
ADVANCING GREEN CITIES

THROUGH PARTICIPATION





COLOPHON

Title	Advancing Green Cities – Through Participation <i>A multiple-case study research in Dutch cities to investigate how a Participatory Planning approach can support the development of Urban Green Infrastructure</i>
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Abstract

In a world where more than half of its population lives in urban areas, cities are becoming more vulnerable because of rapid urbanization combined with climate change impacts. One way for cities to adapt is by enhancing their green infrastructure. Urban green infrastructure has been increasingly promoted as a key measure to mitigate climate change impacts and developing green infrastructure in a participatory way has been identified as a crucial element to improve the planning process. This study aims to shed light on the way participatory planning in Dutch cities can support the development of urban green infrastructure in the context of climate adaptation. A multiple-case study in the Dutch cities Amsterdam, Groningen and Nijmegen was carried out to research how theory and policy are translated into practice. Combining policy document analysis (n=6) with semi-structured interviews (n=7), in-dept insights regarding the way cities spatially planned for urban green infrastructure in a participatory way are provided. Results obtained highlight that theoretical frameworks provide a solid foundation for cities to translate policy into practice. Interesting ideas and methods on how to develop green infrastructure together with citizens were found, yet this remains a tailor-made process that varies across cities. 4 recommendations for Dutch municipalities are provided: 1) make UGI a precondition in policy, especially on the neighbourhood-level; 2) invest in the inclusion of different target groups; 3) make effective use of digital tools and platforms; and lastly 4) make a central municipal department responsible for green initiatives. These should contribute to advancing green cities through participation.

Keywords: *Urban Green Infrastructure, Participatory Planning, Climate (change) adaptation, Multiple-case study, Level of involvement, Urban spatial planning*

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List of abbreviations

GI	= Green Infrastructure
UGI	= Urban Green Infrastructure
PP	= Participatory Planning
C(C)A	= Climate (Change) Adaptation

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Vondelpark, Amsterdam

Chapter 1 | Introduction

1.1 Background

Climate adaptation (CA) in cities has received increasing attention as cities and their inhabitants all over the world are becoming more vulnerable because of rapid urbanization combined with climate change impacts (Zuniga-Teran et al., 2020). Already more than half of the world's population lives in urban areas and this proportion continues to increase at an alarming rate with expectation that over two thirds of the world's population will live in cities by 2050 (UN, 2019; Barau, 2015). The fact that we inhabit a highly populated and urbanized planet poses critical challenges for cities. The way a city is designed can strongly influence the urban climate. This is why urban planning and development of cities is critical in tackling problems such as urban heat island intensification and preserving the liveability of cities guaranteeing better lives for future generations (Lenzholzer et al., 2020; Ramyar et al., 2021). One way for cities to adapt is by enhancing their Green Infrastructure (GI) to mitigate the negative impacts experienced (Derkzen et al., 2017).

The role of GI in an urban context is a topic that has been discussed in literature quite extensively (Ramyar et al., 2021; Sturiale & Scuderi, 2019; Davies & Laforteza, 2017). Green Infrastructure (GI) has become an important planning concept in EU policymaking and Urban Green Infrastructure (UGI) recently emerged from GI with a primary focus on the strategic planning of urbanized landscapes (Vaño et al., 2021). UGI has been increasingly promoted as a key measure to mitigate climate change impacts and thus planning UGI can have significant impacts on the urban climate (Zölch et al., 2016). Nevertheless, green space is often a scarce commodity in urban areas as greenery in the city disappears because of different processes, for example through new housing; paving streets and squares; and people tiling their gardens (WUR, 2020). Urban greenery is not only important for CA but it can also impact the quality of life of humans (Barau, 2015). Especially in the context of urbanization GI is important as the densification of cities generally leads to loss of urban green spaces which results in negative impacts like degraded air quality, poor biodiversity and negative impacts on human health and wellbeing (Furlong et al., 2018). The fact that GI has multiple benefits makes that the concept has broad appeal, but nevertheless there is a slow uptake of GI in urban planning where varying barriers complicate a smooth uptake (Matthews et al., 2015).

Several Dutch cities seem to have realized the potential of UGI within local urban spatial planning and are responding by stimulating citizens to participate in urban green development with different initiatives like 'Plan Boom' (Plan Boom, n.d.), 'Tegel eruit, Plant erin' (Gemeente Groningen, 2021) and even a tile popping competition between Rotterdam and Amsterdam aiming to increase greenery in cities (Baazil, 2021). Citizens' resources in the form of knowledge, skills, but also their collaboration with authorities in the form of public participation have been identified as crucial elements in sustainable development of UGI and so have the potential to improve the planning process of UGI development (Møller et al., 2019; Faehnle et al., 2014). Involving the public through collaborative and participatory approaches can thus play a key role within planning UGI. Nevertheless, this is a complex process that won't be solved with a one-size fit all solution as it remains case-dependent (Ibid.). Already in the 1960s, Arnstein (1969) warned that "participatory processes applied blindly become empty rituals" and so these planning processes should be evaluated by citizens' actual effect on process output (Fors et al., 2015, p.723). Participatory processes are thus interesting research phenomena and new research, connecting this to UGI development is still relevant.

1.2 Academic relevance

The first aim of this study, related to the academic relevance of this research, is to better understand how participatory planning (PP) can contribute to UGI development by combining these two areas of research on a local case-level. While participatory processes are widely demonstrated as being important, little research has been done to empirically connect those processes to physical outcomes (Fors et al., 2015). There is a knowledge gap in scientifically connecting theory and practice, resulting in a call for “a re-focus of research to the case level in order to approach a better understanding of participation” (Ibid., p.732). Also, research regarding UGI planning in cities under densification needs to include the topic of public participation (Haaland & Van Den Bosch, 2015). Furlong et al. (2018) and Zuniga-Teran et al. (2020) refer to this topic by stressing the importance of (continuous) community engagement as a strategy to address pressure on green spaces and to ensure multi-functionality of GI.

This research elaborates on the call by Fors et al. (2015) and Vaño et al. (2021) for a re-focus to case level research, to empirically test the actual benefits of PP processes in the development of UGI to achieve its full potential. To support planning and governance of UGI at the local level, more comprehensive guidance is required (Pauleit et al., 2019). Zuniga-Teran et al. (2020) state that the implementation of GI is context-specific as each city faces unique challenges so it is difficult to provide one-size-fit-all solutions for UGI planning. This is in line with Møller et al. (2019) stating about the complexity of participatory UGI governance. This research dives into this complexity by connecting theoretical debates, about the concepts of UGI and PP, to practical outcomes on case study level to better understand how these two fields of research are related.

1.3 Societal relevance

The second aim of this study, related to the societal relevance of this research, is to provide municipalities of Dutch cities with guidelines for local urban spatial planning by identifying lessons on how a PP approach can support the development of UGI.

The point of departure is inspired by several initiatives in the Dutch cities, aiming to increase greenery in the city by involving the public. These initiatives show that several cities are actively stimulating citizens to participate in planning processes aiming to develop UGI. Nevertheless, there is a gap between participatory theory and practice according to Puskás et al. (2021) and thus research on case level can shed light on how municipalities spatially plan UGI in a participatory way. Results from this case study research can be valuable for other Dutch municipalities looking to include PP as a practice aiming for UGI development. In order to come up with guidelines for municipalities regarding UGI planning as a CCA strategy, it is essential to understand the planning and governance of UGI at the local level. To achieve this, more comprehensive guidance is required (Pauleit et al., 2019).

1.4 Research statement

Summarizing the sections above, this research takes PP as a central approach and aims to provide municipalities of Dutch cities with lessons on how PP can contribute to the development of UGI in the context of CA. This thesis uses a multiple-case study research to investigate the contemporary phenomenon of PP on the development of UGI for CA in the Dutch cities of Groningen, Amsterdam and Nijmegen. This context provides knowledge on the relation between PP and the development of UGI for CA and consequently provide insights for municipalities on how to implement these concepts in their policy. Findings of the research are valuable for other Dutch municipalities through the provision of potentially meaningful guidelines.

According to the research aims, the main research question is formulated as: ***How can participatory planning in Dutch cities support the development of urban green infrastructure in the context of climate adaptation?*** To answer this question, the following sub-questions are developed:

1. What is meant with urban green infrastructure in the context of climate adaptation and how can this be planned?
2. What is participatory planning and what are benefits of such an approach from a theoretical perspective?
3. How and to what extent do (municipalities of) Dutch cities currently incorporate a participatory planning approach in the planning and development of urban green infrastructure?
 - a. How does the city currently plan and develop urban green infrastructure?
 - b. To what extent does the city currently incorporate a participatory planning approach in the planning and development of urban green infrastructure?
4. Which (policy) lessons for local urban spatial planning can be identified for participatory planning supporting the development of urban green infrastructure in Dutch cities?



Europapark, Groningen

Chapter 2 | Theoretical framework

This chapter elaborates on the key concepts central in this research, namely Urban Green Infrastructure (UGI) (section 2.1) and Participatory Planning (PP) (section 2.2) in the context of climate (change) adaptation (C(C)A). First, both concepts are demarcated individually by providing a short history of the concepts and clear definitions. Then the relationship between the concepts is explained in more detail in section 2.3. The chapter ends with a conceptual model (section 2.4) where the key concepts and their relations are visualised.

2.1 Urban Green Infrastructure (UGI)

2.1.1 History of UGI

Cities today face a variety of challenges like increasing urbanization and changing weather and climatic patterns (Zuniga-Teran et al., 2020). These challenges ask for a solid response to increase resilience within the urban boundaries leading to the emerge of the concept of Urban Green Infrastructure (UGI) (Van Oijstaeijen et al., 2020). UGI as a concept arose from the idea of Green Infrastructure (GI), an umbrella term for a strategically planned and managed network of (semi-)natural structures capable of delivering a wide range of benefits for humans and ecosystems (Benedict & McMahon, 2012). With the rise of GI there is a growing academic interest into its functioning and its development. Although the term (U)GI itself is relatively new to academic literature, the idea behind it is long existing. There is no clear time and place of origin of (U)GI but its historical roots go back to the 19th and 20th centuries. The idea of GI is based on much earlier concepts like parkways, green belts or garden cities; which shows that GI as a concept emerged over time by moving across related concepts in theories and practices in different contexts (Monteiro et al., 2020). The rise of the term GI started in the 1990s in the United States with the idea of a network of greenways, which were seen as planning tools that could potentially serve both human and nature purposes (Searns, 1995). This greenway movement in the United States boosted the spread of the idea of GI around the globe. In Europe, the concept emerged with the development of ecological networks, which can be seen as connected nature areas at all levels to counteract fragmentation, isolation and barriers to movement, which help providing inclusive UGI (Ahern, 2004). Although this idea of ecological networks had a lot to do with GI as a concept, GI especially gained momentum after the European Union extensively advocated for the concept through a series of strategies and reports (EC, 2013).

“Cities provide a locus for sustainability” (Vaño et al., 2021, p.1), and “... urban professionals and city leaders are increasingly adopting resilience as a framing concept ...” (Zuniga-Teran et al., 2020, p.711), show that the concepts ‘sustainability’ and ‘resilience’ can be seen as central goals to (U)GI planning. Not only strategies and reports focussing on GI, but also academic literature on the planning of cities, thus often focus on these concepts. Although both concepts have their contribution in the theoretical debate on how cities nowadays could be planned better, it is important to have a clear definition for each concept to understand how both function as central goals to UGI (Ramyar et al., 2021).

Sustainability is defined as “*meeting the needs of the present without compromising the ability of future generations to meet their own needs*” (WCED, 1987, p.41) suggesting that sustainable development requires an integrated approach. Zuniga-Teran et al. (2020) adds to this definition that in the field of urban planning it is envisioned as a static concept that, once achieved, will last for generations. Resilience distinguishes itself here as a concept as it is increasingly understood as being dynamic: “*the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow, no matter what kinds of chronic stresses and acute shocks they experience*” (Ibid., 2020, p.711). Sustainability and resilience as central goals to (U)GI are also part of international gathering such as C40 (C40 Cities Climate Leadership Group Inc., 2019) and 100 resilient cities (The Rockefeller Foundation, 2021). These gatherings create momentum to practically invest in GI (Van

Oijstaeijen et al., 2020). This can also be linked to the UN Sustainable Development Goals, 17 goals that are at the heart of the 2030 Agenda of Sustainable Development, stimulating local action for global solutions (UN, 2015). Goal 11, *Sustainable cities and communities*, is specifically dedicated to urban systems aiming to “make cities and human settlements inclusive, safe, resilient, and sustainable” (Sturiale & Scuderi, 2019, p.1).

Sustainability and resilience as central goals of (U)GI are closely linked to CCA as “how to adapt cities to climate change is emerging as one of the greatest challenges that spatial planners will face in the 21st Century” (Matthews et al., 2015, p.155). Connecting this to urban green, GI development can foster urban sustainability and resilience which can contribute to CA (Ibid.; Derkzen et al., 2017). Within this idea of CA by fostering urban sustainability and resilience, UGI is also promoted as a nature-based solution. Nature-based solutions are defined by the European Commission (EC, 2021, p.4) as solutions that are “*inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience*”. Similar to the concept of UGI, there has been a significant growth in the development and application of nature-based solution in urban planning and policymaking to tackle urban challenges like increasing urbanization and climate change (Meerow, 2020). Next to CCA, also protecting biodiversity, increasing social cohesion and promoting a green economy are challenges cities face where UGI can help to address according to the Green Surge Project (Hansen et al., 2017).

2.1.2 Defining UGI

The section above highlights the rise of (U)GI as a concept and show how it is linked to other goals such as sustainability, resilience, and urban challenges like increasing urbanization and climate change. Although the concept is widely considered new, it gained academic interests in the last decennia resulting in a variety of definitions depending on which context is used and by whom the concept is used. In order to enhance GI and to become an integral part of spatial planning the European Commission (EC, 2013, p.3) presented its definition:

Green Infrastructure (GI) is “a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services” (EC, 2013, p.3).

This definition of GI is present in rural and urban settings. The focus of this research is on the local urban scale: urban as we inhabit a highly populated and urbanised planet where cities face many challenges, and the local scale as according to Hansen et al. (2017) it is key to know the local context to enable GI development. The concept of Urban Green Infrastructure (UGI) has recently emerged as a distinct subset of GI aimed at creating and maintaining networks of multifunctional greenspace in urbanised environments (Vaño et al., 2021; Davies & Laforteza, 2017). This focus on the urban settings is relevant as “growing populations, limited resources, vulnerable ecosystems, and climate change make urban planning and development critical in preserving the liveability of cities and guaranteeing better lives for future generations” (Ramyar et al., 2021, p.1). In this way, UGI can be seen as a strategic approach to greenspace planning that can contribute to ecosystem resilience and human benefits by focussing on network connectivity. UGI has a broad appeal, largely due to its multiple-benefits as ecological, economic, and social benefits for ecosystem-based adaptation are combined (Zölch et al., 2016). For this reason, also the European Commission (EC, 2013) advocates for UGI planning being a successfully tested approach to provide environmental, economic and social benefits through natural solutions. UGI as a planning approach is discussed more extensively in section 2.3.1.

2.2 Participatory Planning (PP)

2.2.1 History of PP

The second main concept is Participatory Planning (PP), based on the idea of involving the public in the planning process. Involving the public in spatial planning through participatory processes is not a new concept. The rise of interest in participation processes started especially in the second half of the 20th Century with new planning paradigms emerging that stressed the need to involve the entire community. Especially since the 1970s public participation has become increasingly important as a means of structuring the relationship between planning processes, urban development and the citizens affected by them (Sorensen & Sagaris, 2010). Spatial planning practices had long been approached through centralized and rational planning approaches neglecting the role of participation. The concept of participation came to life with the emerging paradigm of communicative planning that started dominating theoretical discourse since the late 1980s as a response to the rational planning paradigm that was characterised by blueprint planning (Wang & Chan, 2020). Blueprint planning has been oriented towards a top-down model of planning where there is a central role for the planner as an expert to systematically analyse, predict, and control urban development (Allmendinger, 2017). De Roo (2012) links this idea to complexity theory where blueprint planning can be seen as a close system, controlled through a technical rationale perspective. Within this idea of the planner as expert, there was no room for participation and thus the influence of society was neglected.

Critique towards this planning paradigm came from different scholars, arguing that traditional planning methods were undemocratic and unresponsive to community needs and highlighting which role participation processes can fulfil in planning practice. An influential critic was Jane Jacobs (1961, p.238) stating in her book *The Death and Life of Great American Cities* that “cities have the capability of providing something for everybody, only because, and only when, they are created by everybody”, referring to the potential important role of involving the public in planning processes. Also Hillier (2002, p.25) advocated for more inclusion stating that “democracy should be participatory”, where the role of planning is to collectively search for an acceptable solution. This is where new planning theories emerged that were expected to be more inclusionary and consensus-based rather than expert-driven (Allmendinger, 2017; McCann, 2001). Healey (1992) is one influential scholar that elaborated on these new planning theories highlights the communicative turn in planning theory in which she also stresses the need to better fulfil the democratic potential of planning.

In the Netherlands a similar paradigm shift can be seen relating to participation processes in planning. Boonstra (2016) defines three generations of PP, where the first generation gained strength in the late 1960s through a growing opposition towards the rational planning paradigm. Where the first generation was still highly intertwined with government-led planning through providing information, the second generation moved past the idea of only providing information by also actively inviting the public to participate in the planning process (Ibid.). This is where the communicative planning paradigm gained momentum. Nevertheless, these two generations were both criticised for their government-led nature. This changed in the third generation, which is characterised by self-organised initiatives that moved beyond government-led planning (Ibid.). This movement involves a changing role of governments within the planning process.

