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Bachelor thesis

The influence of cultural and socio-economic factors on active citizenship for nature-based solutions

A case study of three neighborhoods in Utrecht city

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Summary

This research assessed the influence of cultural and socio-economic factors on the level of active citizenship contributing to nature based solutions. Nature based solutions have several social and environmental benefits and can contribute to urban greening. An indication of the level of active citizenship regarding NbS was made through a dataset provided by the municipality and additional data provided by the neighborhood offices with the number of initiative fund applications regarding NbS. The initiative fund is a fund citizens can apply for when they want to develop or contribute to NbS. The neighborhood with lower cultural and socio-economic factors has a lower percentage of citizens applying for the initiative fund in comparison to the two neighborhoods with higher cultural and socio-economic dynamics. Therefore, a potential relationship could be indicated between cultural and socio-economic factors and the level of active citizenship regarding NbS.

To find out how the factors and the level of active citizenship contributing to NbS could be related, in-depth interviews were conducted. This study indicated a direct and indirect influence. The direct influence includes the influence of the factors on active citizenship regarding NbS, as citizens who are in vulnerable situations are less likely to invest time and energy in NbS. Nevertheless, not all factors had an influence on the level of active citizenship regarding NbS as the immigration background was believed not to have an influence. The indirect influence was through the accessibility of resources, which influences the adaptive capacity of the citizens. The cultural and socio-economic factors social cohesion and type of education influence access to resources as higher levels of social cohesion and type of education increase the accessibility of resources.

Local governments and middleground platforms should take the cultural and socio-economic dynamics of a neighborhood in consideration, when stimulating and helping active citizenship regarding NbS. This may result in more NbS in urban areas.

1. Introduction

A large trend of urbanization can be indicated in the last couple of decades (Lafortezza & Sanesi, 2019). In 2050, more than two thirds of the world's population is believed to live in an urban area (Vasenev et al., 2016). These urban areas experience several consequences of the current anthropogenic climate change, which has an impact on the health and well-being of the citizens in the city (Lafortezza & Sanesi, 2019). Therefore, a change is needed and sustainable urban development, "*the development that meets the needs of the present without compromising the ability of future generations to meet their own needs within cities*" (Keeble, 1988), seems more important than ever (Nordin Von Platen & Gustafsson, 2018). A possible way to climate change adaptation and mitigation within cities are nature-based solutions (NbS) (Kabisch et al., 2016). Nature-based solutions are defined by Kabisch et al. (2016) as "[t]he use of nature in tackling challenges such as climate change, food security, water resources, or disaster risk management, encompassing a wider definition of how to conserve and use biodiversity in a sustainable manner". NbS can have several advantages in urban areas such as socio-economic benefits and restoring ecosystem services in cities (Keesstra et al., 2018; Maes & Jacobs, 2017); NbS might even contribute to a more sustainable economy (Maes & Jacobs, 2017). Integration of NbS in urban areas can only be realized with participation of all citizens (Vasenev et al., 2016), therefore active citizenship can play an important role in contributing to NbS (Mattijssen, Buijs & Elands, 2018a). Active citizenship is, according to Buijs et al. (2016), the citizens competence to organize themselves to mobilize resources and act in public, which can contribute to innovation and NbS.

Several studies have confirmed the environmental and social benefits of NbS, and it has been studied that active participation of citizens can contribute to the development of NbS within cities (Buijs et al., 2016; Vasenev et al., 2016). In e.g. the study of van der Jagt et al. (2017), next to emphasizing the importance of engagement of all stakeholders, every six NbS initiatives included citizens as an involved actor. Nevertheless, next to the bodies of literature indicating the importance of involving citizens, there is still a need of in-depth case studies and context-specific research about active citizenship and NbS (Fors, Molin, Murphy & van den Bosch, 2015; Mattijssen et al., 2018a).

Most studies focus on city-specific research, even though there can be substantial differences between neighborhoods within cities themselves concerning the level of active citizenship (Foster-Fishman, Cantillon, Pierce & Van Egeren, 2007). These differences can possibly be explained by cultural and socio-economic factors that define the neighborhood citizens live in

(Marzouki, Mellouli & Daniel, 2017). Therefore, the purpose of this study is to research different types of neighborhoods that differ on various cultural and socio-economic factors and explore the influence of these factors on active citizenship contributing to NbS, which leads to the following research question:

How do cultural and socio-economic factors of urban neighborhoods influence the number of active citizenship initiatives and their contribution to NbS in a neighborhood?

This research, in order to answer the research question, focuses on three neighborhoods in Utrecht city: Overvecht, Wittevrouwen and the City Centre. These neighborhoods all have a different cultural and socio-economic context, therefore an indication can be made on how different cultural and socio-economic factors of urban neighborhoods can influence the number of active citizenship regarding NbS (Alle Cijfers Utrecht, 2019; WistUdata, 2019).

First, the important concepts of the research are discussed in the theory section. Second, the methods of how the research is performed are explained. The different cultural and socio-economic factors per neighborhood that are potentially predictive of active citizenship are researched, and the level of active citizenship in a neighborhood is analyzed through a dataset from the initiative fund. Citizens of Utrecht can apply for the initiative fund for funding to develop a NbS initiative (Gemeente Utrecht, 2019). In-depth interviews are conducted to provide a deeper insight into the influence of cultural and socio-economic factors in neighborhoods on the number of active citizenship initiatives regarding nature-based solutions. Third, these results of the research are described in the results section. Fourth, the results are interpreted and discussed, and the implications and limitations of the research are considered. Finally, an answer to the research question is given and there will be an insight on how cultural and socio-economic factors can possibly contribute to the level of active citizenship regarding NbS.

By researching the influence of cultural and socio-economic factors on active citizenship per neighborhood, context-specific recommendations can be made for the municipality and the contribution to sustainable development by active citizens can be optimized in Utrecht.

2. Theory

The main concepts of this research are active citizenship, nature-based solutions (NbS) and cultural and socio-economic factors. It is important to define the concepts and explain the relationships between these concepts to be able to analyze the conducted data and give an answer to the research question.

2.1 Active citizenship

During the past couple of years, a shift from citizenship to active citizenship can be identified (van Dam, Duineveld & During, 2015). Active citizens are, in comparison to citizens, actively fulfilling their interests and opinions (Mattijssen, Buijs, Elands & Arts, 2018b). This shift from citizens to active citizens is seen in both political discourse, as governments encourage this trend towards citizens' initiatives, and the increase in the number of bottom-up initiatives (Mattijssen et al., 2018b; van Dam, Salverda & During, 2014). Governments encourage active citizenship as it is believed to build a stronger society (van Dam et al., 2014). Moreover, active citizens are seen as trustworthy and reliable (van Dam et al., 2014).

Active citizenship can be defined in different manners and there is still no consensus about a specific definition in the academic field. This research, as shortly described in the introduction, will use the definition of Buijs et al. (2016): “[t]he citizens’ ability to organize themselves in a multiform manner to mobilize resources and to act in the public in order to protect rights and take care of common goods”. Examples of different types of active citizenship not specifically related to NbS are pictured by Jochum, Pratten & Wilding (2005), seen in Figure 1 below. Jochum et al. (2005) divide several types of active citizenship between individual or collective action and informal or formal engagement.

