Master's thesis

Efforts to improve the neighbourhood: did Rotterdam succeed?

A mixed-methods study looking into the influence of large-scale urban regeneration on social sustainability in Rotterdam

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Abstract

Municipalities regularly undertake urban regenerations hoping to improve the living environment. Rotterdam aims to achieve more and focuses on large-scale urban regeneration. However, the effects of urban regeneration on social sustainability remain debated. Case studies are conducted to identify what the influence of large-scale urban regeneration on social sustainability in Rotterdam is. Hoogvliet (large-scale urban regenerated) and Groot-IJsselmonde (only some small-scale interventions) are compared. Quantitative and qualitative methods are sequentially used to collect the data.

The analysis showed that a window of opportunity allowed the large-scale urban regeneration to happen in Hoogvliet. The intervention resulted in, amongst other things, an increase in the socio-economic status. Contrary to the expectations, residents in a large-scale urban regenerated neighbourhood did not seem to value (three dimensions of) social sustainability higher than residents in a neighbourhood that has not been large-scale urban regenerated. Nevertheless, the differences in the mean scores between both neighbourhoods were not significant. An explanation for the difference in scores might be the neighbourhood design. In addition, large-scale urban regeneration was not a significant indicator for any of the investigated dimensions of social sustainability. Meanwhile, the results showed that the future situation is expected to be better by significantly more people in the neighbourhood that has not undergone large-scale regeneration.

The influence of large-scale urban regeneration on social sustainability in Rotterdam seems to be minimal. The findings support the dichotomy that urban regeneration has positive and negative effects. More efforts than large-scale urban regeneration seem necessary to make people feel that their needs can be fulfilled in their neighbourhood, now and in the future. It seems to be about more feasible things that residents experience daily, such as the maintenance of the outdoor space and variety in shopping facilities. Therefore, two practical recommendations are made to guarantee social sustainability in the future.

The results of this study do need to be nuanced. Other intervening and moderating variables might be in place and relevant to explain the influence of large-scale urban regeneration on social sustainability. The two neighbourhoods are comparable, but not identical. An ideal comparison is impossible. Besides, it is hard to anticipate what would have happened with Hoogvliet if the intervention did not take place. Finally, residents that do not expect the future to be better could expect the situation to remain the same, which is also socially sustainable because demands for now and future generations are fulfilled. One cannot conclude that the neighbourhoods are socially sustainable or not.

Key words: (large-scale) urban regeneration, social sustainability, Rotterdam, amenities and social infrastructure, social and cultural life, voice and influence, contextuality, past-present-future

Preface

Dear reader,

Herewith, I present you my master's thesis '*Efforts to improve the neighbourhood: did Rotterdam succeed?*'. The basis of this research is a case study design in which two neighbourhoods are compared to analyse how large-scale urban regeneration influences social sustainability in Rotterdam. This thesis has been written to fulfil the graduation requirements of the Master Urban Governance at Erasmus University Rotterdam (EUR) and the Institute for Housing and Urban Development Studies (IHS). I was engaged in researching and writing this master's thesis from January 2020 until August 2020.

The master's thesis was undertaken based on my interests in urban development and cities. I was intrigued to know more about how (large-scale) urban regenerations can contribute to an improved living environment for residents. I approached this research as unbiased as possible (the results were surprising to me!). There were times I found it challenging to do this research, but to stay within the context of Rotterdam: I continued to *niet lullen maar poetsen*. Conducting this extensive investigation did eventually allow me to answer the research questions.

Fortunately, my thesis supervisor, Saskia Ruijsink, was always willing to answer my questions and to discuss the best way forward. I want to thank you for sharing your knowledge and all your help. Also, to my second reader, Jurian Edelenbos: thank you for your feedback. The comments allowed me to critically reflect on my thesis once more. Besides, I would like to thank the survey and interview respondents from Groot-IJsselmonde and Hoogvliet, without whose cooperation I would not have been able to conduct the analysis. Thank you for your time and effort. Finally, thanks to the people that were willing to proofread some parts of this thesis. Your feedback was valued.

I would like to end with a special note of thanks to my parents and brother: your support was – and still is – really appreciated. You kept me motivated.

I hope you enjoy reading it.

Shelley Wilson
Rotterdam, 5 August 2020

List of content

List of tables

List of figures

List of photos

1. Introduction

In this chapter, the research topic is introduced. The problem statement and research objective are described and linked to research questions. Also, the scientific and societal significance is explained. This chapter ends with a reading guide.

1.1 Research topic

Rotterdam became one of the fastest-growing cities in the Netherlands in the last couple of years (CBS, 2019). More houses are needed to comply with the demand (Gemeente Rotterdam, 2018). An urban development vision is essential for the construction and upgrade of thousands of houses in Rotterdam. Urban regenerations can be part of this vision because these interventions can lead to improved living conditions and problem reduction (Roberts, 2000). Multiple urban regenerations have already taken place in Rotterdam: the city is even known for its large-scale urban regeneration approach (Maandag, 2019). For instance, in the years between 1974 and 1996 alone, over 70.000 houses were renovated and (re)build. That is a large percentage considering that there were only around 270.000 households in Rotterdam in 1990 (Planbureau voor de Leefomgeving, 2010). However, at that time, quality and architecture were of lesser concern. Nowadays, many of these former urban regeneration neighbourhoods cope with social, economic and physical problems (Van Es & Voerman, 2018). Because complications are piling up, Rotterdam is currently aiming to regenerate some of those neighbourhoods again. The pressure on the housing market is fuelling this aim too: urban regenerations need to be big, fast, and effective (Gemeente Rotterdam, 2016). Nevertheless, the question does remain: do large-scale urban regenerations indeed lead to improved living conditions for residents?

Social sustainability is a broad concept looking into the past, present and future and the (experienced) living conditions are part of it (Colantonio & Dixon, 2011). It is one of the three pillars of sustainability: (1) environmental, (2) economic and (3) social (Purvis, Mao & Robinson, 2018). Social sustainability relates to the extent to which citizens' demands are met in their living environment; now and in the future (McKenzie, 2004). More specifically, social sustainability can be divided into three selected dimensions as described by Woodcraft (2015). These dimensions are (1) amenities and social infrastructure, (2) social and cultural life and (3) voice and influence. A socially sustainable community is achieved if residents feel that their needs in these categories can be met and do not compromise future needs (Colantonio & Dixon, 2011). The timeframe highlighted in social sustainability is important for large-scale urban regenerations too. It usually takes some years for it to be realized and for citizens to get used to their new living conditions.

Previous research has shown that the influence of large-scale urban regenerations remains debated (Colantonio & Dixon, 2011; Shirazi & Keivani, 2019). Positive and negative effects have been identified and there is no general agreement on the direction of those. Contextuality seems to play an

essential role in identifying the impact of large-scale urban regeneration (Woodcraft, 2015). The effects of urban regeneration can be influenced by aspects such as the type of intervention (scope and duration) and neighbourhood characteristics (for instance, design). Also, the extent of social sustainability present can be influenced by economic and environmental sustainability. Therefore, it is hard to study social sustainability in isolation. Being aware of these contextual factors is necessary. In this research, two cases in the city of Rotterdam are chosen and a selection of neighbourhood characteristics and the municipal/national policy context is taken into account.

1.2 Problem statement

The influence of urban regeneration on social sustainability has been researched before, amongst others by Colantonio and Dixon (2011). They highlighted that contextual factors matter. All circumstances constitute the context: it is the environment in which something takes place. What works in the south of Rotterdam might not work in the northern part of the city and what worked in the 1960s might be different from what works nowadays. In this study, two cases in Rotterdam are researched. One of which includes large-scale urban regeneration (with mainly a physical component) and one of which has not been regenerated (only some small-scale interventions). New case studies on this are helpful because the effects of urban regeneration are still debated, which makes the outcomes of the interventions hard to predict. Actors involved do not have enough insight into the effects of large-scale urban regenerations (on the three investigated dimensions of social sustainability). Finally, the influence of large-scale urban regeneration on social sustainability cannot be completely isolated from environmental and economic sustainability. However, the timeframe of this research allows to study only one pillar of sustainability extensively. Social sustainability is of particular interest because it is the least investigated pillar of sustainability (Shirazi & Keivani, 2019).

1.3 Scientific significance

Social sustainability has gained increasing attention in urban development by governmental organizations in recent years (Colantonio & Dixon, 2011). Social sustainability is seen as a fundamental part of creating healthy living conditions. However, the social pillar does remain one of the least investigated ones of sustainability (Shirazi & Keivani, 2019). That makes the relationship between urban regeneration and social sustainability also still largely unknown (Glasson & Wood, 2009). This research aims to go deeper into the connection between large-scale urban regeneration and social sustainability by looking into two cases in Rotterdam. This study aims to contribute to the scientific knowledge base on two items. First, the impact of urban regenerations is still debated: it shows positive and negative effects. New case studies on the effects of urban regeneration can confirm or reject previous stances and add to theory development. Second, this study aims to gain understanding of the effects of large-scale regenerations in Rotterdam. Because contextuality is relevant for how urban regenerations take place

and for how social sustainability unfolds, as much research as possible in different circumstances (case studies) is helpful.

1.4 Societal significance

Urban regenerations influence the living conditions of residents. Inhabitants of the regenerated neighbourhoods are the ones experiencing the effects of policy decisions. Therefore, it is in citizens' benefit to know how urban regenerations can affect their (future) needs and demands related to (three selected dimensions of) social sustainability. Essentially, residents create the neighbourhood and their interests should be considered. The insights provided by this study can help to facilitate the participation process better. By understanding the (possible) effects of urban regeneration in Rotterdam better, it can become more clear how to include citizens while also ensuring that social sustainability is being fostered. The information position of citizens is also likely to improve by knowing the effects of urban regeneration better.

1.5 Research objective

The objective is to explain the influence of large-scale urban regeneration on (three selected dimensions of) social sustainability in neighbourhoods in Rotterdam. The three investigated dimensions of social sustainability are (1) amenities and social infrastructure, (2) social and cultural life and (3) voice and influence.

1.6 Research question

The following research question is central in this study: '*What is the influence of large-scale urban regeneration on social sustainability in Rotterdam?*'. The main concepts – urban regeneration and social sustainability – need further clarification in this stage. The concepts are explained in more detail in the theoretical framework. Urban regeneration refers to:

> "A comprehensive and integrated vision and action which seeks to resolve urban problems and bring about a lasting improvement in the […] condition of an area that has been subject to change or offers opportunities for improvement." (Roberts, 2000, p.17)

Urban regeneration is an intervention aiming to improve the living conditions of residents by reducing the concentration of problems. These interventions can have a social, physical and economic orientation. Social sustainability is defined as follows:

> "Social sustainability is about people's quality of life, now and in the future. It is about meeting the needs of the present without compromising the ability of future generations to meet their demands. It focuses on people's livings conditions and experiences related to (1) amenities

and social infrastructure, (2) social and cultural life and (3) voice and influence." (Bacon, Cochrane & Woodcraft, 2012, p.9; McKenzie, 2004, p.12).

1.7 Sub-questions

Four sub-questions are posed to be able to answer the main research question:

1. What is urban regeneration and what are the defining conditions to start urban regeneration?
    To clarify the concept of urban regeneration (in Rotterdam).

2. What does an urban regeneration process look like and to what changes does urban regeneration lead (influence)?
    To gain insight into how urban regeneration is structured and to explain the relationship between urban regeneration and the effects (in Rotterdam).

3. What changes have taken place in the three selected dimensions of social sustainability, looking into the past, present and future?
    To explain how citizens think about the fulfilment of their demands related to social sustainability in detail (in Rotterdam).

4. To what extent are the changes deriving from urban regeneration considered to be socially sustainable?
    To explain the relationship between large-scale urban regeneration and social sustainability (in Rotterdam).

1.8 Reading guide

The theories that frame this research are described in the theoretical framework (Chapter 2). That section is followed by a methodology providing insight into the way the research is conducted (Chapter 3). After that, two cases are introduced (Chapter 4) and the results are discussed (Chapter 5). The research ends with a conclusion, including a reflection on the limitations and recommendations (Chapter 6).

2. Theoretical framework

Multiple literature sources from the field of public administration and urban planning are studied to create a theoretical base for this research. The main concepts are described and relations between concepts are illustrated. The chapter ends with a conceptual model.

2.1 Urban regeneration

The definition of urban regeneration is dependent upon a country's administrative context (Stouten, 2010). For instance, urban regeneration mainly entails the development of older parts of the city in the United States (Oyinloye, Olamiju & Popoola, 2017). It originates from a material concern and relates to physical aspects. In the United Kingdom, urban regeneration is considered to be "a set of activities that reverse economic, social and physical decline in areas where market forces will not do this without support from government" (CLG, 2009, p.1). This definition adds, besides the material concern, a social and economic aspect that is similar to the Dutch approach. Based on the administrative context in the Netherlands, urban regeneration refers to:

> "A comprehensive and integrated vision and action which seeks to resolve urban problems and bring about a lasting improvement in the […] condition of an area that has been subject to change or offers opportunities for improvement." (Roberts, 2000, p.17)

The Netherlands has a long tradition in addressing urban societal problems (Musterd & Ostendorf, 2008). One of the cities that uses urban regenerations to resolve urban problems is Rotterdam. Multiple large-scale urban regenerations have already been done there. In the decennia after the Second World War, citizens demanded improved housing facilities (Maandag, 2019). Especially the price of the new or upgraded houses was important for residents, which resulted in high percentages of social housing and a construction time that was as short as possible. Quality and architecture were of lesser concern because of the pricing priority. This prioritisation resulted in affordable houses; however, the sustainability of the houses was less present. Because of the design and construction in the post-war years, monotonous tenure compositions appeared in some neighbourhoods in Rotterdam. This aspect deserves attention because Turner and Rawlings (2009) highlight that neighbourhood diversity can benefit the whole area. In this case, diversity relates to people their background and their income. Mainly income diversity is challenging to achieve if the housing stock is monotonous. Musterd and Ostendorf (2008) do mention that Dutch urban regeneration policy aims to prevent parallel societies by creating socially mixed areas. In addition, many of these former urban regenerated neighbourhoods are now coping with problems (Van Es & Voerman, 2018). The concentration of problems, monotonous

compositions and minimal housing quality are drivers to start doing large-scale urban regenerations now again. Thus, material, economic and social concerns are combined.

A pitfall is that urban regeneration is sometimes used as a term covering all sorts of urban developments (Zuckermann, 1991). Some studies classify a simple, small-scale home improvement as urban regeneration, while others include a minimum number of impacted addresses to define it as urban regeneration. In addition to the definition based on Roberts (2000), it is helpful to consider what criteria need to be present to call an intervention a large-scale urban regeneration. In this research, large-scale urban regeneration is classified as shown in Table 1.

Table 1: Criteria for large-scale urban regeneration.

Source: Own construct based on indicated authors.

Nr	Criterium	Author(s)
1.	The project addresses a problem based on economic, social and/or physical analysis.	Roberts (2000)
2.	The project is implemented at least at the scale of an (urban) neighbourhood.	Oyinloye et al. (2017), Musterd & Ostendorf (2008)
3.	The project aims to improve economic, environmental and/or social sustainability.	Roberts (2000)
4.	The project affects social housing.	Based on the context of this research.
5.	The interventions in the neighbourhood are seen as one project.	Roberts (2000)
6.	The project includes at least a physical intervention in the (built) environment.	Roberts (2000)

An analysis of urban problems is necessary before starting urban regeneration (UNEP, 2004). This analysis entails the identification of factors influencing the status of a neighbourhood. The research is usually performed in three fields: economic (e.g. employment rates), social (e.g. community facilities) and physical/environmental (e.g. urban physical quality) (Roberts, 2000). The outcomes form the starting conditions for urban regeneration. UNEP (2004) describes urban regeneration as follows: "The primary aim of urban regeneration is to address the complex dynamics of modern urban areas and their problems by revitalising their […] functions" (p.9). The aim of urban regeneration is usually related to problem-solving.

2.1.1 Effects of urban regeneration

The influence of urban regeneration remains debated: positive and negative effects have been identified. While the effects of urban regeneration are case-specific, it is possible to identify some general positive and negative effects that urban regeneration has had in other cases. The effects most often mentioned in

the literature that can be linked to social sustainability are summarized in Table 2. This list of effects is not exhaustive; it is almost impossible to create a list including all potential effects. In addition, it is not always clear if changes are indeed an effect of urban regeneration. There might be a more general trend resulting in change and also influencing the outcomes. Besides, what for some people seems to be a negative effect, could be considered as positive by others. There can be a (normative) bias in deciding the impact of the effects (Colantonio & Dixon, 2011). It is checked for each category whether multiple authors agreed with the direction of the effect to minimize researcher bias.

Table 2: Effects of urban regeneration.

Source: Own construct based on Glasson and Wood (2009) and authors mentioned in the table.

(Possible) negative effects	(Possible) desirable effects
Disruption of existing social networks/isolation (Peng, Lai, Li & Zhang, 2015).	Improved housing quality (Peng et al., 2015).
Increase in stress (Tyler, Warnock, Provins & Lanz, 2013)	Improved living conditions (Colantonio & Dixon, 2011).
Displacement effect (Colantonio & Dixon, 2011).	Reduced overcrowding (Tyler et al., 2013).
(Temporary) loss of access to open spaces (Colantonio & Dixon, 2011).	Enhancing social networks (Peng et al., 2015).
Increase in renting/housing prices (Colantonio & Dixon, 2011).	More balanced neighbourhood related to the tenure percentages (Turner & Rawlings, 2009).
Lack of bonding between new residents because they do not share the same values (Colantonio & Dixon, 2011).	More balanced neighbourhood related to the background of residents in a neighbourhood (Turner & Rawlings, 2009).

2.2 Three pillars of sustainability

The use of the term sustainability has grown over the years (Zeemering, 2018). Sustainability originally derives from ecology. In that context, it refers to the robustness of an ecosystem to remain stable over time (Jabareen, 2008). Especially the long-term perspective is a key characteristic of sustainability. Nowadays, sustainability is used in more fields than ecology. In general, sustainability refers to a "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987, p.41). In line with that definition, sustainability can be divided into three
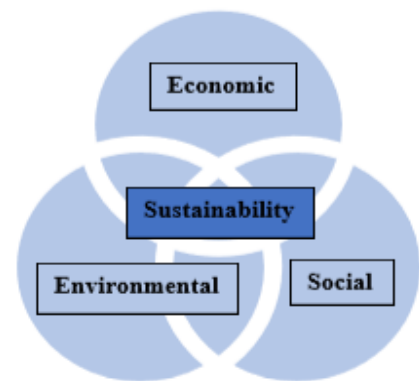
Figure 1: Pillars of sustainability.
Source: Own construct based on Purvis et al. (2018).

