Climate change adaptation in marginalized neighbourhoods

Master thesis 2015

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Front page picture: NB4 (2015)

Preface

This master thesis has been written during the spring semester 2015 from February to June as part of the requirements of the Joint European Master in Environmental Studies: Cities & Sustainability (JEMES CiSu).

As part of the thesis, a poster communicating the thesis content has been created. The poster is presented at a poster exhibition at Nordkraft, Aalborg, in June 2015 and will also be presented during the exam.

Before starting, I would like to thank the people who have helped create this thesis. First, thank you to

- Torkil Lauesen
- René Sommer Lindsay
- Henriette Berggreen
- Lene Nørgård Rasmussen

for making yourself available for interviews. It has been a great experience talking to you and I learned a lot in the process. Second, thank you to my supervisor Martin Lehman and co-supervisor Isabelle Anguelovski for help, comments and constructive criticism throughout the work. Last, thank you to my husband Jesper Kjær, who have put in many hours to help with the layout of the thesis.

The thesis can be cited according to good citation ethics.

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Climate Change Adaptation in Marginalized Neighbourhoods

Master thesis

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Abstract

The distribution of environmental goods and bads are uneven, both between countries and within countries. In cities, poorer neighbourhoods often experience greater environmental hazards, such as brownfields, and fewer environmental goods, such as parks and waterfronts, than wealthier neighbourhoods. When this environmental injustice is addressed it often leads to increased rent and gentrification.

To address the consequences of the changing climate, adaptation is necessary. However, not much research has been done to understand the social consequences of climate change adaptation in cities. Through a case study of Skt. Kjeld's neighbourhood in Copenhagen, it is analysed how climate change adaptation projects transform neighbourhoods and how they address or create social and environmental inequities.

The results show that a change in focus from urban regeneration to climate change adaptation had consequences for the neighbourhood's socially vulnerable residents, who were the reason for the urban regeneration project in the first place. The neighbourhood is now being planned for the broad majority of residents and to attract the creative class, while the socially vulnerable residents are not specifically targeted. As a result, both environmental and social inequity for this resident group has increased. The risk of gentrification from the new green spaces is also real, but as many of the projects are still under way, the consequences are yet to be seen.

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1. Introduction

Climate change causes more extreme weather and increased precipitation amongst others. This has created a need to adapt cities to e.g. the larger amounts of water expected in the future. One way to do this is to manage rainwater locally and above the ground. Some climate change adaptation projects are changing the layout of the cities, incorporating adaptation into physical planning. In Denmark, this has resulted in climate change adaptation being incorporated into urban regeneration projects. However, this raises the question of how the residents of these cities or neighbourhoods experience the new focus on climate change adaptation.

Today's research on climate change adaptation is often focused on different planning approaches (e.g. Anguelovski, Chu and Carmin, 2014) and how to overcome barriers in the adaptation process (e.g. Moser and Ekstrom, 2010). In Denmark, the main focus is the same, which has resulted in databases and reports with examples on how to adapt cities to climate change (e.g. Naturstyrelsen, 2015b), but not much is known about how the neighbourhoods are affected or changed by the adaptation projects.

As most of the high profile climate change adaptation projects are fairly new and thus not completed, there is a lack of research investigating what consequences they have on the residents and the social structures of the neighbourhoods and cities. This was also acknowledged by a Danish inter-ministerial working group in 2007, concluding that there was a general need to further research the consequences of the climate change adaptation actions that are taken (TAK, 2007).

Some research is already pointing out some of the consequences of greening neighbourhoods, which is often a big part of managing rainwater in Denmark. Here, research show links between the greening of neighbourhoods and gentrification. This is also called environmental gentrification, where new green projects not only increase the quality of life of the residents, but also increase prices of housing and properties Wolch, Byrne and Newell (e.g. 2014).

However, whether climate change adaptation projects have the same consequences and how they transform the focus on social problems in vulnerable neighbourhoods and address inequalities in the city remains understudied. This thesis will provide an insight as to how the climate change adaptation projects transform neighbourhoods and what the consequences of this is. The next three chapters presents brief literature reviews on climate change, environmental justice and climate change planning literature to frame the research questions.

1.1 Climate change

Anthropogenic green house gas emissions are causing the global climate to warm. This warming has widespread consequences for both ecosystems and humans (IPCC, 2014a).

The last 30 years are likely to have been the warmest period in the last 1400 years in the Northern Hemisphere, and the global temperature has risen 0.85 °C from 1880 to 2012. Industrialization has caused increased emissions of carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). About 40 % of these emissions have stayed in the atmosphere, while the rest has been stored in plants, soil and the ocean. Up to half of the greenhouse gas emissions from 1750 to 2011 occurred in the last 40 years (IPCC, 2014a).

The impacts of the changing climate are many. Warmer temperatures will change precipitation and increase melting of snow and ice resulting in changes in the hydrological cycle. The oceans are acidifying, heat waves are becoming more frequent and rising sea levels and extreme weather events such as heavy rain and storms are causing floods and damages. Most plant species and small mammals are not capable of changing location or adapting as fast as necessary to keep up with the changing climate (IPCC, 2014a).

While it is difficult to estimate to which degree, economic losses are expected. Food security is undermined, where both crop yields and fisheries are affected negatively. Human health is also affected, and an increase in poor health, especially in low-income areas, is expected. Especially in developing countries, displacement of poor people due to extreme weather events will increase (IPCC, 2014a).

The impacts of climate change mentioned here can be divided into two groups, direct and indirect impacts. Many direct impacts such as sea level rise or extreme weather events have indirect impacts on e.g. transportation and communication systems or agriculture (da Silva, Kernaghan and Luque, 2012), see figure 1.

There are multiple reasons to take a further look on the impacts climate change has on cities. First, cities play an important role, not only as economic centres, but also for the well-being of humans (da Silva, Kernaghan and Luque, 2012). More than half of the world's population is living in cities and this number is projected to rise to 66 % by 2050 (United Nations, 2014). Second, Cities are micro climates that affect e.g. wind and temperature differently than the surrounding rural areas. Some cities are also more exposed due to pre-existing vulnerabilities such as their location at the sea or next to rivers. Third, because cities depend on being connected by infrastructure, have high population density and a high density of material and cultural assets, they are more prone to climate change than rural areas (Carter et al., 2015).

The micro climate of cities, or the special biophysical features, separating cities and rural areas are a

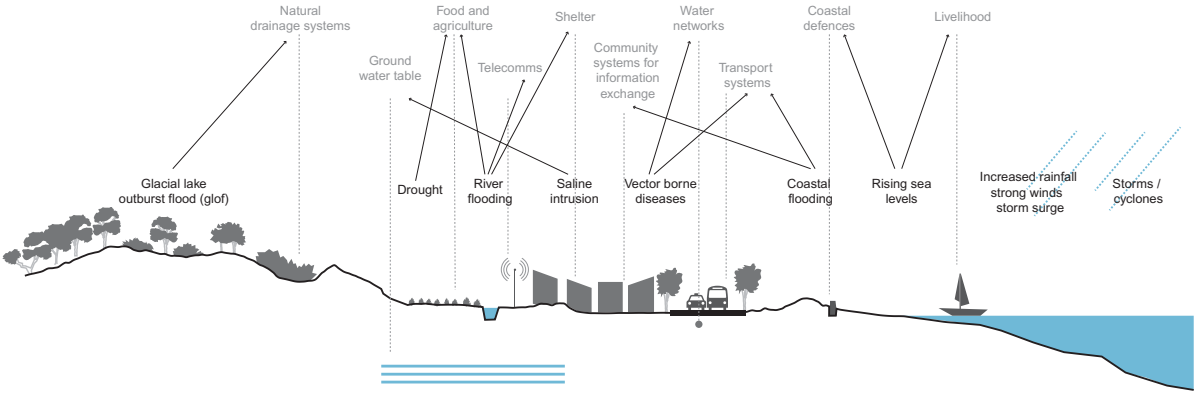

Figure 1. Direct and indirect impacts of climate change (da Silva, Kernaghan and Luque, 2012, p.126).

result of the high density of built areas in cities. One example is the urban heat island effect, where the temperature in the city can be several degrees higher than in the surrounding areas. Another example is increased surface runoff caused by limited possibilities for infiltration in the built area. Green areas would benefit both of these problems by providing cooling from evaporation and increased infiltration of rainwater (Gill et al., 2007).

The most important impacts from climate change on cities are sea level rise, extreme weather events, impacts on human health and energy use as well as availability of water. Other impacts are those on tourism, cultural heritage, biodiversity and air pollution (Hunt and Watkiss, 2011). Figure 2 shows the development in damages from cloudbursts in Denmark from 2000 until 2011.

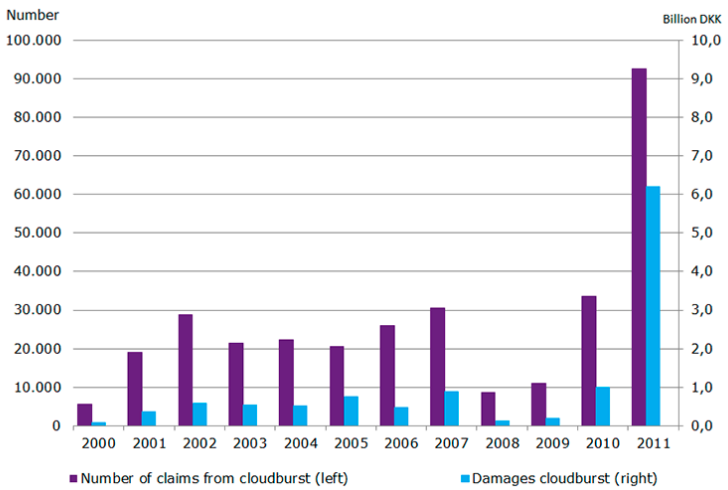

Figure 2. The development in insurance claims and economic damages from cloudbursts in Denmark from 2000 to 2011 (DIA et al., 2013, p. 12).

Sea level rise is a great risk, especially for cities located near the coast, while extreme weather events such as storms and heavy rainfalls are the main risk to the built environment. Storms are today the most costly weather events. Human health will likely be affected directly by the changing climate and indirectly by an increase in food-borne and vector borne diseases, e.g. salmonella. Energy use will be affected by the change in temperature, either increasing or decreasing the need for heating and cooling. The changing climate will also affect both water demand, availability and quality. Increased temperatures will increase the need for water cooling, which again will lead to an increase in water demand (Hunt and Watkiss, 2011).

In cities, indirect impacts from increased temperatures, floods, saline intrusion etc. can include

effects on transportation systems, power supply, drinking water, food distribution, waste management and communication systems (da Silva, Kernaghan and Luque, 2012).

In sum, cities are affected by the same climate changes as rural areas, but because of their function as economic centres and their location, built area and high population density, the consequences of climate change, especially the economic consequences, is high in cities.

1.1.1 Environmental justice

Even though climate change will be felt all over the planet, not all population groups will be affected the same. There is a general consensus that poorer and developing countries in the Global South will experience greater exposure and worse effects from the changing climate than developed countries, as they are more prone to climate change and does not have the (financial nor political) means to adapt to the changes (Parks and Roberts, 2006; Pearsall, 2010). An example is people living in slum areas in inadequate housing, whom will be at great risk to extreme weather events such as storms or heavy rains. One out of three urban dwellers live in slum areas, which equals one out of six worldwide (da Silva, Kernaghan and Luque, 2012). In addition, countries in the Global North often export unwanted and toxic waste such as electronics to countries in the Global South, adding to their environmental hazard(Martínes-Allier, 2002). Furthermore, the countries of the Global South are often the least responsible for climate change as they do not particularly contribute to global CO_2emissions or the consumption of resources. This way, the effects of climate change are felt the greatest in areas that did not cause said climate change in the first place (Agyeman, Bullard and Evans, 2002; Parks and Roberts, 2006).

The uneven distribution of environmental goods and bads is also called environmental justice or environmental injustice. Environmental justice can be understood as *"the right to remain in one's place and environment and be protected from uncontrolled investment and growth, pollution, land grabbing, speculation, disinvestment, and decay and abandonment"* (Anguelovski, 2015b, p. 33). Other terms such as environmental equity or environmental racism is often used together with environmental justice, however, agreeing on a definition of the terms can be difficult as different cultures and places require different understandings. However, Holifield (2001) argues that unclear definitions are not necessarily a problem, as long as researchers makes clear how they understand the terms.

The problems with environmental justice seen on a global scale is also seen in cities. Ethnic minorities, people of colour and low-income residents tend to be living in neighbourhoods with greater environmental risks than white and wealthier residents. These risks include both the risk of climate change (Dodman and Satterthwaite, 2008) and the risk from waste sites, polluting industries, heavy transportation etc. (Schelly and Stretesky, 2009; Anguelovski, 2013).

Some of the reasons for this unequal distribution of environmental hazards can be found in the segregation of housing, where marginalized residents tend to live together, while the wealthier and often white residents tend to have moved out to the suburbs (Sister, Wolch and Wilson, 2010). In a market-based economy, benefits and hazards of production will be distributed based on wealth, and while wealthier people can afford to buy housing in environmentally safe areas, poorer and marginalized people, who cannot afford to move away, get left with housing in close proximity to environmental hazards. Thus, the segregation of the housing market makes it possible for environmental hazards to be unevenly distributed between different social classes (Gould and Lewis, 2012).

The study of uneven distribution of environmental hazards is the traditional way of understanding environmental justice. However, today's research does not only focus on hazards, but also on the distribution of goods. In wealthier and white neighbourhoods parks, green spaces and waterfronts are plenty and well maintained, while in low-income and coloured neighbourhoods the same green amenities are fewer and often appear degraded and poorly maintained (Landry and Chakraborty, 2009; Sister, Wolch and Wilson, 2010; Anguelovski, 2013). This is a problem, as green areas are known to promote physical activity, improve psychological health and general public health (Wolch, Byrne and Newell, 2014) as

well as provide cooling and mitigate air pollution (Landry and Chakraborty, 2009). Furthermore, low-income neighbourhoods often lack supermarkets or other places to buy fresh produce, and access to fitness and sports facilities is limited (Anguelovski, 2013), while the residents are also often excluded from environmental policy making (Pearsall, 2010).

As a response to this, environmental justice activists today fight for environmental goods that will benefit marginalized residents such as healthy and fresh food, green and affordable housing. Also urban gardening is an example that offers a way to bring communities together after experiencing environmental trauma and decay. The community gardens make the residents feel at home not only physically, but also emotionally (Anguelovski, 2015b).

Climate change adaptation can be seen as an environmental good, as it minimizes the risk of consequences from climate change by preparing e.g. a neighbourhood for the expected changes. When climate change adaptation is initiated, the question of how the climate change adaptation projects affect and transform marginalized neighbourhoods comes forward. When climate change adaptation is used to drive urban regeneration, how do the climate change adaptation projects then transform marginalized neighbourhoods? This is the first part of the research questions in this thesis.

1.1.2 Environmental gentrification

One of the challenges of creating environmental justice is the problems arising when steps are taken to clean up polluted sites or create green spaces in marginalized neighbourhoods. Reducing environmental hazards or increasing the number or area of green spaces are known to increase the value of properties. This attracts wealthier residents and can spark a process of gentrification (Gould and Lewis, 2012; Anguelovski, 2015a).

Gentrification was first mentioned by Ruth Glass in 1964 and was meant as an ironic label for the process which happens when middle-class residents move into a previously working-class area (Larsen and Lund Hansen, 2009) and start renovating the buildings. This raises the value of properties and attracts more middle-class residents, eventually making it unaffordable for the long term working-class residents, who will be pushed out of their neighbourhood (Zukin, 1987). Basically, gentrification is the reinvestment of capital in a neighbourhood that for period has experienced disinvestment. Gentrifiers and developers are taking advantage of the rent gap, which is the gap between the potential rent and the actual rent in an area. When buildings are renovated or parks are built, it raises the value of housing closer to its real potential (Bryson, 2013).

When addressing environmental justice problems as mentioned above, it can lead to what then becomes environmental or green gentrification, where the creation of better environmental services closes the rent gap and causes middle class residents to move in. Gamper-Rabindran and Timmins (2011) find that cleaning up a Superfund[1] site in the United States is associated with an increase in housing values of up to 18 % for properties within 1 km of the site. The paradox is of course that the very people the environmental services were meant to help, no longer can afford to live in the neighbourhood and is again pushed to places with greater environmental hazards and fewer environmental goods (Gould and Lewis, 2012).

Some research has been done on how to mitigate environmental gentrification. In Greenpoint, Brooklyn, USA, long-term residents had been fighting for a clean-up of the polluted Newtown Creek waterway for decades, but only after rapid gentrification in the surrounding neighbourhoods did politicians agree in 2007. The long-term residents and activists joined forces with gentrifiers, and educated the gentrifiers in the needs of the community. This resulted in new and strong alliances exercising political pressure for justice, instead of long-term residents losing power to new and incoming gentrifiers, who often have different priorities. This of course does not eliminate the problems of displacement in the gentrification process, but can be seen as an alternative story, where gentrification does not necessarily result in long-term residents losing to the agenda of gentrifiers (Hamilton and Curran, 2013).

[1] A Superfund site is an abandoned, polluted area (EPA, 2015).

This collaboration was also an example of another emerging strategy called "just green enough". The idea of this strategy is to improve environmental services for long-term residents without making it so high profile that it will attract the middle class and spark gentrification. Often clean-ups automatically mean new development with parks, water fronts, cafés and other services targeting higher income residents, and does not leave much space for the working class residents already living in the neighbourhood. By making neighbourhoods "just green enough", better health and quality of life is ensured at the same time as there is space for the industries and other land uses necessary for the working class. This also ensures that the neighbourhood does not become too attractive and will help reduce gentrification (Curran and Hamilton, 2012).

The question arising from this section is whether climate change adaptation projects will create the same dynamics of inequity and exclusion as is seen in other projects addressing environmental injustice, or whether they will address the already existing inequities. This will be the second part of the research questions of this thesis.

1.1.3 Summary

Anthropogenic greenhouse gas emissions are causing the global climate to warm and the consequences are floods, extreme weather and rising sea levels, among others. This will lead to economic losses, undermined food security and an increase in health problems, and cities are particularly vulnerable due to their density both in terms of economy, buildings and population.

Furthermore, the distribution of environmental goods and bads are uneven, both between countries and within countries. In cities, poorer neighbourhoods often experience greater environmental hazards and fewer environmental goods than wealthier neighbourhoods. When this environmental injustice is addressed it often leads to gentrification, as the neighbourhood becomes more attractive.

From this chapter two research questions and one sub-question emerged:

1. How do urban climate change adaptation projects transform marginalized neighbourhoods undergoing processes of urban regeneration?
2. To what extent do they create new dynamics of inequity and exclusion, or on the opposite, address existing social and environmental inequity?

The next chapter presents the themes in climate change planning research to identify the research gap regarding climate change adaptation projects and marginalized population groups.

1.2 Climate change planning

When preparing for climate change, focus has until recently mainly been on mitigation, but as it is clear today that even with proper mitigation measures, some climate change will appear, adaptation is getting more attention (Füssel, 2007; McManus, Shrestha and Yoo, 2014). Mitigation and adaptation are not two completely separate terms, as there are often synergies and trade-offs between the two (Driscoll and Lehmann, 2014). E.g. green areas in the city can be seen both as a mitigation and an adaptation measure, as it will both result in a greater uptake of $CO_2$and increase infiltration, thus reducing the risk of floods from increased precipitation(Gill et al., 2007).

Despite this, the two are often seen as two different things, and are often researched as two different terms. Also in planning, climate change mitigation and adaptation strategies are developed independently of each other and without interaction (Driscoll and Lehmann, 2014).

As a result of mitigation and adaptation being treated as two separate concepts, the focus in this section will be on adaptation, as this is the main focus of this thesis. The literature on adaptation planning is plenty, and several themes emerges; e.g. approaches to climate change adaptation (and their shortcomings), barriers to climate change adaptation and successful adaptation measures.

Climate change adaptation is defined by IPCC in the fifth assessment report as

> *"the process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects"* (IPCC, 2014b, p. 1758).

