). An important principle of data collection for case studies is the use of data triangulation. The aim is to use multiple sources of evidence to corroborate the facts. For this research, data was collected through semi-structured interviews, archival records, documents and official policy documents. Table 4 outlines the type of sources chosen to collect the data for each research question.

*Table 4 Research strategy.*

Research Question	Required Data	Data Sources
How does urban farming contribute to achieving Sustainable Development Goals 2 (zero hunger), 8 (no poverty), and 11 (sustainable cities and communities) in the Netherlands?	Information on malnutrition/nutrition, food accessibility	Archival records, documents
	Information on micro-enterprises, neighborhood revitalization, (part-time) income, job creation	Archival records, documents

	Information on minority information, safety, sustainable agricultural practices	Archival records, documents, semi-structured interviews
What is the role of a place-based approach in achieving sustainable development?	Information is needed on place-based literature and the sustainable practices and values stakeholders have	Literature, semi-structured interviews
How does the place-based approach enhance urban farming's positive impact in the Dutch context?	Information on planning strategies in the Netherlands, the challenges of governance encountered by stakeholders, and literature on how a place-based approach should be implemented	Academic literature, documents, and semi-structured interviews
What are the challenges (socially, economically, environmentally, and on the governance) of improving urban farming initiatives' performance in the Netherlands?	Information from the semi-structured interviews on challenges perceived by the stakeholders.	Semi-structured interviews

### 3.3. Data analysis

The data was analyzed with reference to the research questions. For each question, evidence was addressed until the question was answered. The interviews were transcribed, coded and analyzed. Information from archival records and documentation was also organized in chronological order (Yin, 2009). The strategy for the data analysis relied on theoretical propositions, which is why the research questions guided the analysis. The research follows an explanation building technique in a combination of the theoretical propositions (Yin, 2009).

For the data analysis, the archival records, documents, and interviews were coded. The inferential codes were produced using a combination of deduction and induction. This means that the theory discussed in Chapter 2 was used to create most of the codes. The rest were developed inductively by looking at the data (Punch, 2005). Table 5 presents the codes created to organize the data. The data was organized and coded with the help of Atlas.ti 8.

*Table 5 List of categories and codes developed after analyzing the transcripts in Atlas.ti 8*

	Code
●	CHALLENGES
●	Challenges_Environmentally
●	Challenges_Financially
●	Challenges_Governance
●	Challenges_Social

●	SOCIO-ECONOMIC IMPACT
●	Socio-Economic Impact_Job creation
●	PLANNING STRATEGIES
●	Planning Strategies_Laws
●	Planning Strategies_Policies
●	Planning Strategies_Practices
●	Planning Strategies_Recommendations
●	Planning Strategies_Visions
●	SUSTAINABLE PRACTICES
●	Sustainable Practices_Access to public green spaces
●	Sustainable Practices_Agricultural practices
●	Sustainable Practices_Cultural/natural heritage protection
●	Sustainable Practices_Inclusive/ participatory/sustainable planning
●	Sustainable Practices_Reduce Env. impacts of cities
●	Sustainable Practices_Social sustainability
●	URBAN FARMING
●	Urban Farming_Community
●	Urban Farming_Strategies
●	Urban Farming_Initiatives
●	Urban Farming_Production capacity/consumption
●	Urban Farming_Supporting entities
●	Urban Farming_Type/Function
●	VALUE
●	Value_Benefits
●	Value_Where
●	Value_Who
●	Value_Why

### Archival records

For this research, it was essential to use archival records to obtain statistical data revealing how urban farming has brought change to the Netherlands. The types of archival records that were used included:

- maps where urban farming initiatives were portrayed; and
- reports containing data previously collected about the initiatives, statistical data on health and nutrition, and economic data on urban farming initiatives.

It is important to keep in mind some weaknesses of using archival records. There may be some bias as some reports were produced with a specific purpose and audience in mind (Yin, 2009). To prevent the use of only government documentation, academic articles were also used to corroborate the data if they are available. In addition, maps were used to illustrate some information about the Netherlands.

### Documentation

Documentation is a relevant source of evidence for case studies, and it can take different forms (Yin, 2009, p. 103):

- letters, memoranda, email correspondence, and other personal documents, such as diaries, calendars, and notes;
- agendas, announcements and minutes of meetings, and other written reports of events;

- administrative documents, proposals, progress reports, and other internal records;
- formal studies or evaluations of the same “case” that being studied; and
- news clippings and other articles appearing in the mass media or in community newspapers.

While using documentation, it is important to keep in mind that some of the documents may be biased and only reflect the opinion of the author (Yin, 2009). To prevent the use of biased documentation, it is important to corroborate the information using other sources (Yin, 2009). For this research, the documentation that was used included governmental reports, documents, and pronouncements.

### Interviews

Interviews are an important source of information for case studies. Although it is important to maintain a consistent line during the interview, this should be more like a conversation and be fluid (Yin, 2009), which is why the decision was made to conduct semi-structured interviews. The aim of this research was to have semi-structured interviews to understand the value stakeholders give to urban farming, corroborate, and add to the acquired data from documentation and archival records. It was also expected that data obtained through the interviews would give an insight into the interactions between the stakeholders.

People contacted for the interviews were chosen from three sectors close to the urban farming movement, namely the urban farming initiatives, municipalities, and academic researchers. All were contacted through an email or through Facebook Messenger, resulting in 19 interviews being conducted. The interview protocol for the semi-structured interviews can be found in Appendix 01. The questionnaire was created based on the articles by Brown, (2004) and Horlings, (2015), who introduce Wilber's (2004) four-quadrant model. The questionnaire was divided into four groups:

- Focus on the urban farming initiators (I)
- Focus on the engaged community and the farm’s practices (it)
- Focus on the interaction between initiators and the government (We)
- Focus on the urban farming initiative (they/its)

Table 6 presents how many people were interviewed for each sector. The interviewees represent the municipalities of Amsterdam, The Hague and Groningen, and academic researchers from the universities of Wageningen and Groningen.

*Table 6 List of representatives interviewed for the research.*

Actor typology	Organization
Urban farming initiative	11 bottom-up initiatives
Local governments	5 representatives
Academics	3 academics who have conducted research on urban farming

The interviews were conducted via Skype or in person and each one lasted around 45 minutes. The interviews were then transcribed using the AmberScript website. When the transcription was completed, the Atlas.ti 8 program was used to code and analyze the data. Table 5 presents the code groups and codes that arose after analyzing the transcripts on Atlas.ti 8.

### 3.4. Ethical issues and limitations of the research

Potential limitations of the research include choosing a holistic design instead of an embedded design. A weakness of this design is that the research does not examine specific phenomenon of the case. In this case, the research design tends to be abstract, which makes it more difficult to obtain clear measures or data, and the case study may shift from the intended direction (Yin, 2009).

To prevent any ethical issues, the interviewees are asked in advance if they would like to participate in the research. An overview of the questions was also sent to them prior to the interview, and the purpose of the research was explained to them. The interviews were anonymously quoted, and the transcriptions are only available on request.

### 3.5. Case description: the Netherlands

Although the Netherlands is the second-largest agricultural exporter in the world (the US is the largest), (Wageningen University & Research, 2019), urban farming has been growing in popularity (Van der Schans, 2010). In contrast to other countries where urban farming is popular, there are no food deserts in the Netherlands, and food is quite accessible to every social class as the social security provision in the country is adequate (Van der Schans, 2010). However, between 2000 and 2017, fresh produce became 40% more expensive, and in the last ten years the prices for unhealthy products such as sugar, ice-cream, and candy, have only increased by 13% (Seidell and Halberstadt, 2019). Urban agriculture has emerged as part of a movement for consumption and production of regional food products only (Van der Schans, 2010). Despite urban farming appearing to be a new movement in the Netherlands, it has been part of city life since Middle Ages.

The first form of urban farming in the Netherlands started in the Middle Ages, when only the nobility and clergymen grew vegetables up until the 13th century (Zeevat and Berendsen, 2001). In the 14th century, other population groups started to grow vegetables in “coelgharden” or “coeltunen,” which comes from one of the most popular crops of the time: “kool” (cabbage) (Zeevat and Berendsen, 2001). During the industrial revolution, industrial workers were given the opportunity to grow vegetables to help ease their living conditions. The coelgharden or coeltunen are also known in the Netherlands as “volkstuien” (people’s gardens). The first volkstuien in the Netherlands were meant for charity purposes to help the poor population (Zeevat and Berendsen, 2001).

In 1784, the Maatschappij tot Nut van het Algemeen organization was founded. Its goal was to help increase the population’s happiness by improving the material and moral conditions of, in particular, the working class. Since 1838, the organization helps in the north of the country with the founding of different “arbeidstuinen” (worker’s gardens). Bruinwold Riedel, secretary of the organization for 25 years (Pflug and Groninger Archieven, 2017), believed that the volkstuien were a way to combat poverty, increase work productivity, and improve the moral condition of the workers (Zeevat and Berendsen, 2001). It is important to highlight that it was organizations like Maatschappij tot Nut van het Algemeen that provided these plots of land for the volkstuien. These volkstuien were located mostly on the outskirts of the cities (Zeevat and Berendsen, 2001).

By the end of the 19th century, the charitable volkstuien started to come to an end as the volkstuieners or gardeners founded their own garden associations. Garden associations were part of the movement for workers’ emancipation and the labor movement. At the same time, industries saw the benefits of providing volkstuien to their workers. By 1911, the central government was also aware of the benefits of volkstuien and adopted a law that made the development of organized volkstuien possible (Zeevat and Berendsen, 2001). Similar to the US and the UK, the Netherlands also made use of the volkstuien to combat hunger among its citizens during both World Wars (Zeevat and Berendsen, 2001). Currently, urban farming in the Netherlands is not only done in volkstuien, but gardens can also be found within city centers as private gardens or community gardens (Eetbaar Groningen, 2019a; Stadslandbouw Gemeente Den Haag, 2019). In contrast to the economic role of volkstuien in the past, today urban farming and volkstuien are considered as more of a hobby or pastime role for the communities involved (Zeevat and Berendsen, 2001).



## 4. Analysis and results

The results presented in this chapter are based on the data collected using the methodology outlined in Chapter 3. The data consists mainly of data collected from archival records, documents, and interviews. The data collected from the interviews were used to support the data the archival records and documents and to understand the value the interviewees place in urban farming. The interviews were conducted with people who are directly connected to urban farming as this gave an insight into the practices of the urban farming initiatives and their relationship with the government. The data is presented with reference to the research questions and the code categories that arose through the analysis of the interviews and documents with Atlas.ti 8.

