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Fostering citizen involvement in urban green space for climate adaptation

A case study research in the city of Groningen to investigate the impact that green urban citizen initiatives can have on active citizenship for climate adaptation.

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Preface

In front of you lies the thesis 'Fostering citizen involvement in urban green space for climate adaptation'. This thesis was written as part of my graduation from the Socio-Spatial Planning master within the Faculty of Spatial Sciences of the University of Groningen. I was engaged in researching and writing this thesis from May 2020 to January 2021. Together with my thesis supervisors Ward Rauws and Ina Horlings, I was able to finish this thesis with great pleasure and I look back to this period of study with pride.

The year 2020 was internationally a year of climate adaptation action in preparation for the Climate Adaptation Summit in January 2021. For me, 2020 was also all about climate adaptation. In particular, I researched how green urban citizen initiatives raise citizens' environmental awareness and promote active citizenship in urban green space management for climate adaptation. To investigate this, a case study research with four citizen initiatives was conducted in the city of Groningen, the Netherlands. Groningen is not only a city to my heart, it was also the place of knowledge exchange about climate adaptation during the climate adaptation week in January 2021. Climate adaptation is an increasingly important topic as we already experience severe and irreversible climate change effects. This means we need to adapt to this. Not only in terms of technical solutions, but also in terms of mental and behavioural changes. With my thesis, I hope to contribute to the knowledge of climate adaptation in general and the social dimension of it in particular.

However, 2020 has also been a strange and unpredictable period that we went through due to the coronavirus (COVID-19). I have experienced the challenge to stay connected with my fellow students in times of social distancing and lock-downs, while at the same time working alone on my research and thesis. It was precisely because of these strange circumstances that I could really appreciate the contact moments with my thesis supervisors and fellow students. The meetings with them gave me so much positive energy for which I am very grateful to them. My thesis supervisors were always available when I had questions or uncertainties about my thesis and they always left me feeling confident.

I would like to thank my supervisors for their feedback and support during my research. I would also like to thank all the citizen initiatives that participated in this study. Without their cooperation, I could never have completed this research. I also want to thank my fellow students with whom I have worked on the topic of 'green citizen initiatives' for the pleasant cooperation. We have often been able to spar effectively about our studies. In addition, I would like to thank my family and friends for their support through my research. Besides their moral support, they also actively helped me distribute invitation letters for the survey for which I am very grateful to them. I have considered the support of all the people involved in my thesis as incredibly valuable and I am very grateful to them.

I sincerely hope you enjoy reading this thesis.

Willemijn Schreuder

Groningen, 29 January 2021

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Abbreviations

GI	Green Infrastructure
OD	Citizen initiative Oosterpoort Duurzaam
NGB	Citizen initiative Noorderplantsoen Groenste Buurt
DH	Citizen initiative Duurzaam Helpman

Abstract

To successfully plan for urban green space and climate adaptation there should be a focus on developing awareness amongst city stakeholders such as citizens. Practices of green urban citizen initiatives are known to increase environmental awareness among citizens and to mobilize them to act. The aim of this study is to understand how green urban citizen initiatives foster citizen involvement in urban green space for climate adaptation. A multiple case study research was done in the city of Groningen by using a mixed-method approach. Semi-structured interviews were held with several members of green urban citizen initiatives in Groningen. Accordingly, an online survey was distributed among citizens living in close proximity to the practices of the initiatives. To interpret the result and create a better understanding of the context in which the cases are embedded in, documentary research was done that included multiple climate adaptation policy documents of the city of Groningen. This identified several impact pathways in which citizen initiatives can foster citizen involvement in urban green space for climate adaptation. By framing their activities, using their social aspect and linking citizens with other parties, the following impact pathways were identified: (public) support, institutional resilience and social learning. Citizen initiatives were found to be relevant to transform citizens' willingness but passive behaviour towards proactive stewardship action because they augment the capacity to citizens to do so.

Key concepts: climate adaptation, urban green space, citizen initiatives, awareness development, active citizenship and environmental stewardship

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Chapter 1: Introduction

1.1 Background

Urban areas are under pressure due to the many challenges it faces. Continuous tensions are caused by climate change and a high concentration of people together with the diverse preferences that individuals, groups, businesses, and the state have for cities (Buijs et al., 2020; Andersson et al., 2014). Especially the combination of a growing population living in highly concentrated and dense sealed surface areas does not represent the ideal conditions to combat climate change (Dirkzen et al., 2016). These challenges also put pressure on urban green areas and biodiversity in cities as we have seen a worldwide decline in biodiversity and the ecosystem services provided by green (Torkar & McGregor, 2012). This is remarkable since there is also a growing recognition that green space and biodiversity is essential for sustainable development as it provides many environmental and social services (Hooykaas et al., 2020; Lovell & Taylor., 2013).

Strategies that include the provision and preservation of green space are of high importance to contribute to sustainable development (Haaland & van den Bosch, 2015). Recently, attention has been given to the strategy of nature-based solutions, that are solutions inspired and supported by nature and have a multi-problem-solving capacity (Matthews et al., 2015). It aims to utilize green space to offer solutions to societal challenges (Potschin et al., 2015). Green space is used here, as it has a fundamental role in urban quality of life through the multiple functions and benefits it has (Buijs et al., 2019; Haaland & van den Bosch, 2015). While economic benefits mainly stick to contributions to property values and opportunities for recreation (Haaland & van den Bosch, 2015), social and environmental benefits are somewhat more extensive. Especially for climate change adaptation, urban green is seen as an important solution as it contributes to biodiversity and it allows cities to deal with stormwater regulation and the urban heat-island effect (Derkzen et al., 2017; Haaland & van den Bosch, 2015). On top, urban green space also has a positive influence on people's wellbeing and it could contribute to more environmental awareness because people are getting involved in their green environment (Andersson et al., 2014; Derkzen et al., 2017).

However, as more and more citizens live in urban areas distanced away from nature, there is a decline in pro-environmental behaviour and a lack of seeing the importance of urban green space amongst citizens (Hooykaas, 2020; Soga & Gaston, 2016). This decline in pro-environmental behaviour and awareness makes it, in turn, difficult for cities to transform themselves into more resilient and adaptive cities (Olazabal et al, 2019). Citizens and other stakeholders have identified various challenges concerning the implementation and maintenance of nature-based solutions such as green space. These challenges include the lack of knowledge and awareness about environmental problems and their possible solutions and impacts (Ferreira et al., 2020). This creates negative perspectives and ideas about the use of green and can therefore result in limiting public support (Ferreira et al., 2020).

Hence, to successfully plan for urban green space and climate adaptation there should also be a focus on developing awareness amongst city stakeholders such as citizens ((Bouman & Steg, 2019; Iturriza et al., 2020). The need to focus on awareness development and nature-based solutions asks for a different approach on green space management that incorporates multiple actors and embraces the individual ideal of citizens and stakeholders (Feirreira et al., 2020; Raymond et al., 2017).

New trends in the governance and management of green space are visible that could offer opportunities to increase citizens' awareness solution. This trend implies a shift from citizenship towards active citizenship in which more and more bottom-up practices arise and private actors become increasingly autonomous. This involvement of citizens is increasingly recognized as a way to manage and protect nature and biodiversity in urban areas (Mattijssen et al., 2018). Citizens and communities have a promising role at the local scale due to their local knowledge and expertise, as well as their ability to experiment with innovative ideas (Buijs et al., 2016).

Apart from contributing to the management of green space, practices of active citizenship have also the ability to produce social, cultural or economic effects (Mattijssen et al., 2018). This creates potentials to integrate a social objective, such as raising awareness, together with green space management through active citizenship. Often, co-benefits related to environmental awareness and mobilization can be found in practices of citizen initiatives (Mattijssen et al., 2018). In this way, practices of green urban citizen initiatives could work as an engine for developing awareness and to let people in cities learn about the green environment and get them involved with it (Mattijssen et al., 2018). The question remains however how these initiatives stimulate wider awareness and how it makes citizens understand what actions are needed to combat climate change issues and to contribute to climate adaptive and resilient cities (Andersson et al., 2014).

1.2 Academic relevance

The first aim of this study, related to the academic relevance of this research, is understanding how green urban citizen initiatives can contribute to developing citizens' awareness and how they can mobilize them to act. This aim elaborates on the work of Mattijssen et al. (2018) and Buijs et al. (2016 & 2019). In their studies, they have focussed on green self-governance in the form of green citizen initiatives and the positive contribution it has on biodiversity, social cohesion, institutional innovation, and diversity in urban green space management. It has become evident that green citizen initiatives do indeed contribute to environmental awareness and mobilization of people to get involved in the management of urban green space. However, a knowledge gap exists on how these initiatives influence citizens' awareness and how these initiatives mobilize citizens to act in urban green space management for climate adaptation. In a systematic literature review of Iturriza et al. (2020), an awareness development framework was developed that can provide insights into how citizen initiatives can contribute to developing awareness amongst citizens. On top, Bennett et al. (2018) developed a conceptual and analytical framework on local environmental stewardship which can provide insights into how citizen initiatives, as an external group, can implement 'interventions' that influences individual motivations of citizens and their capacity to perform in stewardship actions. By combining these two frameworks, various impact pathways of green urban citizen initiatives on climate adaptation can be identified. These impact pathways include the influence of the initiatives on citizens' awareness level and stewardship actions and the corresponding actions for climate adaptation as 'outcomes'.

1.3 Societal relevance

To investigate the contemporary phenomenon of citizen initiatives in urban green space management for climate adaptation, a case study research was done in the city of Groningen. In February 2020, the municipality of Groningen presented their implementation agenda on climate adaptation in the city of Groningen (Gemeente Groningen, 2020). In this agenda, they have mapped the effects of climate change on the city to see where the action is needed most. Accordingly, they have formulated objectives to make Groningen a climate-resilient city. In June 2020, the municipality of Groningen elaborated on these plans with their draft version of 'Vitamine G', a policy document on greenery in Groningen. Here they elaborate on the role of urban green space for climate adaptation. (Gemeente Groningen, 2020)

In both policy plans, the municipality recognizes that they cannot achieve their objectives alone as they mention in their climate adaptation agenda that '*there is also an important task ahead for landowners, residents and entrepreneurs'* (Gemeente Groningen, 2020. p 49). The municipality mentions the role of citizens in its green plan: "*Residents and entrepreneurs also play a role to mitigate the effects of climate change which they experience by themselves"* (Gemeente Groningen, 2020. p 42.). The municipality is open to citizen initiatives and says to incorporate them in further policy plans, but they do not elaborate further on how this role can be filled in which way.

This thesis can fill in this knowledge gap on how citizen initiatives can contribute to these policy plans. Therefore, the second main goal of this thesis, related to the societal relevance of this research, is to identify lessons for climate adaptation policy on broadening or deepening the role of citizen initiatives in fostering citizen involvement.

1.4 Research statement

To effectively plan for urban green space and contribute to climate adaptation, environmental awareness and support need to be raised (Bouman & Steg, 2019; Iturriza et al., 2020). Green urban citizen initiatives could affect people's environmental awareness and mobilize them to act (Mattijssen et al., 2018 Seyfang & Smith, 2007). This study uses a case study protocol to investigate the contemporary phenomenon of green urban citizen initiatives in the context of Groningen. Groningen is a densified Dutch city with a municipal policy plan both on urban greenery and climate adaptation. This context will provide knowledge on how green urban citizen initiatives foster citizen involvement and consequently what their role can be in policy plans on these topics. Findings of the research are generalizable to other Dutch cities or cities alike Groningen. The first aim of this research is to understand how green urban citizen initiatives can contribute to developing citizens' awareness and how they can mobilize them to act. The second aim of this research is to identify lessons for climate adaptation policy on broadening or deepening the role of citizen initiatives in fostering citizen involvement.

According to these research aims, the main research question is formulated as: '*How do green urban citizen initiatives foster citizen involvement in urban green space management for climate adaptation?'.* To provide an answer on this, the following sub-questions are developed:

1. How can the concepts of environmental awareness and environmental stewardship enable the identification of impact pathways of green urban citizen initiatives for climate adaptation?
2. How do green urban citizen initiatives in Groningen contribute to developing environmental awareness amongst citizens?
3. How do green urban citizen initiatives in Groningen promote and support stewardship actions in urban green space management for climate adaptation?
4. Which lessons for climate adaptation policy can be identified for broadening or deepening the role of initiatives in fostering citizen involvement in urban green space management for climate adaptation?

Chapter 2: Theoretical framework

This chapter will elaborate on the concepts of climate adaptation, urban green space, environmental awareness, environmental stewardship and citizen initiatives in the context of urban areas. The relationship between the concepts will be explained in detail of which a conceptual framework is visually presented in figure 10.

2.1 Climate adaptation and urban green space

Throughout the literature, the concepts of 'sustainable', 'climate-resilient' and 'climate adaptation' are interchangeably used. It is important to have a clear definition of each concept to know what the differences are and to understand which concept serves best for this research. The concept of sustainability or sustainable development is a so-called container concept which is generally described as "*a development that meets the needs of the present without compromising the ability of future generations to meet their own needs*' (WCED, 1987 p. 41). This differs from the concepts of climate resilience and adaptation, as they have a focus on protecting people and ecosystem services from the challenges posed by climate change (EESI, 2020). In this vein, climate resilience especially focusses on the ability of a system, community or society to build capacities to cope with external shocks (Carter et al., 2015; Itturriza et al., 2020). For a city to become climate-resilient, more proactive and prospective behaviour is needed to learn how to absorb, adapt, transform and cope with external shocks related to climate change (DeVerteuil, 2018; Iturriza et al., 2020). Where resilience supports the sustainable development of a city through contributing to a better and more durable system, climate adaptation supports the resilience of a city through the contribution to cities' capabilities to bounce back after an external shock. This clearly shows how the concepts are inextricably linked and why they are increasingly associated with each other over recent years (Carter et al., 2015). For a city to bounce back after an external shock, the effects of climate change are predicted and accordingly appropriate measures are taken that prevent or minimise the damage that can be caused by such external shocks (European Commission, 2020).

Next to technical-based adaptation measures such as flood protection, alternatives like nature-based solutions for climate adaptation in a city have gained more and more attention over the recent years (Graffin et al., 2012; Potschin et al., 2015). Nature-based solutions are "*solutions inspired and supported by nature, which are cost-effective and simultaneously provide environmental, social and economic benefits and help build resilience*" (European Commission, 2016). They are often relatively quick to implement, inexpensive and designed in such a way that they are more appealing to the public then technical-based solutions (Frantzeskaki, 2019; Matthews et al., 2015).

These solutions promote the use of urban green, which is increasingly recognized as a multifunctional tool for both climate adaptation functions, as well as to create more comfortable urban environments (Derkzen et al., 2017 Frantzeskaki, 2019; Haaland & van den Bosch, 2015). This includes the contribution of urban green space to social interaction, recreational space, cultural heritage, aesthetics, biodiversity conservation, quality of life and to cities' resilience to climate change and environmental shocks (Derkzen et al., 2017; Haaland & van den Bosch, 2015). Given the increased demand for water and heat regulation due to climate change, urban green space is often redeveloped to provide functions such as rooftop gardens, green roofs, green walls and rain gardens in high-density cities (Graffin et al., 2012; Salata et al., 2016). Figure 1 presents several of these measures that have been implemented in cities in the Netherland such as Amsterdam. These measures can soak up and store rainfall during heavy cloudbursts or create cooling effects during heat waves by shading building surfaces, deflecting the radiation from the sun, and releasing moisture into the atmosphere (Environmental Protection Agency, 2020).

Façade gardens. Source: Amsterdam Rainproof. ©*NMT Zuid*

Green roofs. Source: Amsterdam Rainproof. ©*De Dakdokters*

Green walls. Source: Amsterdam Rainproof. ©Madeleine d'Ersu

Green instead of tiles. Source: Amsterdam Rainproof

Figure 1: Examples of urban green space for climate adaptation

The concept of green infrastructure (GI) is often linked to such measures and refers to "*infrastructure of green spaces, water and built systems that together can contribute to ecosystem resilience and human benefits through ecosystem services*" (Demuzere et al., 2014; Derkzen et al., 2017, p. 107). Another way in which urban green is explained is by the concept of urban green space, which refers to "*the nature, biodiversity and green landscapes in the urban area"* (Mattijssen et al., 2018, p. 20). Due to the focus in this research only on urban green that contributes to climate adaptation, the definition of GI nor the definition of urban green space suffices. Since GI also includes water systems for urban resilience and urban green space has no specific focus on climate adaptation. Therefore a mix of both concepts is used for this research, were urban green space is defined as '*the infrastructure and biodiversity of green spaces, nature and green landscapes in an urban area that contributes to cities' resilience through its climate adaptative ability*'.

2.2 Climate adaptation and awareness.

Cities are getting more and more aware of the need to act and it has become evident that urban green space is one way in which cities can face the challenges posed by climate change. However, passive behaviour towards climate change remains dominant and cities fail to transform this passive behaviour into proactive and prospective behaviour (Iturriza et al., 2020). Even if there are ambitious plans to take climate action, without citizens to accept them or participate in them, these plans are doomed to fail (Bouman & Steg, 2020). The challenge remains thus to encourage citizens to engage in these climate action policies. However, this has remained challenging. As more and more citizens live in urban areas distanced away from nature, there is a decline in pro-environmental behaviour and a lack of seeing the importance of urban green space amongst citizens (Hooykaas, 2020; Soga & Gaston, 2016). On top, information about climate change is often presented in an abstract way far from people's daily activity (Tosun & Schoenefeld, 2017). Even when climate change is recognized as a challenge, there is often the assumption or hope to mitigate the effects of climate change with solar panels or wind turbines (Bendell, 2018). Bendell (2018) here argues that climate change effects cannot be reversed and thus adaptation or change in the standard way of living is needed. Continuing to deny this reflects the current lack of awareness to adapt, resulting in the persistent behaviour of cities (Olazabal et al., 2019).

Instead of focussing only on developing knowledge of climate change such as nature-based solutions, there should also be a focus on social skills such as developing awareness (Bouman & Steg, 2020; Iturriza et al., 2020). Developing awareness in this context is about increasing the levels of consciousness among the general population on the risks of climate change and how people can act to reduce their exposure to hazards (UNISDR, 2009).

There are three relationships between climate adaptation and awareness that explain why awareness is needed for climate adaptation (figure 2). First of all, awareness is needed before the development of any climate adaptation solutions in cities because it serves as a requirement to gain any active behaviour transformation (Gurran et al., 2013; Davoudi et al., 2013). Secondly, when active behaviour is gained, awareness is also needed during the development of adaptation programmes to guarantee the quality and success of corresponding adaptation policies and approaches (Tang et al., 2010; Abegaz et al., 2015). When this is achieved, the process of a city to become climate adaptive and resilient has set into motion. For example, city stakeholders develop their preparedness, response and recovery capacities which makes them more resilient to climate change events. This process of improved resilience and adaptive capabilities changes circumstances related to climate change gives the third reason why awareness is needed for climate adaptation. This third explanation entails that awareness is needed to be willing to keep up with the continuous changes that come from both climate change events as well as becoming resilient and adaptive to it (UNISDR, 2012). Awareness here serves as a driver throughout the whole process to keep up with the continuous changes and to keep on adapting. For example, when people are aware of a particular situation they are more likely to respond to demands of the changing situations (O'Sullivan et al., 2015).

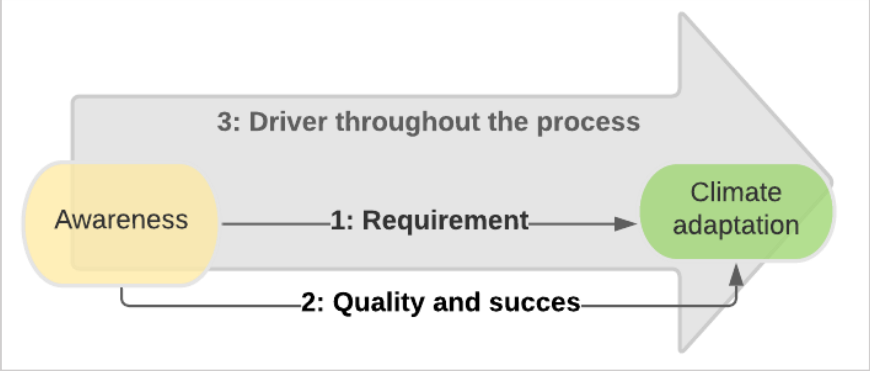

Figure 2: Relationships between awareness and climate adaptation

Gaining, developing and retaining awareness throughout the whole process of climate adaptation creates a higher commitment and engagement level of the city stakeholders involved (Iturriza et al., 2020). City stakeholders are different groups of people that affect or can be affected by the processes towards an adaptive and resilient city (Gimenez et al., 2017). These stakeholders can be grouped into three groups: public entities, private companies and citizens. By increasing commitment and engagement of city stakeholders, developing awareness can change passive behaviour towards proactive and prospective behaviour for successful climate adaptation measures and resilience in a city (Iturriza et al., 2020).

This requires new structured procedures in which new forms of awareness are developed and where each city stakeholder has their role in the process of awareness development and contributes in its own way (Iturriza et al., 2020). Such new structured procedures could fill people's information deficit and it could reframe and transform the original context of climate change (Iturriza et al., 2020; Tosun & Schoenefeld, 2017). These procedures could include local and tailor-made climate change messages that reach the general public more, as it highlights the proximal causes of climate change (Tosun & Schoenefeld, 2017). On top, there is also a need to tailor the design of climate adaptation measures to diverse local demands for the measures to be effective as well as fit in the local context (Dirkzen et al., 2016). Because of the local scale of citizens, they lend themselves well for such local and tailor-made procedures. Local people have a central role in their environment as they operate local and have local knowledge and expertise (Bennett et al., 2018; Buijs et al., 2016)

2.3 Active citizenship and climate adaptation

In the Netherlands, we have seen a shift in nature policy from top-down planning towards a more decentralized division of responsibilities to regional authorities (Mattijssen et al., 2017). This has led to large budget cuts on nature conservation resulting in reduced funding for green space management. In response to this, regional authorities try to involve other city stakeholders such as citizens and private parties in the management of green space. A common trajectory in which municipalities take the lead to develop or redevelop urban (green) space for climate adaptation is that of revalorization (Derkzen et al., 2017). Such spaces are re-designed or upgraded from existing urban space only serving as cultural green space, towards urban green space that serves both for climate adaptation and cultural green space (figure 3). Revalorization is increasingly being done through a collaborative governance approach where municipalities try to incentivize private action (Derkzen et al., 2017; Frantzeskaki, 2019).

Figure 3: Redevelopment Damsterdiep in Groningen. Source: OTO Landscape Architecture (2020).

Another trajectory found by Derkzen et al. (2017), is that of community action. Here, civil society upgrades existing urban green space or develops new ones with the aim of, amongst other things, contributing to climate adaptation and resilience (figure 4). This rise of active citizenship and citizen initiatives is also seen by scholars, in which citizens take action themselves and define their own goals and how to achieve them (Soares da Silva et al., 2018; Mattijssen et al., 2017). This rise of active citizenship fits well with the upcoming of nature-based solutions.

Figure 4: Planting of tree mirrors by citizens. Source: Sunny Selwerd (2020).

In the literature, there are different concepts through which the role of active citizens in green space management is defined. These concepts include citizen-based initiatives (CBI), active citizenship, green self-governance and local environmental stewardship. Again, it is important to distinguish what each concept entails and which concept serves as best for this study. In the context of urban green space, CBI and active citizenship are self-organised *collective* actions in which citizens mobilize their resources and act independent of the government or professional organisations (Bakker et al., 2012; Buijs et al., 2016; Igalla et al., 2020). Actions are thus collectively define and carried out to manage urban green space.

Although these definitions suggest a relatively high degree of autonomy and independence from authorities, this is not always reflected in practice. Authorities still play an important role in green self-governance practices and bottom-up initiatives (Mattijssen et al., 2018). The degree of citizen involvement for urban green space does not necessarily lead to a decline of government involvement, but it shifts the roles of government in relation to the initiatives (Mees et al., 2019). Were governments used to have a regulating and steering governmental role, how society acts, asks for a more collaborative and responsive governmental role. Here, local authorities take up an enabling and facilitating role for initiatives that are self-governed by citizens (Mees et al., 2019). To illustrate this, regional authorities try to involve citizens in urban green space management through supporting community action and bottom-up initiatives (Haaland & van den Bosch, 2015; Mattijssen et al., 2018). Because of the steering and regulating role that governments have or used to have, initiatives that arise are already embedded in existing networks of governments (Mattijssen et al., 2019). Even if the initiatives would not prefer the involvement of governments, they remain to some extent dependent of them because they facilitate via certain subsidies or enable practices of the initiatives to interfere in the public space owned by municipalities.

This line of reasoning is followed to form a definition for this research to which it has been added that the green self-governance practices contribute to urban green space for climate adaptation. In this vein, '*green' active citizenship* in this thesis is defined as '*green self-governance practices in which citizens, up to a certain degree of autonomy from governments, mobilize their resources and collectively define ad carry out projects for urban green space management to contribute to climate adaptation'*. A citizen initiative for this research is then a group of active citizens in the context of urban green space.

Such self-governance practices do not always align with the objectives of municipalities or regional governments because they both act on a different scale (Mattijssen et al., 2018). Because citizens act mostly on the local scale, their practices should also be seen as added value on the local scale as they have large potentials to realize significant impacts here (Mattijssen et al., 2018). Especially in the context of climate adaptation, the local scale interesting because it is the scale on which climate impact and implemented adaptation measures are visible (Mees et al., 2019). As there lie potentials for active citizenship to contribute to the local environment, such active citizenship is comparable with local environmental stewardship. Here, individuals or groups act on a local scale to protect, care for or responsibly use the environment to achieve environmental outcomes (Bennett et al., 2018).

To discuss the influence of citizen initiatives on local environmental stewardship (section 2.5) it is important to first see how they influence citizens' environmental awareness (section 2.4). As this can in turn also influence local environmental stewardship.

2.4 Active citizenship and awareness development

To effectively plan for urban green space for climate adaptation, awareness needs to be raised among citizens (Bouman & Steg, 2019; Iturriza et al., 2020). It has proven that many practices of initiatives create co-benefits related to environmental awareness (Seyfang & Smith, 2007; Mattijssen et al., 2018). *Co-benefits* are 'the outcomes realized by practices of green urban citizen initiatives that have positive social, cultural or economic effects'. In a study by Mattijssen et al. (2018), extensive discussions with persons involved in practices were held providing critical insights on the situation beforehand and how it changed over time. In 88% of the practices (n=50), co-benefits related to environmental awareness and mobilization were perceived to be realized. This shows the potential of active citizenship to turn people's passive behaviour into proactive and prospective behaviour that is required for climate adaptation. As citizen initiatives' practices stimulate environmental awareness and involvement in the green environment, this can positively change people's behaviour.