There are several approaches to climate change adaptation. Municipalities, as the local government, play an important role in adapting cities to climate change. Anguelovski, Chu and Carmin (2014) compared three cities and their (very different) approaches to climate change adaptation. In one case, the work was driven by the municipality with the adoption of a climate change strategy, while in another it was driven by international donors who initiated and supported adaptation strategies. In the last case, adaptation measures were driven by a single department with an expert leader within the municipality (Anguelovski, Chu and Carmin, 2014).

Even though there is a general consensus that adaptation is necessary to address the impacts of climate change (Adger, Arnell and Tompkins, 2005), measures are often taken as a reaction to an extreme climate event. Reactive measures, however, might not be enough in the future, where the nature and frequency of extreme events are increasing (Amundsen, Berglund and Westskog, 2010).

There are many other things that can trigger or prevent adaptation from taking place. E.g. policies and legal requirements, institutional frameworks, technology and knowledge have been identified as factors that play a role, while also budgetary constraints are important (Amundsen, Berglund and Westskog, 2010).

The relationship between national and local governments in adaptation is essential. Climate change adaptation needs to be dealt with across scales, and if climate change adaptation is not deemed important by the national government and they do not identify measures or prioritize actions, the result might be that no measures are taken at the local levels. Without guidance from the national level, local governments find it difficult to develop effective adaptation strategies. The undefined role of local governments pose a barrier to climate change adaptation, and there is a need for a multilevel governance framework (Amundsen, Berglund and Westskog, 2010). Carter (2011) also suggests that the low priority of adaptation at high policy levels strengthen the barriers at the local levels such as the political will to engage in adaptation.

Another stream of literature focuses on successful adaptation. For effective adaptation, it is necessary to focus not only on the physical aspects of cities, but also on the environmental, political, socio-cultural and economic aspects, as these are part of what make cities at risk of climate change. Because of this, it is not enough to simply adopt an adaptation strategy, but adaptation needs to be integrated into urban planning in general. Especially the traditional way of planning infrastructure such as roads, telecommunication etc. poses a threat and are making cities less resilient to climate change (Wamsler, Brink and Rivera, 2013).

However, the integration of adaptation into all aspects of planning is not what is happening in most cities today. To help move in the right direction, scientific knowledge needs to be integrated into decision-making, e.g. by creating opportunities for researchers and planners to share knowledge and by translating research into policy recommendations. This is made difficult by the political commitment, which is influenced by the many different interests that compete for the resources of both national and local governments (Wamsler, Brink and Rivera, 2013).

Adaptation across scale and sectors is also important to be successful. *"Adaptation is equally a problem of governance and behaviour as it is an issue to be addressed through scientific and technical responses"* (Carter, 2011, p. 196). Adaptation needs to be built from the bottom up as well, and individuals and communities need to act collectively and alongside governments to be successful in climate change adaptation (Adger, 2003).

Anguelovski, Chu and Carmin's (2014) case study mentioned above further showed that the initial approach to adaptation was only really important in the beginning of the project, but to ensure the success and commitment in the long run, strong leadership, departmental engagement and stakeholder

involvement i.a. are important. It is also important that adaptation measures generate awareness and are integrated into the municipality's general strategies and visions (Anguelovski, Chu and Carmin, 2014, p. 165):

> *"When climate adaptation is planned in a way that generates initial learning, awareness, integration in the city's agenda and vision, and builds internal and external capacity, the process gives space to the development of comprehensive strategic adaptation actions that can eventually enhance the resilience of the most affected areas and groups."*

As climate change adaptation occurs on many different scales, it is difficult, if not impossible, to make a common set of criteria to assess the success of the adaptation measures as they will depend on the context and scale of the measure. However, some criteria are important, e.g. the efficiency, equity and legitimacy. The success of adaptation depends on both the distribution and the capacity of the measures (Adger, Arnell and Tompkins, 2005).

This section leads to the question of how planning, both urban regeneration and climate change adaptation, is traditionally done in Denmark. This will be the first sub-question to the research questions. The different interests of municipalities together with the first two research questions also raises the question of who the municipalities are planning for in these projects. This will be the second sub-question.

1.2.1 The social side of adaptation

Something that is often overlooked in the literature is the social side of adaptation. Just as the effects of climate change are unevenly distributed between rich and poor, climate change adaptation measures and adaptation capacity are unevenly distributed. In rich areas with strong institutions, where basic needs are covered, e.g. health care and water supply, and where people can set up formal or informal agreements to cope with the changes, adaptation is likely to happen. On the opposite, in places where such systems do not exist, e.g. because of war or poverty, the adaptive capacity is smaller, and even minor climate events can have severe consequences. This also means that to increase the adaptive capacity in vulnerable places, it is necessary to resolve the underlying social, economic, political, etc. issues that have created the problem (Handmer, Dovers and Downings, 1999).

It is not only the uneven distribution of adaptation capacity that is important. When adaptation is taking place, the consequences of the adaptation measures are rarely evaluated, i.e. whether the adaptation measures have unintended consequences or if they can be considered sustainable. What from one perspective can be seen as successful adaptation might from another perspective contradict what is perceived as sustainable either socially, economically or environmentally. E.g. if the use of a technology to reduce the risk of climate change lead to reduced biodiversity. Thus, sustainable adaptation, including social justice and environmental integrity is important to ensure successful adaptation (Eriksen et al., 2011).

Eriksen et al. (2011, p. 16) have identified four principles to ensure sustainable adaptation, including *"acknowledging that different values and interests affect adaptation outcomes"* and the importance of *"integrating local knowledge into adaptation responses"*. It is important that adaptation measures contribute to a greener and more equitable society and not exacerbate the climate problems already existing. Part of this is to strengthen social resilience, e.g. through public participation and knowledge sharing. Only by engaging the socially marginalized groups, making them heard and making their interests count, can sustainable adaptation be achieved (Eriksen et al., 2011).

Even though the social side of adaptation is important, not much emphasis have been put on this aspect in research. In 2011, Ford, Berrang-Ford and Paterson carried out a literature review of publications on adaptation actions in the developed world and only very few of the articles focused on socio-economically disadvantaged groups, while none focused on women, elderly or children, see fig-

ure 3. The conclusion was that literature on adaptation is limited and almost non-existent in regard to focus on marginalized groups (Ford, Berrang-Ford and Paterson, 2011).

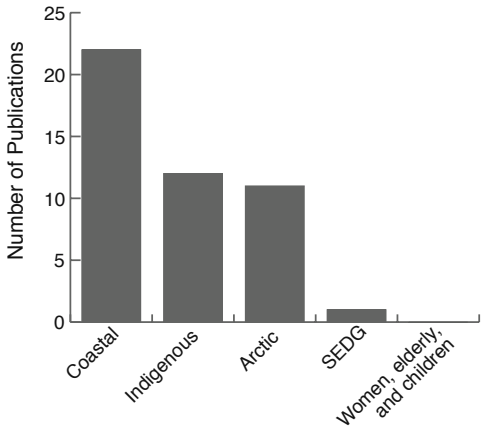

Figure 3. Number of publications with focus on vulnerable groups and regions (Ford, Berrang-Ford and Paterson, 2011, p. 331).

When these vulnerable population groups are not researched it raises the question of whether they are also left out of the planning process. This leads to the third sub-question; How are the residents involved in the planning process, and how is involving the residents in projects important for the outcome?

1.2.2 Summary

Climate change adaptation is defined as the adjustment to the expected or experienced climate change, and several themes in climate change adaptation research is identified.

First, approaches to climate change adaptation. Adaptation projects can e.g. be driven by municipal strategies or by international donors, who support adaptation projects with money and expertise. Second, barriers to climate change adaptation. Municipalities play an important role in climate change adaptation as solutions often need to be local, but if there is no governance framework for municipalities to work within, their undefined role becomes a barrier to adaptation. Third, successful adaptation measures. It is important to have strong leadership, departmental engagement and stakeholder involvement as well as integrating adaptation measures into municipalities' general strategies.

Not much research focuses on the social side of climate change adaptation. Just like the effects of climate change is not evenly distributed, adaptation measures and capacity are not either. Often it is necessary to resolve social, economic and political issues to increase an area's adaptive capacity. Furthermore, the unintended consequences of adaptation measures are rarely evaluated, e.g. whether adaptation measures are sustainable.

As not much research has been done within this area, the research questions are not already answered by existing research. This thesis thus contributes to a better understanding of urban climate change adaptation projects and their connection to marginalized neighbourhoods.

From this chapter two sub-questions emerged:

1. How are urban regeneration and climate change adaptation projects traditionally planned in Denmark?
2. Who are municipalities planning for, when doing urban regeneration and climate change adaptation projects?
3. How are the residents involved, and how is involving the residents in these projects important for the outcome?

1.3 Research questions

It has been established that climate change will impact the world, and as more and more people migrate to cities there is an increasing need to prepare these for climate change.

There are two streams of literature presented in the previous sections. First, there is a stream of literature regarding the problems of environmental justice and environmental gentrification. This stream deals with the uneven distribution of the consequences of climate change, and general environmental goods and bads within cities, but does not look at climate change adaptation. The second stream of literature addresses adaptation planning, which identifies possibilities and barriers for urban climate change adaptation. The focus is often on different approaches and how to successfully prepare for climate change, but ignores the consequences of the adaptation measures.

The two bodies of literature do not speak with each other. While there is a consensus that climate change has consequences and demands action, the consequences of urban climate change adaptation projects on social and environmental equity remains to be studied. This gap in the literature is the starting point of this thesis. The research questions have been presented in the previous sections, but are summarized here:

- How do urban climate change adaptation projects transform marginalized neighbourhoods undergoing processes of urban regeneration?
- To what extent do they create new dynamics of inequity and exclusion, or on the opposite, address existing social and environmental inequity?

Sub-questions:

1. How are urban regeneration and climate change adaptation projects traditionally planned in Denmark?
2. Who are municipalities planning for, when doing urban regeneration and climate change adaptation projects?
3. How are the residents involved, and how is involving the residents in these projects important for the outcome?

The next chapter outlines the methodology used to answer these questions.

2. Methodology

This chapter presents the methodology used to answer the research questions stated in the previous chapter. It outlines the research method, how data has been collected and how the thesis is structured.

2.1 Case study

To answer the research and sub-questions, a case study approach has been chosen. Case study research is especially relevant when dealing with “how” or “why” questions trying to explain different social phenomena (Yin, 2014), such as the questions asked in this thesis, and it produces context-dependent knowledge that, contrary to the natural science, is essential to social science (Flyvbjerg, 2006).

The study will be limited to Denmark, and thus only look at the research questions within a Danish context. This is mainly due to the time frame of the thesis. To determine what cases were available, the municipalities with the six largest cities in Denmark were contacted. The municipalities are Copenhagen, Aarhus, Odense, Aalborg, Esbjerg and Randers, and they are collaborating and sharing experiences on different topics, e.g. climate change planning, in what is called the six-city-collaboration (Kommunernes Landsforening, 2009). Due to the time frame it was not possible to contact all 98 municipalities of Denmark, and these were chosen as they are the largest. When contacted, the thesis and research questions were presented to the municipalities. They were then asked, if they had knowledge

Table 1. Municipalities contacted to identify case studies and their response.

Municipality:	Response:
Copenhagen	Referred to Skt. Kjeld's neighbourhood as the only case in their municipality.
Aarhus	No response.
Odense	Referred to a project in Korsløkken, which is managed by a social housing company. However, when the housing company was contacted, the case did not match the request.
Aalborg	No response
Esbjerg	Did not have knowledge of any cases within their municipality matching the request.
Randers	Did not have knowledge of any cases within their municipality matching the request.

of any projects within their municipality where an urban regeneration project in a marginalized neighbourhood was changed to focus on climate change adaptation. Four municipalities responded, while two did not. The information gained can be seen in table 1.

Skt. Kjeld's neighbourhood was thus the only case that emerged and fitted the criteria set by the research questions. First, the neighbourhood is undergoing urban regeneration and focus changed to climate change adaptation a few years into the process. Second, the neighbourhood is experiencing increasing social problems, which was the initial reason to start the urban regeneration project. Skt. Kjeld's neighbourhood and the related plans are presented in further details in chapter 4 on page 23.

Case studies can generally be divided into four types; single or multiple case designs and holistic or embedded case designs, see figure 4. The case study in this thesis is an embedded case study, type 2 in figure 4, where Denmark is the overall case, while Skt. Kjeld's neighbourhood is the embedded unit of analysis.

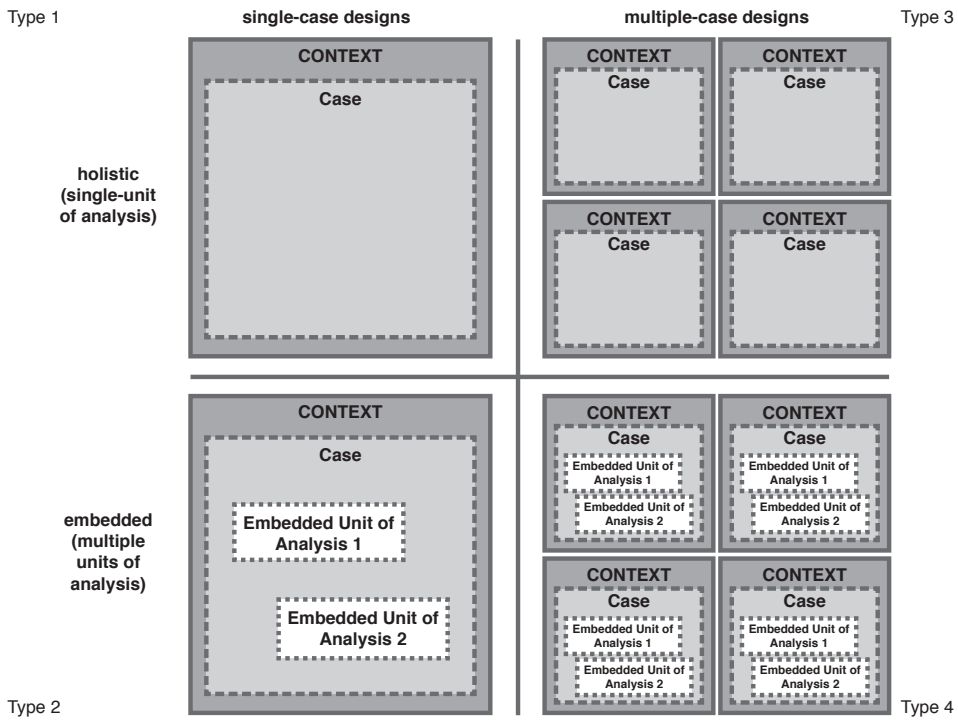

Figure 4. Four types of case studies (Yin, 2014, p. 50).

Single-case studies can be preferable to multiple-case studies under certain circumstances. This can

e.g. be, if the case chosen is a critical case. The purpose of a critical case is *"to achieve information that permits logical deductions of the type, "if this is (not) valid for this case, then it applies to all (no) cases"."* (Flyvbjerg, 2006, p. 230). Identifying a critical case can be difficult and often requires experience. However, what the researcher is looking for is either the most likely or least likely case, which clearly can confirm or falsify the hypothesis (Flyvbjerg, 2006).

The question is then, if Skt. Kjeld's neighbourhood can be characterized as a critical case. Skt. Kjeld's neighbourhood is highly profiled for its climate change adaptation project that link adaptation with creating attractive urban spaces. It is portrayed as a success case that other places can learn from and is already getting a considerable amount of both national and international attention (Lauesen, 2015). The positive discourse implies that the project will be successful in creating attractive urban spaces that are adapted to climate change when it is completed in the near future.

If a case is as highly profiled as a success, as Skt. Kjeld's neighbourhood, ends up creating new inequities in the neighbourhood, there is a good chance that it will also happen in other places, and thus Skt. Kjeld's neighbourhood can be characterized as a critical case.

2.2 Data collection

To answer the research questions, several types of data are important. Multiple *state of the art* analyses or literature reviews are necessary to understand the research already done in the area. E.g. on environmental justice, climate change adaptation planning practices and Danish planning practices. Furthermore, it is necessary to talk to people involved in the case. Here, three groups are identified; residents, employees and consultants. Residents are those living in Skt. Kjeld's neighbourhood, employees are those hired to implement the plans of urban regeneration and climate change adaptation, while consultants come from companies or institutions involved with the plans of the neighbourhood. These are reached through interviews and a survey, which is further described in the following.

The data used in this thesis comes from multiple sources and consists of both primary and secondary data. Primary data is data produced by the researcher specifically for the study. This type of data can include interviews, surveys and observations (Andersen, 2013). In this thesis, primary data consists of interviews, a survey and e-mail exchanges with municipal employees. Secondary data on the other hand, is data collected by the researcher from other sources and is not necessarily produced with the specific study in mind (Andersen, 2013). This type of data can include earlier research, documentation and archival records (Yin, 2014). Secondary data used in this thesis includes journal articles, books, governmental and municipal plans and statistical material. While primary data has the advantage of being produced directly for the study the researcher is working on, secondary data is vital for most research as it is rarely possible for a researcher to produce everything needed within a reasonable time frame (Andersen, 2013).

Different types of data has different strengths and weaknesses, which mean that different sources can compliment each other. Different from other types of research, e.g. experiments, case studies deals with a broad range of evidence where the use of multiple data sources will be more convincing than only one. The use of multiple sources is also the first principle of data collection aiming to ensure the reliability and validity of the case study. The use of multiple sources of evidence builds on data triangulation, where the researcher uses different sources of data to corroborate each other. The second principle is the creation of a case study database. This database is important, as the result of a case study will be the researcher's interpretation of the collected data. The database will allow others to examine the raw data used in the case study. The third principle is maintaining the chain of evidence. By doing so, it will be possible for others than the researcher to trace back from the conclusions to understand the basis for these. The chain of evidence can be maintained by using references in text, which can then be found in the case study database, where the reader can find the evidence complete with notes, dates and other relevant information. The fourth and last principle is to exercise care when using electronic sources. The amount of information available online can be overwhelming and it is

necessary to keep in mind what is searched for. Also, some sources might be biased or it is unclear who the author is. In these cases it is important to double check information before using it in the case study (Yin, 2014).

This case study takes all principles into account. As mentioned above, multiple data collection methods have been used to triangulate findings, a database has been developed to organize literature, interviews and other collected data and citations has been used thoroughly throughout the thesis. As for the last principle, all data collected have been reviewed critically to prevent biased data from being presented without being clear about the origin.

2.3 Interviews

Depending on what information is needed, different interview techniques can be used. In this thesis the semi-structured interview has been chosen, as it is suitable, when the researcher has already gathered background information and needs a certain area, which the interviewee knows, elaborated. An interview guide is developed, but not necessarily followed strictly, which leaves room to follow new information that may arise during the interview. However, the interview guide outlines the main line of questioning and makes sure that the most important questions are asked (Andersen, 2013).

Interviews have the advantage that it is possible to ask questions specific to the case study, but there are a few weaknesses as well. It is necessary to keep in mind that the interviewee might be biased, or that poorly articulated questions might produce biased answers. Also, interviewees might give the answers they think the researcher wants and not what is really on their minds (Yin, 2014).

In this thesis, four semi-structured interviews have been conducted. The interviewees have been chosen based on a set of criteria founded in the research questions, which can be seen in appendix A. To elaborate on the criteria, it was necessary to talk with people involved in both plans for the neighbourhood. This can be seen as two streams; Urban regeneration and climate change adaptation. Within both streams it was necessary to talk to people who knew about the background for the plans, how they were implemented and how the different interests evolved over the duration of the projects. Torkil Lauesen (2015) and René Sommer Lindsay (2015) covered these.

Furthermore, to understand the forces that drove the project, it was necessary to talk with different parties involved in the projects. Again both from streams. It was not possible to get in touch with someone involved in urban regeneration for this part, but Henriette Berggreen and Lene Nørgård Rasmussen covered the part of climate change adaptation. All interviewees are described in further details in appendix B and the interview guides developed can be found in appendix B. Due to the time frame of the thesis, the interviews are not transcribed.

As it was not possible to get in touch with relevant residents, e.g. members of the steering committee, it was chosen to reach the residents through a survey. This is described below.