The section above shortly describes the roots of PP and how it emerged over time. Within the academic literature much is written about the role of participation in planning since PP approaches are emerging, resulting in a variety of concepts and planning theories. These theories include participatory, collaborative and communicative planning. Central to these theories is Habermas’ (1981) idea of communicative rationality that seeks to realise objective decisions through communication and agreement between individuals, something that is achieved through the negotiation of equally

empowered and fully informed stakeholders in a free and open discourse (Nikolaïdou et al., 2016). Other scholars followed this logic and contributed to this renewed emphasis on participation with their research (Innes, 1995; Healey, 1997; Forester, 1998; Innes & Booher, 1999). These contributions helped to build a solid foundation emphasizing the role of participation in planning, resulting in a central focus on PP in this research.

2.2.2 Defining PP

In planning theory references are thus made to participatory, collaborative and communicative planning. Within this research the starting point of PP is participation. What becomes clear from the previous section is that there is no unique definition or understanding of participation, although a variety of perspectives can be found in the academic literature. Participation as a concept within planning theory is often directly linked to the work of Arnstein (1969, p.216; Wang & Chan, 2020, p.1), who defined citizen/public participation as “the redistribution of power that enables the ‘have-not’ citizens, presently excluded from the political and economic processes, to be deliberately included in the future to share in the benefits of the affluent society”. Similar to Arnstein (1969), who links participation to power, the World Bank (1996, p.3) later defined participation as “a process through which stakeholders’ influence and share control over development initiatives and the decision and resources which affect them”, connecting participation to influence and control. One can see an emphasis on including participants through participation processes to make decision-making more democratic and responsive to community needs as building blocks of a PP approach. Adding to this, the ODPM (2003, cited by Peerapun 2012, p.245) stated that PP is “a set of processes through which diverse groups and interests engage together in reaching for a consensus on a plan and its implementation”, which is much in line with the perspectives on participation states earlier. PP is thus an approach where processes are important and the public has a say. By doing this the central goal of PP is “to get the public perspectives into the planning process and actual design of a public space” (Cilliers & Timmermans, 2014, p.417), also highlighting the necessity of integrating public participation into the planning process. Combing these insights, this research adopts the definition by Nasca et al. (2018), who actively link the understanding of PP to communicative planning theory:

Participatory Planning (PP) is “a bottom-up planning approach that employs non-traditional engagement techniques, combines citizen knowledge with professional knowledge, promotes open dialogue, and involves community members throughout all phases of the planning process” (Nasca et al., 2018, p.623).

Within this definition of PP, the involvement of stakeholders at various levels is adopted from Luyet et al. (2012), where five degrees of involvement are distinguished (see Table 1). Based on adaptations and revisions of Arnstein’s ladder of participation, these five levels range from *information*, seen as a low level of involvement, to *empowerment*, ranked as a high level of involvement.

Involvement levels	Description
<i>Information</i>	explanation of the project to the stakeholders.
<i>Consultation</i>	presentation of the project to stakeholders, collection of their suggestions, and then decision making with or without taking into account stakeholders’ input.
<i>Collaboration</i>	presentation of the project to stakeholders, collection of their suggestions, and then decision making, taking into account stakeholders’ input.
<i>Co-decision</i>	cooperation with stakeholders towards an agreement for solution and implementation.
<i>Empowerment</i>	delegation of decision-making over project development and implementation to the stakeholders.

Table 1: Levels of involvement (adapted from Luyet et al., 2012, p.215).

This ranking of involvement is used in this research to structure the PP processes and distinguish participation methods. Linking PP to UGI, the academic literature urges for embedding participation

within UGI planning as stakeholders desire a greater voice in the planning and design of GI (Wilker et al., 2016). Apart from contributing to the development of UGI, advocates see great potential for PP to also enhance social capital, increase social cohesion, strengthen democracy, and achieve better environmental outcomes (Sorensen & Sagaris, 2010). These are several advantages of including participation processes in spatial planning. Luyet et al. (2012) also lists similar advantages related to increasing trust and public acceptance, but is also critical towards risks like a possible expensive and time-consuming process. Nevertheless, embedding participation can strengthen UGI planning as stakeholders’ preferences and values regarding their environment are valuable information for decision-making (Faehnle et al., 2014). Process is crucial here as planning approaches and governance arrangements influence the level of involvement through participation. Relevant question in this context of involving stakeholders are *who* to involve?, *how* to involve? and *when* to involve? Section 2.3.2 elaborates on these questions.

2.3 Participatory Planning of Urban Green Infrastructure

This research investigates the relation between UGI and PP as the aim is to understand how PP can support the development of UGI in the context of CA. This section brings the two concepts together using two conceptual frameworks for UGI planning. Ramyar et al. (2021, p.6) proposes a framework for UGI planning focussing on main goals and principles. Davies et al. (2015, p.13) introduce a framework by interweaving five elements: policy objectives, planning principles, planning process approach, governance arrangements, and implementation measures. Based on these two frameworks this research divides the central elements into elements representing the *content* of UGI planning and elements representing the *process* of UGI planning. These elements are shown in Table 2. *Content* is mostly related to what is part of UGI planning where traces of PP can be found back in objectives and principles. *Process* is much related to the PP approach to UGI planning where the three key questions, *who*, *how* and *when*, as discussed earlier are central.

	Elements	Key focus point
Content	Policy objectives and goals	Climate change adaptation
		Social cohesion
	Planning principles	Four core principles
		Three supporting principles
Process	Who	Participants/Governance
	How	Planning approach/Methods
	When	Phases/Measures

Table 2: PP of UGI through content and process.

2.3.1 Content

Looking at the definition of UGI, it becomes clear that it is a promising planning approach that can provide multiple benefits and can tackle urban challenges like adapting to climate change. However, it can be challenging to fully grasp the concept. Ramyar et al. (2021, p.5) stresses that “because UGI is a complex and comprehensive approach to planning, it is essential to clearly define the goals, principles, and strategies based on the leading research in the field”. The two main elements concerning the content of UGI are discussed in the sections below.

Policy objectives and goals

Policy objectives and goals are integrated in the framework of UGI planning as these relate to the benefits of UGI. Besides resilience and sustainability, the two central goals of UGI planning, that help cities to tackle issues like climate change, there are more urban challenges that UGI can address. These are often connected to specific policy objectives. The Green Surge Project (Hansen et al., 2017)

highlights four key benefits of UGI as policy objectives, namely adapting to climate change, protecting biodiversity, promoting a green economy and increasing social cohesion. Other urban challenges often discussed in academic literature are tackling urbanization and improving human health and well-being (Van Oijstaeijen et al., 2020; Matthews et al., 2015). Sturiale & Scuderi (2019) listed all these benefits of (U)GI, but given the scope of this research the main focus is on the policy objectives ‘climate change adaptation’, relating to the context of the research, and ‘social cohesion’, relating to PP. The two policy objectives are explained in more detail in Table 3.

Policy objective	Definition/Explanation (Benefit)
<i>Climate change adaptation</i>	Adaptation to climate change means anticipating the adverse effects of climate change and taking appropriate action to prevent or minimise the damage they can cause, or taking advantage of opportunities that may arise.
<i>Social cohesion</i>	Social cohesion is understood as the capacity of a society to ensure the welfare of all its members, minimising disparities and avoiding polarisation. People from different backgrounds should have an equal chance to participate in decision-making, should have similar life opportunities and equal access to services, including, access to green spaces.

Table 3: UGI policy objectives (adapted from the Green Surge Project; Davies et al., 2015, p.14).

Planning Principles

Next to policy objectives and goals, there is increasing academic interest to facilitate UGI through principles. Scholars have proposed a variety of principles to incorporate multiple perspectives into UGI planning in order to facilitate the design of functional UGI (Grădinaru & Hersperger, 2019). In the framework proposed by Ramyar et al. (2021) distinguishes principles of which most are directly linked to integration. This is because UGI planning seeks to find integrated solutions through actively merging ecological sciences with urban planning and policy. Davies & Laforteza (2017) made a concrete effort to evaluate how planning principles have been accounted for in policy and practice. These principles were divided into principles concerning the planning approach (i.e., ‘connectivity’, ‘multi-functionality’, ‘integration’, ‘multi-scale’), the planning process (i.e., ‘inter- and transdisciplinary’, ‘social inclusive’), and policy objectives as mentioned earlier. Given this knowledge one can see a certain overlap in principles mentioned by different scholars. Combining these efforts, the Green Surge Project (Hansen et al., 2017) focussed on four core principles, providing a fundamental basis for UGI planning, accompanied by three supporting principles that should also be taken into account. Table 4 provides an overview of these principles and these function as the guiding principles within this research, also referred to as the spatial conditions.

Core principles		
1	<i>Integration</i>	UGI planning seeks the integration and coordination of urban green spaces with other infrastructure, such as transport systems and utilities.
2	<i>Connectivity</i>	UGI planning for connectivity involves creating and restoring connections to support and protect processes, functions and benefits that individual green spaces cannot provide alone.
3	<i>Multifunctionality</i>	UGI planning aims at combining different functions to enhance the capacity of urban green space to deliver multiple benefits – creating synergies, while reducing conflicts and trade-offs.
4	<i>Social inclusion</i>	UGI planning aims for collaborative, socially inclusive processes, meaning that planning processes are open to all and incorporate the knowledge and needs of diverse parties.
Supporting principles		
5	<i>Multi-scale</i>	UGI planning aims to link different spatial levels, ranging from metropolitan regions to individual sites.
6	<i>Multi-object</i>	All types of urban green and blue spaces, regardless of ownership and origin, can be considered as part of a green infrastructure network.

7	<i>Inter- and transdisciplinary</i>	UGI planning aims at linking disciplines, as well as science, policy and practice. It integrates knowledge and demands from different fields, such as landscape ecology, urban and regional planning, and landscape architecture, and is ideally developed in partnership between local authorities and other stakeholders.
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Table 4: UGI planning principles (adapted from the Green Surge Project; Hansen et al., 2017, p.4-5).

2.3.2 Process

Next to content, process is mainly about the PP approach to UGI planning. The idea of participation within UGI planning relates to the type of planning approach as well as to governance arrangements (Davies et al., 2015). To structure this process of involving the public in UGI planning, Wilker et al. (2016) suggests to focus on three important questions, namely: *who* to involve?, *how* to involve? and *when* to involve?. These three key questions are discussed in the sections below.

Who

Who to involve in PP can be a tricky question as it already became clear that there is no unique definition or understanding to it. This section mainly focuses on participants, as in who participates, and on governance, as it has to do with the boundary between government-led and public-sector led. *Who* to involve through PP also closely links to UGI's core principle of *social inclusion*. Striving for social inclusion within UGI planning aims for collaborative, socially inclusive processes, meaning that planning processes are open to all and incorporate the knowledge and needs of diverse parties.

In the academic literature varying terminology is used for participation, ranging from the public, to stakeholders, and also citizens or the community; and these terms are not used consistently. Starting with 'the public', it is often considered as a collection of individuals generally unstructured and unorganized (Luyet et al., 2012). The public can thus be seen as the community or people in general. In contrast to the public, in academic literature 'stakeholders' is also often used when referring to participation. Stakeholders, defined by Freeman (1984) as those who are affected by or can affect a decision, can be anyone or "any group of people, organised or unorganised, who share a common interest or stake in a particular issue or system" (Grimble & Wellard, 1997, p.175). Note that there is an emphasis on those who are affected or can affect and thus have a stake, but this is excluding those who do not affect, or are affected by, the decision-making process. In this perspective the public is a broader concept than stakeholders. Next to stakeholders and the public, Arnstein (1969) puts the emphasis on 'citizens' with her ladder of participation. Citizens can be seen as particular stakeholders in the planning process where they can have an interest in a particular decision. Groups of people with shared origins or interest can collectively form a 'community'.

Within this research, the focus is on public participation as participation is meant to include the involvement of individual citizens and their communities in the planning process. Thus, 'citizens', 'stakeholders' and 'participants' are used and refer in general to public participation. Embedding public participation within UGI planning has the potential to benefit the process. Sorensen & Sagaris (2010) see the potential of citizens organising their own participation process and hence should receive more responsibility in PP processes. The different participants as described above can be seen as non-governmental stakeholders. According to Meijer (2018) participation of non-governmental stakeholders is not directly addressed in PP and thus does not seem to fully deliver its potential. Moving from traditional rational planning approaches towards PP includes a changing role of governments as participating with the public entails a collaboration between governmental and non-governmental stakeholders. Managing the boundary between those two is a core challenge in which all participating actors are involved (Westerink et al., 2017). This boundary is not fixed and so roles and responsibilities are shifting as roles may vary from a leading role for governmental actors to a leading role of (self-governing) societal actors (e.g., citizen participation) (Ibid.).

How

A second relevant question is *how* to involve in PP. This question is approached by looking at different methods of participation and how these methods relate to the different levels of involvement as discussed earlier. PP is seen here as a strategic planning approach.

In her thesis, Faehnle (2014) looks at PP where citizens and other stakeholders are invited to participate in planning or decision-making processes with the aim that participating can influence the content of planning. Suggested methods of participation are questionnaires, web forums, public meetings and field trips. Ferreira et al. (2020) researched the literature and found a range of methods and tools being used to engage stakeholders and citizens in UGI planning. Where questionnaires and survey are seen as the most common tool used in participatory processes, there is increasing attention for e-tools and methods including geographic information systems. All these methods can contribute within the participation process, nevertheless the choice of participation method can have a substantial impact on the entire participation process. The choice of participation method is linked to the idea of involvement at various degrees of participation. Wilker et al. (2016) explains that implementing an inappropriate degree of involvement may result in granting an inappropriate level of power to a stakeholder and so applying a non-suitable participation technique.

In order to avoid inappropriate power distribution, Wilker et al. (2016) combines participation methods with the five levels of involvement adapted from Luyet et al. (2012) as described in section 2.2.2 (see Figure 1). Although there is no standard approach for selecting the correct participation method or tool, linking participation methods to the level of involvement can help structure the process. How to involve is a crucial question as, although participation has long been present in urban planning and design, a gap between participatory theory and practice is still present according to Puskás et al. (2021). This classification of different levels of participation functions as a foundation in this research to investigate participation processes in UGI planning.

Methods	Level of involvement				
	Information	Consultation	Collaboration	Co-decision	Empowerment
Newsletter	■				
Reports (Press Campaign)	■	■			
(Interactive) Website	■	■	■		
Open Space Method	■	■	■	■	
Opinion Survey	■	■	■	■	■
Presentation, Public Hearings, Symposia	■	■	■	■	■
Site Visit / Exploratory Walk	■	■	■	■	■
Meeting	■	■	■	■	■
Round Table	■	■	■	■	■
Social Media	■	■	■	■	■
Charrette	■	■	■	■	■
Geospatial/ Decision Support System	■	■	■	■	■
Focus Group	■	■	■	■	■
Workshop	■	■	■	■	■

Performative Participation

Figure 1: Methods of PP and their level of participation (adapted from Wilker et al., 2016, p.233; based on Luyet et al., 2012).

When

The question on *when* to involve in the participation process is linked to the different planning phases. According to Willems et al. (2020) participation is shaped differently over the course of the GI lifecycle as participation in UGI development is operationalised in various ways. Hence, it is useful to investigate types of participation across different stages in UGI planning. Based on Uittenbroek et al. (2019) three

phases in UGI planning projects can be defined, namely: *project design*; *project delivery*; and *project maintenance*. These stages form a number of opportunities offered in which the decision-making process can be influenced. In the academic literature many scholars argue that, in order to have meaningful participation of UGI development, participants should be included from the beginning of the planning process (Willems et al., 2020).

Wilker et al. (2016) also advocates for participation in early stages of the planning process in order to achieve legitimate outcomes, but also highlights the contradictory character of participation across planning stages. Where stakeholders are highly involved in the later planning stages, they also desire to participate to a greater extent in earlier phases. Organising participatory processes later in the planning process can still be useful, but the question is to what extent participants can still exert power then, as it is argued by scholars that the later participants are included, the less influence they likely have (Uittenbroek et al., 2019). Looking at UGI planning, the maintenance phase can still be crucial given that it is not just about GI development, but also about sustainable maintenance. However, according to Jerome et al. (2017) participation in later stages such as the maintenance phase remains under-researched. Nonetheless, both early and later stages of the planning process can play an important role. Willems et al. (2020) sees that ambitions regarding participation are especially high in the project design (early) and maintenance (later) phases.

2.3.3 Benefits and barriers

Given the content including planning principles and goals providing clear objectives for UGI planning, substantive efforts have been made to boost the implementation of UGI in practice. Also, the European Commission (EC, 2013) has placed a great emphasis on the strategic planning of UGI and the need to mainstream it into spatial planning. Nevertheless, this implementation remains slow and there are diverse reasons for the hampering uptake of UGI (Dhakal & Chevalier, 2017). Concerning process, the academic literature urges for embedding PP within UGI planning as stakeholders desire greater voice in the planning and design of GI (Wilker et al., 2016). However, although participation has long been present in urban planning and design, a gap between participatory theory and practice is still present (Puskás et al., 2021). Although PP of UGI can serve several benefits, still barriers for uptake can be identified, highlighted in Table 5.

Barrier	Academic paper
<i>Institutional path dependency</i>	Matthews et al., 2015
<i>Time constraints</i>	Luyet et al., 2012; Hansen et al., 2017
<i>Political support</i>	Van Oijstaeijen et al., 2020; Davies et al., 2015
<i>Lack of funding; lack of financial and human resources</i>	Hansen et al., 2017; Davies et al., 2015
<i>Responsibilities and cooperation across spatial scales</i>	Davies et al., 2015
<i>Undemocratic, insufficient representation of interest groups</i>	Hansen et al., 2017, Sorensen & Sagaris, 2010
<i>Lack of knowledge on cost, benefits and impact</i>	Van Oijstaeijen et al., 2020

Table 5: Barriers for uptake of UGI through PP (adapted by author).