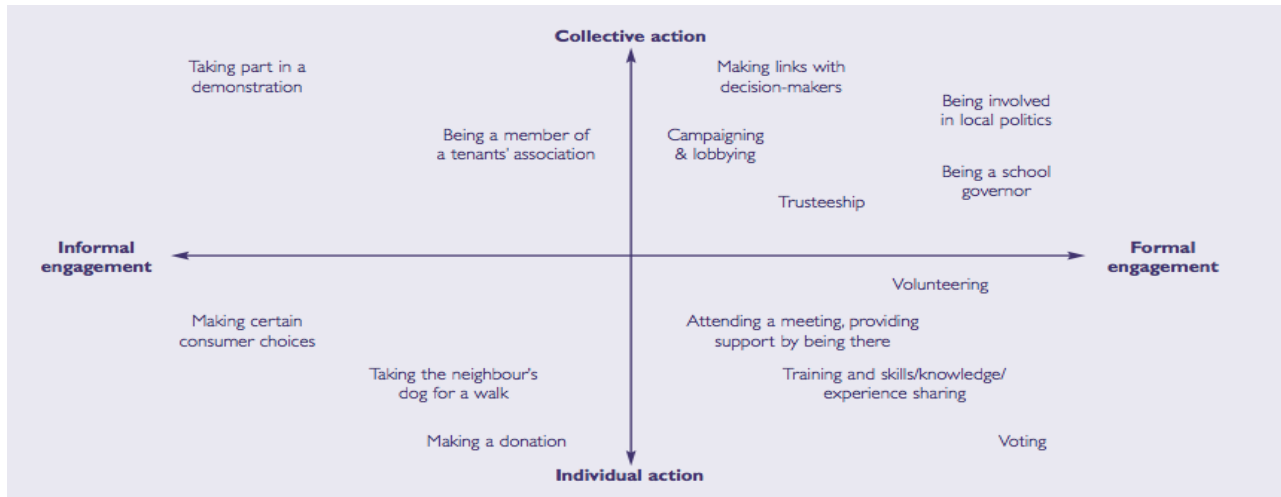


Figure 1. Examples of active citizenship on different levels of action and engagement (Jochum et al., 2005)

Active citizenship can according to different literature result in several environmental and social benefits (Mattijsen et al., 2017). Examples of these benefits are an increase in social cohesion, increase in social capital, community forming, strengthening social networks and creation of recreation and leisure activities (Hoskins & Mascherini, 2009; Krasny, Russ, Tidball & Elmqvist, 2014; Mattijsen et al., 2018a; Veen, Bock, van den Berg, Visser & Wiskerke, 2016). Moreover, active citizenship can have an important role in managing and protecting nature and biodiversity (Paloniemi et al., 2015). There is, however, criticism on active citizenship as well. Some researchers argue that the increasing number of active citizenship results in a decline in public services offered by the government, that citizens will take over these tasks; it is unsure if this will lead to better decisions than when these tasks stay institutionalized (Mattijsen et al., 2018a). The shift in power from government to non-governmental actors such as citizens might be ineffective (Mattijsen et al., 2018b). Nevertheless, citizen initiatives, and thus active citizenship, stay dependent on the support of different stakeholders to succeed, and the involvement of the municipalities is thus from importance (Halloran & Magid, 2013; Mattijsen et al., 2017; van Dam et al., 2014). The relationship between municipalities and active citizens can even lead to mutual benefits (Mattijsen et al., 2018b).

Active citizenship regarding NbS is dependent on three types of resources: funding, social capital and a strong network (Mattijsen et al., 2017). Funding is seen as an important factor for success by Mattijsen et al. (2017); especially funding is identified as fundamental for the success of

NbS by active citizens. Funding is a source of income for NbS initiatives through grants or subsidies (Mattijssen et al., 2017). Social capital are the skills and knowledge of actors and their capabilities; the resources available within a community (Mattijssen et al., 2017; Glover, Parry & Shinew, 2005). A manner to improve the availability to resources such as skills and knowledge is to develop the middleground (Cohendet, Grandadam & Simon, 2010). The middleground is part of a theory that divides the city in three layers: the underground, middleground and upperground (Cohendet et al., 2010). The underground are the active citizens, and the upperground are institutions like the municipality and companies (Cohendet et al., 2010). According to Cohendet et al. (2010), there should be a connection between the underground and upperground to be able to successfully develop an initiative. This mostly happens through the middleground, which are “connecting platforms” such as a neighborhood office or supportive organizations (Cohendet et al., 2010). Thus, citizens will most likely need the middleground to connect with municipalities or companies; in other words, the middle ground as a community to help an initiative to find access to resources, knowledge or skills that can help develop their NbS initiative. Next to funding and social capital, active citizenship regarding NbS is also dependent on a strong social network. A strong social network are the personal ties between citizens; the connection between citizens through personal relationships (Perry-Smith & Mannucci, 2017). A strong social network is believed to improve the accessibility of the resources funding and social capital (Mattijssen et al., 2017). Citizens who have access to these three resources, will have a stronger adaptive capacity; there will be more information about this concept later in the theory section (Mattijssen et al., 2017).

2.2 Nature-based solutions (NbS)

Active citizens can play an important role in fostering NbS in cities and help mitigation and adaptation to climate change (Lafortezza & Sanesi, 2019). Nature-based solutions (NbS) are, as described in the introduction, defined by Kabisch et al. (2016) as “*The use of nature in tackling challenges such as climate change, food security, water resources, or disaster risk management, encompassing a wider definition of how to conserve and use biodiversity in a sustainable manner*”. NbS are designed to serve as both an environmental solution as well as a measure to support the economy and society (Frantzeskaki, 2019); NbS thus both have environmental advantages as socio-economic advantages (Keesstra et al., 2018; Maes & Jacobs, 2017). Examples of NbS are community gardens, green roofs and cause an increasing amount of urban green spaces (Kabisch et al., 2016; Veen et al., 2016). For a successful implementation of NbS in an urban environment, participation of

all stakeholders is needed, and thus participation of all citizens involved is necessary (Vasenev et al., 2016).

2.3 Cultural and socio-economic factors

Cultural and socio-economic factors may influence the amount of active citizenship within a community. These factors explain the relationship between cultural, social and economic factors; it explains how a particular group or class behaves within society (Thornton, Ribeiro-Soriano & Urbano, 2011). The characteristics of these cultural and socio-economic factors can differ between neighborhoods. In this paper, there will be a focus on four factors namely: social cohesion, income, type of education and the immigration background.

The definition of social cohesion by Chan, To and Chan (2006) is used in this research, and is defined as “[a] state of affairs concerning both the vertical and the horizontal interactions among members of society as characterized by a set of attitudes and norms that includes trust, a sense of belonging and the willingness to participate and help, as well as their behavioral manifestations.” The amount of income is the amount of money received by a person on regularly base from work, investment and/or authorities (Van Dale, 2019). The type of education is the education a citizen has completed (van Dale, 2019). A citizen can be highly educated and has an HBO or university degree, or low educated and completed high school or MBO. The immigration background is categorized in three sub-categories; people with non-Western immigration backgrounds, Western immigration backgrounds and native Dutch backgrounds.