13

fields as shown in Figure 1: environmental, economic and social (Purvis et al., 2018). These pillars are not universal but most commonly used.

First, sustainability can be interpreted from an environmental perspective. This one is most similar to the original form found in ecology and, therefore, one of the best-researched fields of sustainability. Morelli (2011) describes environmental sustainability as:

> "A condition of balance, resilience, and interconnectedness that allows human society to satisfy its needs while neither exceeding the capacity of its supporting ecosystems to continue to regenerate the services necessary to meet those needs nor by our actions diminishing biological diversity." (p.5)

The second form of sustainability is economical. Economic sustainability refers to "a system of production that satisfies present consumption levels without compromising future needs" (Kahn, 1995, p.150). Criteria necessary to establish economic sustainability are growth and productivity. Economic sustainability could refer to the degree of financial strength of citizens in a neighbourhood, for instance, the financial means to take care of their living environment. Shirazi and Keivani (2019) highlight that this pillar has also been widely debated.

2.2.1 Social sustainability

The third pillar is social sustainability. Authors as Colantonio and Dixon (2011) and Shirazi and Keivani (2019) highlight that the discourse around social sustainability is still under-theorized. This makes it hard to find a commonly accepted and demarcated definition. The reason that social sustainability is challenging to define might derive from a bias. All dimensions of sustainability are concerned with whether citizens (or other groups) feel that their demands can be met (or not). Society as we experience it is the result of daily interactions, for instance, with other human beings and their living environment (Giddens, 2009). The connections between people and their environment define how they experience and construct things. What social sustainability entails can be based on experiences and differ for each person. An item on which researchers do agree is to highlight the long-term perspective of sustainability. The definition used in this research underlines this as well:

> "Social sustainability is about people's quality of life, now and in the future. It is about meeting the needs of the present without compromising the ability of future generations to meet their demands. It focuses on people's livings conditions and experiences related to (1) amenities and social infrastructure, (2) social and cultural life and (3) voice and influence." (Bacon et al., 2012, p.9; McKenzie, 2004, p.12).

Social sustainability is usually studied within a confined space because it relates to people in their living environment (Woodcraft, 2015). Contextuality is thus important (more details in 2.3 Contextuality). Another important feature – which distinguishes the concept of social sustainability from concepts as social capital, social belonging and social infrastructure – is that it refers to a longer timeframe. The timeframe fits better within the purpose of this research because (large-scale) urban regenerations are usually carried out to achieve a long-lasting impact (Roberts, 2000). Usually, the purpose is to enhance the quality of the neighbourhood for a more extended period. Besides, some effects cannot even be measured on the short-term.
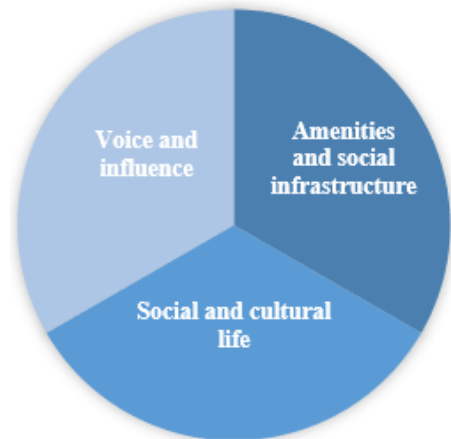
Figure 2: Dimensions of social sustainability.

Source: Own construct based on Bacon et al. (2012).

To further narrow down the concept of social sustainability, Bacon et al. (2012) and others divided the concept into three dimensions as shown in the definition. These dimensions are defined in Table 3 and presented in Figure 2. A fourth dimension called 'change in the neighbourhood' mentioned by Bacon et al. (2012) is discussed later in this chapter (see 2.3 Contextuality).

Table 3: Dimensions of social sustainability.

Sources: Own construct based on Bacon et al. (2012).

Dimension	Description
Amenities and social infrastructure	Refers to the services and facilities a neighbourhood has to offer, such as meeting places, schools, and shopping facilities.
Social and cultural life	Refers to how connected people feel to their neighbourhood. It is about their sense of belonging and whether they feel like they have a local identity.
Voice and influence	Refers to the ability residents have to influence their local environment and their willingness to take action.

If a dimension is socially sustainable, it means that residents feel that their needs in that category can be fulfilled now and in the future. For instance, if the 'voice and influence'-dimension is socially sustainable, residents think that they can tackle problems, are willing to raise their voice and know how to influence decision-making. Their needs and demands on that dimension are fulfilled.

2.2.2 Past-present-future

Sustainability is studied in the long-term (McKenzie, 2004). However, there is no general agreement on how long something has to continue to be sustainable. In the 'generations-literature', an element is seen as sustainable if it is passed on from one generation to a new generation (Grosseries, 2001). A generation

is defined as "sets of individuals born during a certain period" (Grosseries, 2001, p.295). The passing on of elements from one generation to another generation can be applied to social sustainability as well. A characteristic of social sustainability is meeting current needs and demands without compromising future needs and demands. Thus, passing the opportunity to fulfil needs on to the next generation (future). Mannheim (1952) mentions that a generation usually is about thirty years. This timeframe can also be applied to social sustainability. Zolfagharian, Walrave, Raven and Romme (2019) highlight that for transitions it is essential to look into the past as well. They encourage looking into the past, present and future. Also, they found that almost 80% of longitudinal studies about transitions use a time horizon of at least ten years and 38% of even more than thirty years to answer their research question. This period is in line with the thirty year-period highlighted by Mannheim (1952). Based on these authors, a timeframe of thirty years divided into the past, present and future is chosen to study social sustainability in this research.

2.3 Contextuality

Context is crucial for large-scale urban regenerations as well as for social sustainability (Stouten, 2010; Woodcraft, 2015). All circumstances constitute the context: it is the environment in which something takes place. Many dimensions are interconnected and cannot entirely be isolated from one another. A dimension that can be studied to identify the context is called 'change in the neighbourhood' by Woodcraft (2015). This dimension focuses on general (macro-)trends in the neighbourhood. Examples of trends are the development of housing prices, the employment rates and the amount of money available to invest (Woodcraft, 2015). However, context consists of more than the neighbourhood. Therefore, this dimension is seen as part of a broader context in this study. Other authors acknowledge the importance of contextuality as well. Colantonio and Dixon (2011) specifically pay attention to the policy context in which the intervention takes place. Also, Stouten (2010) highlights the importance of history and design of the neighbourhood. The way a neighbourhood is designed can influence the way large-scale urban regeneration is undertaken. Finally, one can look at the division of physical, social and economic components in an intervention (Roberts, 2000).

For social sustainability context is important too. The extent to which social sustainability is present can be influenced by the same contextual influences that drive urban regeneration; however, additional factors can play a role. First of all, social sustainability cannot be (completely) isolated from environmental and economic sustainability (Colantonio & Dixon, 2011). If the economic situation in a country worsens, more people might lose their job and feel less positive about their situation. This event can also influence the number of demands of citizens being met, for instance, because certain people do not have the financial means to shop as they want anymore. Besides, social sustainability is – like place attachment – interconnected with personal, community and environmental connections (Raymond, Brown & Weber, 2010). These connections can be summarized as follows: "The personal context includes topics like place identity, place dependence, attachment and rootedness. The natural

environment context includes connectedness to nature, environmental identity and affinity to nature. The community context includes neighbourhood sustainability, belongingness and familiarity." (Neilagh & Ghafourian, 2018, p.211). These connections are more personal compared to general trends. Everyone perceives them differently but they do influence the perceived social sustainability as a whole.

2.4 Hypotheses

Now the main concepts have been introduced, it is relevant to gain more insight into the relationship between them. Hypotheses help assess whether a relationship is present and can be tested empirically. The first dimension of social sustainability is 'amenities and social infrastructure' and refers to the facilities and provisions in a neighbourhood (Dixon & Woodcraft, 2013). Examples are schools, meeting places, shopping facilities and green spaces. This dimension of social sustainability is related to urban regeneration because these interventions aim to revitalise functions in a neighbourhood by addressing the problems (UNEP, 2004). By addressing a problem such as high vacancy rates for shops, amenities gain vitality again. They can fulfil the demands of citizens which they previously could not. This makes it likely that functions in the field of 'amenities and social infrastructure' will also revitalise and thus improve. Urban regeneration causes more and/or better facilities in the neighbourhood. Because more amenities are offered to citizens, it is more likely that something will comply with their demands. In addition, urban regenerations aim to have a long-lasting impact (Roberts, 2000). Once the problems have been resolved, there are fewer barriers present for amenities to become viable. The expectation is that the trend of more/better facilities will progress and will comply even better with the demand of citizens in the future. Based on this, the hypotheses related to this dimension are:

> H1: Residents of a large-scale urban regenerated neighbourhood value the 'amenities and social infrastructure'-dimension in their neighbourhood higher than residents in a neighbourhood without large-scale urban regeneration.

> H2: The number of residents that expects the 'amenities and social infrastructure'-dimension in their neighbourhood to be better in the future is higher in a neighbourhood that has undergone large-scale urban regeneration than in a neighbourhood that has not.

The second dimension of social sustainability is 'social and cultural life'. It refers to the degree of connectedness to the neighbourhood (Woodcraft, 2015). Turner and Rawlings (2009) mention that neighbourhood diversity – in terms of the general background of people and their income status – can benefit an area, for instance resulting in more contact between different groups. That contributes to a feeling of connectedness. Neighbourhood diversity can derive from a balanced housing stock regarding tenure types. According to Musterd and Ostendorf (2008), urban regenerations often aim to create a more balanced housing stock in the Netherlands. If one changes the composition of tenure types in a

monotonous neighbourhood, the composition of residents in the neighbourhood is likely to change, resulting in more diversity. The expectation is that the large-scale urban regeneration will lead to a more diverse tenure stock in the neighbourhood, which will lead to more diversity in the background and income status of residents. This is likely to lead a higher valuation of 'social and cultural life' by residents since diversity is seen as a benefit by Turner and Rawlings (2009). A higher valuation means that more people feel connected to their neighbourhood. However, in the beginning, residents still have to get to know each other and adapt to the new situation (Colantonio & Dixon, 2011). In those years, this dimension is expected to be lower in a large-scale urban regenerated neighbourhood. This derives from the uncertainty and unfamiliarity of the new situation.

> H3: Residents of a large-scale urban regenerated neighbourhood value the 'social and cultural life'-dimension in their neighbourhood lower than residents in a neighbourhood without large-scale urban regeneration.

> H4: The number of residents that expects the 'social and cultural life'-dimension in their neighbourhood to be better in the future is higher in a neighbourhood that has undergone large-scale urban regeneration than in a neighbourhood that has not.

Third, there is the 'voice and influence'-dimension which is about whether residents feel that they have to ability to participate and/or are willing to participate in addressing problems in the neighbourhood (Dixon & Woodcraft, 2013). Citizens are seen as one of the main actors and are often included in participation programmes in the Dutch approach for urban regeneration (Musterd & Ostendorf, 2008). Large-scale urban regeneration offers opportunities for participation in decision-making about shaping your living environment beyond regular opportunities. According to the OECD (2001), citizens are more likely to participate if they want a situation to change. A large-scale urban regeneration influences the living environment of residents which can be an incentive to participate; there is a necessity. Therefore, it is expected that more residents are able and willing to participate in an intervention in an area that has undergone large-scale urban regeneration compared to a neighbourhood that did not. Over time, however, the concentration of problems in the regenerated urban area is likely to diminish (Roberts, 2000). Since the necessity for citizens to participate in addressing problems in those regenerated neighbourhoods is reduced, the expectation is that fewer people are willing and able to participate and thus value the 'voice and influence'-dimension lower.

> H5: Residents of a large-scale urban regenerated neighbourhood value the 'voice and influence'-dimension in their neighbourhood higher than residents in a neighbourhood that has not.

H6: The number of residents that expects the 'voice and influence'-dimension in their neighbourhood to be better in the future is lower in a neighbourhood that has undergone large-scale urban regeneration than in a neighbourhood that has not.

A socially sustainable situation unfolds once residents think that their needs and demands can be met now and in the future (Colantonio & Dixon, 2011). A socially sustainable community can be seen as the outcome of pursuing the dimensions of social sustainability. Colantonio & Dixon (2011) define a socially sustainable community as follows: "Sustainable communities are places where people want to live and work, now and in the future. They meet the diverse needs of existing and future residents, are sensitive to their environment, and contribute to a high quality of life" (p.33). A neighbourhood is more likely to become a place where people want to work and live when problems are solved (Roberts, 2000). That problem-solving aspect is often part of urban regenerations. A socially sustainable community can be seen as the ultimate outcome. The expectation is that a neighbourhood that did have large-scale urban regeneration is more likely to achieve this type of community.

H7: The number of people expecting the future to improve is higher in a neighbourhood that has undergone large-scale urban regeneration than in a neighbourhood that has not.

If a socially sustainable community unfolds, it is also more likely that the two other pillars of sustainability will materialize. Economic, environmental and social dimensions of sustainability cannot be completely isolated and do overlap.

2.5 Conceptual model

Urban regeneration can affect a neighbourhood either positively or negatively. The expected directions are shown in Figure 3. An overview of all hypotheses is presented in Appendix 1 'Hypotheses'.

First, urban regenerations often aim to vitalise functions (UNEP, 2004). More and/or better facilities will arise by doing so. The future is expected to better even more if the revitalisation of functions continues. Second, diversity can benefit a neighbourhood (Turner & Rawlings, 2009). Neighbourhood diversity can lead to more regular neighbourhood contact and foster feelings of connectedness. Urban regeneration can cause this by bringing more diversity in tenure categories. However, in the beginning, residents still have to get to know each other and value this dimension less favourable. Third, urban regenerations often offer opportunities to participate for citizens (ability). Citizens might be more willing to participate too because it impacts their living environment (OECD, 2001). In the long run, however, urban regeneration might have reduced the concentration of problems (Roberts, 2000). This can reduce the ability and willingness to participate. Finally, the assumption is that residents in a large-scale urban regenerated neighbourhood are more likely to achieve a socially

sustainable community. That is because in most cases urban regeneration is expected to influence the investigated dimensions of social sustainability positively.
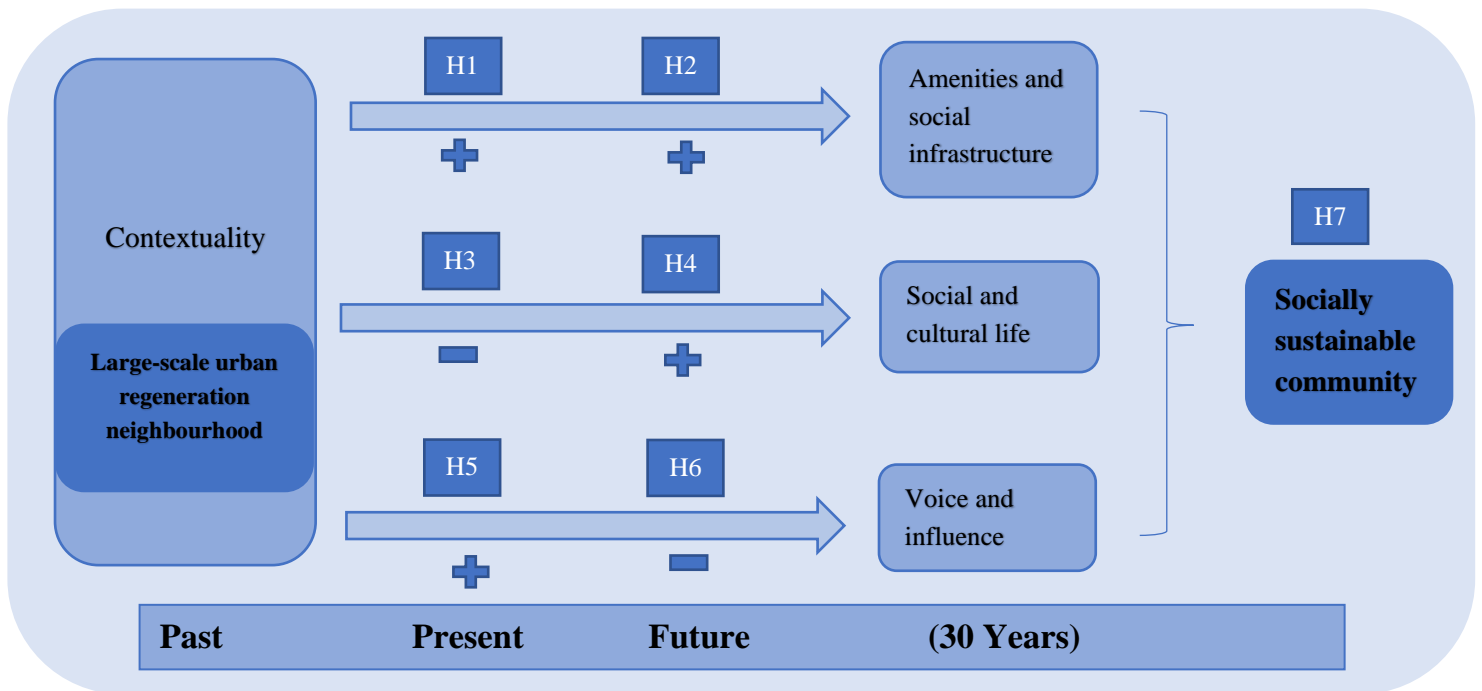
Figure 3: Conceptual model.

Source: Own construct based on the theoretical framework.

*H=hypothesis

3. Methodology

In this chapter, the research design and methods are described. A case study design is used and quantitative and qualitative methods are sequentially used to collect the data. This approach makes this study mixed-methods and allows triangulation which improves the validity and reliability of the findings (Boeije, 2014). Causality is hard to find because of contextuality; however, mixed-methods do help to take circumstances into account in understanding variables and relationships among variables. More details about the limitations of the research design can be found in the final chapter.

3.1 Case study design

A case study provides the opportunity to gain in-depth information about a phenomenon in a particular context (Creswell & Poth, 2018). It enables to test whether the theory applies to a specific case in the real world taking contextuality into account. The aim of doing a case study is to gain a thorough understanding of the influence of large-scale urban regeneration on social sustainability in Rotterdam. Two cases in the city of Rotterdam are compared to do so. One of the neighbourhoods has undergone large-scale urban regeneration: Hoogvliet. The other area is Groot-IJsselmonde, which has not undergone large-scale urban regeneration (only some small-scale interventions). The neighbourhoods are comparable on multiple criteria as shown in Table 4. Kleinhans, Veldboer, Doff and Jansen (2014) also used these neighbourhoods to contrast urban regeneration. Nevertheless, comparing these cases remains challenging. That Groot-IJsselmonde and Hoogvliet are (somewhat) comparable on certain aspects does not make them identical. The percentage of citizens with Dutch background is, for instance, higher in Groot-IJsselmonde than in Hoogvliet and the percentage of non-western immigrants is higher in Hoogvliet than in Groot-IJsselmonde. Citizens' cultural background might influence the 'social and cultural'-life aspect (Turner & Rawlings, 2009). Besides, the percentage of owner-occupied houses is higher in Hoogvliet. Owners might feel more responsible for their place and this could result in better maintenance compared to renters who see this as the landlords' responsibility. These differences between the neighbourhoods make an ideal comparative study impossible. Nevertheless, the neighbourhoods do have commonalities and have been used for comparison by other researchers too.

