Perceptions of green gentrification in Leeuwarden.

The exploration of green gentrification and its impacts in two neighbourhoods in Leeuwarden.

Bachelor Thesis
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Abstract

Cities all over the world are adapting their neighbourhoods for climate change. This is done using more greenery, better quality greenery or lowering the nuisance it creates. While these adaptations are necessary for creating safe and quality environments to live in, recent studies argue over the risk over gentrification in the less affluent neighbourhoods. This phenomenon is called green gentrification and causes the rise of housing prices, which misplace communities to other places, due to the improvement in urban environmental quality in neighbourhoods. This research analyses two different neighbourhoods in Leeuwarden. Heechterp-Schieringen a less affluent one, which has a high number of social housing from the social housing agency in Leeuwarden and Aldlân, a more affluent neighbourhood which holds a high number of homeowners. This research answers the question: How can Leeuwarden avoid green gentrification initiated by climate change adaptation policies and measures? The question is answered using qualitative interviews from residents of the neighbourhoods and the social housing agency. In addition, a policy analysis about Leeuwarden current climate change adaptation plans is performed and to identify the drivers of green gentrification a literature review is conducted. This led to 3 possible alterations and addition Leeuwarden can use to limit green gentrification in Heechterp-Schieringen. These include, different incentives for neighbourhoods dominated with rental housing, better collaboration with the social housing agency to ensure the social housing are below the social housing threshold and provide more neighbourhood specific approaches as both neighbourhoods need different tools to properly adapt.

1. Introduction

1.1 Background

More and more people are living in urban areas. The growth of citizens is putting enormous stress on cities, due to this urbanisation it will only increase. In addition, the effects of climate change are getting more severe and more frequent. Examples are extreme weather effects and the warming of the earth (Allen et al., 2018). Cities all over the globe are trying to adapt to the effects of climate change (UNEP, 2022). Large top-down and small bottom-up initiatives are put in place in efforts to achieve this in Leeuwarden (Gemeente Leeuwarden, 2018: Operatie Steenbreek, 2020), some more effective than others. The spillover effects from these initiatives influences the neighbourhoods. The added value in neighbourhoods could lead to gentrification (Xu et al., 2022: He et al., 2022: Brouwer et al., 2007: Linnekamp et al., 2011). Gentrification is a process in which the value of the neighbourhood rises too much. Eventually the original residents are not able to afford the costs of living in their neighbourhood or do not feel connected anymore due to the fast change in socioeconomic status (Clark, 1988: Smith, 1996). Common indicators for gentrification are often income, race, ethnicity, home ownership, age, education, home ownership and rent (Barton, 2016: Bostic & Martin, 2003: Freeman, 2005: Gould & Lewis, 2012: Hammel & Wyly, 1996: Heldkamp & Lucas, 2006: Walks, 2008).

This research focuses on the challenge for small-mid sized cities in the Netherlands to adapt their neighbourhoods for the effects of climate change and the risk of gentrifying it. If not implemented properly, neighbourhoods can gentrify so severely it can lead to the displacement of the most vulnerable inhabitants (Long & Rice, 2019: He et al., 2022: Brouwer et al., 2007). Multiple cities are already adapting to climate change (C40, 2022). Most large cities have resources to nullify the effects of this gentrification, while smaller cities like Leeuwarden do not have these resources.

1.2 Research problem

The aim of this bachelor thesis is to relate the global trends of urban climate change adaptation to a small-mid-sized city in the Netherlands, namely Leeuwarden. Two neighbourhoods are highlighted, Aldlân, a relatively rich neighbourhood and Heechterp-Schieringen, a relatively poor neighbourhood. See figure 1.2.1.

Figure 3.2.1. Map of Leeuwarden with the highlighted neighbourhoods. (Google Maps, n.d.)

The objective of this research is to help smaller cities in the global north identify problems that could arise when the effects of climate change adaptation plans are not entirely clear. Most studies focus on larger cities and are not always as relevant on cities of a smaller scale (Anguelovski et al., 2022). This also leads to the research gap of this thesis. Smaller cities that start to change their urban structure for climate change are not always aware of green gentrification that can occur. Other small-mid-size cities can learn from the different choices the neighbourhoods in Leeuwarden can make and the results it has. In combination with the different scenario sketches for the future for different inhabitants have for the future and how different scenarios could be created or prevented.

As a result of this, cities with similar characteristics can incorporate different side effects of climate change adaptation in different neighbourhoods. The following research question will be central: *How can Leeuwarden avoid green gentrification initiated by climate change adaptation policies and measures?*

To this end, the related sub-questions this research will answer are:
1. *ˇHow is Leeuwarden currently adapting to climate change?*
2. *What are the drivers of green gentrification in other cities?*
3. *How do residents of Heechterp-Schieringen perceive and Aldlân climate change adaptations in their neighbourhood?*

1.3 Structure of the thesis

This bachelor thesis is divided in multiple parts using the sub research questions as guidelines to answer the main research questions. First the theory is discussed. The most important concepts are explained after which the model of the research is explained. Followed by the methodology the different neighbourhoods are explored and how the data is collected. In the results part the different sub research questions will be answered. The first: §*How is Leeuwarden currently adapting to climate change?* is answered using a policy analysis. After which the second subquestion: *What are the drivers of green gentrification in other cities?* is answered using different cases from other cities to identify different drivers of green gentrification. The last sub question that is answered in the results section is:*How do residents of Heechterp-Schieringen perceive and Aldlân climate change adaptations in their neighbourhood?* To answer this, different qualitative interviews will be coded using the coding tree described in the methodology. Finally, the main research question: *How can Leeuwarden avoid green gentrification initiated by climate change adaptation policies and measures?* Is answered.   Followed by the limitations of this research and the recommendations.