2.4 Conceptual model

The previous sections described the key concepts central in this research, namely Urban Green Infrastructure (UGI) and Participatory Planning (PP) in the context of Climate (Change) Adaptation (CCA), and how they relate in combination. Within this research the concepts are connected to explore how PP can support the development of UGI in Dutch cities in the context of CCA. This results in a model connecting the main concepts of this research (see Figure 2). The conceptual model functions as backbone throughout the research to connect empirical findings to theoretical insights.

Looking at the model, the two main concepts of this thesis, UGI and PP, are the two points of departure interlinked through urban spatial planning. Both concepts are approached in the context of CCA and displayed in the dark green boxes. These dark green boxes highlight the key concepts of this research as UGI and PP come together at the bottom where Participatory planning of UGI is the central topic to the research question. On the right side, UGI is addressed through objectives, principles to come to the spatial conditions, which are the 4 core principles of UGI. These key elements should help to better grasp the concept of UGI. Following the arrows from top to bottom the right column of the model displays the *content*. On the left side, PP is addressed through the three key questions *who*, *how* and *when* which together structure participation processes. Participation is approached through the level of involvement, which can be seen as a continuum from high to low. Following the arrows from top to bottom the left column of the model displays the *process*. Combining the right and left columns through *content* and *process*, the concepts of UGI and PP come together at the bottom at Participatory planning of UGI. Here Participatory planning of UGI is seen as a policy approach to research how PP can support the development of UGI in Dutch cities in the context of CCA.

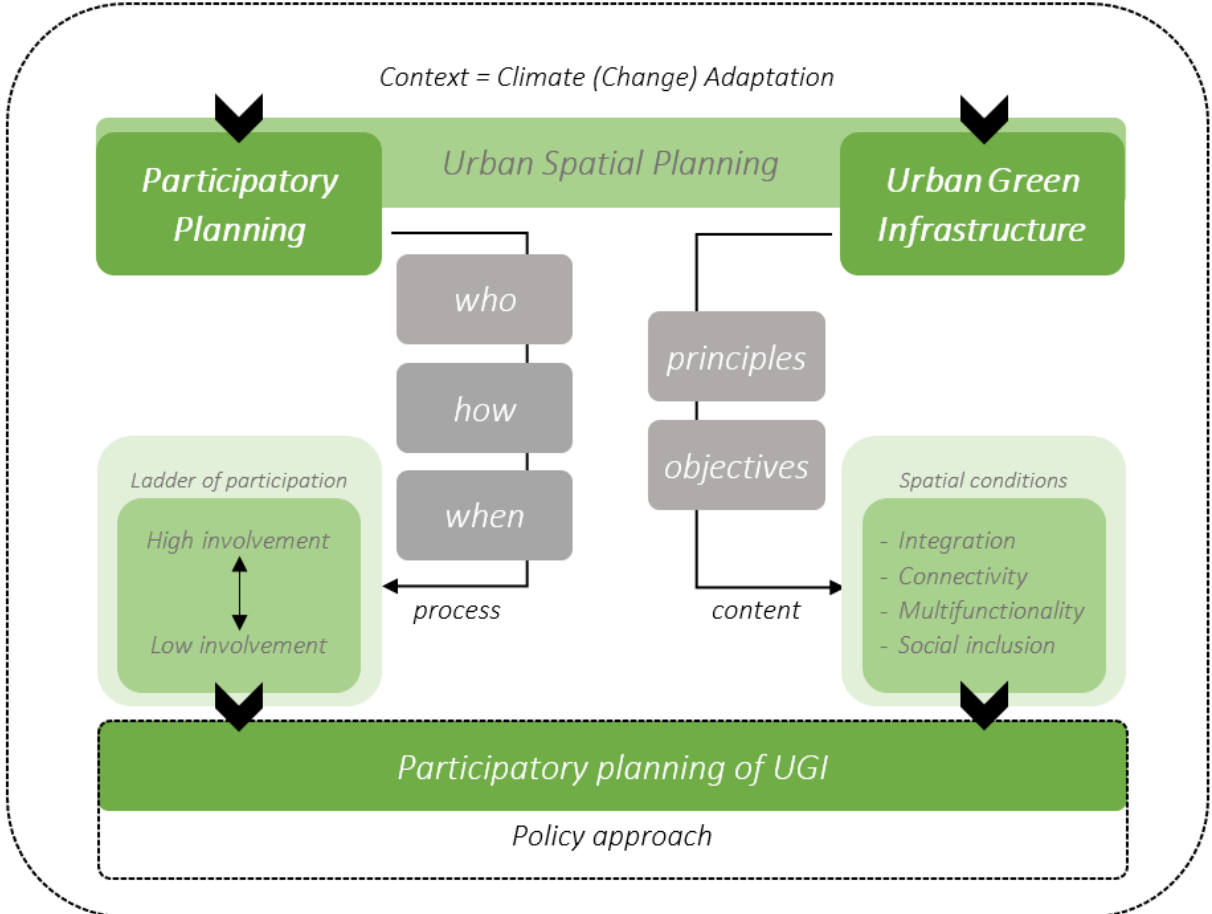


Figure 2: Conceptual model.



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Chapter 3 | Methodology

This chapter elaborates on the research design and the research methods of data collection and analysis. The chapter first discusses the research design (section 3.1), explaining the choice for a multiple-case study research approach and elaborating on the case selection of the research. Following the research design, section 3.2 elaborates on data collection and data analysis. Finally, the ethical considerations concerning the research are discussed in section 3.3. An overview of the methodological approach can be found in Appendix A.

3.1 Research design

The research design is a crucial element as it is the basic plan for doing research and connecting the research questions to the data (Punch, 2014). This research focuses on qualitative, intensive research through a multiple-case study research approach. The next section substantiates this choice.

3.1.1 Multiple-case study research approach

Given the main research question, a few characteristics can be distinguished: the research question is a 'how'-question, this 'how'-question is focussed on processes, and PP can be seen as a contemporary phenomenon. In order to find out how PP can support the development of UGI, the focus within this research is on processes. This is why a qualitative research method is chosen, as qualitative implies an emphasis on "processes and meanings that are not experimentally examined or measured in terms of quantity, amount, intensity, or frequency" (Denzin & Lincoln, 2011, p.8). Moreover, this research aims to gain detailed insights on how PP can contribute to UGI planning. This research can thus be seen as intensive, as it puts the emphasis on describing a single, or small number of case studies with the maximum amount of detail (Clifford et al., 2016). Through an intensive research design a phenomenon is studied more in-depth as it supports a deeper and more detailed investigation of a phenomenon in its natural setting. Within intensive research the research question is often a 'how'- or 'why'-question and a typical method of research is a case study research approach. According to Yin (1994, p.9) case study research is useful when "a how or why question is being asked about a contemporary set of events over which the investigator has little or no control". A case study is an empirical research method that investigates a contemporary phenomenon (the 'case') within its real-life context (Yin, 2009). For this research, public participation is investigated as the contemporary phenomenon to see how Dutch cities spatially plan UGI in a participatory way.

Different types of case study research can be defined. For this research the distinction by Dul & Hak (2008), who categorize case study research as single-case study and comparative or multiple-case study, is used. Case study methods are often criticised in terms of its lack of robustness as a research tool where generalization can be problematic. For this research a multiple-case study approach is chosen as its results are often viewed as more robust, powerful and generalizable than results of single-case studies (Yin, 2009). Given PP as a contemporary phenomenon, multiple Dutch cities are chosen as cases in order to gain meaningful outcomes. The multiple-case study approach used in this research provides the opportunity to realize both practical and theoretical aims within real life context by using multiple sources of evidence, also known as triangulation (Yin, 2009).

In case study research, defining the case is an important step and the unit of analysis functions as basis for the case determining the boundaries of the case. By placing boundaries, the scope of the research is limited as it becomes clear what will and will not be research in the case study (Baxter & Jack, 2008). Bounding a case can be done by setting a theoretical, a temporal and a spatial boundary (Yin, 2009). The theoretical boundary of this research has been set in the theoretical framework. The temporal boundary is set out in the data collection period, which lasted from October 2020 to January 2021.

However, the role of PP could potentially be based on events and experiences of participation prior to October 2020. Finally, the spatial boundary is set out by the case selection of Dutch cities that form the units of analysis, which is discussed more extensively in the next section.

3.1.2 Case selection

Given the provided boundaries, the spatial boundary relates to the selection of cases and the unit of analysis. As the aim of this research is to provide municipalities of Dutch cities with lessons on how PP can contribute to the development of UGI in the context of CA, the case selection consists of Dutch cities. Cities are becoming more vulnerable because of rapid urbanization combined with climate change impacts and UGI has been increasingly promoted as a key measure for cities to adapt to these challenges (Zuniga-Teran et al., 2020; Derkzen et al., 2017). Alongside these challenges that cities face, the role of public participation has been increasingly discussed as being crucial as participatory processes contribute to a sustainable development of UGI (Møller et al., 2019). Given these two statements, cities in the Netherlands are considered an interesting research area. The role of PP in the development of UGI is therefore interesting to research in Dutch cities.

The logic of sampling cases is fundamentally different from statistical sampling where selection of cases should be done purposeful, not random (Perry, 1998). Selecting information-rich cases is an important principle central to case selection, which means choosing cases worthy of in-dept study. For this research the selection of Dutch cities as units of analysis has been made according to some selection criteria. A total amount of three cases is selected, taking into account time constraints as only limited time is available to do research. The selected cities for this research are Amsterdam, Groningen and Nijmegen (see Figure 3).

1. *The selected cases are all Dutch cities with the selected cases providing a geographical spread across the Netherlands.*

The first criterium limits the research area to cities in the Netherlands focussing on urban areas. The three selected cities may vary in their demographic characteristics, but the deliberate choice has been made to select cities from different parts of the Netherlands, with Groningen in the north, Amsterdam in the west (Randstad) and Nijmegen more to the southeast of the Netherlands.

2. *The selected cases are, to a certain degree, all 'green cities', meaning that already existing UGI can be found.*

The second criterium is linked to the concept of UGI as in order to research the role of PP in the development of UGI, cities are selected that already provide existing UGI. All three cities are within the top twelve 'green cities' in the Netherlands according to the Husqvarna Urban Green Space Index (HUGSI, 2020). Nijmegen for example was awarded the title European Green Capital 2018 (EC, 2018).



Figure 3: Map of selected cases.

3. *The selected cases are actively implementing PP and UGI development within their policy*

The third criterium is linked to both key concepts as the selected cases need to be information-rich and thus need to be actively involved with PP and UGI. As the aim of this research is to provide municipalities of Dutch cities with lessons on how PP can contribute to the development of UGI in the context of CA, the selected cases have to be able to provide relevant information into the main concepts.

4. *The selected cases need to be accessible, in other words data has to be available concerning the research objective and the key concepts.*

Accessibility is a key constraint that influences the case selection as it is essential that the data needed can be collected. In the process of selecting cases, cities were checked for their availability of data, e.g., by looking for the availability of policy documents. For Amsterdam, Groningen and Nijmegen sufficient data could be found.

3.2 Data collection and analysis

As mentioned earlier, according to Yin (2009) case study research typically uses a variety of evidence by using different sources. Therefore, multiple sources of evidence, also known as data triangulation, are incorporated in the multiple-cases study approach. This section elaborates on the multiple sources of data that are collected and analysed within this research. Literature research, policy document research and qualitative research through interviews are combined as data collection and analysis methods to answer the research questions of this research.

3.2.1 Literature research

The literature research in chapter 2 forms the theoretical foundation of the research as the main theoretical concepts central to this research are discussed and together resulted in the conceptual model (see Figure 2). This model is based on the core concepts discussed in literature concerning UGI, PP, CA, public participation and urban spatial planning. This literature research aims to gain theoretical insight into the main concepts in order to provide useful answers to the following sub-question:

- *What is meant with urban green infrastructure in the context of climate adaptation and how can this be planned?*
- *What is participatory planning and what are benefits of such an approach from a theoretical perspective?*

The literature used within this theoretical research approach mainly consisted of English academic and scientific peer-reviewed articles. In order to use the most recent theoretical insights from literature, the main focus was on peer-reviewed articles from the last decade (mostly after 2011). Nevertheless, as the main concepts of UGI and PP are topics that have been discussed for quite some time, also older literature is used to provide a short historical overview of the concepts on how they developed over time. The articles were gathered by using different search engines, such as SmartCat (provided by the University of Groningen). Literature was searched to define the main concepts of UGI and PP in the context of CA, and to relate them to each other to find meaningful relations. Search terms that have been used to gather relevant literature, often in combination, are 'climate (change) adaptation', '(urban) green infrastructure', 'participatory planning', 'public participation', and '(urban) spatial planning'. Additionally, the snowball method, where snowballing refers to using the reference list of a paper or the citations to the paper to identify additional papers, has been used to find literature related to the key concepts quickly and relatively easily (Wohlin, 2014).

3.2.2 Document research

Document analysis is a systematic procedure for reviewing or evaluating documents, where a document in its most general sense is a written text (Scott, 1990, p.12), and a method that is often used in combination with other forms of research as a means of data triangulation (Bowen, 2009). Document research can help to provide information in the context of the different cases and helps to create a better understanding of the topic, in this case the role of PP in the development of UGI in Dutch cities focussing on CA. Different types of document research can be distinguished, of which policy research is one. Policy research often takes the form of a commentary on a particular policy or set of policies (Tight, 2019). For this research policy document analysis is done to gain further insight into the cases and their context. This information helps answering the following sub-question:

- *How and to what extent do (municipalities of) Dutch cities currently incorporate a participatory planning approach in the planning and development of urban green infrastructure?*

For every case a minimum of two official municipal policy documents were collected, of which one was more general (e.g., a city’s Strategy on Spatial Planning and the Environment (‘Omgevingsvisie’)) and one more specific (e.g., a city’s Green Plan/Vision). These documents provided insights about UGI development in the context of CA and the role of PP for each city. An overview of the collected documents is shown in Table 6.

Case		Policy document	Author	Focus
<i>AMS1</i>	2021	Strategy of Spatial Planning and the Environment Amsterdam 2050	Municipality of Amsterdam	Long-term vision on spatial development of the city
<i>AMS2</i>	2020	Green Vision 2020-2050	Municipality of Amsterdam	Long-term vision on the role of green in the city
<i>GRO1</i>	2018	Strategy of Spatial Planning and the Environment ‘The Next City’	Municipality of Groningen	Long-term vision on spatial development of the city
<i>GRO2</i>	2020	Green Plan Groningen Vitamin G	Municipality of Groningen	Long-term vision on the role of green in the city
<i>NIJM1</i>	2020	Strategy of Spatial Planning and the Environment Nijmegen 2020-2040	Municipality of Nijmegen	Long-term vision on spatial development of the city
<i>NIJM2</i>	2007	Green Plan Nijmegen ‘The Green Thread’	Municipality of Nijmegen	Long-term vision on the role of green in the city

Table 6: Overview of policy documents.

3.2.3 Qualitative research

The third method of collecting primary data is done through qualitative semi-structured interviews with key actors in urban spatial planning derived from the cases. This method allows the researcher to gain practical insight into the development of UGI in the cities and the role of PP in doing so. Together with the literature research and insights from the policy document analysis, connection can be made between theory and practice. This contributes to provide answers to the following sub-questions:

- *How and to what extent do (municipalities of) Dutch cities currently incorporate a participatory planning approach in the planning and development of urban green infrastructure?*
- *Which (policy) lessons for local urban spatial planning can be identified for participatory planning supporting the development of urban green infrastructure?*

Qualitative data was collected through semi-structured interviews, to get a more complete picture of the practical role of PP in the development of UGI in the selected cities. Qualitative research is chosen as a method since it can provide in-depth understanding of experiences and perspectives (Kelly, 2010). The interviews conducted were semi-structured as this type of interview is appropriate in research situation in which the researcher intends to focus on specific research interests (Ibid.). This is the case

for this research where the aim is to investigate the role of PP in the development of UGI in cities. Generally, a set of topic areas is explored in some dept with room for new questions to emerge, which allows room for follow-up questions. Within semi-structured interviews it is useful to highlight how interviewees are selected. The selection of interviewees is done through criterion sampling, meaning selecting interviewees that meet certain criteria (Bryman, 2012). It is important to select suitable interviewees to ensure appropriateness of the sample. The following lists the criteria for selecting interviewees, followed by an overview of the interviewees (see Table 7):

- Interviewees are familiar with PP in urban spatial planning
- Interviewees are familiar with UGI in urban spatial planning
- Interviewees are actively involved in the municipal policy processes of the selected cities.

Who	Length	Date	Type of interview	
R1	Consulting firm freelancer commissioned by the Municipality of Amsterdam	45:55	29/11/2021	Video call
R2	Municipal official Amsterdam	47:59	01/12/2021	Video call
R3	Municipal official Groningen	62:41	19/11/2021	Physical interview
R4	Municipal official Groningen	55:01	24/11/2021	Video call
R5	Municipal official Groningen			
R6	Municipal official Nijmegen	52:17	23/11/2021	Video call
R7	Municipal official Nijmegen	35:58	29/11/2021	Video call

Table 7: Overview of interviewees.