Table 4: Cases Groot-IJsselmonde and Hoogvliet.

Source: Own construct based on Gemeente Rotterdam (2020a) and Gemeente Rotterdam (2020b).

Criteria	Groot-IJsselmonde	Hoogvliet
Residents	28.000	35.000
Average income	€22.000	€22.600
Background - *Dutch*	61.1%	52.7%

- *Migration Western*	10.4%	10.1%
- *Migration Non-Western*	28.5%	37.2%
Number of addresses	16.028	18.237
Tenure type		
- *Social housing*	50.0%	45.0%
- *Private rent*	15.0%	12.0%
- *Owner-occupied*	34.0%	43.0%
Main building periods	1950 – 1980	1950 – 1980
Number of addresses affected by urban regeneration between 1995 and 2010	Around 500	Around 5.000

Timeframe plays an essential role in considering social sustainability. This aspect is taken into account by using a past-present-future model as shown in Figure 4. The present situation is taken to identify the extent of social sustainability: in a survey citizens can provide a score for the three selected dimensions of social sustainability. Following, they are asked whether the past situation was better or not and whether they expect the future will be better or not. For the past situation, checks can be done based on statistics. A note should be made about the future situation. Herman Kahn (1982) once said that the biggest surprise would be if the future turned out precisely the way we envisioned it. This statement refers to the fact that the future situation is never certain. In this study, a prescriptive method is used to gain some insight into the future situation. Citizens are asked about what they think will happen in the future. Whereas their perception is normative, this is not necessarily unreliable because citizens' perception also constitutes social sustainability. Elements of progress can be identified by asking respondents to envision the future.

Past		**Present**		**Future**
1995-2010	→	2011-2020	→	2021-2030

Figure 4: Time dimension.

Source: Own construct based on Mannheim (1952) and Zolfagharian et al. (2019).

3.2 Research methods

Multiple research methods are sequentially used to collect data. First, a document review is carried out. This review is needed to gain insight into the cases. Based on these findings, a survey is composed and conducted to gain insight into how citizens feel about social sustainability on a larger scale. Afterwards, survey respondents are invited for an interview to gain an understanding of how people feel about their neighbourhood and to find explanations for findings deriving from the survey. Figure 5 represents the research methods.

3.2.1 Document review

A document review is about systematically collecting, analysing and interpreting documentation (Bretschneider, Cirilli, Jones, Lynch & Wilson, 2016). This review is carried out as a first step to get familiar with both neighbourhoods and the procedures regarding urban regeneration in Rotterdam. The search engine of the library of Erasmus University Rotterdam is used to find relevant documents. Documents need to have 'Groot-IJsselmonde' or 'Hoogvliet' in the title or summary, published between the years 1995-2020 and held by this library. All the hits are scanned on whether the topic is related to urban regeneration and/or social sustainability. That resulted in one hit for Groot-IJsselmonde and ten hits for Hoogvliet. This outcome makes sense because Hoogvliet is the neighbourhood in which large-scale urban regeneration took place and this intervention has been studied before.

Besides those documents, some of the authors mentioned in the theoretical framework also provide case studies. Stouten (2010), for instance, mentions the policy framework in which Rotterdam operated. In addition to these sources, statistics can also be used. The most relevant provider of statistics is the municipality of Rotterdam. They track the development of the neighbourhoods in the city. Especially data used to construct the profiles of neighbourhoods is useful for this research. These profiles are constructed consisting of both subjective and objective indicators on how well a neighbourhood is doing (Gemeente Rotterdam, 2020a). A remark is that it is a recent data form (available since 2014).

The programme Atlas.Ti is used to analyse and interpret the collected data in a systematic manner. A code list is used to highlight all relevant text fragments (see Appendices 2 'Codetree' and 3 'Codebook'). By systematically analyzing the information reliability grows.

3.2.2 Survey

A survey is constructed as a second step based on the document review (see Appendix 4 'Survey'). Surveys are a suitable method to gain information from a broader target group (Creswell & Poth, 2018). Citizens can be seen as a large group of relevant actors and play an essential role in forming and defining the social sustainability of a neighbourhood. Therefore, it is relevant to gain insight into their perspective. The sample size should be around 115 respondents per neighbourhood if one accepts a 5% level of tolerance for inaccuracy and a 90% level of reliability (around 227 respondents in total). The survey is distributed online via social media (especially Facebook-groups) using a convenience sample. The online distribution might result in a bias of people who can use digital platforms; however, due to the Covid-19 measures, this method is most suitable. A criterium for respondents is that they live in either Hoogvliet or Groot-IJsselmonde. The results are systematically analysed using the programme SPSS as suggested by Salkind (2014).

3.2.3 Interviews

Once the primary survey findings are outlined, survey respondents are contacted for an interview. Interviews offer the opportunity to gain more detailed information and insight into the experiences of

people (Boeije, 2014). Interviews are useful in addition to the surveys, where respondents can only fill in a number or a short sentence. Citizens who fill in the survey have the opportunity to leave their contact details if they want to discuss their experiences. The criterium for interview respondents is that they filled in the survey (which automatically makes them a resident of one of the neighbourhoods). Before conducting the interview, respondents have to sign an informed consent form (see Appendix 5 'Informed consent form interviews'). The interview itself is semi-structured; there is a list of guiding questions, but there is room for other topics (see Appendix 6 'Interview guide'). Due to the Covid-19 measures, the interview is carried out via telephone. All interviews are transcribed and analysed in Atlas.Ti based on a code list (see Appendices 2 'Codetree' and 3 'Codebook'). The phases of open, axial and selective coding based on Boeije (2014) are followed.
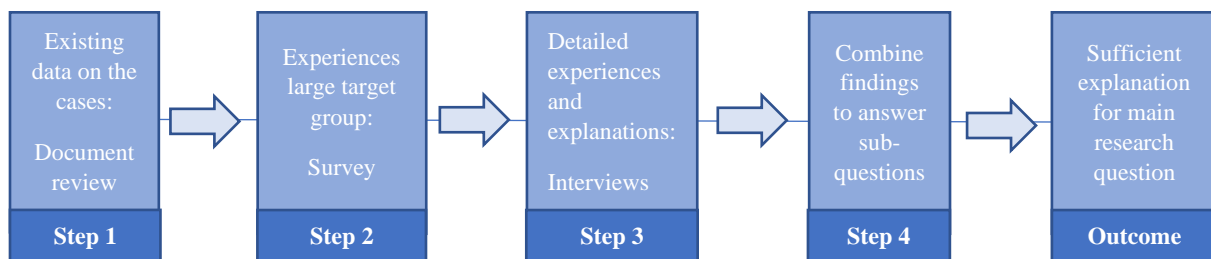
Figure 5: Research methods.

Source: Own construct based on methodology.

3.3 Operationalisation

Operationalisation is necessary to make variables measurable. The indicators are provided in Table 5 and for each dimension the data sources are identified. The socially sustainable community is not operationalised as it follows from the three investigated dimensions of social sustainability. The indicators are measured for the present situation. Documents and surveys are used to identify the past situation. Survey and interview respondents are asked about what they think about the future situation.

Table 5: Operationalisation.

Source: Own construct based on indicated authors in the table.

Variable	Definition	Dimension	Indicator	Source
Urban regeneration	"A comprehensive and integrated vision and action which seeks to resolve urban	Need for urban regeneration (Roberts, 2000)	1. The average income of inhabitants in a particular area. 2. The average educational level of	Document review, interviews

problems and bring about a lasting improvement in the […] condition of an area that has been subject to change or offers opportunities for improvement." (Roberts, 2000, p.17)			inhabitants in a particular area. 3. The percentage of houses that has been built before 1999 in a certain area. 4. The number of crime incidents per 1000 inhabitants in a certain area. 5. The percentage of working people within the labour force in a certain area.	
		Scale level (Musterd & Ostendorf, 2008)	1. The number of houses affected by the urban regeneration. 2. The number of areas (*wijken*) in a neighbourhood affected by urban regeneration.	Document review
		Housing stock	1. The percentages per tenure category in a particular area. 3. The average Real Estate Value of houses in a specific area.	Document review
		Time	1. The number of years the urban regeneration took. 2. The number of years ago the urban regeneration took place.	Document review

Social sustainability	"Social sustainability is about people's quality of life, now and in the future. It is about meeting the needs of the present without compromising the ability of future generations to meet their demands. It focuses on people's livings conditions and experiences related to (1) amenities and social infrastructure, (2) social and cultural life and (3) voice and influence." (Bacon et al., 2012, p.9; McKenzie, 2004, p.12).	Amenities and social infrastructure *The services and facilities a neighbourhood has to offer, such as meeting places, schools, and shopping facilities.* (Woodcraft, 2015)	1. The number of people that use the community space. 2. The average CROW-score[1] in a particular area. 3. The average number of facilities in a certain area compared to the rest of the city. 4. The percentage of houses close that has public transport within 250 meters. 5. The values that people attach to the facilities.	Document review, interviews, survey
		Social and cultural life *How connected people feel to their neighbourhood. It is about their sense of belonging and whether they feel like they have a local identity.* (Woodcraft, 2015; Bacon & Caistor-Arendar, 2014)	1. The values that people attach to their neighbourhood. 2. The percentage of people that has been living in the area for at least ten years. 3. The percentage of people that has contact with neighbours on a weekly base in a certain area. 4. The average score people give for the expectation of becoming a victim of a crime in their area.	Document review, interviews, survey

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[1] CROW is an outdoor space quality indicator used in the Netherlands. It looks into three fields: cleanness, wholeness, green (*schoon, heel, groen*). It is measured on a 5-point scale (A+ – A – B – C – D).

		Voice and influence *The ability residents have to influence their local environment and their willingness to take action.* (Woodcraft, 2015)	1. The number of people that actively participate in activities for their neighbourhood. 2. The percentage of people that have been actively involved in plan-making for their neighbourhood. 3. The percentage of people that have been active as a volunteer in a specific area. 4. The voter turnout at local elections.	Document review, interviews, survey

3.4 Structure

In the following chapter, the two cases are introduced. The findings and results of the data collection and analysis are described in Chapter 5. In Chapter 5, the sub-questions are answered in chronological order. Hypothesis 1 to 6 are used to structure sub-question 3. Hypothesis 7 is used for sub-question 4. Eventually, the results that allowed to answer the sub-questions are combined to answer the main research question in Chapter 6.

4. Cases

Two cases are central in this research: Groot-IJsselmonde and Hoogvliet. Both neighbourhoods of the city of Rotterdam have a history and are built according to certain principles. This background is relevant to understand their history and evolution.

4.1 Groot-IJsselmonde

In 1940, IJsselmonde became a part of the municipality of Rotterdam (Hage, 2005). Before that time, it was an independent municipality. Before 1940, the neighbourhood *Sportdorp* was already built (starting around 1918) and a start with *Zomerland* was made. The area of Sportdorp followed some of the garden city principles such as green spaces between building blocks. A garden city combines elements of

Photo 1: Location Groot-IJsselmonde.
Source: Google Maps.

cities as well as the countryside (Hage, 2005). Nevertheless, many of the houses were built just after World War I what caused a low-quality. In Zomerland, the idea was to build closed building blocks. This typology refers to blocks of houses of around three to four floors in which multiple families can live. Between those blocks, green spaces need to be built to facilitate meetings between neighbours and to prevent anonymousness (Hage, 2005). In other words: enabling the 'social and cultural life'-dimension of social sustainability.

In the time IJsselmonde became part of Rotterdam, the city needed to build many new houses due to a shortage (Hage, 2005). However, there were not that many extension possibilities in the northern part of the city. Therefore, the municipality decided to make a plan for Groot-IJsselmonde. The leading designer for this plan was Van Drimmelen (Hage, 2005). He already designed other neighbourhoods in IJsselmonde, for instance, Lombardijen. He followed the principles of 'human and nature' and saw the neighbourhood as an area in which you should be able to escape from the busy city centre and relax. The development of a child in the neighbourhood is a central element: the child needs to be prepared for the city in a more quiet environment (Hage, 2005). Especially, green spaces and meeting areas were seen as central points. Van Drimmelen saw the city as a tree. A city has lungs (the vibrant centre) and branches (the suburbs). The houses also needed to be built according to the face-to-face method. This method bases the number of houses in an area on the number of faces people can recognize (Hage, 2005). This number usually lies between 300 to 600: the ideal number of residents that can live in facing building blocks (blocks of three to four-floor apartments with facing living rooms). By following the

face-to-face method, it was more likely that the social dimension of living would be enhanced. Contact between neighbours was stimulated.

The design for Groot-IJsselmonde was made by Van Drimmelen and divided into six areas: *Kreekhuizen*, *Hordijkerveld*, *Reijeroord*, *Tuinenhoven*, *Groenenhagen* and centrum-district (Hage, 2005). Zomerland (part of centrum-district) was
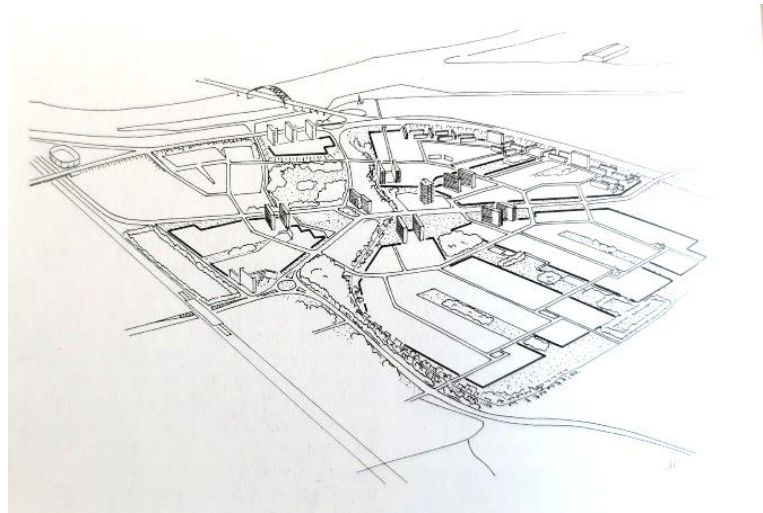
Photo 2: Design Groot-IJsselmonde.
Source: Hage (2005, p.184).

already finished but did contain most of the same elements. Sportdorp was not included in this plan because it was built way earlier. Following the plan made by Van Drimmelen, the municipality of Rotterdam expected the harbour workforce to settle down here. Therefore, a large percentage of the new houses needed to be social housing so those people would be able to afford it. Rotterdam assumed that harbour workers would like to live here because it was closer to the harbour compared to the northern part of the city (Hage, 2005).

In 1961, the finalized expansion plan for Groot-IJsselmonde was presented (Hage, 2005). Just as described by Van Drimmelen, the lungs of Groot-IJsselmonde would become vibrant by placing a green park and a shopping centre (*Park de Twee Heuvels* and *Keizerswaard* – both still there). This park and shopping centre are part of the 'amenities and social infrastructure'-dimension of social sustainability. Three somewhat higher buildings were added to the lungs so it could be seen as the landmark of the area (Hage, 2005). The neighbourhoods are built in the way Van Drimmelen envisioned it. Because his view was so central, a characteristic of Groot-IJsselmonde is that the areas are built in big blocks of similar buildings. Van Drimmelen called this the power of repetition.

In short, the construction of Groot-IJsselmonde started around 1961 and the areas were mostly finished around 1980. The ideas of Van Drimmelen can be seen as the building blocks of Groot-IJsselmonde. It currently consists out of the following areas: Goenenhagen-Tuinenhoven, Zomerland, Sportdorp, Kreekhuizen, Hordijkerveld and Reyeroord. Over the years, the area did socially, economically, and physically quite okay and there was no specific incentive to do urban regenerations. Only some small-scale urban regenerations happened. The map of images below provides some insight into what the neighbourhood looks like (see Photo 3).

Photo 3: Pictures Groot-IJsselmonde.

Source: My own.

4.2 Hoogvliet

Up until 1934, Hoogvliet was an independent municipality (Hage, 2005). In that year, the municipality of Rotterdam annexed Hoogvliet. Around 1945, the harbour of Rotterdam was growing at such a high pace that it had to extend. Hoogvliet was located close to the harbour and by the harbour's growth became even closer. The neighbourhood's location made it a

Photo 4: Location Hoogvliet.
Source: Google Maps.

convenient place for harbour workers to reside; it was an opportunity to downsize long work-home distances (Hage, 2005).

From 1947 onwards, the building department of the city of Rotterdam started making plans to transform the area of Hoogvliet from a small village to an urban residential community (Hage, 2005). The leading designers – amongst whom Gorter, Milius and Stem-Beese – came with the idea to create a satellite city. A satellite town is a smaller part of a metropolitan area that still belongs to the same municipality. Hoogvliet would become the first satellite city ever built in the Netherlands (Hage, 2005). The principles of the satellite town were based on Howard's garden city. A garden city combines elements of cities as well as the countryside (Hage, 2005). From the beginning of the process, designers mentioned that being flexible was necessary because the extension of Hoogvliet was dependent upon the developments in the harbour. Additionally, social housing got a central place in the design of Hoogvliet to make it affordable for harbour workers (Hage, 2005).

In the beginning, it was hard to make a design since there was no example of a garden city/satellite town in the Netherlands. A first confrontation was that in Howards' idea the garden city should inhabit approximately 32.000 inhabitants (Provoost & Vanstiphout, 2000). However, Beese – one of the leading designers – wanted there to be around 60.000 residents. Beese made some drafts with this principle in mind, which were finalized around 1952. While her drafts were made to inhabit 60.000 residents, Hoogvliet eventually gets around 30.000 inhabitants. This outcome is in line with Howards' original ideas. Nowadays, we still see Beese's idea of the garden city to use green spaces as elements of the neighbourhood. These green spaces impact the amenities-dimension of social sustainability.

After Beese, a new designer added to the draft designs of Hoogvliet (Hage, 2005). His name was Gorter and he followed the principles of Le Corbusier's 'Cité Lineaire'. In a linear city, there is a central axis around which the city is constructed. Each part – defined by axes – contains the same functions. Around 1952, two decisive decisions for the design of Hoogvliet were made by the municipality of Rotterdam. The first decision was that Hoogvliet was no longer seen as a sole satellite city, but more as a part of Rotterdam (Hage, 2005). This still fitted within the garden city principle

because it combined city as well as countryside elements. Second, the choice for a concentrated design was made. This was in line with the linear city of Gorter. Interestingly, most of Hoogvliet its original elements were demolished and replaced by new construction. In Hoogvliet, this central axis was in the middle of the northern and southern part of the city. Eventually, the areas in Hoogvliet were built in the periods, as shown in Table 6.