Green urban citizen initiatives and their practices were recognized to influence people's environmental awareness in three different ways; (1) arouse interest and appreciation for the green environment, (2) the development of knowledge and skills, and (3) mobilization and activation (Mattijssen et al., 2018).

Motivations of people to perform in green citizenship and environmental steward actions rely on their values and objectives that are the result of lived experiences (Buijs et al., 2019). Experiences of climate change effects such as natural hazards that influence people's environmental awareness are not something that can be initiated by citizen initiatives. However, citizens initiatives can have a role in the subsequent steps that follow from an increased awareness through lived experiences.

In a study by Iturriza et al. (2020), a framework was developed which was built up of three elements that provide insights on stakeholders' awareness behaviour such as that of citizens. These elements include (1) three awareness development mechanisms (experience, attention and knowledge), (2) the awareness development-process over time graph and (3) a learning ladder which visualizes the gradual process of developing awareness. Each mechanism evolves, resulting in a certain level of awareness and consequently a certain level of adaptation and resilience. Although this thesis focuses on green urban citizen initiatives at a specific point in time, it would not suffice to only look at the awareness development mechanisms that explain citizens' awareness behaviour alone. The awareness development-process over time graph and the learning ladder can provide insights into how citizens' initiatives can contribute to the awareness development process of citizens (and perhaps other city stakeholders).

First of all, the interaction of the three awareness mechanisms explains the behaviour of the awareness development-process. *Experience* refers to the first-hand real lived experiences in a particular topic or event related to natural hazards from climate change which increases citizens' awareness of climate change. *Attention* concerns the behaviour of citizens and refers to the alertness of people and whether they have a proactive attitude and willingness to act upon a problem. *Knowledge* refers to the amount of information in quantity and quality that is collected and analysed about the specific problem at hand. Concerning the contribution of citizen initiatives in the awareness development process, citizen initiatives can influence the latter two mechanisms (see table 1). As initiatives can affect people's interest and appreciation for the green environment as well as mobilize and activate them, they influence the mechanism of *attention*. On top, citizen initiatives can facilitate the development of knowledge and skills and therefore contribute to the mechanism of *knowledge*.

Consequently, these three mechanisms form the basis of the awareness development-process over time graph, in which four steps are defined that show the development of each mechanism as well as the resulting awareness level (figure 5).

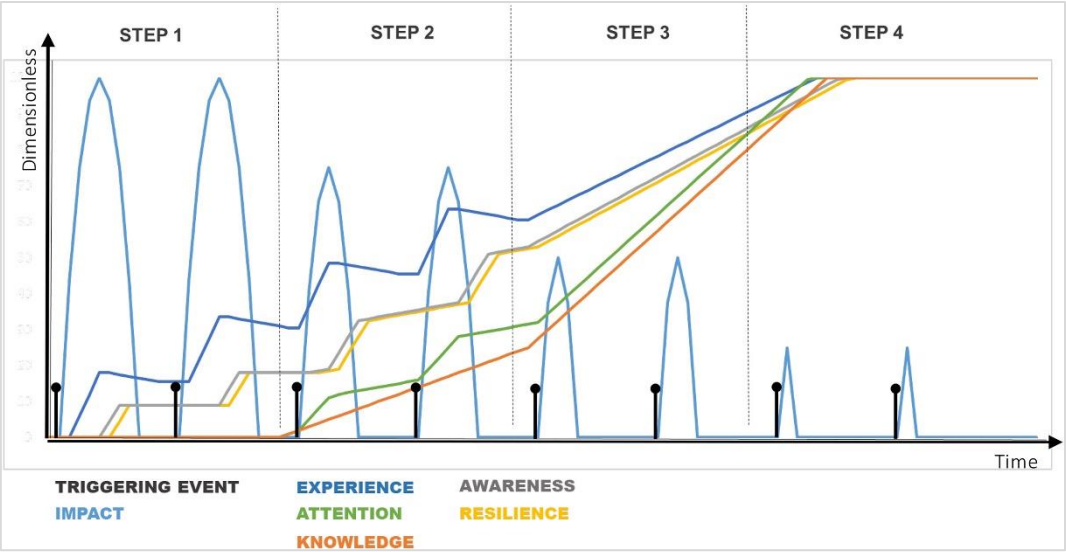

Figure 5: Awareness development-process over time graph. Source: Iturriza et al. (2020). P 7

Step 1 is the reactive phase in which citizens have a passive behaviour towards climate change. Awareness is created through certain experiences causing citizens to realize there is a need to act (figure 6). Examples of such experiences in the context of Dutch cities are periods of drought, heatwaves or heavy cloudburst. Awareness is created amongst citizens but the behaviour remains passive (step 2). Because of the present awareness level, little experience is needed to activate the mechanisms of attention and knowledge (figure 7). Alertness and interest of the climate problems arise and citizens start analysing the causes of it. However, someone who leads the process of behavioural change and who is committed is needed (Iturriza et al., 2020). Committed citizens and citizen initiatives can take on this role as they can incentivize other citizens to act in a proactive way towards climate change. Consequently, awareness and proactive behaviour are developed which creates opportunities to initiate change (step 3). Again, the mechanisms of attention and knowledge are dominant in this phase (figure 8). Through more attention, citizens are more alert and interested which increases their awareness of the problem. Through increased knowledge, information about the problems causing climate changes makes citizens understand them more and makes them more aware of the risks. The increase of awareness leads to more commitment, communication and resources, as awareness works as a driver and ensures the success and quality of citizens' practices (Iturriza et al., 2020; see section 2.2). Again, improved commitment and communication result in improved knowledge and attention.

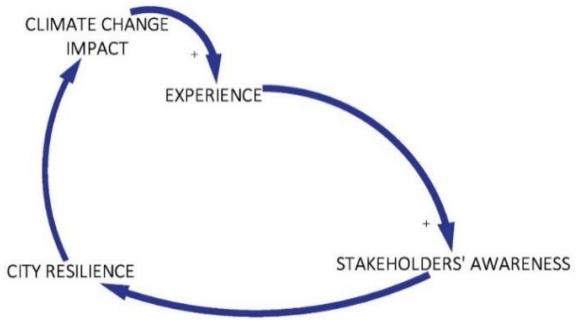

Figure 6: Step 1

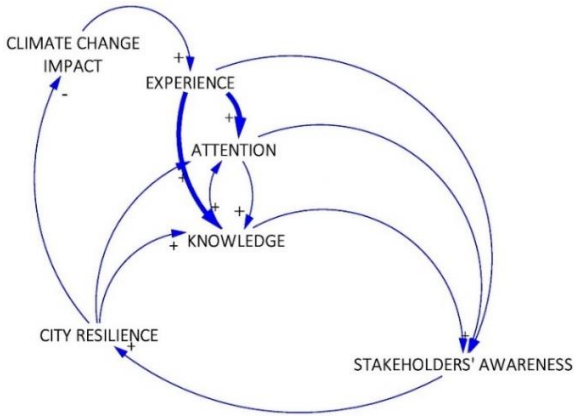

Figure 7: Step 2

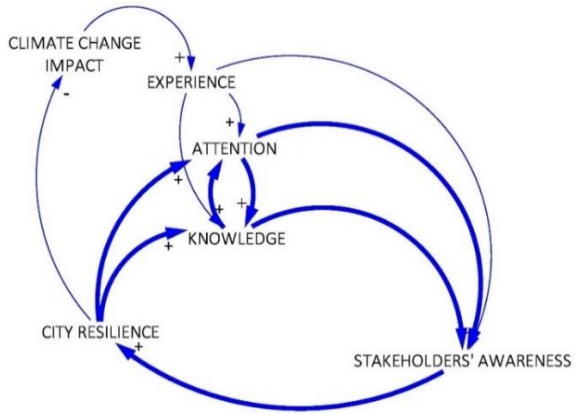

Figure 8: step 3

Source: Iturriza et al. (2020) p 7-9

Where in the previous steps citizens developed awareness and behaviour individually without other city stakeholders, step 4 includes synergies with other stakeholders. Here, city stakeholders act collectively in which awareness is maintained over a long time and climate adaptation measures contribute to resilience in the long term (Iturriza et al., 2020). Through collaboration, communication increases and plans are carried out more effective through the holistic and committed view of all city stakeholders. Here, the suggestion seems that collaboration is only achieved if awareness and proactive behaviour are achieved. However, as mentioned in section 2.3, most of the citizen initiatives appear to be embedded in existing networks of governments (Mattijssen et al., 2018). Collaboration with other city stakeholders can thus also be noticed in earlier steps of the awareness

development-process but as Iturriza et al. (2020) suggest, the effectiveness and success of these collaborations cannot be guaranteed. This may be because initiatives will receive more support like subsidies when their aims align with authorities aims because of their similar awareness level on climate change (Mattijssen et al., 2018). Therefore, it is important to align the awareness level of citizens with the awareness level of other city stakeholders such as municipalities. Throughout this process of becoming more resilient through climate adaptation, each city stakeholder has a role to develop awareness and therefore also has an awareness level when developing it (Iturriza et al., 2020). This underlines the role of citizen initiatives again to increase the awareness level of citizens and to effectively plan for urban green space in collaboration with other city stakeholders for climate adaptation in the long term.

Table 1: The influence citizen initiatives can have on the awareness development-process of citizens.

Mechanism	Citizen initiatives contribution to awareness
Experience	- No contribution as, the awareness level of citizens raises due to the real lived experiences of climate change problems
Attention	- Arouse citizens' interest and appreciation in the green environment, - Mobilize and activate people to act for urban green space for climate adaptation
Knowledge	- The development of knowledge and skills
Development over time	
From step 2 onwards	Citizen initiatives that act as committed leaders, incentivizes civil society to transform their passive behaviour towards proactive and prospective behaviour via *commitment, communication* and *resources*
From step 3 onwards	Because of increased levels of awareness, knowledge and attention for climate change issues, there are opportunities for the citizen initiatives to initiate any change for the benefit of climate resilience. Citizen initiatives facilitate the awareness development process through *commitment*, *communication* and *resources*.
From step 4 onwards	Aligning the awareness level of citizens with that of other city stakeholders to ensure effective and long term urban green space planning for climate adaptation.

2.5 Promoting and supporting active citizenship

Individual actions of citizens in the form of local environmental stewardship in the management of urban green space are dependent on citizens' motivations and their capacity to act (Bennet et al., 2017; van Dam, 2016). Citizen initiatives can influence individual steward actions by addressing people's motivations, facilitating their capacity and thereby mobilize them to take action (Mattijssen et al., 2018; Ferreira et al., 2020). Bennett et al. (2018) developed a conceptual and analytical framework with different elements to facilitate research on local environmental stewardship (figure 9). This framework can be used for this research because of the similarities between local environmental stewardship and active citizenship in the management of urban green space. It can provide insight into how local active citizenship is established and how citizen initiatives can contribute to the various elements within the framework.

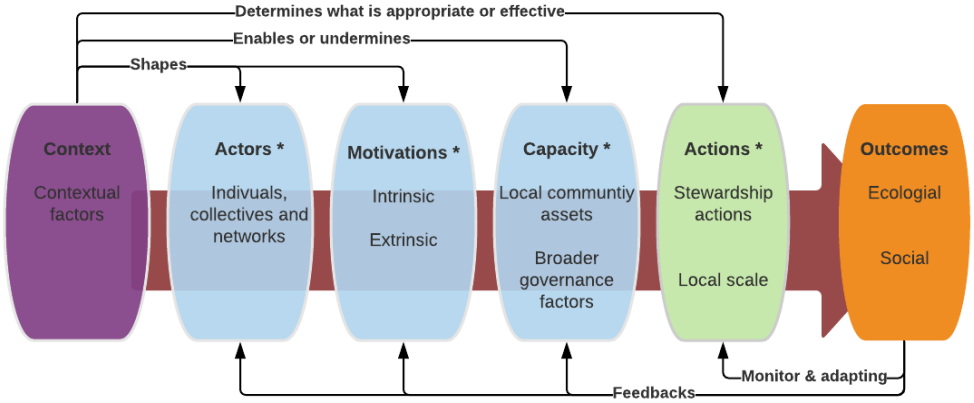

Figure 9: Simplified analytical framework of Bennett et al. (2018) on local environmental stewardship. At the leverage points (*), interventions can be posed to promote and support local stewardship actions.

The different elements of local environmental stewardship concern the *actors* involved, the *capacity* to act, the *motivations* that drive action, and the *actions* or practices that are there to protect, restore or sustainably use the environment (Bennett et al., 2018). In light of this research, the *actors* are citizens that through certain *motivations* and *capabilities* are getting involved in *actions* to manage urban green space for climate adaptation. The outcomes of this are certain steward *actions* that are employed to protect, restore or sustainably use green space for climate adaptation (Bennett et al., 2018).

According to each element, there are different interventions that an external group can pose to promote and support local environmental stewardship. It is often governments, NGO's and private actors that are seen as an external group for promoting certain interventions to support individual local steward actions (Bennett et al., 2018). However, in light of this research, citizen initiatives are seen as external groups who can pose interventions to society to promote individual stewardship actions of citizens. Three elements and their corresponding intervention by the citizen initiatives will be discussed below and is also presented in table 2. The fourth intervention is imposed if a certain outcome has been achieved through stewardship actions and thus will be discussed in section 2.6 on the impact pathways of citizen initiatives.

Before going into detail about the interventions, it is important to mention that the scale on which the practices of citizen initiatives takes place is an important indicator whether their practices can influence citizens and whether it is valuable for urban green space (Bennett et al., 2018). It is expected that the locality of citizen initiatives enables the possibility for citizens to see that local actions can contribute to climate change challenges (Bennett et al., 2018; Tosun & Schoenefeld., 2017).

Accordingly, the first intervention is related to the introduction of new actors to citizens (Bennett et al., 2018). The citizens' initiative can be seen as a new actor whereby citizens get to know the initiative, get a membership in it and/or get into contact with stewardship networks. These networks can provide again new actors that can contribute to promoting active citizenship.

An example of this is the ability of an initiative to facilitate communication between citizens and other city stakeholders such as local governance. In this way, the first intervention of introducing new actors also contributes to citizens' capacity. As capacity is also augmented through other institutional factors that are related to the broader network of governance and other city stakeholders (Bennett et al., 2018). As citizen initiatives are often embedded in existing networks with city stakeholders, communication levels within these networks provide capacity for citizens because more information and resources are available (Bennett et al., 2018; Iturriza et al., 2020).

The second intervention is also related to citizens' capacity as the initiatives can augment capacity through facilitating local community assets. Local community assets provide the resources or capabilities for citizens to take action (Bennett et al., 2018). There are different categories of assets that provide citizens with the capacity to enable local environmental stewardship. Citizen initiatives can facilitate the presence of several local stewardship assets, that are: financial capital, physical capital and human capital (Bennett et al., 2018). Financial capital refers to financial resources that are available, e.g. by taking collective actions, such as the construction of green roofs, there may be benefits in terms of costs. Physical capital refers to the technologies and infrastructures provided by the initiatives such as providing access to information and techniques for effective greening in gardens. Human capital refers to attributes of citizens such knowledge, past experiences, awareness and skills. To illustrate this, a citizen initiative can explain how to manage urban green space for climate adaptation based on their past experiences, knowledge and skills. By facilitating these local community assets to citizens, enables them to be more inclined to perform in stewardship actions (Benett et al., 2018).

The third intervention citizens' initiatives can have is providing incentives that influence peoples motivations to steward. The motivations of citizens to steward refers to people's reasons or incentives that drive them to take action and care for the environment which can be both *intrinsic* and *extrinsic motivations* (Bennett et al., 2018). Where intrinsic motivations bring the belief of personal satisfaction of certain actions, extrinsic motivations are external incentives that motivate a person to act in a certain way. In a systematic literature review of Ferreira et al. (2020), it was found that environmental and communal drivers (extrinsic) together with personal drivers (intrinsic) are the main motivations for citizens to participate in steward activities. However, it is also suggested that reasons for citizens to act is more a result of social and environmental objectives and thus only driven by extrinsic motivations (Buijs et al., 2016). Here, it is assumed that the engagement of citizens in the management of green space for climate adaptation goes beyond personal benefits as it incorporates wider values related to the environment and the community. Nevertheless, people's values and objectives are a result of their lived experiences in their proximate environment which creates awareness and can motivate them to act (Buijs et al., 2019; Iturriza et al., 2020). This again results in *intrinsic motivations* as people want to be able to affect their future and want to ensure good lived experience in their environment (Bennett et al., 2018). In this sense, awareness makes people motivated to act actively to avoid bad lived experiences in their environment in the near future. If initiatives could influence citizens' awareness through addressing the different elements discussed in section 2.4, personal and environmental drivers of motivations could increase.

Table 2: Contributions of citizen initiatives to promote and support individual steward actions of citizens.

Elements local stewardship	Interventions of citizen initiatives
Actors	Introducing new actors
Capacity	Augmenting local capacity - Available resources and capabilities through facilitating financial, physical and human capital - Available information and resources available through communicating in a broader network
Motivations	Provide incentives - Awareness development

2.6 Impact pathways of initiatives for climate adaptation.

In this section, the different influences of citizen initiatives on citizens' awareness and stewardship actions are brought together. Accordingly, certain impact pathways can be identified that illustrate the contribution of citizen involvement for urban green space on climate adaptation. These contributions include the direct impacts for urban green space as well as the indirect contributions to (urban green space for) climate adaptation. The direct contributions are *benefits* for urban green space for climate adaptation by the initiatives themselves and the citizens mobilized by them. The indirect contributions are the *co-benefits* of the initiatives and the citizens they have influenced, which consequently can lead to benefits for urban green space and climate adaptation. The pathways of these achieved *benefits* and *co-benefits* provide practical understandings what citizen involvement can mean for urban green space on climate adaptation.

The influence that citizen initiatives have on citizens can lead to the following two results: (1) the development of awareness amongst citizens but no further mobilization or steward actions, or (2) the development of awareness amongst citizens and consequently also an increased mobilization and individual stewardship actions (see section 2.4 & 2.5).

Result 1 can potentially pass into result 2, provided there is enough capacity and motivations to perform in stewardship actions (*impact pathway A)*. Here, co-benefits on awareness development is seen as the first step towards the creation of *benefits* (Mattijssen et al., 2018). With this said, it is worth mentionable that active citizenship in the form of citizen initiatives can integrate both social objectives and green space management, as there are possibilities to manage the green environment and at the same time contribute to the policy objective of environmental awareness. (Mattijssen et al., 2018).

If this is not the case, result 1 can provide an indirect contribution to urban green space for climate adaptation via public support (*impact pathway B*) (Derkzen et al., 2017). As initiatives provide information about climate change and climate adaptation measures, this can increase public support for adaptation measures. Citizens can support other city stakeholders that perform in stewardship actions such as their neighbours, nearby private parties, municipalities or the initiative itself through getting a membership in the initiative. Membership can create more capacity, resources and support for the initiative to carry out their practices for urban green space on climate adaptation. Again, the local scale on which the practices for climate adaptation measures occur is an important necessity to whether citizens accept such measures (Derkzen et al., 2017).

In result 2, the *co-benefit* of awareness development is thus a trigger for citizens to directly contribute to benefits for urban green space management and climate adaptation (Mattijssen et al., 2018). As citizen initiatives contribute to the awareness development process, this again influences individual motivations and capacity to perform in steward actions and active citizenship. Developing awareness leads to higher commitment and engagement levels, creating positive inputs for citizens' motivations and capacity perform in steward actions and active citizenship. In this vein, result 2 can lead to direct and indirect contributions to urban green space for climate adaptation which is identified by Buijs et al. (2016) as citizens' contribution to environmental resilience (*impact pathway C*) and institutional resilience (*impact pathway D*).

The direct contribution is that of environmental resilience (*C*) which is enhanced using the *benefits* of the initiatives and citizens and refers to the positive physical effects and changes realized in urban green space (Mattijssen et al., 2018). Such contributions like community action found by Derkzen et al. (2017), is seen by many scholars as a valuable contributor to the quality and quantity and diversity of green space (Andersson et al., 2014; Buijs et al, 2016; Mattijssen et al., 2018). Examples of such direct contributions to urban green space are the development of new green space, improvement of the ecological quality of existing green and protecting green against external threats (Mattijssen et al., 2018). Local improvements to cope with climate hazards such as rooftop gardens, green roofs, green walls that have a cooling- and/or absorbing effect can contribute to a cities' adaptive capabilities to natural hazards and therefore contributes to environmental resilience (Buijs et al., 2016).

The indirect contributions of result 2 is that of the institutional resilience of a city (*D*). Through the involvement of citizens and their activity in the governance and management of urban green space, they contribute to the institutional resilience of a city as they complement other actors such as authorities and private parties with their local knowledge (Buijs et al, 2016). How diverse, autonomous and disorganised the nature of civil society is, can give opportunities to create alternative ideas in the management of urban green space for climate adaptation. Accordingly, institutional resilience also refers to the synergies that are created with other city stakeholders. Here, they act collectively to ensure long term awareness and climate adaptation, provided their awareness level is aligned with each other. These synergies are known to encourage trust and intensify the public acceptability of nature-based solutions for climate adaptation (Ferreira et al., 2020).

Another contribution of citizen involvement in urban green space for climate adaptation is that it facilitates social learning (*impact pathway E*). This contribution follows from A, B, C and D were certain outcomes are created that have an ecological or social impact on urban green space for climate adaptation (Bennett et al., 2018). An intervention that an external group such as a citizen initiative can implement here is that of monitoring and evaluating these outcomes (Bennett et al., 2018). By evaluating these outcomes, opportunities for social learning and innovation can emerge (Ferreira et al., 2020). Social learning refers to assessing the practices and the interventions which can provide feedback for the initiative. These feedbacks can be seen as a new type of resource that citizen initiatives can use to improve their practices and interventions (Bennett et al., 2018). These improved practices and interventions can then enhance again benefits and co-benefits of the citizen initiatives that result in positive changes in urban green space for climate adaptation. This also adheres to citizens who gain membership in the initiatives, this could facilitate social learning and could bring changes in people's attitude and behaviour and consequently result in A where citizens are mobilized.

Table 3: Impact pathways of citizen initiatives.

Impact pathways of initiatives		Contribution to urban green space for climate adaptation
A	Indirect	*Co-benefit* as the first step towards the realization of *benefits* (C)
B	Indirect	Public support - Membership
(A→) C	Direct	Environmental resilience through *benefits* - Development of new green space - Improvement of the ecological quality of existing green - Protecting green against external hazards - Examples: rooftop gardens, green roofs and green walls.
D	Indirect	Institutional resilience - Effective synergies if awareness levels are aligned - Encourage trust in nature-based solutions - Create public acceptability of nature-based solutions
E	Indirect	Social learning - Monitoring and evaluating outcomes - Individual social learning through membership

2.7 Conceptual framework

The conceptual framework presented in figure 10 visualizes the relations between the different concepts discussed in this chapter. The framework is inspired by the study of Iturriza et al. (2020) about the awareness development-process of city stakeholders and by the study Bennett et al. (2018) on local environmental stewardship. This section will elaborate on the concepts used in the framework as well as the relationships between the different concepts found in this chapter.

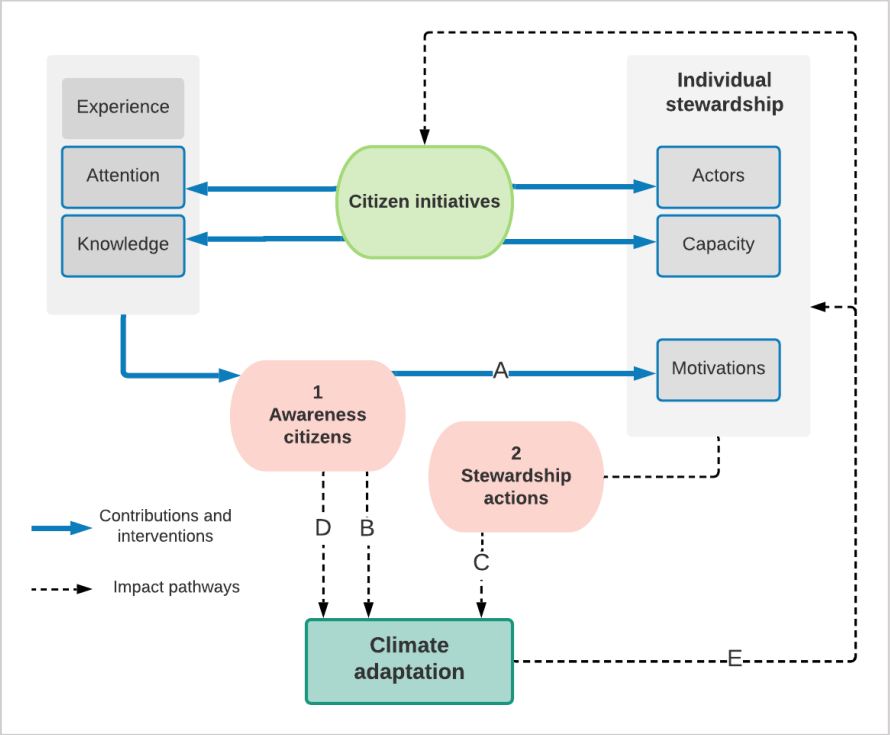

Figure 10: Conceptual model

First of all, the awareness level of citizens depends on the awareness development mechanisms identified by Iturriza et al. (2020). These concern experience, attention and knowledge. On the latter two, citizen initiatives can influence, as experience is influenced by the real first-handed experience of natural hazard in people's living environment. Citizen initiatives can influence the mechanisms of attention and knowledge as they can facilitate interest and appreciation of the green environment and develop knowledge and skills of citizens (Mattijssen et al., 2018). Accordingly, a certain awareness level of citizens through which citizen initiatives have contributed to is created (*1)*. This awareness level creates incentives for citizens steward motivations and can result in (*2) steward actions*, provided some certain actors and capacities enables this. Here, citizen initiatives can influence stewardship elements of actors and capacity through their commitment, communication, resources and their local scale which eventually results in individual steward actions (*2*). According to the different results and outcomes, different impact pathways for climate adaptation can be identified. These are presented in the framework with A, B, C, D, E and F. A refers to the *co-benefit* of awareness development as the first step towards benefits. B refers to public support. C refers to environmental resilience through *benefits*. D refers to institutional resilience through synergies. E refers to social learning within the citizen initiatives to improve their performance and practices and individual social learning through (new) membership in the citizen initiatives. This can positively influence their motivations and results in *benefits* for urban green space on climate adaptation.