### Research sub-questions:

1. How does urban farming contribute to achieving Sustainable Development Goals N 2 (zero hunger), 8 (no poverty), and 11 (sustainable cities and communities) in the Netherlands?
2. What is the role of a place-based approach in achieving sustainable development?
3. How does the place-based approach enhance the positive impact of urban farming in the Dutch context?
4. What are the challenges (social, financial, environmental, and on the governance) associated with improving the performance of urban farming initiatives in the Netherlands?

### Code groups and codes that arose from the analysis:

*Table 7 Code groups and codes that arose from the analysis.*

	<b>Code categories and sub-codes</b>	<b>Comment</b>
●	CHALLENGES	This category describes the challenges perceived by people involved in urban farming. These may be initiatives, governments, or researchers.
●	Challenges_Environmentally	
●	Challenges_Financially	
●	Challenges_Governance	
●	Challenges_Social	
●	ECONOMIC IMPACT	This category describes the economic impact felt by the initiatives or governments due to urban farming practices.
●	Economic Impact_Job creation	
●	Economic Impact_Socio economic objective	
●	PLANNING STRATEGIES	This category describes planning strategies for food production and urban farming. These strategies may be policies, vision documents, laws, or strategies presented by non-government parties. In addition, recommendations on planning strategies are grouped within this code.
●	Planning Strategies_Laws	
●	Planning Strategies_Policies	
●	Planning Strategies_Practices	
●	Planning Strategies_Recommendations	
●	Planning Strategies_Visions	

●	SUSTAINABLE PRACTICES	This category describes: - social sustainability, such as inclusivity of minorities, cultural heritage. - Environmental sustainability within cities, access to public green spaces, sustainable agricultural practices, natural heritage.
●	Sustainable Practices_Access to public green spaces	
●	Sustainable Practices_Agricultural practices	
●	Sustainable Practices_Cultural/natural heritage protection	
●	Sustainable Practices_Inclusive/participatory/sustainable planning	
●	Sustainable Practices_Reduce Env. impacts of cities	
●	Sustainable Practices_Social sustainability	
●	URBAN FARMING	This category describes urban farming matters such as: - Who is the community where they are located - Their finances - Examples of initiatives - Production capacity and consumption of their harvest - Organizations or governmental entities that provide support to the initiatives - Type/function of the initiative
●	Urban Farming_Community	
●	Urban Farming_Finances	
●	Urban Farming_Initiatives	
●	Urban Farming_Production capacity/consumption	
●	Urban Farming_Supporting entities	
●	Urban Farming_Type/Function	
●	VALUE	This category describes the value that the stakeholders give to urban farming. This code includes information about benefits that people consider they get from urban farming, who the people involved are, and how they are involved, why are they are involved, and where urban farming is practiced.
●	Value_Benefits	
●	Value_Where	
●	Value_Who	
●	Value_Why	

Following the sub-questions, analysis of the data is explained according to these categories:

- Urban farming initiatives: will analyze the code categories of urban farming and value
- Economic impact: will analyze the code category of economic impact
- Sustainable practices: will analyze the code category of sustainable practices

- Planning strategies: will analyze the code category of planning strategies
- Challenges: will analyze the code category of challenges.

#### 4.1. Urban farming initiatives

As explained in the case description, urban farming in the Netherlands has been around since the Middle Ages and grew in the 18<sup>th</sup> century with the establishment of the volkstuinten to feed the working class (Zeevat and Berendsen, 2001). Since then, the next boom, according to data collected from the interviews, was around the economic crisis of 2008. Urban farming has since grown in popularity around the country. Research conducted by Wageningen University & Research (Dekking, 2017) reveals how urban farming has grown in popularity in Almere city between 2010 and 2017:

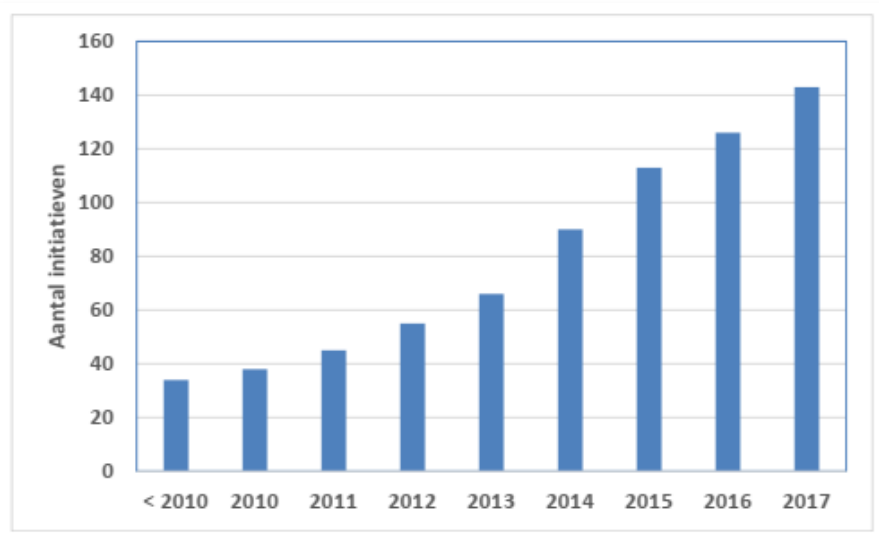


Figure 8 Development of the number of urban farming initiatives in Almere (From Dekking, 2017, p. 16)

The popularity of urban farming can also be seen in other cities by looking at the following mappings from the governments of Amsterdam, The Hague, Groningen, and Utrecht.

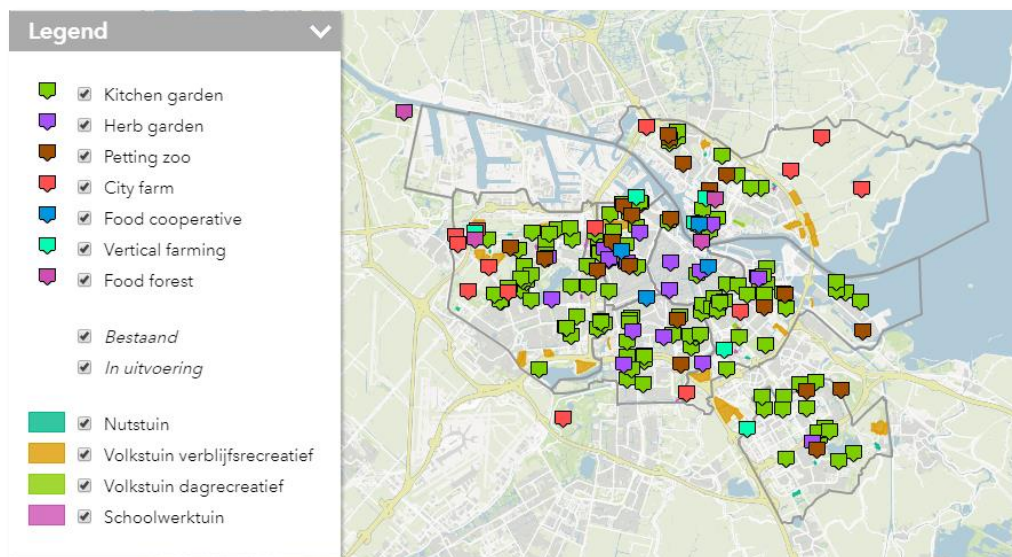


Figure 9 Map showing the types of urban farming undertaken in the city of Amsterdam.



Figure 12 Map showing the types of urban farming present in the city of Groningen



Figure 11 Map showing the types of urban farming present in the city of The Hague.

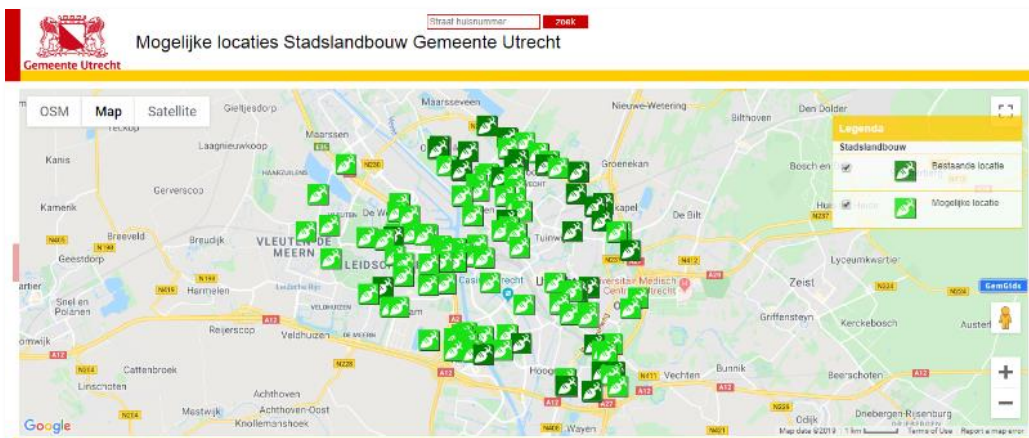


Figure 10 Map showing the types of urban farming present in the city of Utrecht.

## Type and function of urban farming initiatives

Table 8 Production and garden types (developed by the author).

Production types	Garden type
Animals and animal products	Allotment gardens/volkstuinen
Flowers and herbs	Community gardens
Fruits	Food forest
Mushrooms	Kitchen garden
Vegetables	Picking garden
	Orchard
	Roof garden
	School garden
	Self-harvesting garden
	Vineyard

As illustrated in the urban farming maps from the municipalities of Amsterdam and Groningen, the initiatives have been categorized into different recurring types. This could also be seen in the analysis of the interviews and documentation. It is worth mentioning is that not only were there differences in the type of gardens, but also in production types, function or goals of the initiatives, and the usage of the products. Table 8 presents the types of gardens and production found in

interviews, archival records and documents. Most of the initiatives mentioned in the interviews focused on the production of vegetables. Some of these also had a few fruit trees or wanted to plant some; herbs were combined with edible flowers.

Garden types vary more than production types. Some of these depend somewhat on what the initiative wants to achieve. For example, community gardens tend to be small and in the same plot as the neighborhood community center is located. Volkstuinen are large plots of land at the fringe of the city, that are divided into small plots that people can rent. In contrast to the community gardens where people work together, people who are part of the volkstuinen tend to work the land alone.

Table 9 Function/goal/purpose of the initiatives (developed by the author)

Function/goal/purpose of the initiatives	
Non-profit	Recreation (e.g.: petting zoo, just working the land)
	Healthcare (e.g.: farms that help burnout, anxiety and depression patients and addicts).
	Social cohesion
	Biodiversity
	Management of green spaces
	Place making/beautification (e.g.: by planting flowers)
	Food production for underprivileged (e.g.: for a food bank)
	Education (e.g.: school gardens)
For-profit	Food production for commercial purposes (e.g.: CSA gardens)
	Recreation (e.g.: strawberry picking)
	Energy (e.g.: Stadsboerderij Almere (Dekking, 2017))
	Closing cycles (e.g.: initiatives that use the waste from the garden for the compost)
	Short chains of production (e.g.: most urban farming initiatives)

Another category found in the analysis was the function/goal/purpose of the initiative. This category was divided into two sub-categories: for-profit and non-profit. There are functions that repeat themselves in both categories, such as recreation and food production. Some participants answered that they participated in small urban farming initiatives for the experience of just working the land and the company of other people. Under food production, two organizations stated that their main purpose was to produce vegetables for the food bank in their respective cities. Most of the urban

farming initiatives have more than one function. For example, most of them combine food production with functions such as social cohesion.