2. Theoretical framework

2.1 Concepts

In this research a couple important concepts and actors are used. These are explained below. These concepts are important to understand to be able to answer the research question and understand the rest of the research properly. Three concepts are highlighted, social housing agency. These organisations have an important role for housing in the Netherlands and Leeuwarden. It is important to explain because social housing agencies are not active or work the same in different countries. Green gentrification is important due to its connection with the main question. The concept of just green enough is important because of its solution for green gentrification. This also explains the connection between the two concepts.

Social housing agency
Social housing agencies are organisations that provide affordable housing. To achieve this, social housing agencies are given special exemptions from the regional and national government. These privileges include, a discount on the transfer of real estate and land to build, expansion of financing for purchasing real estate and the foundation of a shared thinktank and learning centre for different housing agencies (Kamerstukken, 29453, nr. 480, 2018), to further help these agencies the national renters fee is also waived (Kamerstukken, 36219, nr. 529, 2022).

Green gentrification
Gentrification is the process of adding value or positive change in an environment which attracts new affluent residents, who will attract more affluent businesses and other residents. In turn the original residents will have to move out due to the higher costs or the sudden change in community and environment (Clark, 1988: Smith, 1996). There are multiple drivers for gentrifications for example income, race, ethnicity, home ownership, age, education, home ownership and rent (Barton, 2016: Bostic & Martin, 2003: Freeman, 2005: Gould & Lewis, 2012: Hammel & Wyly, 1996: Heldkamp & Lucas, 2006: Walks, 2008).

For this research the concept of green gentrification from Gould and Lewis (2012, p.121) is used: "urban gentrification processes that are facilitated in large part by the creation or restoration of an environmental amenity", which makes it hard to make altercations in poorer neighbourhoods like Heechterp-Schieringen, because it makes the neighbourhood more favourable and in essence heightens the real estate prices and rent. Even when the prices do not rise a lot, it could lead to social displacement of communities or social segregation (Anguelovski et al., 2018).

Just green enough
'Just green enough' is a term coined by Curran and Hamilton (2012: 2018) and Wolch et al. (2014). This includes a policy strategy which includes creating several smaller parks, whose intended use is for long-term residents and combining it with policies that includes preserving jobs and affordable housing. Rigolon & Nemeth (2020) argue that park sizes do not influence green gentrification and are not a part of a 'just green enough' strategy. Important for this strategy to work is to use a bottom-up strategy in collaboration with local stakeholders, inhabitants and governmental agencies. The use of parks will then be more steered towards the needs of the current long-term residents. This can mean not optimising green spaces, so that the attractiveness of the neighbourhood is not heightened above the standard of the neighbourhood (Wolch et al, 2014: Curran & Hamilton, 2012). Problems with this strategy is that every context is very different. Thus the approach from one neighbourhood in one city could be very different from a neighbourhood that is next to it. Making it hard to make it an uniform term or strategy.

2.2 Theory
In accordance with the concepts it is important to place this research in its theoretical timeframe. Lower income neighbourhoods and households are more susceptible for climate change (Xu et al., 2022: He et al., 2022: Brouwer et al., 2007). To protect them most climate change adaptation should be placed in these environments. To stimulate active participation from households, subsidies or other financial incentives are used (Elrick-Barr et al., 2017). However most poorer neighbourhoods consist of renters, private or from a social housing agency (Winterman, 2020). Who are often not enticed enough by subsidies to take action. This is because most improvements on their house do not benefit renters enough as they are not the owner and more subsidies are focussed on the owner of the house. The same is true for their neighbourhoods. As most renters do not feel the ownership for their neighbourhood (Rohe & Stegman, 1994) nor have the purchasing power to make these changes. This task then shifts towards social housing agencies and the municipality. Both have more financial power and more benefits for adaptations. However, this could lead to gentrification in the neighbourhood. In this case, green gentrification is a possible risk of carelessly adding green spaces in a neighbourhood or improving the quality of existing ones (Rigolon & Nemeth, 2020: Anguelovski et al., 2019). However this could be the answer to increase the resilience of the neighbourhood. This leads to a future in which the green spaces are just green enough (Rigolon & Nemeth., 2020). However this approach is hard to measure and not uniformly applicable in different neighbourhoods and contexts, further explaining the relevance of this research.
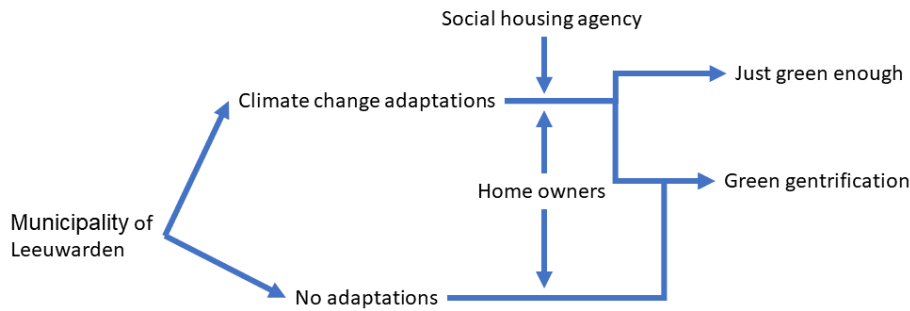
2.2 Conceptual model