Table 6: Building periods and number of houses areas in Hoogvliet.
Source: Own construct based on Hage (2005).

Area of Hoogvliet	Building period	Number of houses
Digna-Johanna	1951-1954	625
Oudeland	1953-1961	2.000
Westpunt	1954-1959	2.100
Meeuwenplaat	1954-1970	3.060
Boomgaardshoek	1957-1985	1.700
Zalmplaat	1956-1967	3.500
Gadering	1956-2000	2.400

Around 1990, various actors – including the municipality of Rotterdam, social housing agencies, citizens and entrepreneurs – agreed that Hoogvliet needed to be redeveloped due to several reasons (Provoost & Vanstiphout, 2000). Developments that asked for interventions were the bad image of the neighbourhood (e.g. deriving from the one-sided housing stock) and a lot of (social) problems[2]. One of the main differences with Groot-IJsselmonde becomes clear here. Whereas Groot-IJsselmonde did quite okay socially, economically and physically, Hoogvliet deteriorated. Additionally, support came from the Big Cities Policy (national policy guideline)[3]. This policy provided tools to work on the concentration of problems in neighbourhoods (Hage, 2005). The municipality of Rotterdam and two social housing corporations in Hoogvliet (Woonbron and Vestia) agreed that the area needed an upgrade; around 5.000 houses needed to be (re)build. In 1996, the plan to regenerate Hoogvliet got shaped and a development vision called 'Welcome into My Backyard' (WiMBY!) started (Provoost & Vanstiphout, 2000). This plan was developed in cooperation with multiple actors: the municipality of Rotterdam, the

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[2] "The challenges for Hoogvliet fall into a social problem of poverty, ageing, ghettoization and isolation, in a planning issue of nuisance zones and noise contours, in a city marketing problem of the wrong reputation in the middle of popular VINEX neighbourhoods, in a political problem of districts versus municipality versus provincial versus national, and in an economic problem of insufficient support for good facilities." (Translated from Dutch: Provoost & Vanstiphout, 2000, pp.51-52).

[3] "Urban regeneration was the policy response to a number of societal developments around the turn of the century, which threatened the functioning of, especially the post-war districts." (Translated from Dutch: Kleinhans et al. (2014), p.5).

sub-council of Hoogvliet, citizens (in associations), entrepreneurs and social housing corporations. The intervention had a large physical component (Hage, 2005). Around 1999, the large-scale urban regeneration plan for Hoogvliet was finalized. The area had to become attractive for all kinds of groups. Besides housing, services had to be added, such as schools, cultural places, supermarkets, and employment opportunities. This relates to multiple dimensions of social sustainability. All
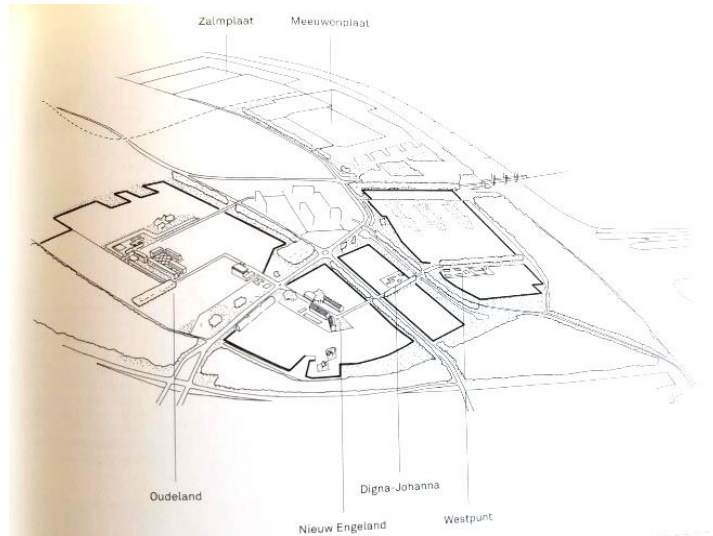
Photo 5: Design Hoogvliet.
Source: Hage (2005, p.199).

these wishes came together in five action points: (1) living as you wish, (2) living together, (3) education and work (amenities and social infrastructure), (4) social safety net and care (social and cultural life), and (5) a pleasant business climate (Kleinhans et al., 2014).

The plan for Hoogvliet was unique. It was one of the most significant urban regenerations in the Netherlands and it was primarily a physical intervention (Kleinhans et al., 2014). It is not exactly known how much money is spent on the project (because different policy fields have crossed each other). However, guesses say it is over one billion euros (Hage, 2005). Around 2012, most of the plans were finalized. However, this does not mean Hoogvliet is finished. From then onwards, new ideas have been created. The map of images below provides some insight into what the area currently looks like (see Photo 6).
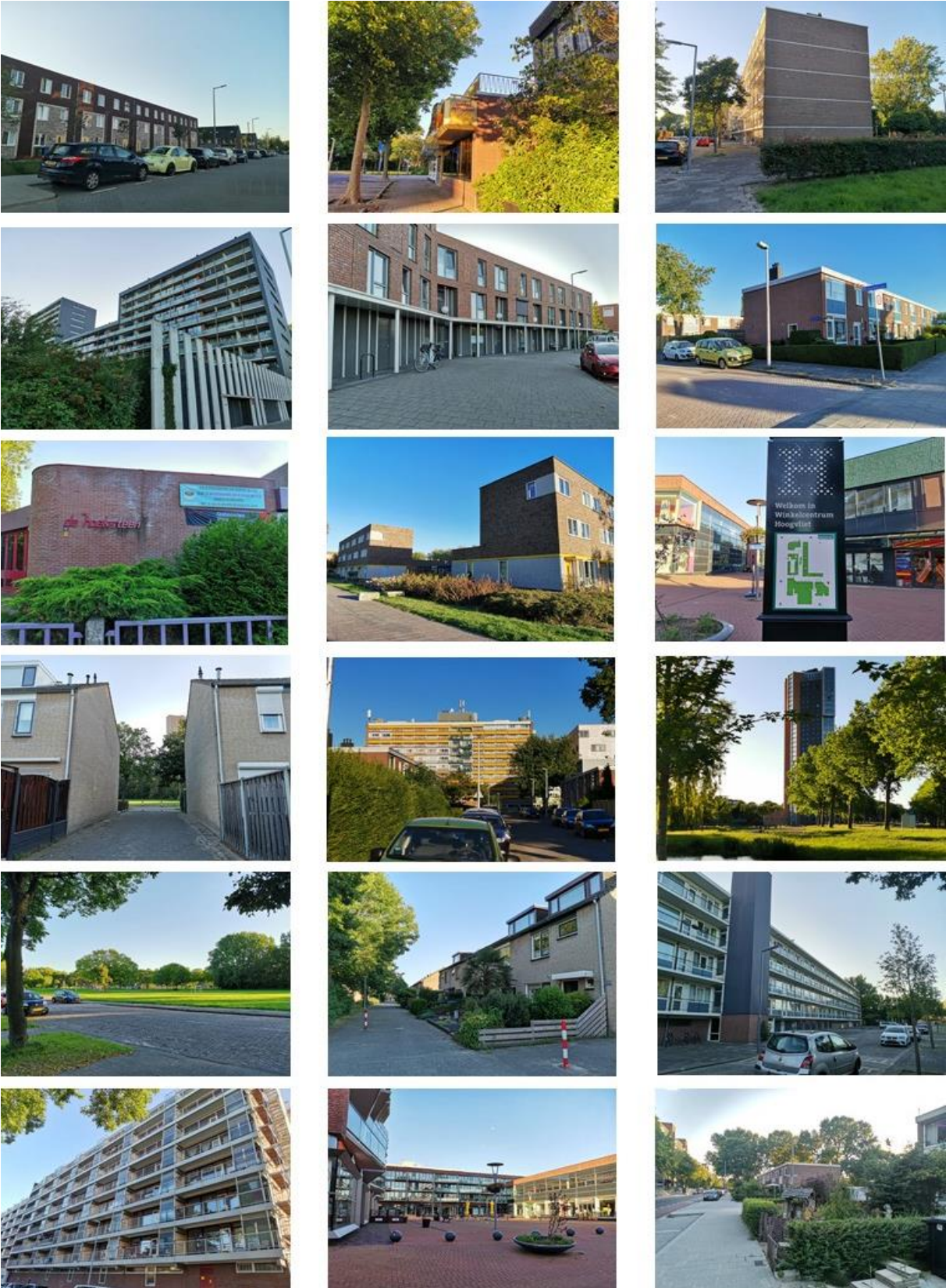
Photo 6: Pictures Hoogvliet.

Source: My own.

5. Results

The main findings of the three data gathering methods are described first. After that, the sub-questions guiding towards answering the main research question is answered. The findings of all data collection methods are combined to develop the results.

5.1 Findings data collection

First, the search engine of the Erasmus University Rotterdam was used to find relevant documents. Five relevant documents were found. Besides the documents reviewed, data from the neighbourhood profiles was used. More information is given in Appendix 7 'Additional findings and results'. The document review is first used to describe the cases. Mainly Hage (2005) and Provoost and Vanstiphout (2000) identify the history of the neighbourhoods and describe its building principles and motivation to build and/or expand the area. Second, mainly Kleinhans et al. (2014) and Stouten (2010) are used to answer sub-question 1 and 2. These sub-questions are about urban regeneration (principles) in Rotterdam. Finally, research carried out by Meier and Sophie (1999) is used to contrasts some of the current findings to the past situation and to create a survey.

The survey conducted in this study is mainly used to identify the extent of social sustainability in both neighbourhoods and to answer sub-questions 3 and 4. It is filled in by 210 people (n=210). Around 64% of the respondents are female compared to 38% male. On average, the respondents are 47 years old (normally distributed). The division of respondents over the two neighbourhoods can be found in Figure 6. There are 44 more replies from Hoogvliet. An explanation might be that the Facebook-group of Hoogvliet had 12.000 members compared to around 4.000 in Groot-IJsselmonde. For all respondents, it is checked whether the zip code matched the neighbourhood. Another interesting descriptive is the years of residence in the neighbourhood. This division is shown in Figure 7. Around 80% of the respondents from Hoogvliet has been living there for over ten years compared to, on average, 53% of the actual population of Hoogvliet (Gemeente Rotterdam, 2020a). Around 70% of respondents from Groot-IJsselmonde has been living there for over ten years compared to, on average, 45% of the actual population of Groot-IJsselmonde (Gemeente Rotterdam, 2020b). Thus, there is a bias in the respondents. Also, there is a significant difference between the number of years living in the neighbourhood between Groot-IJsselmonde (M=3.06, SD=1.14) and Hoogvliet (M=3.36, SD=1.10), t(208)=-1.921, p<0.05. Significantly more respondents from Hoogvliet have been living in the area for over ten years. In the final chapter, a reflection on biases is included. Items are combined into scales to measure the score for (three dimensions of) social sustainability. Details on these scales (such as the mean scores and Cronbach-Alpha) can be found in Appendix 7 'Additional findings and results'. Translations of quotes used in this study can be found in Appendix 8 'Quotes'.
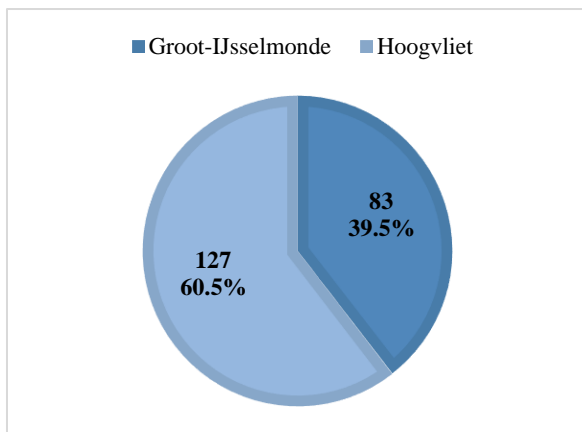
Figure 6: Respondents' neighbourhood.

Source: Own construct based on survey for this research (n=210), conducted in 2020.
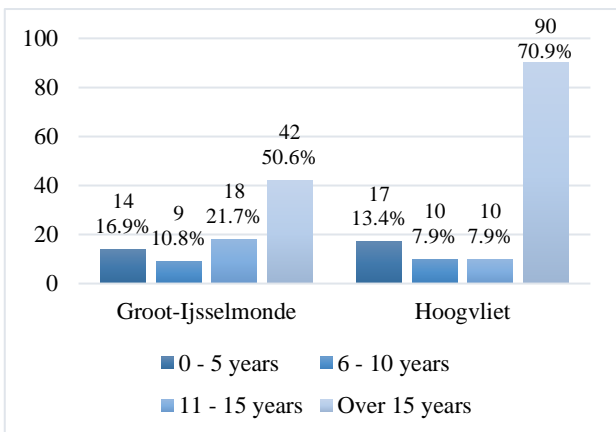
Figure 7: Years of residence.

Source: Own construct based on survey for this research (n=210), conducted in 2020.

The interviews are used to clarify the survey findings. This is especially helpful for answering sub-questions 3 and 4. Twenty-six survey respondents left their contact details. Eight of them replied to an interview request, of whom five from Groot-IJsselmonde and three from Hoogvliet. One of the respondents from Groot-IJsselmonde had recently moved to an area nearby; these findings are excluded. The identified descriptives of the respondents can be found in Table 7. Other specifics have not been registered. There might be a selection bias because respondents decide whether to leave their contact details or not. The people that want to discuss the statements might be more outspoken compared to people that do not. However, the interviews were mainly used to gain insight into the why-question and to clarify their answers. Besides, more residents from Groot-IJsselmonde are interviewed. This is to make up for the lower survey response rate from this neighbourhood. Translations of quotes used in this study can be found in Appendix 8 'Quotes'.

Table 7: Descriptives of interview respondents.

Source: Own construct based on interviews for this research (n=8), conducted in 2020.

Nr.	Neighbourhood	Specified area	Sex	Age	Years of residence
1.	Groot-IJsselmonde	Kreekhuizen	Male	21 – 30	0-5
2.	Groot-IJsselmonde	Sportdorp	Female	51 – 60	0-5
3.	Groot-IJsselmonde	Hordijkerveld	Male	31 – 40	11-15
4.	Groot-IJsselmonde	Reijeroord	Male	41 – 50	>15
~~5.~~	~~Groot-IJsselmonde~~	~~Groenenhagen~~	~~Male~~	~~51 – 60~~	~~>15~~
6.	Hoogvliet	Boomgaardshoek	Female	31 – 40	6-10
7.	Hoogvliet	Oudeland	Male	51 – 60	11-15
8.	Hoogvliet	Boomgaardshoek	Female	51 – 60	>15

5.2 Question 1: Urban regeneration and defining conditions

The first sub-question is posed to clarify the concept of urban regeneration in the chosen context. In this research, urban regeneration is defined as: "A comprehensive and integrated vision and action which seeks to resolve urban problems and bring about a lasting improvement in the […] condition of an area that has been subject to change or offers opportunities for improvement." (Roberts, 2000, p.17). Moreover, it is necessary to gain insight into which guidelines are leading in Rotterdam. The analysis shows that Rotterdam is a leader in this policy field. Stouten (2010) describes this as follows: "Most of these programmes of social renewal, subsequent Big City policies (*Grotestedenbeleid*) and neighbourhood approaches started in Rotterdam […]" (p.17). The Big City policy is divided into a physical, social, and economic pillar. These pillars are quite similar to the dimensions of sustainability. The division into three pillars derived from past experiences that showed that problems are often multidisciplinary (Stouten, 2010). From around 1997 onwards, the focus was on tackling problems as well as differentiation in tenure types. (Large-scale) urban regenerations were seen as a method to make lasting improvements. Urban regeneration in Rotterdam was dependent upon the policy context created by the municipality of Rotterdam itself and supported by the national government (Stouten, 2010).

The question remains what urban regeneration in Rotterdam precisely means. In the nineties, the municipality of Rotterdam formulated a vision including objectives of what urban regeneration should include (Stouten, 2010). A summary of the main elements can be found in Figure 8. The vision of the municipality of Rotterdam consisted of three elements: a complete city (coordination), an attractive city (differentiation) and an undivided city (integration) (Stouten, 2010). (Large-scale) urban regeneration needed to contribute to achieving this. More specifically, this vision resulted in the following objectives. First of all, urban regeneration in Rotterdam needed to be a mix of 'building for the neighbourhood' and 'building for the city' (Stouten, 2010). This follows from the 'complete city'-vision because you take a broader approach than just the neighbourhood and look at what the city as a whole needs. This could, for instance, be a mix in tenure categories as well as facilities needed to fulfil the demands in the city better. A complete city could lead to more balance in facilities and fulfil more demands in this field ('amenities and social infrastructure'-dimension). Secondly, the focus needed to be drawn away from (only) social housing (Stouten, 2010). Private initiatives deserved attention too, in line with the 'attractive city'-vision. The municipality of Rotterdam saw a city with mixed tenure types as an attractive city. By letting public as well as private initiatives build houses, a more diverse housing stock would derive. The third objective related to the 'undivided city'-vision and was to encourage diversity and balanced populations (Stouten, 2010). There needed to be space for anyone in the city (whether you were poor/rich, high/low educated, et cetera) and segregation needed to be prevented. Balanced populations can foster the 'social and cultural life'-dimension.

Complete city		Attractive city		Undivided city
Coordinate a neighbourhood focus with a broader urban focus.	➕	Stimulate private as well as public initiatives in the housing market.	➕	Balanced populations and encourage diversity.
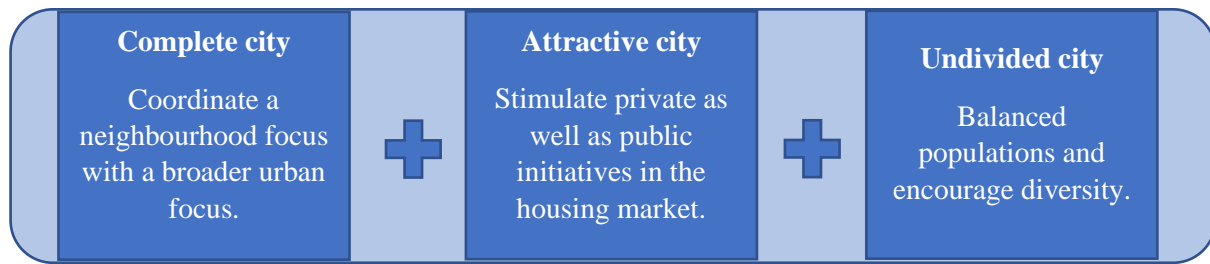
Figure 8: Vision on urban regeneration in Rotterdam.