These four different cultural and socio-economic factors may have an influence on active citizenship and their contribution to NbS. According to Marzouki et al. (2017), the level of active citizenship in a neighborhood can be influenced by their cultural and socio-economic characteristics. Social cohesion may influence the level of active citizenship regarding NbS in the neighborhood; which is interesting since NbS are proved to enhance social cohesion in communities as well (Veen et al., 2016). Foster-Fishman et al. (2007) argue that demographic factors of a neighborhood have no influence on active citizenship in a neighborhood, but that literature has emphasized a relationship between active citizenship and cultural and socio-economic factors. Therefore, the amount of income, the immigration background and type of education may have an influence on active citizenship regarding NbS. The extent and existence of this influence will be researched in this thesis.

Society is constantly changing, which means that citizens have to cope with the changing cultural and socio-demographic context of their surroundings (Mattijssen et al., 2017). Therefore, citizens engaging in NbS initiatives are dependent on their adaptive capacity to changing circumstances in order to maintain effective functioning of their initiative (van Assche, Beunen & Duineveld, 2013). This means that citizens need to be able to adapt to external changes to achieve place-making, and thus urban greening (Mattijssen et al., 2017). Citizens thus need to cope with the cultural and socio-economic factors that define their neighborhood, and need to constantly adapt to these factors (Mattijssen et al., 2017). The resources of funding, social capital and a strong social network contributes to their adaptive capacity, as citizen groups with more social capital and funding are more resistant to external changes (Mattijssen et al., 2017). A strong network, as Mattijssen et al. (2017) state in their article, can help bring in additional resources.

An example of a manner to receive funding in Utrecht city is the initiative fund. This is a manner to receive money for NbS development by citizen groups. The initiative fund thus stimulates active citizenship in Utrecht, and through e.g. talking to the neighborhood office or through digital communication manners, citizens can find their way to the initiative fund. The citizens have to fill in a form consisting of two papers and the most important aspect of the acceptance of the application by the neighborhood office is support from the neighborhood. Citizens or citizen initiatives can get support from the initiative fund for a maximum of three years, with some exceptions who receive money from the initiative fund on a yearly basis beyond this three-year period. The initiative fund is thus an example of an accessible way to receive funding for implementing green in the city. Additionally, the initiative fund can help the process of becoming an active citizen and can thus contribute to the number of active citizenship regarding NbS in an urban area. (Gemeente Utrecht, 2019)

The relationships between all the different concepts are visualized in the conceptual framework in Figure 2. In this research, the influence of four cultural and socio-economic factors on the level of active citizenship initiatives regarding NbS development is researched, and their influence on the access to the three types of resources of funding, social capital and social network. The cultural- and socio-economic factors are on neighborhood level, the amount of active citizenship initiatives and resources are on an individual level. The cultural and socio-economic factors are believed to have an influence on the level of active citizenship regarding NbS and the accessibility to resources. The accessibility of resources influence the level of active citizenship regarding NbS as well.

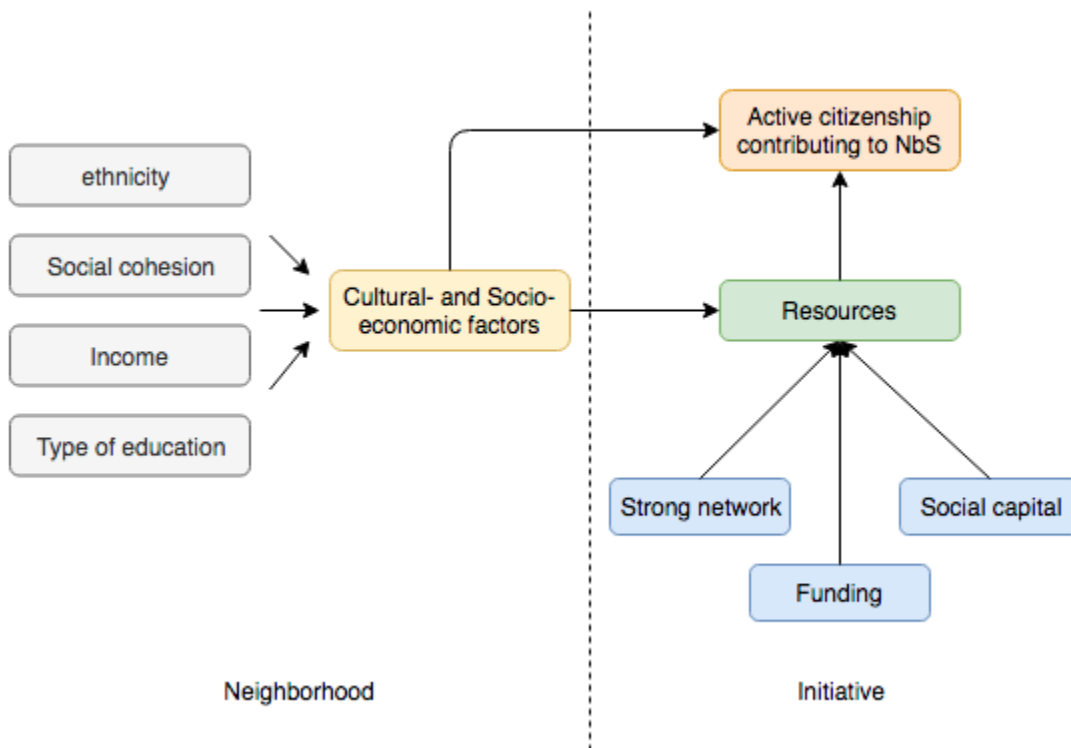


Figure 2. The conceptual framework

2.4 Analytical framework

The cultural and socio-economic factors will be analyzed per factor; income, social cohesion, type of education and the immigration background. Active citizenship will be analyzed through the number of initiative fund applications. Finally, the three types of resources of the active citizens are divided in three different categories: funding, social capital and social network, see Table 1.

	Cultural- and socio-economic factors	Active citizenship	Resources
<i>Sub-categories</i>	Income	Number of fund applications	Social capital
	Social cohesion		Strong social network
	Type of education		Funding
	Immigration background		

Table 1. The analytical framework

3. Method

To understand how several socio economic factors have an influence on the amount of active citizenship and their contribution to NbS in a neighborhood, both quantitative and qualitative data were collected and a mixed-method research was conducted.

The research has focused on the neighborhoods Overvecht, Wittevrouwen and the City Centre in the city of Utrecht; the districts are shown in Figure 3. Wittevrouwen is a neighborhood located in the district “Noord Oost” - North East. All four neighborhoods differ in cultural and socio-economic factors according to data conducted from the website *wistudata* and *allecijfers* of the year 2018 (WistUdata, 2019; Alle Cijfers Utrecht, 2019), see Table 2. Based on this data, these neighborhoods were researched. By choosing these three different neighborhoods, a comparison between the different factors and amount of active citizenship was made, which eventually provided an answer to the research question.