The relationships found in this chapter are hypotheses that will be tested based on a case study. This will provide an answer to the main research question '*How do green urban citizen initiatives foster citizen involvement in urban green space management for climate adaptation?'.*

Chapter 3: Methodology

This chapter elaborates on the research methods that have been used for this study to answer the main question: "*How do green urban citizen initiatives foster citizen involvement in urban green space management for climate adaptation?".* At the start of a case study research, a series of decisions must be made concerning its design. A research design is a rationale behind the steps that need to be taken to link the data to be collected and the conclusions to be drawn to the research questions (Rowley, 2002). Five elements ensure a well-structured case study research design (Yin, 2009). Two of them, the research questions and conceptual model have already been discussed in previous chapters. The remainder of these elements – units of analysis, research logics and procedures, and criteria for interpretation – will be discussed in this chapter. The methodological approach in appendix A elaborates on how each research question has been answered, what quantitative and qualitative data is collected and how this has been analysed.

3.1 Case study research approach

A case study is an empirical research method that investigates a contemporary phenomenon (the 'case') within its real-life context (Yin, 2018). For this research, green urban citizen initiatives are investigated as the contemporary phenomenon in the context of Groningen and how they foster citizen involvement for urban green space management on climate adaptation. This specific research method enables the researcher to get close to both the initiatives and the citizens who live near their practices while taking into account the specific context of each initiative. The explanatory nature of case studies serves best to investigate the event of active citizenship in the form or citizen initiatives that are happening in its real-life context (Yin, 2009). On top, case studies enable the researcher to answer questions when the researcher has little control over these events as the initiatives are difficult to separate from its larger context (Yin, 2009). These strengths of a case study research serve that it is well suitable to provide an answer to how citizen initiatives foster citizen involvement in urban green space for climate adaptation.

To study the phenomenon of citizen initiatives and their impact on citizens, the choice has been made to use a multiple-case design. Multiple cases provide a better understanding as the results can be more powerful and generalizable (Mills et al., 2010). Each case will be first treated as a single bounded case, after which cross-case comparison can be developed (Yin, 2002). Every single bounded case consists of two embedded units of analysis: the citizen initiative and the citizens who live near them (figure 11).

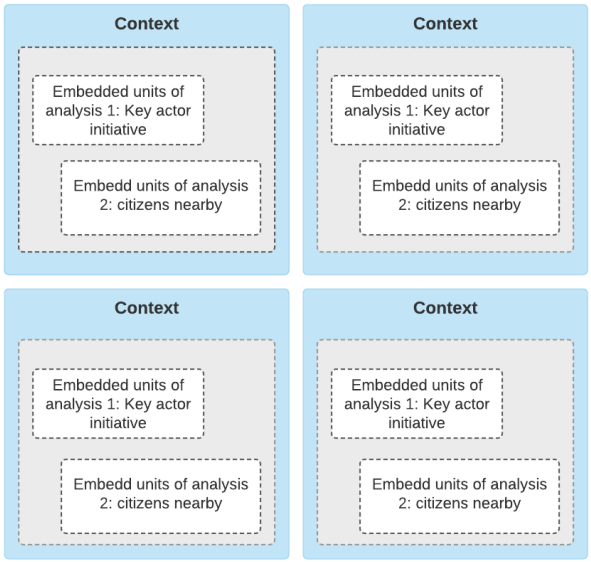

Figure 11: Multiple case embedded design

The boundaries of the case are determined by the theoretical scope (chapter 2), the time boundary of the research and the spatial boundary. The data collection of this case study ran from October 2020 till January 2021. However, the perceptions of interviewees and respondents will most likely be based on experiences and events before this period as the initiatives already existed before October 2020. The deliberate choice was made to investigate both the perspective of the initiatives and the citizens to gain a holistic view of the initiatives' impact on citizens. Gaining such a holistic view is characteristic of a case study research and it allows the researcher to build a deeper understanding of the cases (Clifford et al., 2010). These perspectives from the initiatives and the citizens together with context-specific information in which the cases are embedded in, provide multiple sources of evidence, also referred to as data triangulation (figure 12) (Yin, 2018).

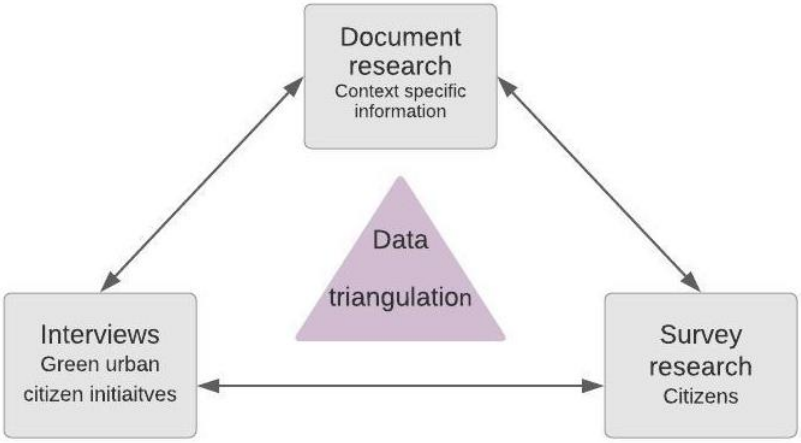

Figure 12: Data triangulation

3.2 Spatial boundary of the research

The context in which the research took place was in the city of Groningen, the Netherlands. To define such a spatial boundary of the research it is important to consider what specific research area is considered appropriate to generalize findings of the research. Cities in the Netherlands are considered an interesting research area because of two different trends in the governance and management of green space. The decentralization of roles and responsibilities to regional authorities on green space management and governance went simultaneously with the trend of active citizenship in urban green space management (Mattijssen et al., 2017). Green urban citizen initiatives are therefore interesting to research in Dutch cities. On top, dutch cities are known to be impacted by policy plans such as the *compact city* resulting in high densified urban areas (Nabielek, 2012). This led to a lack of urban green space and the development of it over the past decades (Haaland & van den Bosch, 2015).

With the current experiences and growing knowledge of the impacts of climate change on urban areas, the city of Groningen is aiming for more and effective climate adaptation policies. In various policy documents, the municipality of Groningen makes it clear that she wants to focus more on the urban green in the city for climate adaptation (Gemeente Groningen, 2020). Concerning citizen involvement and increasing awareness among citizens, the municipality describes their role as 'facilitating, stimulating and collaborating'. Several green urban citizen initiatives on climate adaptation are facilitated and stimulated by the municipality of Groningen over the recent years and in 2018 the municipality launched their website to stimulate wider awareness of citizens on climate change. Due to this seemingly stimulating and supporting governance context in which citizen initiatives are embedded, Groningen provides an interesting research area to gain an understanding of whether citizen initiatives themselves can foster citizen involvement.

3.3 Case selection

Typical cases are used for this research due to the focus on one kind or type of citizen initiatives, that are citizen initiatives active in the urban context to manage green space (for climate adaptation I.A.). These typical cases enable the researcher to explore the causal mechanisms at work and do a cross-case comparison of these mechanisms (Seawright & Gerring, 2008). This causal mechanism can explain how citizen initiatives foster citizen involvement. In light of this study focus, these typical cases need to meet the following criteria:

1. *The initiatives are, amongst other things, active in the field of urban green space for climate adaptation.*

As the aim is to understand how initiatives foster active citizenship in urban green space for climate adaptation, the initiatives themselves must be also active in this field. No distinction has been made as to whether the initiatives operate in public or private green space because both types of urban green can contribute to climate adaptation as nature-based solutions.

2. *The Initiatives are active at the local level, that is the street and the neighbourhood.*

The choice of this local scale has been made based on the evidence that citizens have a promising role here (Buijs et al., 2016; Bennett et al., 2018; Dirkzen et al., 2016; Tosun & Schoenefeld, 2017). The local scale of the initiatives enables the researcher to investigate the influence of the initiatives on local environmental stewardship or local active citizenship. On top, the local scale of the initiatives' practices makes it more convenient for the researcher to contact citizens in proximity.

3. *The initiatives are initiated by citizens and up to a certain degree autonomous from municipalities or public entities.*

To study how an initiative as a form of self-governance fosters citizen involvement, the initiative should have the ability to define and carry out projects at least to some extent by themselves. Involvement of public or private entities is therefore allowed as it is unavoidable because the initiatives are embedded in networks of governments (Mattijssen et al., 2018). In light of this, it is more important that the initiatives are functioning more autonomously and that they are in control, instead of being founded autonomously from public or private entities.

4. *The initiatives must have at least been active for a year in urban green space for climate adaptation with at least 3 activities or more.*

The period in which an initiative has already been active is relevant to investigate the influence of the initiatives on proximate citizens. Because of the recent role of citizens in climate adaptation, little information is available about the appropriate period an initiative must be active to have an influence. A study on citizen initiatives involved in the transition to sustainable energy note that it takes up six to two years for an initiative to go through a formalisation process (Schoor & Scholtens, 2015). This process includes the transformation from loosely connected citizens towards an informal working group to ultimately a formal organization. Where loosely connected citizens will most likely not influence proximate citizens in the neighbourhood, informal working groups and formal organisations are more likely to do this. In light of this and the recent focus of Groningen on climate adaptation, the criteria have been set on 1-year activity.

3.4.1 Unit of analysis: the citizen initiatives

Based on the aforementioned criteria, the following green citizen initiatives in Groningen were selected trough internet research: *Oosterpoort Duurzaam, Groenste Buurt Noorderplantsoen, and Duurzaam Helpman*. This section will give a short description of the selected initiatives and the practices they have on urban green space management for climate adaptation.

Name/logo	Existence	Main aim	Link to climate adaptation/urban green
OOSTERPOORT DUURZAAM	Started in 2018 and emerged from an existing initiative that was active since 2016	Making houses more sustainable and self-sufficient through self-generation of energy	A green team to devise more greenery in the neighbourhood. Promoted façade gardens, and informed about extreme heat temperatures
GROENSTE BUURT noorderplantsoen.nl	In an active neighbourhood (with an association and committee) the initiative started in 2014.	Greening in the neighbourhood and to be energy-neutral by 2024	'*Sustainability encompasses greenery'*. Promotion of green roofs and greenery in the streets
Duurzaam Helpman	Started in 2019 and originated from the neighbourhood committee (active since 1982)	Sustainability approach that encompasses: mobility, energy, health and green	A green team to support citizens in exploring the possibilities for a sustainable and green environment: façade gardens and tree mirrors e.g.
STEENBREEK GRONINGEN	Founded in 2015 as a national foundation and are also active in Groningen.	Take concrete actions against the trend to harden private gardens.	Make urban spaces climate-adaptive through focussing on improving biodiversity: greening in gardens, on the street etc.

During the case selection, the role of a national foundation that facilitates local active citizenship became relevant. Many citizen initiatives propose projects of the municipality or other corporations to their local citizens. It is interesting to look at such a project too because although it is facilitated by the municipality, the initiative to participate in it has to come from the citizens. The national foundation also adheres to the selection criteria, as it focusses on private or public green space for climate adaptation, are active on the local scale and citizens define and carry out the project.

The national foundation facilitates citizens and citizen initiatives with information and knowledge on biodiversity, climate adaptation and urban green. However, the plans for more greenery in the street, neighbourhood or façade gardens must come from the citizens themselves and they have to request the plans from the municipality. In this sense, the foundation is not a citizen initiative in itself but supports and encourages citizens' initiatives and citizens to take participate in active citizenship and steward actions.

3.4.2 Unit of analysis: proximate citizens.

To investigate the impact of citizen initiatives on citizens, it was chosen to include citizens living nearby (in the direct living environment) (past) practices of the initiatives. In this way, each selected citizen initiative comes along with a population that is affected by the initiative; the proximate citizens. To determine which citizens will be included as proximate citizens, a GIS analyses with the buffer tool has been done to decide which residents are near the practices of the initiatives (see appendix B). The initiatives' practices are concerned with changes in the green environment to adapt to climate change and thus concern green space in the direct living environment of citizens. Building upon earlier studies that demonstrate the various influences and benefits of green space accessibility and proximity, green space is used to determine the distances for the proximity buffers. In various studies (Annerstedt et al., 2016; Ekkel & de Vries, 2017; Kemperman & Timmermans, 2014), the distance used for 'direct living environment' has been set around 100 m radius or 'within a 100 m radius from the object studied'. To reflect the impact of the initiatives' practices on citizens living in the direct living environment of it, a proximity buffer of 100 m is used.

3.4 Data collection and analysis

A mixed-methods approach was chosen as specific research to investigate the citizen initiatives in their context, as well as the citizens living near their activities. This approach was found suitable for this study as it enables the researcher to yield all the empirical data from the case studies either quantitative or qualitative (Mills et al., 2010). In this way, the perspectives of both the citizen initiatives gathered qualitatively and the perspectives from the citizens gathered quantitatively can be compared to extract meaning from it. On top, documentary research was used to place the gathered empirical knowledge into the context of Groningen.

3.5.1. Literature research

In chapter 2, various concepts were discussed that are central to the focus of this research. Literature research was done to arrive at this theoretical framework and model presented in figure 10. This theoretical framework is based on the literature that concern climate adaptation, urban green space, citizen initiatives, awareness development, environmental stewardship and active citizenship. The literature used for this consisted of English academic and scientific peer-reviewed articles. Because of the relatively new topic of climate adaptation and active citizenship in planning literature, recent articles (mostly after 2014) had been used as much as possible. The articles were collected by using different search engines, such as SmartCat (provided by the University of Groningen) and Google Scholar. The literature researched aimed to answer the following sub-questions: *'How can green urban citizen initiatives foster citizen involvement in urban green space management for climate adaptation according to scientific literature?'*. Literature was searched to define the different concepts of climate adaptation, urban green space and active citizenship, and to relate them to each other. Throughout the literature research, the concept of awareness and local environmental stewardship became also relevant and are therefore included in the theoretical framework. The search terms that have been used, often in combination, to arrive at relevant articles are 'climate adaptation', 'urban green space', 'active citizenship', 'awareness', and 'local environmental stewardship'. The geographical focus of the literature used was mainly in the context of Western European countries or even more specific, the Netherlands. The literature on citizen initiatives was used in the studies were substantiated with empirical data on Dutch citizen initiatives active in green management. These empirical studies were conducted in a Dutch (urban) context and thus provided a good basis for this research. Throughout the literature research, the local scale on which the citizen initiatives were active became relevant. Therefore, more literature had been used that focuses on the local scale.

3.5.2. Document research

Document research was done to provide information about the context of Groningen in which the cases are embedded in. Municipal documents (published acter 2014) and an advisory document from the Hanze University of Applied science were used to gain knowledge of the contemporary context the citizen initiatives are embedded in (appendix C). This provided insights about climate adaptation policy discourse of the city of Groningen. To interpret the collected data of the documents, repeated review and examination is needed. To do this, an interview guide was developed including general questions concerning the concepts found in chapter 2 (appendix D). This enabled the researcher to analyse the documents in a well mannered and structured way. Understanding this context provides insights on how citizen initiatives can contribute to the current policy discourse by facilitating the awareness development-process of city stakeholders. This information aimed to help formulate an answer to the following sub-question: '*Which lessons for climate adaptation policies can be identified for broadening or deepening the role of initiatives in fostering citizen involvement in urban green space management for climate adaptation?'*.

3.5.3. Qualitative research

Primary data was collected through qualitative semi-structured interviews with key actors of the citizen initiatives. This allowed the researcher to gain insight into how the initiatives operate and how they influence citizens' awareness and stewardship actions. This provided an answer on following the sub-questions '*How do green urban citizen initiatives in Groningen contribute to developing awareness amongst citizens'* and '*How do green urban citizen initiatives in Groningen promote and support active citizenship in urban green space management for climate adaptation'*.

Data collection

To be appropriately prepared, an interview guide was developed with questions and probes which helps to provide flexibility and effectivity during the interviews (Roulston & Choi, 2018). For this, the researcher needs to operationalize variables of the conceptual model (Mills, 2010) (see appendix E.1). Chapter 2 has defined the core concepts and determined a set of indicators. After this, data elicitor were formulated per indicator in the form of a set of questions to gain relevant data and information (Mills, 2010). Accordingly, two different interview guides were made based on this. One interview guide for key actors in the citizen initiatives (appendix E.3) and one interview guide for a key actor active in the 'Operatie Steenbreek' at the regional level of Groningen (appendix E.4). The interview with the national foundation was conducted with a fellow student whose research was around the same topic. Contact letters that have been sent to the initiatives and the national foundation can be found in appendix E.2. In total, 6 interviews were conducted (5 with videophone and 1 face-to-face). The interviews were held in Dutch, as this is the native language of all interviewees and the researcher.

At the start of the interview, an explanation was given to participants what the research is about and permission was asked for recording the interview. The confidentiality of responses was guaranteed, thereby trying to increase the likelihood of interviewees answering questions truthfully. A start was made with general questions about the initiative and their aims. Next, questions were asked in light of the awareness development process. This was followed by questions related to the impact pathways. To end the interview, closing questions were used to ask for any future development and if the interviewee would like to add anything before the interview ends.

Data analysis

The first step in the data analysis was to prepare the data by producing transcripts of the interviews in English and by removing personal identifiers from the data to preserve the anonymity of the interviewees. The citizen initiatives did not remain anonymously as the interviewees did not insist on this. After this, the qualitative data were analysed using the qualitative data analysis software 'ATLAS.ti'. This software package enables the researcher to work with the data without losing its original context (Mills et al., 2010). In this step, it is import to get familiar with the data to list key ideas and recurrent themes. The second step in the analysis was to break down the data into workable units. A deductive method of coding is used that allows the researcher to generate codes before the data collection (Miles & Huberman, 1994). Both descriptive and inductive codes were used (appendix E.5). This enabled to analyse the core concepts as well as new areas of interest, patterns or relations that were found during data analysis (Lewins & Silver, 2007). Hereafter, data with the same codes were compared for similarities and differences. In this phase of analysing there is a search for data that might provide preliminary assertions and results. These preliminary findings have been given meaning by complementing them with the results of the quantitative survey research.

3.5.4. Quantitative research

To provide a holistic view and a deeper understanding of the initiatives being interviewed, primary data was also collected through quantitative research. An online non-experimental cross-sectional survey was executed amongst citizens who live near the practices of the initiatives. For this, a questionnaire format was used as a specific method via the online survey tool Qualtrics[xm]. This type was chosen as it facilitates to move the responses directly into the analysis software. On top, it is also an easy way for the respondents as anyone with an internet connection can fill in the survey via telephone or pc and the answers are immediately sent away by the tool. It is a practical tool for the population researched because most of the citizens are aged 15 to 65 years and are expected to have digital access (Allecijfers, 2020).

Beforehand, the practices and activities of the initiatives for urban green space were located. This allowed the researcher to distribute the surveys in a more targeted manner. The distribution strategy was done based on the proximity buffer around these locations and the random sampling within this buffer (see appendix B). Randomly, 100 to 120 addresses were selected for each initiative. So in total, around 450 addresses were selected for distribution. The contact letter that included a QR-code to the online survey for citizens nearby the practices can be found in appendix F.2. Spreading invitation letters for the surveys throughout neighbourhoods is known to get low response rates. Therefore, a second approach has been adopted for survey distribution. Via the qualitative semi-structured interviews, key-actors were found that could distribute the survey via their online platform with an anonymous link (e.g. websites, social media or newsletters). Accordingly, 145 respondents filled in the online survey:

Distribution type	%	Amount
Anonymous link	59 %	86
QR-code	41 %	59

Gender	%	
Male	41 %	58
Female	59 %	85

Higher education	%	
yes	79 %	114
no	21 %	30

The operationalization of the concepts investigated can be found in appendix F.1. The wording of survey questions is designed in a simple and jargon-free manner and tries to avoid loaded language that can bias responses. Piloting drafts of questions on a small group of individuals has been done to check whether the questionnaires are of good quality. Four online surveys (with the same content) were made to ensure that the right survey would be distributed at the right location (appendix F.3). The sequence of the questions was considered in the following way:

Type questions	Content
Introduction	Topic, researcher and legitimacy of the research. Request cooperation and indicate confidentiality.
Demographics	Age, gender, education level and employment.
Awareness	Experience and awareness level questions
Citizen initiative	Familiarity, participation
Awareness	Attention, knowledge and stewardship action
Stewardship action	Perform stewardship actions, motivations, actors and capacity

The surveys have been analysed with the use of SPSS and the online questionnaire tool Qualtrics[xm]. The online tool provided charts and graphs for visualization of the gathered data and SPSS provided statistics of the gathered data. Preparation of the data was done in SPSS by computing dummy variables of the awareness development steps, the awareness mechanisms, stewardship action, stewardship motivation and the actors involved. This provided the possibility to do multiple binary logistic regressions with the awareness development steps as the dependent variable and familiarity and education as the independent variable. The complete data analysis steps that were executed for this are presented in appendix F.1

3.5 Ethical considerations

The quality of the conducted research was guaranteed by respecting the Dutch code of conduct for research integrity (NOW, 2018). This section will elaborate on the careful considerations that were made in accordance with the supervisors during the research process. These considerations include informed consent, privacy and confidentially, and the data management plan for both the qualitative and quantitative research (Dowling, 2016). Before the interviews, the interviewees were given an explanation of the goal and the reasons of the interviews via e-mail and at the start of the interviews. In light of the current COVID-19 pandemic during the data collection period (October 2020 – December 2020), extra consideration needed to be taken to manage the safety and health of the researcher and the interviewees. Therefore, the most preferred technique for conducting the interviews was asked of the interviewees (face-to-face on social-distance, telephone or videophone). Before the interviews took place, each participant was asked to fill in an agreement to participate paper to make them aware of their right regarding the interview (appendix E.6). Permission was asked to record the interviews and to use the names of the initiatives. Anonymity was ensured for the interviewees themselves. Concerning the quantitative data collection and analysis, an explanation of the goal and the reasons for the online survey was given at the start. The anonymity of the respondents was guaranteed and information could not be traced back to them.

The collected raw data of the interviews (recordings and transcripts) and the surveys were stored safely in three different places each protected by a password. These places included two portable devices (laptop and USB) and a cloud service of Google Drive to which only the researcher has access to. The recordings of the interview will only be listened to by the researcher and the supervisors and will be deleted after 5 years. The transcripts of the interviews were anonymised and can only be traced back to the interviewees by the researcher.

Chapter 4: Results

This chapter will discuss the data collected from the interviews, online survey and documentary research. The results are given meaning by comparing and relating it to each other. This will provide an answer to the following research question: "*How do green urban citizen initiatives foster citizen involvement in climate adaptation policy?*". This research question is divided into several secondary questions that are brought up in different themes. First, 4.1 will give a brief explanation of the policy developments of the local authority and the context in which the citizen initiatives are embedded in. Hereafter, the initiatives, their characteristics and how they operate are discussed in section 4.2. Section 4.3 and 4.4 discuss the results from the online survey related to awareness, stewardship action and the perceived impacts of it by the proximate citizens. Accordingly, in section 4.5 all results are brought together which identifies several impact pathways of the citizen initiatives.

4.1 Context and policy development Groningen

Urban green and climate change have been the focus of attention in various policy documents between 2008 and 2016 (table 4 and appendix C). However, the topics remained mainly separately from each other during these years. Policy on urban green focused on the use of green for positive socio-economic contributions such as contributing to the quality of life and the brand of the city. As a result, climate change policy mainly adhered to climate mitigation and not so much to climate adaptation. Although climate change was seen as a challenge (step 1), the role of urban green space for climate adaptation and climate issues remained a low-profile, as did the role of citizens.

Table 4: policy documents of Groningen on urban green space and climate adaptation

Year	Policy Document	acronym	Focus
2008	Stedelijk Ecologisch Structuur	SES	Urban green
2009	Groene Pepers	GP	Urban green I.A. as a climate change solution
2010	Sportvisie (Sportvision)	Sport	Urban green (in public space)
2012	Samen gezond in de stad	SG	Urban green as co-benefit
2014	Sterke Stammen	GK	Tree policy
2016	Groningen Klimaatbestendig		Urban green and climate adaptation
2020	Uitvoeringsagenda Groningen Klimaatbestendig	UGK	Climate adaptation
2020	Vitamine G	ViG	Urban green for climate adaptation

The policy document ‘Groningen Klimaatbestendig’ (Groningen Climate Resilience) (2016), is the first to explicitly address the effects of climate change and the challenges this entails for the city. The role of urban green is highlighted and seen as a solution for climate adaptation. The plan states that climate adaptation will be given a priority by using green and making it an integral part of spatial plans (step 2). So for example, the intention is to integrate urban green in early stages of neighbourhood and inner-city renewal or in entirely new projects like the ‘Suikerunie’ terrain (a large industrial area in the south-west of Groningen that is assigned to be a housing site). To gain more knowledge and understanding about the climate adaptation measures which are needed in specific locations, various risk dialogues and so-called ‘stress tests’ were held by the municipality between 2016 and 2020. Stress tests are visual presentations of the effects of climate change which are together with the risk dialogues assessed according to their urgency. The risk dialogues were held with internal and external partners of the municipality and were used to create a collaborative participation process for climate adaptation. The policy discourse and approach taken by the municipality here is remarkable: the integrated approach to climate adaptation is mainly done by entering into partnerships with other parties (public or private entities) and by giving good examples to its residents. Residents were thus not involved in the process of becoming climate-resilient.