Source: Own construct based on Stouten (2010).

Multiple large-scale urban regenerations have taken place in Rotterdam. The starting conditions are often related to the vision explained above. The urban regeneration discussed in this research is Hoogvliet. This was one of the first projects on such a large-scale (Provoost & Vanstiphout, 2000). It started around 1995 and aimed to improve at least 5.000 houses. This large-scale urban regeneration had a large physical component (upgrading and (re)building houses) and to a lesser extent social and economic aspects. This is in line with the criteria for urban regeneration as described in Table 1. The main reason to start regenerating Hoogvliet was the concentration of problems and bad reputation of the neighbourhood according to the municipality of Rotterdam (Provoost & Vanstiphout, 2000; see Footnotes on page 32 for details). The problems consisted of, amongst other things, lousy housing quality, a lack of facilities and an unstable economic situation. Multiple respondents in the survey highlighted these problems as well. One of the interview respondents mentioned: "Previously, it was, of course, quite a mess here with crime and everything". Insight into these problems derived from problem analysis as described by Roberts (2000). All the signals from citizens, entrepreneurs, and other stakeholders, alarmed the municipality of Rotterdam to act (Provoost & Vanstiphout, 2000).

A window of opportunity was present at the end of the twentieth century. Multiple factors to act on the problems in Hoogvliet were there (Kleinhans et al., 2014). These conditions are summarized in Table 8. First, the economic situation was stable in the Netherlands. The investment perspectives for the housing market were positive and the financial means to do such large-scale urban regeneration were there. The economy was in a boom. Second, the national policies in place aimed to improve deprived neighbourhoods (Kleinhans et al., 2014). This was in line with the wish to upgrade the neighbourhood of Hoogvliet. The national policy context was supportive of the interventions that were considered by the municipality of Rotterdam. Third, the municipality of Rotterdam saw a growing need to address the concerns in Hoogvliet (Provoost & Vanstiphout, 2000). Rotterdam was able to set up a solid urban regeneration plan supported with financial means of the national government. This plan did not only aim to solve the problems in Hoogvliet but also to create an improved image so that the entire city of Rotterdam can profit from it. That idea resonates with the 'complete city'-vision in which the city centre and suburbs complement each other. Fourth, there was support from local stakeholders such as entrepreneurs and inhabitants (Hage, 2005; Kleinhans et al., 2014). Entrepreneurs as well as residents were organized in associations for representing their wishes and needs. This relates to the 'voice and

influence'-dimension of social sustainability: residents being able and willing to participate. A survey carried out by Meier and Sophie (1999) shows that almost 80% of the respondents agreed that Hoogvliet had good plans for the future. Fifth, the taboo of demolishing social housing was less present compared to a decade before (Stouten, 2010). That was in line with the 'attractive city'-vision for which a diverse housing stock was favourable. Also, social housing corporations were willing to participate in the programme. These five factors were the defining conditions for urban regeneration in Hoogvliet.

Table 8: Defining conditions.
Source: Own construct based on authors indicated in the text.

1.	Booming economy – sound financial situation
2.	Supportive national policy
3.	The willingness of municipality of Rotterdam
4.	Support from residents and entrepreneurs
5.	The taboo of demolishing less present

The question remains why it had to be such a large-scale urban regeneration. The plan was to start upgrading/(re)building around 5.000 houses: a scale almost unknown in the Netherlands at that time (Hage, 2005). Three drivers to do so were found. First, previously done small-scale interventions did not have the effect they should have had (Helleman, Kleinhans & Ouwehand, 2001). These urban regenerations focused solely on (some) single streets and did not tackle the big problems. This realization was present by stakeholders such as the municipality of Rotterdam and the sub-council of Hoogvliet. They had to act differently. Secondly, Hoogvliet was once built for the lower working class, often harbour workers (Kleinhans et al., 2014). Therefore, there was a large percentage of lower-income groups. The number of low-skilled workers kept increasing and this contrasted with the 'undivided city'-vision of balanced populations. A concentration of particular groups was not in line with what Rotterdam wanted. Finally, the bad image of Hoogvliet caused more residents that had the financial means to leave the area to do so (Helleman et al., 2001). The image of Hoogvliet harmed not only the neighbourhood itself but also Rotterdam as a whole. That contrasted with the 'complete city'-vision in which the city centre and suburbs complement each other. The main reasons to do large-scale urban regeneration in Hoogvliet are summarized in Table 9.

Table 9: Drivers to do large-scale urban regeneration.
Source: Own construct based on Kleinhans et al. (2014) and Helleman et al. (2001).

1.	Previously done small-scale interventions did not work.
2.	There was a concentration of low-income groups in the neighbourhood.
3.	The bad reputation of Hoogvliet.

5.3 Question 2: Actors and effects of urban regeneration

The second sub-question is posed to gain insight into how urban regeneration is structured and to explain the relationship between urban regeneration and the outcomes. The urban regeneration process for Hoogvliet is already described in Chapter 4.2. Nevertheless, more information on the involved actors and the effects of it is necessary to gain a broader understanding.

A summary of the most important actors can be found in Table 10. Hoogvliet has been under the attention of the central government as a pilot area for new problematic neighbourhood policies (Provoost & Vanstiphout, 2000). The most influential national policy was the Big Cities policy. The central government provided a framework in which local problems needed to be tackled. Additionally, the national government divided financial means over projects in the country. A second actor involved in the interventions in Hoogvliet was the municipality of Rotterdam (Hage, 2005). The city council of Rotterdam was responsible for "the economic, spatial, and social development of the city […]" (Colantonio & Dixon, 2011, p.173). The municipality of Rotterdam was leading the interventions and possessed formal decision-making (for instance about procedures on land use). The alderman for urban development and the team of officials guided the process and informed the city councillors (Provoost & Vanstiphout, 2000). A third important actor in the case of Hoogvliet is the sub-council of Hoogvliet (Provoost & Vanstiphout, 2000). This council had authority and budgets and was closer to the people. Therefore, it was easier for them to oversee the consequences of a decision. The council of Rotterdam did have the primary decision-making power; however, also the sub-council of Hoogvliet was able to influence the plans. The sub-council of Hoogvliet can be seen as a boundary spanner: between the residents of Hoogvliet and the city council of Rotterdam. The three previously mentioned actors can be seen as 'administrative' actors. They mostly consist of people that have been elected to fulfil a vision. Besides, they possess (some) formal decision-making power.

Also people that come from and/or work in the neighbourhood are involved and affected (Provoost & Vanstiphout, 2000). In the case of Hoogvliet, residents as well as entrepreneurs created associations to represent their demands and wishes. Such associations channel the voice of these important actors and can be seen as a good indicator of the 'voice and influence'-dimension of social sustainability. For residents, each area in the neighbourhood had an association. There were specific ones for people living in social housing corporations' houses (for instance the ones from Woonbron) and more general ones. The associations had a chair who represented the discussed points to the municipality or sub-council (Provoost & Vanstiphout, 2000). These groups of actors experience the outcomes of urban regeneration which makes it more likely that they are willing to participate (OECD, 2001). If the 'administrative actors' wanted their plan to be supported, they had to make sure these associations were in line with it (ability to participate). Based on the documents read, most residents seemed to be positive about the large-scale urban regeneration and participation (Provoost & Vanstiphout, 2000; Hage, 2005). However, these documents are not written by citizens. Citizens might

have thought that it would not have made any difference if they were against it. Nevertheless, this is not backed up in either the survey or interviews.

Finally, in the case of Hoogvliet, social housing corporations Woonbron and Vestia played an essential role. They owned many social houses in Hoogvliet (Woonbron over 12.000 and Vestia over 5.000) (Hage, 2005). In Hoogvliet, the percentage of social housing was around 50% in the time the approach was made. The cooperation of Woonbron and Vestia was needed to upgrade these houses. Both agreed that something had to be done in Hoogvliet, also to ensure that their rental houses would remain attractive for future renters. Sometimes, these social housing corporations even facilitated associations of residents to ensure the voice of renters was also heard in the intervention.

Table 10: Main actors involved.

Source: Own construct based on Provoost and Vanstiphout (2000) and Hage (2005).

Actor	Role	Description
National government	Enabler/ Facilitator	Providing guidelines, creating a policy framework, and investor.
Municipality of Rotterdam	Regulator/ Facilitator	In the lead of the development and steers the involved actors.
Sub-council Hoogvliet	Co-producer/ Boundary spanner	Can influence decision-making and connects residents and entrepreneurs to the municipality.
(Association of) residents	Sounding board	Each neighbourhood had its association, sometimes even connected to a social housing corporation.
(Association of) entrepreneurs	Sounding board	Most entrepreneurs were organized in an association.
Woonbron	Co-producer	Owned a large percentage of social housing in the area.
Vestia	Co-producer	Owned a large percentage of social housing in the area.

Now the actors have been identified, the effects of the urban regeneration can be clarified. The possible negative and desirable effects that became clear in the literature review are described in Table 2 (see Chapter 2). Regarding the physical aspects, one could say that the housing quality did improve. Indicators from the neighbourhood profiles highlight this. Over 80% of the residents answered that they are content with their housing situation (Gemeente Rotterdam, 2020a). Previously this was not the case, because the worsening housing conditions were one of the reasons many residents agreed with the urban regeneration (Hage, 2005). However, there has been an increase in renting and housing prices. This is described as an adverse effect of urban regeneration by Colantonio and Dixon (2011). Nevertheless, there is also a more general trend resulting in increased housing prices. Another possible negative effect of urban regeneration is displacement. Whereas some of the residents did have to move, many of the former residents were able to stay (Provoost & Vanstiphout, 2000). While there might be some displacement, one cannot speak of the displacement of a whole neighbourhood. In addition, the urban

regeneration in Hoogvliet did lead to more balanced tenure categories. Whereas there now is around 44% owner-occupied houses, this percentage used to be lower (Gemeente Rotterdam, 2020a). Finally, a (temporary) loss of access to open spaces was identified as a possible negative effect. That did happen to some sides in Hoogvliet. An interview respondent highlighted a playground near a building site that was temporarily closed. However, it did not seem to be perceived as negative because most stakeholders saw the necessity of the regeneration. Research by Kleinhans et al. (2014) supports the findings that most of the physical effects were positive.

Besides the physical effects, more social effects have been identified. Most of these effects are linked to social networks and bonding. Because these effects are interwoven with social sustainability (and mainly the 'social and cultural life'-dimension), this is described in more detail in the following paragraph. However, one of the possible effects identified by Turner and Rawlings (2009) was a more balanced neighbourhood relating to people their background (income, education, et cetera). This did happen according to Kleinhans et al. (2014). Their study highlighted that the socio-economic status of Hoogvliet increased. Nevertheless, this effect was not caused by an increase in the socio-economic status of former residents. Mainly the new residents – mostly with better education and a higher income compared to the former residents – contributed to this effect. The socio-economic status of former residents did barely change.

5.4 Question 3: Changes in social sustainability

Sub-question 3 is posed to explain how citizens think about their demands/needs and the extent of fulfilment related to social sustainability in detail. To identify what changes have taken place in three selected dimensions of social sustainability, the past, present and future situation are described. The survey and interviews were used to do this. In section 5.5, the relationship as a whole is studied.

5.4.1 Past situation

The past situation is between 1995 and 2010: the years in which the large-scale urban regeneration in Hoogvliet started and took place. Over 5.000 houses were built in Hoogvliet in the period between 1990 and 2010 (Gemeente Rotterdam, 2020a). In Groot-IJsselmonde, only around 1.400 new addresses were constructed (Gemeente Rotterdam, 2020b). Survey respondents were asked whether they felt like the past situation was better compared to the current situation for three dimensions of social sustainability. Table 11 shows the percentages for both neighbourhoods for each dimension. Around 42% of the respondents think the situation for social sustainability was (somewhat) better in the past. This means that people think that their wishes were better fulfilled previously. An independent samples t-test shows that there is no significant difference in the percentage of residents that feels that their demands were met better in the past between Groot-IJsselmonde (M=1.47, SD=0.44) and Hoogvliet (M=1.49, SD=0.41); t(152.349)=-0.299, p>0.05.

Three dimensions of social sustainability are analysed separately to gain more insight into how people felt about the past situation. First, there is the 'amenities and social infrastructure'-dimension. This pillar relates to the facilities in the neighbourhood as described by Bacon et al. (2012). In both neighbourhoods, over 55% of the respondents answered that the situation was better in the past. This means that the respondents felt like they had more and/or better facilities. There is no significant difference on this dimension of social sustainability between Groot-IJsselmonde (M=1.44, SD=0.50) and Hoogvliet (M=1.43, SD=0.50); t(195)=0.150, p>0.05. Interview respondents were asked to clarify their answers to identify what specifically was better in the past. Multiple interview respondents from Hoogvliet claim that the shopping centre used to be more vibrant. Meier and Sophie (1999) found that in the past, 84% of the respondents from Hoogvliet felt like the shopping centre was sufficient. Interview respondents mention the following about the current state: "I think around twenty-one buildings are empty in the shopping centre". A respondent from Groot-IJsselmonde also highlighted the decay of the shopping centre. Respondents mention that they miss the smaller entrepreneurs, such as highlighted in this quote: "In the past, I could just go to the local bakery for some fresh bread. Now, I have to go to the large supermarket.". Statistics do support this statement: in Hoogvliet, only 35% of all households' lives within norm distance of a bakery (272 meters) (Gemeente Rotterdam, 2020a). In Groot-IJsselmonde, this percentage is around 40 (Gemeente Rotterdam, 2020b). The average in Rotterdam is 62%. A remark is that reduced presence of local shops is not necessarily related to large-scale urban regeneration, but could also derive from a more autonomous development.

Second, there is the 'social and cultural life'-dimension. Bacon et al. (2012) describe this as a feeling of connectedness to the neighbourhood. Again, more respondents answered that the situation was better in the past compared to the percentage of respondents that said it was not better in the past. This means that most survey respondents felt more connected to their neighbourhood before. Based on remarks from the survey, this feeling mainly seems to derive from a lessening of neighbour contact. An example of a text fragment supporting this is the following: "In the past, there was more joint action, we helped each other". The weakening of social contacts was identified as a possible negative effect of urban regeneration by Peng et al. (2015) (see Table 2). However, respondents also mention things that improved compared to the past situation, mainly related to safety(-perception). Safety(-perception) is an important indicator of how well people feel about their neighbourhood (Colantonio & Dixon, 2011). Previous research shows that almost 60% of the respondents mentioned that there was too much crime in Hoogvliet in the past (Meier & Sophie, 1999). Interview respondents support this claim: "There was a period of more crime and that is getting better now". Crime statistics from the municipality of Rotterdam support this too. In Groot-IJsselmonde, over 85% of survey respondents acknowledge feeling safe now. Their perception of safety is in line with the actual crime rates as measured by the municipality of Rotterdam: a decrease in crime of 32% (Programmabureau Veilig, 2002). In Hoogvliet, around 76 percent of survey respondents mention feeling safe. The number of registered crimes also decreased in Hoogvliet: by almost 50% (Programmabureau Veilig, 2002).

Third, there is the 'voice and influence'-dimension. When people in the survey were asked whether they felt like this aspect was better in the past, 47.4% said yes in Groot-IJsselmonde and 43.5% said yes in Hoogvliet. This is the lowest percentage of people mentioning that it was better in the past for the three investigated dimensions. Statistics from the municipality of Rotterdam show that residents were at least more active in voting in the past. In 2002, in Groot-IJsselmonde and Hoogvliet respectively 57.7 percent and 53.3 percent of residents went out to vote for local elections (Gemeente Rotterdam, 2020a; Gemeente Rotterdam, 2020b). In 2018, this decreased to only 43.1% and 38.5% respectively. However, there is a general decrease in the voter turnout rates in the Netherlands. Besides, the interview respondents highlighted that cooperation between neighbours was more comfortable in the past. The following quote illustrates this: "We certainly had support from the residents in the first years". However, afterwards, there were more discussions about how to continue the cooperation. While old residents left, not many new inhabitants helped: "Only there you do actually always see the same faces". It thus seems hard to get new people to join in neighbourhood activities and long-lasting cooperation is hard to reach because of disagreements. The lack of bonding between new residents was highlighted as a possible negative effect of urban regeneration by Colantonio and Dixon (2011).

Table 11: Past situation.

Source: Own construct based on survey for this research (n=210), conducted in 2020.

Dimension	Neighbourhood	Better in the past?	
		Yes	**No**
Amenities and social infrastructure (n=197)	Groot-IJsselmonde	55.7%	44.3%
	Hoogvliet	56.8%	43.2%
Social and cultural life (n=202)	Groot-IJsselmonde	56.3%	43.8%
	Hoogvliet	51.6%	48.4%
Voice and influence (n=195)	Groot-IJsselmonde	47.4%	52.6%
	Hoogvliet	43.6%	56.4%

*It does not always add up to 100% or n=210 because besides the options 'yes' and 'no' respondents could fill in their own answer.

5.4.2 Present situation

The present situation has a timeframe from 2011 until 2020. The scale of social sustainability in the survey (combining the 15 items that were used to measure the dimensions) shows an average score of 6.01 (SD=1.10) on a scale from 1 to 10 (see Appendix 7 'Additional findings and results'). This means that most people feel that their needs are fulfilled while there still is room for improvement. Regression analysis is conducted to identify whether there is a significant coherence between urban regeneration and the dimensions. Urban regeneration is not a significant indicator for any of the dimensions (see Appendix 9 'Regression results'). There is also no significant difference in the present scores for social

sustainability between Groot-IJsselmonde (M=6.16, SD=1.11) and Hoogvliet (M=5.92, SD=1.09); t(2018)=1.572, p>0.05. Also, the years of residence in the neighbourhood does not seem to affect the perception of social sustainability significantly. All the findings of the independent samples t-tests are shown in Table 12.