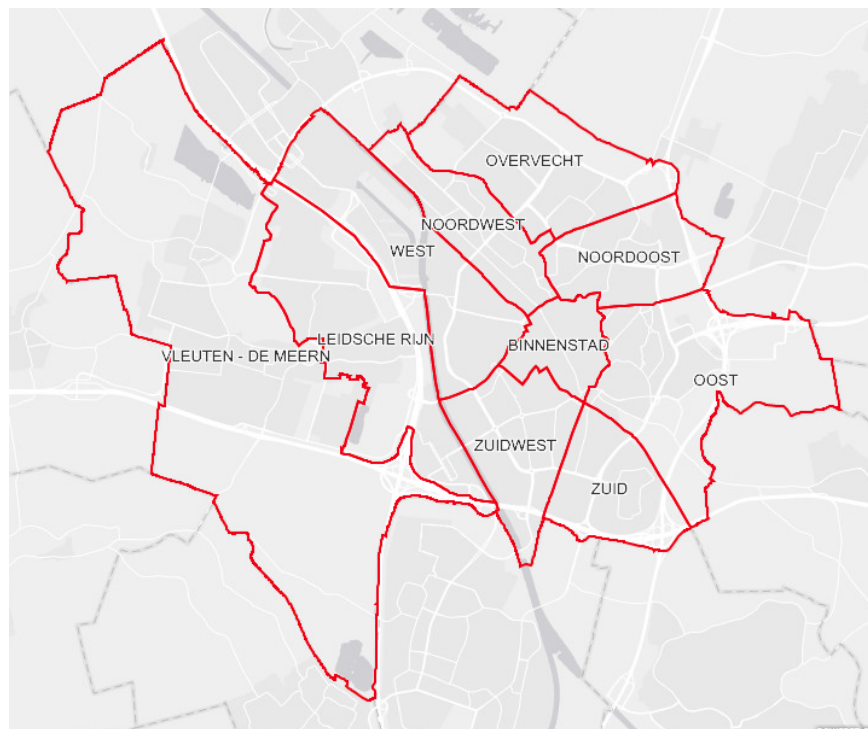


Figure 3. All districts located in the city of Utrecht

The first link between the factors and the number of active citizenship initiatives regarding NbS was made through a dataset provided by the municipality of Utrecht. This dataset showed the number of accepted proposals for funding from the initiative fund for the year 2018. Moreover, the neighborhood offices provided additional data about the number of green applications and the

number of rejected applications for the initiative fund in the neighborhood in 2018. The number of total applications for the initiative fund, consisting of accepted and rejected applications, gave insight in the level of active citizenship regarding NbS in the neighborhoods. The data was analyzed by using Excel, where the total number of rejected and accepted applications and the total number of rejected applications were divided by the number of residents in the specific neighborhood to get a relative overview. The dataset about the initiative fund provided by the municipality was population-based, the grades of www.wistudata.nl and www.allecijfers.nl were based on a sample.

To research how the four cultural and socio-economic factors could have an influence on active citizenship and their contribution to NbS, semi-structured interviews with open questions for different active citizen initiatives were conducted in the three neighborhoods. Through conducting qualitative data, an in-depth overview on the influence of cultural and socio-economic factors on the level of active citizenship regarding NbS was formed, which has increased the validity and reliability of the research. The interviews were conducted according to a topic list, see appendix A. There were eight interviews conducted, consisting of four interviews with active citizenship initiatives, three neighborhood offices and Utrecht Natuurlijk. The active citizenship initiatives interviewed were Vergroening Singel in the City Centre, the Planter Commission and Bikkershof in Wittevrouwen and the Voedseltuin in Overvecht. These initiatives were chosen according to selection criteria as they were a NbS citizen initiative located in one of the three neighborhoods. Next to these active citizenship initiatives, the neighborhood offices of Overvecht, North East and the City Centre and Utrecht Natuurlijk were interviewed. Utrecht Natuurlijk is an organization citizens can go to if they want to develop a nature related initiative in their neighborhood or city (Utrecht Natuurlijk, 2019). Hereby, an in-depth analysis of the three different neighborhoods was performed with the guidance of the analytical framework. This has given insight into the influence of cultural and socio-economic factors on the amount of active citizenships regarding NbS and on the accessibility of resources. The data obtained through these interviews were analyzed in NVivo applying deductive coding, using different nodes and sub nodes corresponding with the conceptual framework, see appendix B.

During the research, all harm has been avoided harm to the participants and all participants were asked for voluntary participation through a consent form, see appendix C. All interviews were recorded and transcribed and if preferred the information provided by the participants remained anonymous in the research. The information was saved exclusively on the drive of the student university Gmail account, and the data was not shared with others beyond the supervisor and the

researcher. For access to the data, the researcher used a password to the google drive that was only known by the researcher, where the NVivo and excel data were stored.

4. Results

The following chapter provides a summary of the quantitative and qualitative data which were collected and analyzed throughout the research. This data gives insight into how cultural- and socio-economic factors can influence the number of active citizenship contributing to NbS. The findings are based on quantitative data (4.1), and these findings are explained through in-depth interviews (4.2, 4.3, 4.4) following the structure of Figure 2.

4.1 Influence of cultural and socio-economic factors on active citizenship regarding NbS – quantitative data

4.1.1 Cultural and socio-economic factors

The three different neighborhoods differ in their cultural and socio-economic factors. The scores obtained from the websites www.wistudata.nl and www.allecijfers.nl are shown in Table 4. The neighborhood Overvecht has lower scores on all the different factors in comparison to the other neighborhoods. The average income of citizens in Overvecht is almost half compared to the average income in Wittevrouwen and the City Centre. Wittevrouwen and the City Centre are quite the same, but mainly differ in the grade in social cohesion as the City Centre receives a 5,7 out of 10 for social cohesion and Wittevrouwen a 6,9 out of 10.

	Wittevrouwen	Overvecht	City Centre
Population	6705 inhabitants	34255 inhabitants	18120 inhabitants
Grade social cohesion	6,9	4,7	5,7
Average income per capita	33800 euros annually	18000 euros annually	35000 euros annually
Type of education	Mostly high-educated	Mostly less educated	Mostly high-educated
Immigration background	Native Dutch: 76,6% Western immigration: 14,9% non-Western immigration: 8,5%	Native Dutch: 40,9% Western immigration: 9,8% non-Western immigration: 49,3%	Native Dutch: 71% Western immigration: 17,3% non-Western immigration: 11,6%

Table 2. The population and socio economic factors per neighborhood in 2018 (Alle Cijfers Utrecht, 2019; WistUdata, 2019), (Interviews neighborhood offices)

4.1.2 Active citizenship regarding NbS

Through data from the municipality and the neighborhood offices, an estimation of active citizenship regarding NbS is made. The excel data considers applications for flower baskets, tree drip lines, facade gardens, planters borders and others as NbS.

	Wittevrouwen	Overvecht	City Centre
<i>Number of accepted applications for initiative fund for NbS initiatives</i>	7	9	40
<i>Number of rejected application for initiative fund for NbS initiatives</i>	0	9	5
<i>Number of total applications initiative fund for NbS initiatives</i>	7	18	45
<i>Percentage of total initiative fund applications rejected for NbS initiatives</i>	0,00%	50,00%	11,11%
<i>Percentage of total population in neighborhood applying for initiative fund for NbS initiatives</i>	0,104%	0,0525%	0,248%

Table 3. The amount of initiative fund applications and percentage of total population applying for the initiative fund regarding NbS.