Based on these stress tests and risk dialogues, an implementation agenda for a climate-proof Groningen was published in February 2020 (*Uitvoeringsagenda Klimaatbestendig Groningen*). The ambition is set to be climate-resilient in 2050 and thus to profile (inter)nationally as a municipality in the field of climate adaptation. The role of urban green in interwoven in these ambitions. The strategy here remains to include climate adaptation and urban green in spatial plans. However, the municipality is still experiencing how this should be done and which guidelines are needed for this strategy (step 3):

> *“Insights into how the public space can be arranged in a climate-adaptive way are still regularly changing. That is why it is difficult to formulate exact standards for the ultimate climate-adaptive design ”*
>
> Gemeente Groningen. (2020) *Groningen klimaatbestendig*. p. 73

A new policy discourse: synergies

To arrive at these guidelines and strategies, the policy discourse of Groningen changed compared to the previous approach in 2016. In addition to cooperation with public and private entities, cooperation with residents is for the first time positioned central within climate adaptation policy. It is recognized that adapting to a changing climate must also go hand in hand with residents and entrepreneurs:

> *"We are indeed responsible for the planning of the public space, but the majority of the space in the municipality is owned by third parties. This means that there is also an important task for landowners, residents and entrepreneurs, among others. "*
>
> Gemeente Groningen. (2020) *Groningen klimaatbestendig*. p. 49

However, it is also recognized by the municipality that different city stakeholders, such as civil society, lack awareness for effective synergies. A panel survey of the municipality showed that 90% of the respondents perceive the challenge of climate change but they place the responsibility with the government or other parties to act upon it (OIS Groningen, 2019). Therefore, citizens are seen to be in between awareness step 1 and 2: they perceive the challenge of climate change but they do not yet (or partially) want to make a change to combat the challenges of it:

> *"Many residents of our municipality do not feel responsible for making their living environment climate-proof. They place the responsibility with the municipality and the national government "*
>
> Gemeente Groningen. (2020) *Groningen klimaatbestendig*. p. 16 & p. 80

Due to the current awareness level of citizens, the policy discourse is aimed at increasing awareness among citizens which must eventually lead to increased action for climate adaptation. To reach this, various steps have been set out by the municipality that can be linked to the different awareness steps of the awareness development process identified by Iturriza et al., (2019):

- Step 1: Making residents aware of the effects of climate change
- Step 2: Make residents aware of the need for action
- Step 3: Encouraging residents to make their environment climate-adaptive
- Step 4: Retrieving information from residents and entrepreneurs (effective synergies)

In light of the awareness development process, the policy discourse at this time of the study (2020) can be found in step 3 as well as step 4 in the awareness development process (figure 13). This differs from the awareness development over time graph by Iturriza et al. (2019) as the policy discourse of Groningen finds itself in step 3 and 4 simultaneously as the municipality is still experiencing which measures and synergies are most effective.

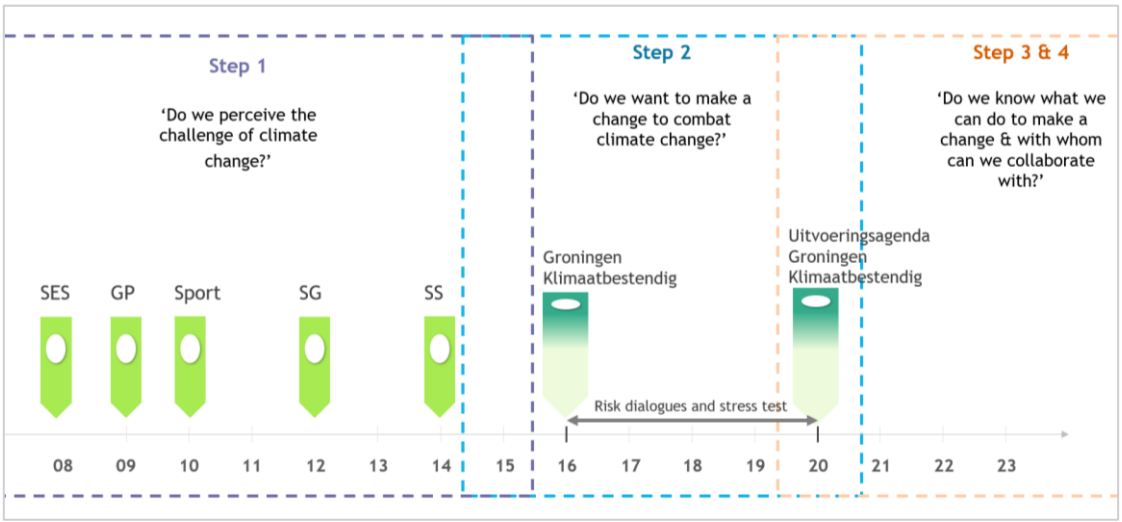

Figure 13: Awareness development process in the city of Groningen

Strategy for implementation

A communication and participation strategy is developed to go through these steps and to ultimately achieve effective synergies in which various city stakeholders work together for a climate-resilient Groningen. Part of this strategy is a 'Klimaatmonitor' (climate monitor) that has yet to be developed by the municipality. This tool shares credible, reliable and usable data with citizens and will be used as an incentive tool to achieve good cooperation and communication between various city stakeholders. The ambition of this climate monitor is to increase people's climate awareness and willingness to take action. Sharing of easy and understandable knowledge about climate adaptation should provide more support from citizens for climate adaptation measures (Roest & Boogaard, 2020. With this climate monitor and other strategies, the municipality facilitates different mechanisms of the awareness development process of citizens (table 5)

Table 5: Contribution of the communication and participation strategy of the municipality of Groningen.

Mechanism	What	Example	Facilitating
Knowledge	Information about climate adaptation measures for citizens and their effects.	Climate monitor & websites (klimaatadaptatiegroningen.nl) with examples of measures	Step 3
Knowledge	Providing credible, reliable and usable data	Climate monitor	Step 3
Knowledge. Attention	A perspective for action: showing what is done (by municipality or citizens) and what opportunity there is to contribute	Climate monitor & websites (klimaatadaptatiegroningen.nl) with examples of measures	Step 2 & step 3
Attention	Marketing campaigns with concrete actions for citizens can join	Operatie Steenbreek	Step 2
Attention	Incentives (subsidies and supporting citizens)	Financial incentives for adaptive measures; green roofs e.g.	Step 2

In light of this, the municipality facilitates the development of awareness step 2 "*do we want to make a change"* by offering citizens a perspective for action that they can contribute to a climate-proof Groningen. Information that is given through the climate monitor can facilitate step 3 of the awareness development process "*what can we do to make a change"* as citizens gain knowledge on what measures can be effective in their direct living environment.

The advice was given by Hanze University of Applied Sciences (Roest & Boogaard, 2020) to the municipality on how to successfully share information with citizens. This advice included that supporting and promoting citizen initiatives could offer citizens a perspective for action by showing which actions (bottom-up or top-down) are already taking place in their living environment. When following this advice, citizen initiatives can be given a more prominent position within climate adaptation policy in Groningen.

With the national foundation 'Operatie Steenbreek', which is regulated in Groningen by the municipality, citizen initiatives are indeed gaining this prominent position. The aim of this foundation which started (in 2015) is to involve citizens in climate and greening in an easy and accessible way. They facilitate the demands of citizens which can range from only providing knowledge, to actively offering help through buying plants or removing tiles. Over the years applications to help or facilitate initiatives of citizens have increased. To cope with this demand, priority will be given to larger groups (citizen initiatives e.g.) that have collective applications and to applications that are in line with the climate adaptation policy of Groningen:

"Preferably I'd like collective applications from the whole street or neighbourhood … you just reach a lot more people if they are larger groups; there is more awareness. ... we also reward large groups"

"climate is always reflected in the assessment of whether we support the initiative to a higher or lower degree"
Interviewee Operatie Steenbreek.

4.2 Green urban citizen initiatives

This section will elaborate on the qualitative data gathered during the interviews. Appendix G gives an overview of the characteristics of each initiative such as its origin, aims, activities, collaborations and communication. A discussion of the characteristics will be given, revealing various similarities, patterns and differences followed with an explanation on how the initiatives try to foster citizen involvement.

Citizen initiatives: characteristics

The initiatives all originate from an existing neighbourhood association/organisation, providing them already with resources to use (existing network e.g.). The initiators of the initiative are neighbourhood citizens who started based on their interest, expertise or background. They are the committed leaders mentioned by Iturriza et al. (2020), in which they lead the process of behavioural change in step 2. In general, the aims and ambitions of the initiatives are somewhat the same: a sustainable and green neighbourhood in which citizens collaborate and work together. They all stress the importance that residents should understand the need for this and the ease of which climate measures can be taken.

There are however also slight differences between the initiatives. The initiatives 'Oosterpoort Duurzaam' (OD) and 'Duurzaam Helpman' (DH) are relatively young and starting initiatives (from 2016 and 2019) compared to 'Noorderplantsoen Groenste Buurt' (2014). As they are relatively young, they are mainly focussed on involving and incentivizing citizens to participate in their activities and to gain an adherence of citizens. Through small, simple and accessible activities they raise citizens' attention and interest for greening and climate adaptation:

> *"We want to boost green initiatives, but also implementing and devising them. We come up with actions to stimulate people a bit and show 'it can be that easy to do greening' … doing small things, show that it's not difficult, stimulate by simply organizing activities that people might get excited about … present it in such a way that people really feel involved"*
>
> Interviewee Oosterpoort Duurzaam

The initiative of 'Noorderplantsoen Groenste Buurt' (NGB) has been around for some time (2014) which is also reflected in their main aim: zero-emission in 2024. Were the younger initiatives have a broader focus on sustainability (energy, mobility and greenery), NGB has a more narrow and primary focus on climate mitigation. This can be attributed to their path dependency: they are often involved in climate mitigation by the municipality as 'best practice' (see 4.1). Furthermore, the committed leaders at the origin also started from their interest in energy and sustainability:

> *"We noticed that because of the occupation and the interests of the people who are now in the cooperative [the citizen initiative NGB], and because of the questions of citizens, that we automatically move towards the energy side [climate mitigation] .. and we actually leave out greening a bit"*
>
> Interviewee 1: Noorderplantsoen Groenste Buurt.

In that respect, NGB is fairly new in the field of climate adaptation compared to the other initiatives. However, they do have a 'head start' on these initiatives: they have a greater adherence of people with awareness and interest in climate issues and/or the activities of the initiative. NGB therefore mainly functions to spread knowledge about the topics or to link and refer citizens with other parties. After all, there is already a great involvement of citizens and so NGB is less focused on raising attention or interest of people to become involved.

Comparing how the citizen initiatives and citizens in the national foundation operate reveal various patterns that enable the identification of strategies through which the initiatives try to foster citizen involvement (table 6):

Table 6: Citizen initiatives using the concepts of commitment, communication and resources

Strategies	What	Effects	Facilitating
1. Small, concrete and accessible activities	Citizens get easily involved in activities and stewardship actions	'learn by doing'	*Knowledge*
2. Framing	'greening' instead of 'climate adaptation'	More receptive for citizens	*Attention*
3. Framing with a social aspect	Citizens get in touch with each other	a. snowball effect b. a perspective for action	*Attention & knowledge*

1. Small, concrete and accessible activities

Figure 14 illustrates what specific activities and practices the initiatives have implemented related to urban green space for climate adaptation. Due to the local scale of the initiatives, small, simple and concrete activities are organised. The interviewees emphasize the importance of organising these type of activities, as it provides that residents don't have to make a great effort to get involved. They argue that getting involved will create more awareness as citizens 'learn by doing'. Therefore, simple but concrete actions like the examples in figure 14 are organised:

> *"we mainly try to choose a route that is fun, small and very action-oriented. … take people with you for participation, because you learn from it "*
>
> Interviewee Duurzaam Helpman.

Handing out free trees for citizens in Helpman. Source: Duurzaam Helpman

Citizens on a neighbourhood tour to show examples of urban green. Source: Oosterpoort Duurzaam

Constructing and planting of façade gardens. Source: Oosterpoort Duurzaam

Collective construction of green roofs. Source: Noorderplantsoen Groenste Buurt.

Figure 14: Activities of the citizen initiatives

2: the framing of activities

Concerning *communication,* the initiatives perceive difficulties with 'climate adaptation' as word of use. All of the initiatives, including Operatie Steenbreek, acknowledge that climate adaptation as word of use won't get the attention of citizens that are needed:

> *"the story is too complex. And I sense that that's also what residents think, they just want an easy and simple story and I agree very much. Everyone understands greenery, but climate, maybe only ten or twenty percent of the people understands that "*
>
> Interviewee Operatie Steenbreek.

According to the initiatives, climate adaptation is a difficult and abstract concept for citizens. Citizens are difficult to be motivated for climate adaptation as they link expensive measures to it such as solar panels or heat pumps. Instead of using climate adaptation, the initiatives more often use 'greening' or 'green' as this is '*more easily received by citizens*' because citizens prefer an '*easy and simple story*' (Operatie Steenbreek, 2020). Results from the online survey also show that 'climate adaptation' is not receptive as word of use for citizens. Although respondents indicate high willingness, knowledge and stewardship action related to climate adaptation measures (table 7), there is a slight nuance worth mentioning. It turns out that within the choices of climate adaptive measures, 13% opted for the option 'other, namely …'. Respondents could enter which measures they had taken, apart from the presented choice options. Here, many of the entered answers are part of climate mitigation measures and not so much climate adaptation measures:

Examples of answers from the online survey:
'less air travel', 'less car driving', 'solar panels', 'insulation', 'heat pump', 'LED-lightening', or 'different lifestyles'

Because of this, the initiatives hardly communicate with the term climate adaptation. Instead, they frame their actions for 'greening of the neighbourhood' with small and concrete actions focussed around the social aspects of the activities. This social aspect refers to communication with and between the citizens. Because activities of the initiatives are on the local scale, their practices become visible in the direct living environment of citizens which creates opportunities for them to get in touch with each other:

> *"It was also very social and I think that is also the strength that you can link the social to the green. So green is nice because you meet people, get to know a new face. It can even be a means for integration of new residents with neighbourhood projects around greenery in which everyone has a task"*
>
> Interviewee Oosterpoort Duurzaam.

3: the social aspect of activities

With this social aspect, there is a promising role to foster citizen involvement in urban green space in two different ways. Firstly, there is a snowball effect that creates new initiatives. As people get in touch with each other, word of mouth about the initiatives' practices and measures related to greening is generated. This is also confirmed through answers of a few respondents when it was asked how they perceive to be more aware through the initiatives:

'How have you noticed an increase of awareness about the effects of climate change?'

"I have initiated an activity myself" "I am going to develop an initiative myself"

Secondly, this word of mouth between citizens also offers them a perspective for action. While people get in touch with each other, good examples, experiences and awareness are exchanged. Physical capital like façade gardens, tree mirrors or greening of gardens is used as a resource to exchange experiences and give citizens a perspective for (stewardship) action. In this way, citizens can find out how and how easily they can take measures for themselves:

"Especially neighbours know each other and like to pick up tasks together: 'How do you arrange that?' 'I have already done it and I already have quotes' so yes that's how it goes. So you also share a kind of knowledge together … and ask to each other 'can I take a look inside your house? … How did it go?' I thing that is very much a strength … just take a look at each others house inside or take a loot at someone's garden, it lowers the thresh-hold for someone"

Interviewee Duurzaam Helpman

The strength of using this social aspect is also reflected in the motivations of citizens to perform stewardship actions. For example, a respondent answered what his/her motivation was to perform in stewardship action: '*collaboration motivates me and strengthens my commitment*'. Examples of activities that lend themselves well for citizens to get in touch with each other, generate word of mouth and a perspective for actions are housing tours:

Green House Route: Noorderplantsoen Groenste Buurt
'we have a greenhouse route, a kind of bicycle route where you come together to see the do's and don'ts, best practices and worst practices. We invite people to someone who has a heat pump or someone who has a green roof. So all kinds of things like that, that is a bit of the philosophy that you look together what the possibilities are'

Interviewee Duurzaam Helpman

'you can tackle things together with the neighbours. Due to the home visits, there is a big impression among the citizens, because you see how things work in practice. That stimulates. A must, the Green House Route!'

Citizens' experience of the Green House Route. Source: website Noorderplantsoen Groenste Buurt.

4.3 Awareness development

This section will elaborate on the findings from the online survey regarding the awareness development and awareness mechanisms of proximate citizens. Appendix H gives an overview of these results which will be interpreted hereafter.

Figure 15 shows that the vast majority of respondents (n=145) agrees on the existence of climate change (96%) and that it will have serious negative consequences in cities (92%). This is in line with the research done by IOS Groningen which showed that 90% of the respondents perceive the challenge of climate change (2019). This indicates that most of the citizens are already in step 1 of the awareness development process. The mechanism of experience form the awareness development process seems to be an initiator for this. As 95% of the respondents indicate they have first-hand real-lived experiences such as more frequent/extreme heat waves (29%) or periods of drought (27%). Further confirmation that respondents agree on the existence of climate change and its effects appears from the fact that 69% of the respondents are more climate aware because of their experience. On top and more promising for developing societal awareness, 81% of the respondents realise action is needed to reduce or prevent the effects they have experienced:

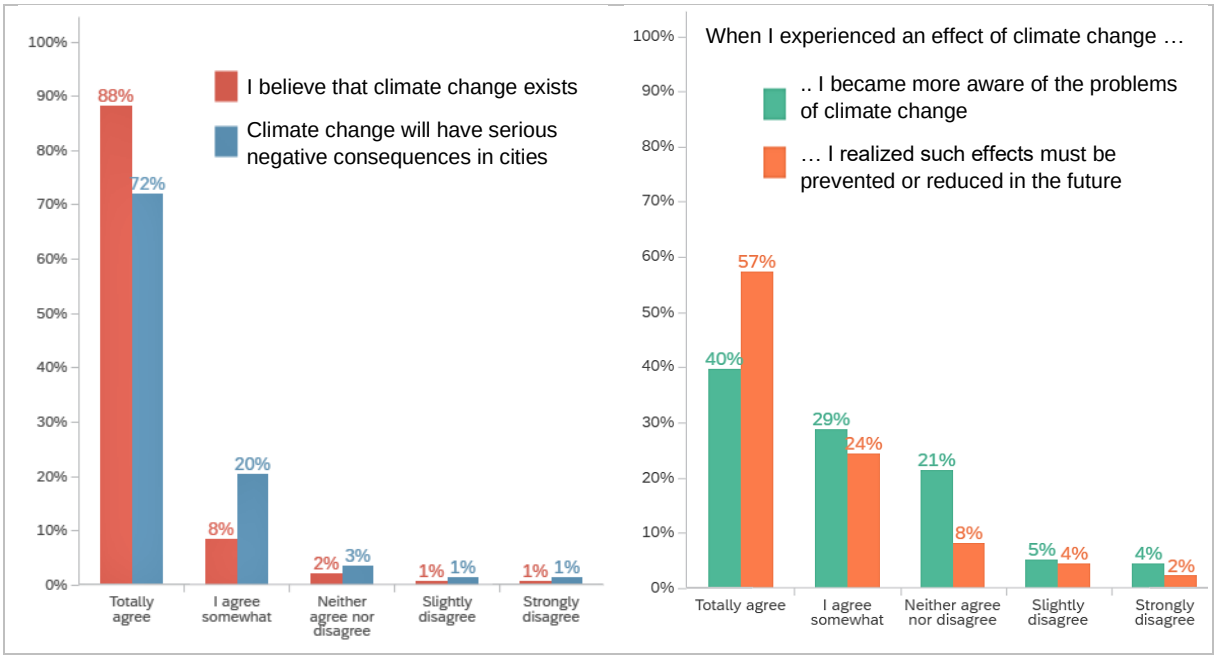

Figure 15: Results from the online survey on awareness step 1.

Table 7 gives an overview of the steps in the awareness development process, the data elicitors used and the results for each awareness step. Respondents indicate high willingness (94%) and knowledge (82%) for climate adaptation measures. Slightly fewer respondents indicated that they have indeed taken action for climate adaptative measures (72%).

Table 7: Result from the online survey on the different awareness development steps.

Awareness development	Survey question	Yes (P)	No
Step 2	'Would you like to take measures yourself to prevent or reduce the effects of climate change?'	94 %	6%
Step 3	'Do you know what measures you can take to prevent or reduce the effects of climate change?'	82%	18%
Step 3 – stewardship	'Have you ever taken measures to prevent or reduce the effects of climate change?'	72%	28%
Step 4 – synergies	'Have you ever taken measures in collaboration with others to prevent or reduce the effects of climate change?'	44%	56%

To investigate the influence of the citizen initiatives on the awareness development process of citizens, various statistical tests were done. For this, the null hypothesis is as follows: *within the population, the fraction of successes is the same for all distinguished groups*. The successes as the dependent variable are the different steps in the awareness development process (P = yes). The independent variables used are *education* and *familiarity*. The results of the statistical tests are presented in appendix I and table 8.

Table 8: The independent variables and the results

'Have you completed a higher education?' – education		
	%	**Amount**
Yes	79%	114
No	21%	30
'Have you ever heard about [the citizen initiative]?' – familiarity		
	%	Amount
Yes	67%	91
No	33%	44

Awareness development	**Education**	**Familiarity**
Step 2	A positive and significant predictor	Non-significant predictor
Step 3	Non-significant predictor	A positive and significant predictor
Step 3 – stewardship	A positive and significant predictor	A positive and significant predictor
Step 4	Non-significant predictor	Non-significant predictor

The statistical tests show that familiarity is not relevant for the willingness to take climate adaptive measures (step 2). Personal factors like that of committed leaders who lead the process from step 2 onwards could be more relevant. These personal factors are for example their interests, background and expertise (education) that would be relevant for step 2. This is in line with Ferreira et al. (2020) who discussed that personal drivers are the main motivators for stewardship action. These personal drivers could rely on environmental objectives that arise from peoples' interest and appreciation for urban green space or climate adaptation (Buijs et al., 2016). To reach citizens who do not have these specific personal drivers and motivations, the citizen initiatives mention the importance of developing targeted communication. This communication strategy must then correspond to the type of neighbourhood or type of citizens living in the neighbourhood. Using targeted communication can create the possibility to reach beyond the people who already have an interest and attention for greening or climate adaptation (like the adherence of NGB)

> *"What we are trying now is to map out who we actually miss. Which residents do not receive our call and on those we try to organize targeted communication. I've already mentioned some groups that are tenants and students who need a different kind of response or a different style of communication."*
> Interviewee Noorderplantsoen Groenste Buurt.

For citizens to know which measures to take and to perform stewardship action, familiarity with the initiatives is indeed relevant. This is in line with Bennet et al. (2020) who discussed that the citizen initiatives augment local capacity to citizens to perform in stewardship actions. The strategies discussed in section 4.2 provide examples of how citizen initiatives do this. For example, by providing a perspective for action to citizens, physical capital of climate adaptation measures is used to exchange information and ideas. This could be helpful for citizens to be more motivated to perform in stewardship actions. On top, human capital is also augmented as citizens gain knowledge on past experiences and certain skills that are necessary to let them perform in stewardship actions. From the respondents who did perform stewardship action, 44% had also done stewardship actions in collaboration with others. Familiarity with the initiatives was not found relevant for this, which could be explained by the fact that climate adaptive measures were most often mentioned to be with neighbours. Although this doesn't directly contribute to effective synergies, it can be a motivator for stewardship actions (see section 4.4. on motivations)

Figure 16: Collaboration for climate adaptive measures

Awareness mechanisms

Information about the concepts of *attention* and *knowledge* was collected from respondents who answered to be familiar with the initiatives (n=91). Within this group, respondents indicated that the initiatives had a different influence on the awareness mechanisms. Respondents perceived that they had gained more interest and appreciation for greenery through the initiative (59%) than that they had developed knowledge and skills through the initiative (39%) (figure 17). This is consistent with the strategy of the (younger) initiatives to arouse citizens' interest and attention by framing their activities for 'greening' in a small, simple and accessibly way. On top, this is also consistent with the fact that respondents who are familiar with the initiatives already have certain attention for the green environment.

From the respondents who were familiar with the initiative a binary logistic regression was done to investigate whether an increase in citizens' attention, knowledge and awareness is a predictor for performing stewardship actions. *H0: within the population, the fraction of successes (stewardship action because of the initiative) is the same for all distinguished groups (attention, knowledge and awareness).* However, an increase of attention, knowledge and awareness were found to be non-significant predictors of stewardship action. This can be explained by the fact that there are indirect contributions to urban green space for climate adaptation via public support (*impact pathway B*) (Derkzen et al., 2017). Here, there is a development of awareness on climate adaptation or greenery but there is no further mobilization or stewardship action. This could indicate that citizens are likely to support other city stakeholders in their stewardship actions while remaining passive themselves.

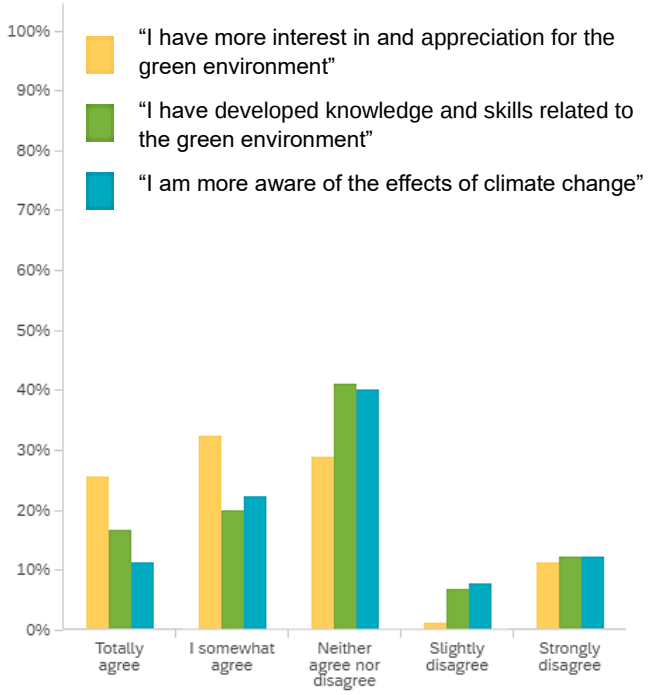

Figure 17: Results from the online survey

4.4 Stewardship action and its impacts.

This section will elaborate on the result of the online survey related to stewardship action and motivation. Hereafter, the different impacts perceived by respondents will be discussed according to their increase in awareness or stewardship actions. Information about these concepts was collected from respondents who answered to be familiar with the initiatives (n=91).

Stewardship motivation

Around 60% perceived they had been motivated by the initiative to contribute to greening or prevent/reduce the effects of climate change. However, this motivation is not fully reflected in actual stewardship action by the respondents: 44% of the respondents performed stewardship actions either with the initiative (15%) or by themselves (29%). This indicates that there are still respondents (16%) whose behaviour can be transformed from passive towards proactive through augmenting local capacity.

Table 9 presents the motivations of people to perform in stewardship actions (active respondents) or how citizens would be motivated if they haven't done so (passive respondents). Motivations from passive respondents are in general equally distributed providing the possibility to address multiple motivations at the same time. Motivations related to getting into contact with third parties seems to apply for both groups as one of the important motivators to perform in stewardship actions. However, when it was asked if the respondents had come into contact with other parties only 19% answered with 'yes'. Actors mentioned by respondents were mainly: initiatives, gardeners, the municipality and private parties in the field of mitigation measures (energy) and adaptation measures (green roofs).