First, survey respondents were asked to value the 'amenities and social infrastructure'-dimension. In Groot-IJsselmonde it received a 6.55 and in Hoogvliet a 6.25. This means that inhabitants are averagely content with the provision of amenities in their neighbourhood. The first hypothesis that assumed that residents in a large-scale urban regenerated neighbourhood value this dimension higher compared to residents in a neighbourhood that has not is based on this rejected. The difference between both neighbourhoods was, however, not significant (see Table 12). Statistics from the municipality of Rotterdam show that these neighbourhoods are doing below average for the city. The facilities in Groot-IJsselmonde and Hoogvliet score 87 and 82 respectively (compared to 102 on average in Rotterdam) (Gemeente Rotterdam, 2020a; Gemeente Rotterdam, 2020b). Interview respondents highlight that they mainly miss facilities for children/youth in both neighbourhoods. The following quote illustrates this: "I think the facilities for the youth are not quite optimal. Then I am talking about the adolescent years. You know, there are not really any special places set up for them or not much, enough, is done for them". A community centre can be used for this purpose. Nevertheless, only 20.4% (Groot-IJsselmonde) and 12.6% (Hoogvliet) of the survey respondents answered using the community space. The low percentage in Hoogvliet might derive from the distance: "Yes, there is a community centre in Hoogvliet, but not close by. That is a long way from here". Another thing that interview respondents highlight as a deficiency is the quality of the outdoor space, especially related to road maintenance and waste disposal. One of the interview respondents mentions: "The policy is no trash bins. […]. But it could be a bit cleaner". Statistics from the municipality of Rotterdam support the respondents' statements. Groot-IJsselmonde and Hoogvliet respectively score a 3.78 and 3.70 (1 (cleanest) - 5 (dirtiest)) on CROW, compared to an average of 3.65 in Rotterdam (Gemeente Rotterdam, 2020a; Gemeente Rotterdam, 2020b). However, the survey conducted in this study shows a more nuanced picture: over 50% of the respondents say the outdoor space is well maintained in both neighbourhoods.

Second, the 'social and cultural life'-dimension was scored. Residents give Groot-IJsselmonde a 7.31 and Hoogvliet a 6.99, which shows they feel quite connected to their neighbourhood. The third hypothesis that assumes that residents in a neighbourhood that has not been large-scale regenerated value this dimension higher compared to residents from a large-scale regenerated neighbourhood is confirmed based on this. The difference between both neighbourhoods was, however, not significant (see Table 12). An explaining intervening variable might be the years of residence. Presumably, people that have been living in the area longer feel more connected to it. Over three-quarters of the survey respondents (76.2%) has been living in Groot-IJsselmonde/Hoogvliet for at least ten years. Significantly more respondents from Hoogvliet have been living in the neighbourhood for a longer time than in Groot-IJsselmonde. When asked about this during the interviews, respondents highlighted that the of years of

residence affects their relationships with neighbours: "We greet each other nicely and yes. […]. It is also true that people who are born here, they also stay here. And their mutual contact is, of course, stronger than the contact they have with me". This respondent had left the neighbourhood for several years but did come back. The survey results show that most people are content with their neighbour contacts. 79.5% (Groot-IJsselmonde) and 90.6% (Hoogvliet) of the respondents answered to have 'regular' contact with neighbours. An explanation for this score can be the bias in respondents that have been living in the neighbourhood for a long time. However, statistics from the municipality of Rotterdam also show that Hoogvliet (58) scores higher than Groot-IJsselmonde (51) (Gemeente Rotterdam, 2020a; Gemeente Rotterdam, 2020b). And also in the whole target group, Hoogvliet (53.0%) has more people that have been living in the neighbourhood for over than years compared to Groot-IJsselmonde (45.0%).

Third, the 'voice and influence'-dimension was analysed. Survey respondents value the 'voice and influence'-dimension a 5.30 in Groot-IJsselmonde and a 5.25 in Hoogvliet. It means that the respondents do really not feel the ability and/or willingness to participate in projects for their living environment. The scores given reject the fifth hypothesis assuming that residents in a large-scale urban regenerated neighbourhood value this dimension higher than residents in a neighbourhood that did not have one. Nevertheless, the difference between both neighbourhoods is again not significant (see Table 12). More specifically, the survey results showed that in Groot-IJsselmonde (67.5%) and Hoogvliet (51.2%), more than half of the respondents are willing to contribute. Therefore, the low valuation of this dimension could derive from the (perceived) ability to participate. Over 43% of respondents from Groot-IJsselmonde and almost 45% of respondents from Hoogvliet mentions feeling that they can actually contribute to their neighbourhood. However, these are most of the time also the respondents that score high on their willingness. Most of the respondents feel that they are not able to do something for their neighbourhood. This is reflected in the percentage of respondents that actually participates in programmes: that is only around 20.0% is both neighbourhoods. According to statistics from the municipality of Rotterdam, only 23.5% in Groot-IJsselmonde and 21.0% in Hoogvliet participates in plan-making for the neighbourhood (average in Rotterdam 29.0%) (Gemeente Rotterdam, 2020a; Gemeente Rotterdam, 2020b). This is interesting concerning the large-scale urban regeneration in Hoogvliet in which resident participation was a central element (Provoost & Vanstiphout 2000). Apparently, after the urban regeneration in Hoogvliet, the percentage of actively participating residents decreased. This finding is also in contrast with the idea that more outspoken people are more likely to fill in this survey.

Table 12: Present situation.

Source: Own construct based on survey for this research (n=210), conducted in 2020.

Dimension	Neighbourhood	Mean (1-10)	Standard deviation	Significant difference between neighbourhoods?
Amenities and social infrastructure	Groot-IJsselmonde	6.55	1.25	No
	Hoogvliet	6.25	1.34	t(208)=1.645, p>0.05
Social and cultural life	Groot-IJsselmonde	7.31	1.34	No
	Hoogvliet	6.99	1.62	t(208)=1.495, p>0.05
Voice and influence	Groot-IJsselmonde	5.30	1.59	No
	Hoogvliet	5.25	1.54	t(208)=0.220, p>0.05

5.4.3 Future situation

The timeframe for the future is from 2021 until 2030. Because social sustainability is about meeting current and future demands, this period is essential to consider. The survey is used to construct a general image of how residents perceive the future. The interviews are subsequently used to clarify this. Again, the questions were asked for three dimensions of social sustainability. Table 13 shows the percentages for both neighbourhoods for each dimension. More survey respondents expect the future not to be better compared to the number of respondents that does expect it to be better in both neighbourhoods. Around 25% of the respondents think that the future situation for social sustainability will (somewhat) improve, compared to around almost 65% that feels like the situation will not be (somewhat) better (n=189). This score means that people do not expect more of their demands to be fulfilled in the same neighbourhood in the future. An independent samples t-test shows that there is a significant difference in the scores for the expected social sustainability in the future for Groot-IJsselmonde (M=1.58, SD=0.50) and for Hoogvliet (M=1.75, SD=0.44); t(151.401)=-2.448, p<0.05. More residents of Groot-IJsselmonde expect their needs and demands to be fulfilled more optimally compared to the percentage of residents from Hoogvliet. An explanation is tried to be found in the following paragraphs.

Related to the 'amenities and social infrastructure'-dimension, the hypothesis was that more people expect the future to be better in a large-scale urban regenerated neighbourhood compared to the number of people that expect to future to improve in a neighbourhood that has not. In Groot-IJsselmonde, 39.8% of the respondents mention that they expect their demands related to amenities to be more fulfilled in the future. This contrary to in Hoogvliet, where only 23.60% of respondents expect it to be better. Therefore, the hypothesis is rejected. The difference is shown to be significant and, based on this, people from Groot-IJsselmonde (M=1.61, SD=0.49) can be seen as more positive about the future on this dimension of social sustainability compared to people from Hoogvliet (M=1.75, SD=0.43); t(154.621)=-2.067, p<0.05. An explanation for this might be that the shopping centre and central park in Groot-IJsselmonde have recently been upgraded, while there has been less attention for

the ones in Hoogvliet. Multiple respondents from Groot-IJsselmonde mention these developments: "There is a beautiful park – the Twee Heuvelenpark – which is really beautifully upgraded". Also, mainly respondents from Hoogvliet highlight that the accessibility/public transport needs to improve to fulfil their needs. Statistics from the municipality of Rotterdam support this statement. In Groot-IJsselmonde, the percentage of houses within a couple of hundred meters of a public transport facility is 60.7% and in Hoogvliet this is only 53.3% (Gemeente Rotterdam, 2020a; Gemeente Rotterdam, 2020b). These are quite low scores compared to the average in Rotterdam (71.3%). The lack of attention to these facilities in the neighbourhood could explain why residents feel that their demands will not be more fulfilled in the future. However, (re)developments of facilities are not always known in advance. It could, therefore, also be the uncertainty that makes people feel less positive about the future.

Also for the 'social and cultural life'-dimension it was assumed that more residents expect the future to be better in a large-scale urban regenerated neighbourhood compared to the number of residents in a neighbourhood that has not. In Groot-IJsselmonde, 31.3% of the respondents mention that they expect the future for their social and cultural life to be better (M=1.67, SD=0.47). This contrary to in Hoogvliet where only 18.9% of respondents highlights this (M=1.81, SD=0.40). The difference is shown to be significant (t(145.115=-2.117, p<0.05), meaning that significantly more residents in Groot-IJsselmonde expect to be more connected to their neighbourhood in the future compared to in Hoogvliet. An explanation might be that residents from Groot-IJsselmonde currently already feel more connected to their neighbourhood and therefore also see the future as more positive: a self-reinforcing effect. Another explanation for the low percentage of respondents that expects the future to be better might be the Covid-19 pandemic. Multiple interview respondents mentioned that the pandemic influenced the way they interact with neighbours. There is no sight for a quick cure and this can create a more cynical tendency about the future. Items of the 'social and cultural life'-dimension are affected by the limited contact measures taken by the Dutch government to minimize the spread of Covid-19. A reflection on this can be found in the final chapter.

Finally, the way respondents think about the future of the 'voice and influence'-dimension is analysed. The hypothesis related to this entailed that more people in a neighbourhood that has not been regenerated expect to be willing and able to participate in the future compared to the number of residents from a large-scale urban regenerated neighbourhood. This hypothesis is confirmed. In Groot-IJsselmonde, 37.4% of the respondent's mentions that they expect to be more willing and able to participate in the future (M=1.61, SD=0.49). Contrary, in Hoogvliet only 23.6% of respondents expect themselves to be more willing and able to participate in the future (M=1.75, SD=0.43). The difference is shown to be significant (t(154.612)=-2.067, p<0.05). However, it is not clear if people expect themselves to be more willing and/or more able to participate. An explanation for the low percentage of people that expects the future to be better in Hoogvliet might be that there is no longer a concentration of problems as a result of the large-scale urban regeneration. This takes away their ability to participate (fewer opportunities to do so) and their willingness to participate (fewer incentives to do so). Also, some

of the interview respondents highlight that they have tried to achieve things before but without success. An interview respondent said the following: "[…] I, we, addressed the police several times. But yes, he says we cannot help it […]". Other respondents mentioned similar experiences. These residents thus feel like their participation does not enable change and/or is not valued (which relates more to citizens' ability than willingness to participate).

Table 13: Future situation.

Source: Own construct based on survey for this research (n=210), conducted in 2020.

Dimension	Neighbourhood	Better in the future?	
		Yes	No
Amenities and social infrastructure (n=199)	Groot-IJsselmonde	39.8%	55.4%
	Hoogvliet	23.6%	70.9%
Social and cultural life (n=203)	Groot-IJsselmonde	31.3%	63.9%
	Hoogvliet	18.9%	78.7%
Voice and influence (n=201)	Groot-IJsselmonde	37.3%	59.0%
	Hoogvliet	23.6%	71.7%

*It does not always add up to 100% or n=210 because besides the options 'yes' and 'no' respondents could fill in their own answer.

5.5 Question 4: Socially sustainable changes?

Sub-question 4 is posed to explain the relationship between large-scale urban regeneration and social sustainability. That is done by taking citizens their perception into account. Social sustainability focuses on the conditions people live in and how they experience it (McKenzie, 2004).

The survey results show that residents from Groot-IJsselmonde value (all dimensions of) social sustainability higher than residents from Hoogvliet. None of these differences are significant. Different intervening variables might explain the differences between the two neighbourhoods. For instance, in the design of Hoogvliet there are more higher-floor buildings than in Groot-IJsselmonde (Gemeente Rotterdam, 2020b). These type of buildings can make it harder to have social contact. The coherence between large-scale urban regeneration and social sustainability is examined to further nuance the findings. Simple linear regression is used to do so. This test is most suitable because the dependent variable is predicted based on only one indicator. Social sustainability is measured by combining 15 items based on the dimensions (see Appendix 7 'Additional findings and results'). The regression analysis shows that whether a neighbourhood is large-scale urban regenerated only predicts 1.2% of social sustainability. That means other variables predict the vast majority. The ANOVA-results show that this model does not include significant explaining variables. Large-scale urban regeneration is – in this context – not a significant explaining indicator. Residents' predicted score for social sustainability is equal to 5.916 + 0.243X (X= no large-scale urban regeneration). However, this finding needs to be

put into the light that the model does not include significant indicators. The regression results can be found in Table 14 and more details can be found in Appendix 9 'Regression results'.

Table 14: Regression results large-scale urban regeneration on social sustainability.

Source: Own construct based on survey for this research (n=210), conducted in 2020.

Variable	B	95.0% CI	β	t	P
(Constant)	5.916	[5.72, 6.11]		60.87	0.000
Groot-IJsselmonde	0.243	[-0.06, 0.55]	0.108	1.57	0.117

* (Constant)=Hoogvliet, CI = Confidence interval for B, R2=0.012.

Neighbourhoods are not static; they do change. An interview respondent mentioned: "I think a lot has changed in IJsselmonde". Changes are socially sustainable if the demands and needs of residents now and in the future can be met (McKenzie, 2004). Based on the analysis, one sees that most respondents do not expect the future to be better. This means that they expect the number of their demands/needs to be fulfilled to remain the same or lessen. Only 33.7% (Groot-IJsselmonde) and 20.3% (Hoogvliet) expect the future to be (somewhat) better. That means that over half of the respondents does not expect more of their demands to be fulfilled later on. This outcome makes it hard to speak of sustainable development. Nevertheless, if respondents answered that they do not expect the future to be better could also mean that they expect it to remain the same (and not worsen). That respondents expect the future situation to remain stable is mentioned in multiple survey fragments. In that case, the number of demands/needs met remains equal and that is still socially sustainable. However, the potential lessening of social sustainability is also highlighted. Multiple respondents wrote the following concerns: "Everything will be more expensive and less social" and "I am afraid of more crime". Therefore, it is not straightforward to speak of socially sustainable changes; however, also not impossible. A reflection on the question formulation in the survey is given in Chapter 6.3.

A better future (which refers to more demands and needs being fulfilled in the neighbourhood) was expected to be supposed by more respondents from Hoogvliet than from Groot-IJsselmonde in the seventh hypothesis. This is not the case. Over 20.0% of Hoogvliet respondents expect the future to be better, while almost 34.0% of Groot-IJsselmonde respondents expect more of their demands to be fulfilled. Therefore, this hypothesis is rejected. However, statistics from the municipality of Rotterdam show a more nuanced picture than found in this study. When they asked residents whether they had faith in the future of their neighbourhood, 63.0% in Groot-IJsselmonde and 65.0% in Hoogvliet answered yes (Gemeente Rotterdam, 2020a; Gemeente Rotterdam, 2020b). It might be that people make a distinction between having faith in the future (as asked by the municipality of Rotterdam) and expecting progress (as asked in this survey). When the municipality asked residents of Rotterdam whether they expected progress in their neighbourhood, only 32.0% in Groot-IJsselmonde and 31.0% in Hoogvliet answered

yes (Gemeente Rotterdam, 2020a; Gemeente Rotterdam, 2020b). Again, because most residents highlight that they do not expect the future to improve, it is hard to speak of socially sustainable changes.

5.6 In short

All sub-questions have been answered. The hypotheses used to gain insight into the relationship between large-scale urban regeneration and (three selected dimensions of) social sustainability have been tested. The primary outcomes are shown in Figure 9 and these results are used to answer the main research question in the following chapter.
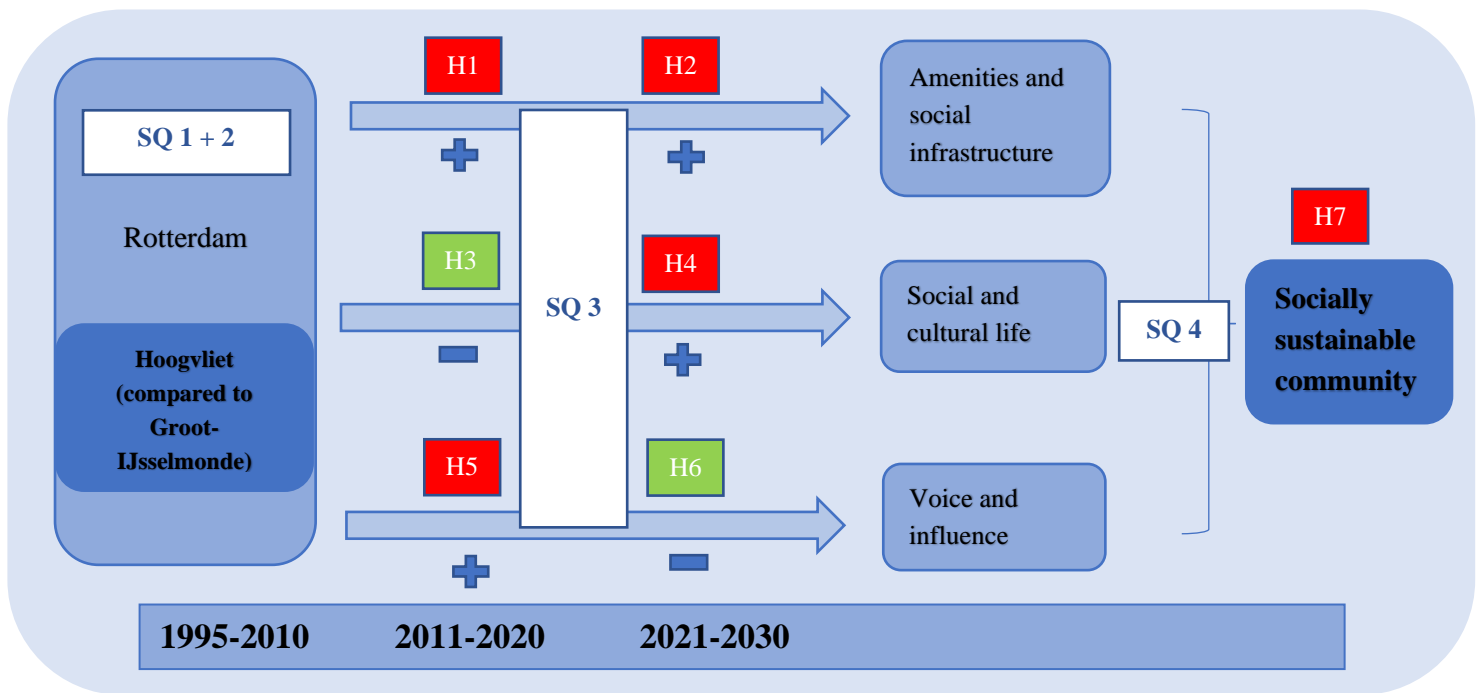

Figure 9: Results shown in the conceptual model.

Source: Own construct based on the theoretical framework, survey (n=210) and interviews (n=8).