In table 3 it is shown that Wittevrouwen has the lowest percentage (0,00%) of rejected applications for the initiative fund. The City Centre is in the middle with 11,11%, and in Overvecht

half of all the applications for the initiative fund were rejected. Moreover, Overvecht has the lowest percentage of applications for the initiative fund with only 0,0525% of the total population applying for the fund. Wittevroutwen is followed with 0,104% of the total population applying for the initiative fund. The City Centre has the highest percentage (0,248%) of their population applying for the initiative fund.

Both the City Centre and Wittevroutwen have higher scores on all the different cultural and socio-economic factors and have a higher amount of active citizenship regarding NbS in comparison to Overvecht. Therefore, it can be concluded that cultural and socio-economic factors and active citizenship regarding NbS are likely correlated.

4.2 Influence cultural and socio-economic factors on the level of active citizenship regarding NbS – qualitative data

It is concluded in the paragraph before that cultural and socio-economic factors are likely correlated with the amount of active citizenship regarding NbS in the quantitative data analyzed. However, it is unsure how these factors can possibly influence the amount of citizenship.

Eight out of eight interviewees confirmed that citizens in disadvantaged areas will probably not invest time in setting up an NbS initiative due to several circumstances. Citizens characterized with low cultural and socio-economic factors, who are in vulnerable situations, often do not have the time or energy to think about urban greening.

“If you don’t have hardly anything to eat or living, you don’t think of green.” Bickershof
Wittevroutwen

“If you are in a vulnerable situation, you’re in a survival mode. You don’t have the energy, resources or network to focus on an active contribution to the livability of the neighborhood.” Voedseltuin
Overvecht

Thus, cultural and socio-economic factors in general can have an influence on the level of active citizenship regarding NbS. Now, the various factors researched and their influence on the level of active citizenship regarding NbS are discussed.

4.2.1. Social cohesion

The neighborhood offices stated that when there was a higher level of social cohesion in the neighborhood, people will feel more connected with each other which can result in organizing more NbS activities.

“People here feel more connected with one and another, and in a neighborhood like Overvecht they do not have this type of social cohesion. I think that’s one of the reasons why they do not organize activities together” neighborhood office Noord Oost

4.2.2. Type of education

Most interviewees stated that due to the upcoming urgency of climate change, a trend towards more active citizenship regarding NbS could be indicated. Citizens with a higher level of education will probably see the urgency of sustainability earlier than citizens with a lower level of education, and may thus more likely to be committed to a NbS initiative.

“I have worked on several places, and people who have less knowledge about what the project is, that are mostly the low socio-economic neighborhoods, they think it is dirty while highly educated people really like it.” Utrecht Natuurlijk

4.2.3. Amount of income

As mentioned before, citizens in disadvantaged areas are less likely to invest time in NbS. This can, as mentioned by the community garden Bickershof in Wittevrouten, be due to the amount of income of a citizen. When people are poor, they will not think about green, or organize a green activity.

4.2.4. Immigration background

Only one interviewee expressed the possible relationship between the number of active citizenship regarding NbS and the immigration background of a citizen, as a lower number of active citizenship regarding NbS might be due to culture. Nevertheless, no other interviewee has stated a possible relationship between the immigration background of a citizen and active citizenship regarding NbS. Therefore, no relationship is indicated.

In summary, there is an influence of the different cultural and socio-economic factors on the level of active citizenship regarding NbS; which is confirmed by the quantitative data as well. This

direct influence can be due to the vulnerable situation citizens in disadvantaged areas are in. The factors social cohesion, type of education and amount of income can influence the level of active citizenship regarding NbS as well. There is no relationship indicated between the immigration background of a citizen and active citizenship concerning NbS. These relationships are visualized in Figure 4 below. Additionally, an indirect influence of cultural and socio-economic factors on the access to resources is indicated as well, which will be explained in the following section.

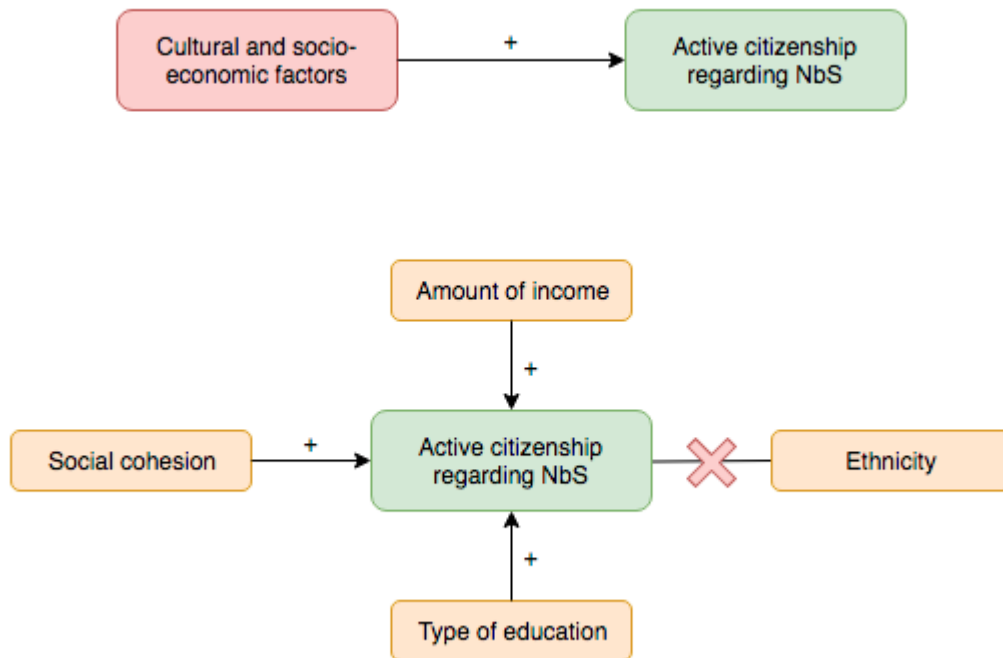


Figure 4. The influence of cultural and socio-economic factors on the level of active citizenship regarding NbS.

4.3. Influence of cultural and socio-economic factors on the access to resources

The accessibility to resources funding, social capital and a strong social network are from importance if a citizen wants to set up an NbS initiative (Mattijssen et al., 2017). Seven out of eight interviews highlighted the fact that people with lower cultural and socio-economic circumstances are less likely to find their way to develop a NbS initiative, these citizens will have more trouble finding access to the three resources.

Thus, cultural and socio-economic factors in general can influence the access to resources. Now, the different factors researched and their influence on the access to resources are discussed.

4.3.1 Social cohesion

The amount of social cohesion is, according to number out of eight interviewees, causing a stronger social network, which results in better access to social capital and funding. In neighborhoods with a higher rate of social cohesion, people are able to organize themselves better as they know more people and thus have a stronger social network.

“I think it is just easier in neighborhoods like this. Like looking after each other’s children, it goes more naturally here. People can organize themselves here.” Planter commission, Wittevrouwen

Social cohesion is not perceived by the interviewees to have a direct influence on the resource funding and social capital. Nevertheless, the strong network caused by a strong social cohesion indirectly influences the accessibility to funding and social capital, which is illustrated in Figure 5.