2.4 Surveys

As mentioned, a survey was conducted amongst the residents of Skt. Kjeld's neighbourhood. A survey can be considered as a structured interview (Bryman, 2008; Yin, 2014), where the respondent fills out the answers (self-completed surveys) (Bryman, 2008). In a structured interview the questions and sometimes also the answer categories are fixed and the same for all respondents (Andersen, 2013). The survey can be distributed either by post or be internet-based (Bryman, 2008; Andersen, 2013).

Here, a web-based survey was developed and was distributed amongst residents by delivering notes with a link and a QR-code to the survey to their mailboxes. This was done as the resident's e-mail addresses were unknown and there were no possibility of sharing the survey through e.g. Facebook.

There are several advantages to self-completed surveys. It is cheap, fast, easy to manage, easy to process and the respondents have as much time as they need to answer the questions. A disadvantage is that the response rate often is much lower than with face to face interviews (Bryman, 2008; Andersen,

Table 2. Sample size calculation (Raosoft, 2015).

Margin of error: 5 %
Number of resident: 23,885 (appendix D)

Confidence level	Sample size needed
90 %	266
95 %	379

Table 3. Margin of error of the sample size (Raosoft, 2015).

Sample size: 66

Confidence level	Margin of error
90 %	10.11 %
95 %	12.05 %

2013). A reason for the low response rates can be that respondents are presented with surveys regularly and do not want to answer them all. To ensure a higher response rate it is also important to make sure that the questions are simple and easy to understand (Andersen, 2013). To increase the response rate, follow-ups can be used to remind respondents to answer the survey (Bryman, 2008).

A web-based survey as is used in this thesis, requires that respondents have the technical ability to navigate a computer and the internet. Respondents not able to do so will not be able to respond and might create a bias in the answers (Bryman, 2008). However, computers today are commonly used, also by elders. Distributing the survey by post was not an option due to the limited time frame and as no funds were available. Thus, a web-based survey was considered the best option.

When distributing a survey, a couple of things are important to notice. First, determining the sample size necessary for the sample to be representative for the group studied. The sample size necessary depends on the desired level of precision and confidence (Agresti and Finlay, 2009). Precision is the margin of error, which relates to how much error can be accepted. Confidence refers to the level of uncertainty that can be accepted (Raosoft, 2015).

The online sample size calculator Raosoft (2015) has been used to calculate the necessary sample size for this thesis. Table 2 shows the results.

As 1,000 surveys were handed out, a response rate of either 37.9 % or 26.6 % was needed to reach the desired sample size. The actual response rate, however, was only 6.6 % giving a total of 66 answers. Table 3 shows the actual margin of error, which is high. As there were no time to distribute enough surveys to reach the desired sample size, the results of the survey should be treated and interpreted carefully as they are not representative with the precision and confidence normally accepted.

The questions asked in the survey are rooted in the criteria set in appendix A and can be seen in appendix C. Not all respondents were asked all questions. What questions were asked depended on their previous answers.

2.5 Documentation

Documentation covers a variety of written data, including journal articles, books, newspapers, letters and administrative documents. Documentation is necessary for most case studies and can be a good source of information that is otherwise inaccessible, but it is important to remember that the data has been produced with a different purpose and audience in mind than that of the current case study. Also, the original author might have been biased and only presented one side of the story (Yin, 2014). In this thesis a wide range of documentation has been used. Mainly articles from scientific journals, governmental and municipal plans and books.

2.6 Archival records

Statistical records, service records, budgets, geographical information or surveys produced by others can be characterized as archival records. Unlike documentation, the relevance of archival records to a case study can vary greatly depending on the topic being researched. Many of the same strengths and weaknesses that exist for documentation also exist for archival records, and it is thus important to remember that the data is often produced with a specific purpose and audience in mind that might not correlate with the case study it is now used for. Also, accessibility to private data can be difficult (Yin, 2014). In this case study, geographical information and statistical data about the residents living in Skt. Kjeld's neighbourhood, produced by the municipality, is used to make a demographic analysis.

2.7 Structure

Figure 5 shows how the thesis is structured and the content of the different chapters and how they are connected to the research questions and sub-questions.

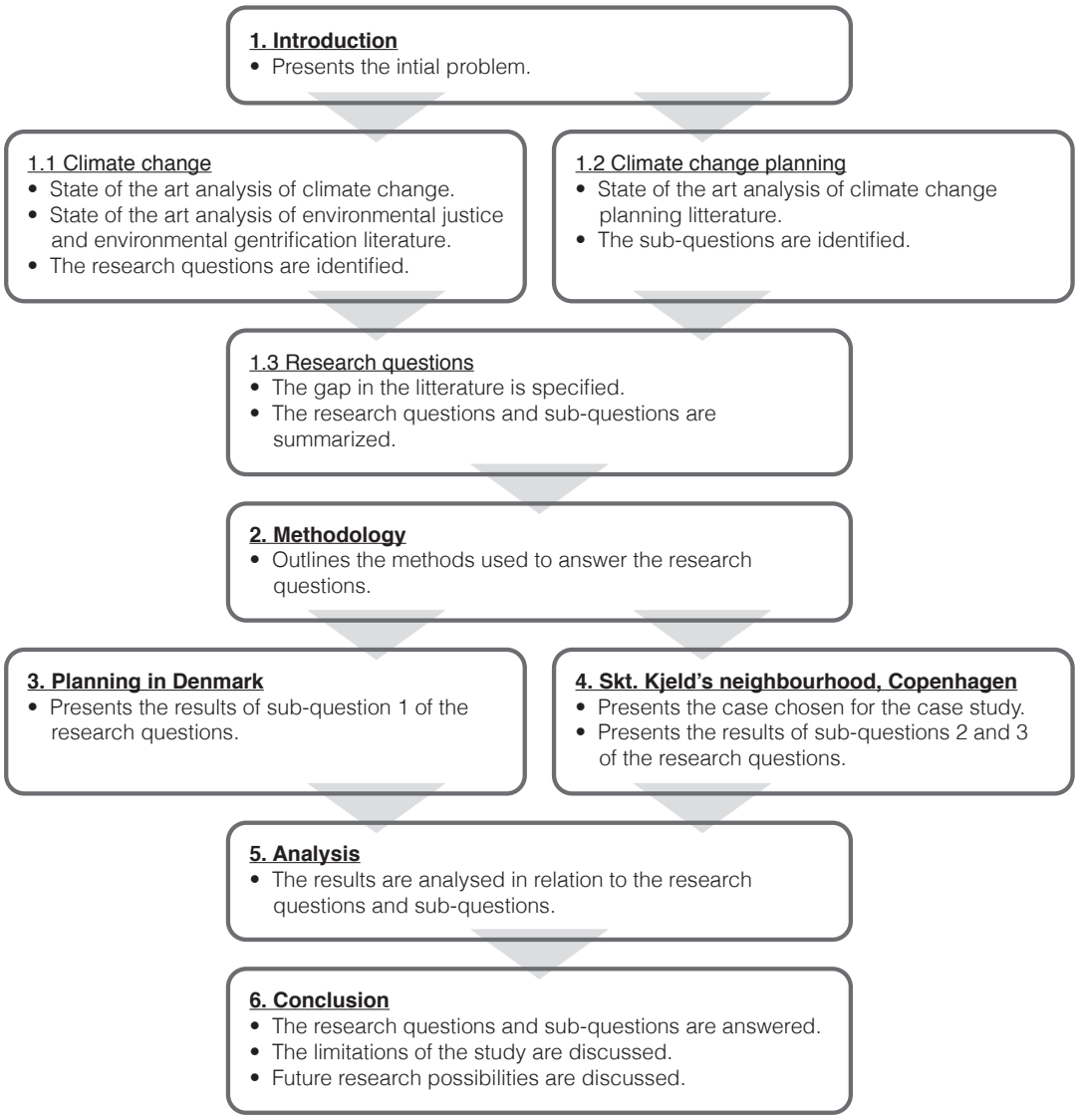

Figure 5. The structure of the thesis.

3. Planning in Denmark

This chapter outlines the Danish planning system and how planning is traditionally done in Denmark. It also shows the current trends in planning, especially in Copenhagen, where Skt. Kjeld's neighbourhood is located. The chapter presents the case of Denmark and the results of the research regarding sub-question 1 of the research questions.

3.1 The planning system

Planning in Denmark, as it is known today, originated from the 1950s with emerging problems of urban sprawl, growing inequalities and high migration towards Copenhagen. To meet these challenges, reforms were made to create an integrated planning system to ensure integration of plans across sectors, both horizontally and vertically (Galland et al., 2015).

The Danish administrative system consist of three levels; a government, five regions and 98 municipalities. This is the result of a structural reform implemented in 2007 that substituted 14 counties with five regions and substantially reduced the number of municipalities from 275 to 98. There has been a long tradition for a high degree of decentralization with municipalities responsible for a variety of public services ranging from education to spatial planning, and the responsibilities have only grown with the structural reform (Østergård and Witt, 2007).

At a national level the Nature Agency under the Ministry of Environment monitors planning at the local level and prepare the national planning legislation. The counties at the regional level previously had a large role in spatial planning, but these responsibilities are with the structural reform redistributed to both the national and municipal level, while the new regions today are responsible for writing strategic visions in a regional spatial development plan. The municipal level is responsible for most spatial planning. The municipalities are required to produce municipal plans that contain the framework for local plans and can adopt legally binding local plans to implement planning strategies (Østergård and Witt, 2007).

The three levels operate under the planning legislation. The main legislation is the Planning Act, which was officially adopted in 1992. Here, the Ministry of Environment is responsible for generating an *overview of national interests* after each election, which set the guidelines for municipalities and their planning. The municipalities are obliged to follow this *overview* and municipal plans can be vetoed by the Ministry of Environment if it does not live up to the *overview*. The Ministry of Environment is also responsible for national directives regarding national interests such as where to place wind turbines. Since 2007, they have also prepared a special directive regarding the development of Greater Copenhagen, which otherwise spans over multiple municipalities (Galland et al., 2015).

The municipal plans also serves as a link between the national strategies and the more detailed local plans. The Planning Act outlines the structure of the municipal plan and sets minimum requirements for the content. Local plans are the main planning instrument, when implementing planning strategies and is thus the foundation of the spatial planning framework. Local plans are legally binding and should be adopted before any larger development or construction projects are commenced. All municipal and local plans must undergo eight weeks of public hearing, where stakeholders can comment and object (Galland et al., 2015).

Sustainability and environmental protection are also incorporated in the Planning Act. E.g. All municipalities must prepare a Local Agenda 21 plan to support sustainable development, and all large development projects must undergo an environmental impact assessment (Miljøministeriet, 2013). All municipalities are also obliged to adopt a climate change adaptation plan (Naturstyrelsen, 2014).

The Building Act describes the regulations that apply to new buildings and is the basis for building permits. If no local plan is adopted for the area of a new construction, and the municipal plan does not have any specific regulations for the area, the construction should comply with the regulations of the Building Act (Miljøministeriet, 2010).

The Danish planning system is thus controlled through plans rather than through a free market, and politicians can control the development (Galland et al., 2015). However, in some ways this has changed in recent years. Previously the main focus in planning has been on equal development in all of Denmark, but this has shifted with globalization and the neoliberal political climate towards focusing on growth by creating development in the largest cities and urban regions of the country (Olesen and Richardson, 2012).

In Denmark, focus on equal development across the country to ensure that all citizens have access to basic public and private services has been dominating planning from the 1960s and up until the early 1990s. Here, growth policies and spatial planning became linked, and there was a new focus of making Copenhagen a new growth centre. It was believed that the focus on Copenhagen would benefit the entire country and that this would be the only way to compete in an increasingly globalised world. This was followed by a change in the Planning Act in 1992 that pushed social aspects of planning to the background, while focusing on economic and environmental aspects instead. In 2007, with the structural reform of the planning system, the responsibility of spatial planning of Greater Copenhagen was given to the Ministry of Environment, as the area consisted of multiple municipalities (Olesen and Richardson, 2012).

One of the problems arising with the structural reform that transferred power in spatial planning from counties to municipalities is that the municipalities often will look out for their own best interests, which makes it difficult to plan and steer entire urban regions in the desired direction, if not for top-down planning as is seen in the case of Greater Copenhagen (Olesen and Richardson, 2012). This problem is also articulated by Galland and Enemark (2013), who conclude that the structural reform has abolished spatial planning on national and regional levels leaving municipalities with the core responsibility for spatial planning, even though they lack expertise in spatial coordination, which was previously a responsibility of the counties.

3.2 Public participation

Public participation is about involving the public in decisions and processes that will impact their lives:

> *"Public participation is the process by which public concerns, needs, and values are incorporated into governmental and corporate decision making. It is two-way communication and interaction, with the overall goal of better decisions that are supported by the public"* (Creighton, 2005, p. 7).

There are several reasons to initiate public participation and involve the public in decision making. First, to reduce conflicts. As the public has different preferences, there is a risk of contradicting interests that can lead to conflicts. By involving the public these contradictions can be identified early and mitigated or resolved before escalating into real conflicts. This can also be seen as a way to prevent opposition against decisions and make implementation easier in the long run (Kørnøv, 2007).

Second, to improve planning. More balanced results can be obtained, when planners get ideas and learn about concerns from the public (Creighton, 2005). Furthermore, public participation can provide planners with local knowledge, which will enable them to make qualified decisions (Innes and Booher, 2004). Communication however is two-way and thus also from planners to the public. This will enable the public to learn about the planning process and how to criticize plans and present new ideas (Kørnøv, 2007).

Third, democratisation. Public participation can be a way to delegate power to the public, thus supporting democracy (Arnstein, 1969). It can also be a way to listen to and get input from population groups that normally have difficulties in voicing their opinions and being heard (Creighton, 2005).

In Denmark, public participation is part of the Planning Act. As mentioned above, all public plans have to be sent to public hearing for at least eight weeks (Miljøministeriet, 2013). This ensures a mini-

mum of public participation, as the public has the opportunity to respond and criticize the plans. This of course does not mean that more extensive public participation cannot take place. Denmark also signed the UNECE[2] Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, generally referred to as the *Aarhus Convention 1998*. This convention ensures public participation in activities that might have significant impacts on the environment (Kørnøv, 2007).

Participation can occur on different levels. In 1969, Arnstein developed a ladder of participation showing how different levels of participation had different benefits, see figure 6. It shows eight levels of participation; manipulation, therapy, informing, consultation, placation, partnership, delegated power and citizen control. The two first levels, manipulation and therapy, are not actual participation, while the next three levels are described as degrees of tokenism, as no power is delegated to the citizens, but they can hear and be heard by the practitioners. The last three levels delegate degrees of power to the citizens (Arnstein, 1969).

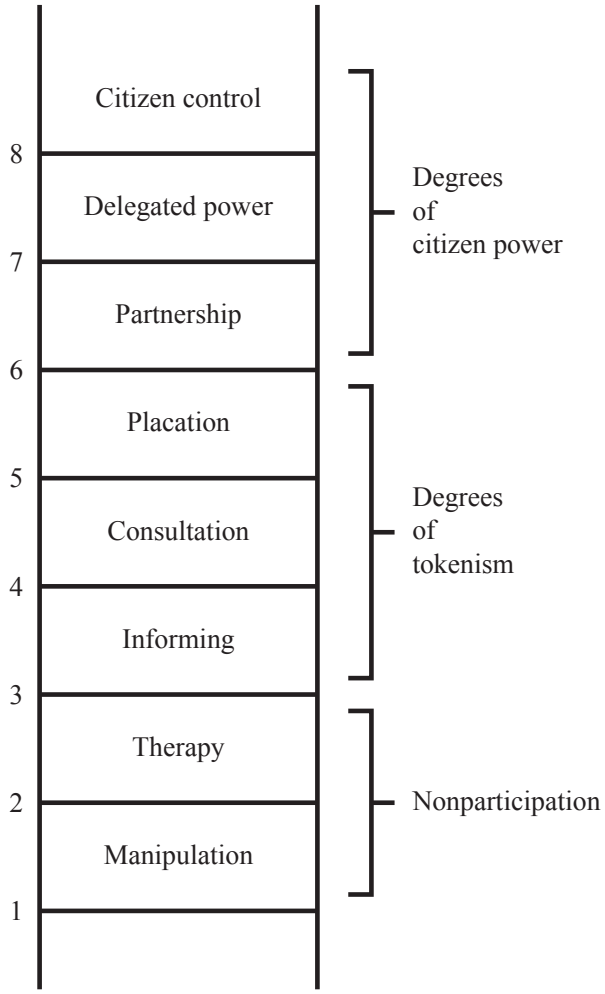

Figure 6. Ladder of public participation (Arnstein, 1969, p. 217).

Figure 6 makes clear that there are many ways to involve the public, and one is not necessarily better than another. What level of involvement is necessary depends on the project, but it is preferable to strive for the highest level of involvement, when appropriate, to gain most benefits (Arnstein, 1969).

There are a number of factors affecting the participation process. Figure 7 show some of these. E.g., the planner's attitude towards public participation will affect the approach and the communication with the public; the level of education amongst the citizens targeted will affect their willingness and ability to

[2]United Nations Economic Commission for Europe

participate; and involving the public late in the project might decrease their willingness to participate as many decisions have already been made. It is thus important to take these factors into consideration, when initiating public participation for any project to ensure success (Kørnøv, 2007).

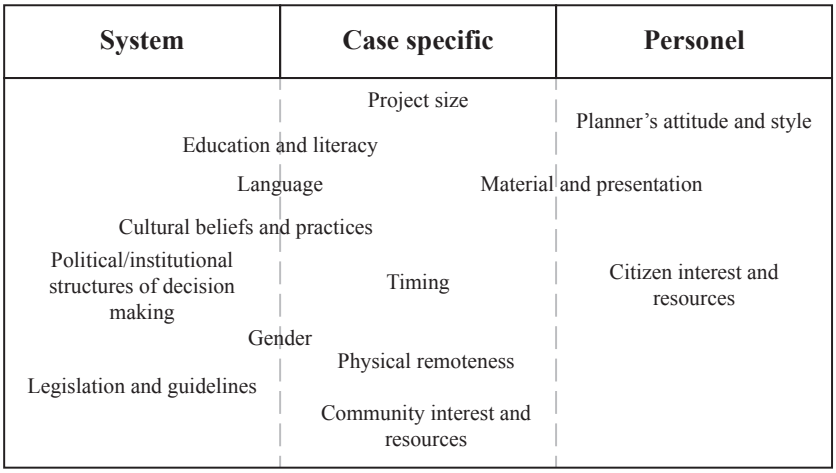

Figure 7. Factors affecting public participation (Kørnøv, 2007, p. 734).

3.3 Current trends in planning

During the last decades, developed countries have experienced de-industrialization with manufacturing jobs relocating to countries where labour costs are significantly lower. The remaining industries are the specialized ones where creativity is in the spotlight. This means, as mentioned in the previous section, that policies now tend to focus on the development of urban areas and how to attract and retain creative people to promote economic growth. Florida's (2012) literary work on the creative class is well known by policy makers (Leslie and Catungal, 2012).

The main idea of Florida (2012) is that there has been a shift from production and manufacturing to a knowledge-based economy where creativity is essential to compete. This has led to an increase of the creative class, which consists of the people working in the new creative industry (Leslie and Catungal, 2012); e.g. engineers, architects etc. (Florida, 2012). The cities with the majority of creative people are thus more likely to experience economic growth, as the creative class will attract investments (Leslie and Catungal, 2012).

To attract the creative class, it is necessary to focus on the *quality of place* that this group are looking for. The *quality of place* is linked to *what's there*, *who's there* and *what's going on*. Florida (2012) breaks this down to eight points that creative people will be looking for in a place before settling down; thick labour markets, lifestyle, social interaction, the mating market, diversity, authenticity, scenes and identity.

- **Thick labour markets**: There should be many opportunities for different jobs, as creative people do not tend to stay in the same company for an extended period of time.
- **Lifestyle**: Different scenes in the city such as music, art, sport etc. as well as nightlife, are important as the flexible work schedule of creative people has changed the way they take time off. Today, there is a need for smaller breaks during or between the workdays, which does not leave time to go out of the city.
- **Social interaction**: In recent decades social interaction has declined and more people tend to live alone. This has created a need for places to meet that is neither home nor work. These places can be cafés, coffee bars etc. where people can meet and interact.
- **The mating market**: With more single people, places to meet a partner is becoming increasingly important and creative people thus look for places where they are more likely to meet someone.