Table 9: Motivations for stewardship action

Motivations	**Performed stewardship:** 'What is the reason that you are/have been active because of [the citizen initiative]'?'	**Would perform stewardship if:** 'Would you be motivated to contribute to urban green (for climate adaptation) if [the citizen initiative] ..'
Gets you in touch with your neighbours	14%	19%
Makes u care about the neighbourhood	14%	12%
Makes financial resources available	7%	19%
Learns about climate adaptive measures	12%	12%
Makes you more aware of the importance of greenery for climate adaptation	28%	9%
Gets you into contact with third parties	20%	19%
Other	4%	5%
The initiative does not motivate me	0%	5%

There is a noticeable difference between the two groups in motivation related to an increased awareness: active respondents are more motivated by their awareness of the importance of greenery for climate adaptation than passive respondents. This awareness of active respondents could be explained by the fact that awareness is needed as a prerequisite for any active behaviour (Gurran et al., 2013; Davoudi et al., 2013). Meaning that the active respondents were more aware and thus felt more motivated to perform in stewardship action. On top, active respondents could have 'learned by doing' through which they became more aware than passive respondents

The difference in the availability of financial resources as motivator between the two groups of respondents is also interesting. Active respondents are less motivated by the availability of financial resources than passive respondents. This is in line with Ferreira et al., (2020) who argued that motivations to act rely more on intrinsic motivations in which citizens have their idealistic motives to act for the benefit of the environment or community. Citizens who are not motivated by these intrinsic motivations rely more on extrinsic motivations such as financial incentives (subsidies, collective purchasing or small gifts for gardening). However, citizen initiatives often do not have the capabilities to provide citizens with such financial resources which makes it difficult to foster citizen involvement of those passive respondents.

Impacts of awareness and stewardship action

The impacts perceived by respondents reveal differences that result from an increase in awareness and/or being mobilized for stewardship actions (table 10). Firstly, it is visible that citizens perceive the impact of attention in general more compared to the impact of gaining knowledge. This is in line with the results of the figure 17, indicating that the mechanisms of attention are facilitated more than the mechanism of knowledge. However, table 10 also reveals the pattern of 'learn by doing' which has been discussed in earlier sections. Respondents who indeed were mobilized for stewardship actions perceive that they have gained more knowledge about greenery for climate adaptation (19%) than respondents of awareness (15%). On the other hand, the impact of (public) support is often mentioned by respondents who perceived an increase in their awareness. This could indicate that these respondents are aware and therefore support stewardship actions on climate adaptation, but are not (yet) motivated enough to perform stewardship action themselves. Since the impact of public support is less mentioned for stewardship action, after all, active respondents are already performing in stewardship action themselves instead of supporting others (municipality, initiatives or public entities) to do so.

Table 10: Impact pathways to foster citizen involvement.

Impact pathways	**Awareness development:** 'How have you noticed an increase in awareness about the effects of climate change?'	**Stewardship action:** 'What do you recognize as a result of your activities?'
More attention to using greenery for climate adaptation	24%	24%
More knowledge about greenery for climate adaptation	15%	19%
More (public) support for urban green for climate adaptation	25%	20%
More acceptance for the use of greenery for climate adaptation	15%	15%
I have joined the citizen initiative	6%	8%
I participated in activities of the citizen initiatives	11%	13%
Other	4%	1%

4.5 Impact pathways to foster citizen involvement

This section will bring the findings of section 4.1, 4.2 and 4.3 together, which identifies the impact pathways of citizen initiatives that were found empirically to foster citizen involvement.

The quantitative part of this research has shown that citizens perceive the challenge of climate change (step 1) and have a certain willingness to take climate adaptive measures (step 2). However, the first nuance here is that respondents still often confuse climate mitigation measures with climate adaptation measures. Personal drivers and motives were found more relevant for the development of awareness step 1 and step 2. To transform the passive behaviour towards proactive stewardship action, familiarity with the initiatives was found relevant. Section 4.2 has identified various strategies through which the citizen initiatives contribute to this awareness and promote individual stewardship action. These strategies can be summarized as follows:

1. Framing their activities for 'greening' instead of 'climate adaptation' as this was found more receptive for citizens.
2. Within this framing, they link their activities with their social aspect in which citizen get in touch with each other. This has provided:
    a. A snowball effect for other initiatives to emerge and;
    b. A perspective for action for citizens
3. If a certain adherence or interest from citizens has reached, the initiatives link and refer citizens with other parties that can help them with stewardship actions.

Throughout section 4.3 and 4.4, it was visible that respondents perceived an influence on their awareness by the initiatives on both *attention* and *knowledge*. Although this increase of awareness wasn't a relevant predictor for actual stewardship actions by its own, it still can have an impact. As environmental motives are one of the motivations for stewardship actions, awareness (together with communal or personal motives) could be adding up the overall motivation (Ferreira et al., 2020) This overall motivation with a certain capacity to act can still enable citizens to perform in stewardship actions (Bennett et al., 2018). Besides, respondents who only perceived an increase of awareness did perceive the impact of feeling more (public) support. This entails the support for others performing stewardship actions or taking climate adaptive measures (Derkzen et al., 2017).

If citizens were provided with the capacity and motivations to perform stewardship actions, results showed that they in turn perceived in an increase in their awareness. As it has come across several times that respondents have 'learned by doing'. Not only because the initiatives organised easy accessible activities for citizens to join easily, but the respondents indicated this 'learn by doing' also: respondents who performed stewardship action indicated to be more aware and have more knowledge on greenery and climate adaptation. These results identify the impact pathway of citizen initiatives: that of *social learning*. What is interesting here, is that this impact was found both at the level of the initiatives and the individual citizens' level. The literature had identified this impact pathway as the citizen initiative that evaluates the outcomes of stewardship action, providing opportunities for social learning and innovation (Ferreira et al., 2020). Feedbacks of the stewardship actions provided social learning at the individual level which had brought changes in respondents' attitude and behaviour (more awareness and knowledge). On top, these feedbacks also ensured social learning for the initiatives: the initiative of NGB itself concluded that they had paid too little attention to climate adaptation or greenery and the initiative of DH concluded that working in smaller groups was more efficient.

The impact related to *benefits* for urban green (environmental resilience) was found to a lesser extent. Indeed, façade gardens, green roofs, tree mirrors or new green space was developed, but it is too soon to conclude if these measures are effective at the place where these measures have been implemented.

Concerning the contribution to institutional resilience, something is interesting to mention which has not yet been discussed before in chapter 4. According to the literature, this institutional resilience entails the alternative ideas that arise to govern and manage green space for climate adaptation because the citizen initiatives are getting involved in this (Buijs et al., 2016). Although this has not been seen in practice, such synergies between the citizen initiatives and the municipality have been spoken about during the interviews. The citizen initiatives, as well as the municipality, mentioned the role of 'ambassadors' to complement the governance and management of local authorities for greening and climate adaptation:

> *"that is a part of the future in which we are heading, but we [the municipality] would like to establish climate ambassadors. We want to support them, facilitate them and give them some money. People from the neighbourhood who also know the neighbourhood … because the closer you are to the people, the easier it is to gather initiatives from the neighbourhood"*
>
> Interviewee Operatie Steenbreek.

> *"you can use the things they [citizens] do to reach others [citizens] … in fact we are all climate ambassadors .. I can also tell about the sustainable measures .. I think that works very well, hopefully we will all have climate ambassadors"*
>
> Interviewee Duurzaam Helpman.

These ambassadors could be seen as 'committed leaders' who are active at the very local street level in neighbourhoods to provide information and a perspective for action for other citizens in the street. Because synergies take place at the local level with these ambassadors, this could encourage trust and intensify public acceptability of climate adaptation measures (Ferreira et al., 2020)

5. Discussion and conclusion

This chapter will briefly summarize the findings and link them with the conceptual model and theoretical framework of chapter 2. This will provide an answer to the main research question and its sub-questions. Furthermore, the contribution of the findings of this study for planning in practice and theory will be discussed. The end of this chapter will contain a critical reflection on the outcomes and the research process.

5.1 Discussion

This study aimed to gain a better understanding of how green urban citizen initiatives can contribute to developing citizens' awareness and how they can mobilize them to act. Understanding this could provide lessons for broadening or deepening the role of these initiatives in recent climate adaptation policies. It has been argued that more awareness of climate adaptation and its consequences is needed to transform citizens passive behaviour towards more proactive and prospective behaviour through performing stewardship actions (Abegaz et al., 2015; Davoudi et al., 2013; Gurran et al., 2013; Iturriza et al., 2020; Tang et al., 2010; UNISDR, 2012). Citizen initiatives were found to be promising to achieve this as they operate local and have local knowledge and expertise (Bennett et al., 2018; Buijs et al., 2016), and they are known to create co-benefits related to environmental awareness (Seyfang & Smith, 2007; Mattijssen et al., 2018)

The assumption was that citizens initiatives can contribute to climate adaptation by fostering citizen involvement. This assumption was based on the first sub-question related to the theoretical conceptualization of awareness and stewardship actions. In short, citizen initiatives could influence citizens' *attention* and *knowledge* as they can facilitate interest and appreciation and develop knowledge and skills of citizens (Mattijssen et al., 2018). Accordingly, a certain awareness level of citizens through which citizen initiatives have contributed to is created (*results 1*). This awareness level creates incentives for citizens' steward motivations and can result in steward actions (*result 2*), provided there is enough capacity for this. Here, citizen initiatives can influence stewardship elements of actors and capacity through their commitment, communication, resources and their local scale which eventually results in individual steward actions. This theoretical conceptualization enabled the identification of various impact pathways of green urban citizen initiatives on climate adaptation:

- *A*: co-benefit of awareness as the first step towards the realization of benefits for urban green
- *B:* (public) support or membership in the initiative
- *C:* environmental resilience through benefits for urban green
- *D:* Institutional resilience
- *E:* social learning

The remaining part of this discussion will explain how citizen initiatives influence the awareness development process and thereby promote individual stewardship actions. This explanation identifies the various impact pathways of the initiatives in their context, based on the results from chapter 4 and the theory discussed in chapter two.

Developing environmental awareness

The concept of awareness and how this had been influenced by the citizen initiatives were analysed with the awareness mechanisms and the different awareness development steps. It was found that familiarity with the citizen initiatives wasn't relevant for development in the first two phases of the awareness development process. Personal factors are more important in explaining the development from passive behaviour towards gaining more awareness and realizing there is a need to act. These personal factors are indeed related to citizens' intrinsic motivations (personal values and objectives) and extrinsic motivations (communal and environmental objectives) (Buijs., 2016; Ferreira et al., 2020). When citizens have gained a certain awareness based on their interest, there are opportunities for the initiatives to mobilize and activate them. The assumption here was

that the citizen initiatives could do this in three different ways. By (1) arousing interest and appreciation and by (2) mobilizing and activating citizens, they facilitate the mechanism of *attention.* On top, by (3) contributing to the development of knowledge and skills, they facilitate the mechanism of *knowledge*.

Based on the conceptual model and chapter 4, the following strategies were found that summarizes how the citizen initiatives facilitate the awareness development of citizens:

1. *Attention*: Framing their activities for 'greening' instead of 'climate adaptation' as this was found more receptive for citizens
2. *Attention:* Within this framing, they link their activities with their social aspect in which citizen get in touch with each other. This has provided:
    a. A snowball effect for other initiatives to emerge and;
    b. A perspective for action for citizens
3. *Knowledge:* If a certain adherence or interest from citizens has reached, the initiatives link and refer citizens with other parties that can help them with stewardship actions.
4. *Knowledge:* if individual stewardship actions are performed, citizens can experience 'learn by doing' (*impact pathway E:* social learning), in which citizens gain knowledge and skills because of their actions.

According to these strategies and the conceptual model, the influence of the citizen initiatives on citizens can lead to result 1 or 2. It was indicated that citizens who were familiar with the initiative perceived an increase of *attention, knowledge* and awareness. However, this was not a significant predictor for stewardship action. Instead, it was found that this could indicate more (public) support for climate adaptive measures (*impact pathway B*). Citizens who perceived an increase in their awareness felt more (public) support than citizens who did perform stewardship actions. After all, these active citizens already performed stewardship actions themselves instead of supporting others (municipality, initiatives or public entities) to do so.

Promoting individual stewardship actions

If then certain motivations and capacities are present, this can result in actual stewardship actions (2). It was found that being familiar with citizen initiatives is relevant here. Familiarity with the initiatives can transform citizens' willingness and passive behaviour towards proactive stewardship actions. The earlier mentioned strategies on how the initiatives operate, identify interventions that the initiatives can pose to transform awareness into actual stewardship actions.

The first intervention is related to motivation incentives (Bennet et al., 2018). Although the increase of awareness turned out to be irrelevant whether respondents perform stewardship actions, concluding that it has no impact at all falls short. Citizens' motivations to perform in stewardship actions consists of multiple motives (Bouman & Steg, 2019; Ferreira et al., 2018) which can be communal, environmental or personal. An increase in environmental awareness could add up to citizens' overall motivation. Thereby increasing the likelihood of performing in stewardship actions, provided they also have a personal interest or communal motives.

Secondly, the initiatives aimed to introduce new actors to citizens by linking and referring them to other parties. However, this was found to a lesser extent in the respondents' answers in the online survey. Only 19% of the respondents answered to have come into contact with third parties. This could be because only the initiative of NGB is somewhat more focussed on linking and referring citizens or because climate adaptation is a relatively new topic also at local public and private entities. Both explanations entail that there is still profit to be made to motivate citizens for stewardship actions by introducing new actors.

The third explanation of how these strategies pose an intervention enables the understanding of why familiarity with citizen initiatives was found relevant for stewardship action. With these strategies, the initiatives can augment capacity for citizens to perform in stewardship actions through local community assets (Bennet et al. 2020). Physical capital and human capital was used in this way by exchanging ideas, experiences and awareness of climate adaptive measures and thereby provide citizens with a perspective for action.

Furthermore, the contribution of citizen initiatives to cities' institutional resilience provides possibilities for future developments on promoting individual stewardship actions or foster citizen involvement (*impact pathway D*). Both authorities and citizen initiatives on the local scale seem optimistic towards synergies in which they complement each other. These collaborations could in turn encourage trust in adaptive measures and intensify public acceptability of these measures (Ferreira et al., 2020).

5.2 Conclusion

This study aimed to investigate how citizen initiatives could foster citizen involvement in urban green space management for climate adaptation. The guiding research question of this thesis was: '*How do green urban citizen initiatives foster citizen involvement in urban green space management for climate adaptation?'.*

The qualitative part of this study has revealed strategies with which the citizen initiatives raise awareness and promote individual stewardship actions. These strategies include (1) framing, (2) using their social aspect, and (3) linking and referring citizens. This information was complemented with the perspectives of citizens who lived in proximity to where activities of the initiatives have taken place. This provided the identification of various impact pathways of the citizen initiatives to foster citizen involvement. The first impact pathways identified relates to (public) support. Citizen involvement can be fostered as the citizen initiatives facilitate awareness development, resulting in more (public) support for climate adaptive measures. The second impact pathway identified relates to mobilizing and activating citizens, which results in social learning. Being familiar with citizen initiatives is relevant for citizens to perform stewardship actions as they augment local community assets such as physical capital and human capital. Performing stewardship actions can eventually result in social learning through which knowledge and awareness for climate adaptation are increased.

In this sense, the role of citizen initiatives can be promising for climate adaptation policy in Dutch cities. However, it is important to keep in mind how fostering citizen involvement has been initiated here. As the initiatives started with citizens as 'committed leaders' who began from their own personal communal or environmental motives. Such committed leaders are needed in the first place to initiate any behavioural change within communities or civil society (Iturriza et al., 2020; Ki-Moon, 2009). This means that if there is a lack of such committed leaders in a neighbourhood, fostering citizen involvement here needs another approach. Strategies such as framing and using the social aspect can still foster citizen involvement, but other initiators that act as the 'committed' leaders' are still needed for this.

Recommendations for planning theory

The first aim of this thesis, related recommendations for planning theory, was to understand how green urban citizen initiatives can contribute to developing citizens' awareness and how they can mobilize them to act. The combination of the awareness development framework (Iturriza et al., 2020) and the conceptual and analytical framework of environmental stewardship (Bennet et al., 2020) provided insights on this. Insights showed that initiatives facilitate both *attention* and *knowledge* and thereby contribute to awareness developing. To transform citizens' passive behaviour towards actual proactive stewardship action, familiarity with the initiatives can be found relevant. The citizen initiatives implement interventions mainly through augmenting physical and human capital, which addresses citizens' motivations and their capacity to act. The use of the awareness development framework could be interesting to use as a prescriptive tool for further research and contributions to planning theory. In this sense, the awareness development steps can be used as a prescriptive tool to raise citizens' awareness. Here, the different awareness steps provide recommendations on how to facilitate citizens' awareness according to their current awareness level. For instance, citizens in awareness step 3 and 4 can be involved in (demo) activities or projects to implement climate adaptive measures and thereby providing citizens in step 1 and 2 a perspective or action.

On top, citizens' motivations have proven to be an interesting topic of research on how to foster citizen involvement (Steg & Bouwman, 2020). This thesis has shown that passive respondents would be motivated by extrinsic motivations related to financial incentives to perform stewardship actions. However, citizen initiatives do not have the resources and capabilities to address these financial motives. Local authorities and governments are more likely to have a role in providing these financial incentives. The municipality of Groningen is already doing this by providing subsidies for green roofs, solar panels or providing free rain barrels (Gemeente Groningen, 2020). However, addressing the financial motives of citizens alone to get them involved in initiatives may be overrated (Sloot et al., 2019). The hope to foster further citizen involvement by addressing financial motives alone does not suffice. This is in line with recent studies of Sloot, Jans & Steg (2019) on citizens' motivations for getting involved in initiatives. Within their studies, they focused on three different motivations for initiative involvement. It was found that motives related to the environment and community are more strongly related to initiative involvement than financial motives are (Sloot et al., 2019). They pointed out that environmental and communal motives are interesting pathways to foster further involvement in initiatives.

With this said, the contribution of citizen initiatives to cities' institutional resilience (i*mpact pathway D)* can be seen as a window of opportunity for effective synergies between local authorities and citizen initiatives. They can collaborate and complement each other by addressing different motivations. Citizen initiatives can influence intrinsic motivations by framing their activities for 'green' (environmental motives) and making use of their social aspect (communal motives), while local authorities can influence extrinsic motivations through financial incentives (financial motives). In a study of Sloot et al. (2021), it was however found that combining and addressing these motivations at once didn't promote further initiative involvement. Nevertheless, their study focussed on appeals of these motives and on getting citizens involved in the initiatives. This initiative involvement was indicated by *interest to join, initiative membership*, and *identification*. As this thesis has shown, individual stewardship actions can also happen beyond being involved in initiatives. Citizen initiatives can promote individual stewardship, without getting them involved in their initiative. For further research, it is therefore interesting to examine whether a combination of these three motives (environmental, communal and financial) addressed through synergies of local authorities and citizen initiatives, can foster further citizen involvement in urban green space for climate adaptation.

Recommendations for planning practice

The second main goal of this thesis was related to recommendations for planning practice. The aim was to identify lessons for climate adaptation policy on broadening or deepening the role of citizen initiatives in fostering citizen involvement. Currently, policy discourses like that of the city of Groningen are trying to get citizens involved in what is probably the biggest challenge of the 21st century: the changing climate. The municipality of Groningen has set the ambition to be climate-resilient in 2050. To be climate-resilient, awareness of city stakeholders needs to be raised including that of citizens (Bouman & Steg, 2019; Iturriza et al., 2020). In Groningen, a communication- and participation strategy has been set up to increase citizens' awareness on this topic. With this strategy, the municipality aims to provide citizens with information and a perspective for action to facilitate citizens' awareness development. This thesis filled in the knowledge gap on how citizen initiatives can contribute to these policy plans. Citizen initiatives can have a promising and prominent role if policies aim to raise citizens' awareness. The citizen initiatives have already partially filled in this role by indeed providing a perspective for action for citizens and by augmenting capacity to citizens to transform passive behaviour towards proactive stewardship actions On top, the role of citizen initiatives in climate change policy can be deepened or broadened as they also an increase in citizens' (public) support for climate adaptive measures.

Reflection

Looking back on the outcomes of the research, more information could be gathered and interpreted from the quantitative part of this study. On the one hand, it would suffice to ask some questions in the survey differently to appropriately test the variables with the right statistical tests. For example, the awareness development steps could be asked more directly, or in a more detailed manner according to predefined variables and statistical tests. This was done to a lesser extent in this research which provided difficulties to do statistical tests with the gathered data. On the other hand, some questions of the online survey were not used for analysis. Looking back, it would suffice to exclude those questions to shorten the online survey. However, the qualitative part of this study has gathered information that could be interpreted sufficiently. By including two actors of two citizen initiatives, multiple perspectives of the citizen initiatives' functioning could be gathered.

Reflecting upon the research process of this study reveals some strengths and weaknesses. First of all, the mixed-method approach of this study provided the strength to include both the perspective of the initiatives and the perspectives of citizens. This was done to avoid any bias from both perspectives. Second of all, bias was also avoided by randomly distributing the online survey within a radius of 100 m where activities of the citizen initiatives have taken place. Although the distribution of recruited respondents is not entirely equal (59% respondents via the anonymous link and 41% via the QR-code), an attempt was made with great effort to have an equal distribution of recruited respondents. However, this may mean that there is still some bias in the results. Therefore, including a data collection method by interviewing experts related to climate adaptation and active citizenship would be valuable for this research as it could provide an extra critical and relative not on citizen initiatives.

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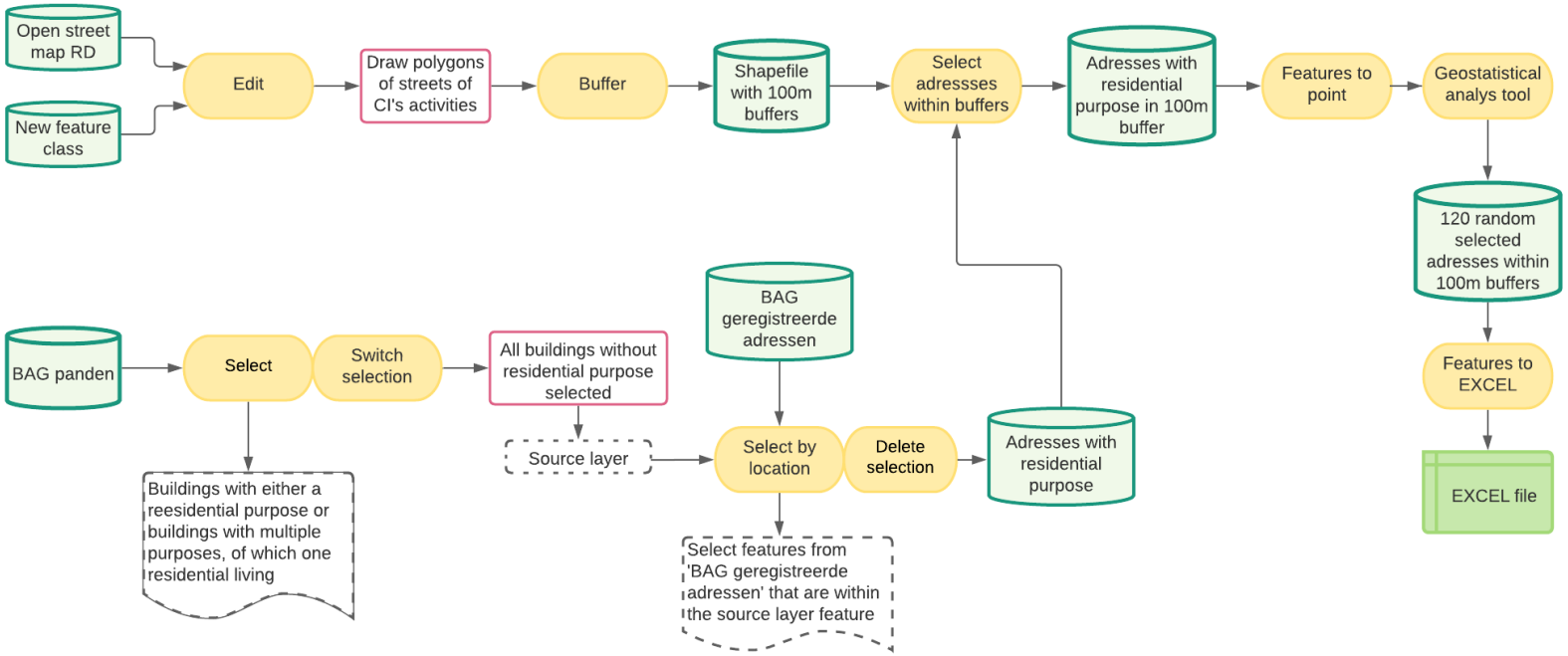
Appendices

A: methodological approach

	Which information	***Moment of collection***	***Sources to you/how to obtain this data***	***Documentation/archiving data***	***Analysis of data***
Main RQ: How do green urban citizen initiatives foster citizen involvement in urban green space management for climate adaptation?	The influence of citizen initiatives on awareness and stewardship actions of citizens and what this can mean for climate adaptation policy in cities	July 2020 to January 2021	Mixed method approach: literature & documentary research, interviews and survey research. (Qualtrics, Google forms, ArcGIS)	The main question is answered by the data from the sub-questions. The empirical data section is explained in the methodology.	Data analysis is based on combining the literature from sub-Q1 to the empirical data of sub-Q2 & sub-Q3. Sub-Q4 places the data in context to provide a better meaning to the data.
Sub-Q1: How can the concepts of environmental awareness and environmental stewardship enable the identification of impact pathways of green urban citizen initiatives for climate adaptation	The relationship between climate adaptation and: urban green space, awareness and active citizenship. The relation between active citizenship (stewardship) and awareness. Impact pathways of citizen initiatives for climate adaptation	Writing theoretical framework: from august 2020 to October 2020.	Scientific peer-reviewed literature	N/A Storage of files on: university storage (P: drive) and home storage (H; drive) and online (google drive)	Reading articles, comparing and linking of the articles and using different theoretical frameworks to create a conceptual model for this research.
Sub-Q2: How do green urban citizen initiatives in Groningen contribute to developing environmental awareness amongst citizens	The influence of citizen initiatives on the awareness development process of citizens	November 2020 to December 2020	Semi-structured interviews with key actors of the initiatives Survey research for citizens living in proximity to practices	Interviews: recording and transcribing. Survey research: archived in Qualtrics & Excel/SPSS files Storage of files on: university storage (P: drive) and home storage (H; drive) and online (google drive)	Transcription and coding with Atlas.ti for the interviews Qualitrics tools and SPSS for the surveys
Sub-Q3: How do green urban citizen initiatives in Groningen promote and support stewardship actions in urban green space management for climate adaptation	The interventions citizen initiatives pose to citizens: activities, projects, resources, information and actor network.	November 2020 to December 2020	Idem to sub-Q2	Idem to sub-Q2	Idem to sub-Q2
Sub-Q4: Which lessons for climate adaptation policy can be identified for broadening or deepening the role of initiatives in fostering citizen involvement in urban green space management for climate adaptation	Context specific information of Groningen to interpret the collected data and give meaning to it. The insights from Q2 en Q3 are translated into the role citizen initiatives can have in climate adaptation policy.	December to January 2020	Documentary research using an interview guide to read these documents Data from Q2 & Q3	N/A Storage of files on: university storage (P: drive) and home storage (H; drive) and online (google drive)	Analysing the documents using an interview guide. Data from Q2 & Q3 is placed in context to give meaning to it and extract lessons for climate adaptation policy