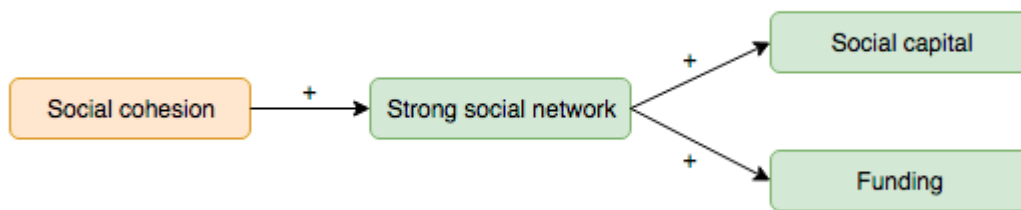


Figure 5. The influence of social cohesion on the accessibility on resources

4.3.2. Type of education

The type of education can be from importance according to most interviewees. Higher education can help citizens to find the way to funding, which can result in a stronger social network and can influence the accessibility to social capital.

The neighborhood office in the City Centre stated that citizens with a higher level of education have knowledge about funds for organizing or developing NbS initiatives, and that citizens with a higher level of education will more likely know the initiative fund.

“I think they know the way to the initiative fund in the City Centre. They know that there is money to organize things in the neighborhood. It would almost be weird if they did not apply for the fund.”
neighborhood office City Centre

On the other hand, the City Centre stated as well that they think that every citizen can fill in the form for the initiative fund, except when citizens do not have internet access.

Several interviewees have stated that highly educated citizens have better access to the resource social capital. This has three reasons, as highly educated citizens will be more likely to have: i) better knowledge, ii) better self-organization skills and iii) better digital skills.

“In the core, it is easier to be highly educated when you set up an initiative. It’s not necessary, but it makes things easier. You just need to know the way.” Vergroening Singel

“It could work in other neighborhoods, if you have some people with self-organization skills. If they do not have that, it will not work. There should always be people with knowledge about how to organize an initiative or commission.” Planter Commission Wittevrouwen

I think that in other neighborhoods, they have better digital skills and they can find the way easier if they want to do something: I want something, so I will take care of that. People here often do not know how to organize something, so they leave it that way. That can be a difference.” Neighborhood office Overvecht

Most initiatives also confirmed the usefulness to have a strong social network with some highly educated people involved. It can help to find a way to set up and develop your initiative easier. The respondent at Vergroening Singel for example worked at the environmental federation (“milieufederatie”) for a year, and she had a lot of contact with the municipality, green groups and the water authority (“waterschap”), therefore it was easier to set up the initiative.

Thus, the type of education influences the accessibility to all the three resources, see Figure 6.

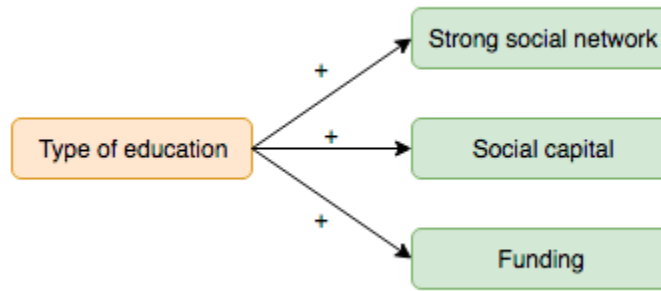


Figure 6. The influence of the type of education on the accessibility on resources

4.3.3 Amount of income and immigration background

Not one interviewee indicated a direct influence of the amount of income and the immigration background on the accessibility to resources.

In conclusion, cultural and socio-economic factors do have an influence on the accessibility to resources, which eventually results to more active citizenship regarding NbS. The factors social cohesion and type of education both increase the access to resources, as shown in Figure 7. A high level of social cohesion in a neighborhood results in a stronger social network, which indirectly causes better accessibility to the resources social capital and funding. A higher level of education gives better access to all three resources; a strong social network, social capital and funding.

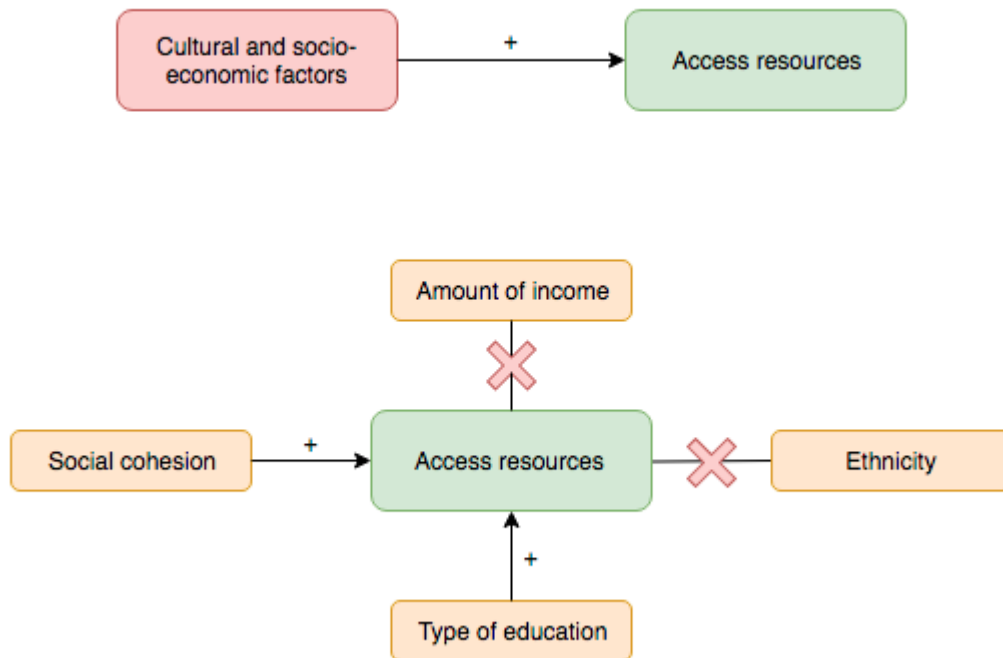


Figure 7. The influence of the different cultural and socio-economic factors on the accessibility of resources.

4.4. Influence access to resources on active citizenship regarding NbS

All interviewees emphasized the importance of access to resources when developing a NbS initiative. How these resources influence active citizenship concerning NbS is discussed below.

4.4.1. Funding

All initiatives emphasized the importance for receiving funding to develop a NbS initiative. Three out of four initiatives have had a hard time finding funding for their initiative. The Bickershof in Wittevrouwen stated that it is very hard to get financial support. Only the planters commission in Wittevrouwen did not experience difficulties finding finance support, as they receive money from the initiative fund every year and are an exception to the three-year rule. They are an exception since they already exist for thirty years, and have proven to be a stable commission with many advantages in the neighborhood. The other three initiatives have stated their concern for the three-year rule. Nevertheless, every initiative did indicate the fact that the initiative fund was a great opportunity to receive money from the municipality without much effort.

4.4.2. Social capital

Every initiative has underlined the importance of social capital during the interview. All the initiatives has contact with the neighborhood office and/or Utrecht Natuurlijk, and thus uses the middleground for fostering NbS. The neighborhood offices and Utrecht Natuurlijk all emphasize their relevance for citizen initiatives as well.