- **Diversity**: Creative people are looking for places with different ethnic groups, gay communities and people with alternative appearances, as if this is visible in the place, it is likely to be diverse. Diversity is important as it offers opportunities for different experiences and as it opens up to new creative ideas and discussions.
- **Authenticity**: Historic buildings and established neighbourhoods with local shops and restaurants instead of chain grocery shops or chain restaurants are attracting creative people as it is perceived as authentic. A local music scene is also very important, as it creates identity, and supporting the local music scene can thus be essential for attracting the creative class.
- **Scenes**: A broad variety of scenes, where people can meet both socially and for business and networking are important. Scenes are places where experiences take place and can be everything from film festivals to tattoo parlours to farmers' markets. The scenes are not only important in attracting creative residents, but self-expressing scenes have been found to have important economic impacts on growth as well.
- **Identity**: As people tend to move away from where they grew up, and change jobs more often than previously, the creative class find identity in the place they choose to live. Creative people want to life in a neighbourhood with an identity that they can both influence and reflect in.

Florida's (2012) thesis on the creative class is widely used by policy makers in all of the developed world, as it fit well into the already existing agenda of attracting both tourists and investments to the cities. This also means that it is the same actors – politicians, real estate developers, business interests etc. – that are dominating urban development as it has been for a long time. However, the thesis also creates inequalities as it focuses mainly on the needs of the elite and their neighbourhoods, and creates wider income gaps as growth of the creative class generate growth of the service class as well (Leslie and Catungal, 2012).

Florida (2012) argues that even though inequalities are an issue, focus on attracting the creative class will benefit society as a whole and that the working and service class living in areas with high concentrations of creative people are generally better off than the same people living in areas with lower concentrations of creative people even though the wage gap might be wider. To contest this idea of "tricle down" social justice, Leslie and Catungal (2012, p. 114) brings forward an example from Ronald Reagan's presidency:

> *"There are parallels here, as Shearmur (2007) points out, with Reagan's trickle-down economics, which advocated a reduction in taxes for the elite, and the removal of regulations governing the economy. The idea here was that the enrichment of the upper classes would improve the lot of all classes, because a 'rising tide raises all boats'. These policies were clearly not successful, as the growing gap between rich and poor in the U.S. since the 1980s indicates."*

Another way the focus on attracting the creative class thesis creates inequalities is the redevelopment of inner city neighbourhoods into cultural centres. As the neighbourhoods become more popular real estate prices and rent increases sparking gentrification and the displacement of the original, often poorer residents (Leslie and Catungal, 2012).

Davidson and Wyly (2012) draw attention to another problem created by the focus on the creative thesis, namely the disappearance of class discussions in literature. At the same time as neoliberalism has changed cities and increased social inequality, the discussion of struggles between classes has disappeared with the disappearance of industries. However, class struggles have not disappeared but merely changed, e.g. to concern gentrification and displacement, and by ignoring them or not articulating them, the reasons for the current struggles are overlooked and not understood (Davidson and Wyly, 2012).

3.3.1 Gentrification

As mentioned above, focus on attracting the creative class is connected to gentrification. Gentrification is comprised of two elements; the movement of richer population groups to cheaper neighbourhoods and reinvestment in the housing stock (Atkinson, 2012). Today however, the definition of gentrification has been broadened and is no longer only concerned with upgrading the housing stock:

> *"Gentrification is no longer about a narrow and quixotic oddity in the housing market but has become the leading residential edge of a much larger endeavour; the class remake of the central urban landscape'. The spatial and physical manifestations of the term have evolved as urban development has changed. A major form of contemporary gentrification is the transformation of old industrial brownfield sites into high-end, new-build developments"* (Doucet, 2014, p. 126).

New developments and flagship or megaprojects can also be part of the gentrification process, which can be understood more broadly as *"an upward class transformation and the creation of affluent space"* (Doucet, 2009, p. 300).

This has also meant that gentrification no longer is led by individual household choices as was the case in the original definition. It became developer-led and the role of the authorities were strengthened. Today, gentrification is used as a policy tool and an urban strategy to make neighbourhoods more attractive, and is concerned with attracting new amenities, e.g. cafés. However, the original residents often have no need for these new amenities and often lack the money to pay for them. By using gentrification as a policy tool, gentrification has also changed from being seen as a problem by planners to be a solution, as gentrifying neighbourhoods attract the groups of residents that many cities want, i.e. the creative class (Doucet, 2014). There is thus both positive impacts and negative impacts from gentrification. Figure 8 summarizes some of these.

Positive	*Negative*
Stabilisation of declining areas	Displacement through rent/price increases
Increased property values	Displacement and housing demand pressures on surrounding poor areas
Reduced vacancy rates	Secondary psychological costs of displacement
Increased local fiscal revenues	Community resentment and conflict
Encouragement and increased viability of further development	Loss of affordable housing
	Unsustainable speculative property price increases
Reduction of suburban sprawl	Homelessness
Increased social mix	Greater draw on local spending through lobbying by middle-class groups
Decreased crime	Commercial/industrial displacement
Rehabilitation of property both with and without state sponsorship	Increased cost and changes to local services
	Loss of social diversity (from socially disparate to affluent ghettos)
	Increased crime
	Underoccupancy and population loss to gentrified areas

Figure 8. Neighbourhood impacts of gentrification (Atkinson, 2012, p. 271).

When talking about gentrification, the residents are often divided into winners or losers, the winners being the gentrifiers, those who move into the neighbourhood, while the losers are those being displaced. However, often there is a group of residents that does not fit into either of these categories. They are the ones who live through gentrification and remain in the neighbourhood (Doucet, van Kempen and van Weesep, 2011).

Even though this group of residents cannot be seen as either winners or losers, they do feel the effect of gentrification. They might experience that the image of the neighbourhood changes positively, but as mentioned above, the new amenities are often not catering to them, but the gentrifiers. Thus, they do not really gain from the gentrification process. It can also lead to divisions in the neighbourhood and create struggles between 'us' and 'them', the original residents and the gentrifiers. Even though a group of people might fight gentrification and stay in the neighbourhood to begin with, there is always the risk of them being displaced further down the road (Doucet, van Kempen and van Weesep, 2011).

Doucet, van Kempen and van Weesep's (2011) study of the neighbourhood Leith in Edinburgh, a rapidly gentrifying neighbourhood, also showed that even though the original residents welcomed parts of the changes coming with the gentrification process, when studied critically their enthusiasm was more muted. Even though positive elements can be seen by original residents, concerns follows as well.

3.3.2 Copenhagen

In Denmark, and especially Copenhagen, the creative agenda is also seen. With a greater focus on development in the capital region, creativity and culture are central to planning on both governmental, regional and municipal levels. Traditionally, Denmark has used culture to ensure economic development, but for a period focus seemed to shift towards social impacts of these policies. However, the new debate on creativity has again altered the focus and stopped the emerging social turn (Bayliss, 2007).

Hansen, Andersen and Clark (2001) argues that the focus on creativity is a result of globalization with increased migration and sparked the change in politics described earlier, where focus went from even growth and development in all of Denmark to increased focus on the capital region, which should function as a growth driver for the entire country. This paradigm shift was marked by several new megaprojects in the capital region, e.g. the Øresund Bridge between Denmark and Sweden, new metro lines and the development of Ørestaden, a Danish counterpart to the London Docklands (Hansen, Andersen and Clark, 2001).

The social geography of Copenhagen has been driven by different forces. First, the abolishment of the restrictions on growth in the capital region. Second, de-industrialization opened up for redevelopment of brownfield areas and reduced the need for industrial labour. Third, high unemployment due to an economic crisis in the 1970s and 1980s. Fourth, suburbanization, where the most resourceful and young residents left the inner city in favour of the suburbs. In general, this led the inner city, like in many other western cities, to be dominated by immigrants, unemployed and otherwise marginalized groups (Hansen, Andersen and Clark, 2001).

The neoliberal focus on growth also sparked a competition between places both locally and regionally and housing policies became a way to attract an *economically sustainable population*. In Copenhagen, this was done by improving the housing stock to ensure especially bigger and better homes and also by renewing the neighbourhoods in the city that was traditionally working class and immigrant areas – they planned gentrification. The result of these strategies is that economically unsustainable residents, the already marginalized population, are being moved back and forth between neighbourhoods and municipalities (Hansen, Andersen and Clark, 2001). In general, the new policies and the rhetoric of creativity do not leave much room for the weakest social groups of the city (Bayliss, 2007).

An example of planned gentrification in Copenhagen is the neighbourhood Vesterbro. Vesterbro was known as one of the poorest neighbourhoods in Copenhagen, and in the early 1990s, it was decided to launch a large scale urban regeneration project in the neighbourhood. The building stock was to be upgraded, and even though the plan said that redevelopment should be aimed at the then-current residents, it also stated that the goal was a social uplift and in reality this was done by attracting the economically sustainable population that was underrepresented at that moment (Larsen and Lund Hansen, 2008).

Striving to make Copenhagen a creative city thus emerged from the competition between cities that globalization had started, and it is done with little consideration to the social costs of the strategies. Hansen, Andersen and Clark (2001, p. 866) writes:

> *"What at first glance appears to be an unambiguously positive characteristic and goal – the creative city – becomes on closer inspection a dubious ideological smokescreen to cover up the social costs associated with compulsive adaptation to the 'requirements' of the 'new' flexible globalized economy, including reduced transparency in urban governance, social*

and geographic polarization and large scale transformation of the urban landscape involving considerable displacement."

In addition, both Hansen, Andersen and Clark (2001) and Bayliss (2007) question the efforts that should make Copenhagen creative, as creativity is rarely something that comes on demand or from top-down planning.

3.3.3 Identity

Another trend in Danish planning springing from Florida's (2012) thesis on the creative class is the focus on giving places identity. Identity can be described as what makes something different or special, and if a place lacks identity it is seen as a problem and as something that should be created. However, identity is not something that can just be created, but is rather something that appears over time, something that is created between people and is about those characteristics that make people associate with a specific place (Stender, 2015).

When new urban areas are created, it is thus not only about creating an attractive built environment, but also about how the place can be branded to make it attractive to future (creative) residents, investors and tourists. The focus is on giving the place identity, soul, history and life, and to create this, strategies such as branding, temporary activities, reuse of industrial buildings, etc. are used (Stender, 2015).

It is however important to understand the pitfalls of trying to brand new places and to try to make them old, even though they are new. When designing a place with a specific audience in mind there is always the risk of over-designing and not getting the expected results. It is also important to remember how this type of planning often caters to a specific group of people, thus excluding others (Stender, 2015).

3.4 Summary

This chapter is concerned with sub-question 1 of the research questions: How are urban regeneration and climate change adaptation projects traditionally planned in Denmark?

It is established that the legal framework of the Danish planning system is the Planning Act that outlines the responsibilities at the national, regional and municipal level. The structural reform in 2007 abolished the counties and replaced them with five regions, and at the same time transferred many responsibilities for spatial planning to the municipalities. Power is highly decentralized and while the government produces a national plan and regions produce strategic visions for spatial planning, municipalities are responsible for most spatial planning. Municipalities adopt a municipal plan after each election which sets the guidelines for spatial planning amongst others. All municipalities are also obliged to develop a climate change adaptation strategy. There is a strong focus on public participation and the Planning Act ensures a minimum of eight weeks of public hearing before plans are adopted.

It is also established that the current trend in planning is focused on creating identity and attracting the creative class, who are linked to economic growth. This breaks with the traditional focus there has been in Denmark on assuring even development across the country. Today, focus is on making Copenhagen a growth centre by attracting the creative class. This has resulted in urban regeneration projects that have sparked gentrification and displaced the typical residents of the inner city of Copenhagen, the poorer working class.

4. Skt. Kjeld's neighbourhood, Copenhagen

This chapter presents the embedded unit of analysis in the case study, Skt. Kjeld's neighbourhood, the plans related to the neighbourhood as well as the planning processes behind the plans. The chapter

presents the results regarding sub-question 2 and 3 of the research questions. As the chapter presents a large amount of data, fact boxes has been used to highlight the most significant results.

Skt. Kjeld's neighbourhood is situated in Østerbro in Copenhagen, see map on figure 9. The area is part of what is commonly referred to as Outer Østerbro (Ydre Østerbro) and consists of a number of smaller neighbourhoods that residents identify with, see map on figure 10. Thus, Skt. Kjeld's neighbourhood is not a coherent neighbourhood and great socio-economic differences can be found within the area. Neighbourhoods with highly educated, high-income residents living in attractive housing is found side by side with neighbourhoods with inadequate housing and residents struggling with poverty and unemployment (Københavns Kommune, 2011).

When looking at the overall statistics from Skt. Kjeld's neighbourhood before the urban regeneration project, the neighbourhood did not stand out from the rest of Copenhagen as particularly problematic, see appendix D. However, smaller pockets within the neighbourhood experienced increased problems with inadequate housing, immigrants and unemployment, and the neighbourhood as a whole was identified as in need for regeneration. The point was to stop the negative development before the problems became so big that they would demand a rescue plan instead of a development plan (Københavns Kommune, 2009a).

In addition to the increasing social challenges in Skt. Kjeld's neighbourhood, the physical environment presented a problem in itself. Large parts of the neighbourhood appear run down, both roads, buildings and public spaces (Københavns Kommune, 2009a). Skt. Kjeld's Square functions as the centre of the neighbourhood with seven streets radiating from the square, but in spite of its function, the square lacks life and possibilities for activities. Today people are mainly passing through without any stays. Because four of the streets radiating from Skt. Kjeld's Square run diagonally through the neighbourhood, a number of small triangular spaces are formed, see map on figure 11. Many of these are not used and are merely covered by asphalt or by plain grass. This is a continuous problem throughout the neighbourhood (Københavns Kommune, 2011). Many corners and small squares are covered by asphalt, making it difficult for cars to navigate as the layout of the roads appear confusing. This was especially true on Tåsinge Plads.

Physically run-down

The social problems in Skt. Kjeld's neighbourhood are not prominent, but confined to smaller pockets. The physical environment on the other hand, appears run-down with few green spaces and confusing roads. Many small squares are covered by asphalt and of no use to either cars or people.

One of the challenges of renewing the run-down and confusing roads is that the roads are private, and thus the responsibility of maintenance lies with the homeowner associations. This means that the municipality has to work together with the residents if they want to renew the roads Lauesen (2015); Lindsay (2015).

The residents responding to the survey are generally happy living in Skt. Kjeld's neighbourhood. The residents who moved in after the plans were adopted were asked how happy they are living in the neighbourhood today, while the residents who moved in before the plans were adopted were asked how happy they were living in the neighbourhood before the plans. Their answers can be seen on figure 12 and 13. They were also generally positive about access to green spaces before the plans were adopted, see figure 14.

4.0.1 Skt. Kjeld's neighbourhood today

In appendix F, the maps show how Skt. Kjeld's neighbourhood has transformed socio-economically over the last approximately 10 years. The maps show the level of education, number of immigrants from non-western countries, the number of people outside the labour market and the number of low-

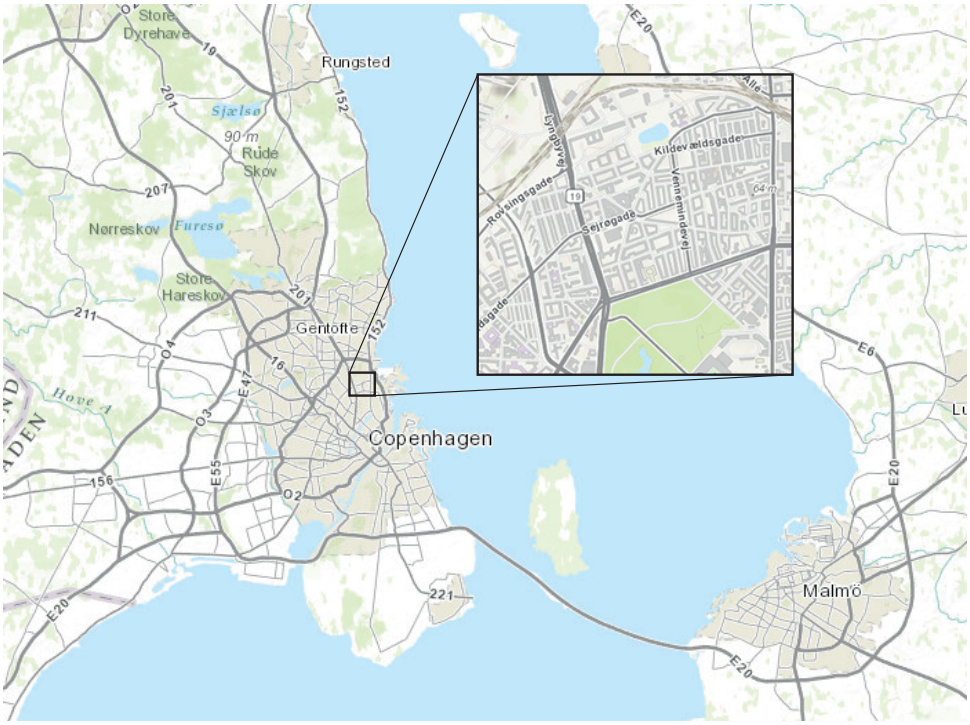

Figure 9. Skt. Kjeld's neighbourhood is located in Outer Østerbro in Copenhagen.

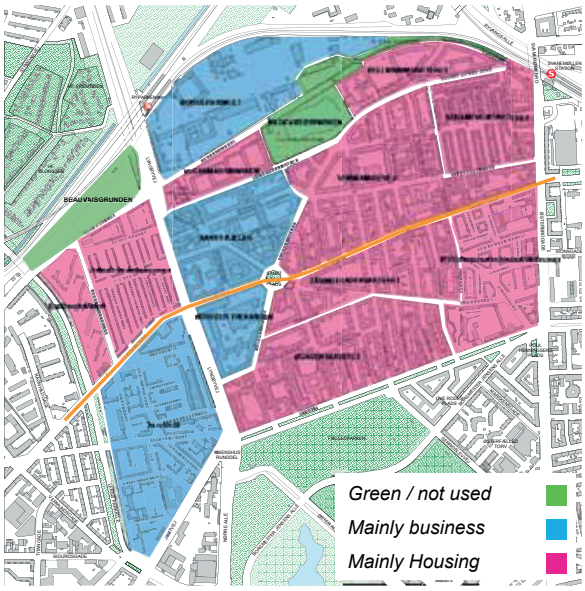

Figure 10. Skt. Kjeld's neighbourhood consists of many smaller neighbourhoods (Københavns Kommune, 2011, p. 11).

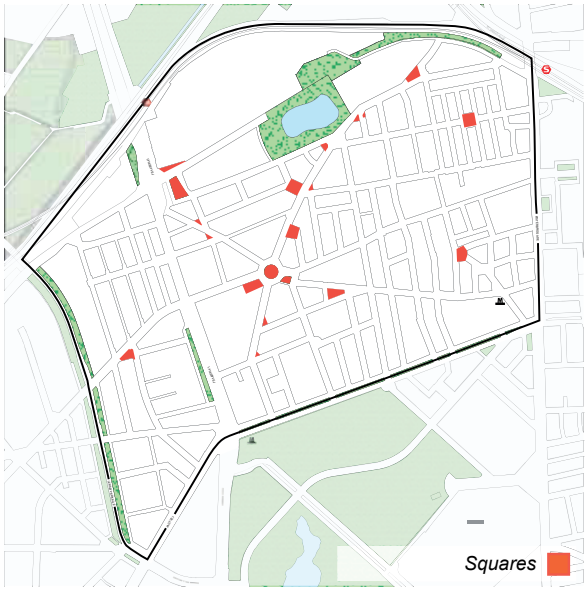

Figure 11. Skt. Kjeld's neighbourhood has many squares and spaces not used (Københavns Kommune, 2011, p. 11).