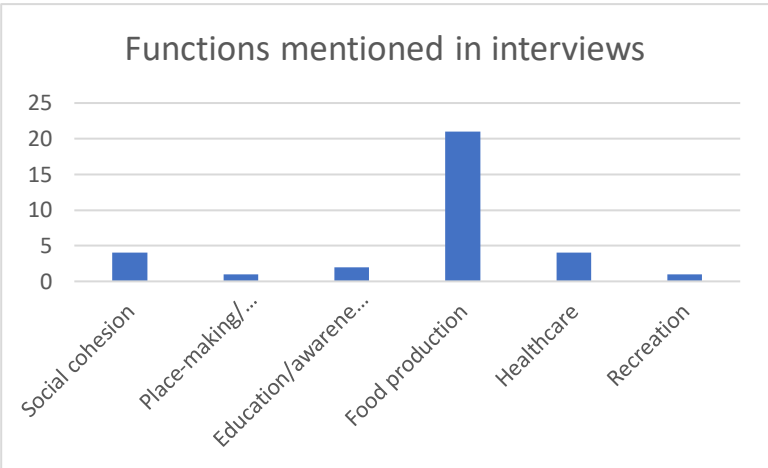


Figure 13 Functions for urban farming mentioned in the interviews.

Food production is an important aspect of urban farming. From the interviews, the next most important function that arose was social cohesion (see Figure 13). Within the function of food production, two distinctions can be made, namely commercial purposes and non-commercial purposes. Under the commercial farms, a system of community supported agriculture (CSA) was used. This is a system where the farmer and the clients jointly bear the burden and share the proceeds. For this research, two CSAs were interviewed, one of which is a self-harvesting garden. These interviews suggested that most of the CSAs are self-harvesting gardens.

Food production

Along with knowing what the most popular function of the initiatives is, it is interesting to know what is done with the harvest. A 2004 report from the Dutch government's Planbureau voor de Leefomgeving office states that 21% of Dutch citizens produced their own food in allotment gardens or kitchen gardens and only 1% of the population was active in joint food production such as urban farming (Rood, Van Gelder and Van Zeijts, 2014). While these numbers are significant, there is no new data from the CBS that gives an insight into the current situation. From data collected for this research, it seems clear that most people consume what they harvest from the gardens (see Figure 14).

It is important to acknowledge that even though most people who participate in the initiatives consume their harvest, they are aware that the food that they harvest is not enough to survive. From

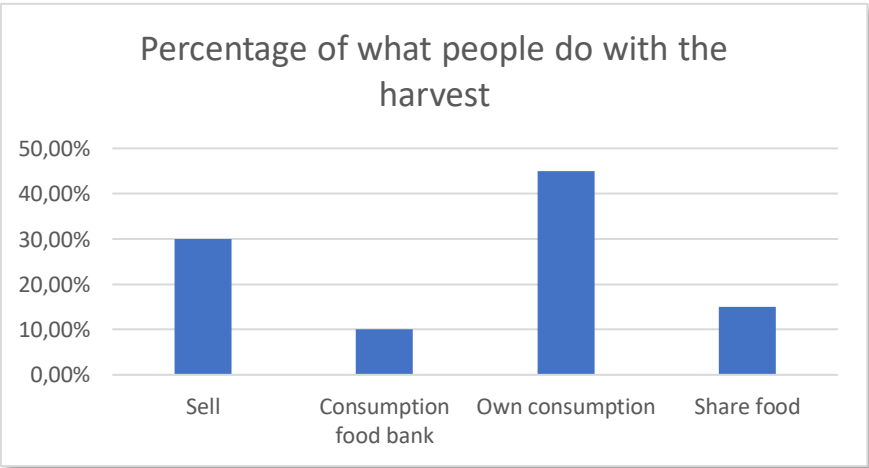


Figure 14 Percentage of what people do with the harvest. (developed by the author)

the interviews, it seems that people are not in a position in which they cannot access healthy food as

the government has different programs for people with low or no income. There is welfare (Werknemersverzekeringen, 2019), food programs to feed children who go to school without eating (from interview), and the food is cheap enough to be accessible to every social class (from interview). However, there are still news reports that there are around 300,000 children who go to school without eating breakfast (Radio, 2019). These are situations where governmental assistance is not enough to help parents get out of difficult financial situations. In the Netherlands, the Food Bank helps not only people who need extra help with groceries, but also helps deliver breakfast to children. In 2018, they helped 29,000 children around the country (Voedselbank, 2019). Even though the food banks help so many children, in 2018 and again in 2019, the Food Bank in Groningen reported that it faces financial difficulty delivering breakfast to every school (von Hebel, 2018), so it will start delivering only to primary schools (Cusiel, 2019).

## Urban farming strategies

### *Finances of the initiatives and supporting entities*

Figure 14 reveals what people do with the harvest; this shows that 30% sell their produce. On a country level however, a government study conducted in 2014 shows that only 1% of the society sells what they harvest (Rood, Van Gelder and Van Zeijts, 2014). The question is how the rest of the initiatives finance their practices. From the interviews, it would seem that most initiatives have the option of asking for subsidies from a local or regional government, NGOs, and even banks (Dekking, 2017, and information gathered from interviews). In addition, depending on the type of initiative, they collect money from the participants in the case of Volkstuinen or moestuinen (allotment gardens, kitchen gardens). Other cases indicate that some initiatives have a mix of functions and types (e.g. a healthcare center also has a moestuin). Some get help from family or do what they can with the money they accumulate from various sources, as was the case with one of the interviewees:

*“Yes, everything that is here was created with my own hands. I have all the means, yes, my parents have, of course, bought me (the plot) again. Yes. If I had some money, then I bought a plant – look a coin plant is three euros. All the plants that you see there, all those mint plants originated from one plant. And yes, I am a damn good breeder. I am an out-of-the-box thinker. I have done everything with my own resources and I have also done other work for ten years. But the last two years I have been here full time. Luckily, I have a partner who has a job so we can still make ends meet. Yes, that is a luxury.”*

Some local governments, such as Groningen, The Hague, and Amsterdam, have created offices to deal with urban farming. In Groningen, there is *Eetbaar Groningen* (Eetbaar Groningen, 2019b), which was formed together with the NGO Natuur en Milieufederatie Groningen and has even appointed a “coordinator for green participation,” who people can contact directly if they want to start a green initiative (Natuur en Milieufederatie, 2019). The municipality of The Hague has also appointed a project manager for urban farming; with the help of the project manager, the municipality of The Hague has created a website called *Stadslandbouw Den Haag* from which citizens of The Hague can get information on how to start an urban farming initiative, the types of urban farming, information about the municipality, and networks with other municipalities and what they are doing (Stadslandbouw Den Haag, 2019). In Amsterdam, the municipality has taken the same steps as Groningen and The Hague. Through the municipality website they explain what urban farming is and who people can contact if they want information or advice on the topic (Gemeente Amsterdam, 2014). *Van Amsterdamse Bodem* is the platform where people can access information about urban farming in the metropolitan area of Amsterdam, get to know other urban farmers, and obtain general information on food (Van Amsterdamse Bodem, 2019).

Organizations that do not focus on urban farming itself, but on creating a network, developing knowledge, working with governments, and representing citizens' initiatives have also been established. In Amsterdam, two food councils concerned with a new way of planning food systems were created by citizens and researchers. The Food Connect Foundation represents provincial and municipal authorities, and large companies in the region (minus the municipality of Amsterdam). The other food council is called the Food Council MRA, which is a network of citizens' initiatives and entrepreneurs (Valk, 2019). Together with the Food Connect Foundation, the province of North Holland created a new regional food vision in 2017 (Valk, 2019).

On the same level of network making, the *Stedennetwerk Stadslandbouw* and *Stadslandbouw Nederland* initiatives were established. *Stadslandbouw Nederland* focuses on sharing knowledge and experiences, learning together and helping each other, making people aware of the effects of food, and working together to discover what urban farming can mean for how society treats food in the future and how it can contribute to a more social and climate-proof environment (Stadslandbouw Nederland, 2019).

Stedennetwerk Stadslandbouw is a network of the municipalities in the Netherlands that have been working on urban farming. They work on developing and deepening knowledge about new and promising themes, exchange, gain inspiration and learn from practical situations. Together with citizens and entrepreneurs, they work on local and national policy, and contribute to expanding urban farming in the Netherlands (Stedennetwerk Stadslandbouw, 2019). The network was developed by Wageningen University and Research at the request of the Ministry of Economic Affairs, Agriculture and Innovation (Stedennetwerk Stadslandbouw, 2013).

Housing corporations are important stakeholders and supporting entities for the urban farming initiatives as the plots of land that some of the initiatives have acquired have been from the housing corporations. In Groningen, Neijstee and Lefier have been known for working together with the initiatives. One of the initiatives that obtained a plot of land from Neijstee was Toentje, the urban farming initiative that harvests for the city's food bank:

*"In the beginning the woningbouw didn't cooperate because different parks were building locations apart from Neijstee from Lefier. Okay. And Neijstee, you know Neijstee, just nicely, is an organization who wants to help do more than the other. But now it is less. This is a complex story. They are not allowed to invest in the citizens. Only maintenance for the buildings and they are not allowed to build. Ten years ago, they invested with Toentje. They invested in the groene tuin."*



The municipality of The Hague collected and grouped the stakeholders that could be or are engaged in urban farming within the city or at a country level (Voorma and D S B afdeling Natuur- en Milieu Educatie, 2017):