B: GIS analysis proximity buffers

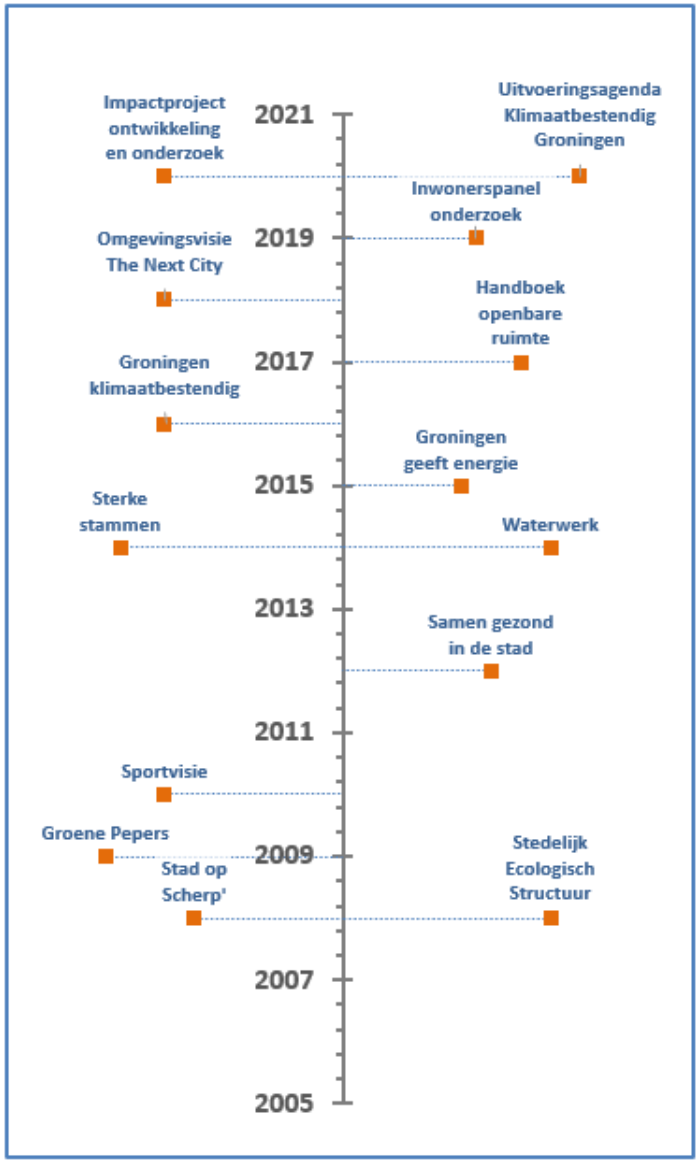


The datasets used in the GIS analysis were provided by Geodienst, the spatial expertise center of the RUG. Originally the datasets are from PDOK, the 'Publieke Dienstverlening Op de Kaart' which is a platform were open datasets from the Dutch governments are published. The streets in which activities of the initiatives took place were searched beforehand. For each initiative, a shapefile was created with these streets and a buffer of 100m was made around those streets. This resulted in 4 different shapefiles that consisted of the streets where activities took place and the 100m buffer. Accordingly the addresses in Groningen that had a residential purpose were selected. For each initiative, addresses of residential purpose were selected that fell within the 100m buffer. This resulted in the selection of addresses within a 100m buffer for each initiative.

First it was chosen to randomly select 2% of the total addresses, however the size of the buffers according to where activities of each citizen initiative took places wasn't similar. For example, there were fewer locations of activities from Duurzaam Helpman then there were locations of activities from Noorderplantsoen Groenste Buurt. As a result, the buffer of locations where activities of NGB took place was larger than the buffer of DH. That is why it was decided to randomly select 120 addresses within the buffers of each initiative, in order to arrive at an equal amount of addresses for each initiative. The 120 random selected addresses were exported to an EXCEL file and used to for the distribution of the contact letter invitation. This contact letter included a QR-code that gave citizens access to the online survey

C: Documents used for document research

Year	Policy document	Focus
2008	Stad op Scherp'	Focus on compact city policy (urban green under pressure), climate change as 'one of many tasks'.
2008 – present day	Stedelijk Ecologisch Structuur	Attention for urban green
2009	Groene Pepers	Green as, among others, solution for climate change effects
2010	Sportvisie	Green design for public space
2012	Samen gezond in de stad	Urban green as co-benefit
2014	Sterke stammen	Tree policy
2014	Waterwerk	Attention to respond to climate change
2015	Groningen geeft energie	Attention for climate mitigation
2016	Groningen klimaatbestendig	
2017	Handboek openbare ruimte	No attention for climate adaptation. Upon completion there are chances to promote climate adaptive measures
2018	Omgevingsvisie The Next City	Climate adaptation as a theme in all tasks
2019	Inwonerspanel onderzoek	A residents' panel study into climate change and climate adaptive measures in the municipality of Groningen.
2020	Uitvoeringsagenda Klimaatbestendig Groningen	
2020	Impactproject ontwikkeling en onderzoek	An inventory of indicaotrs for climate change, adaptation and their side-effects. The research looked at residents' willingness to take action and their direct living environment.



D: Interview guide document research

1. Welke ambities zijn er voor klimaatadaptatie
    - Wat is de rol van stedelijk groen hierin
    - Wat is de rol van bewoners hierin
2. Welke beleidsdiscourse heeft de gemeente op het gebied van
    - Groenbeheer
    - Klimaatadaptatie
3. Welke strategieën zijn er om de ambities te bereiken?
    - Hoe brengen ze groenbeheer, klimaat en klimaatadaptatie onder de aandacht?
    - Hoe vergroten ze kennis van groenbeheer, klimaat en klimaatadaptatie?
4. Hoe is de awareness development process?
    - Zien ze klimaatverandering in?
    - Willen ze een verandering maken?
    - Wat doen ze om een verandering te maken?
    - Met wie werken ze samen?
5. Welke toekomstperspectief kan er gevonden worden
6. Zijn er al aanbevelingen/lessen voor klimaatadaptatie beleid in de toekomst?

E: Qualitative research

E.1: Operationalization

Concepts	Indicators	Data elicitor
Citizen initiatives	Actors	Members or volunteer
	Objectives	Main objectives
	Contextual factors (social & cultural capital)	Description of the neighbourhood
	Development	
	Communication	Government, private parties and society.
Citizen initiatives' resources	Financial Resources	Financial resources to pursue goals • to facilitate individual stewardship actions
	Human resources	• main people who set goals • main people involved in practices • which resources for practices • which actors in practices
Awareness development	Step 1	'do we perceive the challenge of climate change?'
	Step 2	'do we want to make a change?'
	Step 3	'what can we do to improve the situation?'
	Step 4	'who else do we (want to) collaborate with?' Communication with city stakeholders Changes or collaborations for long term climate adaptation
Awareness mechanisms	Experience	'do we perceive the challenge of climate change?'
	Attention	Increase attention of citizens
	Knowledge	Increase knowledge of citizens
Stewardship	Capacity	• Local community assets • Activities and actions • Which resources (local community assets) used?
		Broader factors: collaborations (step 4 awareness development)
	Motivations	Improve motivations of citizens
Climate adaptation	Discourse	Urban green as a solution for climate adaptation Citizens as contributor to climate adaptation and urban green space management
	Impact pathways	Increased awareness Increased stewardship actions

E.2: Contact letter for interviews

Citizen initiatives

Geachte meneer/mevrouw,

Op de website van […] las ik dat u met uw bewonersorganisatie een initiatief bent begonnen om te zorgen voor meer groen in de straten en wijken van […]. Met veel enthousiasme ben ik gaan lezen over de activiteiten die […] organiseert om samen te zorgen voor een duurzame en groene wijk. De manier waarop bewoners bijdragen aan groen en een beter klimaat in een wijk is iets wat mij heel erg interesseert. Vandaar dat ik deze mail naar u en […] stuur.

Voor mijn masteropleiding Planologie aan de Rijksuniversiteit Groningen ben ik bezig met mijn afstudeerscriptie wat aansluit bij uw bewoners initiatief. Het doel van mijn onderzoek is om inzicht te krijgen hoe groene burgerinitiatieven de betrokkenheid van de burger in groenbeheer voor klimaatadaptatie kan bevorderen. Ik ben vooral geïnteresseerd in hoe groene burgerinitiatieven meer bewustzijn onder de mensen brengt over de huidige klimaatvraagstukken zoals hittegolven en wateroverlast in de stad. Daarnaast vind ik het interessant op welke manier groene burgerinitiatieven de lokale bevolking aanzet tot actie in groenbeheer om zo bij te dragen aan de klimaatadaptatie.

Uw initiatief en de activiteiten van […] sluit perfect aan op mijn onderzoek! Het lijkt mij daarom ook erg interessant om meer te weten te komen over […] middels een interview met één van de leden van […]. Dit zou mij enorm kunnen helpen met mijn onderzoek. Gezien de huidige omstandigheden rond COVID-19, zal het interview uiteraard online plaatsvinden (via videobellen of de telefoon). Er zal hiervoor dus geen fysieke afspraak voor worden gemaakt.

Meedoen aan mijn onderzoek heeft ook voordelen voor [..]! Middels mijn onderzoek kan ik erachter komen of burgerinitiatieven van grotere betekenis kunnen zijn binnen het huidige klimaatbeleid. Dit zou op z'n beurt kansen kunnen bieden voor burgerinitiatieven zoals […].

Graag hoor ik of u, of een ander actief persoon binnen […] geïnteresseerd is om mee te werken aan mijn onderzoek in de vorm van een interview. Mochten er verder nog vragen of onduidelijkheden zijn, dan hoor ik graag van u.

U contact met mij opnemen door te reageren op deze mail, of door te bellen naar mijn telefoon nummer (06-30833584).

Alvast bedankt voor uw moeite!

National foundation Operatie Steenbreek

Beste meneer/mevrouw,

Wij zijn Mirjam en Willemijn, twee masterstudenten planologie aan de Rijksuniversiteit Groningen. Via o.a. websites van de gemeente Groningen zijn wij de naam van Operatie Steenbreek vaak tegengekomen en is onze interesse in de stichting gegroeid. De manier waarop Operatie Steenbreek samen met bewoners, organisaties en bedrijven bijdraagt aan groenbeheer en een beter klimaat is iets wat ons erg interesseert.

Voor onze afstudeerscriptie doen wij onderzoek naar partijen die zich inzetten voor meer groen in de stad Groningen. Binnen dit thema hebben wij allebei onze eigen focus: Mirjam doet onderzoek naar de samenwerking met en ondersteuning van groene bewonersinitiatieven. Willemijn onderzoekt hoe groene bewonersinitiatieven de betrokkenheid van de burger in groenbeheer klimaatadaptatie kan bevorderen.

De activiteiten en doelen van Stichting Steenbreek passen goed binnen het kader van ons onderzoek. Het lijkt ons dan ook erg interessant om meer te weten te komen over de stichting door middel van een interview met één van de medewerkers van Operatie Steenbreek Groningen. Het interview zal ongeveer één uur duren en bij voorkeur plaatsvinden in of rond november. Dit zou ons enorm kunnen helpen met ons onderzoek. Gezien de huidige omstandigheden rond COVID-19 zal het interview online plaatsvinden (via (video)bellen). Er zal dus geen fysieke afspraak gemaakt te hoeven worden.

Deelname aan ons onderzoek heeft ook voordelen voor Operatie Steenbreek. Zo kunnen wij de uitkomsten van ons onderzoek delen. Hierdoor krijgt u meer inzicht in de aanwezige partijen binnen het netwerk van stedelijk groen in Groningen en hoe de rol en betrokkenheid van bewoners hierin vergroot kan worden.

Wij horen heel graag of u, of een andere medewerker van Operatie Steenbreek Groningen, geïnteresseerd is om mee te helpen aan het onderzoek in de vorm van een interview. Mochten er verder nog vragen of onduidelijkheden zijn, dan kunt u ons altijd bereiken.

Alvast bedankt voor uw moeite en hopelijk tot snel!

Met vriendelijke groet,

Mirjam Kats (06 21983889)

Willemijn Schreuder (06 30833584)

E.3: Google Forms & interview guide citizen initiatives

Beste meneer/mevrouw,

Hartelijk bedankt dat u wilt deelnamen aan mijn onderzoek middels een interview. Het invullen van de vragenlijst zal 1 à 2 minuten duren. Het doel van deze korte vragenlijst is om alvast wat meer te weten te komen over […]. Daarnaast geeft het ons ook meer tijd tijdens het interview om de kernzaken binnen […] en mijn onderzoek te bespreken.

De vragenlijst sluit af met enkele praktische zaken voor het aanstaande gesprek zoals de voorwaarden, eventuele audio-opname en anonimiteit.

Aan het einde van de vragenlijst kunt u aangeven of u akkoord gaat met de voorwaarden van het interview, een eventuele audio-opname en of u wilt dat uw gegevens geanonimiseerd worden.

Alvast bedankt voor uw moeite!

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1. Wat is het startjaar van […]?
2. Hoeveel leden of vrijwilligers zijn aangesloten bij […]? (Een schatting volstaat)
3. Uit hoeveel leden bestaat het bestuur/de organisatie?
4. Hoe vaak wordt er overlegd of zijn er vergaderingen binnen […]? (per maand of week)
5. Hoe lang bent u al actief binnen […]?
6. Wat is uw rol/functie binnen […]? (Taken/verantwoordelijkheden)
7. Wat zijn de voornaamste doelen van […]?
8. Welke vormen van financiering zijn beschikbaar voor […]?
9. Hoe zou u de inwoners en de sfeer in de buurt/wijk waar […] actief is omschrijven?

Overeenkomst om deel te nemen in het onderzoeksproject van Willemijn Schreuder

1. In het informatieblad kunt u de vertrouwelijkheid en uw deelnemersrecht vinden van dit onderzoek
2. Ik heb het informatieblad van dit huidige onderzoeksproject gelezen en begrepen
3. Ik heb de gelegenheid gehad om deze studie te bespreken. Ik ben tevreden met de antwoorden die ik heb gekregen.
4. Ik begrijp dat deelname aan deze studie vrijwillig is en dat ik het recht heb om me tot drie weken na het interview terug te trekken uit de studie en te weigeren om individuele vragen in de studie te beantwoorden.
5. Ik begrijp dat mijn deelname aan deze studie vertrouwelijk is. Zonder mijn voorafgaande toestemming, geen materiaal, die mij kon identificeren zal worden gebruikt in alle rapporten gegenereerd uit deze studie.
6. Ik begrijp dat deze gegevens ook kunnen worden gebruikt in artikelen, boek hoofdstukken, gepubliceerd en ongepubliceerd werk en presentaties.
7. Ik begrijp dat alle informatie die ik geef vertrouwelijk zal worden bewaard, hetzij in een vergrendelde faciliteit of als een wachtwoord beveiligd versleuteld bestand op een wachtwoord-beveiligde computer.

Ik ga ermee akkoord dat er audio-opnames worden genomen van het interview. Ja / Nee

Ik wil persoonlijk anoniem blijven voor dit onderzoek Ja / Nee

Ik wil dat […] anoniem blijft onderzoek Ja / Nee

"Ik ga akkoord om deel te nemen aan dit individuele interview en dit toestemmingsformulier en het informatieblad van het onderzoeksproject te bevestigen." (Naam en datum invullen)

Zie appendix F voor het informatieblad.

Interview guide

Introductie

Beste meneer/mevrouw,

Hartelijk bedankt dat u wilt deelnemen aan mijn onderzoek middels een interview. Het doel van dit interview is om inzicht te krijgen hoe groene burgerinitiatieven de betrokkenheid van de burger in groenbeheer voor klimaatadaptatie kan bevorderen. Dit onderzoek doe ik voor mijn masteropleiding planologie aan de Rijksuniversiteit Groningen. Ik ben vooral geïnteresseerd in hoe groene burgerinitiatieven meer bewustzijn onder de mensen brengt over de huidige klimaatvraagstukken zoals hittegolven en wateroverlast in de stad en hoe ze mensen uiteindelijk aanzetten tot actie.

Ik wil benadrukken dat ons gesprek volledig vertrouwelijk is en de informatie kan niet naar u of het burgerinitiatief worden getraceerd, het is volledig anoniem. Met uw toestemming zou ik graag het interview opnemen. De audio-opnames zullen alleen worden beluisterd door mijzelf en eventueel mijn supervisor van dit onderzoek. Deze audio-opnames worden veilig bewaard en na 5 jaar verwijderd.

Graag wil ik u bij voorbaat bedanken voor je deelname aan dit onderzoek. We hebben ongeveer een uur voor dit interview, gaat dit lukken voor u?

Voordat we beginnen, heeft u nog ergens vragen over?

Achtergrond informatie

Interview nummer:

Introductievragen:

1. Hoe is […] ontwikkeld over de afgelopen jaren/vanaf het begin?
    a. (aandacht, kennis, draagkracht, support)

2. Doelen naar aanleiding van vragenlijst.
    a. Waarom zijn die doelen gesteld?
    b. Welke partijen zijn hierbij betrokken?

3. Op welke manier probeert […] inwoners van […] te bereiken en te informeren over de activiteiten, acties en samenwerkingen?

Hoofdvragen

4. Welke rol wil uw initiatief spelen in het vergroenen van tuinen, straten en publieke ruimtes in de wijk?
    a. Waarom ..?
    b. Welke doelen/ambities hiervoor?
    c. Welke activiteiten hiervoor?

5. Welke rol wil uw initiatief spelen om de wijk klimaat adaptief te maken?
    a. Waarom .. ?
    b. Welke doelen/ambities hiervoor?
    c. Welke activiteiten hiervoor?

6. Hoe ziet uw initiatief de rol van inwoners voor het groenbeheer en het klimaat?

Vragen milieubewustzijn

7. Heeft u aanwijzingen waaruit blijkt dat inwoners van […] de effecten van klimaatverandering inzien?

8. Heeft u aanwijzingen waaruit blijkt dat inwoners voldoende gemotiveerd zijn om iets te doen voor het klimaat?

9. Op welke manier probeert uw initiatief inwoners van […] te motiveren om bij te dragen aan groenbeheer en/of klimaatadaptatie?
    a. Welke acties
    b. Welke middelen
    c. Welke actoren/samenwerkingen

10. Richt uw initiatief zich op het vergroten van de aandacht en interesse van mensen voor stedelijk groen en klimaatverandering?
    a. Welke acties
    b. Welke middelen
    c. Welke actoren/samenwerkingen

11. Heeft u aanwijzingen waaruit blijkt dat inwoners weten wat ze kunnen doen om de effecten van klimaatverandering te verminderen?

12. Richt uw initiatief zich op het vergroten van mensen hun kennis over stedelijk groen als oplossing voor klimaatadaptatie?
    a. Welke acties
    b. Welke middelen
    c. Welke actoren/samenwerkingen

Vragen impactpaden van betrokkenheid bewoners

13. Heeft u aanwijzingen waaruit blijkt dat bewoners in […] meer bewust zijn geworden over klimaatadaptatie en/of groenbeheer?

14. Heeft u aanwijzingen waaruit blijkt dat bewoners in […] actiever zijn geworden om bij te dragen aan klimaatadaptatie en/of groenbeheer?

Sluitvragen

15. Wat is er volgens uw initiatief nodig om positieve bijdragen aan het klimaat en klimaatadaptatie te waarborgen op lange termijn?

16. Bedankt voor alle waardevolle informatie, is er nog iets wat u toe wilt voegen voordat we eindigen? (Bijvoorbeeld documenten die ik zou moeten lezen of personen die ik zou moeten spreken)

E.4: Google Forms & interview guide Operatie Steenbreek

Beste ____,

Hartelijk bedankt dat u wilt deelnamen aan mijn onderzoek middels een interview. Het doel van deze korte vragenlijst is om alvast wat meer te weten te komen over Operatie Steenbreek. Daarnaast geeft het ons ook meer tijd tijdens het interview om de kernzaken binnen Operatie Steenbreek en mijn onderzoek te bespreken.

Aan het einde van de vragenlijst kunt u aangeven of u akkoord gaat met de voorwaarden van het interview, een eventuele audio-opname en of u wilt dat uw gegevens geanonimiseerd worden.

Alvast bedankt voor uw moeite!

---

1. Welke organisaties zijn, naast de Gemeente Groningen en NMF Groningen, betrokken bij Operatie Steenbreek Groningen?
2. Hoe vaak wordt er overlegd of zijn er vergaderingen binnen Operatie Steenbreek Groningen? (per maand of week)
3. Hoeveel leden of vrijwilligers zijn aangesloten bij Operatie Steenbreek? (Een schatting volstaat)
4. Hoelang bent u al actief binnen Operatie Steenbreek Groningen?
5. Wat is uw rol/functie binnen Operatie Steenbreek Groningen? (taken en verantwoordelijkheden)
6. Wat zijn de voornaamste doelen van Operatie Steenbreek Groningen?
7. Welke vormen van financiering zijn beschikbaar voor Operatie Steenbreek Groningen?

Overeenkomst om deel te nemen in het onderzoeksproject van Willemijn Schreuder

1. In het informatieblad kunt u de vertrouwelijkheid en uw deelnemersrecht vinden van dit onderzoek
2. Ik heb het informatieblad van dit huidige onderzoeksproject gelezen en begrepen
3. Ik heb de gelegenheid gehad om deze studie te bespreken. Ik ben tevreden met de antwoorden die ik heb gekregen.
4. Ik begrijp dat deelname aan deze studie vrijwillig is en dat ik het recht heb om me tot drie weken na het interview terug te trekken uit de studie en te weigeren om individuele vragen in de studie te beantwoorden.
5. Ik begrijp dat mijn deelname aan deze studie vertrouwelijk is. Zonder mijn voorafgaande toestemming, geen materiaal, die mij kon identificeren zal worden gebruikt in alle rapporten gegenereerd uit deze studie.
6. Ik begrijp dat deze gegevens ook kunnen worden gebruikt in artikelen, boek hoofdstukken, gepubliceerd en ongepubliceerd werk en presentaties.
7. Ik begrijp dat alle informatie die ik geef vertrouwelijk zal worden bewaard, hetzij in een vergrendelde faciliteit of als een wachtwoord beveiligd versleuteld bestand op een wachtwoord-beveiligde computer.

Ik ga ermee akkoord dat er audio-opnames worden genomen van het interview. Ja / Nee

Ik wil persoonlijk anoniem blijven voor dit onderzoek Ja / Nee

Ik wil dat […] anoniem blijft onderzoek Ja / Nee

"Ik ga akkoord om deel te nemen aan dit individuele interview en dit toestemmingsformulier en het informatieblad van het onderzoeksproject te bevestigen." (Naam en datum invullen)

Zie appendix F voor het informatieblad.

Interview guide

Introductie

Bedankt dat u wilt meehelpen aan het onderzoek door mee te doen aan dit interview! Het doel van dit interview is om inzicht te krijgen hoe Operatie Steenbreek omgaat met bewonersinitiatieven voor stedelijk groen en hoe dit de betrokkenheid van de bewoners bij klimaatadaptatie kan bevorderen.

Dit onderzoek doen wij voor onze masterscriptie van de studie planologie aan de Rijksuniversiteit Groningen. Mirjam is vooral geïnteresseerd hoe verschillende partijen in Groningen groene bewonersintiatieven ondersteunen. Willemijn is vooral geïnteresseerd in hoe Operatie Steenbreek inwoners van Groningen bewust maakt over klimaatadaptatie en mensen aanzet tot actie. Wij hebben dus beide een eigen onderzoeksfocus met onze eigen vragen aan u. In totaal zal het interview ongeveer een uur duren. Heeft u behoefte aan een pauze tussen de twee onderdelen door?

Alles wat u in dit interview benoemt zal alleen gebruikt worden voor het onderzoek en zal niet gedeeld worden met mensen buiten het onderzoeksteam. U heeft al het online toestemmingsformulier ingevuld, waarin u heeft aangegeven dat u en Operatie Steenbreek niet anoniem willen blijven. Ook gaat u ermee akkoord dat er een audio-opname van het interview wordt gemaakt. Het interview zal dus ongeveer een uur duren, klopt het dat u de tijd heeft tot 11 uur? Heeft u nog vragen voordat we beginnen aan het interview? Dan beginnen we eerst met een aantal algemene openingsvragen.

Algemene openingsvragen

1. Naar aanleiding van de vragenlijst heeft u aangegeven dat het voornaamste doel van Operatie Steenbreek Groningen “Op een laagdrempelige manier bewoners betrekken bij klimaat en vergroenen” is.
    a. Doorvragen: Op welke manieren zetten jullie je voor dit doel in?; Waarom is dit doel gesteld? Welke acties?
2. Op welke manier is Operatie Steenbreek Groningen verder betrokken bij stedelijk groen in de stad Groningen?
    a. Doorvragen: Ontwikkeling/realisering van groen?; Beheer van groen?; Overig?
3. U gaf in de online vragenlijst aan dat er een aantal partijen betrokken zijn bij Operatie Steenbreek: Gemeente Groningen, Natuur en Milieufederatie Groningen, De Korenbloem, Carla Veldhuis, De Wilde, Donkergroen en diverse initiatiefnemers. Bedoelt u met diverse initiatiefnemers de bewoners die zich inzetten voor groen?
    a. Doorvragen: Relatie met deze partijen (factoren SNA);

Vragen Mirjam (ondersteuning bewonersinitiatieven)

4. Met welk(e) bewonersinitiatief/-initiatieven staat u in contact?
    a. Doorvragen: Schatting van aantal bewonersinitiatieven; Met welke het meest?; Hoe vaak spreekt u deze initiatieven?; Op welke manier communiceren jullie?; Hoe worden deze gesprekken ervaren?
5. Hoe ziet Operatie Steenbreek de rol (activiteiten en verantwoordelijkheden) van bewoners (of bewonersinitiatieven) in stedelijk groen in Groningen?
    a. Doorvragen: en de rol van bewoners in groenbeheer voor klimaatadaptatie?