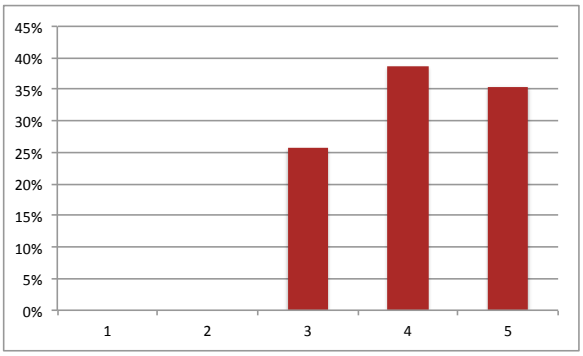

Figure 12. How satisfied the residents, who moved into Skt. Kjeld's neighbourhood after 2009, are with living in the neighbourhood. 1 is very dissatisfied and 5 is very satisfied. N=31. (survey, Q4)

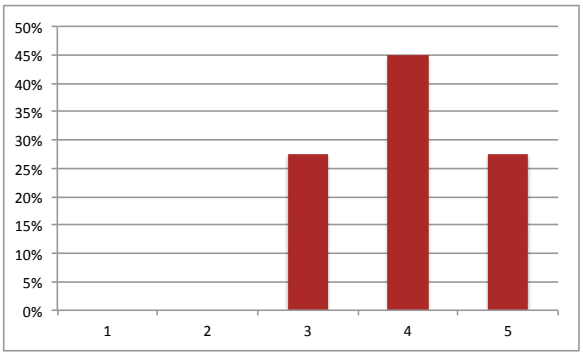

Figure 13. How satisfied the residents, who moved into Skt. Kjeld's neighbourhood before 2009, were with living in the neighbourhood before the plans were adopted. 1 is very dissatisfied and 5 is very satisfied. N=29. (survey, Q5)

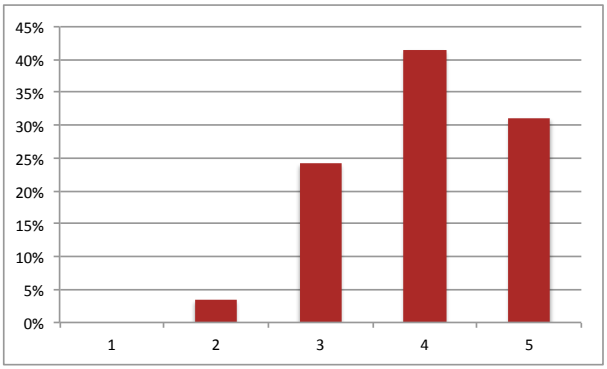

Figure 14. How the residents, who moved into Skt. Kjeld's neighbourhood before 2009, rate access to green spaces before the plans were adopted. 1 is very dissatisfied and 5 is very satisfied. N=29. (survey, Q8)

income residents in the neighbourhood. Three years have been chosen; 2000, 2007, before the urban regeneration project began, and 2012/13, depending on when the newest data is available from. It was chosen to include 2000 to show if the changes are part of a general trend, or if they only occurred after the two projects were initiated. All the results can be seen in appendix F.

- Non-western immigrants: The number of non-western[3] immigrants living in Skt. Kjeld's neighbourhood has been rising through all the years.
- Level of education: The data includes the number of 16- to 64-year-old residents with either no education or secondary school as the highest level of education. Generally, the level of education is rising, and fewer and fewer residents have only completed secondary school or have no education at all.
- Low income: Low income is defined as an income of 25 % below the median. It is calculated as the gross income for people above 18 years of age. From 2000 to 2007 the level of low-income households seems to be rising, while it has dropped a bit again from 2007 to 2012.
- Outside the labour market: The data includes the number of 16- to 66-year-old residents in retirement schemes and others permanently outside the work force. From 2000 to 2007 the number

[3] *"Western countries include EU, Andorra, Iceland, Lichtenstein, San Marino, Norway, Monaco, Switzerland, Vatican City, Canada, USA, New Zealand and Australia. Non-western countries includes all other countries".* (Københavns Kommune, 2015).

increases in some parts of the neighbourhood, while it decreases in other parts of the neighbourhood. From 2007 to 2013, it increases slightly.

4.1 Urban regeneration

In 2009, as a consequence of the before mentioned challenges in Skt. Kjeld's neighbourhood, the municipality applied for funds from the government to begin an urban regeneration project in the neighbourhood. After the funds were obtained, a secretariat was established locally in the neighbourhood, conversations with key stakeholders and an initial public meeting were completed and a steering committee with representatives from the neighbourhood, the municipality, local institutions etc. was elected. In late 2010, a neighbourhood plan was delivered to the government and municipality to be approved, and the project became a reality (Københavns Kommune, 2011).

The urban regeneration project officially consists of two projects, Skt. Kjeld's neighbourhood South and Skt. Kjeld's neighbourhood North, see map on figure 15. There are differences between the two in regard to the condition of the building stock, ownership structure and social challenges, but the challenges described above can be found in both parts of the neighbourhood. Also, the structure of the neighbourhood binds north and south together with people moving around and using the same amenities. Because of this, the municipality chose to only create one secretariat and one steering committee, as well as create only one neighbourhood plan for the two projects (Københavns Kommune, 2011).

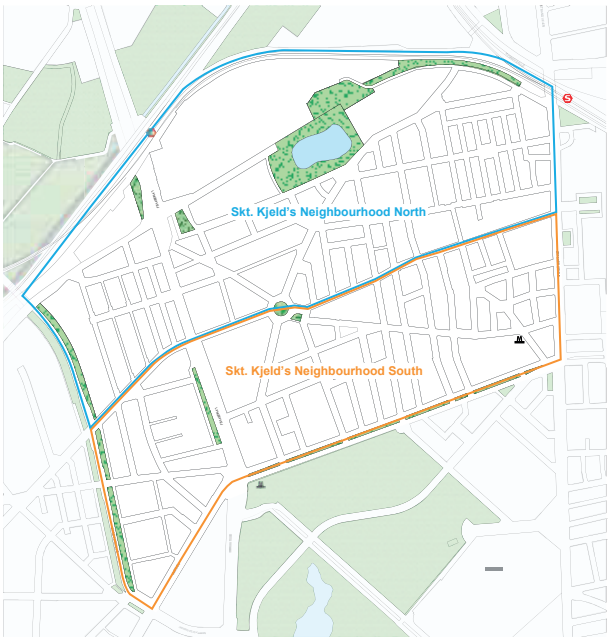

Figure 15. Skt. Kjeld's neighbourhood is divided into two, North and South (Københavns Kommune, 2011, p. 2).

The main theme of the neighbourhood plan is *health and exercise*. By improving the physical environment and create public spaces that encourages exercise, the municipality hopes to improve the physical and emotional health of the residents in the neighbourhood. Research has suggested a connection between socio-economic status and health and well-being. People with a lower level of education and income tend to be have poorer health than those with higher education and income. In addition, people outside of the workforce have a higher mortality rate than those within the workforce. Important to the overall health is both physical health and mental health (Københavns Kommune, 2009a).

To improve the health of the residents, the work concentrates on creating places where residents can meet and socialize, spaces that invite residents to walk, bicycle or play more and healthy homes with up-to-date amenities and green outdoor facilities (Københavns Kommune, 2011).

Physical improvements
The urban regeneration project addresses the social problems through physical improvements in the neighbourhood, that will invite residents to exercise and form networks with neighbours.

This is done through three focus areas; meeting places, collaboration and activities. These focus areas are thought to improve the health of the residents as well as attract private investors that are important to ensure both homes and jobs in the neighbourhood in the future (Københavns Kommune, 2011).

The **meeting places** will be created in the many small squares and spaces scattered around the neighbourhood and should motivate residents to play, move and stay. Meeting places can be cafés, schools, streets, parks etc. **Collaborations** between residents, businesses, institutions and associations will utilize the resources within the community and create platforms for development. This can be done through associations, networks or partnerships. **Activities** will test the meeting places and enhance collaborations. Activities can be the temporary use of urban spaces for exhibitions, street art or to test ideas for permanent uses. It can also be cultural activities or sport activities. The three focus areas are being realized through eight specific projects decided by the steering committee. These are (Københavns Kommune, 2011):

- Activity and movement streets
- Skt. Kjeld's Square
- Better connections
- Cultural laboratory
- Project and media workshop
- Kildevæld Park
- Places for young people
- Cultural festival

A general greening of the neighbourhood is prioritized and in a few places throughout the neighbourhood plan, climate change adaptation is mentioned. It is suggested to incorporate urban drainage systems into the regeneration of the neighbourhood (Københavns Kommune, 2011).

4.2 Climate change adaptation

On June 2nd 2011, Copenhagen experienced a severe heavy rainfall (DMI, 2012). The heavy rainfall lasted approx. 2.5 hours and in the most heavily affected areas, precipitation was approximately twice of what is normal for all of July (Beredskabsstyrelsen, 2012).

The consequences were extensive and damages were far more comprehensive due to the fact that the event took place in the capital, both because the built area has a higher density than other places, and because the infrastructure is extensive and used by many people (Beredskabsstyrelsen, 2012). The damages exceeded 6 billion Danish kroner(Klimakvarter, 2013), making it the most damaging heavy rainfall in the history of Denmark (DMI, 2012). 17 of the residents responding to the survey experienced flooded basements (survey, Q11).

Skt. Kjeld's neighbourhood was appointed Copehagen's first *climate neighbourhood* by Copenhagen Municipality for several reasons. One of the reasons was that the neighbourhood, has wide roads and large, unused areas covered by asphalt. These areas could be used for adaptation measures and green spaces (Klimakvarter, 2013). Also, the entrance to Skt. Kjeld's neighbourhood, Lyngbyvej, was completely flooded during the heavy rainfall in 2011 (Klimakvarter, 2013). Lindsay (2015) also points out that the fact that the area had already been approved for urban regeneration and had funding played a factor, as it was thus possible to begin the work straight away as long as the climate change adaptation

projects remained within the framework of the neighbourhood plan, which was fairly open. Berggreen (2015) tells that Skt. Kjeld's neighbourhood was chosen not because it was especially important in preventing floods, but as the urban regeneration project presented an opportunity to test ideas and to showcase solutions.

Furthermore, Rasmussen (2015) points out that the inspiration to make the climate change adaptation project came from the architecture company Tredje Natur[4]. Tredje Natur won the architect competition Europan in 2011 with their plan of making Skt. Kjeld's neighbourhood a climate-adapted neighbourhood (DAC, 2014). This plan became the foundation for the actual project Tredje Natur (2014).

In 2013, a plan for climate change adaptation was presented, which included visions, strategies and projects. The vision is to address the problems Skt. Kjeld's neighbourhood experiences by giving the neighbourhood the identity it has been lacking through climate change adaptation. Furthermore, the vision is to make rainwater a positive element in the city and to handle it in a way that reduces damages and creates unique experiences in the neighbourhood (Klimakvarter, 2013).

Five goals for the adaptation efforts are identified (Klimakvarter, 2013, p. 10):

- Decouple 30 % of the area from the sewage system.
- Retain as much water as possible in the upper catchment area.
- Establish roads that can lead away the water in case of heavy rain.
- Keep surface temperatures low.
- Increase biodiversity

These five goals should be reached through four strategies. The first is concerned with decoupling from the sewage system. A 10:10:10 strategy is adopted referring to 10 % impoundment, 10 % infiltration and evaporation and 10 % surface drainage of the rainwater. The second strategy is to optimize the use of the roads and thus create the best setting for the everyday life of the neighbourhood. The third strategy is to involve residents to ensure success, as the residents possess both knowledge about their neighbourhood, what creates value to them and the resources to implement the projects. The forth strategy is to use temporality as a method to test different solutions before implementing them (Klimakvarter, 2013).

The visions and strategies result in a range of more or less specific projects. These consist of urban spaces, courtyards, buildings and resident's own small scale projects, see map on figure 35. Three large urban spaces have been identified to have special potential due to their current layout. These are Skt. Kjeld's Square, Tåsinge Square and Bryggervangen (a street), see map on figure 16. Common for these is that they all appear run down and have large and confusing roads that makes navigation for both pedestrians and car drivers difficult. These three projects will be the most visible projects that combine climate change adaptation with public spaces. Tåsinge Square was finished in late 2014, while Skt. Kjeld's Square and Bryggervangen has not been renewed yet (Klimakvarter, 2013).

High-profile projects

Three high-profile climate change adaptation projects have been chosen; Tåsinge Square, Skt. Kjeld's Square and Bryggervangen. These will be the most visible projects in the neighbourhood, and will combine climate change adaptation with attractive public spaces.

In addition to these three high profile urban space projects, a number of smaller projects are planned and some completed. First, the creation of roads to lead water from heavy rainfalls that cannot be retained or infiltrated in the neighbourhood to the harbour, where it does not create damages. Second, courtyards cover 30 % of the neighbourhood, and two courtyards have been selected to showcase how climate change adaptation can create better environments for the residents. Third, six buildings are being renewed focusing on rainwater, green roofs, permeable surfaces and soakaways. Fourth, residents

[4] In English: Third Nature

Figure 16. Skt. Kjeld's Square, Tåsinge Square and Bryggervangen are the three largest projects in the climate change adaptation plan (Klimakvarter, 2013, p. 9).

have the possibility of getting help and funding to make their own small-scale projects. Examples of completed projects are sidewalk gardens, plant containers and rainwater barrels (Klimakvarter, 2013). Figure 36 in appendix I on page 63 shows the planned progress of the projects.

4.2.1 Sustainability

All interviewees were asked about the sustainability of the project, and whether they thought that the three legs of sustainability (social, economic and environmental) went well with the project. It is clear that sustainability has not been the main focus of the projects. Rather, focus has been purely on climate change adaptation in regard to managing water and how to incorporate that into urban spaces. Rasmussen (2015) says:

> *"Climate change adaptation is not about economy or social aspects. Climate change adaptation is about managing water and not about $CO_2$and not about economy and not about... That is it. That you then can get some positive side effects and create some added value – you certainly can – and that is also something HOFOR[5] is always up to. But you should*

[5]In Danish: Hovedstadsområdets Forsyningsselskab. The public utility in Copenhagen

perhaps not mix it, i.e. you should sometimes be aware that climate change adaptation cannot tackle all problems, as it is about water – about managing water."

Also Berggreen (2015) agrees that sustainability was not the focus, and that they were not yet ready to include all the three elements of sustainability. This was a trial project about managing water in the city and to find out how they could use the excessive water from increased precipitation to make interesting urban spaces.

4.3 The combination of urban regeneration and climate change adaptation

As the work with climate change adaptation in Skt. Kjeld's neighbourhood began, the work with urban regeneration still continued. The two projects have since existed alongside each other, share office space and collaborate. When the climate change adaptation project was decided by the municipality, two new employees were hired to the urban regeneration secretariat to help implement the new focus. The urban regeneration secretariat is thus responsible for the day-to-day work with climate change adaptation and handles project development and public participation.

Lauesen (2015) describes the shift from health and exercise to climate change adaptation as common when working with urban regeneration, as focus or themes change with what is popular at the moment. The shift also meant more money and possibly more investments in the future to the neighbourhood, while the new focus had the opportunity to create an identity for the neighbourhood and pride among the residents, something that had been lacking previously:

"We could give it [the neighbourhood] that climate neighbourhood identity. This way we could also create a sense of pride in the neighbourhood, now you were something, and the place was something. Now it was Copenhagen's first climate neighbourhood."

Also Lindsay (2015) and Berggreen (2015) talk about identity and point to the fact that the neighbourhood as a whole lacks identity, and that the residents are seeking this identity and gaining it through the climate change adaptation project.

Identity
Skt. Kjeld's neighbourhood lacks identity and this is something the residents are seeking. The climate change adaptation plan is used to create identity within the neighbourhood and also to make the residents proud of their neighbourhood.

Lauesen (2015) further explains that since the shift occurred so early in the process, many residents might not even have noticed that there was a change in focus. Lindsay (2015), on the other hand, points out that some of the residents who participated from the beginning might have felt that the original agenda was hijacked by the new focus on climate change adaptation. However, he also explains that the shift had certain advantages, as the new focus on climate change adaptation presented an opportunity for the urban regeneration project:

"The problem with health and exercise was a bit unclear, what problem were we going to solve? Climate change adaptation provided a very clear and measurable and noticeable problem: we have water in the basements, we want to do something about that. [...] We have a problem to be solved; that we agree upon. How can we solve it in the best way for everyone? Health and exercise is a little more fluffy."

Thus, today the two plans coexist, and climate change adaptation has effectively been integrated into the original urban regeneration strategy. The focus on health and exercise has not been abolished

completely, but the focus lies on creating new green spaces in the neighbourhood that can function as both climate change adaptation and to motivate people to use the public spaces.

The residents are generally positive about the plans and figure 17 shows how the plans fit well with their wishes for the neighbourhood. 35.5 % of the residents who moved into Skt. Kjeld's neighbourhood before the plans were adopted also stated that the plans have made them happier about living in the area (survey, Q7). Of these residents, 75.9 % also think that access to green areas has already improved or expect that it will, when the plans are fully implemented (survey Q9).

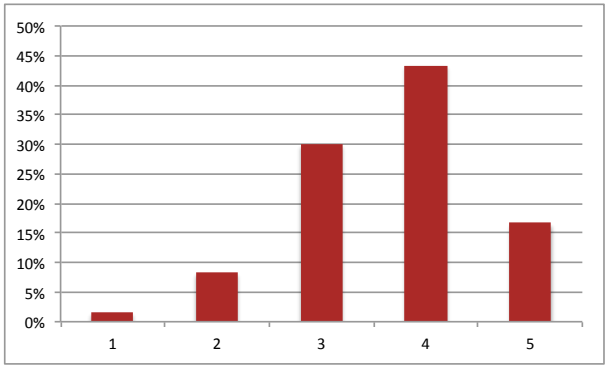

Figure 17. The degree to which the plans live up to the wishes of the residents. 1 is not at all and 5 is very much. N=60 (survey, Q14)

The initiatives and the "new" neighbourhood have been welcomed by many. Already in the beginning of the project, real estate agents were positive and saw a renewed interest for the area due to the plans of new green areas(Berggreen, 2015). 28.3 % of the residents also expect that rent will increase in the neighbourhood due to the plans (survey, Q18).

Increased rent

Real estate agents are positive, and have from the beginning of the project experienced increased interest in Skt. Kjeld's neighbourhood due to the plans. Furthermore, 28.3 % of the residents expect that rent will increase in the neighbourhood due to the plans.

Rasmussen (2015) predicts that Skt. Kjeld's neighbourhood will evolve like other places in Copenhagen, e.g. Skt. Hans Square, also located on Østerbro, where regeneration transformed the area from boring to a hip neighbourhood with cafés. However, she says, Skt. Kjeld's neighbourhood will be popular in a different way, with focus on sustainability:

> *"I do not believe that it [the neighbourhood] will be hip with music places and trendy cafés and things like that. It will be in a different way, but there could very well be more, how to say, eco-specialized stores. So I think it will be with a sustainability profile, but there could open really interesting restaurants, I could easily imagine, and more cafés, but in a more subdued manner."*

Berggreen (2015) points out that the real beneficiaries of the plans will be the people living directly next to them, and thus a great part of the neighbourhood might not experience the improvements:

> *"I think that it is those who live directly next to something [a project] or who get a better courtyard or something else, they can easily get a better quality of life. And there will be some who do not know the project and do not know it exists, and who in no way will experience changes."* (Berggreen, 2015)

Target group

Skt. Kjeld's neighbourhood will not become trendy with many cafés and music places, but instead have focus on sustainability and local eco-specialized shops. Those who will gain from the projects in the neighbourhood are those living next to them, while many residents will not experience changes and might not know that the projects exist.

4.4 Public participation

During both projects, urban regeneration and climate change adaptation, the public has been involved. The organisation of the two projects can be seen on figure 18. The municipality has tried working with new approaches to public participation due to the somewhat traumatic results of urban regeneration projects in e.g. the neighbourhood Vesterbro (see short description in section 3.3.2 on page 22) (Lauesen, 2015). First, the people hired to run the urban regeneration project went out and spoke to key stakeholders in the neighbourhood to identify the network and the skills available for them to draw on. Then a public meeting was organized before the steering committee was elected with members representing the residents (Københavns Kommune, 2011).