Figure 2.2.1 Conceptual model showing the relationship between the different concepts

In the model above different actors and concepts are put together. This shows the interrelationships between them. Starting with the municipality of Leeuwarden if it chooses to make climate change adaptations or not, which will have consequences if a neighbourhood will have trouble with green gentrification or will be just green enough. Even if no adaptations are implemented in a neighbourhood other places will be more interesting to live in due to the fact it did have climate change adaptations in place. The most important factor in the model is the influence homeowners and social housing agencies have on the potential outcome. This influence will help steer different choices from the municipality towards green gentrification or just green enough solutions. When no adaptations are in place by the municipality, homeowners and social housing agencies can take matters into their own hands which, due to their lesser expertise, could lead to green gentrification. While it could also lead to a situation that is just green enough due to lack of finance or authority over bigger projects. The same is possible from when the municipality does induce climate change adaptations. In combination with the different efforts from homeowners and social housing agencies the neighbourhood could have adapted to climate change, which might lead to green gentrification instead of just green enough.

3. Methodology

3.1 Data collection

How can Leeuwarden avoid green gentrification due to climate change adaptation policies using an analysis of strategies?

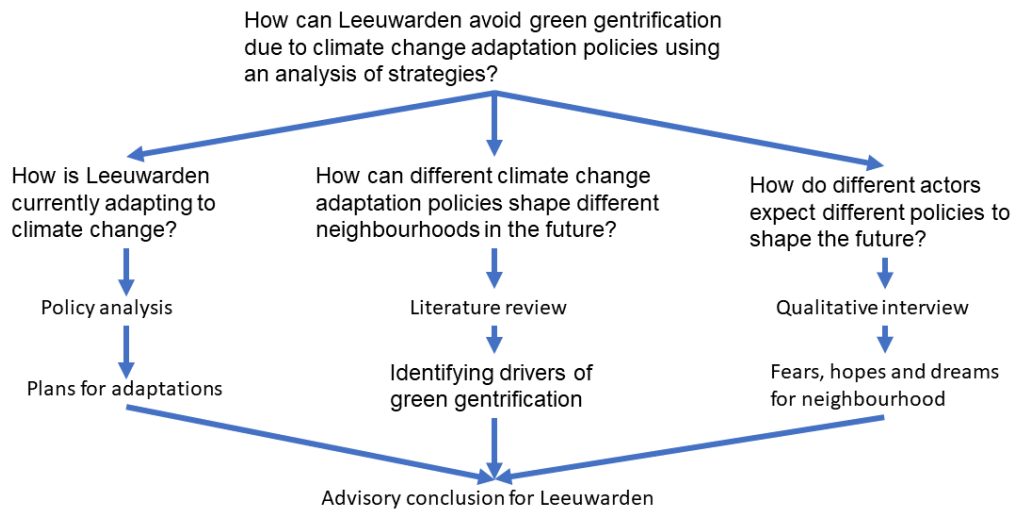| How is Leeuwarden currently adapting to climate change?	How can different climate change adaptation policies shape different neighbourhoods in the future?	How do different actors expect different policies to shape the future?
Policy analysis	Literature review	Qualitative interview
Plans for adaptations	Identifying drivers of green gentrification	Fears, hopes and dreams for neighbourhood

Advisory conclusion for Leeuwarden

Figure 3.1.1. Schematic overview of this research.

In figure 3.1.1 a schematic overview of this research is given. The three sub questions give different views on the research topic. First the plans for climate change adaptation of the municipality of Leeuwarden were researched, therefore policy analysis was done. The results from this gave an insight into how the municipality of Leeuwarden is currently adapting in their city. Literature research was done to check how different climate change adaptations policies and drivers of green gentrification in other cities explain why and how this green gentrification occurs. These case studies gave insight into how other cities, although in other contexts, react to climate change adaptations. Lastly qualitative interviews were conducted with different actors in which their views of the future for their neighbourhood were asked about. These were ranked in what they think are strengths, weaknesses, threats and opportunities for their neighbourhood and their houses. These helped identify in what way different actors want to participate in climate change adaptation plans in their environment.