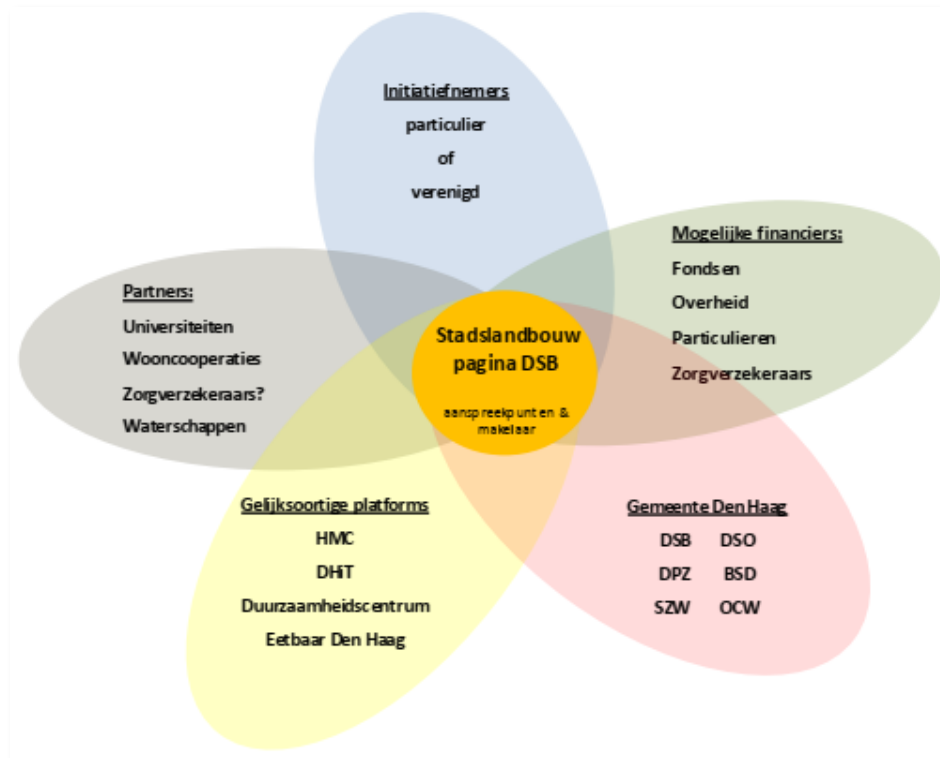


Figure 15 Possible stakeholders involved in urban farming in The Hague. (Voorma and DSB afdeling Natuur- en Milieu Educatie, 2017)

### Urban farming marketing strategies

To compete in the market, urban farmers can differentiate, specialize or diversify when they take on marketing strategies. Specializing, for example, helps them reduce their costs, fine-tune their operations, and reduce their costs of production, processing and distribution (Van der Schans, 2010). This, in turn, has the goal of increasing the scale of the operation. Differentiation means offering a quality product that is clearly different from other products on the market. Another form of differentiation is vertical integration, which this work does not focus on. For example, one of the interviewees differs from other producers by producing flowers and biological, vegetarian and high-quality teas.

*“Mahala/Mahalo vegan lunch cream on the corner of. At the moment they take away so many edible flowers that I cycle there three times a week. And their clientele is naturally also interested. It is also a young hipster place and, well, of course, I need that. I have also changed many things in my manure because I actually noticed that I have a lot of vegans as customers, and in my garden, I use vegan fertilizer.”*

Diversification refers to the diversification of activities that have synergy. Examples of these activities are nature management and landscape services, social care, education and recreation.

*“I was then responsible for maintaining gardens and laying out gardens. Wild gardens, all that kind of thing. And provide information.”*

The people who are involved with the initiatives, their reasons for joining, the community and where the initiatives are located

#### *The people involved in urban farming*

Something that was asked during the interviews is, “Who are the people who are involved in urban farming?” People who are involved in urban farming have a variety of backgrounds. In age, the participants range from children, who participate through school or with their parents, to older people who are retired. Most initiatives say they are open to everyone in the neighborhood; however, based on the interviews, mostly Westerners participate. This could be explained because in Groningen, where most initiatives were contacted, the population mostly of Western origin. Most of the population with a migrant background live in the large cities; Amsterdam, Rotterdam, and The Hague have the largest percentage of migrants (CBS, 2018). Interviews with the municipality of Amsterdam and The Hague could explain this as they mentioned that the initiatives tend to be mixed:

*“This is a healthcare institution that gets to know ten different, fifteen different, nationalities and they are working together; they don't speak the language. Going to cook together and the oven you made is immediately a kind of community center here.”*

*“Very mixed. It is a very mixed company. So, young and old, male and female, different background, different cultures. So yes, I recently heard someone say an allotment association is a small society, so a mini society. I think it applies, yes. Everything around is very different.”*

*“There is also money that is very varied. It depends on the neighborhood where it is, which of course makes a big difference. In which city does the initiative want to arise, but then you simply see many different backgrounds of Amsterdammers. Yes, I think it is very varied on the spot. It is said that it is also a hobby for the higher educated. I think there are enough projects in Amsterdam that show that this is certainly not just for that and that it can also appeal to everyone – low-skilled and immigrants. Yes, some people don't like gardening or farming. But it appeals to many different people.”*

As mentioned in the literature review, Glatron and Granchamp (2018) divide initiators into two categories (i.e. individuals and collectives). However, knowing characteristics such as the gender of those involved can tell us more about the influence that urban farming has on the community and if the initiative is helping with inclusivity of minorities. This can also indicate how accessible it is for everyone in the community to participate or make use of the services provided by the urban farming initiative. The interviewees that practice urban farming are divided as follows:

- Individual: 7 interviewees
- Collective: 9 interviewees

It is also important to note that when talking with the five government representatives, most of the examples that they gave about urban farming were about collective initiatives. It was even mentioned that the governments place emphasis on having the approval of the neighborhood and being accessible to everyone in the neighborhood.

#### *The community*

After explaining who the people involved in the initiative are, it is also important to understand the community that interacts with these initiatives as this can provide information about the value that is created by the urban farming initiative. From the interviews, people who buy from commercial initiatives are more conscious about healthy and sustainable eating and believe that a farmer must earn a fair price. When looking at the non-profit initiatives, a broad range of characteristics is visible, including young and old, differences in nationalities and background ethnicities, all of whom welcome

the initiative into the neighborhood. However, there are situations where the community has reservations about the initiatives. For instance, one of the commercial initiatives interviewed is located on the fringe of the city where the community is conservative and religious:

*“They are sometimes a little suspicious or a little afraid of change. And therefore, I think there are fewer members in the garden because they think it is scary and crazy.”*

Some initiatives consciously choose where they want to be located. For example, one of the initiatives’ goals is to focus on women who are, temporarily or structurally, in a vulnerable situation. Their focus is on intergenerational women of color. The community where they are located reflects this type of group:

*“If I’m not mistaken, 49 percent men, 51% women. The largest ethnic groups are Afro-Caribbean, with Suriname leading, and then Antillean, then a lot of others. So, West African, very many single mothers. I thought the highest percentage, I think together with the North district. The highest percentage of single mothers. Perhaps South East is slightly higher. A very matrifocal culture. So indeed, single mothers, women who run a household.”*

*Why people join urban farming initiatives and the benefits they perceive they obtain*

Reasons people gave to be involved in urban farming were varied, ranging from valuing small-scale/local/organic agriculture, to using it as a way to get to know their neighbors. The same goes for the reasons the government sees value in participating in urban agriculture. Table 10 provides a summary of the responses given by the interviewees.

*Table 10 Reasons identified for taking up urban farming*

<b>Reasons for participating in urban farming</b>	
<i>Initiatives</i>	<i>Government</i>
Value in small/local/organic agriculture	Give people space to do things
Family/close friends’ interest in agriculture	People are working the land, they become a more critical consumer
Mental health	It is a means to achieve policy goals
Social cohesion	
Learn from each other	
Reconnect with food/healthy food	
To work with the hands	
People are more interested in nature	
Creates biodiversity	
Economic interest	
They like gardening	

A study conducted by the PBL Netherlands Environmental Assessment Agency (Planbureau voor de Leefomgeving) about what Dutch citizens think about sustainable food found that 24% participate in urban farming initiatives because they think food grown in an urban farm tastes better than food purchased in a shop. Others gave reasons such as: it is better for the environment; it is teachable, especially for the children; they save on costs; it is good for their health; and it adds to the livability of the neighborhood. It is important to note that the interviewees for this research who did not participate in urban farming also did not believe in the value of the activity (Rood, Van Gelder and Van Zeijts, 2014). The same research concluded that about 1% of the population participate in urban farming in the Netherlands.

The PBL Netherlands Environmental Assessment Agency updated the report in 2018. However, the focus was not directly on the citizens and their opinions, but on the policies. This report acknowledges

that the government considers urban farming as an alternative food network that has arisen due to the “faceless and essentially placeless food system.” It concludes that alternative food networks continue to be mentioned as part of problem descriptions but not in the solutions. An exception is the Nature Inclusive Agriculture Manifesto initiative. The Agency does not consider that alternative food networks, of which urban farming is a part, are an important perspective in the Food Agenda (Mulwijk and Krom, 2018).

Similarly, with regard to the variety of reasons people gave for joining urban farming initiatives, the interviewees perceived they obtained different benefits. Table 11 presents a collection of the benefits people perceived. In addition, Wageningen University & Research conducted a study in 2013 in which they did a social cost benefit analysis to identify the impact the benefits of urban farming have on Dutch society. They found that the social balance of urban farming, or food gardens, is €100,000 net present value with a benefit–cost ratio of 1:2. This means that urban farming is a socially sustainable project as the welfare of the society improves. The study found that there were health benefits, livability or place making benefits, in which they identify a reduction in crime costs through more social supervision and more value experienced through more recreational possibilities (Abma *et al.*, 2013).

Table 11 Benefits perceived (developed by the author)

<b>Benefits</b>
Income/economic independence
Mental health
Connect with people you would not normally talk to
Neighborhood development/place making
Helps by giving a use to empty lots
One person responded that it gives her a place to be herself
Being outside
More green within the city
Social cohesion
Physical exercise

*Where are the initiatives located?*

Despite urban farming being a popular and recognized activity in the Netherlands, access to land is still a matter of debate due to limited space availability in the country. Still, most municipalities have a process whereby initiatives can access a plot of land. This can be by giving them space in a park, renting a lot, or entering into an agreement with a housing corporation:

*“This can be done in various ways. For example, if you have a good plan, you can rent a space somewhere and you can grow champignons in an apartment building. You can then do your own garden if you have it and you can do it on your own balcony. There are also places of which. One, for example, the garden was previously owned by one of the developers. They bought it. A lot of effort to own the land bought the garden. What I mentioned earlier where I went to look for those people within the church, ‘whose land is that?’ ‘Oh, who is wanting to build a development but now don’t want to build?’ Ultimately, they can now be there for 10 years.”*

The following is a summary of all the locations where the interviewees practice or gave examples of other initiatives:

- The outskirts of the city
- Government land
- On expensive/marketable land

- House garden
- Volkstuinen/Allotment garden – city outskirts
- Within buildings
- Developers' land
- Bought land
- Community center
- School gardens

Most of the large commercial urban farming initiatives are located on the outskirts of the cities. This is where representatives of the government also think it would work best for the socio-economically driven urban farmers:

*“And then there's this whole space around the cities where the farms are. I mean there's where the potential is for actual urban farming. I would say of this, of this local food system. Yeah of course. Yeah. That's what I think so.”*

*“But farming more in the commercial way is also urban agriculture. I think it would work better on the outskirts rather than inside because you don't have space. If there's space ... it's expensive.”*

In addition, people can always approach their municipality when they see an open unused plot of land and enter into an agreement with the government or developers to use it for urban farming.