Within the process of conducting semi-structured interviews, it is important to take into account some key aspects. Confidentiality and anonymity are two important ethical issues to take into account when conducting interviews (Longhurst, 2003). Before starting the interview, interviewees were provided with an information sheet regarding confidentiality, anonymity and participation rights (see Appendix C). Through this sheet, the interviewee was informed on what is done with the data, who has access to the data and how and for how long the data is stored. It also explained that it was possible to withdraw from the research at any time without explanation and that the information supplied remains confidential and anonymized. After going through the information sheet, both the interviewee and the researcher signed a form of consent (see Appendix D). By signing this, the interviewee gave permission to record the interview. Within a semi-structured interview, the researcher works with a list of predetermined questions, but still the interview unfolds in a conversational manner offering participants the chance to explore issues they feel are important (Ibid.). A list of predetermined question was set up beforehand to make sure the relevant research topics are explored in some dept during the interviews. These predetermined questions are based on the insights from literature research (chapter 2) and policy document research, and together form the interview guide (see Appendix E). The recordings of the interviews were used to transcribe and code each interview. The interviews were held in Dutch, as this is the native language of the interviewees and the researcher. After conduction the interviews, the interviews were transcribed removing personal identifiers to preserve anonymity of the interviewees, and transferred to ATLAS.ti.

3.2.4 Data analysis

The analysis of the policy documents and interviews is done in a logical order. First policy documents are analysed to obtain a deeper understanding of the selected cases. Following this analysis, the interviews are analysed to find shared experiences and processes between the interviews that provide in-dept knowledge and insights. To analyse the policy documents and interviews, ATLAS.ti, a qualitative data analysis software program to analyse qualitative data, is used for the coding process.

Coding process

Coding is the initial step to analyse interview data. Coding means attaching on or more keywords (tags or labels) to a text segment in order to permit later identification of a statement (Brinkmann & Kvale, 2018). Codes can be seen as tags or labels based on relevant categories or themes concerning the research. Coding is a circular process and in order to structure the coding process, a codebook is created, being “a set of codes, definitions, and examples used as a guid to help analyse interview data” (DeCuir-Gunby et al., 2011, p.138). Within the codebook both descriptive and inductive codes are used. Prior to the policy document analysis, a list of key search terms based on the concepts as discussed in the literature is formulated to ensure that the policy documents are analysed in a well-mannered and structured way (deductive codes). Using these codes, search terms can be discovered in the policy documents and relevant text passages from these documents can be coded in ATLAS.ti. The policy document analysis resulted in a so-called preliminary codebook (see Appendix F). Policy documents are analysed prior to the interviews as insights from the policy analysis can be incorporated in the interviews to gain more in-dept knowledge and help to make sense of the overall context. For the analysis of the interviews, the preliminary codebook that resulted out of the policy document analysis was used as basis. This codebook can be seen as deductive coding drafted before the interviews. Inductive coding is the result of analysing the interviews where new concepts can emerge leading to potentially new theoretical insights. Combining these deductive and inductive codes, a final codebook emerges that is used in the analysis of the interviews (see Appendix G).

3.3 Ethical considerations

Within carrying out research, ethical considerations have to be made. Tight (2017) distinguishes four main ethical principles. First, there is the principle of informed consent, meaning that interviewees involved in the research give their consent to be involved and know what they are consenting to. This principle is accounted for in this research through the provision of an information sheet and by letting them sign a form of consent (see Appendix C & D). Next, there is the principle of safety, meaning that interviewees and researcher suffer no harm or disadvantage from being involved. Given the main concepts of this research, namely UGI and PP do not seem to be burdensome topics, it is not expected that involved interviewee are harmed in any way. If interviewees however decide to drop out of the research, they can do so at any time without explanation. This principle of withdrawal is the third main principle. Lastly, as mentioned earlier, confidentiality and anonymity are guaranteed within the research.



Sint Jorisstraat, Amsterdam

Chapter 4 | Results

This chapter discusses the data collected from the policy document and interviews. The results are presented per case first, combining insights from the policy document analysis, enriched with more detailed information gained through the interview analysis. The policy documents and interviewees are numbered and referred to according to Table 6 and 7.

Combined with the theoretical insights, these results provide more in-depth information that contribute to answer the question: *How and to what extent do (municipalities of) Dutch cities currently incorporate a participatory planning approach in the planning and development of urban green infrastructure?* This question is divided into two sub-questions, namely:

- a. *How does the city currently plan and develop urban green infrastructure?*
- b. *To what extent does the city currently incorporate a participatory planning approach in the planning and development of urban green infrastructure?*

The results are structured per case according to these two sub-questions, first focussing on *content* followed by *process*. Within these sections, the main concepts, principles and elements are mentioned first individually by stating the key message extracted from the analysis highlighted in the boxes. This is supplemented with more detailed information from the policy documents and interviews in the text. Section 4.4 provides a collective overview of the cases highlighting the main lessons and remarks.

4.1 Amsterdam

4.1.1 Content: Planning and development of UGI

UGI	Strategic choice for ‘Rigouereus vergroenen’ (rigorous greening) and the Green Vision for a green city.
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The role of UGI development in Amsterdam is actively incorporated in both policy documents. This is highlighted in Amsterdam’s Strategy of Spatial Planning and the Environment 2050 where the strategic choice for ‘Rigouereus vergroenen’ is a central policy aim (AMS1, 2021, p.56). R2 confirms this by stating that *“green as a theme is high on the agenda”*. This can also be seen back in the Green Vision that is specifically focussed on the role of green in the city (AMS2, 2020).

Objectives

Climate change adaptation	Climate change as urban challenge with climate change adaptation as a main reason to make the city greener.
Social cohesion	Equity as a main aim of an inclusive city, the Green Vision dedicating two principles to provide green for everyone and working together on green.

Looking at the policy objectives and goals, the policy documents both emphasise the role of UGI as the strategy of ‘Rigouereus vergroenen’ aims to provide *“more and above all better green”* (AMS1, 2020, p.22) as *“green makes the city better”* (AMS2, 2020, p.5). CCA and social cohesion are clearly accounted for in the policy documents as both concepts are two of the four *“main reasons to make a city more green”* (AMS2, 2020, p.13). R1 adds to this that those themes *“always play a role in every piece of greenery”*. Social cohesion is discussed by stating that green in the city should be available for everyone relating to accessibility, inclusion and ownership, to provide citizens with a more central role in the development of the city (AMS1, 2021, p.48). Where the policy documents lack in providing a clear definition, R1 defines it as: *“everyone has equal opportunities and is also included in the policy-making process”*. This sounds promising in theory, but as both R1 and R2 stress, including all citizens is more complex in practice.

Goals

Sustainability	Being sustainable is defined as preparing the city for the consequences of climate change, connected to CCA. Central ambition 'Duurzame stad' (sustainable city).
Resilience	Being resilient is defined as a sustainable city that is crisis proof and provides the conditions for being self-reliant. Also seen as being 'wendbaar' (manoeuvrable).

CCA is further connected to the goal of sustainability, where *"being sustainable also means that [we] prepare ourself for the consequences of climate change"* (AMS1, 2021, p.47). The municipality has a central ambition 'Duurzame stad', aiming to become sustainable and climate proof actively linked to the development of UGI. Resilience is defined as a sustainable and crisis proof city with a self-reliant society (AMS1, 2021, p.247). In addition, it is linked to the idea of being 'manoeuvrable', meaning that Amsterdam should learn to cope with insecurities of the unknown future (AMS1, 2021, p.58). So, being resilient is intertwined with the idea of sustainability, but less connected to UGI development.

Principles

Integration	Integrating walk and cycle infrastructure with UGI. Revolutionary 'Groen tenzij' principle.
Connectivity	Creating networks of green and green-blue connections, with the 'hoofdgroenstructuur'.

The UGI principles can all be found back in the policy documents. *Integration* and *connectivity* are achieved by creating networks of green and green-blue connections, and also integrating walk and cycle infrastructure networks with the UGI network (AMS2, 2020, p.25). The proposed green-blue framework is interlinked with the renewal of the 'hoofdgroenstructuur' (main green structure). Both principles are important to provide a coherent network which is crucial as illustrated by: *"those connections transcend the neighbourhood level, they are important for all people and animals in the city by their value for ecology, climate adaptation, perception, exercise and recreation"* (AMS2, 2020, p.39). Also, the principle 'Groen tenzij' (green unless), according to R1 *"quite a revolution in policy"*, adds to the development of UGI, meaning that green solutions are explored at first.

Multi-functionality	Providing green that can address different challenges and can fulfil many functions, such as advancing recreation, education or biodiversity.
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Multifunctionality is incorporated in the idea that UGI is of value for different aspects. Amsterdam sees the importance of multifunctional UGI as illustrated by: *"the green environment in and around the city has many functions for humans and animals"* (AMS2, 2020, p.26). According to R1 UGI *"is always multifunctional, especially in the public space"* and this is why essential to invest in green development. R2 adds that it is not only about the different functions UGI fulfils but *"it is also interpreted differently by different people"*, making UGI development in the city complex because of the diverse interests.

Multi-scale	Rigorous greening happens at all levels from city level to private properties.
Multi-object	A variety of green elements in green and green-blue networks. Actively connected to the coherent framework of the 'hoofdgroenstructuur'.

Further, the idea of *multi-scale* and *multi-object* become visible as the development of UGI takes place at different levels, from public space in the city to private facades, with different types of UGI. In Amsterdam there is a clear focus on citizen initiatives at the lower scale in order to provide fine-grained green which *"also greatly enhances Amsterdam's green identity and makes the city more friendly and liveable"* (R2). R2 add to this that this type of green cannot be developed by the municipality solely, *"[you] need those citizens for that"*. On the higher scale, participation in the development of UGI is much more restricted as R1 states that *"the larger green projects are really built and managed by the municipality"*. Amsterdam connects *multi-object* to the idea of the 'hoofdgroenstructuur' where the focus is on a *"coherent framework of different types of green"* (AMS1, 2021, p.88).

Social inclusion	'Rigoreus vergroenen' together with the city through active citizenship.
Inter- and transdisciplinary	Integrating knowledge through collaboration between key stakeholders, focussing on collective knowledge.

Lastly, the principles *social inclusion* and *inter- and transdisciplinary* are integrated through collaboration. *Inter- and transdisciplinary* is mainly discussed by stressing the role of knowledge transfer as “good plans for the development of the city are based on the use of collective knowledge” (AMS1, 2021, p.239). This knowledge incorporates the wishes and ideas of citizens and effectively uses it as Amsterdam is “part of many urban networks” (R1) and “all kinds of working groups discussing how to approach the greening of the city” (R2). This relates to the principle of *social inclusion*, as collective knowledge is gathered through collaborative, social inclusive processes. Amsterdam sees this as essential for their strategy ‘Rigouereus vergroenen’ stating that “greening of a densifying city needs to be done together” (AMS1, 2021, p.56). Nevertheless, in practise it is rather complex to involve all citizens. When proposing a green initiative, a lot is expected concerning your skills and R1 clarifies that “[you] just cannot expect that from everyone, especially not if [you] don’t speak the Dutch language”. Hence, there is a need for qualitative professional guidance at the local level to guide this process.

4.1.2 Process: Incorporating a PP approach to support UGI development

PP	Strategic choice for ‘Samen stadmaken’ (making the city together) and the principle ‘Aan groen werken we samen’ (we work together on green).
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Amsterdam sees the development of UGI as a challenging task that cannot be done alone emphasising that greening of the city needs to be done together with the public. The policy documents hardly mention “participation”, but nevertheless the role of participants is discussed as Amsterdam strives for a greater role for citizens and societal partners for maintenance and programming of new and existing green. Next to the strategy of ‘Rigouereus vergroenen’, the strategy of ‘Samen stadmaken’ is also one of the five key strategies (AMS1, 2021). This strategy focusses on providing room for initiatives by involving citizens more actively in the planning and development of the city. The Green Vision incorporates a principle ‘Aan groen werken we samen’, focussed on working together on the development of UGI with different stakeholders (AMS2, 2020, p.29).

who	Active citizenship; and collaboration of entrepreneurs, knowledge institutions, housing corporations and other organisations; together with local authorities.
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Looking at the three key questions, *who* to involve is mostly aimed at citizens. Citizens have a clear role to play as Amsterdam envisions active citizenship for 2050, stating that there is a need to actively collaborate with citizens in order to provide an inclusive city (AMS1, 2021, p.48). However, this is not specifically directed to the development of UGI, but more to spatial development in general. Nevertheless, within the strategy of ‘Rigouereus vergroenen’, a core theme is developing UGI together with the city stressing the need to involve ‘Amsterdammers’ (AMS1, 2021, p.56). R1 confirms this clear focus on citizens stating that “with participation, [we] do indeed ultimately mean the Amsterdammer”. Yet, it is not only about citizens as also entrepreneurs, housing corporations, knowledge institutions and other organisations are stressed as important participants (AMS2, 2020, p.29). R2 adds that many projects the municipality is working on imply collaborations with a variety of participants, thus “also working with associations, organisations and foundations”.

how (level of involvement)	Agenda on ‘Samen stadmaken’, e.g., through equal knowledge positions or ‘buurtrechten’ (neighbourhood rights). Stimulating citizen initiatives through digital platforms and ‘groencoaches’ (green coaches) as local spokesperson.
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How to involve is discussed in the agenda on ‘Samen stadmaken’, focussing on making room for diverse participants in a democratic and transparent way. The idea of ‘buurtrechten’ should for example “contribute to the creation of an equal playing field between, municipality, professional parties and neighbourhood groups and bottom-up initiatives” (AMS1, 2021, p.239). R1 argues that ‘buurtrechten’ is just mainly a new term for the municipality striving for a direct democracy, but in the end “[you] just have to ensure that neighbourhoods have co-determination and also co-ownership of the neighbourhood”. To do so, realistic plans with enough public support are needed which ask for a tailor-

made approach. The policy documents lack a clear vision on how to give citizens and other key participants a more central and active role in developing UGI. The Green Vision mainly elaborates on participation in the form of sharing knowledge in order to learn from each other and to make the knowledge available for all (AMS2, 2020, p.29). Next to this the policy documents also stress the need for consultation in order to create shared ownership (AMS2, 2020, p.45). R1 and R2 provide more concrete methods with a central focus on digital platforms. R1 talks about ‘West Begroot’, a concept of participative budgeting where citizens receive a code in a letter that can be used to vote on citizen initiatives in the neighbourhood. Also ‘Buurtgroen020’ and ‘GroenplatVorm Zuidoost’ are examples of online knowledge and network platforms for green neighbourhood initiative. PP and UGI development are combined here through collaboration, bringing people together within a green network and collecting and sharing knowledge. Amsterdam also works with ‘groencoaches’, according to R1: “*an approachable spokesperson on the local level*”, who helps other citizens with their green ideas. With these examples Amsterdam shows that it provides citizens with a variety of methods to get involved and also in ways that they can truly do something concerning the development of UGI.

when <i>(design – deliver – maintenance)</i>	Stimulating public initiatives for planning and implementing of e.g., green roofs, vegetable gardens, façade gardens. (Co-)management of new and existing green. Full participation possible with projects and initiatives.
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Lastly, *when* to participate is partly discussed in the policy documents. Especially the maintenance phase is discussed by highlighting (co-)management of new and existing green as a way of increasing the role of participants (AMS1, 2021, p.57). The design and deliver phase are not mentioned directly, but both policy documents do talk about stimulating public initiatives on the lower scale, for example by planning and implementing green roofs or façade gardens (AMS2, 2020, p.15). On a higher scale, PP in the development of UGI is less explicitly mentioned, yet R2 provides an example of participation in the development of a park on the roof of the tunnel of the A9. This resulted in the idea of a community garden and “*[we] are now working on creating a very large community garden in the middle of the park, which will also be maintained by citizens*”. This example shows that full participation is possible from design to maintenance. The municipality can stimulate and facilitate this through the provision of “*clear frameworks for construction, maintenance and management*” (AMS2, 2020, p.36).

Reflecting on the Amsterdam case:

Looking at content and process, Amsterdam has a clear perspective on how to plan and develop UGI aiming for CCA and social cohesion. With their strategy ‘Samen stadmaken’, Amsterdam strives for incorporating a PP approach stating that “*collaboration, cocreation and participation is an integral part of the way [we] work*” (AMS1, 2021, p.204). This aim of social inclusion is not supplemented with clear methods on how to do so. Nevertheless, concrete online methods, like platforms as ‘West Begroot’, ‘Buurtgroen020’ and ‘GroenplatVorm Zuidoost’, as well as physical spokespersons, like ‘groencoaches’, were discussed by the interviewees. These methods provide valid options for applying a PP approach for the development of UGI. However, there is still room for improvement. A preliminary conclusion drawn from this case is that the municipality should keep investing in qualitative professional guidance on the local level. This helps to provide citizens with clear methods on how they can get involved in the development and management of UGI in Amsterdam.

4.2 Groningen

4.2.1 Content: Planning and development of UGI

UGI	Two of twelve strategic choices concerning green: provide space for GI, strengthening of GI, connecting of GI; and the Green Plan for a green city.
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Although the municipality of Groningen aims to become a “*sustainable, healthy and green municipality*” (GRO1, 2018, p.8), their Strategy of Spatial Planning and the Environment ‘The Next City’

does not incorporate a specific section on UGI. Nevertheless, the importance of green in the city is emphasized. This becomes clear in Groningen’s Green Plan Vitamin G stating a strong ambition to make Groningen greener (GRO2, 2020). Central to this strategy is the idea of “*increasingly trying to make green a precondition, where green is now often seen as a kind of balancing item*” (R4).

Objectives

Climate change adaptation	Aim to be a climate proof municipality, with ‘Groen & klimaatadaptatie’ (green & climate change adaptation) as one building block of the Green Plan.
Social cohesion	Everybody participates and helps in a growing city with principles for collaboration and participation. Focus on ‘groenparticipatieprojecten’ (green participation projects).