The data collection was done in three different ways as seen in the schematic overview. The first sub question was answered using a policy analysis. These policies are locally used policies, although they are inspired by a nationwide program to adapt cities. The Klimaatadaptatie van het Rijk (Rijksoverheid, 2018) was written to inspire cities in the Netherlands how to adapt neighbourhoods. The municipality of Leeuwarden first started to identify areas that are most vulnerable for extreme weather and climate change with the Friese klimaatatlas (2018). In which is identified the most problematic extreme weather effects are extreme rainfall, droughts and long heatwaves in the cities. As most environments can not deal with the increasing stress these extreme weather provides, more people could experience nuisance. To combat these effects the policy 'programma

volhoudbaarheid' (Gemeente Leeuwarden, 2018) was made. Which is the leading strategy Leeuwarden uses for climate change adaptation. This policy programme introduces ambitions for the municipality. The main ambitions were to create a CO_2 - poor energy supply and become independent from fossil fuels like oil and gas, to be adaptable to climate change in the future, become a trashless community in 2050 and become a top-3 developing region in a circular economy.

To answer the second sub question different case studies were used. These include green gentrification in other cities. The results from research in other cities were used and then placed in the Leeuwarden context. These include studies from Amsterdam (Del Pulgar, 2021) and Barcelona (Anguelovski, 2018). The studies could shed light on different strategies other cities have used and their results. Conclusions were then compared to the strategy of Leeuwarden, 'programma volhoudbaarheid' (Gemeente Leeuwarden, 2018).

For the last sub question qualitative interviews were used. I interviewed 8 people, 5 living in Aldlân, two employees of the home owners agency in Heechterp-Schieringen and an ex-resident of Heechterp-Schieringen. The different actors that were important for this research were homeowners, renters and the social housing agency. To recruit people that were willing to give an interview, my contacts were used. In my personal circle multiple people own a house in Aldlân, which shortened the search for willing participants. For renters in Heechterp-Schieringen, the local district team was used, but they were unable to provide willing participants due to interference from the care team and the social housing agency in the Heechterp-Schieringen. Lastly contact with the social housing agency was made using their official channels, either through their helpdesk and/or their mailing address.
        The interviews were semi-structured. In these interviews I would ask the participants how they see their future and how they can alter it. Also their influence in adaptation in their neighbourhood was asked about and how likely they will find different future scenarios to happen. The interview with the social housing agency was a bit more specific and more about policy and strategies due to their expertise on the topic. The questions for residents would be more about their own views of their housing situation. In these interviews different future scenarios would be described and their response on how such a future should be able to develop in Leeuwarden. The views, fears and ideas of the people in these communities were examined further, both can be reviewed in appendix I and appendix II.

3.2 Case selection

This thesis focuses on two different neighbourhoods in Leeuwarden. Aldlân and Heechterp-Schieringen as seen in figure 3.2.1. Although in the same city, these two neighbourhoods differ a lot. About 75% of all the houses in Heechterp-Schieringen are social housing with rents below the social rent allowance (Jonker, 2022), where Aldlân, a much richer neighbourhood, reaches almost 70% home ownership.

Heechterp-Schieringen

Heechterp-Schieringen is a neighbourhood in the eastern part of Leeuwarden. This neighbourhood was mostly built between 1958 and 1963 (Jonker, 2022). With the intention of building lots of houses in a relatively small space for the lower income class in Leeuwarden, the neighbourhood resulted in a series of multiple porch flats as seen in figure 3.2.2. It consists of around 600 houses (CBS, 2022).

Figure 3.2.2. Aerial view of Heechterp-Schieringen (Arodi Buitenwerf, n.d.)

These buildings encompass small green spaces to accommodate the residents. These endured multiple alterations throughout the years to add playing grounds or other paths to encourage usage of these areas. While Heechterp-Schieringen started as a trendy neighbourhood in the home shortage crisis of the 50's, soon changed. Most residents that grew into a higher socioeconomic status left the neighbourhood. The neighbourhood and its residents kept their poor status and turned into a troublesome neighbourhood (De Weerd, 2014). This resulted in a lot of crime in the neighbourhood. Heechterp-Schieringen became the only Frisian neighbourhood of the 40 'vogelaarwijken' in the Netherlands (Sitalsang, 2017). This meant the national government found the circumstances in the neighbourhood bad enough, they invested money to improve these. Years later these problems are not entirely solved. Some bigger and more expensive homes were built, but the price of the majority of the houses stayed far below the average and thus most residents fled the neighbourhood when they had the means.

"I've never felt really safe in the neighbourhood and that was one of the main reasons I moved"
        Interviewee 3, ex-resident of Heechterp-Schieringen, 10-01-2023

The neighbourhood also struggles with criminality and cannot seem to shake that problem. While it decreased in the years (CBS, 2022), due to different factors (Jonker, 2022), it is still an issue as told by interviewee 3.

Aldlân

Aldlân is a neighbourhood in the south of Leeuwarden. The neighbourhood is built as a result of the expansion of Leeuwarden towards the south. Most buildings were built between

1970 and 1980 (CBS, 2022). As seen on figure 3.2.2, most houses consist of one or two family homes. In the neighbourhood there are two small flats for senior citizens.