Vragen over de stimulerende en faciliterende rol voor bewonersinitiatieven (behorende bij de thesis van Mirjam Kats, niet van belang voor de Thesis van Willemijn Schreuder dus bijbehorende vragen zijn niet inbegrepen).

** Eventueel korte pauze*

Vragen Willemijn: klimaatadaptatie en bewoners

1. Heeft u aanwijzingen waaruit blijkt dat deelnemers van Operatie Steenbreek de effecten van klimaatverandering inzien?
    a. Hoe merkt u dit?
2. Heeft u aanwijzingen waaruit blijkt dat deelnemers van Operatie Steenbreek voldoende gemotiveerd zijn om de effecten van klimaatverandering te verminderen?
    a. Inwoners?
3. Hoe vergroot Operatie Steenbreek mensen hun aandacht en interesse voor stedelijk groen en klimaatadaptatie?
    a. Welke acties, middelen en samenwerkingen
4. Heeft u aanwijzingen waaruit blijkt dat deelnemers van Operatie Steenbreek weten wat ze kunnen doen om de effecten van klimaatverandering te verminderen?
    a. Inwoners?
5. Richt Operatie Steenbreek zich op het vergroten van mensen hun kennis over stedelijk groen en dat het bij kan dragen aan klimaatadaptatie?
    a. Welke acties, middelen en samenwerkingen

6. (Heeft u aanwijzingen waaruit blijkt dat inwoners van Groningen meer bewust zijn geworden over het belang van groen voor klimaatadaptatie?)
7. (Heeft u aanwijzingen waaruit blijkt dat inwoners van Groningen actiever zijn geworden in groenbeheer voor klimaatadaptatie?)

8. Wat is er volgens u of Operatie Steenbreek nodig om de positieve bijdragen aan klimaatadaptatie te waarborgen op lange termijn?

9. Bedankt voor alle waardevolle informatie, is er nog iets wat u toe wilt voegen aan dit interview voordat we eindigen? (Bijvoorbeeld documenten die we zouden moeten lezen of personenen die we zouden moeten spreken)

E.5: Qualitative analysis: code tree

Thematic codes (deductive)		**Open codes (inductive)**
Descriptive group codes	**Interpretative codes**	**Codes**
Climate adaptation	Discourse	Framen
		Role citizens
Urban green space	Discourse	
	Practices	
Citizen initiative		Draagvlak (support base/adherence)
	Actors	Aims
	Commitment	Communication to citizens
	Communication	Communication between citizens
		Communication strategy
	Resources	Human resources
		Local scale
		Strategy
awareness development	Awareness level	
	Experience	
	Attention	
	Knowledge	
	Awareness development	Synergies
Stewardship	Capacity	
	Actors/networks	
	Motivations	Incentives
		Little perspective for action
Impact	Public support	
	Benefits	Stewardship action
	Co-benefits	
	Synergies	
	Trust	
	Public acceptability	
	Social learning	Learn by talking/doing

E.6: Information sheet

Information sheet – Research Ethics Committee (REC)

Thesis van: Willemijn Schreuder

Hartelijk bedankt dat u de tijd heft genomen om te overwegen deel te nemen aan deze masterthesis.

Vertrouwelijkheid en deelnemersrechten

- De interviews worden opgenomen en tijdens het interview worden notities gemaakt.
- U hebt het recht om te vragen om de opname uit te schakelen wanneer u dit beslist en u kunt het interview op elk moment beëindigen.
- Desgewenst ontvangt u een kopie van de interviewnotities en hebt u de mogelijkheid om correcties aan te brengen of te vragen om de verwijdering van alle materialen.
- De informatie die u verstrekt, wordt vertrouwelijk bewaard in een afgesloten faciliteit of in een met een wachtwoord beveiligd bestand op mijn computer tot vijf jaar na het voltooien van mijn onderzoek.
- Het belangrijkste gebruik van de informatie die u verstrekt zal mij helpen bij mijn masterthesis.
- Tenzij u uitdrukkelijke toestemming hebt gegeven om dit te doen, worden persoonlijke namen of andere informatie die dient om u als informant te identificeren, niet opgenomen in dit onderzoek.

Als deelnemer hebt u het recht om:

- weigeren deel te nemen;
- weigeren om een bepaalde vraag te beantwoorden;
- vragen om de audiorecorder op elk moment uit te schakelen;
- het interview op elk gewenst moment te beëindigen
- zich terugtrekken uit de studie tot drie weken na deelname aan het onderzoek;
- op elk moment tijdens de deelname vragen te stellen over het onderzoek; en
- te vragen om het wissen van alle materialen die u niet wenst te gebruiken in rapporten van deze studie.

Ik bedank nogmaals dat u de tijd heeft genomen om deel te nemen aan mijn masterthesis. Ik sta tot uw beschikking voor alle vragen die u heeft. U kunt ook contact opnemen met mijn supervisor op het onderstaande adres.

Hoogachtend,
Willemijn Schreuder

Contactgegevens onderzoeker:	Supervisor:
Willemijn Schreuder 06-30833584 w.e.schreuder.1@student.rug.nl	dr. W.S. (Ward) Rauws University of Groninen

Faculteit Ruimtelijke Wetenschappen, Rijksuniversiteit Groningen, Landleven 1, 9747 AD Groningen, Nederland.

F: Quantitative research

F.1: Operationalization

Concepts	Indicators	Data elicitors
Demographics	Age	What is your age?
	Gender	What is your gender?
	Education	Have you completed a degree in higher education?
	Working situation	Which of the following categories best describes your working situation?
	Location	In what neighbourhood do you live?
Awareness	Awareness level – step 1	Likert scale on sentences: *'I believe climate change exists'* *'Climate change will have serious consequences in cities'*
	Experience	Have you experienced any of the following climate change related events in your direct living environment? Do you agree with the following sentence?: "*When I suffered a CC event, I gained experience and became (more) aware of the problems of CC*" Do you agree with the following sentence?: "*When I suffered a CC event, I realized the need to get ready for future impacts*"
	Awareness level – step 2	Do you want to take measures that are necessary to combat climate change?
	Awareness level – step 3	Do you know which measures you can take that are necessary because of climate change? Do you take measures that are necessary because of climate change?
	Awareness level – step 4	Do you improve the situation in collaboration with others?
Climate adaptation	attention	Do you have the need to be informed on the effects of climate change and climate adaptive measure rain?
Citizen initiative	attention	Likert scale on sentences *'I would like to know more about such an initiative'* *'I am interested to participate in such an initiative'* *'I would participate if such an initiative would start in my neighborhood'*
	Familiar with local initiative	Are you familiar with the local initiative […] Are you familiar with activities/practices of […]
	Scale	Have there been activities of Operatie Steenbreek in your street?

Concepts	Indicators	Data elicitors
Awareness	Attention	Do you agree with the following sentence?: "*Through this initiative, I have gained interest and appreciation for the green environment*"
	Knowledge	Do you agree with the following sentence?: "*Through this initiative, I have developed knowledge and skills that concern urban green space for climate adaptation*"
	Awareness	Do you agree with the following sentence ?: "*The initiative has made me more aware of climate change and the challenges posed by it*" If yes: How do you notice this?
Stewardship actions	Actors & capacity (broader institutional factors)	Did the initiative bring you into contact with other stakeholders concerned with urban green management for climate adaptation?
	Motivations	Likert scale with sentences: *'Because of the initiative, I have been more motivated to contribute to urban green space'* *'Because of the initiative I have been more motivated to contribute to climate adaptation'*
	Capacity – local community assets	Have you actually been active to manage urban green space for climate adaptation? - If yes: what are the reasons - If no: would you be motivated if
Outcomes	Increase of awareness	(see awareness)
	Active citizenship	(see capacity)
Outcomes	Impacts	What do you recognize as a result of your activities?

F.2: Contact letter for surveys

Beste meneer/mevrouw,

Mijn naam is Willemijn en ik ben een master student van de opleiding Planologie aan de Rijksuniversiteit Groningen. Op dit moment zit ik in de afrondende fase van mijn studie en ben ik bezig met mijn afstudeerscriptie.

Voor mijn afstudeerscriptie doe ik onderzoek naar groene bewonersinitiatieven in Groningen. Met veel enthousiasme ben ik begonnen aan mijn onderzoek en daar kan ik uw hulp goed bij gebruiken!

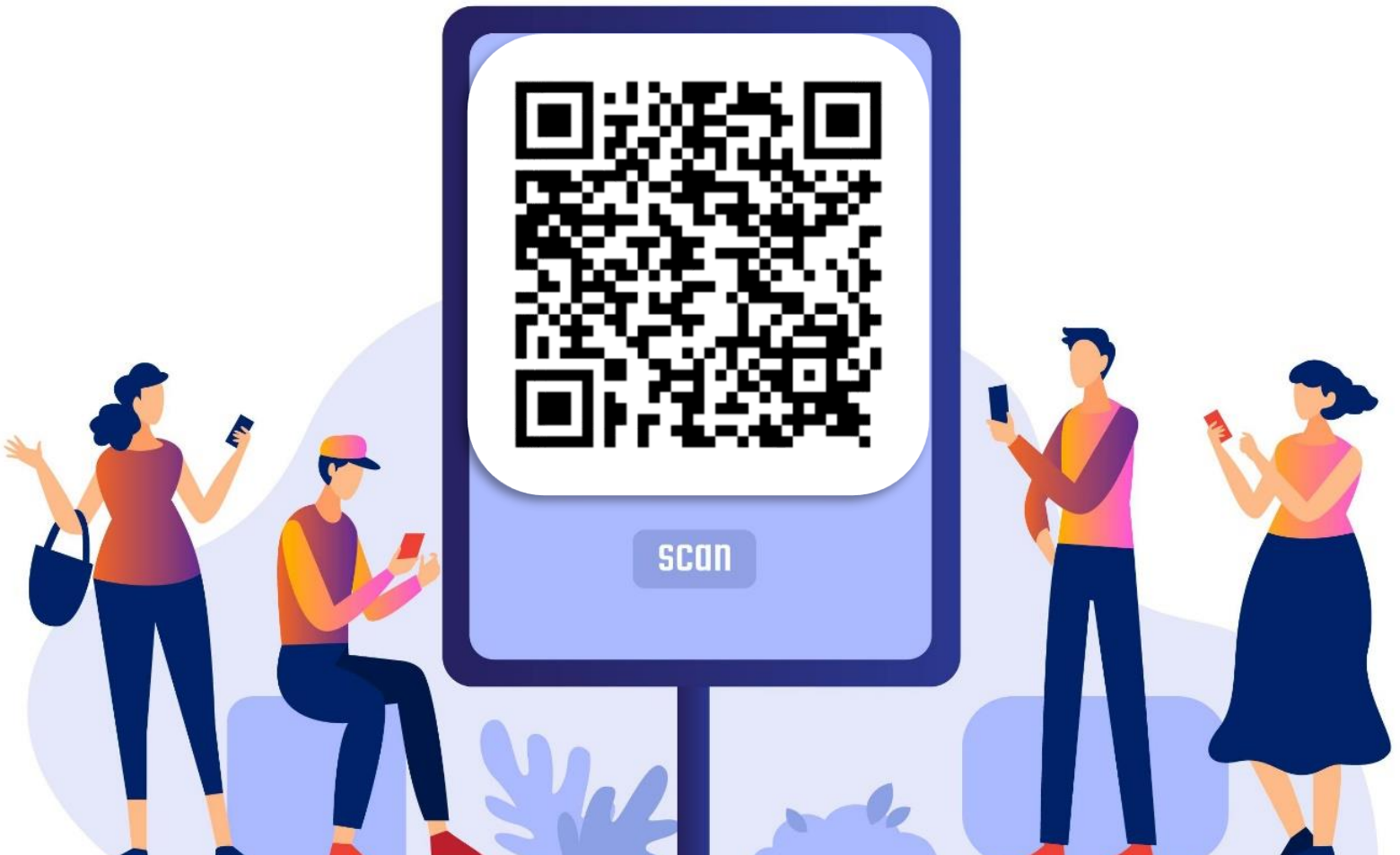
Ik zou het zeer op prijs stellen als u voor mij een **enquête** zou willen invullen over dit onderwerp. De enquête vraagt maar **7 minuten** van uw tijd.

Als u onderstaande **QR-code** scant met uw mobiele telefoon komt u bij de online enquête

1. Open de camera-app van uw telefoon

2. Selecteer de camera aan de achterzijde. Houd uw apparaat zo vast dat de QR-code verschijnt op uw telefoonscherm

3. Tik op de melding die tevoorschijn komt om de enquête te openen



F.3: Online survey

Introductie

Beste mevrouw/meneer,

Allereerst wil ik u hartelijk danken voor uw deelname aan dit onderzoek. Mijn naam is Willemijn en ik ben masterstudent in de richting planologie aan de Rijksuniversiteit Groningen. Voor mijn afstuderen onderzoek ik hoe groene burgerinitiatieven de betrokkenheid van burgers bij groenbeheer voor klimaatadaptatie bevorderen

Het doel van mijn onderzoek is om inzicht te krijgen hoe groene burgerinitiatieven het milieubewustzijn van mensen beïnvloed en hoe ze mensen aanzetten tot actie voor groen en klimaatadaptatie in de stad. Op deze manier kan duidelijk worden hoe en op welke manier burgerinitiatieven en mensen zoals u, bij kunnen dragen aan klimaatadaptatie in de stad.

Het onderzoek zal ongeveer 10 minuten van uw tijd in beslag nemen. Er zal betrouwbaar met uw gegevens worden omgegaan en de resultaten worden geheel anoniem verwerkt.

Mocht u nog vragen of opmerkingen hebben over het onderzoek, neem dan contact op met mij via w.e.schreuder.1@student.rug.nl

Nogmaals hartelijk dank voor uw deelname aan dit onderzoek.

Met vriendelijke groet,

Willemijn Schreuder

Demografische vragen (openingsvragen)

1. Wat is uw leeftijd?

_____

2. Wat is uw geslacht?
   - ☐ Man
   - ☐ Vrouw
   - ☐ Anders, ___
   - ☐ Zeg ik liever niet

3. Heeft u een opleiding aan het hoger onderwijs (hogeschool of Universiteit) afgerond?
   - ☐ Ja
   - ☐ Nee

4. Welke van de volgende categorie omschrijft het beste uw huidige werksituatie?
   - ☐ Werkzaam (full-time, part-time of zzp)
   - ☐ Geen baan, niet werkzoekend
   - ☐ Geen baan, werkzoekend
   - ☐ Gepensioneerd
   - ☐ Arbeidsongeschikt
   - ☐ Studerend
   - ☐ Anders, namelijk _____

5. In welke buurt in de stad Groningen woont u?
   - ☐ Oosterpoort
   - ☐ Selwerd
   - ☐ Noorderplantsoenbuurt
   - ☐ Anders, namelijk _____

Vragen bewustzijn – step 1 (geen invloed van initiatief)

De volgende vragen gaan over klimaatvraagstukken in stedelijke gebieden.

Let op! De focus ligt hierbij op klimaatadaptatie. Klimaatadaptatie is het treffen van maatregelen die nodig zijn vanwege de veranderingen in het klimaat.

Dit verschilt met klimaatmitigatie. Met mitigatie wordt met name de energietransitie bedoeld. Denk bijvoorbeeld aan de overstap van fossiele brandstoffen of energievoorzieningen naar duurzame varianten. Hierop focus dit onderzoek **NIET**.

De focus ligt dus op klimaatadaptatie.

---

6. In hoeverre bent u het eens met de volgende stellingen?

	Helemaal mee eens	Mee eens	Neutraal	Mee oneens	Helemaal mee oneens
"Ik geloof dat klimaat verandering bestaat"					
"Klimaatverandering zal serieuze negatieve gevolgen hebben in steden"					

7. Welke van de volgende effecten van klimaatverandering heeft u meegemaakt in uw direct leef- en/of woonomgeving?

- ☐ Frequentere/extremere hittegolven
- ☐ Periodes van droogte/droogte
- ☐ Extreme temperatuurverschillen
- ☐ Extreme neerslag (felle buien, meer hagel en onweer)
- ☐ Wateroverlast (overstromingen)
- ☐ Anders, namelijk ____
- ☐ Ik heb geen van zulke effecten meegemaakt

7.a.. In hoeverre bent u het eens met de volgende stellingen?

	Helemaal mee eens	Mee eens	Neutraal	Mee oneens	Helemaal mee oneens
"*Toen ik een effect van klimaatverandering meemaakte, werd ik me (meer) bewust van de problemen van klimaatverandering."*					
"*Toen ik een effect van klimaatverandering meemaakte, realiseerde ik me dat zulke effecten in de toekomst voorkomen of vermindert moeten worden"*					

Vragen bewustzijn – step 2, 3, 4

Vergroening in de stad kan een essentiële bijdrage leveren aan een klimaat adaptieve stad. Zo zorgt groen voor koeling tijdens warmere periode en wordt de riolering minder belast tijdens stevige buien door hun ‘spons’ effect. Daarnaast bieden ze ook een fijnere leefomgeving in de stad.

In de rest van de enquête zal er een focus liggen op groen als een oplossing of maatregel dat kan bijdragen aan klimaatadaptatie.

8.. Zou u zelf maatregelen willen nemen om effecten van klimaatverandering te voorkomen of te verminderen?

- Ja
- Nee
- Weet ik niet

9.. Weet u welke maatregelen u kunt treffen om effecten van klimaatverandering te voorkomen of te verminderen?

- Ja
- Nee

10.. Heeft u al eens maatregelen getroffen die effecten van klimaatverandering voorkomen of verminderen ?

- Ja
  - Tuin vergroenen
  - De straat vergroenen
  - De wijk vergroenen
  - Geveltuintje / gevelbeplanting aanleggen
  - Groen dak aanleggen
  - Anders, namelijk, ..
- Nee
- Niet mogelijk want ..

10.a. Heeft u al eens in samenwerking met anderen maatregelen getroffen die effecten van klimaatverandering voorkomen of verminderen ? (Bijvoorbeeld met de buren, bewonersinitiatieven, de gemeente, familie en/of vrienden)

- Ja, met:
- Nee

Vragen over het initiatief

11. Heeft u behoefte aan informatie over de effecten van klimaatverandering en klimaat adaptieve maatregen?

- Ja
- Nee
- Weet ik niet

12. De volgende stellingen gaan over buurt- en/of bewonersinitiatieven die actief zijn in vergroening van wijken/straten.

	Helemaal mee eens	Mee eens	Neutraal	Mee oneens	Helemaal mee oneens
Ik zou graag meer willen weten over zo'n initiatief					
Ik ben geïnteresseerd in deelname aan zo'n initiatief					
Ik ben van plan om deel te nemen als zo'n initiatief zou worden opgestart in mijn buurt					

De volgende vragen hebben betrekking op een burgerinitiatief dat actief is in de buurt waar u woont (zoals u dat heeft aangegeven in vraag 5). Dit burgerinitiatief heeft activiteiten en acties in uw buurt die te maken hebben met thema's zoals duurzaamheid en het klimaat

---

13. Bent u bekend met het initiatief [….] ?

- Ja
- Nee

Als geantwoord met 'ja…' → verder met enquête

Als geantwoord met 'nee' → einde enquête

14 .Bent u bekend met activiteiten/projecten van het initiatief […]?

- Ja, ik heb al deelgenomen: … (hoevaak ongeveer)
- Ja, ik ben van plan om deel te nemen
- Ja maar ik ben niet van plan om deel te nemen
- Nee maar ik zou wel willen deelnemen
- Nee en ik heb ook geen behoefte om te deelnemen

Vragen invloed burgerinitiatief op bewustwording

15. In hoeverre bent u het eens met de volgende stellingen?

	Helemaal mee eens	Mee eens	Neutraal	Mee oneens	Helemaal mee oneens
"Door het initiatief heb ik meer interesse en waardering gekregen voor de groene omgeving en/of klimaat adaptieve maatregelen"					
"Door het initiatief heb ik kennis en vaardigheden ontwikkeld die te maken hebben met groenbeheer voor klimaatadaptatie"					
"Door het initiatief ben ik meer bewust geworden over de effecten van klimaatverandering"					

→ Als geantwoord met '(helemaal) mee eens/ mee eens dat de persoon meer bewust is geworden →

15.a Waaraan merkt u dat? (Meerdere antwoorden mogelijk).

- ☐ Ik heb meer aandacht voor het gebruik van groen voor klimaatadaptatie
- ☐ Ik heb meer kennis over het gebruik van groen voor klimaatadaptatie
- ☐ Ik voel meer (publieke) steun voor stedelijk groen wat bijdraagt aan klimaatadaptatie
- ☐ Ik heb meer acceptatie voor het gebruik van groen in publieke/private ruimte voor klimaatadaptatie
- ☐ Ik ben lid geworden van het initiatief
- ☐ Ik heb deelgenomen aan activiteiten van het initiatief
- ☐ Anders, namelijk

Vragen invloed burgerinitiatief op actief burgerschap

16. Bent u door […] in contact gekomen met partijen die zich bezig houden met vergroening en/of het klimaat?

- ☐ Ja, namelijk ___
- ☐ Nee

17. In hoeverre bent u het eens met de volgende stellingen?

	Helemaal mee eens	Mee eens	Neutraal	Mee oneens	Helemaal mee oneens
"Door het initiatief ben ik meer gemotiveerd geraakt om bij te dragen aan vergroening"					
"Door het initiatief ben ik gemotiveerd geraakt om de effecten van klimaatverandering te voorkomen of te verminderen"					

18. Bent u door […] ook daadwerkelijk actief (geweest) om de effecten van klimaatverandering te voorkomen of te verminderen?

- Ja, ik heb zelf actie ondernomen
- Ja, ik heb meegedaan aan activiteiten van het initiatief
- Nee

→ Als geantwoord met 'ja' → 18.a en 18.b

→ Als geantwoord met 'nee' → 18.c

18.a Wat is de reden dat u door […] actief bent (geweest)?

- Het initiatief kon mij in contact brengen met mijn buren
- Het initiatief zorgde ervoor dat ik meer om mijn buurt/wijk gaf
- Het initiatief maakte voor mij financiële middelen beschikbaar om dit te doen
- Het initiatief heeft mij geleerd over klimaat adaptieve maatregelen
- Het initiatief heeft mij meer bewust gemaakt over het belang van groen voor klimaatadaptatie
- Het initiatief kon mij in contact brengen met derden (autoriteiten, private partijen en hun projecten)
- Anders, namelijk _____

18.b Wat herkent u naar aanleiding van uw activiteiten? (Meerdere antwoorden mogelijk)

- Ik heb meer aandacht voor het gebruik van groen voor klimaatadaptatie
- Ik heb meer kennis over het gebruik van groen voor klimaatadaptatie
- Ik voel meer (publieke) steun voor stedelijk groen wat bijdraagt aan klimaatadaptatie
- Ik heb meer acceptatie voor het gebruik van groen in publieke/private ruimte voor klimaatadaptatie
- Ik ben lid geworden van het burgerinitiatief
- Iets anders, namelijk ____

18.c Zou u gemotiveerd zijn om wel bij te dragen aan stedelijk groen (voor klimaatadaptatie) als: (Meerdere antwoorden mogelijk)

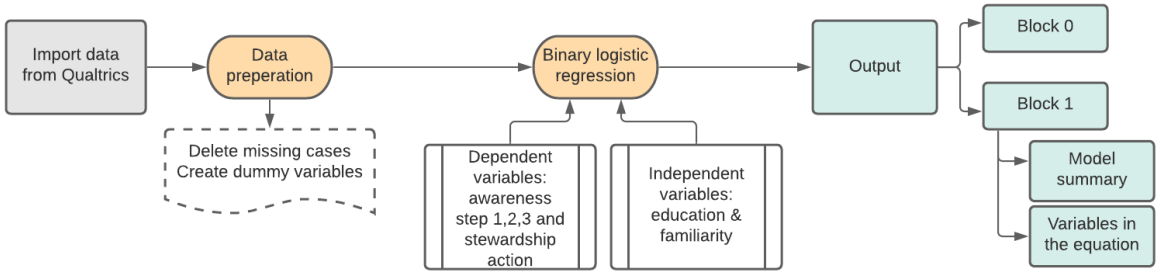
- Het initiatief u in contact kon brengen met uw buren?
- Het initiatief ervoor zorgt dat u meer om uw buurt/wijk geeft?
- Het initiatief financiële middelen voor u beschikbaar maakt om dit wel te doen?
- Het initiatief u heeft leert over klimaatadaptatie maatregelen?
- Het initiatief u meer bewust maakt over het belang van groen voor klimaatadaptatie?
- Het initiatief u in contact kan brengen met derden (autoriteiten, private partijen en hun projecten)?
- Anders, als het initiatief mij ___
- Het initiatief zou mij niet kunnen motiveren.

Hartelijk bedankt voor het invullen van deze enquête! Als u vragen heeft over de enquête, kunt u een e-mail sturen naar: w.e.schreuder.1@student.rug.nl of bellen naar 06-30833584.

Als u meer mensen kent (uw huisgenoten of buren) in de wijk waar u woont zou het erg op prijs gesteld worden als u deze enquête ook met hen zou willen delen. Dat kan via de QR-code die u heeft gebruikt voor dit onderzoek, of via de link van deze enquête: [link enquête].

Als het goed is hebben uw buren deze enquête ook ontvangen, maar aarzel niet om ze over dit onderzoek te vertellen (op veilige afstand natuurlijk)!

F.4: Quantitative data analysis.



Data preparation

First, data preparation was done by deleting suspicious or invalid cases. For example, cases were deleted when the respondents didn't finish the questionnaire or only answered the first few questions. This resulted in a total of 145 respondents/cases, of which 91 respondents were familiar with one of the initiatives.

Accordingly, the variables of the different awareness steps were recoded into dummy variables to run the binary logistic regressions:

Variable	Question	Variable labels	Recode variables
Awareness step 2	Do you want to take measures that are necessary to combat climate change?	1 = yes 2 = no	1 → 1 = yes 2 → 0 = no
Awareness step 3	Do you know which measures you can take that are necessary because of climate change?	1 = yes 2 = no	1 → 1 = yes 2 → 0 = no
Stewardship action	Do you take measures that are necessary because of climate change?	1 = yes 2 = no	1 → 1 = yes 2 → 0 = no
Awareness step 4	Do you improve the situation [take climate adaptive measures] in collaboration with others?	1 = yes 2 = no	1 → 1 = yes 2 → 0 = no

The output of the binary logistic regressions provided:

- Block 0: prediction of the outcome of the regression without any additional information. It is based on the distribution of the dependent variable – not relevant
- Block 2: the prediction model.
    - Model summary: for all binary logistic regression run, the prediction model fits significantly better to the data then a 0 model with no predictors (the model fit is significant)
- Variables in the equation: to see which variable is a predictor variable

SPSS output

Number of cases: 145.