## 4.2. Economic impact

### Job creation

Urban agriculture is not only about the scale in terms of land, but also in terms of turnover and employment (Dekking, 2017). Based on the interviews and research conducted in the Netherlands, jobs that have been created due to urban farming include internships, volunteer work, so-called “participatiebanen” (jobs that allow people to build experience) and self-employment. Furthermore, urban farming has created job opportunities for partially disabled people and provides training to disadvantaged young individuals by allowing them to work on farms. Other groups that have found opportunities through urban farming are people with burnout and other social problems, as it helps them reintegrate into the labor force.

As more urban farming initiatives appear and the current farms grow, more jobs can be created. Notably, a benefit mentioned by one of the government interviewees is that the government could be interested in this job creation as costs of welfare can be avoided. In particular, one of the goals is to create participatiebanen through urban farming as it helps people gain work experience. These participation jobs bring benefits to both the initiatives and people who want to join to workforce, as the initiative obtain get low wage workers and save on expenses.

There are benefits for the employees and volunteers in the urban farming initiatives as welfare and health costs are avoided (Abma *et al.*, 2013). In particular, as peri-urban farms are closer to the city, they can take advantage of volunteer labor (Van der Schans, 2010). The added value for society is that urban farming contributes to the creation of job opportunities (for low educated individuals). However, this will not be the case when there is a local shift in employment instead of an increase in employment. In this case, the economic balance will be negative (Abma *et al.*, 2013). Abma *et al.* (2013) conclude that urban farming creates jobs for those with low education and helps them re-enter the workforce. For example, one of the initiatives stated:

*“Volunteers make up a big proportion of the people employed in most of the initiatives. They often form part of the ‘participatie,’ where they are allowed to keep their welfare and earn a bit of money on the side with this volunteer job, as long as it is no more than 32 hours a week. This way, they get the chance to build up experience and acquire new skills so they can apply for regular jobs. In this way, these programs help integrate people into the workforce.”*

### 4.3. Sustainable practices

#### Social sustainability

Social sustainability identifies and manages the positive and negative impacts of businesses on people (Karbassi, 2018). Furthermore, a socially sustainable society supports the capacity of current and future generations to be equitable, diverse, socially cohesive and democratic and promotes wellbeing through urban design (Palich and Edmonds, 2013). The data was analyzed with this definition in mind.

A categorization of urban farmers not recognized by Veenhuizen (2006) is urban farming initiatives with the goal of providing for those who do not have the necessary resources to access food products. For example, two of the initiatives interviewed mentioned that their main goal is to produce for the food bank in their respective cities. Looking at the functions identified in urban farming initiatives and benefits people mention, social sustainability is one of the main characteristics that appears. An example is that people realize it is a way to get to know people they would otherwise not have spoken to, or reconnect with family members, as one of the interviewees noted:

*“And my father was just retired and then, much to the surprise of my mother, the first thing he did after he retired was rented a garden for vegetables. And he was so proud of that, but it was too much for him. He couldn’t do it. So, he asked me to accompany him and I thought that would be a fantastic opportunity to get to know my father better.”*

One of the goals of some initiatives is to be accessible and open for everyone in the community and contribute against loneliness. Some even organize events to get the people of the neighborhood together. These events are not necessarily related to urban agriculture; they could be a music event or cooking workshops. From the government’s point of view, urban farming is a means to stimulate social cohesion and the health of the citizens (Ministerie van Economische Zaken, 2016).

#### Cultural/natural heritage

Agricultural heritage is part of the cultural landscape of the Netherlands. Therefore, urban farming can contribute to the cultural heritage of the country (Rijksdienst voor het Cultureel Erfgoed, 2019). The gap between the citizens and farmers has widened, as many people hardly know where their food comes from (Dekking, 2017). Urban farming contributes to close this gap by reconnecting Dutch society back to their native food and helps them reconnect to their ancestors who worked the land. From the interviews, it was clear that people with other cultural backgrounds living in the Netherlands use urban farming as a way to reconnect to their culture, growing vegetables they would eat in their home countries (Afdeling Beleid en Programmering Dienst RO/EZ Gemeente Groningen, 2012). One of the interviewees stated:

*“When someone says like, oh yeah, like what, you know, what you had in your childhood cooked by your grandma, your grandparents. So, it’s a little bit, probably the same with the gardening. Like people have this romantic idea, like, having gardens. And at some point, they realize that, oh it’s my ancestors who probably also did it. So, kind of always connecting to the earth but also like connecting to where you come from, to your heritage.”*

Because the agricultural landscape in the Netherlands is part of the heritage and protected by law, this has an impact when peri-urban farmers want to plant fruit trees as this changes the landscape. If peri-

urban farmers want to plant fruit trees, they need to discuss the plan with the government to see what the alternatives are, as was the case with one of the initiatives:

*“And there are also rules for that. And then we would first have to go to the table with a landscape architect to see what is and isn't allowed. Ehm, but also in this, this is an experimental area, so there is always something possible and yes, that way. ... And then this directive must be maintained, so that there can be trees here and here, but not here and here. Or just bushes.”*

### Inclusive/participatory planning

The interviewees' perspective is that the government is open to working with the initiatives when it comes to providing access to an abandoned plot of land. There have even been situations in which the municipality has stepped in when the owner of the plot is another party, such as housing corporations. However, the stance of the governments is that initiatives are free to do what they want as long as they follow the law. Two of the initiatives explained that the terrain where they are located is an area where experimental projects can be given a place. However, the place is not provided free charge; the initiatives fall under a corporation that rents the plot from the government. The government wants to have a serving role towards society instead of being above the people.

### Access to public green spaces

By opening the gardens for everyone to be able to participate, the initiatives are creating open green spaces where people can go and enjoy them. Even the commercial initiatives have, for example, open days where people can go to experience the work. Another example is that some *volkstuinen* have open hours when they are accessible to everyone who wants to walk in. Even from the point of view of the governments, the initiatives must stay open so everyone can access to them and participate:

*“Look, I think it's very important, such a project is fine, but many of the urban agriculture projects in the city are already very open, so it's available. If accessible to everyone in the neighborhood, and certainly when it comes to projects in the public space, where, ultimately, I hope that publicity and accessibility are very important principles for projects. That can't be a certain group, well this part belongs to us and the others don't like it, or we close it. That is an important discussion about the use of the public space, that there is room for everyone.”*

### Agricultural practices

Most of the interviewees practice sustainable agriculture by composting the garden waste and collecting/harvesting water or using water pumps when possible. However, some use tap water when there is no other option. One of the interviewees admitted that they used pesticides to get rid of the slugs; however, he does not believe this is bad for the environment as it is allowed by the law and is more critical about what is or is not organic agriculture. For this interviewee, sustainable agriculture means having plants that complement each other and rotating the plants. Of the initiatives interviewed, the most professional ones went beyond the basics of not using chemicals, collecting water, and composting. For example:

*“We have, yes, vegetables that are in season. We do not use very special cultivation measures to grow things that do not want to grow. So, for example, we only have tomatoes in the summer and, uh, not in the winter and that way we follow the seasons a bit. So that is – then you also have diversity. At the start of the season you have certain things that you don't have at the end of the season, for example.”*

*“No poison, indeed, no pesticides. If we use pesticides, it is like having pigs in the garden to eat weeds or ducks to eat snails. So, we try to create an environment in which the pests also have natural enemies, so that the pests can never get out of hand.”*

The three governments interviewed encouraged sustainability. For example, the government of The Hague encourages initiatives to be sustainable through the “subsidieregeling duurzaamheid door haagse wijken,” which is a subsidy of 5000 euros for sustainable neighborhood initiatives. Urban farming initiatives that promote sustainable eating may be able to apply for this subsidy. An important point is that most people interviewed do not undertake urban farming for subsistence reasons, so the need to produce efficiently is not there. It is important to realize that, even from the central government, the Netherlands is trying to be sustainable in its agricultural practices. Since 2018, the intention was that glyphosate and other plant protective products would be forbidden by law (Ministry of Economic Affairs, 2013). However, an examination of recent policies indicates that it is still legal to use (Rijksoverheid, 2019).

#### Reduce environmental impacts of cities

As is clear from the section on agricultural practices, most initiatives are conscious of trying to use sustainable practices in their plots. Although some of these initiatives have small plots of land, they teach people to use resources optimally for the production of food. Nowadays, people are learning about composting and harvesting of water. Not only can urban farms contribute to making people conscious of their everyday activities, but if cities could introduce food forests, the impact would be greater for biodiversity within the city. For example, one of the interviewees explained about a small-scale food forest in Nijmegen that has 200 different species. Students had conducted research to measure the biodiversity of this forest to compare it to a natural area of the country and found that both forests had the same type of species of insects and birds. However, the amount of fauna found in the food forest was twice as much as in the natural area.

#### 4.4. Governmental planning strategies

##### Laws, policies and visions

The Land & Co initiative, advisers for a strong and vibrant countryside (Land & Co, 2019), wrote a guide explaining the laws that play a role in urban farming (Land & Co, 2014. p. 3):

*Table 12 Laws that initiatives should take into account when practicing urban farming.*

	Theme	Law (most important)	Institution	Permit
1	Food safety	Commodities Act Drinking and Catering Act EurepGAP and other private delivery requirements	Central government: NVWA Municipality of Branch	No need for a permit, you just need to follow the law
2	Environment, water, soil, manure, waste	Environmental Management Act Activities Decree Agriculture	Municipality	Report or permit. Test on AIM.nl
3	Trade general	Civil code	Central government, civil justice. Chamber of Commerce.	No need for a permit, you just need to follow the law. Register on KvK.nl
4	Space used	Spatial planning law Crisis and recovery law	Municipality	Environmental permit



5	Rent, property	Civil code	Central government, civil justice.	Contract. basic rights that are above contract
6	Labor	CAO	Central government, civil justice.	
7	Tax	Tax law		Register as a company. Register for BTW or not
8	Building, separation	Spatial planning law Building decree Fire brigade	Municipality	Environmental permit
9	Flora and fauna	Flora and fauna law	Central government and municipality	Municipality
10	Financing, crowdfunding		Central government	
11	Public order liability	Civil Code General local regulation	Central government and municipality	No permit, sometimes a permit is needed, such as for a terrace, party/event

The theme of food safety only applies for initiatives that want to sell or bring their produce to a shop, as they only buy food from entities that are registered in the NVWA (Nederlandse voedsel en warenautoriteit, Dutch Food Safety Authority) as entrepreneurs and that meet the Commodities Act. According to a Land & Co document, urban farming is still not assigned as an activity in the urban areas with the exception of volkstuinen (Land & Co, 2014). However, the municipality of Amsterdam explained that urban farming has been given a place in the zoning plan in two areas in the city. This information can also be found in the Food Vision of Amsterdam (Zanen, Ponteyn and Keijzer, 2011; Gemeente Amsterdam, 2014). Municipalities can also assign a mixed use to plots, such as recreation, offices, or landscaping. The crisis and recovery law allows governments to also assign a temporary use to plots within the urban area. It is important to mention that people who have a plot in a volkstuin are not allowed to sell their produce as the zoning is recreation.