Figure 3.2.3. Aldlân west, Uitzicht op Drachsterweg (v.d. Veer & v.d. Graaf, z.d.)

All interviewees I spoke to were positive about the neighbourhood. What's valued most is the anonymity you can live with in the neighbourhood. This combined with the occasional friendships in the neighbourhoods makes it a safe haven for the interviewees as seen by the quote below.

"You have nothing to do with the other people in the neighbourhood, only the residents within your block. This makes it peaceful and pleasant to live."
        Interviewee 4, resident of Aldlân, 10-01-2023

3.3 Data coding

The interviews are recorded and then transcribed. Then they are coded in Atlas.ti. This program helped to analyse data from the different interviews. For the coding a SWOT-analysis is used. SWOT-analyses are used to identify strengths, weaknesses, opportunities and threats (Swaen, 2021). These are used to identify the four aspects in the Heechterp-Schieringen and Aldlân. Strengths include aspects such as collaboration between neighbours or initiatives for climate change adaptation that are in place. Weaknesses include bad communication between governmental organisations and residents. Opportunities include things interviewees see as things that could be improved. Lastly, threats include aspects interviewees see as unfixable.

3.4 Ethical considerations

This research uses personal data acquired using interviews, so privacy is an important factor for this research. To ensure participants understand what the implications of this research are, a consent form has been signed, the one used is seen in appendix III. Furthermore to ensure their privacy, the names of the participants are not used in this research. The interviews were recorded in agreement with the participant and safely stored. In the interviews names were also avoided due to an extra layer of safety.

Another thing to take in consideration is the subject of this research. It could be a very frustrating topic for residents. If one of the interviewees really would like to make a contribution or is unable, it can be very frustrating. It can even be infuriating, if they feel that the ones that need to help them, are working against them. The homeowners and especially renters need privacy. As their household depends on a good cooperation between the social housing agency, more struggles between them is the last thing that should be induced. This could lead to frustration and that should be avoided. This is done by reassuring that the given answers are sufficient and that being unable to answer is not an issue.

4. Results

4.1 Current climate change adaptation plans in Leeuwarden

Leeuwarden has a couple policies they use to adapt their city for extreme weather. The circumstances that have the most influence on Leeuwarden are extreme rainfall, droughts and Heat-island effects (Friese Klimaatatlas, 2018). This study identifies the most vulnerable parts of Leeuwarden and Fryslân. The Friese Klimaatatlas (2018) gives, however, not an accurate representation of the future. The effects of climate change will eventually worsen, with all its consequences. Leeuwarden will need to adapt as its changes will not be enough to mitigate the effects of climate change. Leeuwarden has put up a couple of policies to adapt to the coming changes. 'Leeuwarden Klimaat actief' (2020) focuses on what attitude Leeuwarden needs to have. This policy will focus mostly on an integral approach to adapt the city of Leeuwarden. So places that are not up to climate standards will be improved in combination with other projects. This is due to the relative high costs of the projects. This means new building projects get new requirements regarding climate change adaptation. So will new neighbourhoods need to withstand precipitation rates of 60mm per hour. For these and other standards for neighbourhoods Leeuwarden uses 'Klimaatadaptatie van het rijk' (Rijksoverheid, 2018) and 'covenant klimaat adaptief bouwen' from the southern Holland (Provincie Zuid-Holland, 2018) for inspiration. While this is their strategy for now, 'Leeuwarden Klimaat actief' (2020) concludes new technology and approaches change fast, so it will be renewed every 5 years.

Another big climate change adaptation program is 'programma volhoudbaarheid' (Gemeente Leeuwarden, 2018) based on the national 'Deltaplan ruimtelijke adaptatie' (KlimaatadaptatieNederland.nl, 2018). This policy is more focused on results than the way to achieve it. The three main results that need to be achieved before 2025 are: 25.000m3 water storage in built-up areas, 10% shadow increase on at least 25% of the trouble points of UHI-effects and a finished research on the long term effects of droughts in urban areas.

Leeuwarden will also focus on citizen initiatives and participation. For example 'project Steenbreek' (2020). This initiative focuses on multiple projects to enhance biodiversity by adding green spaces in private property. This is mostly achieved with information days, brochures that give information that mostly focuses on greenification of private property. For example the 'TonTon' rainwater ton could be bought using a large subsidy from the municipality of Leeuwarden, operation Steenbreek advised and informed civilians on that subsidy. This helped collect rainwater and give it a better purpose to water people's plants (TonTonRegenton, 2022).

These policies all give a course of action and give steering towards a more adaptable Leeuwarden. However none mention differences in socio-economic classes, homeownership and the effects of these measures. As seen in the theory (Anguelovski et al., 2018), these measures could lead to gentrification in the poorer neighbourhoods.

4.2 Drivers of gentrification in other cities

Relevance
In this section a literature review will be conducted to identify the drivers of green gentrification. Different researches show how green gentrification is handled in other cities with other contexts. Comparing these different contexts with that of Leeuwarden identifies different trends and gives different approaches Leeuwarden can use to adapt Aldlân and Heechterp-Schieringen in the future.