The policy documents show a strong link between UGI and CCA where the Green Plan incorporates ‘Groen & klimaatadaptatie’ as a central building block (GRO2, 2020, p.42). R4 confirms this connection stating that: “*those two things, they are very much intertwined*”. The objective of social cohesion is intertwined as Groningen is focussing on expanding ‘groenparticipatieprojecten’ in order to develop green in the direct living environment and on private properties (GRO2, 2020, p.44). Getting sufficient public support is crucial as social cohesion is about doing it together. In practice this means a ‘kartrekker’ (active citizen) is necessary because “*when such a person is not there, initiatives fail, as the most successful projects always have such a person behind it*” (R3). This is also closely linked with the idea that attracting the right target group is difficult. As R4 is stating: “*[we] no longer have to reach a part of the citizens, they already do the things. It is about reaching the target group that is not yet very aware of what the challenge is and what role they can play in it*”.

Goals

Sustainability	Not clearly defined, aim to be a sustainable and future proof municipality, activity linked to the aim of being climate proof focussing on providing room for green and water.
Resilience	Not clearly defined.

Groningen strives to become a sustainable and future proof municipality as climate change forces the city to adapt by planning “*an urban area with plenty of space for greenery and water*” (GRO1, 2018, p.16). Sustainability is linked to the idea of CA, but the concept is not clearly defined. R5 puts the concept into perspective by stating that: “*it is mainly transcending generations, that [we] can live here, but ... also in 50 years*” and thus sustainability is often linked to different themes like green, CA, public health and biodiversity. Resilience is slightly accounted for in the city’s aim to become future proof, but no clear definition is included. Hence, no link between resilience and UGI development is found. Sustainability is linked to UGI through CCA as the municipality also states that “*[we] make Groningen climate proof by strengthening green*” (GRO1, 2018, p.30).

Principles

Integration	Integrating walk and cycle infrastructure with UGI.
Connectivity	Creating a new green- blue framework and a robust network through connecting green.

Looking at the UGI principles, Groningen incorporates all of them in the policy documents. *Integration* and *connectivity* are important for the municipality to become greener illustrated by: “*[we] realise the connections by adding new greenery and by constructing the necessary infrastructure between green areas*” (GRO2, 2020, p.58). So, it is not just about developing UGI, but also connecting these new green areas and integrating them with infrastructure to guarantee accessibility. By doing this the municipality strives for a robust green network, a green network that should become multifunctional.

Multi-functionality	Multifunctional green network by combining functions. Not only functional but also practical reasons.
Multi-object	Green is present in different types and sizes.

Multifunctionality is thus also an important focus point as Groningen wants to make multifunctional green by “*using green space plural as much as possible*”, for example for recreation or nature (GRO2,

2020, p.60). Multifunctional GI also has practical reasons as it saves space. Thus, R4 states that because of limited space “[we] are not only forced to go for multifunction green, but it is also smarter as it is just more cost-efficient”. The principles above cannot be combined without a variety of GI, related to the idea of *multi-object*. Groningen strives for more greenery but also for better greenery as more diverse green “increases robustness and is more resistant to the effects of climate change” (GRO2, 2020, p.14). So, UGI is provided in different types and sizes, ranging from parks to façade gardens.

Inter- and transdisciplinary	Coordination between different policy areas, but not clear if collaboration between disciplines is happening. Knowledge sharing through networks.
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Process-wise Groningen makes clear that it strives for an integral approach connecting green and CCA. Although the municipality states that they “ensure coordination between the different policy areas” (GRO2, 2020, p.74) there is no clear statement on collaboration between disciplines, related to the idea of *inter- and transdisciplinary*. Nonetheless, Groningen tries to stimulate coordination and collaboration between disciplines through knowledge sharing as R4 states that the municipality is “active in a few national networks, for example with Wageningen University, where [we] also try to exchange knowledge”.

Social inclusion	Working on green together through collaboration and participation-projects using the ‘Kader burgerparticipatie’. Including all target groups can be challenging.
Multi-scale	Participation mainly at the lower scale, neighbourhood and street level (‘nevengeen’). Municipal responsible on the higher scale for a coherent network (‘basisgroen’).

Lastly, the principles *social inclusion* and *multi-scale* are discussed by distinguishing two levels of GI. Groningen distinguishes ‘basisgroen’ (basic greenery), which is the public green space at the city level where the municipality is responsible, and ‘nevengeen’ (remaining greenery), which is all green space left especially at a lower scale, so neighborhood and street level, where citizens are co-responsible and participating (GRO2, 2020, p.57). R4 states a similar division with “nevengeen often being the side-streets and small neighborhoods, where citizens are provided with a little more room to get involved, but doubts if the division is that strict”. So, Groningen is actively stimulating participation and the ‘Kader burgerparticipatie’ (framework for citizen participation) is developed to provide guidance (GRO1, 2018, p.50). Participation is thus a central focus in the development of UGI.

4.2.2 Process: Incorporating a PP approach to support UGI development

PP	Framework for citizen participation, and collaboration and connecting through green participation projects.
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Developing UGI needs to be done together according to Groningen stating that “[we] will make the municipality greener together” (GRO2, 2020, p.5). Groningen strives to be an inclusive municipality and this is also expressed in one of their five important strategic choices stating that “everyone participates and helps in a growing city” (GRO1, 2018, p.36). Within this idea there should be equal rights and opportunities to participate in society. Although Groning’s Green Plan does not highlight a specific strategy or objective concerning participation, it is stressed that the involvement of public participants is essential as “greening of the neighborhood is done together with citizens” (GRO2, 2020, p.40).

who	Municipality for ‘basisgroen’, citizen participation for ‘nevengeen’. Collaboration of citizens, entrepreneurs, societal organisations and nature organisations.
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Citizens are thus crucial participants when looking at *who* to involve. However, also other participants are mentioned that should be involved where “especially at the vital ‘haarvaten’-level (capillary-level) a lot of land is owned by citizens, companies, housing corporations or other organizations” (GRO2, 2020, p.68). So, the municipality realises that co-responsibility and participation is necessary at this scale. Besides, Groningen stresses that public green space on higher scales is primarily the responsibility of the municipality. Hence, participation is especially focussed on citizens at lower scales where the strategy states: “together with citizens, [we] will look at how [we] can improve small-scale

green in neighborhoods or make other places greener” (GRO1, 2018, p.39). It is good to make a nuance here as it is impossible to involve everyone since “there are also just people who simply don’t care what [you] are doing as a municipality” (R4). R5 add to this nuance that “also through changing tactics a bit, by being more neighbourhood-oriented”, the municipality hopes to reach a broader target group. For example, through ‘klimaatambassadeurs’ (climate ambassadors), “people who are already involved with the subject, being a local spokesperson trying to get things going in those neighbourhoods” (R4).

how (level of involvement)	‘Kader burgerparticipatie’ as policy framework to provide guidance in participatory processes. ‘Groenparticipatieprojecten’ providing room to develop initiatives.
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How to involve is shortly highlighted in the Green Plan stressing the need to “collaborate and connect” (GRO2, 2020, p.16). Collaborating and connecting are rather abstract terms and thus the municipality designed the ‘Kader burgerparticipatie’ as a policy framework to provide guidance. This framework should help to stimulate participation as Groningen believes in the power of the community. Although this framework is not directly addressed at the development of UGI, it can “relate to all areas, e.g., green maintenance” (GRO1, 2018, p.50). The Green Plan elaborates on participation through focussing more on communication and informing (GRO2, 2020, p.16), and also transfer of knowledge is crucial (GRO2, 2020, p.28). In practice, the municipality is mainly stimulating when it comes to participation, where “actually everything is possible, but in the end [we] are still informing and stimulating” (R4). Concrete examples are provided through ‘groenparticipatieprojecten’: citizens can get a tree for their garden, they can build a façade garden and they can get a subsidy for a green roof (GRO, 2020, p.72). R3 adds that “for façade gardens, community vegetable gardens, there is a link on the municipal website” where citizens can make a request, something that is mainly done by active citizen. However, also “in disadvantaged neighbourhoods, community workers see opportunities to actively involve citizens” and thus function as mediator between citizens and municipality (R3). So, on the one hand it is citizens that actively request green measures or propose green initiatives, and on the other hand a mediator or municipality sees opportunities. R5 states here that “it requires a different approach if [we] as a municipality are initiators or if there is request from (a number) of citizens”.

when (design – deliver – maintenance)	Integrate green from the beginning. (Co-)responsibility and participation in implementation and management. Full participation possible with projects and initiatives.
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Lastly, when to participate is a question that stays a bit abstract, but it is stressed that planning of GI needs to start at the beginning of a project. Thus, Groningen strives to make UGI planning an integrated part, nevertheless this is not specifically directed at participation (GRO2, 2020, p.74). Related more to PP, Groningen strives for co-responsibility and participation especially connected to maintenance of new and existing green at the lower scale (GRO2, 2020, p.57). Although the municipality advocates for integrating the development of UGI early in the process, participatory development of UGI is mainly connected to later phases such as green maintenance. R3 states that in practice “citizens are becoming more aware and sufficient room for green initiatives is provided” so the enthusiasm is there, but “a lot of people have no idea how to perform maintenance in a very simple way”. Thus, the will and possibilities to get involved early in the process are there, but practical difficulties occur in later phases of green maintenance. This later phase is nonetheless crucial, illustrated by: “[you] must always guarantee some form of management” (R3). R4 agrees with this as “it is no longer just about the design and the implementation, but also that [we] expect citizens to contribute to maintenance”.

Reflecting on the Groningen case:

Groningen has clear ambitions concerning content and process on how to plan and develop UGI aiming for CA, also focussing on social cohesion through PP. With the ‘Kader burgerparticipatie’ and a focus on ‘groenparticipatieprojecten’ the municipality is providing guidance to spatially plan UGI in a

participatory way. Still, participation in UGI development is mainly focussed on including citizens on lower scale-levels with the municipality distinguishing between ‘basisgroen’ and ‘nevengeen’. “Involve citizens, but be very clear about the possibilities and limitations, so be realistic” (R3) is crucial to avoid misleading expectations between municipality and citizens. A clear framework helps “as a measuring staff to score initiatives” (R4). Although there are citizens that actively get involved, there is also a group that is hard to reach. The municipality is actively trying to reach this group, for example through changing strategies to a more neighborhood-oriented approach where ‘klimaatambassadeurs’ function as local spokespersons. Groningen is thus making clear efforts to involve citizens in the development of UGI, but in practice this is mainly limited to the lower scale and done by active citizens.

4.3 Nijmegen

It should be mentioned that the Green Plan Nijmegen dates from 2007 meaning that it is significantly older than the other policy documents used. This green plan is used because Nijmegen is currently developing a new green plan that has not been published yet.

4.3.1 Content: Planning and development of UGI

UGI	Spatial choice aiming for a ‘Groene, gezonde stad’ (green, healthy city) as part of the ‘Duurzame stad’ (sustainable city) and the Green Plan for a green city.
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The municipality of Nijmegen strives for a sustainable city and to do so the spatial choice ‘Groene, gezonde stad’ is incorporated as central strategy (NIJM1, 2020, p.52). Nijmegen’s Green Plan ‘The Green Thread’ incorporates this ambition to be a green city, highlighting that GI contributes to various aspects, but as this plan dates from 2007 it is not up to date with the latest development in Nijmegen (NIJM2, 2007). For the development of UGI the municipality is making new plans as R6 states that “there is a biodiversity plan, that is 90 percent finished ... also defining a new main green structure”.

Objectives

Climate change adaptation	Actively linking the role of green to cope with the consequences of climate change, with climate adaptation as precondition.
Social cohesion	Aim to be an inclusive city with a central role for citizens and everyone can participate. Green contributes to social cohesion.

Concerning policy objectives and goals, CCA is strongly linked to the idea of UGI. Within their strategy ‘Groene, gezonde stad’, the municipality strives for a green city where green is not only accessible, but also contributes to reduce the negative effects of climate change, indicated by: “[we] therefore see climate adaptation as a precondition for the development of the city” (NIJM1, 2020, p.55). Nevertheless, a green and healthy city cannot be achieved alone. Thus, collaboration is needed as “together [we] strengthen the green qualities” (NIJM1, 2020, p.32). This links social cohesion to the idea of working together on the development of UGI, but also to the aim of an inclusive city, “a city that will continue to offer room for own initiative in the future” (NIJM1, 2020, p.7). This sounds simple where R6 defines it as “the city that is there for everyone and all citizens have the same rights and obligations to think along within policy”. However, in practice it is more complex to involve all citizens.

Goals

Sustainability	Not clearly defined, mainly connected to policy aims. ‘Duurzame stad’ as one of four main perspectives aiming for climate adaptation.
Resilience	Not clearly defined. Resilience acknowledged through being ‘wendbaar’ (manoeuvrable) and mixing functions to be future proof and less vulnerable.

Nijmegen adopted ‘Duurzame stad’ as one of four main perspectives and this is closely linked to the idea of CA as R6 states that “this ‘Sustainable city’ has been split into a water-robust, so climate proof city, and a green, healthy city”. Sustainability is thus mainly connected to different policy aims. The city is progressing in its goals as “Nijmegen is at the forefront of sustainability and future-proofing”, also

winning the title ‘European Green Capital’ in 2018 (NIJM1, 2020, p.31). R6 confirms this by stating that Nijmegen “*is perhaps one of the leading cities in it*”. Resilience is only linked to the idea of being ‘manoeuvrable’, meaning that Nijmegen strives for mixing functions to better cope with future changes and thus be less vulnerable (NIJM1, 2020, p.47). Hence, despite not being clearly defined, mainly sustainability is accounted for as policy goal.

Principles

Integration	‘Beweegroutes’ (travel routes) connecting green-blue networks with infrastructure for walking and cycling. Green routes to get out of the city.
Connectivity	Interconnecting ‘natuurparels’ (nature pearls) and connecting them with other UGI to strengthen coherence of green areas.

Concerning the UGI principles, Nijmegen incorporates more or less all of them. It becomes clear that especially *integration* and *connectivity* are important principles since these two are frequently included. *Connectivity* is important as “*by connecting the green areas with each other, their qualities improve*” (NIJM1, 2020, p.89). Moreover, it is crucial to integrate UGI as “*the building pattern, the road pattern and the green structure have always been developed in mutual coherence*” (NIJM2, 2007, p.17). R6 puts an emphasis on the ‘natuurparels’, “[*our*] *most important green areas*” as these designated areas could be seen as “*stepping stones for connections*”, linking GI inside and outside the city.

Multi-functionality	Green contributes to more than ecology and thus has several benefits for the city, such as increased liveability, biodiversity and public health.
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Through connecting and integrating UGI Nijmegen also adheres to the principle of *multifunctionality*, meaning that green in the city contributes to different aspects, illustrated by: “[*we*] *now see greenery more as part of the urban fabric with different functions for the city*” (NIJM2, 2007, p.9). Next to this, multifunctional green also has practical reasons as “*because space is scarce, the trick is to combine it, for example by combining green with a playground*” (R7).

Multi-scale	Greening on street level, neighbourhood scale and in and around the city.
Multi-object	UGI with various types of green.

The above-mentioned principles all happen on different scales with different types of green and this relates to the principles of *multi-scale* and *multi-object*. Although not explicitly incorporated, Nijmegen states a clear aim concerning scale and object: “[*we*] *want a green city with space for various types of greenery, both in the neighborhoods and in and around the city*” (NIJM1, 2020, p.55), with green varying from parks to gardens. These ‘natuurparels’ provide a clear example that UGI can vary in scale and object, as R6 is stating: “*some nature pearls are parks or urban forest, it is our entire Heumensoord, which is 600 hectares of forest outside our city limits, and in rare cases it is something else*”.

Inter- and transdisciplinary	Linking green ambitions to ambitions in other policy areas, collaboration through a ‘programmeertafel’ (programming table) and the ‘Natuurlijke Alliantie’ (Natural Alliance).
Social inclusion	General focus on participation, collaboration with citizens in greening the city mainly through citizen initiatives which can contribute to social cohesion.

Looking at the process of UGI development, Nijmegen strives for an integral approach through collaboration linked to *social inclusion* and *inter- and transdisciplinary*. The city aims to provide green a strong position for the future and “*this is possible if [we] link our green ambitions to ambitions in other policy areas*” (NIJM2, 2007, p.12). R6 and R7 highlight the ‘programmeertafel’, an internal working group, and the ‘Natuurlijke Alliantie’, an external working group, as examples of how Nijmegen collaborates with different policy areas and disciplines where also the Radboud University is an important partner. This also relates to *social inclusion* and Nijmegen is clear about the idea of participation: “*participation is an important pillar, as municipality [we] think that's important*” (NIJM1, 2020, p.95). Nijmegen’s Green Plan provides examples of collaborating with citizens through greening front gardens and developing façade gardens as “*collaborating with citizens can contribute to social*

cohesion” (NIJM2, 2007, p.34). R6 also actively links participation to the idea of the inclusive city as “[you] want everyone to think along about what happens in the city, and that is what [we] call participation”. Participation is thus a central focus in the policy documents, and in practice this is mainly addressed through citizens providing initiatives for the development of maintenance of UGI.