*H=hypothesis, SQ=sub-question

6. Conclusion and discussion

The main research question is answered in this final chapter. Also, the contribution and limitations of this study are described. Recommendations for practice and research follow this.

6.1 Research question

In the upcoming years, Rotterdam will do more large-scale urban regenerations (Gemeente Rotterdam, 2016). Lessons can be learned from evaluating the influence of previous interventions. This research aims to explain the influence of large-scale urban regeneration on (three selected dimensions of) social sustainability in Rotterdam. The four sub-questions have been answered in the previous chapter. The main research question that guided this study was: "*What is the influence of large-scale urban regeneration on social sustainability in Rotterdam?*".

The analysis has shown that the large-scale urban regeneration that happened in Hoogvliet was not just a regular one. A window of opportunity was present to do so, consisting of, amongst other things, a booming economy and supportive national policy. That these conditions had to be present to enable such an intervention shows that contextuality matters, as also acknowledged by Colantonio and Dixon (2011). Additionally, the problems present in Hoogvliet were of such extent that a small intervention would not work. Previous interventions had shown this. Stakeholders, amongst which the municipality of Rotterdam and residents, agreed that something had to be done. Residents were seen as the central stakeholders in this study because social sustainability focuses on the conditions people live in and how they experience it (McKenzie, 2004). The large-scale urban regeneration has caused multiple effects: positive and negative. These results support previous research that also highlights this dichotomy. The housing quality seems improved; however, prices also increased. In addition, urban regeneration in Hoogvliet did lead to more balance in tenure categories. The displacement effect was less present in Hoogvliet, but concerning this another effect had been identified. Kleinhans (2014) et al. highlight that the socio-economic status in Hoogvliet had increased. Nevertheless, this effect was not caused by an increase in the socio-economic status of former residents but mainly by newcomers.

Contrary to what was expected, the analysis has shown that residents in a large-scale urban regenerated neighbourhood do not necessarily value (the three selected dimensions of) social sustainability higher than residents from a neighbourhood that did not. A higher score for social sustainability means that more people think that their needs/demands can be fulfilled in their neighbourhood. While the scores in Groot-IJsselmonde were slightly higher than in Hoogvliet, the differences were not significant. This might be explained by the design of the neighbourhood or other general trends. Meanwhile, the future situation is expected to be better by significantly more people in the neighbourhood that has not undergone large-scale regeneration: Groot-IJsselmonde. A better future refers to more residents feeling that their demands will also be met (or better) in the future. Nevertheless,

residents that do not expect the future situation to improve could expect the situation to remain the same, which is also socially sustainable because demands for now and future generations are fulfilled. These findings do need to be nuanced. The regression analysis showed that large-scale urban regeneration predicts only 1.2% of the score for social sustainability and cannot be considered as a significant explaining indicator. Large-scale urban regeneration was also not a relevant indicator of one of the investigated dimensions.

Based on these findings, it cannot be assumed that large-scale urban regeneration automatically has a positive influence on the way residents perceive social sustainability. Most respondents are not outspokenly positive and some even mention that they expect less of their demands to be met in the future. This makes it hard to speak of a socially sustainable community in which people assume their demands and needs to keep being met. Explanations mentioned by respondents were, amongst other things, Covid-19 and that their participation is not valued. More efforts than large-scale urban regeneration seem to be needed to make people feel like their needs can be fulfilled in their neighbourhood. It seems to be about more feasible items that people experience on a day-to-day basis, such as the maintenance of the outdoor space and variety in shopping facilities. These are items mentioned by multiple survey and interview respondents.

To conclude: it is essential to consider these conclusions with caution. Other intervening and moderating variables might be in place and relevant to explain the impact of large-scale urban regeneration on social sustainability. The analysis shows that the influence of large-scale urban regeneration in Rotterdam is – based on these two cases – minimal. The scores for social sustainability do not significantly differ between both neighbourhoods. Additionally, most respondents do not expect the future to be better. Therefore, it is hard to speak of a socially sustainable community. But it is too straightforward to say that this cannot still be achieved: no progress could also mean that the situation remains the same.

6.2 Contribution

This study contributes to the knowledge base by adding a case study focusing on large-scale urban regeneration in Rotterdam. This research takes residents' viewpoint as central. The results confirm that the effects of urban regeneration are indeed not easily identifiable.

While the findings can come across as unsupportive of large-scale urban regeneration, this is not necessarily the case. Hoogvliet might have deteriorated (to a more or lesser extent) if the intervention had not taken place. Besides, goals of the municipality of Rotterdam such as a complete city (differentiation in tenure categories) and a less negative image have been achieved. Additionally, other researchers such as Kleinhans et al. (2014) have found that the quality of life and the living situation of residents in the neighbourhood did improve after urban regeneration took place. It could be that residents need more time to adjust their perception to their new situation and social sustainability shows its progress in a later stage. It could also be the case that people were first satisfied, but now already used

to the situation: a time effect. It is advised to start gathering data on the same indicators for a more extended period to gain more insight into these side-effects. Longitudinal studies seem an advantageous method for studying (social) sustainability. By doing so, a real long-term image can be constructed and contextuality can be taken into account. Finally, this study also adds to the still under-theorized discourse of social sustainability by using three selected dimensions (Shirazi & Keivani, 2019). The three dimensions seem to give a sufficient picture of social sustainability: an image of the extent to which citizens feel that their demands are being met could be constructed. However, more attention can be paid to operationalising the concepts in future theory development. They are still quite broad and not completely isolated from other concepts. An example is that adding a community space is part of the 'amenities and social infrastructure'-dimension, but also impacts the 'social and cultural life'-one. Also, it is hard to study the concept of social sustainability in isolation from economic and environmental sustainability. For instance, the economic situation can affect the way people interact and the other way around. For future research it might be interesting to study social, economic and environmental sustainability as interwoven.

6.3 Discussion

Limitations have been encountered during this study. That makes that the results should be considered with caution. A description of the limitations and biases is given below.

First, the Covid-19 outbreak caused limitations. The pandemic had consequences for the way people interact since the start of the data collection process until the moment of finalizing this research. The measures taken to prevent the spread of Covid-19 in the Netherlands meant a minimal form of social contact. This resulted in, amongst other things, that residents could not be observed in their natural environment and interviews had to take place digitally. It was harder to interpret respondents their answers because it was not possible to see their body language. Also, some people had more spare time due to Covid-19, while others had to take extra shifts. This can result in a respondent bias. Additionally, multiple respondents highlighted to feel more cynical about the future because of Covid-19. There is no sight into a quick cure for the virus. Therefore, the future might be perceived as less favourable than a couple of months ago. The uncertainty of the situation influences their perception of what needs can be fulfilled, for instance, because they are not able to have real-life social contact.

Second, there is always the risk of researcher/confirmation bias. This can already be minimized by being aware of one's viewpoints. Also, triangulation is used to make sure different stands are highlighted and a first and second reader supervises the thesis. Finally, parts of the research have been reviewed. The survey was, for instance, preread by six people differing in education level, age, neighbourhood and living situation. By incorporating their feedback, confirmation bias was tried to be prevented.

Third, some research design limitations are present. First, the two compared neighbourhoods are not identical. The differences make an ideal comparison impossible. However, commonalities have

been found and other researchers support the choice for contrasting these neighbourhoods. For future research, it would be advisable to pay more attention to the design differences within the neighbourhoods. Second, in the survey and interviews, respondents were asked about their feelings related to the past, present and future situation. There is a general tendency to look back at the past with a more positive attitude. Also, respondents in the survey were asked whether they felt like the past and future situation 'was/will be better?'. This is a directive question and should have been formulated more carefully. Besides, the methodological scale-level was afterwards seen as a limitation. It became clear that people mostly identify themselves with the lowest scale-level, which in this case was not the neighbourhood Hoogvliet or Groot-IJsselmonde. Within these neighbourhoods, there are some smaller areas. A recommendation is to further narrow down the scale-level to a more feasible geographical scale for residents and/or enlarge the sample size of all the areas within the neighbourhood to make the results more generalizable. Additionally, because the physical component of the urban regeneration was mainly aimed at the social housing stock, it would have been better to check for the respondents' tenure category (privately owned, rented private/social sector). This grouping variable can bring interesting insights. A final methodological limitation was that there is no long-term data on social sustainability in Rotterdam yet. Therefore, a longitudinal case study on this subject is advised, for instance, by doing a yearly survey amongst residents.

Finally, it is necessary to reflect on the respondent bias. Significantly more survey respondents had been living in the area for over ten years compared to the percentage in the whole population. People that have been living there for a more extended period might feel differently connected than people that have been living there for a shorter period. There also was a significant difference between the average years of residence in Groot-IJsselmonde and Hoogvliet. Additionally, the people participating in the survey and interviews might be more outspoken compared to the population as a whole. This can result in a bias of people that are more likely to participate in any kind of activity in their neighbourhood. However, this is not reflected in the survey findings. It could also be that respondents felt like something was not going well in their neighbourhood and wanted to share their frustration (OECD, 2001). This can result in a more negative outcome of social sustainability than the general image.

6.4 Recommendations

Besides the suggestions for future research above, more practical recommendations can be made. The objective of this study was to explain the influence of large-scale urban regeneration on (three dimensions of) social sustainability in Rotterdam. This study shows that large-scale urban regeneration in Hoogvliet had desirable and negative effects. The intervention in this neighbourhood was mainly physical and did lead to improved housing conditions. However, urban regeneration is more than a physical component. It includes social and economic aspects as well. A study carried out by Kleinhans et al. (2014) showed that the socio-economic status in Hoogvliet did increase; nevertheless, it derived mainly from newcomers and not the former residents. All components of urban regeneration (physical,

social and economic) can help to achieve social sustainability. Mainly focusing on one of those aspects can create a disbalance. The following recommendations are made to guarantee social sustainability in Rotterdam in the future:

1. *Create an equal balance of physical, social and economic components in a large-scale urban regeneration.*

   The large-scale urban regeneration studied in this research had a significant physical component. That intervention did seem to improve the housing conditions, but more is needed to increase the extent of social sustainability. The advice is to pay more attention to the other two components in future intervention designs. A balance between the three components could mean, for instance, offering classes on practical skills (such as job interviewing) to former residents besides upgrading housing. These classes enable former residents to increase their socio-economic status, while also getting improved housing conditions (physical, social and economic). Paying attention to this balance needs to be done by the initiator of an urban regeneration, which in this case shall often be the municipality of Rotterdam.

2. *Identify the elements that citizens consider as beneficial to their quality of life for the three investigated dimensions of social sustainability in each neighbourhood.*

   The municipality of Rotterdam should start a longitudinal study on what citizens see as beneficial for their quality of life regarding the three investigated dimensions of social sustainability. This insight can be created by a survey amongst citizens in all neighbourhoods of the city. The survey has to be carried out every year to make sure the findings are still up to date. Once the beneficial elements are identified, these items need to be shared with residents in a meeting hosted by the sub-council. In these sessions, inhabitants can tell how they feel about these elements and whether the list is complete or not. These sessions have to take place twice a year to forestall that residents cannot share their opinion. Besides listening to citizens' opinion, valuing citizen participation needs to be done thoroughly. Otherwise, one risks the pitfall of not being taken seriously. If an element shows to be essential for how beneficial citizens perceive social sustainability, the municipality of Rotterdam could add this to the neighbourhood. An element could range from a new community centre to better road maintenance.

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Appendices

Appendix 1: Hypotheses

Table: Hypotheses.

Source: Own construct based on the theoretical framework.

Nr.	Hypothesis
1.	Residents of a large-scale urban regenerated neighbourhood value the 'amenities and social infrastructure'-dimension in their neighbourhood higher than residents in a neighbourhood without large-scale urban regeneration.
2.	The number of residents that expects the 'amenities and social infrastructure'-dimension in their neighbourhood to be better in the future is higher in a neighbourhood that has undergone large-scale urban regeneration than in a neighbourhood that has not.
3.	Residents of a large-scale urban regenerated neighbourhood value the 'social and cultural life'-dimension in their neighbourhood lower than residents in a neighbourhood without large-scale urban regeneration.
4.	The number of residents that expects the 'social and cultural life'-dimension in their neighbourhood to be better in the future is higher in a neighbourhood that has undergone large-scale urban regeneration than in a neighbourhood that has not.
5.	Residents of a large-scale urban regenerated neighbourhood value the 'voice and influence'-dimension in their neighbourhood higher than residents in a neighbourhood that has not.
6.	The number of residents that expects the 'voice and influence'-dimension in their neighbourhood to be better in the future is lower in a neighbourhood that has undergone large-scale urban regeneration than in a neighbourhood that has not.
7.	The number of people expecting the future to improve is higher in a neighbourhood that has undergone large-scale urban regeneration than in a neighbourhood that has not.

Appendix 2: Codetree

This codetree shows how the codes described in the codebook and used to analyse the data cohere.

1. Living environment	
1.1 Neighbourhood type	
1.2 Housing quality	
1.3 Positive aspects	
1.4 Negative aspects	
1.5 Motivation	1.5.1 Born
	1.5.2 Family/friends
	1.5.3 House wanted
2. Social sustainability	
2.1 Amenities and social infrastructure	2.1.1 Sport facilities
	2.1.2 Parking facilities
	2.1.3 Community spaces
	2.1.4 Shopping facilities
	2.1.5 Public transport
	2.1.6 Outdoor space
2.2 Social and cultural life	2.2.1 Contact with neighbours
	2.2.2 Neighbourhood activities
	2.2.3 Safety
	2.2.4 Social cohesion
	2.2.5 Bonding
2.3 Voice and influence	2.3.1 Willingness to participate
	2.3.2 Ability to participate
	2.3.3 Communication
3. Time dimension	
3.1 Past situation	
3.2 Current situation	
3.3 Future situation	
4. Urban regeneration	
4.1 Drivers	
4.2 Intentions	
4.3 Structure	4.3.1 Scale level
	4.3.2 Partners
	4.3.3 Design(ers)

Appendix 3: Codebook

This codebook further elaborates on the concepts identified in the codetree. First, a definition is given. The short definition is useful to add to Atlas.Ti, without adding too much information. Second, the inclusion- and exclusion criteria are described. These criteria define when the code is applied or not be applied. Finally, the relevance of the code is described. This is important to illustrate why this code needs to be included in the code book and why it helps to answer the research questions.

Table: Codebook.

Source: Own construct based on indicated authors.

	Code	Definition	Inclusion- and exclusion criteria	Relevance
1.	Living environment	**Short definition:** The surroundings of a person in the area in which he or she lives. **Extensive definition:** 'An assembly of the natural and built environment which is offered to the inhabitants of the place who perform various kinds of social, cultural, religious, economic, and political activities which induce peculiarities in the character of the living environment (Tiwari et al., 2015, p.153).'	**Inclusion:** The code 'living environment' will be applied if an interviewee speaks about Groot-IJsselmonde or Hoogvliet in a general sense. **Exclusion:** This code will not be applied if a person talks about a different neighbourhood than Groot-IJsselmonde or Hoogvliet. In addition, it will not be used if it can be labelled with one of the more specific codes.	The relation tested in this research (urban regeneration → social sustainability) happens in a contextual environment. This environment can be called the living environment. According to Tiwari et al. (2015), it is relevant to gain insight into this environment to be able to identify the most important aspects of it.
1.1	Neighbourhood type	**Short definition:** a general category which resembles the building style of a neighbourhood. **Extensive definition:** the guiding principles for building a neighbourhood	**Inclusion:** This code will be applied when someone mentions characteristics that can be linked to a certain neighbourhood type, such as the garden city. The respondent does not need to be aware of this	The code 'neighbourhood type' is relevant to consider because it provides insight into the way a neighbourhood is built and why it is done in a certain way.

		combined into a category that shows the character and building style of the area (Colantonio & Dixon, 2011).	categorization. A name of a neighbourhood is also coded. **Exclusion:** The code 'neighbourhood type' will not be applied if the characteristic a respondent mentions does not fit within one of the neighbourhood types researched in this study.	The building principles for a neighbourhood can influence the way the area is experienced (Colantonio & Dixon, 2011).
1.2	Housing quality	**Short definition:** The state of the house a person lives in. **Extensive definition:** 'Housing quality refers to the physical condition of a person's home as well as the quality of the social and physical environment in which the home is located. (Krieger & Higgins, 2002, p.758)' The focus here is mainly on the physical condition of a person's home.	**Inclusion:** This code will be used when a respondent mentions something about the physical conditions of their own home or homes in the neighbourhood. **Exclusion:** The code 'housing quality' will not be applied when someone speaks about the outdoor space. An example of a text fragment is: "And the gardens do not always look great either".	According to Krieger and Higgins (2002), the quality of a person's house partly defines how they feel about their neighbourhood and living environment. It, therefore, has a relation to social sustainability and how people feel about their living conditions and is thus relevant to consider.
1.3	Positive aspects	**Short definition:** Things a person experiences in a good way. **Extensive definition:** Elements of a neighbourhood a person feels good about and that they value.	**Inclusion:** This code will be applied when someone mentions something they consider to be a positive aspect. This code can be combined with more specific codes. **Exclusion:** This code will not be applied if someone does not actually mention whether they consider	The code 'positive aspects' is relevant to include because it provides insight into how people experience their neighbourhood. By identifying positive aspects, the social sustainability of a neighbourhood can be identified.