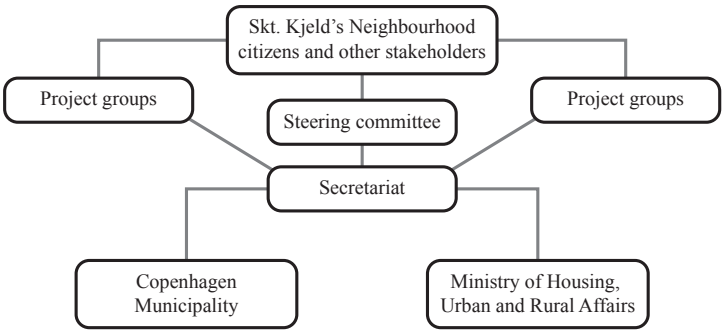

Figure 18. Organization of the urban regeneration project (Københavns Kommune, 2011, p. 7).

The steering committee, as mentioned, consists of representatives from the neighbourhood, the municipality, local institutions etc. (Københavns Kommune, 2011). The members of the committee represents the diversity of the residents in the neighbourhood, but they are also people already familiar with political culture and working in associations (Lindsay, 2015). Together with the municipality and Ministry of Housing, Urban and Rural Affairs, the steering committee adopted the neighbourhood plan. The steering committee have veto power when it comes to the projects in the neighbourhood and set the framework for these (Københavns Kommune, 2011).

Smaller project groups are established for each project, and here local representatives are found through advertisements. The project groups are free to operate within the framework set by the steering committee. Because many of the roads in the neighbourhood are private roads maintained by homeowner associations, representatives from these associations also need to approve the projects concerning their roads (Lindsay, 2015).

When planning the projects around the neighbourhood, different approaches to public participation have been used. Recognizing that the residents often only get involved when they start building or digging up streets, the secretariat has used temporary installations and different activities, both to test what works in a certain place and also to get people involved. Examples of these activities and installations are instant breakfast, cultural installations, events with plants, parties, public meetings and games (Lauesen, 2015). The residents participating generally come from diverse backgrounds (Lindsay, 2015).

In the application for the urban regeneration project, Københavns Kommune (2009a, p. 23) writes

that *"the diverse mix of residents can come to serve as a central resource for the development of the neighbourhood"*. Because of this, it is listed as a goal to involve less resourceful residents and their skills and knowledge in the process (Københavns Kommune, 2009a). This has e.g. been done by arranging workshops with young people who would otherwise have been difficult to involve, talking to the residents at the nursing home about their wishes and by collaborating with the public school and the children attending here. In the beginning of the project the team also went around the neighbourhood and talked to specific groups, e.g. people walking their dogs or people with strollers. This way they had conversations with groups they would otherwise not have been able to reach (Lauesen, 2015).

Lauesen (2015) also makes it clear that it is not possible nor necessary to involve everyone in the projects:

> *"One should not think that you can mobilize the masses, it is very few people who are mobilized in a project like this. People have other interests."*

In addition, Lauesen (2015) pointed out the secretariat's role as mediators in the public participation process.

The secretariat has thus had different roles in the public participation process, from interviewers, to coordinators, to mediators. Likewise, residents have been involved in many different ways, from traditional public meetings to events and temporary installations.

Of the residents in the survey, 33.3 % participated in some sort of public participation in regard to the projects, e.g. summer parties, workshops and the steering committee. Figure 19 shows how much they feel like they have been able to affect the planning process through the participation activities.

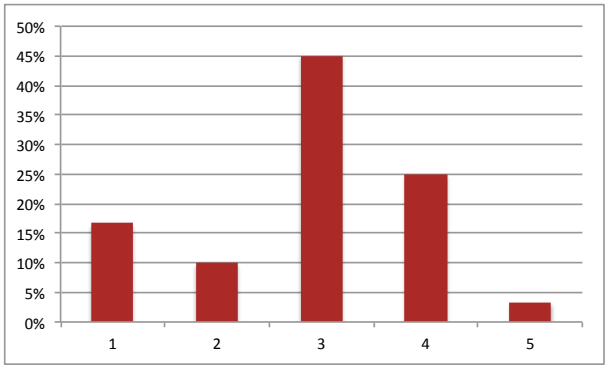

Figure 19. Residents perception of the ability to affect the planning process through participation activities. N=60. (survey Q17)

Public participation

The residents have been involved on different levels; the steering committee, project groups, temporary installations and various activities. The group of residents participating has been diverse, and vulnerable groups have been directly targeted in the initial phase of the project.

4.5 Relation to other plans and institutions

The urban regeneration and climate change adaptation projects at Skt. Kjeld's neighbourhood are connected to multiple other plans and institutions within Copenhagen.

Østerbro Local Committee[6] is part of Copenhagen Municipality and is the link between the residents

[6]Danish name: Østerbro Lokaludvalg

in Østerbro and the politicians in the municipality. The local committee supports initiatives and project throughout Østerbro (Østerbro Lokaludvalg, 2015). Skt. Kjeld's neighbourhood was flagged by Østerbro Local Committee as an area needing attention (Københavns Kommune, 2009a).

Miljøpunkt Østerbro, loosely translated to Environmental Point Østerbro, is a local environmental center that works to promote sustainable development in Østerbro. It is an independent foundation that is part of and gets its funds from Østerbro Local Committee (Miljøpunkt Østerbro, 2015). Miljøpunkt Østerbro is a partner in the urban regeneration/climate change adaptation projects and works to involve residents in activities related to climate change adaptation (Klimakvarter, 2013). They have done surveys of the (environmental) wishes of the residents, and they are getting funds to communicate and to host smaller courses in sustainable practices for the residents. They are also partners in smaller projects in the neighbourhood, e.g. small gardens and plant boxes (Berggreen, 2015).

Furthermore, there is collaboration with other municipal departments, e.g. the Climate Unit, which is part of the technical and environmental department, and **HOFOR**, the public utility in the Copenhagen region.

Both the municipal climate unit and HOFOR became involved in the project when it was decided to focus on climate change adaptation, and they began by collaborating with the secretariat for the urban regeneration project. The Climate Unit brought many of the fundings to the new climate change adaptation project, while HOFOR was responsible for the hydraulic part, i.e. the technical solutions and that the capacity of the solutions was satisfying. As the Climate Unit brought a lot of funding, it was necessary for them to be able to use the experiences elsewhere after the project (Berggreen, 2015).

It has been a new way for the institutions and companies to work together, and in many ways it has been necessary to find out how collaborate, who is responsible for what and how to integrate the many different interests of both the municipality, HOFOR, the urban regeneration secretariat, the residents etc. into the project. The collaboration has not been without conflicts and often what they wanted to do was stopped by other rules, e.g. they wanted a water tower at Tåsinge Square, but due to health reasons, the water needed to be replaced every 24 hours, which was not possible. The water tower also needed to be empty to be able to store water from cloudbursts, but this contradicted the wish to have water in the tower at all times. Many of these challenges came along the way and needed to be dealt with. In this sense, the project has been a learning process for all involved (Rasmussen, 2015).

Skt. Kjeld's neighbourhood is also covered by other plans than those relating to the urban regeneration or climate change adaptation projects listed above. A climate change adaptation plan for all of Copenhagen has been adopted and also cloudburst plans have been developed by the municipality to prepare for increased heavy rainfalls. Østerbro Local Committee also adopted a plan for all of Østerbro that also covers Skt. Kjeld's neighbourhood.

4.6 Summary

This chapter presents the case area Skt. Kjeld's neighbourhood and is concerned with the results regarding sub-question 2 and 3 of the research questions:

- Who are municipalities planning for, when doing urban regeneration and climate change adaptation projects?
- How are the residents involved, and how is involving the residents in these projects important for the outcome?

Skt. Kjeld's neighbourhood is not socially vulnerable as a whole, but experiences increased social problems concentrated in smaller pockets around the neighbourhood. The neighbourhood as a whole however appears run-down with large areas covered by asphalt that are not used. The few green spaces in the neighbourhood also appear run-down and some are inaccessible.

The urban regeneration project focused on inviting residents to exercise and create networks by meeting neighbours. This should be done by physically renewing the neighbourhood. Residents were

involved in the project from the beginning and a steering committee was elected. In 2011, it was decided that Skt. Kjeld's neighbourhood should be Copenhagen's first climate-adapted neighbourhood. This project was integrated into the urban regeneration project and the focus became on testing climate change adaptation solutions and to make these into attractive urban spaces.

The focus now is also on creating an identity for the neighbourhood through climate change adaptation. The residents are generally positive about the plans and state that they live up to their wishes for their neighbourhood. They expect that the plans will lead to increased access to green spaces in the neighbourhood, but also expect rent to increase due to the plans.

The residents have been involved in the planning process in different ways. In the beginning conversations and regular citizen meetings were used, and then a steering committee was elected. For each project in the neighbourhood a project group is elected, who can work within the framework set by the steering committee. Furthermore, residents have been involved through temporary installations and different activities such as parties and games. The group of residents involved has been diverse, but it has not been a goal to mobilize everyone.

5. Results and analysis

In this chapter, the results presented in the two previous chapters together with a few new results are analysed. The chapter is structured around the two research questions and three sub-questions. Thus, every section will refer to one of the questions. Which one is stated in the beginning of the sections. The first research question is: How are urban regeneration and climate change adaptation projects traditionally planned in Denmark? As this question is more descriptive than the rest, it will only briefly be addressed here, but will be followed up in the conclusion.

The planning process in Skt. Kjeld's neighbourhood follows common practice in Denmark, and only the process of public participation differed from the usual. The consequences of this are discussed in section 5.2 below. According to Lauesen (2015), the shift from urban regeneration to climate change adaptation was also not unusual:

> *"It was not traumatic or special really. It frequently happens that there are shifts in focus of neighbourhood plans. That is very common."*

In Skt. Kjeld's neighbourhood the shift is mainly seen as a positive change by the planners, as it presented a way to carry out the plans of urban regeneration (Lindsay, 2015). However, the shift in focus had consequences, and also led to a shift in the purpose of the plans, which is discussed in the next section.

5.1 Planning for the creative class

This section refers to the sub-question: Who are municipalities planning for, when doing urban regeneration and climate change adaptation projects?

When cities and neighbourhoods are planned, many different interests come into play. It has been established in section 3.3.2 on page 22 that Copenhagen is trying to attract the creative class by planning for the things they are looking for in the city. This has caused conflicts in neighbourhoods in Copenhagen that traditionally have had many low-income residents (Hansen, Andersen and Clark, 2001). The question thus is, if the urban regeneration and climate change adaptation plans in Skt. Kjeld's neighbourhood are adopted to benefit the current residents and help solve the social and environmental problems stated in the initial application for funds or if they are focusing on attracting the creative class.

One of the things the creative class is looking for is *identity*, and that is something the secretariat at Skt. Kjeld's neighbourhood tries to create. Both Lauesen (2015), Lindsay (2015) and Berggreen (2015)

mentions that Skt. Kjeld's neighbourhood lacks identity, that it is something the residents are missing and that it is something they actively try to give the neighbourhood through the climate change adaptation plan. Lindsay (2015) says:

> *"What I think has been the greatest challenge out here is – I speak again as a resident – that it is really, really boring, and it lacks some common identity. There are some small... The Composer-neighbourhood has an identity, the Lyngbyvej-neighbourhood… There is some community feeling in and around the blocks, but there is no community feeling as a whole, and there is no identity as a whole, and there is not much that draws people out here, and this means it is a place that can easily deteriorate, if you do not ensure that people in Copenhagen are still aware that it is a place."*

The focus on giving the neighbourhood an identity also fits well into the current planning practice in Copenhagen, which focuses on attracting creative people. However, when planning to attract creative people, there are two important problems to notice. First, the creative people are not the same as the socially vulnerable residents who they were initially planning for in Skt. Kjeld's neighbourhood. This means that the project might not target this group of vulnerable residents at all, and their problems are neither addressed nor solved. Second, by focusing on a new resident group, the creative class, there is a risk of the neighbourhood gentrifying and the socially vulnerable residents being displaced.

Identity is not the only quality the creative class is looking for, and places where *social interaction* can take place, e.g. cafés, or *authenticity*, such as a local music scene and local shops, are some of the others. Rasmussen (2015) tells that though she does not expect the area to become hip with a music scene and many cafés, it might become popular in a different way with focus on sustainability and e.g. specialized ecological shops.

Even if the vulnerable residents are not pushed out of the neighbourhood by gentrification, the new amenities will most likely only benefit the residents living directly at them (Berggreen, 2015).

The map on figure 35 on page 62 shows the projects planned in Skt. Kjeld's neighbourhood, while the map on figure 34 on page 61 shows where social housing, which often houses the majority of the socially vulnerable residents, is located in the neighbourhood. Some (mainly smaller) projects take place in areas with social housing, while the major projects, Tåsinge Square, Skt. Kjeld's Square and Bryggervangen, are all located in areas with almost no social housing. Thus, the residents living in social housing will benefit to a lesser extent from the projects than the residents, who are already better off.

This contradicts what is presented as the purpose in the initial plans, which wanted to target a neighbourhood in social decline. The climate change adaptation plan has altered this focus, as the actual projects in the climate change adaptation plan in most cases do not target the vulnerable groups directly.

5.2 Public participation

This section refers to the third sub-question: How are the residents involved, and how is involving the residents in these projects important for the outcome?

Even though the climate change adaptation plan targets the creative class rather than the socially vulnerable residents, it is not that the current residents have been left out of the planning process. The project at Tåsinge Square e.g., was driven by the residents and did not focus on attracting outsiders to the neighbourhood (Rasmussen, 2015):

> *"They [the residents] clearly wished that it was their small, local [square] – they did not want Distortion[7] or large concerts and the like, and that has been listened to. We could have covered more of the surface and still solved the climate change adaptation task. They*

[7] A street festival in Copenhagen

set the agenda for a small square, where you can sit and drink coffee at the coffee bar, no playground, exciting plants all year round etc. That way they were listed to very, very much, and they got many of their wishes fulfilled."

Likewise, public participation has been an important part of the project to avoid the traumatic processes of urban regeneration experienced in e.g. Vesterbro. To do so, the urban regeneration secretariat has tested many different ways of involving the residents, e.g. parties, regular public meetings, art projects and temporary installations. Some of the vulnerable groups were specifically targeted in the initial phase of the planning, and Lindsay (2015) tells that the composition of residents participating has been diverse:

"There is some groups that are always difficult to attract, the local committee's experience that too, but it has been somewhat diverse, i.e. we said that we wanted a representative from the social housing companies, a representative from the cooperatives, a representative from the homeowner associations. So there has been some from everywhere. Then there has been representatives from sports associations, leisure associations and representatives from the seven administations[8]*"*

In regard to Arnstein's (1969) ladder of participation, the public participation activities in Skt. Kjeld's neighbourhood at least ranged from *informing*, e.g. summer parties and cultural installations, to *consultation*, e.g. public meetings, to *partnership*, i.e. the representatives in the steering committee.

Despite this, Berggreen (2015) points out that the socially vulnerable residents are still not particularly benefiting from the projects:

"Those with great social problems or other problems, I am not sure of. I think you reach the broad majority; those who are doing okay and who are interested. But those with many problems, I do not think you reach."

This is of course a problem, if the goal of the plans is still to address the growing social problems of the neighbourhood and not to attract the creative class.

5.3 Gentrification

This section deals with the first research question: How do urban climate change adaptation projects transform marginalized neighbourhoods undergoing processes of urban regeneration?

Skt. Kjeld's neighbourhood cannot be described as a socially marginalized neighbourhood as a whole. There are smaller pockets around the neighbourhood that experience negative social development, but overall the neighbourhood is doing fine in comparison to the rest of Copenhagen. In the application for funds to the urban regeneration project the municipality paints a worse picture of the neighbourhood than what is described by the people working with the regeneration and climate change adaptation project (see Københavns Kommune, 2009a). This can of course have several reasons. Most likely is, however, that it might be easier to gain funds, if the project is taking place in a neighbourhood experiencing social problems. Thus, these problems are emphasized in the application.

Even though the neighbourhood is not socially marginalized, it might be characterized as environmentally marginalized. There is a lack of green amenities and the few ones there are run-down and sometimes inaccessible. Skt. Kjeld's Square, which is one of the green spaces in the neighbourhood is in the middle of a wide roundabout with no access and is thus not used. Tåsinge Square had a small park, but was also surrounded by large areas of asphalt making it difficult for cars to navigate. The large areas covered by asphalt is a general problem for the neighbourhood.

[8] Copenhagen Municipality has seven administrations.

Both Lauesen (2015), Lindsay (2015) and Berggreen (2015) agree that Skt. Kjeld's neighbourhood was not particularly exposed socially, but was run-down and experiencing environmental problems.

That the neighbourhood is environmentally marginalized poses a problem in regard to environmental justice, as residents have poor access to green spaces and environmental amenities. The projects in Skt. Kjeld's neighbourhood are now addressing this issue by implementing green solutions, most notably at Tåsinge Square, Skt. Kjeld's Square and Bryggervangen (figure 16 on page 30). The projects are high profile, and it is not uncommon for representatives from other Danish municipalities as well as international guests to visit the area and to learn about the solutions implemented (Lauesen, 2015). However, as presented in section 1.1.2 on page 5, the creation of green amenities in a marginalized neighbourhood poses the threat of making the area attractive to people from outside and thus spark environmental gentrification.

There are already signs that Skt. Kjeld's neighbourhood is becoming more popular with residents from outside the neighbourhood. Berggreen (2015) told that real estate agents early on experienced an increase in interest for the area, and 28.3 % of the residents expect rent to increase due to the implementation of the plans (survey, Q18). The statistics in appendix D on page 57 also present that the majority of homes in Skt. Kjeld's neighbourhood is privately owned and either owner-occupied or privately rented. This increases the risk of gentrification, which might benefit the owners, but not the 30.3 % who live in privately rented homes, for whom the risk of increased rent and the consequences thereof is real. Gentrification is thus a real risk in Skt. Kjeld's neighbourhood, just as it has been seen following other urban regeneration projects in Copenhagen.

While the risk of gentrification is real, the effects are not seen yet. While the level of education is rising, the number of immigrants and people outside the labour market is rising in the neighbourhood as well. The number of low-income residents were rising before 2008, but have been decreasing in recent years. Much of this development seems to follow a trend not related to the adoption of either the urban regeneration or climate change adaptation plans. Thus, the level of education was already rising before the plans were introduced. Generally these statistics do not indicate that the plans have resulted in gentrification.

It is important to remember that the plans have still only been adopted, and many of the projects have not been carried out yet. Only Tåsinge Square and smaller projects have been completed, while Skt. Kjeld's Square and Bryggervangen have only just been initiated. That the projects are not yet completed might be the reason why the gentrification process has not yet fully started. It is necessary to re-evaluate the consequences once the projects are implemented and the full effects can be expected.

5.4 Socially vulnerable residents

This section deals with the second research question: To what extent do they create new dynamics of inequity and exclusion, or on the opposite, address existing social and environmental inequity?

In the urban regeneration plan the social problems were to be addressed by improving the physical landscape of Skt. Kjeld's neighbourhood so it would invite the residents to exercise more and to meet other residents and form networks within the neighbourhood. Tredje Natur mixed this idea with climate change adaptation in their winning proposal to Europan, which then became the starting point for the climate change adaptation plan Lindsay (2015):

> *"The delivery Tredje Natur made, also included the question of how we do health and exercise at Bryggervangen and Skt. Kjeld's Square. But what they delivered, that was also climate change adaptation. So you can say that we were a bit lucky that many things fitted perfectly together here."*

However, it has been established that the projects within the climate change adaptation plan are not particularly connected to the socially vulnerable areas of the neighbourhood and that they will mainly benefit the broad majority of residents. The social challenges are thus not solved through the plans.