4.3.2 Process: Incorporating a PP approach to support UGI development

PP	General focus on participation and collaboration as part of an inclusive city, for UGI specifically connected to citizen providing own initiatives and green maintenance.
<p>Nijmegen makes clear that participation is an important aspect of developing the city and it is part of the city’s ambition to be an inclusive city. The municipality strives to be “a city that will continue to offer room for own initiative in the future” (NIJM1, 2020, p.7). These initiatives also relate to green initiatives as R6 and R7 state that Nijmegen uses “<i>mijnwijkplan.nl as a tool to gain initiatives and ideas</i>”. Nijmegen’s Green Plan highlights some participatory processes related to developing green with their “ambitions for citizen participation in green management”, but this only relates to maintenance of GI (NIJM2, 2007, p.14).</p>	
who	Management and maintenance of green done by citizens, so mainly citizens actively involved. Also collaborating with housing corporations, companies and entrepreneurs.
<p>Citizens thus have a significant role to play when looking at <i>who</i> to involve. Next to participation in green management, also collaboration with citizens to make front gardens greener or to develop façade gardens are examples of UGI development stressing the need to “stimulate private initiatives” (NIJM2, 2007, p.25). The ambition “Together we strengthen the green qualities” stresses the need to collaborate, but it stays abstract who is included (NIJM1, 2020, p.32). Yet, the interviews did show collaboration is done “also with housing corporations, sport clubs and schools” (R7) and additional external expertise is gained through working together with consulting firms. Citizens can thus be seen as important participants, but also other parties are involved in the participation process.</p>	
how <i>(level of involvement)</i>	Stimulating citizen initiatives to make private properties greener, for example through developing façade gardens. Municipality as initiator providing a framework for participation. Using external expertise to reach target groups that are difficult to include.
<p><i>How</i> to involve is not discussed in detail in the policy documents. The general focus on participation is discussed in ‘Samenwerking en participatie’ (collaboration and participation) where steps regarding the participation process are mentioned (NIJM1, 2020, p.94). Central to this process is the idea that “appointed stakeholders are informed at an early stage and have the possibility to think along with ideas/plans” (NIJM1, 2020, p.97). In project initiated by the municipality “prior to a project, it is determined to what extent citizens have a say and in what” (R7) so a deliberate assessment is made about the level of involvement through a framework for participation. This is then linked to a certain participation method like “an information evening, or just a letter or entire workshops and sessions” (R7). Nijmegen also tries to incorporate participation through providing room for and stimulating private initiatives “as long as they benefit the quality of the city” (NIJM1, 2020, p.7). When citizens are the initiator there is usually also more expected of them in the process, resulting in the fact that “those who propose the initiatives are usually the highly educated” (R6) as not all poses the right capacities. However, Nijmegen is making serious efforts to include all, for example citizens with a migrant background, by working together with welfare associations and the consulting firm ‘Bureau Wijland’. Through this external expertise also the hard-to-reach target groups can be included as “it turns out that these organizations are well integrated into the city’s capillaries” (R6).</p>	
when <i>(design – deliver – maintenance)</i>	Municipality stimulates UGI development through citizen initiatives which entails full participation from design to maintenance. Also, specific ambitions for citizen participation in green management and maintenance.

Lastly, *when* to participate is mentioned varying from early involvement to green management in a later stage. Early involvement is discussed in general, stressing the need to inform stakeholders in an early stage. This is necessary as only if participation is included from the start, “*then the environment has the opportunity to actually influence the plan*” (NIJM1, 2020, p.97). Looking specifically at the development of UGI, the Green Plan only puts an emphasis on participation in a later stage through green maintenance. Nevertheless, full participation in all stages is possible as R6 states that “*a green initiative that starts with citizens is of course full participation, citizens are involved from start to finish*”.

Reflecting on the Nijmegen case:

The municipality of Nijmegen strives for the development of UGI with their spatial choice aiming for a ‘Groene, gezonde stad’. This is strengthened by a strong link between sustainability and CCA, a precondition for a green and sustainable city. Claiming to be one of the leading cities when looking at sustainability, Nijmegen has a clear strategy focussing on ‘natuurparels’, and collaborating through working groups via the ‘programmeertafel’ and ‘Natuurlijke Alliantie’. Collaboration and participation are central to the aim to be an inclusive city and providing room for citizen initiatives to get involved in the development of UGI is an important element. Nevertheless, only a selected group actively proposes initiatives. So, Nijmegen tries to also involve target groups that are hard to reach by using the expertise of external parties. A preliminary conclusion drawn from this case is that the municipality should invest in a clear assessment framework to score initiatives and to provide citizens with a clear framework about the rules of the game concerning green initiatives. This is crucial in order for the municipality to be on the same page with citizens about expectations and possibilities.

4.4 Overview of the cases

This section provides an overview of the three cases highlighting the main lessons and remarks gathered from the three cases. A detailed overview of the cases is provided in Appendix H. The sections below on *content* and *process* provide more in-depth information concerning the overview.

4.4.1 Content

Looking at *content* the cases show that CA as a policy objective provides the cities with a clear aim to green cities. The same is true for social cohesion, which is linked to the aim of being inclusive in all three cities. In theory the ambition of being an inclusive city sounds promising, but in practice this is much more complex as it is difficult to involve all. Green initiatives are mainly proposed by active citizens and the highly educated as certain capacities are required to do so. As a result, often non-Dutch speaking people and those with a migrant background are left out. The objective of CCA thus seems better incorporated in practice than social cohesion.

Concerning the goals, all cities provide a clear aim striving for a sustainable city linked to CA. Amsterdam defines the sustainability the most concrete also linking it to CA, but less explicitly to UGI. Nijmegen, although less clearly defined, links the concept better to the development of UGI. Resilience is only slightly incorporated as a policy goal in the different cities linked to the idea of being ‘manoeuvrable’ and ‘futureproof’, however not connected to the development of UGI. The cases show that sustainability is clearly better incorporated than resilience, although both concepts are often not clearly defined. Amsterdam and Nijmegen seem to do a better job here compared to Groningen.

The cities all integrated the principles in their policy, but in different ways as some implemented principles more extensively than others.

Integration and *connecting* are the most obvious ones as all cities incorporate them clearly. Especially Amsterdam’s principle of ‘Groen tenzij’ is revolutionary in their new Green Vision, making green more a precondition instead of a balancing item in the development of the public space.

Concerning *multifunctionality*, only Groningen explicitly states it as a policy principle. Nevertheless, all cities integrate it, but less clearly as GI is often already characterised as multifunctional. Yet, it should not be underestimated, as multifunctional green provides both functional and practical benefits. The same is true for *multi-object*, which is often not mentioned explicitly. Amsterdam makes the strongest link by making a coherent framework of diverse GI types part of the 'hoofdgroenstructuur'.

Multi-scale has a more prominent role in policy as all cities make a distinction between the lower scale, the neighbourhood and street level where citizens are provided with more space to get involved, and the higher scale on city level which is more the responsibility of the municipality. It should be mentioned that this division is not that strict. Especially Nijmegen provides a strong strategy with their focus on 'natuurparels', important green areas ranging from inside to outside the city.

When moving more towards PP, the principle of *inter- and transdisciplinary* is perhaps the trickiest one as it is rather broad to interpret. Where all cities achieve some sort of collaboration between policy fields and diverse stakeholders, only Nijmegen seems to actively integrate disciplines through internal and external working groups like the 'programmeertafel' and the 'Natuurlijke Alliantie'. Looking specifically at *social inclusion*, all cities provide some guidelines on participation especially connected to citizens providing green initiatives. A critical point that all cities address is the fact that only a selected group of citizens actively propose these initiatives and thus efforts are needed to also include harder to reach target groups.

4.4.2 Process

Process wise all cities address participation in their policy where most provide a general policy focus on PP, not specifically connected to the development of UGI. Only Amsterdam provides a concrete principle integrating the development of UGI with PP, namely 'Aan groen werken we samen'.

Looking at the three key questions, concerning the *who* all three cities put a main focus on involving citizens through green initiatives. Groningen makes an interesting division between 'basisgroen' and 'nevengroen', making it clear that citizens can play a role especially in 'nevengroen'. Although this division might not be as strict in practice as it is mentioned in policy, it provides clarity on who can participate in what type of GI. Next to citizens all cities put an emphasis on the fact that the municipality can't facilitate participation solely by themselves and thus advocate for involving external knowledge, for example through consulting firms, community workers and welfare associations.

This directly relates to the *how*-question, where all cities provide examples of external parties to involve. For Amsterdam 'groencoaches', for Groningen 'klimaatambassadeurs' and community workers, and for Nijmegen the focus is on consulting firms. These parties mainly help to approach the citizens that are hard to reach where all cities agree that it is just a selected group of people that propose green initiatives by themselves. Next to these external parties, also digital knowledge and network platforms fulfil an important role in linking the development of UGI with participation. Especially in Amsterdam these platforms seem to make a difference in bringing together people and their ideas about how to make the city greener.

Green initiatives from citizens are thus an important part of the development of UGI in cities. For the *when*-question this means full participation, as these initiatives move from design to maintenance. This is thus the case when citizens are the initiator, but when the municipality is initiator in green projects often a choice about the level of involvement is made beforehand. Especially Groningen displays a clear 'Kader burgerparticipatie' which should assist in assessing the level of involvement. Nevertheless, wrong choices can still be made when wishes of citizens do not align with ideas of the municipality. All cities do highlight the necessity of guaranteeing some form of green management and maintenance, for initiatives as well as projects.



Eetbare Stad, Groningen

Chapter 5 | Conclusion and discussion

In this chapter, the sub-questions and the primary research question are answered and conclusions are drawn in section 5.1. Also, recommendations for municipalities are presented. The discussion follows in section 5.2, where the empirical findings are discussed and interpreted in relation to the theory. Following this, the implications of the study for planning theory and planning practice are considered and suggestions for follow-up research are presented. This chapter finishes with a critical reflection on the research process highlighting limitations of this research.

5.1 Conclusion

5.1.1 Research questions

According to the research aims discussed in section 1.2 and section 1.3, this study researched the question: *How can participatory planning in Dutch cities support the development of urban green infrastructure in the context of climate adaptation?* In order to provide an answer to this, the main research question is divided into four sub-questions:

The first sub-question was: *What is meant with urban green infrastructure in the context of climate adaptation and how can this be planned?* Based on the literature, UGI (see section 2.1) is emerging as a rather new concept aiming to create and maintain networks of multifunctional greenspace in urbanised environments. Greenspace is under pressure as cities are densifying and through urbanisation space becomes even more scarce. UGI as a concept is also increasingly seen as a strategic approach to green space planning to contribute to the liveability and sustainability of cities where CCA becomes more and more relevant. Although UGI has a broad appeal, it is still seen as a complex and comprehensive planning approach. The literature provides a variety of frameworks to implement UGI in planning practice, yet defining concepts clearly is necessary and the frameworks only function as guidance. This is in line with the results showing that a lot of concepts are popular policy terms, that lack meaning when not clearly defined and complemented with specific policy aims.

The second sub-question was: *What is participatory planning and what are benefits of such an approach from a theoretical perspective?* Based on the literature, a PP approach (see section 2.2) gained interest over the last few decennia where participation emphasises a planning approach that includes people at various levels of involvement. By including people in planning processes, decision-making becomes more democratic responding better to community needs. Concerning UGI, people desire a greater voice in the planning and design of GI. In doing so, people not only feel heard, but also valuable information for decision-making is gathered as participation can strengthen the development of UGI. Next to this, advocates of participation see great potential to improve social cohesion, a concept that is closely linked to the development of UGI. The results show similar things, indicating the link between participation in GI development in order to enhance social cohesion.

Answering the third sub-question: *How and to what extent do (municipalities of) Dutch cities currently incorporate a participatory planning approach in the planning and development of urban green infrastructure?* This question was divided into two parts.

Firstly: *How does the city currently plan and develop urban green infrastructure?* Related to the content of UGI development, the cases show that the proposed frameworks can function as guidance, but do not represent the planning process itself. All cases highlight the benefits of green in the city and clearly interlink this with CCA and sustainability as policy aims to guide the development of UGI. However, social cohesion and resilience are less accounted for. What becomes clear is that the development of UGI is a tailor-made process that can vary across cities. The principles as proposed in the framework can provide guidance in the development of UGI, but clearly formulated definitions and aims are necessary. *Integration* and *connecting* are often clearly incorporated whereas *multifunctionality*, *inter-*

and transdisciplinary and social cohesion are approached differently. Making GI a precondition in policy highlighting its functional and practical benefits on different scales contributes to the development of UGI. Process wise it is crucial to collaborate with different discipline also guaranteeing a form of participation. However, efforts are needed to include all in an effective way. The results show that cities realise the role of participation in UGI development, but this process often lacks structure.

Secondly: *To what extent does the city currently incorporate a participatory planning approach in the planning and development of urban green infrastructure?* Based on the theory on PP and linking this with the findings, the cases show that all municipalities incorporate general ambitions about participation as this is also integrated in the newly developed Strategy of Spatial Planning and the Environment. Nevertheless, there are varying levels of involvement when looking at participation. Municipalities on the one hand stimulate green citizen initiatives which entail full participation, and on the other hand initiate green projects themselves where the involvement level and participation methods are deliberately chosen upfront. The results show that municipalities should clarify this distinction to make clear how participation in the development of UGI is possible. Participation frameworks help here to provide effective guidance to citizens. What becomes clear is that municipalities express policy ambitions to spatially plan UGI in a participatory way, but expertise in understanding how participation should be accounted for in practice is lacking behind.

The fourth and last sub-question was: *Which (policy) lessons for local urban spatial planning can be identified for participatory planning supporting the development of urban green infrastructure in Dutch cities?* This relates much to the previous question where it was concluded that translating policy aims to practice can still be challenging. Nevertheless, the cases show interesting outcomes where a PP approach is linked to the development of UGI. Especially the 'how'-question is crucial here as this is what links theory to practice, namely how participation can contribute to the development of UGI. Hence, some interesting lessons arose in this research resulting in four recommendations for municipalities: 1) make UGI a precondition in policy, especially on the neighbourhood-level; 2) invest in the inclusion of different target groups; 3) make effective use of digital tools and platforms; and lastly, 4) make a central municipal department responsible for green initiatives (see section 5.1.2).

The primary research question was as follows: *How can participatory planning in Dutch cities support the development of urban green infrastructure in the context of climate adaptation?* Concluding, a PP approach can stimulate the development of UGI in Dutch cities, however the development of UGI is a tailor-made process that varies across cities. One-size fit all solutions for a PP approach are thus not working, but the proposed framework forms a solid foundation for cities to translate policy aims concerning participation and the development of UGI to practice. So, the findings show interesting ideas and methods on how to develop UGI together with citizens. This resulted in four recommendations for municipalities of Dutch cities to better combine the importance of UGI for local urban planning with a structured PP process. These recommendations provide cities with guidance on how to spatially plan UGI in a participatory way. Effectively working together through clear collaboration and participation is key as advancing green cities for CA can benefit from a PP approach.

5.1.2 Recommendations

Based on the results of this study, various recommendations for municipalities of Dutch cities can be made to enhance the development of UGI through a PP approach.

Make UGI a precondition, especially on the neighbourhood-level

It was found that green is often seen as a balancing item. The first recommendation would thus be to make UGI a precondition within policy. The difficulty with green in policy is that its value is often not measurable, but nevertheless UGI has a lot of indirect value where a green city has multiple benefits. Thus, municipalities should integrate green already at the forefront, something that should be partly

a political choice to go for green, and also partly achieved through awareness of society agreeing on the fact that UGI can play an important role in cities. This can be a challenging task to unfold for an entire city or municipality at once, so a suggestion is to focus on a neighbourhood-oriented approach. By focussing on the neighbourhood-level first, it is easier for a municipality to implement a tailor-made approach matching with the neighbourhood. This is what Groningen does for example with their 'climate ambassadors' to implement the theme climate adaptation, and also Nijmegen focusses on the neighbourhood-level with so called 'neighbourhood healers'. Shifting strategical focus from the city level to the neighbourhood level is thus something municipalities could integrate. In order to create more awareness for the important role green can fulfil in cities, municipalities could stress the benefits of multifunctional UGI more explicitly. By focussing on providing multifunctional green, which is often more cost-efficient, a more effective solution is provided as space is scarce in most cities.

Invest in the inclusion of different target groups

A second recommendation relates to the argument of Arnstein (1969), who states that citizen participation is the redistribution of power that enables the 'have-not' citizens to be included in the benefits of society. The 'have-not' citizens relate to the citizens that are often excluded for example those with a lower socioeconomic status, those who do not speak the general language or those with a migrant background. It was found in the results that these groups are often not included in the participation process concerning the development of UGI, especially because these groups are hard to reach. In order to also include them, municipalities could invest in qualitative professional guidance at the local level. Examples like 'groencoaches', who function as accessible spokespersons on the local level, but also including external expertise through consulting firms could help municipalities reach these target groups. These parties are often well integrated into the city's capillaries and can assist municipalities to reach a broader audience. Municipalities should actively invest in this.

Make effective use of digital tools and platforms

Additionally, a third recommendation for municipalities is to invest in digital knowledge and network platforms providing clear information on UGI in cities and on how citizens can participate in the development through projects and initiatives. Some people prefer to get involved online as this is experienced as an easier and more accessible method to participate. For municipalities these digital platforms are an easy option to share information where physical newsletters are often hardly read and information evenings only attract a selected audience. 'West Begroot' in Amsterdam is a good example as it combines a digital platform with physical letters as a reminder for citizens. This makes it easy accessible and citizens are actively reminded since the letter makes it tangible. Municipalities should keep investing in online possibilities to get citizens involved, especially the ones that do not actively get involved by themselves.

Make a central municipal department responsible for green initiatives

Lastly, a fourth recommendation is to make a central municipal department responsible for handling citizen initiatives. This should help municipalities to keep overview of the proposed initiatives and should provide citizens with a central point of contact concerning UGI development. This department should make use of a general assessment framework for scoring initiatives, to be transparent as not all proposed initiatives can be granted given the limited budget. In order to avoid friction, this department should provide clarity beforehand about what the possibilities are, how initiatives are scored and what is expected of the initiator of an initiative. This last point is crucial as often municipalities expect citizens to be actively involved in green management and maintenance. UGI maintenance is a topic that should be clearly aligned at the start of the process in order to avoid unnecessary costs. Sometimes this means that citizens need professional guidance as they lack basic knowledge about how to maintain green.