“If citizens want to set up an initiative, and they need help, they can contact us and we will help them.” Utrecht Natuurlijk

“We are a connecting factor between all parties in the neighborhood.” Neighborhood office Overvecht

“I would really recommend initiatives to look at supporting organizations.” Voedseltuin Overvecht

The contact strategies and the way citizens applied for the initiative fund varied between neighborhoods offices depended. The neighborhood office in Overvecht is physically next to the citizens who fill in the form. The City Centre also invest time in getting to know the citizen applying for the initiative fund, but they are not physically next to them when they fill in the form. In the neighborhood Noord Oost, where Wittevrouwen is part of, they do not necessarily have personal contact with the citizens and most citizens find the form online.

4.4.3. Social network

Every initiative emphasized the relevance of a strong network. The neighborhood offices and voedseltuin Overvecht all stated that a strong social network is essential to gain support for your initiative.

“Your target audience and partners should always be involved, and you should always ask what they want to see. In that way, they kind of get co-owners and in that way the initiative will gain more support.” Voedseltuin Overvecht

5. Discussion

5.1 Interpretation findings

This research shows that several cultural and socio-economic factors influence the level of active citizenship regarding NbS, as well as the availability to resources which in their turn influence the level of active citizenship concerning NbS as well.

First, cultural and socio-economic factors have an influence on the level of active citizenship regarding NbS in a neighborhood. This research implies that citizens in disadvantaged areas develop less NbS in comparison to citizens in more advantaged areas. This is mainly due to the fact that citizens in disadvantaged areas have other priorities, and are in a certain “survival mode”. This is also related to the amount of income, as citizens who live below the poverty line are less focused on urban greening. The level of social cohesion in a neighborhood will make citizens feel more connected with one and another, which can result in the organization of more NbS initiatives. The type of education may increase the number of NbS citizen initiatives as well since highly educated people are more likely to see the urgency of sustainability. The immigration background has no influence on the number of active citizenship regarding NbS. Nevertheless, the immigration background may be related to the other three factors as the quantitative data implies that neighborhoods with a higher percentage of non-Western migration population and the level of active citizenship regarding NbS is much lower than neighborhoods with a lower percentage of non-Western migration population. This cannot be said with certainty since there was no statistical test performed. Theory from Marzouki et al. (2017) argues that the level of active citizenship in a neighborhood can be influenced by all their cultural and socio-economic characteristics; however, it seems to be dependent on the type of cultural or socio-economic factors.

Second, this study shows that cultural and socio-economic factors have an influence on the access to resources, which affects the development of NbS. In general, citizens with lower socio-economic status experience more difficulties finding resources, but this differs per factor and per resource. A higher level of social cohesion in a neighborhood directly results in a stronger social network, which strengthens the access to the resources funding and social capital since they will most likely hear how to find access to these resources sooner from their network; this corresponds with theory from Mattijssen et al. (2017). The type of education that a citizen followed influences the access to all three resources, as they can find a way to develop a NbS initiative more easily. Highly-educated citizens are more likely to have a stronger social network, since they have better connections with people with power in e.g. the municipality. Moreover,

citizens who are highly educated have better access to social capital, since they have i) better knowledge, ii) better organizing ability and iii) better digital skills. Additionally, citizens who are highly educated have better knowledge about the existence of funds in comparison to low-educated citizens. The factors amount of income and the immigration background do not have an influence on the accessibility of resources. Thus, not all cultural and socio-economic factors influence the access to resources.

Finally, the research indicates that access to resources is from importance for long-term continuity of a citizen-based NbS. As Mattijssen et al. (2017) also suggests, citizens with better access to resources will have a stronger adaptive capacity, which will make them less vulnerable to external changes in society. A strong social network does, as Mattijssen et al. (2017) suggests, influence the accessibility to funding and social capital. Furthermore, social capital and thus the middleground as contact between the initiatives and municipality and for the access to skills and knowledge as resources has been proven to be necessary for developing a NbS initiative as citizen, which confirms the theory from Cohendet et al. (2010). Moreover, funding has been proven to be an important resource as well. Most initiatives experience difficulties finding these; even when there is an existence of relatively accessible fund.

5.2. Theoretical and practical implications

This research provides a new insight in how cultural and socio-economic factors can influence active citizenship regarding NbS in urban areas. Previous studies have researched the contribution from active citizenship to NbS, and the influence of cultural and socio-economic factors on active citizenship (Buijs et al., 2016; Foster-Fishman et al., 2007; Marzouki et al., 2017; Vasenev et al., 2016). However, this research bridges the knowledge gap on how cultural and socio-economic factors on active citizenship specifically focused on NbS. The quantitative data confirmed the possible relationship of cultural and socio-economic factors on the level of active citizenship regarding NbS; which confirms the theory of Marzouki et al. (2017). Nevertheless, new insights have been gained that not all cultural and socio-economic factors influence active citizenship contributing to NbS; it is dependent on the type of factor. This is also the case for the access to resources; not all factors have an influence on the accessibility to resources. Finally, this research has confirmed the theory of Mattijssen et al. (2017) that access to resources is needed for successfully developing NbS initiatives as citizen.

These insights can be taken into account when municipalities want to stimulate active citizenship regarding NbS. Local governments and middle ground platforms can take the cultural and socio-economic dynamics of a neighborhood in consideration when activating citizens for developing NbS. First, the neighborhood offices can encourage their citizens to become an active citizen regarding NbS based on the cultural and socio-economic dynamics of the neighborhood. For example, neighborhood offices in disadvantaged areas can focus on increasing awareness of the initiative fund through physical contact. Neighborhood offices in advantaged areas can increase awareness about the initiative fund through digital platforms, since citizens in advantaged areas have better digital skills compared to citizens in disadvantaged areas. Through increasing awareness about the initiative fund, citizens will have better access to the resource funding which can increase the number of active citizenship regarding NbS. Additionally, neighborhood offices can decrease the number rejected applications of the initiative fund by helping citizens filling out the initiative fund form. In Overvecht, a disadvantaged area, there are more rejected applications than in advantaged areas. The neighborhood offices, especially in disadvantaged areas, can help citizens even better while applying for the initiative fund and help them gain support in the neighborhood to decrease the number of rejected applications. In this way, the number of accepted initiative fund applications for NbS will increase. Finally, to increase the number of fund applications in areas with lower cultural and socio-economic dynamics, local governments can increase the support for citizens who are in vulnerable situations. Once citizens are out of these situations, they may have more time and energy to contribute to NbS.

By taking the cultural and socio-economic dynamics of a neighborhood in consideration, local governments and middleground platforms can stimulate and increase the level of active citizenship regarding NbS. This may result in more NbS in urban areas, which has several environmental and social benefits such as socioeconomic benefits and restoring ecosystem services in cities and can eventually contribute to sustainable development (Keesstra et al., 2018; Maes & Jacobs, 2017).