Barcelona
Starting with Barcelona a research from Anguelovski et al (2017). In this research the equality of adding green space in undeserved neighbourhoods in Barcelona. A similar research in a large global city. The context is different from Leeuwarden. Barcelona is much larger and has way more resources to deal with gentrification. In combination with the possibility the neighbourhoods are already gentrified. While similar to this research different neighbourhoods are researched. The author concludes that all new parks have increased gentrifying conditions like more higher educated inhabitants, higher land prices and home income. Interesting is the Ciutat Vella district and the northern parts of Barcelona. These areas experienced green gentrification trends. As Angluevoski (2017) states these neighbourhoods have a high population of immigrants and a bad stigma of worker class residents. Similar to the stigma Heechterp-Schieringen has. The author gives two other green gentrifications that do not occur: houses of a low quality and the isolation from large cultural amenities. For Leeuwarden it is important to learn from this research. If the collaboration with the social housing agency is good enough, Heechterp-Schieringen should not gentrify. Important are the houses that the social housing agency provides, because the improved neighbourhood will attract potential affluent buyers and investor.

Amsterdam
In Amsterdam-Noord a large climate change adaptation project was initiated mostly to focus on the flooding risk in the region. The municipality several merged smaller parks into larger parks and now improved its amenities (Gemeente Amsterdam, 2023). To combat green gentrification in the area the municipality focussed on a mix of young, old, rich and poor (Veldboer and Bergstra, 2011) and social and spatial segregation should be avoided at all costs. Veldboer and Bergstra (2011) argue that this approach is working in accordance with the tasks social housing agencies have in the area. However leads to 'scheefwoners' (Hamer & de Vries, 2015), which are residents that are earning too much to live in these low rent houses. This means gentrification is halted but the adaptations are not targeted towards low-income residents. Leeuwarden can use this info to work more in accordance with the social housing agencies and properly assess the renters and their housing situation. This helps allocate the right adaptation measures to the right people and lessens the social injustice in the city.

4.3 Perceptions of climate change adaptation in the neighbourhood

5 interviews are held with 7 people. One with two people from the social housing agency in Heechterp-Schieringen, Elkien, one with an ex-resident of Heechterp Schieringen and the other 3 interviews with residents of Aldlân.

Heechterp-Schieringen
Elkien is one of the social housing agencies that is working actively to provide housing for an affordable price in the province of Fryslân (Elkien, n.d.). Social housing agencies have a couple of duties in a region, such as providing affordable housing, maintenance and making their housing more sustainable. Luckily most inhabitants do not complain about extreme weather effects in the neighbourhoods. Although heat is a recurring problem in the houses. In both interviews they see a threat in this problem and its increasing risks. Combined with the opportunity in the rebuilding done in the neighbourhood, both are positive about the ability to adapt to climate change. Interviewee 4, once moved out of the neighbourhood when more financially able, would consider moving back when adapting changes are implemented. The social housing agency says it has strong income classes for which it provides houses, thus eliminating the pushing out of residents.
A big difference between the interviewees is that interviewee 4 feels more opportunities lie within the residents of Heechterp-Schieringen, while the social housing agency sees more opportunities with the municipality.

Aldlân
What interviewees 1, 2, 3 and 5 value most is the collaboration in the community and the neighbourhood. Most do not fear extreme weather effects and act upon initiative from the municipality. Some initiatives to make their houses more sustainable are done, but on a small scale. They do point out that due to information or expertise from their neighbours, they are also more likely to make an effort to adapt to climate change. A threat that emerges from this, is their dependence on the municipality with a large top-down approach. Most weaknesses are incompetence and not having enough information to properly adapt their environment for climate change and not wanting to act outside of their own property, while this also benefits residents. Strengths in the neighbourhood are the willingness and the ability to pay is high. This means that the municipality can easily put in programs to help stimulate residents to adapt to their neighbourhood.

5. Conclusion

The main research question of this research is: *How can Leeuwarden avoid green gentrification initiated by climate change adaptation policies and measures?* Leeuwarden can avoid green gentrification by applying some additions to their climate adaptation strategy. In addition to their current adaptation goals of 25.000m3 water storage in built-up areas, 10% shadow increase on at least 25% of the trouble points of UHI-effects and a finished research on the long term effects of droughts in urban areas. Leeuwarden should include a strategy to make this as fair as possible. As most programs are now focussed on citizen participation and initiatives. Which are less successful in poorer neighbourhoods like Heechterp-Schieringen. Programs Leeuwarden need to provide should include extra incentives for renters and poorer communities as financial incentives are less successful.

Leeuwarden can identify different drivers of climate change. These drivers include the stigma of the different neighbourhoods and the isolation from different amenities in the city. In collaboration with the social housing agency the stigma can be counteracted. With the adaptation measures by the municipality and the social housing agency, Heechterp-Schieringen can get a better stigma. As the neighbourhood will have more beautiful houses and amenities. This can lead to 'scheefwoners' that are also troublesome in Amsterdam. The municipality of Leeuwarden should provide the tools and information to the social housing agency to counteract this phenomenon as much as possible.