Theme 5, rent/ property, explains that the use of land for agricultural management is called a lease. The rules for leases are in the civil code. These are aimed at protecting the business farmer or horticulturist. However, it is the law that determines whether it is rent or lease and not the tenant or owner. A lease or rent makes a difference to aspects such as the rights and obligations of the notice period, subleasing, and contribution to a partnership. Theme 9 is about the flora and fauna law, which protects the biotope of species. Within the city, frogs, toads, bats and certain butterflies are the most common protected animal species.

In 2018 the central government published the food policy and its central points. This policy explains that one of the goals is to improve the trust between citizens and farmers by narrowing the gap through short chains, urban farming, and regional products (Ministerie van Landbouw Natuur en Voedselkwaliteit, 2018). 2018 was the year of “day-care” and kitchen gardens were installed in more than 150 locations as part of this. The goal is to teach children about food, taste and healthy behavior (Ministerie van Landbouw Natuur en Voedselkwaliteit, 2018). Furthermore, the central government

sees possibilities in urban farming on vacant lots, on rooftops, and also indoors under the influence of improved LED lighting (Snellen, Hamers and Tennekes, 2019).

At municipality level, policies can differ between cities. The three municipalities interviewed explained that they have policy documents where the value of urban farming is expressed. For example, in 2009 the municipality of Groningen adopted the Groenstructuurvisie (green structure vision) and made room for green participation, which includes urban farming as one of the green activities (Afdeling Beleid en Programmering Dienst RO/EZ Gemeente Groningen, 2012). The interviewee explained that the municipality of Groningen is working on an update for the Food Vision that is due in spring 2020.

It is important to note that municipalities want people to be the carriers of the initiatives; they will not start a project themselves. Municipalities tend to ask initiatives if they have support from the neighborhood and participants before they can start. This is done to ensure that the community wants the initiative in their neighborhood and that the initiative will have continuity. In some instances, the municipalities work with initiatives without making the arrangement formal. For example, the interviewee from the municipality of The Hague explained that, in some instances, initiatives are given a small plot of land to work on:

*“There are also pieces of park where the municipal green manager gives a part of 10 by 10 meters and we do not put anything on paper. Sounds fun to do, but if the next year is crap then you are gone. You do not have a right, but it is a kind of tolerance. We agree that we both want the best.”*

#### Recommendations to the government

During the interviews, some recommendations for improvement were mentioned, including availability of money for the management of the initiatives. Urban farming could be given a space on the outskirts of the cities where there would be more space for more production. A study by Wageningen University & Research indicates that to see the real impact of urban farming, we need to look further than the food production initiatives and look at the whole network of industries that are interlinked in the system (Dekking, 2017). This means that connecting urban farming to restaurants, hotels, and hospitals would demonstrate the impact urban farming could have in a city. Vertical



Figure 16 Possible different types of urban farming in Rotterdam (source: De Graaf, 2011, p.49)

farming has great potential to grow the production of urban farming. People ask for more space and, according to the population, government policy on investing in a farm can best be achieved through tax breaks (Rood, Van Gelder and Van Zeijts, 2014). The Eetbaar Rotterdam association conducted a study on the potential urban farming has for the city of Rotterdam. They give examples of a zoning plan for different urban farming types (De Graaf, 2011). Figure 15 illustrates where the different types of urban farming could be placed within the city of Rotterdam (De Graaf, 2011, p. 49).

Van der Van der Schans (2010) goes further into what the role of planning should be in respect of urban farming:

Planning needs to focus on improving access to these farms for urban pedestrians and cyclists rather than the large vehicles generally used by conventional agriculture chains. It also requires public planning to acknowledge the multifunctional character of peri-urban and urban agriculture locations, and therefore a shift from strict single use to more flexible mixed-use planning designations in the peri-urban farmland zone. For example, agricultural buildings could be used as education or recreation facilities, as processing sites, or as direct sales outlets (p. 42).

Although the three municipalities used for this research have a central point for information for urban farming, not every city in the Netherlands has one. One of the initiatives stated that Amersfoort does not have one, so people who want to start an urban farming initiative are a little lost asking for information at the municipality. The municipality of The Hague created an image showcasing the importance of a central point for information (Voorma and D S B afdeling Natuur- en Milieu Educatie, 2017) (see Figure 17). The interviewee also recommended that more information and understanding of different types of agriculture and the value it has for society and ecology is required. Other initiatives

also mention that understanding what each initiative does and its impact on the community would help the cooperation between both parties and some laws, such as the “landscape heritage law” would not be necessary to follow in some cases.

In 2014 the Planbureau voor de Leefomgeving (PBL Netherlands Environmental Assessment Agency) conducted a study on the opinion of Dutch society on sustainable food (Rood, Van Gelder and Van Zeijts, 2014). From this research they gathered some information on what people believe the

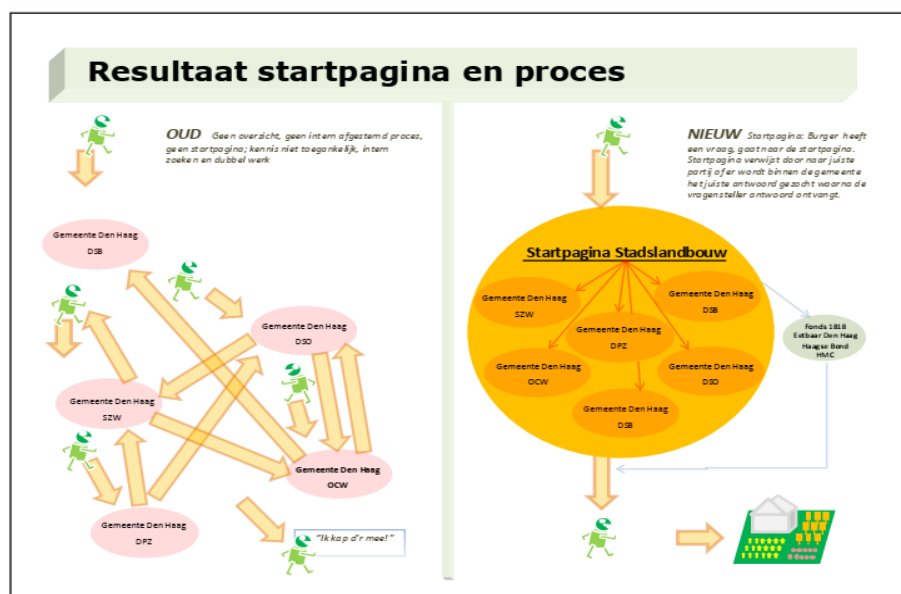


Figure 17 Diagram showcasing the importance of having a central point for information about urban farming (source: Voorma and DSB afdeling Natuur- en Milieu Educatie, 2017)

government takes measures on. Table 13 is a translation of the original, which can be found on page 43 of the report.

*Table 13 Public expectations about government action for measures for food from their own garden or joint food production (proportion of the population who think these are sustainable activities and that the government should do something for this) (Rood, Van Gelder and Van Zeijts, 2014, p.43)*

Government measure	Growing more vegetables or fruit in the vegetable garden, etc.	More joint food production
The government must set fewer rules *	40	51
The government must make more land available	70	81
The government must make it cheaper, for example, through tax breaks or subsidies **	58	38
The government must provide information about self-cultivation and joint production of food	43	67
Other	2	5
* With joint food production: the government must lay down fewer rules to make it possible to grow food together in more places; ** With joint food production: there must be tax breaks.		

#### 4.5. Challenges for urban farming

##### Environmental challenges

Most environmental challenges people encounter when starting urban farming initiatives is the quality of the soil. The government of Groningen explains that this is why most initiatives that they help start use raised gardens. Other challenges encountered include learning to work the land and how the sods are sometimes difficult to remove.

##### Financial challenges

###### Commercial initiatives

Various financial challenges were encountered, including not being able to grow revenue and the variety of products, as growing from a one-person company to having employees would mean not having anything left of the profits as labor is expensive in the Netherlands (Van der Schans, 2010). There are occasions when initiatives cannot pay commercial prices for the plot as they are just starting. Generally, the following applies to entrepreneurs: the larger the scale, the more profitable (Abma *et al.*, 2013) so, it can become expensive for a starting farm to have a large plot to be more profitable. Initiatives that start as non-commercial farms in volkstuinen and later want to become a commercial concern encounter the challenge of having to move to another plot, as commercial activities are not allowed within these allotments. It must be noted that food production for urban farming initiatives can be harder as it is already difficult to earn an income from food production in the Netherlands. Farmers have been under pressure due to increasing costs and international competition.

###### Non-commercial initiatives

Even though some of the small initiatives finance their practice with subsidies, there are not enough governmental or particular subsidies for the initiatives. Initiatives end up competing for the scarce resources provided. Furthermore, there are initiatives that do not want to be financed by banks like Rabobank because “*everything will be corrupted,*” as one of the interviewees stated. Non-commercial

initiatives have the same challenge of not being able to pay commercial prices for the plot of land, but they are willing to pay a symbolic amount for it.

Around 2010, housing corporations were able to finance all types of social initiatives, including urban farming initiatives. However, after a problem with a housing corporation in The Hague, the central government did not allow housing corporations to invest in social initiatives any more as they could only focus on social and student housing.

To be able to grow food on the ground, the initiatives need to have a statement confirming that the ground is clean enough to grow food, and that can be quite expensive and not affordable for most small initiatives.

### Governments

Municipalities also encounter financial challenges. For example, governments that have urban farming programs depend on the elected party to continue supporting the programs. Most depend on where the preferences and priorities of the elected government stand. For the governments, it is difficult to calculate the monetary value of the initiatives, so it is hard to give plots of land to the initiatives when more houses need to be built.

### Governance challenges

It took one of the commercial initiatives four years before the government introduced urban farming in the policies and made it possible to get access to a plot. Although the interviewed municipalities mention urban farming as part of their policies, it is still not included in the zoning plan. This has consequences, because the lease contracts that the municipalities offer are only temporary. This makes it difficult for urban farming initiatives to build a business or have continuity. Many of the initiatives are worried that the land where they are located will be sold to an investor, which has been the case on several occasions. Some initiatives had to close because the land was sold to an investor. At the same time, there are different functions that claim space, so it is difficult for governments to decide how to distribute the available land.