5.3. Limitations

There are some limitations concerning the research conducted. First, there can be several other factors influencing the number of initiative fund applications for NbS in neighborhoods. For example, Overvecht is one of the greenest neighborhoods in Utrecht, which can be an underlying reason for a lower number of applications for the initiative fund. However, all the selected

neighborhoods have barriers that can influence the number of active citizenship regarding NbS. Moreover, further research can include a larger body of NbS initiatives and neighborhoods, in that way a statistical test can be performed to see if there is a significant difference of initiative fund applications between the neighborhoods. This was not possible in this research due to time limitations. However, the decision not to do a statistical test was made to be able to conduct in-depth interviews, which resulted in an in-depth perspective on the influence of cultural and socio-economic factors on the level of active citizenship regarding NbS. Lastly, basing the number of active citizenship regarding NbS on the number of initiative fund applications in a neighborhood is rather limited. Further research can include other funding instruments for NbS to get a fair overview of the number of active citizenship regarding NbS, and can include what governance approaches are needed to support active citizenship regarding NbS in all different neighborhoods. By taking these limitations into account, even more insightful results can be found about the influence of cultural and socio-economic factors on the level of active citizenship regarding NbS.

Nevertheless, through combining both quantitative and qualitative data and conducting in-depth interviews on a broad scale, this research has given useful insights into how cultural and socio-economic factors can influence the level of active citizenship contributing to NbS.

6. Conclusion

This research has focused on the research question: *How do cultural and socio-economic factors of urban neighborhoods influence the number of active citizenship initiatives and their contribution to NbS in a neighborhood?* This research has collected both quantitative and qualitative data through a data provided by the municipality and neighborhood offices and conducting in-depth interviews.

By analyzing a database and conducting in-depth interviews, this study found that cultural and socio-economic factors have an effect on the number of active citizenship initiatives contributing to NbS in two manners; through a direct influence on active citizenship and through an indirect influence on the accessibility to resources for setting up a NbS initiative.

First, cultural and socio-economic factors directly influence the level of active citizenship regarding NbS in a neighborhood. When citizens are characterized with low levels of cultural and socio-economic factors, they will most likely have different priorities and they will not have time or energy to focus on NbS. Urban greening will not be important, as they will be in a certain survival mode. The amount of income, the type of education and the level of social cohesion influence on the level of active citizenship regarding NbS, there was no influence of the immigration background of a citizen on the level of active citizenship regarding NbS indicated.

Second, cultural and socio-economic factors have an influence on the access to the resources funding, social capital and a strong social network that help develop a NbS initiative. A lower access to these resources will cause a lower adaptive capacity, which means that citizens are less able to adapt to external changes in society and will therefore have trouble setting up a NbS initiative. Not all cultural and socio-economic factors affect the accessibility of resources, as only the factors social cohesion and type of education influence the accessibility of resources. The level of social cohesion increases the access of resources through strengthening the social network in a neighborhood. This results in better access to the resources social capital and funding. The type of education has an influence on all the three resources, as citizens who are highly educated will have a stronger network, and they will find access to funding easier. Additionally, highly educated citizens will find social capital sooner since they have i) better knowledge, ii) better self-organization skills and iii) better digital skills compared to less highly educated citizens.

Local governments and middleground platforms can take the cultural and socio-economic dynamics of a neighborhood in consideration when stimulating active citizenship regarding NbS. Middleground platforms can i) create awareness about the initiative fund among citizens in different manners and ii) help the citizens apply for the initiative fund and help them gain support

in the neighborhood in different manners. Local governments can increase the support for citizens in vulnerable situations, which can result in creating more time and energy for citizens in vulnerable situations to contribute to NbS. In this way, the level of active citizenship regarding NbS may increase, which can have several environmental and social benefits in urban areas and can eventually contribute to sustainable development.

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Appendix A: Topic list interviewees

Interview neighborhood office/Utrecht Natuurlijk/NbS initiative

- Thank people for their free time
- Consent form
- If acceptable, start recording + introduction subject

Introduction

Could you first introduce yourself?

What is your role at the middleground platform/NbS initiative?

Neighborhood

Could you briefly describe the neighborhood?

Could you tell something about the different cultural- and socio-economic factors in the neighborhood? (Cultural- and socio-economic factors as in the amount of income, the social cohesion, immigration background and type of education)

Do these factors have an influence on the number of active citizenship regarding NbS in the neighborhood?

Active citizenship within neighborhood

Is there a large number of active citizenship within the neighborhood? Why/why not?

What are according to you the motives of citizens to become an active citizenship in this neighborhood?

How does this initiative experience the access to resources? Or:

How do initiatives find their way to this specific middleground platform (neighborhood office/Utrecht Natuurlijk)

Applications initiative fund (for neighborhood offices)

Are applications for the initiative funds often rejected? If so, why?

Why do you think there are many/not many applications for the initiatives funds? Is this amount related to the cultural- and socio-economic factors in the neighborhood?

- Amount of income
- Social cohesion
- Immigration background
- Type of education

How could the amount of applications, and the acceptance rate of the applications for the initiatives funds be improved?

For initiatives:

How did you find social capital in the neighborhood?

Does the initiative have a strong social network?

How does the initiative get funding?

How do you experience the accessibility of these resources?

Are the different cultural and socio-economic factors related to this accessibility of resources?

- Amount of income
- Social cohesion
- Immigration background
- Type of education

Appendix B: Nodes NVIVO

Nodes	Sub nodes	Sub nodes
<i>Overvecht</i>	Cultural- and socio economic factors	<ul style="list-style-type: none"> - Income - Social cohesion - Type of education - Immigration background
	Active citizenship	<ul style="list-style-type: none"> - Initiative fund application
	Resources	<ul style="list-style-type: none"> - Funding - Social capital - Social network
<i>City centre</i>	Cultural- and socio economic factors	<ul style="list-style-type: none"> - Income - Social cohesion - Type of education - Immigration background
	Active citizenship	<ul style="list-style-type: none"> - Fund application
	Resources	<ul style="list-style-type: none"> - Funding - Social capital - Social network
<i>Wittevrouwen</i>	Cultural- and socio economic factors	<ul style="list-style-type: none"> - Income - Social cohesion - Type of education - Immigration background
	Active citizenship	<ul style="list-style-type: none"> - Fund application
	Resources	<ul style="list-style-type: none"> - Funding - Social capital - Social network
<i>General</i>	Cultural- and socio economic factors	<ul style="list-style-type: none"> - Income - Social cohesion - Type of education - Immigration background
	Active citizenship	<ul style="list-style-type: none"> - Fund application
	Resources	<ul style="list-style-type: none"> - Funding - Social capital - Social network

Appendix C: Consent form

This bachelor thesis researches the potential influence of cultural- and socio-economic factors on the number of active citizenship initiatives contributing to nature-based solutions in a neighborhood.

This form is designed to ask your consent of participation. It is made to confirm that you know what the project is about and that you are happy to take part.

Please check the boxes you agree with below and *delete as appropriate* where * is indicated:

- I know what the bachelor thesis is about.
- I *consent/do not consent** to participate in this research project and for the information I provide to be used in the project's analysis and outputs.
- I *wish/do not wish* to have my anonymity protected.
- I *consent/do not consent* to the interview/meeting/discussion being recorded, and *an anonymous/ non-anonymous** record to be stored for research purposes in accordance with the data protection policy described in the "Information Sheet for Participants"
- I understand the terms under which this record and any additional information I provide will be stored.
- I am aware that I do not have to answer all the questions that I am asked, and I reserve my right to refuse or cease participation in the interview process, and to request keeping certain materials confidential.

	Participant	Researcher
Name		
Signature		
Date		

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