5.2 Discussion

5.2.1 Interpreting the results

Connecting the results to the conceptual model (see section 2.4), the model provides a general overview on the relationship between the development of UGI and the role of a PP approach. With the division between UGI as *content* and PP as *process*, the results show how both are individually and collectively accounted for in municipal policy. Nevertheless, some nuances to the model could be added, especially in the way policy is translated into practice. The conceptual model brings together UGI and PP based on the frameworks presented by Ramyar et al. (2021, p.6) and Davies et al. (2015, p.13). By dividing the themes into content and process a clear structure is presented, providing a logic overview of the different component. However, as Ramyar et al. (2021) stated about the complexity and comprehensiveness of UGI as a planning approach, also the results show that it can be difficult to distinguish the different components as clear as discussed in theory. This is of course the challenge of translating theory to practice, the research gap that Fors et al. (2015) described.

Reflections on the theoretical framework and results: Content

Based on the frameworks presented by Davies et al. (2015, p.13) and Ramyar et al. (2021, p.6), content is mostly related to UGI planning. It is crucial to clearly define objectives, goals and principles and this was also the basis for the division of elements (Ibid.).

Firstly, concerning objectives and goals, CCA was placed in the conceptual model as context, but also highlighted as key policy objective in the framework. The importance of CCA as emphasised by Matthews et al. (2015) is in line with the results where all cities clearly incorporate this aim in their policy. Adapting to climate change is thus seen as urban challenge and this is actively connected to sustainability. Where the theory links UGI to CCA, sustainability and resilience, the results mainly show a strong connection between UGI, CA and sustainability. Hence, resilience as central policy goal seems to be lacking when looking at the results. Nevertheless, the fact that cities have clear green policy visions are in line with Van Oijstaeijen et al. (2020) stating that cities actively involved in sustainability goals seem to create momentum for UGI development. Nijmegen is a good example here as it was elected European Green Capital in 2018. Given the results showing that UGI, CCA and sustainability are highly intertwined, the connection between these concepts could perhaps be made more explicitly in the conceptual model. Social cohesion as second policy objective, is seen as a key benefit of UGI by Hansen et al. (2017). This is mostly in line with the results where cities provide clear objectives concerning social cohesion through aiming to be inclusive cities. As emphasised by Sorensen & Sagaris (2010), there is a strong link between a PP approach and increasing social cohesion. According to the results the development of UGI could also be part of this. Within the conceptual model this link between PP, UGI development and social cohesion could be made clearer.

Secondly, looking at the principles as defined by Hansen et al. (2017), with four core principles and three supporting principles, the results overall show that it is not that easy to incorporate these principles as strict as they are defined in theory. Where Grădinaru & Hersperger (2019) emphasise that scholars have proposed a variety of principles to facilitate the development of UGI and in line with the theory, the results show that cities also incorporate principles differently. Where Groningen for example states that it develops multifunctional green, Amsterdam and Nijmegen are less clear about this principle. A nuance that becomes visible here is that the framework as presented in the literature research should be seen as a tool to facilitate the development of UGI in planning, and does not represent the planning process itself, as it is a tailor-made process. The results thus show, as in line with the theory, that the principles function as guidance, but do not guarantee successful development of UGI. Next to this, the results also do not show a clear distinction between groups of principles where Hansen et al. (2017) distinguishes between four core principles and three supporting principles. For

this research the division by Hansen et al. (2017) was incorporated, but Davies & Laforteza (2017) used a different division, making it difficult to say if one is better than the other. Especially social inclusion and inter- and transdisciplinary were harder to interpret given their broad definition.

Reflections on the theoretical framework and results: Process

Based on the work presented by Davies et al. (2015) and Wilker et al. (2016), process is mostly related to a PP approach. In order to structure PP, it is helpful to focus on three important questions. This was also the basis for the division of elements (Ibid.).

The results show that the PP approach is especially linked to the development of UGI through social cohesion and social inclusion. As a main objective and principle both are mentioned in the literature, but not explicitly linked in practice to the PP approach. This link is not as clear in the conceptual model as it shows in the results. Participation in this perspective is in line with the definition of the World Bank where an emphasis is put on the development of initiatives, something that also became clear in the results showing that citizens proposing green initiatives play an important role in all three cities.

In order to bridge the research gap, the gap between connecting participatory theory and practice (Puskás et al., 2021), the analysis of the results showed that the 'how'-question turned out to be a crucial question, in line with what Wilker et al. (2016) stated. However, this question was hardly answered in policy and only with additional information from interviewees meaningful insights were gained. Citizen initiatives formed a dominant method for inclusion in the results, yet this was not an explicit focus within the literature. Nevertheless, there is resemblance with methods discussed by Luyet et al. (2012) and the results, as newsletters, information meetings and workshops were mentioned. Also, the increasing attention for digital tools to engage with citizens, something that is also stressed by interviewees referring to the use of digital platforms and WhatsApp groups, stood out. This is in line with the theory showing an increased attention for e-tools and methods including geographic information systems (Ferreira et al., 2020). It should be said that this field needs more investigation and investment in order to use digital tools more effectively. Moreover, the results show a strong link between who to involve and how to involve, where there are differences when citizens are initiator compared to when a municipality is initiator. This relates to Wilker et al. (2016) highlighting the level of involvement, where citizen initiatives mostly entail empowerment, and with municipal initiated project it is decided beforehand to what extent citizens are involved. Nevertheless, the results also highlight the complexity of inclusion as in practice it is difficult to reach all. Especially the target groups that are hard to reach, such as those with a lower socioeconomic status, those who do not speak the general language or those with a migrant background, ask for effective strategies to be included. This is not discussed extensively in the literature, but is crucial according to the results. The results show that cities have different strategies on how to involve this particular group, ranging from 'groencoaches' to using external expertise of consulting firms.

Lastly, when to involve participants was discussed according to Willems et al. (2020) GI lifecycle. This division in three phases of UGI planning worked out in practice, with the results varying from full participation in initiatives to projects focussing more on green management and maintenance.

5.2.2 Implications

Following the previous section, relating the results to the conceptual model showed that both overall complied. This also entails implications for planning practice and planning theory. Linking the development of UGI to a PP approach shows that both fields have been researched quite extensively, but translating this from theory to practice can be challenging. UGI planning as well as participation are both complex phenomena that need theoretical based guidance to be translated to practice.

Looking at the scientific contribution and implications for planning theory (see section 1.2), a knowledge gap between connecting theory and practice concerning UGI was stressed, and thus there was a call for a re-focus to case level research (Fors et al., 2015). This study is a step in this direction by empirically looking at PP processes as a way of developing UGI in cities and the findings are an attempt to fill this knowledge gap. The cases shed light on how policy is translated to practice and show that the framework used provides a solid foundation to do so. Yet, providing one-size-fit-all solutions for UGI planning is difficult as UGI development is context-specific and thus challenging (Zuniga-Teran et al., 2020). Nevertheless, this study provides insights in how to spatially plan UGI in a participatory way. Additionally, the study presents clear starting points for follow-up research.

Looking at the societal contribution and implications for planning practice (see section 1.3), also a gap between participatory theory and practice is still present (Puskás et al., 2021). Findings of this study relate to practical insights about the way a PP approach can contribute to the development of UGI in Dutch cities. Based on the findings, four recommendations are provided how municipalities of Dutch cities can enhance the development of UGI through a PP approach. Given the size of the research and the fact that the findings are still highly context-specific, it is hard to fully generalise the findings of the three cases to Dutch cities. Nevertheless, given the multiple-case study approach, these recommendations do provide indications to potential policy lessons for local urban spatial planning. Hence, this study is a step forward in understanding the practice on how to spatially plan UGI in a participatory way.

5.2.3 Suggestions for follow-up research

Reflecting on the implications for planning practice and theory calls for future research. Hence, based on limitations and findings of this research, some suggestions for follow-up research are formulated. Firstly, further research could research the relationship between the development of UGI and the role of a PP approach more closely by examining more cases. These could be cities in the Netherlands and perhaps even cross-country by looking at cities outside the Netherlands. This study chose a multiple-case study research resulting in less in-depth knowledge than when a single-case study approach was chosen, given the time and scope of the research. More extensive research in more cities could contribute to new findings and could also add to the generalization of the results. Not only more cases could contribute to better findings, but also more extensive policy document research and interviewing can broaden potential insights into the topic, for example by also including a city's climate adaptation strategy plan.

Further research might also investigate more specifically the role of the municipality as initiator and the role of citizens as initiator in UGI initiatives and projects. This study did not specifically focus on a certain target group, but investigated more in general who is included. The results showed a distinction between different initiators of UGI development initiatives and this also affected the level of involvement. So, there are indications that participation and the level of involvement depend on who is the initiator. More in-depth research could shed light on this to see if theoretical insights match practical findings.

Finally, also additional research could focus on the inclusion of target groups that are hard to reach, such as non-Dutch speaking people and those with a lower socioeconomic status or a migrant background. Suggestions are proposed on how to reach these groups, online through digital platforms, and offline by investigating in local spokespersons and involving external expertise who are often better integrated into the city's capillaries. Reaching these target groups, the 'have-not' citizens, is an interesting point of focus for further research as this is a critical group to involve since they often do not participate by themselves.

5.2.4 Critical reflection

Rounding off the research, a critical reflection on the research process highlighting limitations is provided. Reflecting back the process overall went smoothly, but still some remarks can be made. Finding a suitable research question given the many interesting research fields appeared to be a challenging task. Quite some time was invested in this process of narrowing down the topic to a concrete research topic and question. As a result, chapters 1 to 3 had to be written in a short period in order to leave sufficient time for the data collection and analysis. The theoretical framework including the conceptual model thus needed some adjusting over time. During the process it became clear that concepts should be linked differently and new insights into the relationship between concepts arose. Investing time in getting familiar with the key concept is a crucial step in the research process as time pressure made it a challenging task to transfer the key theoretical concepts into a clearly aligned conceptual model. The conceptual model of this study turned out satisfactory to answer the research question, but as section 5.2.1 also highlights, some theoretical links between key concepts could have been made more explicitly.

Concerning the methodology some remarks can be made. The choice for a multiple-case study with multiple sources of evidence and the achieved level of detail turned out to be satisfactory. Nevertheless, as also suggested for follow-up research, more cases could benefit the findings of the research. Given the time and scope of the research the choice of three cities turned out doable, but given the findings it is hard to effectively generalise the results. Including more cities would provide results that are viewed as more robust, powerful and generalizable. This also relates to the policy documents and interviews. One policy document was rather outdated, but as mentioned, this policy document was used since the newer version had not been published yet. In order to increase its representativeness, extra attention was paid by asking interviewees for more information concerning this specific policy document.

Next to this, when looking at the interviews, all interviewees were municipal officials possessing the right knowledge for the research, but possibly also providing a one-sided viewpoint to the topic. One interviewee, a consulting firm freelancer, did not directly work for the municipality but was commissioned by them. It was noticed during the interview and the analysis that this interviewee had a refreshing viewpoint and approached some topics from a different angle compared to the other interviewees. Still sufficient data was provided, but interviewing a non-municipal official for every case could improve the representativeness of the cases. Besides, all interviews, except one, took place digitally as a consequence of the measures concerning COVID-19. This did not affect the quality of the interviews, but face-to-face interviews are preferred as additional information, for example via non-verbal communication, could be obtained.

Altogether, this study led to new, interesting insights into the relation between the development of UGI and a PP approach. Findings provide an attempt to fill the knowledge gap by bringing together theory and practice on UGI and PP. Nevertheless, this relation stays rather complex and challenging to grasp where translating theory and policy to practice remains contexts-specific and thus providing one-size-fit-all solutions is difficult. New questions arose and the results provided indications for follow-up research. This research shows that both UGI and PP are interesting phenomena with an increasing theoretical background, also showing promising developments in practice that ask for further research in order to advance green cities through participation.



HAN, Nijmegen

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Appendices

Appendix A – Methodological approach

Appendix B – Contact letter interviews

Appendix C – Information sheet

Appendix D – Form of consent

Appendix E – General interview guide

Appendix F – Preliminary codebook (codebook document analysis)

Appendix G – Final codebook (codebook interview analysis)

Appendix H – Overview analysed cases

Appendix A – Methodological approach

	Which information	Moment of retrieval	Method of retrieval (source)	Documentation method	Method of analysis
Main RQ: How can participatory planning in Dutch cities support the development of urban green infrastructure in the context of climate adaptation?	The role of public participation within PP in developing UGI in Dutch cities in the context of CA.	July 2021 to January 2022.	Multiple case study research: literature and policy document research, and interviews.	The main research question is answered by the data from the sub-question The empirical data section is explained in the methodology.	Data analysis is based on combining the literature from sub-Q1 & sub-Q2 with the empirical data of sub-Q3. Sub-Q4 places the data in context to provide a better meaning to the data.
Sub-Q1: What is meant with urban green infrastructure in the context of climate adaptation and how can this be planned?	The role of green infrastructure in cities and the relationship with climate adaptation.	August 2021 to October 2021.	Scientific peer-reviewed literature.	Writing a theoretical framework, linking the key concepts and their relationship.	Reading literature, comparing and linking the literature using different theoretical frameworks to create a conceptual model that function as theoretical foundation.
Sub-Q2: What is participatory planning and what are benefits of such an approach from a theoretical perspective?	The role of participation in participatory planning and the level of involvement.	August 2021 to October 2021.	Idem to sub-Q2	Idem to sub-Q2	Idem to sub-Q2
Sub-Q3: How and to what extent do (municipalities of) Dutch cities currently incorporate a participatory planning approach in the planning and development of urban green infrastructure?					
- 3a: How does the city currently plan and develop urban green infrastructure? - 3b: To what extent does the city currently incorporate a participatory planning approach in the planning and development of urban green infrastructure?	The role, planning and development of UGI in municipal policy. The role, and process of a PP approach in developing UGI in municipalities Context specific information of the cases to interpret data.	October 2021 to December 2021.	Policy document research using public policy documents of the cases. Semi-structured interviews with key actors of the cases.	N/A Recording interviews and producing transcripts.	Coding policy documents with ATLAS.ti using deductive and inductive codes resulting in a preliminary codebook. Coding transcripts with ATLAS.ti using the preliminary codebook and using additional inductive codes resulting in a final codebook.
Sub-Q4: Which (policy) lessons for local urban spatial planning can be identified for participatory planning supporting the development of urban green infrastructure in Dutch cities?	Possible guidelines for municipalities for the role of public participation stimulating the development of UGI in the context of CA.	December 2021 to January 2022.	Data from Q1-Q3.	N/A	Data from Q3a/b is placed in context to give meaning by linking it with theoretical insights from Q1 & Q2 to provide lesson for planning theory and practice.

Appendix B – Contact letter interviews

TITEL: Hoe gaat de gemeente [] om met beleid omtrent groen en participatie?

Geachte meneer/mevrouw,

Voor mijn Masteropleiding Planologie aan de Rijksuniversiteit Groningen ben ik bezig met mijn afstudeerscriptie over vergroening van Nederlandse steden. Het doel van mijn onderzoek is om inzicht te krijgen hoe publieke participatie bij kan dragen aan de ontwikkeling van groen/“groene infrastructuur” in de stad binnen de context van klimaatadaptatie. Klimaatverandering is een belangrijke opgave binnen steden en daarom hebben veel steden de ambitie om de stad te vergroenen. Nu ben ik binnen mijn onderzoek vooral geïnteresseerd in de rol van publieke participatie binnen het vergroenen van de stad. Hiervoor onderzoek ik binnen het beleid van enkele steden hoe er op dit moment ingezet wordt op het vergroenen van de stad en hoe participatie hierin een rol kan spelen. Eén van de steden waar ik op focus is []. Nu wil ik mijn beleidsanalyse heel graag uitbreiden middels interviews om een beter beeld te krijgen van het beleid van steden. Voor [] heb ik gekeken naar de Omgevingsvisie en specifieke groenplannen. Middels interviews hoop ik dieper in te kunnen gaan op het beleid van de gemeente om uiteindelijk te kijken of steden onderling van elkaar kunnen leren.

Aangezien u betrokken bent binnen het groenbeleid van de gemeente mail ik u met de vraag of u of iemand binnen uw kring mogelijk geïnteresseerd is om mee te werken aan mijn onderzoek in de vorm van een interview. Ik ben dus gericht op zoek naar mensen die actief zijn binnen het gemeentelijk beleid rondom groen en participatie. Het interview hoop ik in de loop van november af te nemen en zal ongeveer een uurtje duren. Gezien de huidige omstandigheden rond COVID-19 zal het interview in online vorm plaatsvinden.

Mocht u zelf interesse hebben, of iemand weten die geschikt/geïnteresseerd zou kunnen zijn, of mochten er verder nog vragen of onduidelijkheden zijn, dan hoor ik het graag!

Alvast bedankt voor uw moeite!

Met vriendelijke groet,

Déan Klimp
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Appendix C – Information sheet

Onderzoeker
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Groningen, [datum]

Geachte meneer/mevrouw [],

Ter afsluiting van de MSc Environmental & Infrastructure Planning doe ik onderzoek naar rol van een participatieve planningsaanpak bij de ontwikkeling van stedelijke groene infrastructuur binnen de context van klimaatadaptatie. Ik bestudeer in het bijzonder hoe participatie bij kan dragen aan de ontwikkeling van groen in Nederlandse steden. Hiervoor kijk ik hoe gemeentes op dit moment hun beleid omtrent de planning en ontwikkeling van groen en de rol van participatie vastgelegd hebben. Zodoende hoop ik tot adviezen te komen hoe gemeentes van deze steden onderling van elkaar kunnen leren qua beleid. Bij voorbaat dank voor uw bijdrage aan dit onderzoek. Deze brief bevat een korte toelichting op het interview.

Hoe zal het gesprek verlopen?