In regard to the environmental problems, the climate change adaptation plan has increased the distribution of environmental goods in Skt. Kjeld's neighbourhood and will continue to do so until all the projects are completed. When the projects are fully implemented, the neighbourhood as a whole might no longer be characterized as environmentally marginalized. However, while other residents will experience greater access to green amenities, it remains status quo for group of socially vulnerable residents. The group of vulnerable residents might not experience poorer environmental conditions, but as conditions will only improve for other groups, it can be argued that there will be an increase in environmental inequality due to the plans.

If environmental gentrification becomes a problem, the situation for the socially vulnerable residents might become even more problematic, especially if the social housing companies do not continuously ensure low-rent housing in the neighbourhood. The result will be that the attempt to solve an environmental justice problem of uneven distribution of green amenities has changed little, if nothing, or in worst case has resulted in displacement of the very people it was supposed to help in the beginning.

5.5 Experiences from Augustenborg

Projects similar to the one in Skt. Kjeld's neighbourhood have been carried out in other places. One of these is the eco-city Augustenborg, a neighbourhood in Malmö in Sweden, which was carried out in the late 1990s. Here, a climate change adaptation project based on public participation was initiated to battle social problems as well as problems with floods from heavy rainfalls (Malmö stad, 2015b). The results were falling crime rates, higher voter turnouts and residents who became proud of living in their neighbourhood (Naturstyrelsen, 2015a), while the turnover of tenancies decreased by almost 20 % (Malmö stad, 2015b)[9].

Whether the same positive results can be expected in Skt. Kjeld's neighbourhood depends on several factors, and there are both similarities and differences between the two neighbourhoods. Both neighbourhoods experienced growing social problems, and in both neighbourhoods climate change adaptation has been used to drive urban regeneration and to target the social challenges. Public participation also played an important role in both neighbourhoods, where the residents have had the opportunity to interact with policy makers.

However, many of the similarities are at the same time differences. First, Skt. Kjeld's neighbourhood is much larger than Augustenborg. Second, in Augustenborg climate change adaptation and sustainability were used to drive urban regeneration from the beginning, while focus shifted from one to the other in Skt. Kjeld's neighbourhood. Third, the social challenges were a continuous problem throughout Augustenborg, but as it has already been established, in Skt. Kjeld's neighbourhood they did not affect the whole neighbourhood and are described as emerging and increasing, not yet an overall problem, so the project was supposed to prevent social problems in the future. Fourth, in Augustenborg, focus on solving the social problems was strong from the beginning, while focus in Skt. Kjeld's neighbourhood has been mainly on physical improvements, not only targeting the socially vulnerable residents but the entire neighbourhood.

The project in Augustenborg is presented as a success case, and in 2010 it won the World Habitat Award for the way public participation was used to target all three legs of sustainability World Habitat Awards (2010); Malmö stad (2015a). In many ways, the project in Skt. Kjeld's neighbourhood is also presented as a success, but while the project in Augustenborg seems to have been focused on the residents, Skt. Kjeld's neighbourhood is used by Copenhagen Municipality to showcase urban climate change adaptation solutions.

As Skt. Kjeld's neighbourhood has not had the same focus on involving the vulnerable residents in the planning process, it is difficult to say if this group of residents will identify themselves with the projects or be proud to live in a climate change adapted neighbourhood as it happened in Augustenborg. In Augustenborg, this is seen as one of the main reasons for the success (World Habitat Awards, 2010;

[9]For more information about the project in Augustenborg, see e.g. Malmö stad (2015b).

Naturstyrelsen, 2015a).

6. Conclusion

The consequences of climate change as well as the distribution of environmental goods and bads are uneven, both between countries and within countries. In cities, poorer neighbourhoods often experience greater environmental hazards and fewer environmental goods than wealthier neighbourhoods. When this environmental injustice is addressed it often leads to environmental gentrification, as the neighbourhood becomes more attractive.

To address the consequences of the changing climate, adaptation is necessary. However, not much research has been done to understand the social consequences of climate change adaptation. As climate change adaptation can be understood as an environmental good, the question is whether the consequences are the same as when addressing environmental injustice. This research gap has been the basis of this thesis. This conclusion is structured as follows; first, the sub-questions and then the research questions are answered. Second, the limitations of this study are discussed and possibilities for further research is presented.

- How are urban regeneration and climate change adaptation projects traditionally planned in Denmark?

The planning system in Denmark is controlled by the Planning Act, which divides tasks between the national level, the regional level and the municipal level. A structural reform in 2007 closed the counties and established five regions instead, and transferred responsibilities of spatial planning from the counties to the municipalities. Power is highly decentralized and municipalities are now responsible for most spatial planning. Municipalities adopt a municipal plan after municipal elections that contain strategies for spatial planning and climate change planning i.a. There is a strong focus on public participation and the Planning Act ensures a minimum of eight weeks of public hearing before plans are adopted.

Traditionally focus has been on even development across Denmark, but in recent decades this has changed and focus has shifted to making Copenhagen the growth centre of Denmark. Copenhagen wants to attract the creative class, which is linked to economic growth, and the result is urban regeneration projects that have sparked gentrification and displaced the poorer working class, who typically resided in the inner city of Copenhagen.

- Who are municipalities planning for, when doing urban regeneration and climate change adaptation projects?

In the urban regeneration plan the goal is to address the emerging social problems in Skt. Kjeld's neighbourhood through physical improvements that should invite the residents to exercise and build networks with their neighbours. The climate change adaptation plan became a way to do this, but has also changed focus from vulnerable residents to making an interesting neighbourhood and to create identity through climate change adaptation.

The focus on giving Skt. Kjeld's neighbourhood an identity through climate change adaptation fits well into the current planning practice of attracting creative people. This creates two problems. First, the project no longer targets the group of vulnerable residents, and their problems are neither addressed nor solved. Second, by focusing on the creative class, there is a risk of the neighbourhood gentrifying and the vulnerable residents being displaced.

Whether the shift has been a deliberate choice or not, requires further research, but the result is the same. The planning do no longer seem to be focused on solving social problems but rather on creating an attractive neighbourhood for the creative class.

- How are the residents involved, and how is involving the residents in these projects important for the outcome?

Public participation can reduce conflicts both between citizens and between planners and citizens. It

is also a way to obtain balanced results, as planners get inputs and learn from the local residents. Public participation can also support democracy by delegating power to the public and by targeting population groups that normally have difficulties in voicing their opinions and being heard.

In Skt. Kjeld's neighbourhood, the residents are involved in several ways. A steering committee with representatives from the neighbourhood, the municipality, local institutions etc. was elected. The steering committee has veto power when it comes to the projects in the neighbourhood and sets the framework for these. For each project a project group is established with representatives found in the neighbourhood. The project groups are free to operate within the framework set by the steering committee.

Besides the steering committee and the project groups, the general public was involved by hosting e.g. summer parties, regular public meetings, art projects and temporary installations to test solutions. The composition of the steering committee, project groups and general participants has been diverse and represented the different residents in the neighbourhood.

- How do urban climate change adaptation projects transform marginalized neighbourhoods undergoing processes of urban regeneration?

Even though there are smaller pockets where social problems are emerging in Skt. Kjeld's neighbourhood the neighbourhood as a whole cannot be characterized as socially marginalized. The neighbourhood however can be described as environmentally marginalized, as there is a general lack of green amenities and the few ones there, are run-down and inaccessible.

The climate change adaptation project addresses this problem by generating green urban spaces that function both as public spaces and as urban drainage systems. As these projects gain a lot of attention there is a risk that they will spark a process of gentrification, where the rent in the neighbourhood increases. This risk is enhanced by the high level of private homes in the neighbourhood. The risk of gentrification can also be seen as a result of the shift in focus from urban regeneration to climate change adaptation, where the focus on vulnerable residents was pushed to the back.

That Skt. Kjeld's neighbourhood is still not gentrifying can be contributed the fact that most of the projects are still not implemented. Real estate agents however report of increased interest in the neighbourhood due to the plans. Only when the projects are implemented will it be possible to see the full effects.

- To what extent do they create new dynamics of inequity and exclusion, or on the opposite, address existing social and environmental inequity?

The existing environmental inequities of poor access to green amenities within Skt. Kjeld's neighbourhood are addressed by creating new green spaces that function as urban drainage systems to prevent floods in the future. Besides the three large scale projects, Tåsinge Square, Skt. Kjeld's Square and Bryggarvangen, a series or smaller projects such as courtyards and side walk gardens are being established, all contributing toward increasing access to green spaces as well as preventing future floods by adapting the neighbourhood to climate change. When the projects are all implemented, the neighbourhood as a whole will no longer be environmentally marginalized.

Social inequities are not as great as environmental inequities in Skt. Kjeld's neighbourhood, and they are addressed indirectly by creating green urban spaces across the neighbourhood that should invite residents to build networks and exercise. However, the climate change adaptation projects are not particularly connected to the socially vulnerable areas of Skt. Kjeld's neighbourhood, and it has been suggested that they will mainly benefit the broad majority of residents. The social challenges are thus not targeted or solved by the plans and the vulnerable residents have not particularly gained greater access to green amenities. As other residents will have greater access to green spaces, it can be argued that environmental inequity has increased.

If gentrification becomes a problem due to the plans, the situation will become more difficult for the socially vulnerable residents, who might be displaced because of increased rents. In this case the plans will have resulted in both increased social and environmental inequity.

6.1 Suggestions for future research

This thesis provides insight into the possibilities and consequences of climate change adaptation in marginalized neighbourhoods. It brings to light and recalls the need to consider all the consequences of the projects when climate change adaptation is planned in order to achieve just and equitable adaptation.

It was only possible to identify one project in Denmark that fitted into the criteria of this thesis, but as climate change adaptation is emerging, more cases are bound to appear in the near future. As more projects appear, it is important to be fully aware of the consequences to ensure informed decisions and sustainable adaptation measures that will benefit everyone both economically, environmentally and socially.

There are some aspects that have not been thoroughly researched in this thesis that would provide further insight. To better understand how the socially vulnerable residents respond to the plans, it is necessary to specifically target this group, both by identifying exactly where they live and e.g. through interviews or surveys. This way it would be possible to understand how they have been involved in the planning process, if the projects target their needs, if the new green amenities are accessible to them, if they use the new green amenities and how they are able to cope with e.g. increased rent. This will help to further understand how the dynamics of inequity have changed due to the plans.

The concept of 'just green enough', presented in section 1.1.2 on page 5, is interesting in regard to climate change adaptation as well, especially in cases like Skt. Kjeld's neighbourhood, where green spaces are used as urban drainage systems, and where the goal has also been to improve the physical aspects of the neighbourhood. The 'just green enough' approach ensures that marginalized neighbourhoods get better access to green amenities but without making them too interesting to gentrifiers. This approach has not been researched in regard to the case study, but doing so could provide insight into the possibilities to ensure socially sustainable climate change adaptation.

The question of whether the climate change adaptation project can be characterized as sustainable in Skt. Kjeld's neighbourhood is also only slightly addressed in this thesis, but it opens up to a discussion of the way climate change adaptation is planned, and how both social, environmental and economic sustainability can be incorporated.

Another interesting research area that is not included in this thesis is the links between climate change mitigation and adaptation. Often climate change mitigation and adaptation is understood as two different terms, and thus a common framework to analyse the synergies, trade-offs and conflicts are missing (Driscoll and Lehmann, 2014). However, adaptation projects often have elements of mitigation and vice versa, e.g. green urban spaces. There are thus elements of mitigation in the climate change adaptation project in Skt. Kjeld's neighbourhood as well. In this thesis mitigation has not been studied, as it was outside of the scope, but to study the links between mitigation and adaptation would provide interesting insight into how a more holistic approach to climate change planning can be achieved.

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A. Criteria for selection of interview candidates

The interview candidate must have knowledge about:

- The development of the climate change adaptation plan.
  - How various considerations were made in the development of the plan.
  - How interaction between the new climate change adaptation plan and the old urban regeneration plan was thought of.
  - How and why the decision to change focus to climate change adaptation was made.
  - The vision and goals for Skt. Kjeld's neighbourhood.
- The mobilisation of the residents.
  - The residents in general, also from before the project started. Both composition and how they use the neighbourhood.
  - How the residents organized themselves during the plans.
  - The residents' attitude towards the plans.
- Public participation in regard to both climate change adaptation and urban regeneration.
  - How residents were involved and at what time during the process.
  - Who participated and their attitude toward the participation process.
  - The residents' projects in the climate change adaptation project, how they are organised, who took the initiative etc.
- The development of Outer Østerbro in general.
  - What happens in the neighbourhoods around Skt. Kjeld's neighbourhood.
  - What is the vision for Outer Østerbro.
- Copenhagen Municipality's focus on climate change adaptation.
  - The municipality's visions for climate change adaptation
  - Why climate change adaptation is important to Copenhagen Municipality
  - The role of Skt. Kjeld's neighbourhood in the municipality's visions.

B. Interviews

B.1 Torkil Lauesen

Torkil Lauesen studied political science and has worked with urban regeneration and public participation processes for many years. He has been part of the urban regeneration project in Skt. Kjeld's neighbourhood from the beginning. Before Skt. Kjeld's neighbourhood he worked with urban regeneration projects at Nørrebro and Amager (Lauesen, 2015).

B.1.1 Interview guide

- What is your role in this project?
- How did the work with the urban regeneration project start?
  - What were the expected goals for the project in terms of benefits for residents, especially environmental and/or health benefits?
- How was Skt. Kjeld's neighbourhood different from the rest of Copenhagen before your work started?
  - Both in physical appearance, land use and resident composition.
  - Both positively and negatively.
- What were the biggest challenges the neighbourhood faced before the urban regeneration project started?
  - How does the urban regeneration plan address the challenges the neighbourhood has/had?
  - How do you use the strengths (physical, residents) of the neighbourhood in the regeneration project?
- How did you experience the residents' reaction to the plans of urban regeneration?
- How were the residents involved in the creation of the urban regeneration plan?
  - The application for funds for the urban regeneration project states that less resourceful residents should be involved, how did you ensure that?
  - When in the process were they involved?
  - Did they have any say or was it mainly to give them information?
- Which residents participated in the organized public participation?
- Can you describe the process and decision for switching focus to climate change adaptation?
  - How was the decision made and how did the work begin?
  - What was the deciding factor? A specific event?
  - Did they hire a new group of people to work with climate change adaptation or was it the people already working on the urban regeneration project who were responsible for the new project as well?
- How did you experience suddenly having to work with a new focus on climate change adaptation (rather than urban regeneration)?
- How do you secure interaction between the urban regeneration plan and the climate change adaptation plan?
- How did the residents react to the switch to climate change adaptation?
- Copenhagen Municipality has developed a very optimistic discourse about the positive opportunity that climate change actually brings to make cities more resilient and greener and bring back nature into the city. It showcases itself as having the "world's first climate change adapted neighbourhood".
  - What do you think of such a positioning?
  - To what extent do you think that such a position balances well the three legs of sustainability (environmental, economic and social)?

B.2 René Sommer Lindsay

René Sommer Lindsay is an architect and today he works as chief project manager in the climate change adaptation project in Skt. Kjeld's neighbourhood. He was hired around the same time as the shift towards climate change adaptation was made (Lindsay, 2015).

B.2.1 Interview guide

- What is your role in this project?
- How did the work with the climate change adaptation project start?
  - What were the expected goals for the project in terms of benefits for residents, especially environmental and/or health benefits?
- Can you describe the process and decision for switching focus to climate change adaptation?
  - What was the deciding factor? A specific event?
  - Why was Skt. Kjeld's neighbourhood chosen?
- What challenges and opportunities did you see in Skt. Kjeld's neighbourhood when you began the work?
  - Both in physical appearance, land use and resident composition.
  - How are these different from other places in Copenhagen?
- How did you start the collaboration with the employees from the urban regeneration project?
  - Did you collaborate from the beginning or only after the climate change adaptation plan was adopted?
- How were the residents involved in the creation of the plans?
  - When in the process were they involved?
  - Did they have any say or was it mainly to give them information?
- Which residents participated in the organized public participation?
- How did the residents react to the switch to climate change adaptation?
- How do you secure interaction between the urban regeneration plan and the climate change adaptation plan?
- How do you expect that the work with climate change adaptation will affect the social challenges the neighbourhood is facing?
- Copenhagen Municipality has developed a very optimistic discourse about the positive opportunity that climate change actually brings to make cities more resilient and greener and bring back nature into the city. It showcases itself as having the "world's first climate change adapted neighbourhood".
  - What do you think of such a positioning?
  - To what extent do you think that such a position balances well the three legs of sustainability (environmental, economic and social)?

B.3 Henriette Berggren

Henriette Berggreen is an urban planner who has mainly worked with urban development, climate change adaptation, urban spaces and green solutions. She works for Copenhagen Municipality in the climate change adaptation team and has been part of the project in Skt. Kjeld's neighbourhood from the beginning (Berggreen, 2015).

B.3.1 Interview guide

- What is your role in the Climate Unit and in the project at Skt. Kjeld's neighbourhood?
- Could you describe the involvement of the Climate Unit in the project in Skt. Kjeld's neighbourhood?
  - Could you describe the process and decision for the Climate Unit to become involved?
- How do you work with other stakeholders/partners in the project?
  - What was your role? Consultants, partners etc.?
- What environmental and social challenges do you see for Skt. Kjeld's neighbourhood due to climate change?
  - How does this differ from other areas of Copenhagen?
- How important are green urban drainage solutions in Copenhagen for the ability to adapt to climate change?
- How is the Climate Unit generally involved in climate change adaptation in Copenhagen?
- How can you use the experiences gained in Skt. Kjeld's neighbourhood in other places?
- How do you expect that the project in Skt. Kjeld's neighbourhood will affect the residents?
  - In terms of quality of life, physical environment etc.
  - Both positively and negatively.
- When making projects like this, it will impact the local residents. E.g. more green spaces can lead to different uses of public space or make it more attractive to live in the neighbourhood. How do you address these impacts when planning the project?
  - How do you involve the residents in your planning?
  - How were the residents in Skt. Kjeld's neighbourhood involved?
  - What is your perception of the residents' responses to your work?
- How do you think that the project will impact the quality of life in the neighbourhood?
  - What do you think the neighbourhood will look like environmentally and socially in 5 and in 10 years?
- How is the climate unit involved when the municipality starts urban regeneration projects?
  - Every time or only if an opportunity or need for climate change adaptation is identified?
- Copenhagen Municipality has developed a very optimistic discourse about the positive opportunity that climate change actually brings to make cities more resilient and greener and bring back nature into the city. It showcases itself as having the "world's first climate change adapted neighbourhood".
  - What do you think of such a positioning?
  - To what extent do you think that such a position balances well the three legs of sustainability (environmental, economic and social)?

B.4 Lene Nørgård Rasmussen

Lene Nørgård Rasmussen is a project manager at HOFOR, but comes from a job at Copenhagen Municipality. She has been involved in the project at Skt. Kjeld's neighbourhood in both Copenhagen Municipality and HOFOR (Rasmussen, 2015).

B.4.1 Interview guide

- What is your role in HOFOR and in the project at Skt. Kjeld's neighbourhood?
- Could you describe the involvement of HOFOR in the project in Skt. Kjeld's neighbourhood?
  - Could you describe the process and decision for HOFOR to become involved?
- How do you work with other stakeholders/partners in the project?
  - What was your role? Consultants, partners etc.?
  - What challenges did you experience during the collaboration?
- What environmental and social challenges do you see for Skt. Kjeld's neighbourhood due to climate change?
  - How does this differ from other areas of Copenhagen?
- How important are green urban drainage solutions in Copenhagen for the ability to adapt to climate change?
- How have you experienced the transition in HOFOR from more traditional methods of rainwater management to the great focus on adaptation and green urban drainage that is seen today?
  - What problems has it created?
  - How do you address and solve these problems?
- How is HOFOR generally involved in climate change adaptation in Copenhagen?
- How can you use the experiences gained in Skt. Kjeld's neighbourhood in other places?
- When making projects like this, it will impact the local residents. E.g. more green spaces can lead to different uses of public space or make it more attractive to live in the neighbourhood. How do you address these impacts when planning the project?
  - How do you involve the residents in your planning?
  - How were the residents in Skt. Kjeld's neighbourhood involved?
  - What is your perception of the residents' responses to your work?
- How do you think that the project will impact the quality of life in the neighbourhood?
  - What do you think the neighbourhood will look like environmentally and socially in 5 and in 10 years?
- Copenhagen Municipality has developed a very optimistic discourse about the positive opportunity that climate change actually brings to make cities more resilient and greener and bring back nature into the city. It showcases itself as having the "world's first climate change adapted neighbourhood".
  - What do you think of such a positioning?
  - To what extent do you think that such a position balances well the three legs of sustainability (environmental, economic and social)?