Some of the initiatives also commented that what helped them start their initiatives is that they knew someone within the municipality, so it was easier to ask for information and pull strings. Therefore, communication is important, but sometimes both parties have difficulties. There is also the challenge that the government does not know much about the topic, its potential, and how to deal with these bottom-up initiatives that want to do things themselves. In the case of the three municipalities interviewed, only one person within each municipality is responsible for the department that deals with urban farming. One of the interviewees experienced this as exhausting. From the initiatives' side, the problem is that most of the time they do not know what they are supposed to do. For example:

*“Questions that new initiators struggle with are: What permits do I need? What does the zoning plan say about the piece of land on which I want to grow? Where can I find a buyer? Where can I find seed/fertilizer/advice? Are there areas or buildings where I can get going? With whom should I go then? What are the tax consequences of the commissioning of construction sites? Where do I get water from? How do I involve the neighborhood/children/other organizations for greater support?” (Gemeente Amsterdam, 2014 p. 8)*

### Social challenges

A social challenge identified during the interviews was that some initiatives are not able to attract people from their neighborhood to participate. In one of the initiatives, the problem turned out to be that it was difficult for groups of other ethnic backgrounds to connect or understand the Dutch culture

or the decision making within the initiatives. However, after one of the participants talked to the neighbors, they were able to accommodate their needs. In addition, the interest is slowing down and people who want to take on the managing role are difficult to find. So, when that person leaves, there is no one else to carry that same role and the projects tend to disappear.

A recurring social challenge is the collaboration between the people or managing people. Sometimes people did not like the management style, or like each other. In addition, from the outside there are many people who do not understand the value of urban farming. For example, food is not considered in planning so the acceptance of these initiatives at all levels of society becomes more difficult. Another challenge the initiatives encounter is that there are not enough volunteers, not because they do not understand the decision-making process or urban farming, but because people tend to be too busy with other activities or have personal problems.

Table 13 presents the results of a code frequency analysis of the challenges, specifically focusing on what the interviewees had to say. The numbers reveal that the recurring challenges for the government and the initiatives lie in governance. Conversely, according to the researchers interviewed, the most important challenge for urban farming lies in the society.

Table 14 Problems are more frequent by group of respondents (developed by author)

	Interviews-Government		Interviews-Initiatives		Interviews-Researchers		Totals
	Absolute	Column-relative	Absolute	Column-relative	Absolute	Column-relative	Absolute
● Environmental Challenges	3	5,56%	3	5,26%	0	0,00%	6
● Financial Challenges	8	13,89%	7	12,28%	10	17,65%	25
● Governance Challenges	32	<b>55,56%</b>	26	<b>45,61%</b>	17	29,41%	74
● Social Challenges	14	25,00%	21	36,84%	30	<b>52,94%</b>	65
<b>Totals</b>	57	100,00%	57	100,00%	57	100,00%	171

## 5. Discussion and conclusion

To recapitulate, this research aimed to examine how a place-based approach can enhance urban farming's potential to contribute to the sustainable development of cities in the Netherlands, specifically focusing on how a place-based approach may help give more decision power to the people. This chapter discusses the results presented in Chapter 4, their implications, and their limitations. Then the research conclusion is present and finally, the chapter ends with a reflection on the research and the contributions to planning.

### 5.1. Discussion

This section discusses the results by answering the sub-questions.

- **How does urban farming contribute to achieving Sustainable Development Goals 2 (zero hunger), 8 (no poverty), and 11 (sustainable cities and communities) in the Netherlands?**

The overall conclusion for goal 2 of the SDGs is that urban farming is not used by local initiatives as a way to feed themselves, as food is accessible for citizens in the Netherlands. The country has different programs for people with low or no income, so they can access food. In the case of people who do not have sufficient income to buy groceries, the Food Bank, which is a private organization, provides help. However, between 2000 and 2017, fresh produce became 40% more expensive, and in the last 10 years, the prices for unhealthy products such as sugar, ice-cream, and candy, have only increased by 13% (Seidell and Halberstadt, 2019). Given these points, it can be concluded that the government still needs to fill a gap so the lower income part of society is able to access healthier food. This can be done by lowering the taxes on healthy basic products.

People do, however, participate in urban farming mostly for food production (see Figure 13). Some of the reasons for participation were to reconnect to the process of food production and healthy eating, for recreation, and for education. Furthermore, people mostly consume the harvest or sell it.

This brings us to goal 8 of the SDGs, no poverty. From Figure 14, it can be seen that 14% of the interviewees sell their produce and engage in businesslike practices. Furthermore, the economic impact of urban farming is mostly felt on job creation. Jobs that have been created through urban farming practices include internships, volunteer work, participatiebanen, and self-employment. Urban farming has also contributed to the employment of partially disabled people, the training of disadvantaged young people, and helping people with social problems such as burnouts to reintegrate into the labor force.

The contribution of urban farming to SDG 11 in the Netherlands lies mostly in social sustainability. In fact, people realize it is a way to get to know people they would otherwise not have spoken to, or a way to reconnect with family members. In addition, most initiatives are accessible to anyone who is interested in participating. Another point that goal 11 focuses on is the contribution to the cultural and natural heritage of the country. As agriculture is part of the Dutch cultural heritage, urban farming contributes to connect people to their cultural heritage. Furthermore, other cultures living in the Netherlands have found a way to stay connected to their original culture through cultivation of fresh produce that they would normally find in their countries of origin.

Local governments have given space to local initiatives to practice urban farming and play a facilitating role when it comes to non-profit urban farming initiatives. However, for initiatives that want to be lucrative but do not have much capital to start, no subsidies or other governmental help was identified. As they are seen as a business, they need to pay taxes and commercial prices for plots of land, which increases the difficulty of becoming profitable for some. An additional contribution by urban farming

is the creation of green spaces within the cities. By giving space to urban farming initiatives, local governments have created public access to green spaces for all citizens.

Sustainable agricultural practices could not be counted as a contribution of urban farming, since most people practicing urban farming are more conscious about the environment and are interested in producing food in sustainable ways. However, reducing the environmental impacts of cities has been a contribution from practicing urban farming, as it teaches people to use resources optimally for the production of food. People are also learning about composting and harvesting of water. Not only can urban farms contribute to the consciousness of people in their everyday activities, but if cities also introduce food forests, the impact can be greater for the biodiversity within the city.

In conclusion, urban farming has contributed to some extent to the three SDGs. However, to have a greater impact, the movement would need to grow more by having more people learn about the benefits of urban farming and providing more land for urban farming initiatives. It is important to note that the governments and the private sector must see urban farming as a feasible way to achieve sustainable food production by incorporating it into urban activities. Some of the benefits mentioned here can also be attained by introducing green areas and other types of social initiatives to the urban area.

- **What is the role of a place-based approach in achieving sustainable development?**

As explained in the literature review, a place-based approach can be used to develop places sustainably as it focuses on the sense of place people experience and use to transform the same places. Further, to adapt to sustainable development, the use of local resources, capacities and distinctiveness of a place are required (Horlings, 2015). We also saw that the motivational values people have when involved with their surroundings play an important role in the place-shaping process to achieve sustainable development. To discover if motivational values also play a role in their involvement with urban farming, a cross-tabulation was conducted between the “sustainable practices” codes and the codes “value\_benefits,” “value\_why,” and “urban\_farming\_type/function.” These three codes provide an overview of the reasons for involvement of the people interviewed. The table reveals that the motivational values people have for participating in urban farming as a way to contribute to sustainability lies mostly on social sustainability. This means that people are consciously participating in urban farming for social cohesion reasons and to have a sense of community. We can also see that some of the interviewees participate in urban farming to contribute to sustainable farming. However, the numbers are still a little low. As most people participate for social reasons, it can be concluded that urban farming adds to the social sustainability of their communities.

*Table 15 Cross-tabulation showing the values behind the involvement in sustainable practices. The numbers are the number of times both codes were mentioned at the same time (developed by author).*

	● Sustainable Practices_ Access to public green spaces	● Sustainable Practices_ Agricultural practices	● Sustainable Practices_ Cultural/ natural heritage protection	● Sustainable Practices_ Inclusive/participatory/ sustainable planning	● Sustainable Practices_ Reduce Env. impacts of cities	● Sustainable Practices_ Social sustainability
● Urban Farming_ Type/Function	3	5	1	1	1	6
● Value_Benefits	1	1	2	0	0	8



• Value_Why	1	1	1	0	0	5
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- **How does a place-based approach enhance urban farming positive impact in the Dutch context?**

Table 12 in Chapter 4 presents a summary of the laws that play a role in urban farming. Most are aimed at people who want to start a business in urban farming. For example, the law on food safety does not apply for bottom-up initiatives that consume their own produce; the law only applies when people want to sell what they harvest. Furthermore, people who grow vegetables and fruits in their own gardens do not need to apply for any type of permit. From the interviews, the impression was that people are relatively free to practice urban farming within these laws. However, they do not indicate any type of room for people or initiatives to have a participative role in the decision-making process or give feedback to the government about how the procedures are taking place or what could improve.

Some municipalities have been giving room to urban farming initiatives by assigning a mixed use to plots in the zoning plan. This way, people are free to give an agricultural designation to a plot of land without any further governmental process. This mixed use also allows the municipalities to experiment with urban farming initiatives without needing to change the zoning plan. However, the municipality of Amsterdam has opted to assign two places in the zoning plan for urban farming purposes. Other municipalities give room for experimentation and allow urban farming initiatives to use empty plots of land for agriculture. However, this is always with the condition that if the plot of land is sold or developers want to build something, the initiatives must go. Alternatively, short-term lease contracts are provided, so there is not really a feeling of security among some of the initiatives.

The framework for place-based governance by George and Reed (2017) guides local initiatives and governments to implement strategies to achieve sustainable development. This framework can provide municipalities in the Netherlands with a guide to achieve a comprehensive understanding, community empowerment, and community-based outcomes. Local governments in the Netherlands should focus on understanding the needs, issues and interests of their citizens. Bottom-up urban farming initiatives should also focus on adapting their governance strategies to have a greater impact on the society. However, it also depends on whether the initiatives are self-governed or self-organized. Based on the interviews, both take place in the Dutch context. Table 16 compares the Dutch case to the characteristics of self-governance and self-organization initiatives presented in Chapter 2 (Rauws, 2016, p.345).