Dependent variable : awareness step 2.

Independent variable: education and familiarity with the citizen initiative

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	8,399	2	,015
	Block	8,399	2	,015
	Model	8,399	2	,015

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B) Lower	Upper
Step 1[a]	Heeft u wel eens iets gehoord over het initiatief 'Oosterpoort Duurzaam'?	,115	,792	,021	1	,885	1,121	,238	5,294
	Heeft u een opleiding aan het hoger onderwijs (hogeschool of Universiteit) afgerond?	2,214	,773	8,205	1	,004	9,151	2,012	41,626
	Constant	1,264	,697	3,292	1	,070	3,541		

Education is a positive and significant (b=2.214, s.e.=0.773, p=0.004) predictor of the probability for awareness step 2. The OR indicates that for every unit increment on the predictor, the odds of being in step 2 increases by a factor of 9.151. (meaning that the odds are increasng)

Familiarity with the initiative is a non-significant predictor of awareness step 2

Number of cases: 145

Dependent variable : awareness step 3

Independent variable: education and familiarity with the citizen initiative

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	8,036	2	,018
	Block	8,036	2	,018
	Model	8,036	2	,018

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B) Lower	Upper
Step 1[a]	Heeft u wel eens iets gehoord over het initiatief 'Oosterpoort Duurzaam'?	1,108	,482	5,274	1	,022	3,028	1,176	7,795
	Heeft u een opleiding aan het hoger onderwijs (hogeschool of Universiteit) afgerond?	,896	,540	2,754	1	,097	2,450	,850	7,061
	Constant	,295	,527	,313	1	,576	1,343		

Familiarity with the initiative is a positive and significant (b=1,108, s.e.=0.482, p=0.022) predictor of the probability for awareness step 3. The OR indicates that for every unit increment on the predictor, the odds of being in step 3 increases by a factor of 3.028. (meaning that the odds are increasing)

education is a non-significant predictor of awareness step 3

Number of cases: 145

Dependent variable : stewardship action

Independent variable: education and familiarity with the citizen initiative

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	13,800	2	,001
	Block	13,800	2	,001
	Model	13,800	2	,001

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B) Lower	Upper
Step 1[a]	Heeft u wel eens iets gehoord over het initiatief 'Oosterpoort Duurzaam'?	1,148	,414	7,681	1	,006	3,153	1,400	7,102
	Heeft u een opleiding aan het hoger onderwijs (hogeschool of Universiteit) afgerond?	1,174	,479	6,012	1	,014	3,235	1,266	8,269
	Constant	-,657	,495	1,759	1	,185	,518		

familiarity with the initative is a positive and significant (b=1.148, s.e.=0.414, p=0.006) predictor of the probability for stewardship action. The OR indicates that vor every unit increment on the predictor, the odds of stewardship action increases by a factor of 3.153. (meaning that the odds are increasing)

education is a positive and significant (b=1.174, s.e.=0.479, p=0.014) predictor of the probability for stewardship action. The OR indicates that for every unit increment on the predictor, the odds of stewardship action increases by a factor of 3.235. (meaning that the odds are increasing)

Number of cases: 145

Dependent variable : awareness step 4

Independent variable: education and familiarity with the citizen initiative

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	3,469	2	,177
	Block	3,469	2	,177
	Model	3,469	2	,177

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B) Lower	Upper
Step 1[a]	Heeft u wel eens iets gehoord over het initiatief 'Oosterpoort Duurzaam'?	,709	,493	2,063	1	,151	2,031	,772	5,342
	Heeft u een opleiding aan het hoger onderwijs (hogeschool of Universiteit) afgerond?	,631	,649	,946	1	,331	1,879	,527	6,698
	Constant	-1,271	,695	3,341	1	,068	,281		

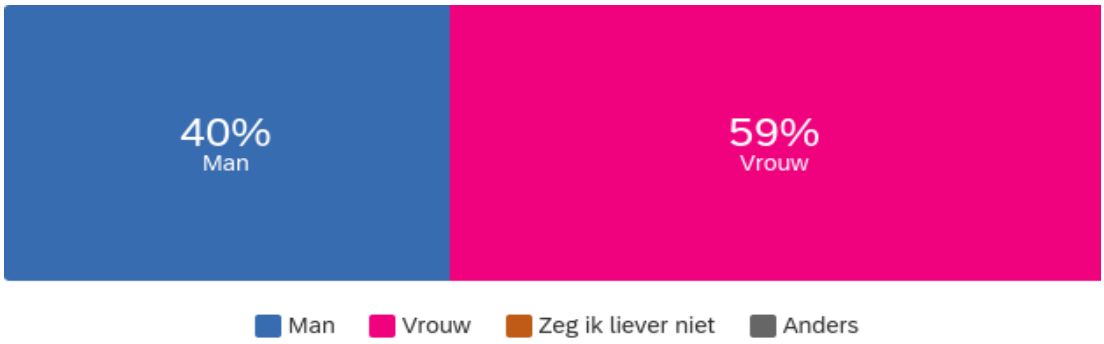
Education and familiarity is a non-significant predictor for awareness step 4.

G: Results qualitative research

Citizen initiative	Start	Background committed leaders	Aims	Activities on urban green for climate adaptation	Informal collaborations	Communication
Oosterpoort Duurzaam	2016. (team green – 2020).	i.e. sustainability, entrepreneurial, gardener, social work.	- A sustainable and green neighbourhood. - Support and activate citizens - Making citizens aware of the need to do so and the ease of it.	- Information meetings. - Help constructing facade gardens and tree mirrors. - Neighbourhood tour with good practices and experiences	- Municipality - Neighbourhood team - Garden centres.	- Neighbourhood newspaper - Website - Business cards - Social media - Word of ear advertising
Duurzaam Helpman	2019	Neighbourhood committee, climate adaptation, communication	- Referring, stimulating, devising and implementing green initiatives - Convincing citizens of the importance of green in an easily accessible way	- Handing out free trees - Neighbourhood tour with good practices and experiences - Help constructing façade gardens and tree mirrors	- Municipality Entrepreneurs Garden centres - Elementary school - Shopkeepers - Gardener	- Neighbourhood newspaper - Neighbourhood apps - Social media - Newsletter for members - Word of ear advertising
Noorder-plantsoen Groenste Buurt	2014	Neighbourhood committee, green and sustainability	- Energy-neutral neighbourhood in 2024 - Greening in the neighbourhood.	- Information meetings - Neighbourhood tour with good practices and experiences - Communication and referral between citizens and other parties	- Municipality - Grunneger Power - Various stakeholders	- Neighbourhood newspaper - Website - Facebook
Operatie Steenbreek	2015	Municipality of Groningen	- Fostering citizen involvement in greening and climate in an accessible way. - To be findable for residents and respond to the needs of citizens	- Facilitating individual and collective initiatives of citizens on greening the street/neighbourhood. - Providing information meetings	Citizens and citizen initiatives	- Websites - Social media - Word of ear advertising.

H: Results quantitative research

Gender of respondents



Completed higher education (hogeschool of Universiteit)

Heeft u een opleiding aan het hoger onderwijs (hogeschool of Universiteit) afgerond?	Procent
Ja	79%
Nee	21%
Totaal	144

Current work situation

Welke van de volgende categorieën omschrijft het beste uw huidige werksituatie? -	Procent
Werkzaam	66%
Geen baan, werkzoekende	3%
Geen baan, niet werkzoekende	3%
Gepensioneerd	14%
Student	6%
Arbeidsongeschikt	1%
Anders, namelijk	7%
Totaal	143

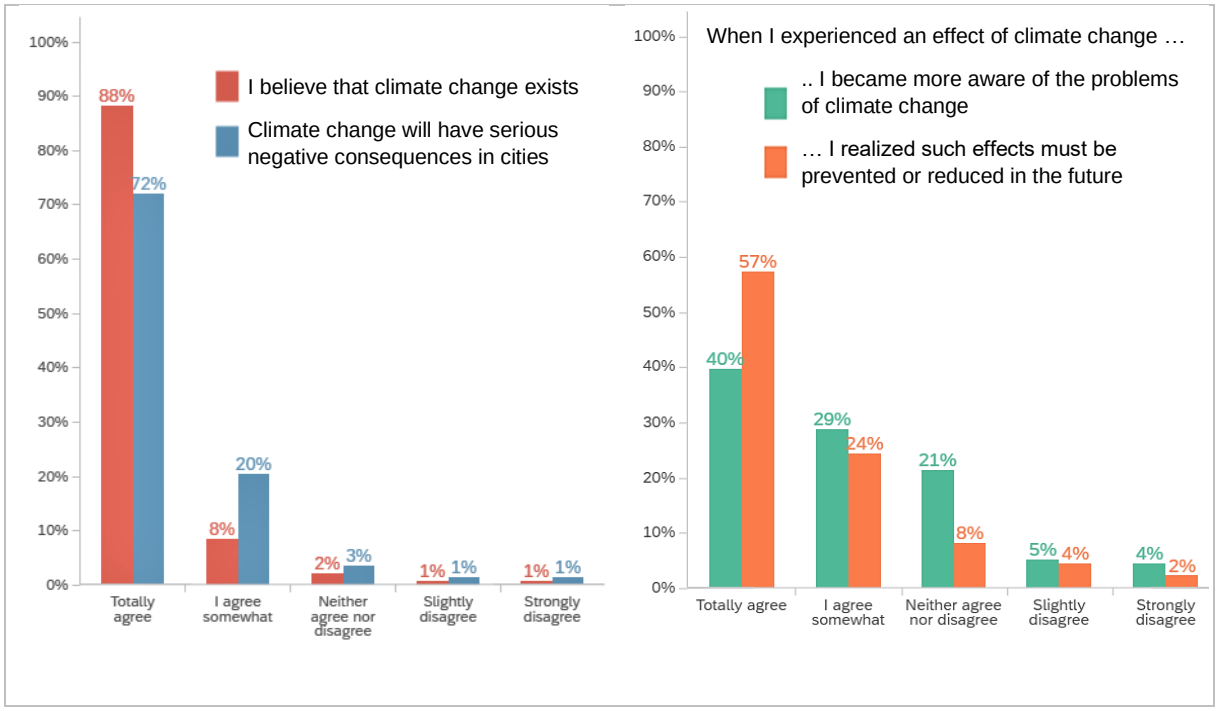
Awareness development process - step 1: 'do we perceive the challenge of climate change?'

Vraag	Totally agree	I agree somewhat	Neither agree nor disagree	Slightly disagree	Strongly disagree	Totaal
“Ik geloof dat klimaat verandering bestaat”	88%	8%	2%	1%	1%	143
“Klimaatverandering zal serieuze negatieve gevolgen hebben in steden”	73%	21%	4%	1%	1%	141

Welke van de volgende effecten van klimaatverandering heeft u meegemaakt in uw direct leef- en/of woonomgeving? (Meerdere antwoorden mogelijk) - Selected Choice	Procent
Frequentere/extremere hittegolven	29%
Periodes van droogte	27%
Extreme temperatuurverschillen	12%
Extreme neerslag (felle buien, meer hagel en/of onweer)	18%
Wateroverlast	10%
Ik heb geen van zulke effecten meegemaakt	2%
Anders, namelijk	2%
Totaal	385

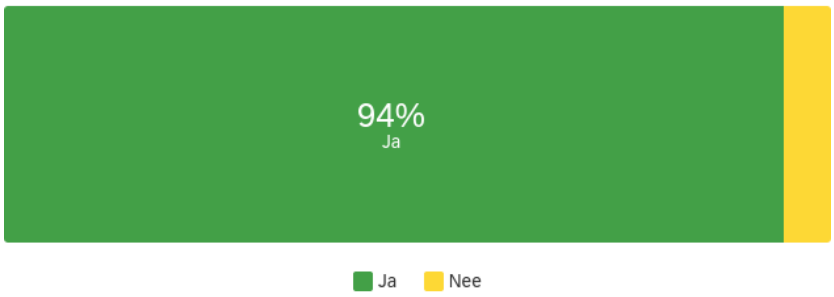
Awareness development process - step 1: 'do we perceive the challenge of climate change?'

Vraag	Totally agree	I somewhat agree	Neither agree nor disagree	Slightly disagree	Strongly disagree	Totaal
"Toen ik een effect van klimaatverandering meemaakte, werd ik me (meer) bewust van de problemen van klimaatverandering."	40%	29%	21%	5%	4%	135
"Toen ik een effect van klimaatverandering meemaakte, realiseerde ik me dat zulke effecten in de toekomst voorkomen of verminderd moeten worden"	60%	25%	8%	5%	2%	131



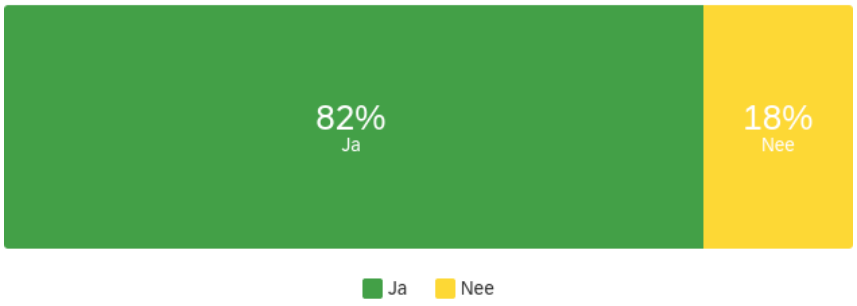
Awareness development process - step 2: 'Do we want to make a change?'

Would you like to take measures yourself to prevent or reduce the effects of climate change?



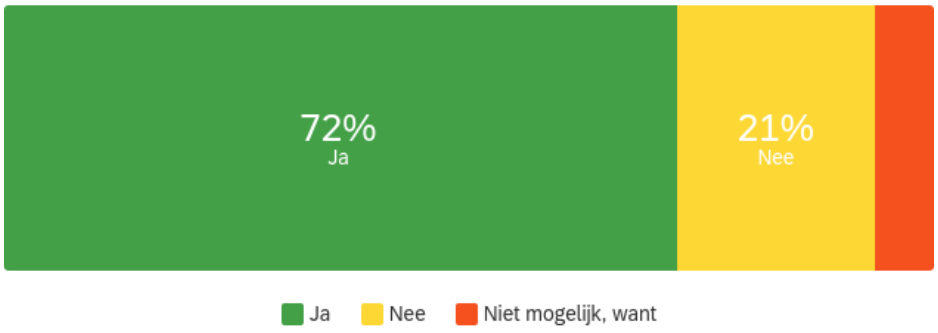
Awareness development process - step 3: 'do we know what we can do to make a change?'

Do you know what measures you can take to prevent or reduce the effects of climate change?



Stewardship action

Have you ever taken measures to prevent or reduce the effects of climate change?



Climate adaptation measures

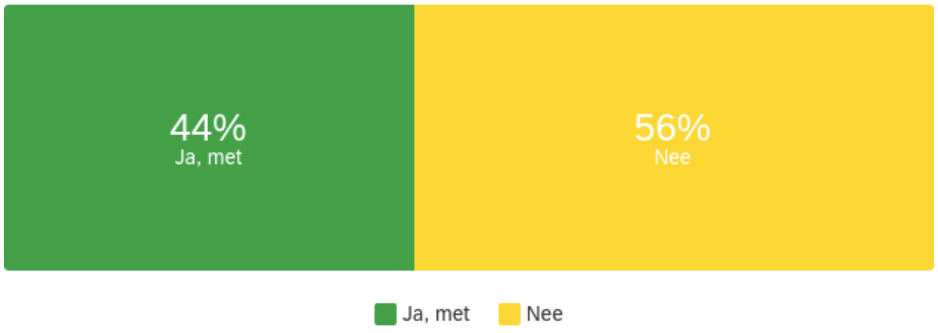
Welke maatregelen heeft u dan getroffen? (Meerdere antwoorden mogelijk). - Selected Choice	Procent
Vergroening van mijn tuin	34%
Geveltuin/gevelbeplanting aanleggen	19%
Vergroening in de straat	17%
Anders, namelijk	13%
Groen dak aanleggen	10%
Vergroening in de wijk	7%
Totaal	204

Q14_6_TEXT - Anders, namelijk

Anders, namelijk - tekst
opvang hemelwater
Minder vliegen, auto etc
waterdoorlatende bestrating, afkoppelen van de regenpijp
Adviezen en ook uitvoering aan/met buren en ambtenaren en politiek
Regenton
zonnepanelen op het dak, gelsoleerd waar maar kan
Gevelisolatie
Alternatieven voor de chemie vinden
Regenton
Isolerende voorzieningen
Regenton
samen met andere straatbewoners isolatie van mijn huis
Isolatie, warmtepomp
Huis isoleren, led verlichting aanleggen
Ophangen nestkasten aan gevel, instantie zonnepanelen en hybride warmtepomp
Vegetarisch leven, minder consumeren
rij geen auto meer bewust inkopen doen
Veel meer de auto laten staan
Ervoor kiezen om geen rijbewijs te halen en geen auto aan te schaffen. Dus reizen zoveel mogelijk met de fiets of het openbaar vervoer. Bewuste keuzes maken in de supermarkt.
Ik heb geen auto.
Mond a mond reclame voor t goede doel
Groen balkon, minder gasverbruik, bewustere boodschappen
Vergroeining dakterras
Zonnepanelen
Energiezuiniger leven
Zonnepanelen

Climate (adaptive) measures in collaboration

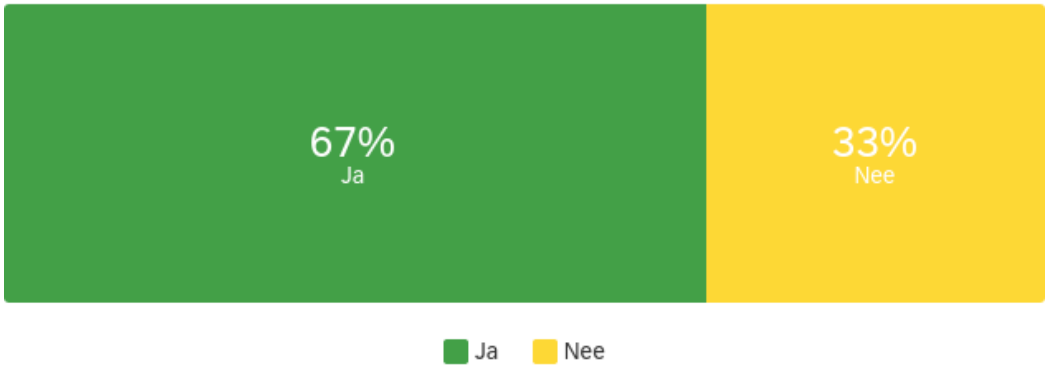
Have you ever taken measures in collaboration with others to prevent or reduce the effects of climate change?



Q15_1_TEXT - Ja, met

Familiarity with the green urban citizen initiatives

Have you ever heard about the citizen initiative ?



Participation in activities or projects of the citizen initiative

Are you familiar with activities/projects of the citizen initiatives

Bent u bekend met activiteiten/projecten van 'Oosterpoort Duurzaam' ?	Procent
Ja, ik heb al deelgenomen	29%
Ja, ik ben van plan om deel te nemen	22%
Ja maar ik ben niet van plan om deel te nemen	21%
Nee maar ik zou wel willen deelnemen	18%
Nee en ik heb ook geen behoefte om deel te nemen	10%
Totaal	90

Statements about the initiative related to awareness

Vraag	Totally agree	I somewhat agree	Neither agree nor disagree	Slightly disagree	Strongly disagree	Totaal
“Door het initiatief heb ik meer interesse en waardering gekregen voor de groene omgeving”	26%	33%	29%	1%	11%	89
“Door het initiatief heb ik kennis en vaardigheden ontwikkeld die te maken hebben met groenbeheer (voor klimaatadaptatie)”	17%	21%	43%	7%	13%	87
“Door het initiatief ben ik meer bewust geworden over de effecten van klimaatverandering”	12%	24%	43%	8%	13%	84

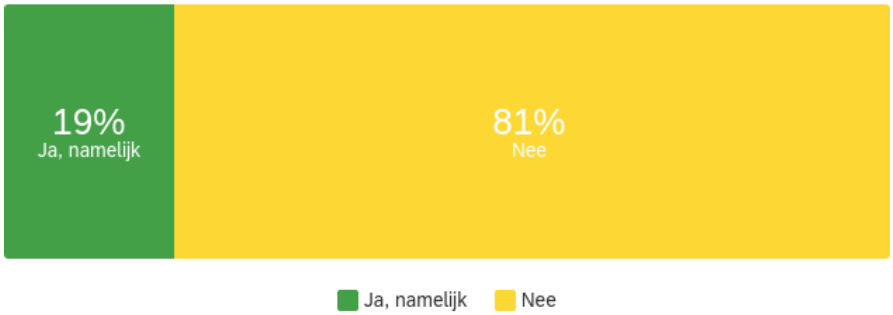
Impact pathway - awareness development

How have you noticed an increase of awareness about the effects of climate change?

Waaraan merkt u dat uw meer bewust bent geworden over de effecten van klimaatverandering? (Meerdere antwoorden mogelijk) - Selected Choice	Procent
Ik heb meer aandacht voor het gebruik van groen voor klimaatadaptatie	24%
Ik heb meer kennis over het gebruik van groen voor klimaatadaptatie	15%
Ik voel meer (publieke) steun voor stedelijk groen wat bijdraagt aan klimaatadaptatie	25%
Ik heb meer acceptatie voor het gebruik van groen in publieke/private ruimte voor klimaatadaptatie	15%
Ik ben lid geworden van het initiatief	6%
Ik heb deelgenomen aan activiteiten van het initiatief	11%
Anders, namelijk	4%
Totaal	177

Stewardship action - actors

Have you come into contact with other parties involved in greening and/or climate adaptation through the initiative?



Q23_1_TEXT - Ja, namelijk

Ja, namelijk - tekst
oosterpoort duurzaam
hoveniers
energieloket Groningen
DZ haren
Gemeente en groen comité Paddepoel
Meerdere
Sedum daken bedrijven
Ik ben nu in contact met iemand voor groene daken
Energiecooperaties in de hele provincie (gevolg van voormalige baan bij provincie Groningen)
team groen = onderdeel van oosterpoort duurzaam
Energieloket Groningen
Contact gehad over zonnepanelen, groene daken.
individuen op gebied van permacultuur, biologie

Stewardship action - motivation

The following statements relate to the citizen initiative

Vraag	Totally agree	I somewhat agree	Neither agree nor disagree	Slightly disagree	Strongly disagree	Totaal
"Door het initiatief ben ik meer gemotiveerd geraakt om bij te dragen aan vergroening"	26%	33%	30%	1%	10%	89
"Door het initiatief ben ik gemotiveerd geraakt om de effecten van klimaatverandering te voorkomen of te verminderen"	24%	36%	25%	5%	11%	84

Stewardship action

Have you actually been active because of the citizen initiative to prevent or reduce the effects of climate change?

Bent u door 'Oosterpoort Duurzaam' ook daadwerkelijk actief (geweest) om de effecten van klimaatverandering te voorkomen of te verminderen?	Procent
Ja, ik heb zelf actie ondernomen	29%
Ja, ik heb meegedaan aan activiteiten van het initiatief	15%
Nee	56%
Totaal	80

Stewardship action - motivations

What is the reason that you are or have been active because of the citizen initiative?

Wat is de reden dat u door 'Oosterpoort Duurzaam' actief bent (geweest)? (Meerdere antwoorden mogelijk) - Selected Choice	Procent
Het initiatief kon mij in contact brengen met mijn buren	14%
Het initiatief zorgde ervoor dat ik meer om mijn buurt/wijk gaf	14%
Het initiatief maakte voor mij financiële middelen beschikbaar om dit te doen	7%
Het initiatief heeft mij geleerd over klimaat adaptieve maatregelen	12%
Het initiatief heeft mij meer bewust gemaakt over het belang van groen voor klimaatadaptatie	28%
Het initiatief kon mij in contact brengen met derden (autoriteiten, private partijen en hun projecten)	20%
Anders, namelijk	4%
Totaal	69

Stewardship action - Impact

What do you recognize as a result of your activities?

Wat herkent u naar aanleiding van uw activiteiten? (Meerdere antwoorden mogelijk) -	Procent
Ik heb meer aandacht voor het gebruik van groen voor klimaatadaptatie	27%
Ik heb meer kennis over het gebruik van groen voor klimaatadaptatie	22%
Ik voel meer (publieke) steun voor stedelijk groen wat bijdraagt aan klimaatadaptatie	23%
Ik heb meer acceptatie voor het gebruik van groen in publieke/private ruimte voor klimaatadaptatie	17%
Ik ben lid geworden van het burgerinitiatief	9%
Iets anders, namelijk	1%
Totaal	81

Impact motivation for stewardship action

Would you be motivated to contribute to urban green (for climate adaptation) if the initiative ..

Zou u gemotiveerd zijn om wel bij te dragen aan stedelijk groen (voor klimaatadaptatie) als: (Meerdere antwoorden mogelijk) - Selected Choice	Procent
Het initiatief u in contact brengt met uw buren?	19%
U meer om uw buurt/wijk zou geven?	12%
Het initiatief financiële middelen voor u beschikbaar maakt om dit wel te doen?	19%
Het initiatief u leert over klimaatadaptatie maatregelen?	12%
Het initiatief u meer bewust maakt over het belang van groen voor klimaatadaptatie?	9%
Het initiatief u in contact kan brengen met derden (autoriteiten, private partijen en hun projecten)?	19%
Anders, namelijk als	4%
Het initiatief zou mij niet kunnen motiveren.	4%
Totaal	89

Q28_7_TEXT - Anders, namelijk als

Anders, namelijk als - tekst
Er iets met de jeugd wordt bedacht, ik vind de nieuwsbrieven interessant om te lezen, maar mijn gevoel is dat veel ouderen actie ondernemen. Mijn straat doet ook weinig actiefs.
Wanneer er in samenwerking met straatgenoten iets gedaan wordt. Met mensen die ik ken en die bij mij in de straat wonen
Ik ben sowieso wel bereid om te anticiperen in initiatieven ten bate van het milieu

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