Lastly, Leeuwarden could provide the right tools to the right people. Residents of Aldlân see more benefits in information and subsidising climate adaptation measures. While in Heechterp-Schieringen needs a more top down approach. Beneficial would be for Leeuwarden to identify troublesome regions for green gentrification and apply different strategies for the different neighbourhoods. This means more customization per neighbourhood, but ensures neighbourhoods will be just green enough.

5.1 Limitation

One of this bachelor thesis' shortcomings is in size. Due to the (relatively) short amount of time for this research, not many interviews could be conducted. This means the data collected is sampled and does not speak for all the actors. Because these policies are the first regarding climate change adaptation in neighbourhoods there are no precedents in Leeuwarden. The importance of the right implementation is hard to predict for that case and makes it hard to give the right advisory recommendations. In addition, due to the poor status and the relatively bad relationship between the social housing agency, the local care team and the residents in Heechterp-Schieringen it is decided to minimise the contact between residents of the neighbourhood and this research. This meant that interviews were reduced in number and the data can be more focused on the social housing agency. To get a better insight a survey, with minimising contact with residents could enhance this research to get a better view of the perceptions of residents of Heechterp-Schieringen.

5.2 Recommendations

I recommend the municipality of Leeuwarden to do extensive research on the different effects and drivers of green gentrification in their city. In combination with this research, Leeuwarden can then identify troublesome areas and prepare a special strategy to minimise the risks of green gentrification. This could be done using comparative studies in other cities in the Netherlands or cities similar in size, income, political climate or approach. This can help identify different strategies to maximise adaptation plans while minimising the risks of green gentrification. In addition, the way Leeuwarden is adapting at the moment is very susceptible for exclusion of poorer neighbourhoods. Leeuwardens way of combining different building projects makes it more cost effective, but more probable to happen in more affluent neighbourhoods as other building projects are more frequent due to the ability to pay.

Further research can include the effects of adaptation measures that do not include open greenery. For example the effects of private greenery on green gentrification in a neighbourhood. Leeuwarden can then make more direct incentives and calculate the effects of their subsidy program. Other research that could be done is the difference between adaptation plans that include greenery and 'grey' adaptations. To further explain the difference in green gentrification that occurs due to improving green spaces and if the same effects occur when better infrastructure to adapt to climate change is installed.

Lastly, another research could develop different outcomes of climate change adaptations. This research focused on 2 different outcomes, green gentrification or 'just green enough'. More outcomes could be developed with more specific outcomes.

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Appendix

I. Interview guide - residents

Welcome,

I'm doing research about gentrification induced by climate change adaptations in two different neighbourhoods in Leeuwarden. I am looking into different fears, opportunities, experiences and emotions about the changes in the different neighbourhoods. I am interviewing you because you are a citizen/policymaker/social housing agency, who participates in this phenomenon.

The results from this interview will be analysed and reported in my research project. The intended readers of this project are my instructor and other members of the teaching staff. In accordance with your anonymity in the paper, your privacy will be protected and you will feel secure enough to continue. You can stop any time you'd like. With your approval, I would like to record this interview, so it can be transcribed later and analyse it more easily. The interview will last around 20 minutes, please do not be alarmed to be timed, you have time enough to step in as much detail as you would like. Be it longer or shorter.

With that all said, do you have any questions before we begin?

Introduction questions - resident

Wat kun je vertellen over deze wijk?
- Vind je het fijn om hier te wonen? → hoe zit het met de gemeenschap?
- Wat vind je het belangrijkste in de wijk?

Ervaar je wel eens extreem weer of klimaatverandering in uw wijk?
- Hoe ervaar je dit en waar?
    - In de geschiedenis of in de recente geschiedenis?
- Hoe denk je dat dit verandert in de toekomst? (2030→2050)

Kernvragen

If you would experience less extreme weather in the future what would it take?
- Do you think that is viable?
- What is your role in it?

Wat zijn maatregelen die u neemt om uw wijk en woning te beschermen tegen klimaatverandering?
- Hoe ziet dat eruit in de wijk?
- Welke langdurige effecten heeft dat op de inwoners?
- Welke inspraak hebben jullie hierop?

Wat zou er met de wijk gebeuren als de gemeente niet ingrijpt in uw wijk?
- Hoe ziet dit eruit?
- Zou u er willen blijven wonen?

Hoe zou de wijk eruit zien als het volledig aangepast is aan klimaatverandering?
- Wat ziet u? Welke rol heeft u hierin?

- Welke rol heeft de gemeente/overheid hierin?
- Welk effect heeft dat op de rest van Leeuwarden en de wijk?

Wat heeft u nodig van de gemeente om uw wijk klimaatadaptief te maken?
- Welke middelen of beleid?

Afsluitende vragen
- Zou je nog wat willen toevoegen? (buiten de opname optioneel)
- Heb je nog vragen of opmerkingen over het interview?