*Table 16 Comparison of the Dutch urban farming initiatives with characteristics of self-governance and self-organization initiatives (developed by author based on Rauws (2016, p.345))*

	<b>Urban self-governance</b>	<b>Urban self-organization</b>	<b>The Netherlands</b>
Focus of analysis	Urban transformation led by citizens and non-governmental actors	Urban transformation as a result of adaptive behavior of urban systems and networks	Community groups lead the movement of urban farming with a social driven goal. However, there are some cases where the initiatives are individual and not characterized by a network of citizens.
<b>Characteristics</b>			

Actions by actors	Internally coordinated, no external control	No coordination or external control	The initiatives are internally coordinated.
Intent	Collective	Individual	Mostly collective, there are some farms that do it only for profit.
Source of the reconfiguration of the urban system	Resulting from deliberative action towards a common goal	Spontaneously emerging from a set of independent changes at a lower scale	The deliberative action of attracting more people to understand the food process and the process of doing it sustainable.
Predictability of the outcome of the transformation process	Some degree of predictability	Unpredictable	Through the provision of land permits and the registration of urban farming initiatives. The transformation can be predicted to some degree.
Point of engagement of enabling and constraining institutional forces	Individual and collective activities	Individual activities	Individual and collective activities.

The table indicates that most of the initiatives tend to be self-governance in nature. This means that the place-based framework can be used on these initiatives as it focuses on urban transformation led by bottom-up initiatives. For a place-based approach to enhance the positive impacts of the urban farming initiatives, the initiatives should focus on following the framework for sustainability developed by George and Reed (2017). This means that they should focus on developing the drivers of local leadership, collaborating networks, diverse community engagement, learning together, and information sharing (George and Reed, 2017) to achieve comprehensive understanding, community empowerment and community-based outcomes.

- **What are the challenges (social, financial, environmental, and on the governance) of improving urban farming initiatives' performance in the Netherlands?**

Recurring challenges for the bottom-up urban farming initiatives to perform well are financial challenges, governance challenges, and social challenges. Environmentally, the challenge is the quality of the soil. Initiatives are asked to perform soil quality tests before starting to grow vegetables or fruits on the ground. However, even if the soil is not contaminated, the government recommends that starting initiatives have raised gardens if they want to continue with the initiative. This may be sufficient for small neighborhood initiatives, but if initiatives want to extend their production, they are going to need to invest a lot of money on testing the soil thoroughly and cleaning it to be able to grow fruits and vegetables.

Financial challenges were identified for three parties: the commercial initiatives, non-commercial initiatives, and the local governments. With standard farming, the investment in urban farming is high, so growing from a one-person company and still making a profit is a challenge, especially because land on the outskirts of the city or within the city is more expensive than in the rural areas. An alternative could be giving empty buildings to urban farmers so they can invest in vertical farming. Financial challenges non-commercial initiatives face include obtaining financial resources to be able to operate. However, initiatives do not see it as a challenge as they get tips from the local governments on how to

access financial resources. Financial challenges faced by local governments include how to give land away for urban farming initiatives that cannot pay for it when housing needs to be built.

Governance challenges found in the data included local governments trying to find a way to deal with bottom-up initiatives that want to start farming within the urban areas and how to give them the space physically and within the policies. For the bottom-up initiatives, the challenges were in communication. This means feedback and when they needed information on the possibilities for urban farming. Another major challenge for the bottom-up initiatives is the continuity of the lease contracts for the land where they can practice urban farming. Continuity is also a topic that came up in the social challenges as people do not know how to attract others to participate or people who want to take on a managing role. When the person or people who have a management role leave, many of the projects tend to disappear.

## 5.2. Conclusion

In the introduction, it was mentioned that policy strategies have mainly been focused on policies that support urban farming and on participatory planning (Schmidt, Magigi and Godfrey, 2015; Dieleman, 2017) but not on a place-based approach. Participatory planning is the focus of some research as one of the known challenges for urban farming initiatives is the lack of participation in the decision-making process that could influence policies (Nchanji, 2017). Furthermore, the connection between urban farming and sustainable development and the significance for developed countries could benefit from more research. The findings from this research have, to some extent, closed this gap in the literature, especially for the Dutch case. To elaborate on this, the research question will be answered.

### ***How can a place-based approach help enhance urban farming's positive impacts so it can be used as a driver for sustainable development in the Netherlands?***

The responses to the sub-questions partially address the main research question. However, to help answer the research question, the conceptual model is used as a guide to explain the situation in the case of the Netherlands. It can be concluded that people involved in urban farming do have a motivational value in line with sustainable development, even if they are unaware of this. For example, a significant focus lies in social cohesion. However, when asked about sustainable motivation, they did not make the link to social cohesion motivation. They focused more on how they farm without using any type of chemicals. What is important in this step is to inform urban farming initiatives of the impact urban farming can have on sustainable development when their motivational values are more in line with the purpose of creating a sustainable development.

Next, after analyzing the data, the conceptual model (see Figure 18) reveals that the drivers for a place-based approach for sustainability are not present. For example, strong collaborating networks are not present at local level. The organization for urban farming at national level, Stadslandbouw Nederland, does have an open website where information is shared on urban farming. However, it was not evident from the interviews that it connected every initiative in the country. Better performance by the bottom-up urban farming initiatives can be achieved if they were to be better informed of the possibilities a place-based approach can provide. The local governments can play a role in this network making as they are already connected to other local governments who also work with urban farming initiatives. The focus on place-based approach drivers can also help the initiatives with some of their challenges, such as continuity due to not having good leadership to manage the initiative.

Finally, some aspects of sustainable development have been achieved. However, they can be increased if local governments and urban farming initiatives would consider using the drivers of a place-based

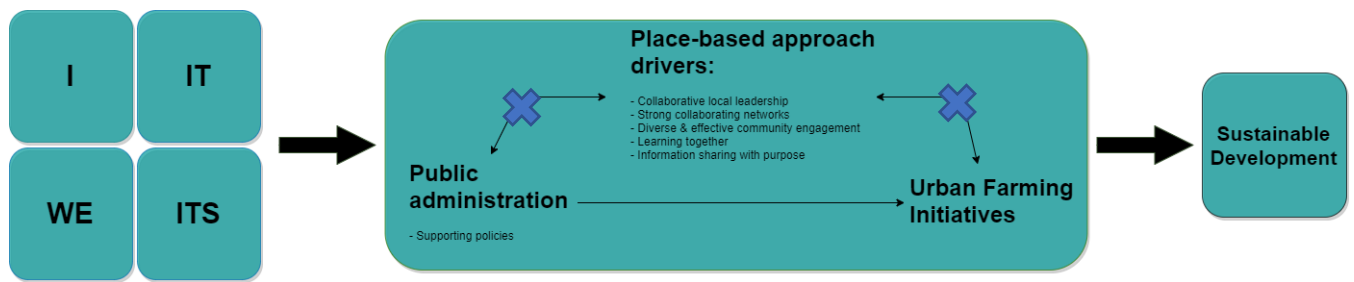


Figure 18 Conceptual model adapted to resemble the situation in the Dutch context. (Developed by author)

approach for sustainability. This would certainly help solve the challenges of communication between the government and the initiatives, and the challenges of knowledge.

### 5.3. Recommendations

As this research focused on how urban farming initiatives could help achieve the SDGs, specifically goal 2 (zero hunger), goal 8 (no poverty), and goal 11 (sustainable cities and communities), it would be interesting for future research to focus on what urban farming can mean for the food system in the Netherlands and see how it can then help to make it more sustainably oriented. Furthermore, it would be interesting study each of the goals separately as this would provide more detailed data and understanding of what urban farming can mean for the Netherlands. In addition, an experimental study teaching local government and initiatives how to implement the place-based approach drivers into their governance would put the theory into practice and test how this approach can help improve the sustainability of urban farming.

### 5.4. Reflection

As with any other research, there were limitations to this research. I started conducting the interviews in English; however, I soon realized that I would get more information from the participants if I conducted them in Dutch. Because Dutch is not my mother language, I feel some of the interviews could have gone a little more smoothly. Nonetheless, it was the right choice to conduct most of the interviews in Dutch as many of the participants felt more comfortable speaking in their language.

The results presented in this thesis show a general image of what is happening in the Netherlands with regard to bottom-up urban farming initiatives and how three of the municipalities have responded to this phenomenon. However, it is necessary to test how local governments and initiatives could put the drivers into practice and undertake a follow up. It would also be interesting to apply the place-based approach theory to developing countries and see the impact it has on these countries, since it has already been concluded from other studies that urban farming contributes to social and ecological sustainability (Madaleno, 2000).

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## Appendix – 01

### Questionnaire protocol

Dear Sir/Madam,

This investigation is carried out within the framework of education that is given at the Faculty of Spatial Sciences, in the master Environmental and Infrastructure Planning of the University of Groningen, in the Netherlands. This interview is part of the research master thesis. The purpose of this research is to reflect on the importance of Citizens' initiatives, their motivations and perceptions, their activities and the role of governments in this. This research examines urban farming as a bottom-up initiative and how they can contribute to the sustainable development of a city.

Individual people or businesses will not be identified in my research thesis. I'm only looking at an overall picture of urban farming initiatives. The results will be presented in an anonymous way and the data will be stored in a safe way at the University of Groningen.

The interview will last approximately an hour.

#### *Personal information*

*Name:*

*Title and job responsibility:*

#### *Interview questions*

##### **Focus on the urban farming initiators (I)**

1. Could you briefly introduce yourself and tell us about your personal background?
2. Could you tell why did you start participating in this community?
3. Why do you engage with Urban Farming? What is in your opinion their personal motivation or mission?
4. Was there a specific experience which made you decide to engage in this activity?
  - a. Have you experienced personal challenges during your engagement with the community? What kind of challenges? How did you experience these and cope with these?
5. What are the benefits you get from the urban farming initiatives?

##### **Focus on the Engaged Community and the farm's practices (it)**

1. What are the characteristics of the community?
2. What are the issues or challenges the community deals with? What goals do the community have?
3. What is the potential for development? What are the challenges?
4. How would you describe the engagement of the community with the initiatives?
5. Who are the people that engage with the initiative?
6. What social activities does Urban Farming initiatives provide for the community?
7. What type of farm do you have? (e.g. animals, vegetables, fruits)
8. What does the initiative do with the produce?
9. Does the initiative focus on sustainable food production? (e.g. waste management, sustainable water usage, no pesticides or herbicides)

**Focus on the Interaction between Initiators and the government (We)**

1. How do you perceive the community that you engage with?
2. How do you communicate with the community?
3. How do the urban farming initiatives access the space to farm?
4. Does the government (on different scales) have any type of involvement with the urban farming initiatives?
5. Has there been any type of rejection from the initiatives towards the government? Or vice versa?
6. How can the current situation be improved in your opinion?

**Focus on the urban farming initiative (they/its)**

1. What resources does the initiative have? To what extent is the initiative supported by other parties?
2. Who are the stakeholders involved in the initiative?
3. What are the roles of each stakeholder?
4. What is the influence/power of each stakeholder?
5. What benefits does the initiative get from the cooperation with the stakeholders?
6. How do the initiative deal with the stimulating/hampering role of these stakeholders?
7. Do the initiatives practice sustainable agricultural methods?