C. Survey

1. Dear resident,

   Thank you for spending 5 minutes answering this questionnaire about Skt. Kjeld's neighbourhood.

   Skt. Kjeld's neighbourhood is the area you see on the map below. It is also referred to as Outer Østerbro.

   Through the questionnaire, reference will be made to two plans regarding urban regeneration and climate change adaptation. Urban regeneration is the plan/project regarding "Skt. Kjeld – a neighbourhood in motion" and general urban regeneration, which started in 2009. Climate change adaptation is the plan/project regarding "climate neighbourhood", which was started after the floods in 2011. Today both projects run in parallel.

2. Have you heard about the plans regarding urban regeneration and climate change adaptation?

   The plans cover the projects at Tåsinge Square, Bryggervangen and Skt. Kjeld's Square.

   - Yes
   - No

3. When did you move to Skt. Kjeld's neighbourhood?
   - In 2009 or before
   - After 2009
   - I do not live in Skt. Kjeld's neighbourhood

4. How satisfied are you with living in Skt. Kjeld's neighbourhood?
   - Scale 1-5 from very dissatisfied to very satisfied

5. How satisfied were you with living in Skt. Kjeld's neighbourhood before the plans of urban regeneration and climate change adaptation were adopted?
   - Scale 1-5 from very dissatisfied to very satisfied

6. Has this changed because of the plans?
   - Yes
   - No

7. To which degree did it change positively or negatively?
   - Scale 1-5 from negatively to positively

8. How do you assess the access to green spaces in Skt. Kjeld's neighbourhood before the plans of urban regeneration and climate change adaptation?
   - Scale 1-5 from poor to good

9. Has access improved with the plans?
   - Yes
   - Not yet, but I expect better access
   - No
   - Do not know

10. Was your household affected by the floods in 2011?
    - Yes
    - No
    - I did not live here in 2011
    - I do not know

11. If yes, how?

12. What was your first impression of the urban regeneration plan?
    - Scale 1-5 from negative to positive

13. What was your first impression of the climate change adaptation plan?
    - Scale 1-5 from negative to positive

14. To which degree do the plans live up to your wishes for Skt. Kjeld's neighbourhood?
    - Scale 1-5 from low to high
15. Did you participate in activities related to either urban regeneration or climate change adaptation?

    Activities can be everything from public meetings where you got information about the projects, to events that the secretariat arranged, e.g. the spring party.

    - Yes
    - No
16. If yes, which activities did you participate in?
17. Which degree of power do you feel the residents had in the planning of the two projects (urban regeneration and climate change adaptation)?
    - Scale 1-5 from low to high
18. Do you expect that the rent will increase due to the plans in Skt. Kjeld's neighbourhood?
    - Yes
    - No
    - I don't know
19. Will increased rent affect your household?
    - Yes
    - No
    - I don't know
20. If yes, how?
21. Which type of housing do you live in?
    - Social housing
    - Privately rented
    - Cooperative
    - Owner occupied
22. How old are you?
    - Younger than 20
    - 20-29
    - 30-39
    - 40-49
    - 50-59
    - 60-69
    - Older than 70
    - I do not wish to tell
23. What is the total income of the household per year before tax?
    - Below 100,000 kr.
    - 100,001-200,000 kr.
    - 200,001-300,000 kr.
    - 300,001-400,000 kr.
    - 400,001-500,000 kr.
    - 500,001-600,000 kr.
    - 600,001-700,000 kr.
    - More than 700,000 kr.
24. How many people live in your household?
    - 1
    - 2
    - 3
    - 4
    - More than 4
25. Your answers are now registered. Thank you for helping.

D. Skt. Kjeld's neighbourhood, Statistics

	Skt. Kjeld North	Skt. Kjeld South	Copenhagen
Residents	12,739 (1.1.07)	11,146 (1.1.09)	518,574 (1.1.09)
Age distribution			
0-17 year old	16.8 %	14.2 %	17.3 %
18-29 year old	24.9 %	24.2 %	24.4 %
30-59 year old	42.9 %	41.4 %	43.0 %
Above 60 year old	15.4 %	20.2 %	15.3 %
Level of education, 1.1.07			
16-64 year old with secondary school as the highest level of education	19.4 %	19.0 %	23.4 %
High school	8.3 %	8.8 %	8.5 %
Vocational training	18.7 %	20.2 %	19.2 %
Higher education	31.8 %	30.5 %	28.2 %
Studying	21.8 %	21.5 %	20.7 %
16-66 year old outside of the workforce, 1.1.07	21.2 %	21.8 %	23.9 %
Residents of non-western origin, 1.1.09	10.8 %	9.1 %	14.5 %
Number of homes, 1.1.09	7.267	7.250	295.632
Homes built before 1950	73.9 %	67.6 %	73.1 %
Ownership			
Social housing	7.6 %	16.1 %	20.2 %
Home ownership	21.1 %	14.6 %	20.4 %
Housing cooperative	39.3 %	39.8 %	32.5 %
Private rental	31.1 %	29.5 %	25.1 %
Publicly-owned housing	0.8 %	0.0 %	1.8 %
Homes with installation deficiencies	13.9 %	10.4 %	12.3 %
Home size			
Homes smaller than 60 sq. m.	28.9 %	33.6 %	31.4 %
Homes from 60-79 sq. m.	29.9 %	29.2 %	29.3 %
Homes from 80-99 sq. m.	22.2 %	20.4 %	19.6 %
Homes from 100-199 sq. m.	8.6 %	11.5 %	9.2 %
Homes larger than 120 sq. m.	10.4 %	5.3 %	10.5 %

Figure 20. Statistics from Skt. Kjeld's neighbourhood (Københavns Kommune, 2009a,b)

E. Skt. Kjeld's neighbourhood, statistics from survey

Residents	66
Age distribution	
0-19 year old	0 %
20-29 year old	21.7 %
30-59 year old	63.3 %
Above 60 year old	10 %
Did not respond	5 %

Ownership	
Social housing	5 %
Home ownership	33.3 %
Housing cooperative	46.7 %
Private rental	15 %

Household income	
Below 100,000	6.7 %
100,001-200,000	11.7 %
200,001-300,000	15 %
300,001-400,000	11.7 %
400,001-500,000	8.3 %
500,001-600,000	3.3 %
600,001-700,000	13.3 %
Above 700,000	30 %

Number of people in the home	
1	41.7 %
2	28.3 %
3	16.7 %
4	13.3 %
More than 4	0 %

Figure 21. Statistics from the survey (Survey, Q21-24).

F. Development in Skt. Kjeld's neighbourhood

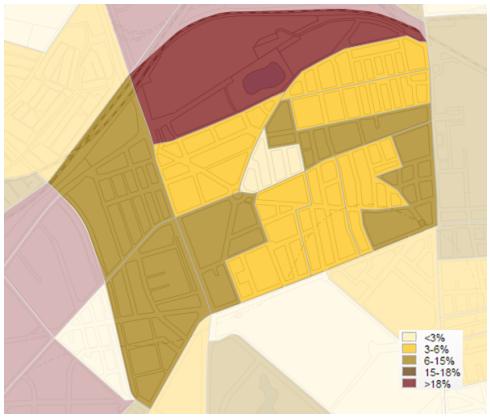

Figure 22. Non-western immigrants, 2000 (Københavns Kommune, 2015).

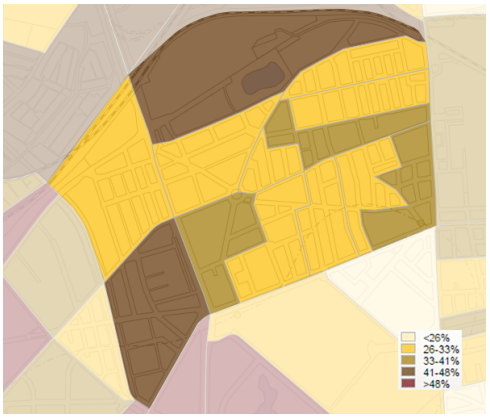

Figure 23. Low income, 2000 (Københavns Kommune, 2015).

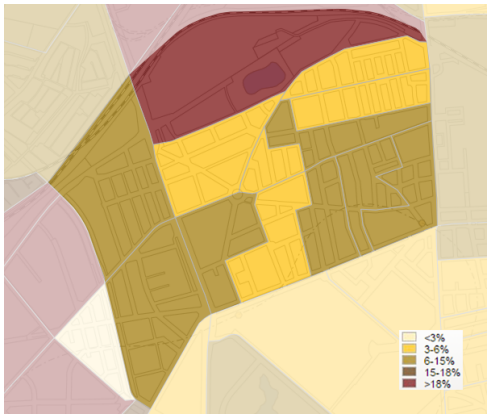

Figure 24. Non-western immigrants, 2007 (Københavns Kommune, 2015).

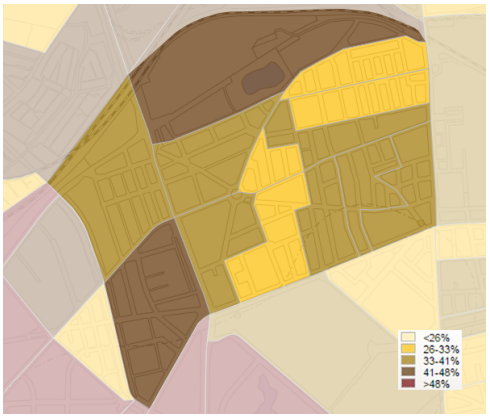

Figure 25. Low income, 2007 (Københavns Kommune, 2015).

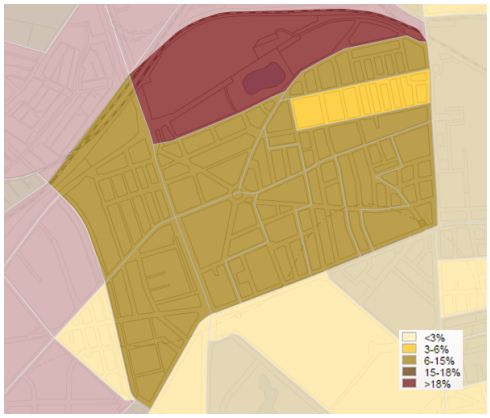

Figure 26. Non-western immigrants, 2013 (Københavns Kommune, 2015).

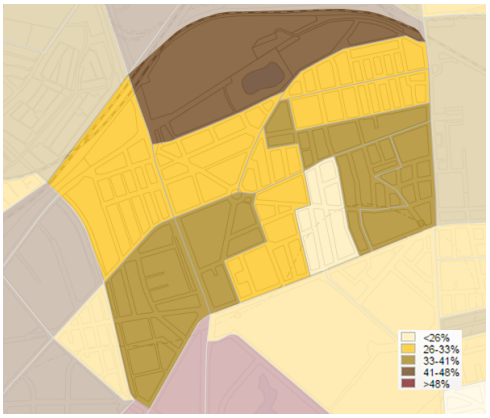

Figure 27. Low income, 2012 (Københavns Kommune, 2015).

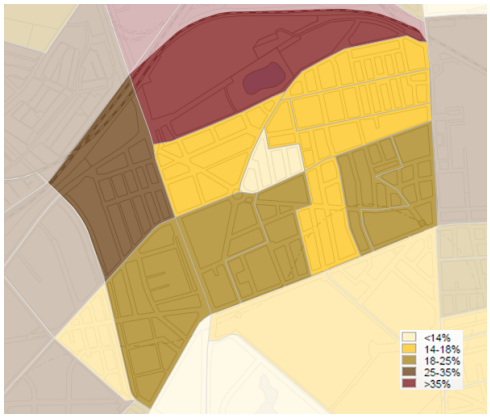

Figure 28. No education or secondary school as highest education, 2000 (Københavns Kommune, 2015).

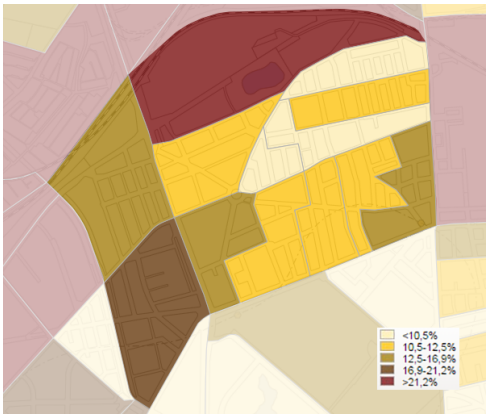

Figure 29. Outside the workforce, 2000 (Københavns Kommune, 2015).

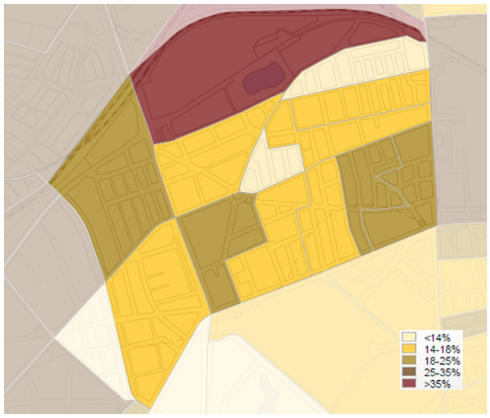

Figure 30. No education or secondary school as highest education, 2007 (Københavns Kommune, 2015).

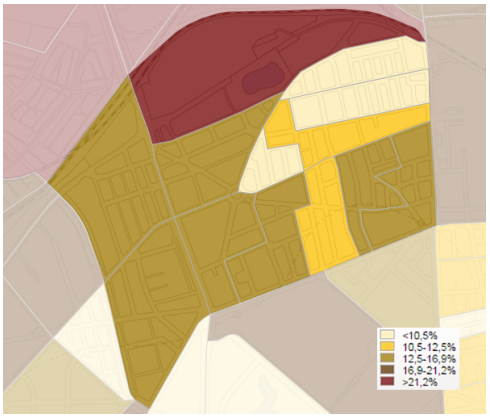

Figure 31. Outside the workforce, 2007 (Københavns Kommune, 2015).

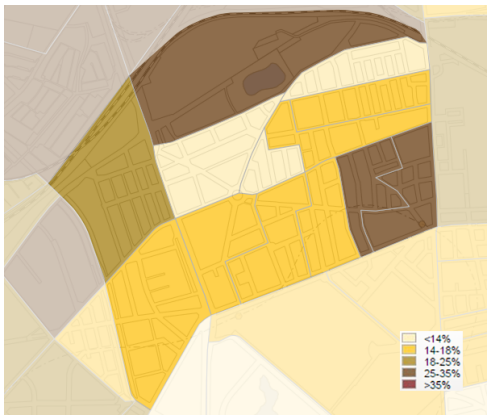

Figure 32. No education or secondary school as highest education, 2013 (Københavns Kommune, 2015).

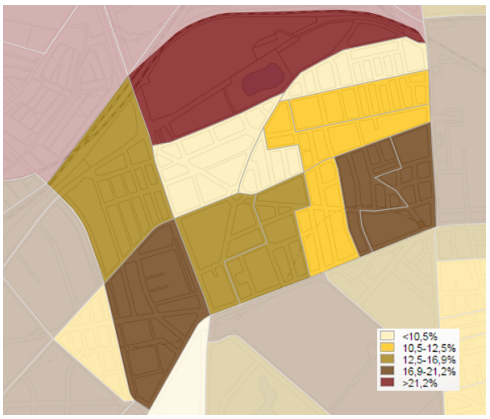

Figure 33. Outside the workforce, 2013 (Københavns Kommune, 2015).

G. Social housing in Skt. Kjeld's neighbourhood

Figure 34. The location of social housing in Skt. Kjeld's neighbourhood (Københavns Kommune, 2015).

H. Projects in Skt. Kjeld's neighbourhood

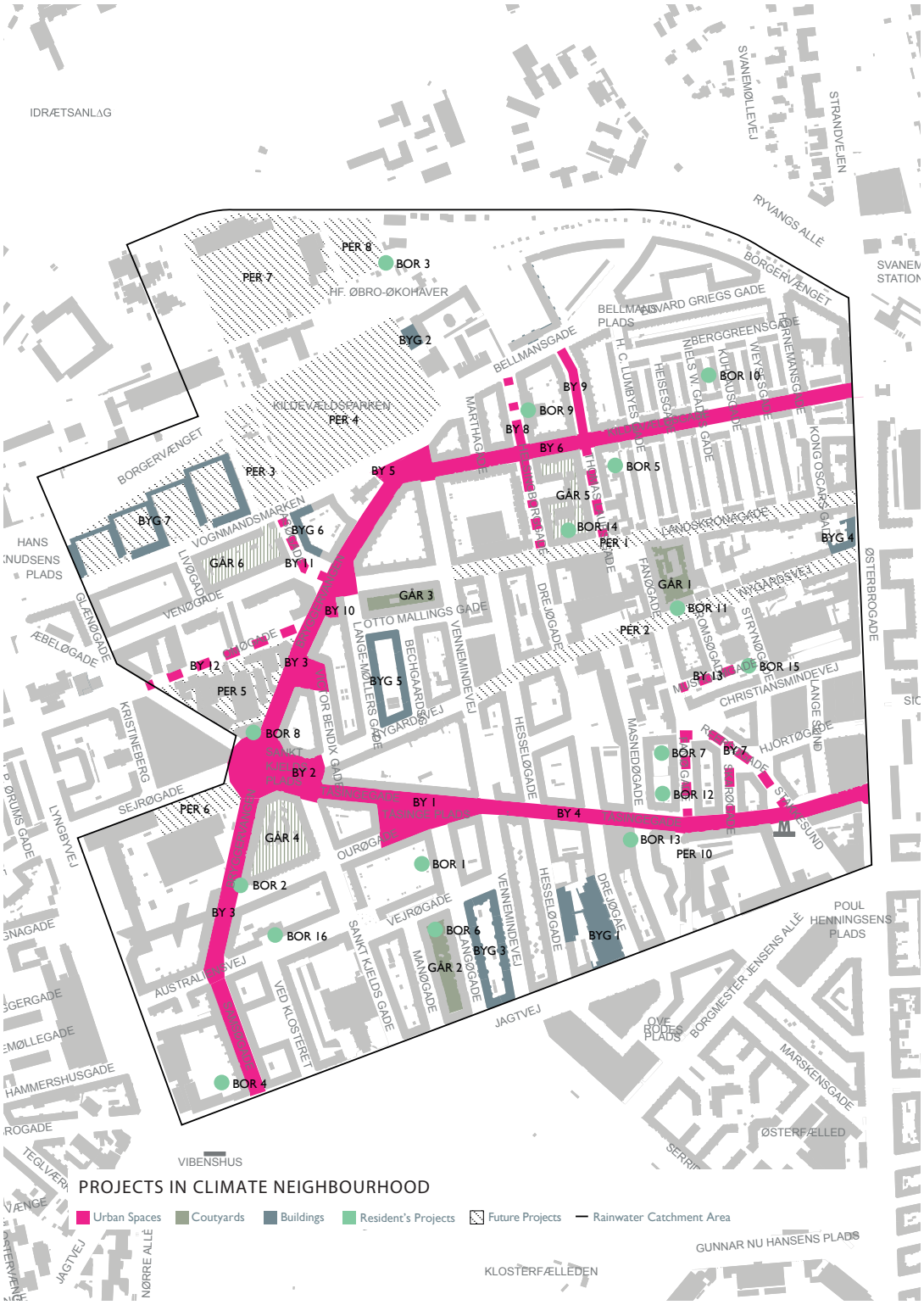

Figure 35. Planned or completed projects in Skt. Kjeld's neighbourhood (Klimakvarter, 2013, p. 20).

I. Progress in projects in Skt. Kjeld's neighbourhood

Figure 36. Planned progress of the projects in Skt. Kjeld's neighbourhood (Klimakvarter, 2013, p. 48).