II. Interview guide - Housing agency

Welkom,

Ik ben Rick Lazeroms en doe onderzoek naar gentrificatie veroorzaakt door klimaat adaptatie. Ik onderzoek verschillende aspecten, angsten, mogelijkheden en andere ervaringen over dit onderwerp in 2 verschillende wijken. Heechterp-Schieringen en Aldlân in Leeuwarden. Ik heb u gevraagd om een interview om uw werkzaamheden bij de woningcorporatie die een groot deel uitmaakt van het woningaanbod in Heechterp-Schieringen.

De data en resultaten van dit onderzoek worden gebruikt in mijn bachelor scriptie. De doelgroep voor dit onderzoek is dan ook mijn scriptiebegeleider en beoordelaars van de faculteit ruimtelijke wetenschappen van de Rijksuniversiteit Groningen. Om uw privacy te waarborgen zal ik uw naam en werkgever uit het document laten. U kunt het interview op ieder moment stoppen. Met uw goedkeuring zou ik het interview wel willen opnemen, zodat het makkelijker getranscribeerd en geanalyseerd kan worden. Het interview zou ongeveer 20 minuten duren, maar u mag in zoveel detail als u zelf fijn vindt.

Heeft u nog andere vragen? Of zullen we beginnen?

Introductie vragen - woningcorporatie
- Kunt u vertellen wat uw werkzaamheden zijn bij deze woningcorporatie zijn?
- Bent u betrokken bij de wijken Heechterp-Schieringen en Aldlân of bekend met deze omgevingen? → in welke manier wel/niet?

Kern vragen
Merkt u meer overlast van extreem weer van inwoners?
- Is er meer extreem weer? Of krijgen jullie daar alleen meer/minder meldingen van?
- Hoe uit zich dat?
- Denkt u dat meer of minder wordt in de toekomst? Waarom?

Wat zijn maatregelen die u neemt om wijken te beschermen tegen klimaatverandering?
- Hoe ziet dat eruit in de wijk?
- Welke langdurige effecten heeft dat op de inwoners?
- Welke inspraak hebben inwoners hierop?

Waar ligt bij jullie de prioriteit als het gaat om klimaatbestendig ?
- Waarom hebben jullie voor deze pijlers gekozen?

Hebben jullie rekening gehouden met gentrificatie in jullie wijken?
- Waarom wel/niet?
- Hoe veranderen wijken na jullie ingrepen?
    - Wat als dit niet volgens plan gaat?
    - Wat zijn gevaren voor de wijken en de inwoners?

Wat zou er met de wijken gebeuren als jullie helemaal niet ingrijpen?
- Hoe ziet de wijk eruit over 20 jaar? En over 50 jaar?
- Welk effect zou dat hebben op de inwoners?
- Welk effect zou dat hebben op andere wijken in Leeuwarden?

Wat voor beleid zou er moeten worden ingevoerd zodat jullie succesvol(ler) worden in jullie missie?
- Is dit aannemelijk/haalbaar?
- Hoe kunnen inwoners/huurders jullie helpen?

Afsluitende vragen
- Zou je nog wat willen toevoegen? (buiten de opname optioneel)
- Heb je nog vragen of opmerkingen over het interview?

III. Interview consent form
DECLARATION OF INFORMED CONSENT

Research project name: **Green gentrification in Leeuwarden**

Student's name: **Rick Lazeroms**

This bachelor thesis research investigates: **Green gentrification in different neighbourhoods of Leeuwarden**

You have been invited to participate in this research as an interviewee.

Please provide your consent that

1. You have been informed about the purpose of the research:

2. You have spontaneously and in complete freedom accepted to be interviewed:

3. You consent to the use of anonymized interview data for the research aims of the project, including its publication.

I declare that I am aware that:

· The research includes the collection of individual responses, opinions, evaluations

· each participant is free to ask for clarifications on the data collection procedure and about every other aspect of the project:

· each participant is free to leave the session in every moment:

· the eventual refusal to participate or the renunciation during the session will not involve any negative consequence for the participant:

· personal data collected for research purpose will not be transmitted to third parties:

· the collected personal data will be elaborated anonymously

· the research is conducted in the light of the RUG ethical policy (https://www.rug.nl/about-ug/policy-and-strategy/research-ethics/?lang=en)

Name _____

Signature_____

Date_____

In case you believe you have been mistreated during this interview or for any

more information you may wish to have regarding the research, please contact the thesis supervisor, Dr. Ethemcan Turhan (e.turhan@rug.nl)

IV. List of interviewees

Code	Age	Reason for interview	Date
Interviewee 1	29	Resident of Aldlân	11 - 01 - 2023
Interviewee 2	28	Resident of Aldlân	11 - 01 - 2023
Interviewee 3	26	Former resident of Heechterp-Schieringen	10 - 01 - 2023
Interviewee 4	53	Resident of Aldlân	10 - 01 - 2023
Interviewee 5	24	Resident of Aldlân	10 - 01 - 2023
Interviewee 6	/	Social housing agency - Heechterp-Schieringen	12 - 01 - 2023
Interviewee 7	/	Social housing agency - Heechterp-Schieringen	12 - 01- 2023