Het gesprek is erop gericht om kennis en expertise over het gemeentelijk beleid omtrent de ontwikkeling van groen en de rol van participatie te verkrijgen. Het is belangrijk om te melden dat dit geen kennistest of functioneringstest o.i.d. is. Er zijn geen goede of foute antwoorden. Voorafgaand aan het interview heb ik het gemeentelijke beleid geanalyseerd bestaande uit de Omgevingsvisie en het specifieke groenplan en middels dit interview hoop ik verder op dit beleid in te kunnen gaan. Ik doe dit aan de hand van een vragenlijst om het gesprek te structureren. Deze vragenlijst is opgebouwd uit de volgende thema's:

- Content
 - Stedelijke groene infrastructuur ("Urban Green Infrastructure")
 - Doelen (klimaatadaptatie, sociale cohesie, duurzaamheid, veerkrachtig)
 - Principes (integratie, connectiviteit, multifunctionaliteit, sociale inclusiviteit)
- Proces
 - Participatieve planningsaanpak ("Participatory Planning")
 - Wie is betrokken?
 - Hoe betrokken? (methode)
 - Wanneer betrokken? (planningsfase)
- Beleidslessen
 - Knelpunten
 - Adviezen

Het interview zal ongeveer een uur duren. U kunt op elk moment zonder opgaaf van reden besluiten om het interview stop te zetten of te pauzeren. Ook kunt u er altijd voor kiezen om een specifieke vraag niet te beantwoorden, wederom zonder opgaaf van reden.

Wat zal er gebeuren met de gegevens?

Met uw toestemming wil ik het interview graag opnemen. Het interview zal ik transcriberen, waarbij persoonlijke identificeerbare informatie verwijderd zal worden zodat het interview geanonimiseerd is. Er zal vertrouwelijk worden omgegaan met de gegevens. De gegevens zullen op een beschermde schijf worden bewaard (max 5 jaar) waar allen mijn begeleider mevrouw Horlings en ikzelf bij kunnen. Uw anonieme inzichten zullen worden gebruikt voor wetenschappelijke doeleinden.

Als participant heeft u het recht om:

- af te zien van deelname;
- elke specifieke vraag die gesteld wordt onbeantwoord te laten;
- het opnemen van het interview op elk gewenst moment te stoppen;
- het interview op elk gewenst moment te pauzeren of beëindigen;
- u terug te trekken van deelname tot één week na het interview;
- een kopie van het transcript van het interview toegestuurd te krijgen om zo naar wens aanpassingen te maken;
- vragen te stellen over het onderzoek op elk gewenst moment tijdens de deelname; en
- verstrekte informatie waarvan u wens dit niet op te nemen in het onderzoek te laten verwijderen.

Mocht u meer willen weten dan kunt u contact op nemen met mij of met mijn begeleider, mevrouw Horlings.

Nogmaals hartelijk dank voor uw bereidheid om deel te nemen!

Met vriendelijke groet,
Déan Klimp

Appendix D – Form of consent

Geïnformeerde toestemming

in het masterscriptie scriptieonderzoek:

Een meervoudig casestudie onderzoek in Nederlandse steden om te onderzoeken hoe een participatieve planningsaanpak de ontwikkeling van stedelijke groene infrastructuur kan ondersteunen.

Het doel van dit onderzoek is om beter te begrijpen hoe een participatieve planningsaanpak bij kan dragen aan de ontwikkeling van stedelijke groen infrastructuur binnen de context van klimaatadaptatie. De focus ligt hier specifiek op Nederlandse steden om te kijken hoe gemeentes op dit moment hun beleid omtrent de planning en ontwikkeling van groen en de rol van participatie vastgelegd hebben. Op deze manier wordt gekeken of gemeentes van deze steden onderling van elkaar kunnen leren qua beleid.

- Ik heb het informatieblad dat gekoppeld is aan dit onderzoek gelezen en begrijp wat hierin beschreven is. Ik kon aanvullende vragen stellen. Mijn vragen zijn voldoende beantwoord.
- Ik begrijp dat deelname aan dit onderzoek volledig vrijwillig is en dat ik op elk gewenst moment mag pauzeren of afbreken, zonder opgaaf van reden.
- Ik begrijp dat deelname aan dit onderzoek vertrouwelijk is en dat alleen de mensen, zoals vermeld staat op het informatieblad, de verstrekte informatie kunnen inzien.
- Ik begrijp waar het onderzoek over gaat, wat er van me gevraagd wordt, welke gevolgen deelname kan hebben, hoe er met mijn gegevens wordt omgegaan, en wat mij rechten als deelnemer zijn.
- Ik geef hieronder aan waar ik toestemming voor geef

VINK HIERONDER AAN:

Toestemming voor deelname aan het onderzoek:

- Ja, ik geef toestemming voor deelname
 Nee, ik geef geen toestemming voor deelname

Toestemming voor het maken van een audio-opname tijdens het onderzoek:

- Ja, ik geef toestemming voor het maken van een audio-opname van het interview
 Nee, ik geef geen toestemming voor het maken van een audio-opname van het interview

Volledige naam deelnemer:	Handtekening deelnemer:	Datum:

Volledige naam aanwezige onderzoeker:	Handtekening onderzoeker:	Datum:

De aanwezige onderzoeker verklaart dat de deelnemer uitvoerig over het onderzoek is geïnformeerd.

U heeft recht op een kopie van dit toestemmingsformulier

Appendix E – General interview guide

Intro

- Kunt u zichzelf kort voorstellen? Wat is uw functie/rol binnen gemeente? Wat zijn uw werkzaamheden?
- Op welke manier heeft u te maken met de ontwikkeling van groene infrastructuur? In hoeverre (en op welke manier) houdt u zich bezig met burgerparticipatie in de stad?

UGI en participatie (PP)

Content = UGI

- Hoe zou u de strategie van de gemeente omschrijven omtrent de ontwikkeling van groen in de stad? Kijkende naar de omgevingsvisie/groenplan.
- Hoe speelt klimaatadaptatie een rol bij de ontwikkeling van groen in de stad?
- *Duurzaamheid (sustainability) en veerkrachtig (resilient) als centrale doelen* >> Hoe zijn deze doelen onderdeel binnen het beleid van de gemeente? En hoe zijn deze gedefinieerd?
 - o Voorbeeld: “wendbaarheid”. Wat wordt daarmee bedoeld?
- *Multifunctioneel als principe* >> Hoe zorgt de gemeente voor multifunctioneel groen?
 - o Voorbeeld: alleen verschillende functies of ook meerdere voordelen?
- *Sociale inclusiviteit als principe* >> Hoe zorgt de gemeente voor sociale inclusiviteit bij de ontwikkeling van groen in de stad?
 - o Voorbeeld: “inclusieve stad”. Hoe bereik je dat? Wat is er al geprobeerd?
- *Inter- en trans-disciplinair als principe* >> Hoe zorgt de gemeente voor integratie tussen disciplines bij de ontwikkeling van groen in de stad?
 - o Voorbeeld: “integrale aanpak”. Hoe voorkom je fragmentatie en verzuiling?

Proces = PP

- *Wie* = Wie worden er betrokken bij de ontwikkeling van groen in de stad?
- *Hoe* = Op welke manier vindt participatie plaats, zijn er specifieke methodes/voorbeelden?
- *Wanneer* = In welke fase(n) van het planproces vindt er participatie plaats?
- Hoe zou u het betrokkenheidsniveau van burgers omschrijven? Is dit verschillend tussen typen burgers? En verschillend tussen delen van de stad?
- Wat zijn dilemma’s voor de gemeente t.a.v. participatie bij de ontwikkeling van groen in de stad? Voorbeelden?

Beleidslessen

- Is er bij het opstellen van het beleid wel/niet gekeken naar beleid van andere steden als voorbeeld? Zo ja, welke steden?
- Wat werkt goed als we kijken naar de uitvoering van beleidsdoelen op het gebied van burgerparticipatie (bij groenontwikkeling en -beheer)? Voorbeelden?
- Wat zijn knelpunten waar de gemeente in de beleidsuitvoering tegenaan loopt? Voorbeelden?
- Heeft u zelf nog adviezen voor andere steden hoe participatie een stimulerende rol kan spelen bij de ontwikkeling van groen in de stad?

Afsluiting

- Heeft u nog iets toe te voegen wat van belang kan zijn voor dit onderzoek?

Appendix F – Preliminary codebook (codebook document analysis)

Theme	Sub-theme	Key words
Urban Green Infrastructure	Content	UGI, GI, urban greenery, urban green space, green, greening, <i>green city</i> .
<i>policy objectives</i>	Climate change adaptation	Climate change, climate adaptation, anticipating, adapt, mitigate, <i>climate proof</i> .
	Social cohesion	Equal change to participate, participation, involvement, <i>accessibility, equity</i> .
	Other	Biodiversity, green economy, human health and well-being, urbanisation, <i>quality of life</i> .
<i>goals</i>	Sustainability	Sustainability.
	Resilience	Resilient, <i>flexible, manoeuvrable, future</i> .
<i>planning principles</i>	Integration	Integration, green-grey, coordination, <i>green-blue, coherent, network</i> .
	Connectivity	Connectivity, connection, <i>connected network</i> .
	Multifunctionality	Multifunctional, combining functions, multiple benefits.
	Social inclusion	Collaborative process, participation, collaboration, <i>inclusive, democratic, involvement, active citizenship</i> .
	Multi-scale	Different spatial levels, <i>scale level</i> .
	Multi-object	All types of urban green, <i>coherence, framework, green types, green elements</i> .
Participatory Planning	Inter- and transdisciplinary	Linking disciplines, partnership, <i>collaboration, stakeholders, knowledge integration</i> .
	Process	Participatory, participation, collaborative, communicative.
<i>who</i>	Government	Officials, planners, <i>local authorities, municipality</i> .
	Public	Locals, citizens, residents, representatives, <i>entrepreneurs, housing corporations, knowledge institutions, organisations, companies</i>
<i>how</i>	Planning process approach	Participation, strategic, integrated, <i>collaboration, inclusive, ownership, involvement</i> .
	Level of involvement	Low, high, methods, governance, <i>involvement</i> .
	Information	Information, newsletter, reports, <i>knowledge exchange</i> .
	Consultation	Consultation, website, open space method, <i>discuss</i> .
	Collaboration	Collaboration, opinion survey, presentation, public hearings, symposia, site visit, exploratory walk, meeting, round table, social media, <i>knowledge transfer</i> .
	Co-decision	Co-decision, inclusion, cooperation, charrette, geospatial / decision support system, <i>cocreation, co-responsibility</i> .
	Empowerment	Empowerment, focus group, workshop, <i>self-organisation, ownership</i> .
<i>when</i>	Design	Early involvement, planning, <i>initiatives, programming</i> .
	Deliver	Implementatie.
	Maintenance	Late involvement, maintenance, <i>(co-)management</i> .

Codebook used for the policy document analysis. Themes and sub-themes based on literature research. Key words function as deductive and *inductive* (italic) codes.

Appendix G – Final codebook (codebook interview analysis)

Theme	Sub-theme	Key words
UGI = content		
<i>policy objectives</i>	Climate change adaptation	
	Social cohesion	
	Other	
<i>goals</i>	Sustainability	
	Resilience	
<i>planning principles</i>	Integration	<i>Precondition, 'Green unless'-principle.</i>
	Connectivity	<i>Precondition, 'Green unless'-principle.</i>
	Multifunctionality	<i>Scarcity, cost-efficient.</i>
	Social inclusion	<i>Initiator, socioeconomic status.</i>
	Multi-scale	<i>'nature pearls'.</i>
	Multi-object	<i>'main green structure'.</i>
	Inter- and transdisciplinary	<i>'programming table', 'Natural Alliance'.</i>
PP = process		
<i>who</i>		<i>Green coach, consulting firm, community worker, climate ambassador.</i>
<i>how</i>		<i>Neighbourhood rights, digital platform, green coach, awareness, programming table, neighbour-oriented approach.</i>
<i>when</i>		<i>Full process.</i>
<i>extra</i>	Dilemma	<i>Budget, scarcity, reach all, estimate involvement.</i>
	Important	<i>Spatial quality, public support, dynamic, clarity, easy accessible, tailor-made, realistic, resistance.</i>
	Policy lesson	<i>Awareness, digital platform, assessment framework, local green point, professional guidance.</i>

Codebook used for the interview analysis. The codebook used for the policy document analysis functioned as deductive codebook (preliminary codebook). This codebook only shows *inductive* (italic) codes added during interview analysis, resulting in the final codebook.

Appendix H – Overview analysed cases

Content	Amsterdam	Groningen	Nijmegen
<i>UGI</i>	Central policy strategy: 'Rigoureus vergroenen'.	Central policy strategy: 'Groen & klimaatadaptatie'.	Central policy strategy: 'Groene, gezonde stad'.
<i>objectives</i>	Climate adaptation and social cohesion as two central policy aims for a greener city. Aim to be an inclusive city fostering equity contributing to social cohesion, but in practice it is complex to involve all.	Climate adaptation as central aim intertwined with the greening of the city. Aim to be an inclusive municipality where social cohesion means doing it together, but in practice it is complex to involve all.	Climate adaptation as precondition for coping with climate change resulting in a clear aim. Aim to be an inclusive city contributing to social cohesion, but in practice it is complex to involve all.
<i>goals</i>	'Duurzame stad' as central ambition, closely linked to climate adaptation, but less connected to UGI. Resilience as a sustainable, crisis proof city that is self-reliant and manoeuvrable, thus more linked to sustainability than to UGI.	'Duurzame en toekomstbestendige gemeente' as central goal, with sustainability linked to adapting to climate change. Resilience only connected in general to the theme of futureproof, but not to UGI development.	'Duurzame stad' as central task, closely linked to climate adaptation and also to UGI, resulting in the city being at the forefront of this theme. Resilience as being manoeuvrable only connected in general to the theme of futureproof, but not to UGI development.
<i>principles</i>	Revolutionary principle of 'Groen tenzij' and strong connecting with the 'hoofdgroenstructuur' works for <i>integration</i> and <i>connecting</i> . <i>Multi-object</i> effectively connected to the coherent framework of the 'hoofdgroenstructuur'. <i>Multifunctionality</i> makes UGI complex because of diverse interests, could be accounted for more explicitly especially in the public space. <i>Multi-scale</i> at all levels ranging from city level to private properties with citizen initiatives being important to implement fine-grained green. Collaboration through urban networks and working groups contributing to collective knowledge, but not effectively <i>inter- and transdisciplinary</i> . <i>Social inclusion</i> linked to active citizenship, but in practice not all poses the capacities to get involved in UGI development, excluding for example non-Dutch speaking people.	<i>Integration</i> and <i>connecting</i> achieved through creating a robust green-blue network linked to infrastructure. <i>Multifunctionality</i> achieved through combining functions as it saves space, so functional and practical. Different types and sizes of green are needed here but <i>multi-object</i> could be integrated more explicitly. <i>Multi-scale</i> accounted for through a division between the municipality being active at higher scales ('basisgroen') and citizens participating at lower scales ('nevengroen'). <i>Inter- and transdisciplinary</i> is stimulated through coordination and collaboration by exchanging knowledge between disciplines. <i>Social inclusion</i> actively linked to participation, mainly stimulating 'groenparticipatieprojecten' guided by the 'Kader burgerparticipatie'.	Focus on 'beweegroutes' and 'natuurparels' to strengthen coherence of GI and achieve <i>integration</i> and <i>connectivity</i> . Also, a strong feature of <i>multi-scale</i> as 'natuurparels' are not only within the city but also on higher scale around the city. <i>Multifunctionality</i> achieved through combining functions as it saves space, so functional and practical. Different types and sizes of green are needed here but <i>multi-object</i> could be integrated more explicitly. Collaboration through working groups like the 'programmeertafel' and the 'Natuurlijke Alliantie', contributes to <i>inter- and transdisciplinary</i> . <i>Social inclusion</i> as important pillar actively linked to participation, mainly through citizen initiatives dealing with UGI development and maintenance contribution to social cohesion.

P.T.O.

Process			
<i>PP</i>	General policy focus through the agenda 'Samen stadmaken' and the principle 'Aan groen werken we samen'.	General policy focus through the 'Kader burgerparticipatie' and the strategic choice of everyone participates.	General policy focus through 'samenwerking en participatie'.
<i>who</i>	Mainly focussing on involving citizens through active citizenship via initiatives, also collaborating with entrepreneurs, knowledge institutions, housing corporations and other organisations.	Mainly focusing on involving citizens, making a division between the municipality for 'basisgroen' and citizen participation in 'nevengeen'. Also, entrepreneurs and societal and nature organisations.	Mainly focussing on involving citizens through initiatives, also collaborating with housing corporations, entrepreneurs and companies. Consulting firms also play an important role.
<i>how</i>	Concrete methods mentioned in the agenda on 'Samen stadmaken', such as 'buurtrechten', but not clear if it works for UGI development. Important role for digital knowledge and network platforms, and 'groencoaches' as physical spokesperson on the local level, providing an easy and accessible option for citizens to get involved in UGI development.	Municipality as initiator providing a framework for participation setting up projects at higher level. Citizens as initiator through 'groenparticipatieprojecten' at lower level, but mainly active citizens. 'klimaatambassadeur' and community workers as physical spokesperson on the local level, actively involving target groups hard to reach.	Municipality as initiator providing a framework for participation setting up projects. Citizens as initiator through initiatives, but mainly the highly educated. Critical to use external expertise to involve target groups that are hard to reach. An improved assessment framework for scoring initiatives is needed, making it also more clear for citizens what is possible.
<i>when</i>	Citizen initiatives entail full participation. With municipal initiated projects participation depends on the choices made upfront according to participation frameworks. Green management and maintenance seen as important but are low in budget.	Citizen initiatives entail full participation. Aim for early involvement, but policy mainly on maintenance. Green management and maintenance important but often a lack of basic knowledge here so guidance necessary.	Citizen initiatives entail full participation. With municipal initiated projects participation depends on the choices made upfront according to participation frameworks. Always important to explicitly fix green management and maintenance.