			something to be a good thing.	
1.4	Negative aspects	**Short definition:** Things a person experiences in a bad way. **Extensive definition:** Elements of a neighbourhood a person feels bad about and that they would like to see changed.	**Inclusion:** This code will be applied when someone mentions something they consider to be a negative aspect. This code can be combined with more specific codes. **Exclusion:** This code will not be applied if someone does not actually mention whether they consider something to be a bad thing.	The code 'negative aspects' is relevant to include because it provides insight into how people experience their neighbourhood. By identifying negative aspects, the social sustainability of a neighbourhood can be identified.
1.5	Motivation	**Short definition:** Why someone does or feels a certain way. **Extensive definition:** The reason for acting in a particular way, in this case, related to the reason why someone lives in a neighbourhood.	**Inclusion:** The code 'motivation' will be applied if an interviewee speaks about why he or she moved to Hoogvliet or Groot-IJsselmonde. **Exclusion:** This code will not be applied if a person talks about a different neighbourhood than Groot-IJsselmonde or Hoogvliet. In addition, it will not be used if it can be labelled with one of the more specific codes.	The code 'motivation' came up while open coding the interviews and analyzing the survey results. Multiple categories emerged when people were talking about their motivation to live somewhere. A reason to move to a neighbourhood can be related to social sustainability and is thus important to include.
1.5.1	Born	**Short definition:** Having started life in a neighbourhood. **Extensive definition:** When a person started life in the area and did not have to make	**Inclusion:** This code is applied when a respondent mentions that they have lived in the area since birth. An example of a fragment is: "I was born here and have not moved until now."	The code 'born' came up while open coding the interviews and analyzing the survey results. A reason to move to a neighbourhood can be related to social

		a choice itself to live somewhere.	**Exclusion:** This code is not applied when someone was able to influence where they live themselves.	sustainability and is thus important to include.
1.5.2	Family/friends	**Short definition:** Acquaintances. **Extensive definition:** When a person moved to a certain neighbourhood because friends and/or family already lived there or close by.	**Inclusion:** This code is applied when a respondent mentions that they moved to a certain area based on family and/or friends. **Exclusion:** This code is not applied when someone moved there first and afterwards friends and/or family followed them.	The code 'family/friends' came up while open coding the interviews and analyzing the survey results. A reason to move to a neighbourhood can be related to social sustainability and is thus important to include.
1.5.3	House wanted	**Short definition:** The house someone was looking for. **Extensive definition:** When a person moved to a certain neighbourhood because it offered the house someone was looking for.	**Inclusion:** This code is applied when a respondent mentions that they moved to a certain area because it had a house they were looking for. An example of a fragment is: "A cheap family home and greenery". **Exclusion:** This code is not applied when someone mentions facilities or other things related to the neighbourhood as a reason to move to a certain area.	The code 'house wanted' came up while open coding the interviews and analyzing the survey results. A reason to move to a neighbourhood can be related to social sustainability and is thus important to include.
2.	Social sustainability	**Short definition:** Social sustainability is about people's quality of life, now and in the future (Bacon et al., 2012). **Extensive definition:** "Social sustainability is	**Inclusion:** This code will be applied when a part has a relation with social sustainability, but does not necessarily fit within one of the dimensions of social sustainability or is too	The code 'social sustainability' is relevant to include because it is one of the main concepts in this research. Therefore, it is important to keep track of the parts in

		about people's quality of life, now and in the future. It is about meeting the needs of the present without compromising the ability of future generations to meet their demands. It focuses on people's livings conditions and experiences related to (1) amenities and social infrastructure, (2) social and cultural life and (3) voice and influence." (Bacon et al., 2012, p.9; McKenzie,2004, p.12).	general to put it into one category only. **Exclusion:** This code will not be applied when the coding can be more specific, for instance, in one of the categories of social sustainability. An example of a fragment is: "It is very social with each other".	which this concept emerges.
2.1	Amenities and social infrastructure	**Short definition:** All facilities and services a neighbourhood offers. **Extensive definition:** This dimension refers to the services and facilities a neighbourhood has to offer related to a social purpose, such as meeting places, schools and shopping facilities (Dixon & Woodcraft, 2013).	**Inclusion:** This code will be applied when someone talks about amenities in the neighbourhood that does not fit within one of the following categories: sports, parking, community and/or shopping. **Exclusion:** This code will not be applied when the coding can be more specific, for instance, in the category's sports, parking, community and/or shopping. In addition, the code will not be applied to not-social purpose amenities.	The code 'amenities and social infrastructure' is important to include in this code book because it is one of the main concepts in the conceptual model. It provides insight into the main relation and Bacon et al. (2012) define it as one of the dimensions of social sustainability.
2.1.1	Sport facilities	**Short definition:** A place where people can exercise.	**Inclusion:** This code is applied when a respondent	This code is important to include because it

		Extensive definition: The provisions a neighbourhood offers where people can exercise and play sports, either alone or in a team, for every age group.	mentions something about exercising in their neighbourhood. **Exclusion:** The code 'sport facilities' will not be applied when they talk about provisions outside of their neighbourhood.	is one of the main elements of the amenities and social infrastructure dimension of social sustainability, according to Dixon and Woodcraft (2013). In addition, it was something respondents frequently mentioned.
2.1.2	Parking facilities	**Short definition:** Spots to leave your vehicle. **Extensive definition:** Spaces in the neighbourhood specially reserved to park your car or bike there.	**Inclusion:** This code is applied when someone talks about parking facilities and using them. An example of a fragment is: "Yes, that there always is not enough parking space". **Exclusion:** This code is not applied when someone talks about a parking facility for public transport.	This code is important to include because it is one of the main elements of the amenities and social infrastructure dimension of social sustainability, according to Woodcraft (2015). In addition, it was something respondents frequently mentioned.
2.1.3	Community spaces	**Short definition:** A facility where people can meet each other. **Extensive definition:** An area in a neighbourhood that is open to all and where people can meet, socialize and interact without any expectations beforehand (Anderson, Ruggeri, Steemers & Huppert, 2016).	**Inclusion:** This code will be applied when a respondent mentions an area where people from the neighbourhood can come together. They do not need to use the name 'community space'. **Exclusion:** The code 'community spaces' will not be applied when people have to pay to be able to come together in that space.	The code 'community space' is important to include because it is one of the main elements of the amenities and social infrastructure dimension of social sustainability, according to Woodcraft (2015).

2.1.4	Shopping facilities	**Short definition:** Places where you can be necessities. **Extensive definition:** Stores and entrepreneurs in the neighbourhood that provide you with the opportunity to buy food, clothing and other stuff.	**Inclusion:** This code will be used when a respondent talks about shops they go to buy their groceries and other stuff. **Exclusion:** This code will not be used when respondents talk about shopping facilities outside of their neighbourhood, for instance: "It is a copy of the Lijnbaan in Rotterdam".	This code is important to include because it is one of the main elements of the amenities and social infrastructure dimension of social sustainability, according to Dixon and Woodcraft (2013). In addition, it was something respondents frequently mentioned.
2.1.5	Public transport	**Short definition:** A transportation system anyone can use. **Extensive definition:** Facilities to move around that are available to anyone, such as the metro, tram, bus, or train.	**Inclusion:** This code is applied when someone mentions a method of transportation in which they are not the only users. **Exclusion:** This code is not applied when someone mentions a method of transport they possess by themselves.	This code is important to include because it is one of the main elements of the amenities and social infrastructure dimension of social sustainability, according to Dixon and Woodcraft (2013). In addition, it was something respondents frequently mentioned.
2.1.6	Outdoor space	**Short definition:** Outside of a house. **Extensive definition:** The outside environment that is available to the public in which a home is located and where people reside (Colantiono & Dixon, 2011).	**Inclusion:** This code is applied if a respondent speaks about the quality of publicly available outdoor space in their neighbourhood. **Exclusion:** This code will not be applied if someone talks about private gardens or other outdoor spaces that	The code 'outdoor space' is relevant to include because it is one of the contextual factors influencing social sustainability. Colantonio and Dixon (2011) identify this in the change in the neighbourhood dimension.

			are not publicly available for everyone.	
2.2	Social and cultural life	**Short definition:** How people feel about their neighbourhood. **Extensive definition:** This dimension refers to how people feel about their neighbourhood. It is about their sense of belonging and whether they feel like they have a local identity (Woodcraft, 2015).	**Inclusion:** This code will be applied when the interviewee really speaks about their feelings and it does not fit within one of the more specific categories and can thus be considered as a general remark on this subject. **Exclusion:** The code 'social and cultural life' will not be applied when the interviewee speaks about how someone else feels. In addition, the text should not fit within one of the following more specific categories: contact with neighbours, neighbourhood activities, safety and social cohesion.	The code 'social and cultural life' is important to include in this code book because it is one of the main concepts in the conceptual model. It provides insight into the main relation and Bacon et al. (2012) define it as one of the dimensions of social sustainability.
2.2.1	Contact with neighbours	**Short definition:** An interaction between at least two people in an area. **Extensive definition:** The opportunity for at least two people to talk to each other, wave at each other or have another form of interaction in a certain area.	**Inclusion:** This code will be used when a respondent talks about how he or she connects with other people in the neighbourhood. A text fragment showing this is: "I mean like I am not sitting with my neighbours every other night". **Exclusion**: This code will not be used when a respondent only talks about what he or she would actually like to do but does not actually do.	This code is important to include because it is one of the main elements of the social and cultural life dimension of social sustainability, according to Dixon and Woodcraft (2013). In addition, it was something respondents frequently mentioned

2.2.2	Neighbourhood activities	**Short definition:** Events organized in an area. **Extensive definition:** Events that are organized in a neighbourhood to foster connectedness between neighbours and which are accessible to all.	**Inclusion:** This code is used when a respondent mentions neighbourhood activities that have actually been organized or will be organized in the future. **Exclusion:** This code will not be applied when a respondent just mentions events that he or she would like to see in the neighbourhood.	This code is important to include because it is one of the main elements of the social and cultural life dimension of social sustainability, according to Dixon and Woodcraft (2013).
2.2.3	Safety	Short definition: A state of protectedness (Elagin, 1996). Extensive definition: A state in which people feel protected and know that they do not have to worry about their situation (Elagin, 1996).	**Inclusion:** This code will be applied when respondents talk about their feelings and experiences related to safety in the neighbourhood. **Exclusion:** The code 'safety' will not be applied when the respondent only mentions, for instance, crime rates.	This code is important to include because it is one of the main elements of the social and cultural life dimension of social sustainability, according to Woodcraft (2015).
2.2.4	Social cohesion	**Short definition:** The extent to which people feel connected to each other. **Extensive definition:** 'Social cohesion refers to the extent of connectedness and solidarity among groups in society' (Manca, 2014, p.261). In this case, social cohesion is not among groups but among people in a neighbourhood.	**Inclusion:** The code 'social cohesion' will be used when people specially mention that they feel connected to or emphasize with other people in the neighbourhood. **Exclusion:** This code will not be applied when people mention aspects that could contribute to social cohesion, such as contact with neighbours, but do not mention that they,	The code 'social cohesion' is relevant to include because as defined by Manca (2014) it provides you insight into the sense of local identity. The local identity is a key aspect of the social and cultural life dimension of social sustainability.

			therefore, feel connected to the neighbourhood. An example of an excluded fragment is: "We are about to leave because of much less living pleasure".	
2.2.5	Bonding	**Short definition:** a feeling of belonging to the neighbourhood (Manca, 2014). **Extensive definition:** the feeling that you belong in a certain neighbourhood because it makes you feel at home. This feeling of bonding does not derive from the neighbours living there, but purely the area itself.	**Inclusion:** The code 'bonding' will be used when people specially mention that they feel connected to the neighbourhood, not specifically the persons living there. An example of an included fragment is: "We are about to leave because of much less living pleasure". **Exclusion:** This code will not be applied when people mention that they feel connected to the neighbourhood because of the people living there (that is social cohesion).	The code 'bonding' is relevant to include because as defined by Manca (2014) it provides you insight into the sense of local identity. The local identity is a key aspect of the social and cultural life dimension of social sustainability.
2.3	Voice and influence	**Short definition:** The willingness and ability to participate. **Extensive definition:** This dimension refers to the ability residents have to influence their local environment and their willingness to take action (Woodcraft, 2015).	**Inclusion:** This code will be applied when the interviewee speaks about one of his or her own experiences related to participation and it does not fit within one of the more specific categories and can thus be considered as a general remark on this subject. **Exclusion:** The code 'voice and influence' will	The code 'voice and influence' is important to include in this code book because it is one of the main concepts in the conceptual model. It provides insight into the main relation and Bacon et al. (2012) define it as one of the dimensions of social sustainability.

			not be applied when the interviewee speaks about an event they did not experience themselves. In addition, the text should not fit within one of the following more specific categories: willingness to participate, ability to participate and/or communication.	
2.3.1	Willingness to participate	**Short definition:** The preparedness to tackle local problems (Colantonio & Dixon, 2011). **Extensive definition:** The preparedness of residents to help gain attention for or to help solve local problems to improve the neighbourhood.	**Inclusion:** This code will be applied when the respondent talks about either his or her own intentions to participate or the intentions he or she sees by people surrounding them. An example of a fragment is: "So, I think, yes, my heart would be big enough to do that too". **Exclusion:** This code will not be used when people mention that they, for instance, do not have time to participate. These sentences will be placed under the code ability to participate.	This code is important to include because it is one of the main elements of the voice and influence dimension of social sustainability, according to Woodcraft (2015).
2.3.2	Ability to participate	**Short definition:** The knowledge and power to solve local problems (Colantiono & Dixon, 2011). **Extensive definition:** The knowledge and power of residents (capabilities) to help gain attention for or to	**Inclusion:** This code will be applied when respondents talk about either their capabilities or the capabilities by people surrounding them to solve local problems.	This code is important to include because it is one of the main elements of the voice and influence dimension of social sustainability, according to Woodcraft (2015).

		help solve local problems to improve the neighbourhood.	**Exclusion:** This code will not be used when people mention that they, for instance, do not like it to participate. These sentences will be placed under the code willingness to participate.	
2.3.3	Communication	**Short definition:** The way information is processed from one person to another. **Extensive definition:** 'Communication is the process through which relationships are instituted, sustained, altered, or ended by increases or reductions in meaning' (Serrat, 2017, p.985). In this case, it focuses on communication related to the voice and influence dimension.	**Inclusion:** This code will be used when a respondent talks about the communication of participation projects or other projects in the neighbourhood. **Exclusion:** This code will not be used when the fragment is about communication in another field than the municipality and/or voice and influence.	This code is important to include because it is one of provides insight into why people are prepared and willing to contribute to their neighbourhood. It derives from the interviews themselves; multiple respondents mentioned it.
3.	Time dimension	**Short definition:** The time frame. **Extensive definition:** A generation is a period of around thirty years in which people are born (Grossieries, 2001; Mannheim, 1952).	**Inclusion:** This code will be applied when someone mentions something about another time in general, only if one cannot make up whether the respondent talks about the past, current or future situation. **Exclusion:** This code will not be applied when a respondent talks clearly about the past, current or future situation.	It is important to include the time dimension because it is one of the central elements of the concept of social sustainability. The time dimension makes sustainability a unique concept.
3.1	Past situation	**Short definition:** A previous state.	**Inclusion:** This code will be applied when someone specifically mentions	It is important to include the time dimension because it

		Extensive definition: A state in the period between 1995 and 2010.	talking about the past situation. **Exclusion:** This code will not be applied when someone talks about the current or future situation and/or it does not have a relation to one of the dimensions of social sustainability.	is one of the central elements of the concept of social sustainability. The time dimension makes sustainability a unique concept (Colantiono & Dixon, 2011).
3.2	Current situation	**Short definition:** A contemporary state. **Extensive definition:** A state in the period between 2011 and 2020.	**Inclusion:** This code will be applied when someone specifically mentions talking about the current situation. **Exclusion:** This code will not be applied when someone talks about the past or future situation and/or it does not have a relation to one of the dimensions of social sustainability.	It is important to include the time dimension because it is one of the central elements of the concept of social sustainability. The time dimension makes sustainability a unique concept (Colantonio & Dixon, 2011).
3.3	Future situation	**Short definition**: A state that has not happened yet. **Extensive definition**: A state that is expected in the period between 2021 and 2030.	**Inclusion:** This code will be applied when someone specifically mentions talking about the future situation. An example of a fragment is: "And especially with the Caronavirus, I do not think the future will be much more positive". **Exclusion:** This code will not be applied when someone talks about the past or current situation	It is important to include the time dimension because it is one of the central elements of the concept of social sustainability. The time dimension makes sustainability a unique concept (Colantonio & Dixon, 2011).

			and/or it does not have a relation to one of the dimensions of social sustainability.	
4.	Urban regeneration	**Short definition:** The process of upgrading a certain area. **Extensive definition:** Urban regeneration refers to 'comprehensive and integrated vision and action which seeks to resolve urban problems and bring about a lasting improvement in the economic, physical, social and environmental condition of an area that has been subject to change or offers opportunities for improvement' (Roberts, 2000, p.17).	**Inclusion:** This code will be applied when a part has a relation with urban regeneration, but does not necessarily fit within one of the more specific codes or is too general to put it into one category only. **Exclusion:** This code will not be applied when the coding can be more specific, for instance, in one of the more specific codes of urban regeneration.	The code 'urban regeneration' is relevant to include because it is one of the main concepts in this research. Therefore, it is important to keep track of the parts in which this concept emerges.
4.1	Drivers	**Short definition:** A reason to do something. **Extensive definition:** A driver is a motivation to undertake a certain action, in this case, a reason to do an urban regeneration project in a neighbourhood.	**Inclusion:** This code is applied when a reason to undertake action in an area is mentioned, either by a resident or another actor, for instance: "It used to be quite a mess here with crime". **Exclusion:** This code is not applied when someone mentions how they would like to see the neighbourhood.	The code 'drivers' is important to include because it provides insight into why an urban regeneration took place and thus shows the problem analysis used to start the project.
4.2	Intentions	**Short definition:** Goal. **Extensive definition:** An intention is what someone	**Inclusion:** This code is used when a fragment provides insight into the	The code 'intentions' is relevant to include because it provides insight into what one

		wants to achieve; it is the goal of urban regeneration.	goals of urban regeneration. **Exclusion:** The code is not used when someone mentions how they would like to see the neighbourhood, without it being an official goal of the urban regeneration.	wants to achieve by doing the urban regeneration and thus its (possible) outcomes.
4.3	Structure	**Short definition:** How a project is organized. **Extensive definition:** The way an urban regeneration project is shaped.	**Inclusion:** The code is used when a fragment shows how the project is organized. **Exclusion:** This code is not used when a fragment shows how an urban regeneration project is organized related to the involved actors. For this, the code partner(s) is used.	The code 'structure' is relevant to include because it shows how the urban regeneration project was handled and what things were taken into consideration while carrying it out.
4.3.1	Scale level	**Short definition:** The scope of the project. **Extensive definition:** The scope of the urban regeneration project, for instance, the number of streets it includes or how many households it affects.	**Inclusion:** This code is used when someone mentions a number or scope of the affected households, for instance: "All those flats have been demolished". **Exclusion:** This code is not used when a fragment only mentions a part of a project, not the project as a whole.	The code 'scale-level' is relevant to include because in Rotterdam especially 'large' urban regeneration projects are carried out. It is thus important to know on what scale it is carried out.
4.3.2	Partners	**Short definition:** The involved stakeholders. **Extensive definition:** All actors that are involved in the urban regeneration project	**Inclusion:** The code 'partners' is used when a fragment shows stakeholders that are involved in urban regeneration.	The code 'partners' is relevant to include because it shows what stakeholders where included in the urban regeneration project.

		and have a role in shaping the project. **Exclusion:** This code is not used when a fragment talks about an actor involved in something that is not the urban regeneration, for instance, the designer of the initial neighbourhood.	Since one actor does not just construct social sustainability, it is relevant to know who is included.
4.3.3	Design(ers)	**Short definition:** The initial designs and designers for a neighbourhood. **Extensive definition:** The persons who made plans to form the neighbourhood in a certain way.	**Inclusion:** The code 'design(ers)' is used when a fragment talks about the way a neighbourhood is organized or by whom it is done, for instance: "Hoogvliet's design was flexible." **Exclusion:** This code is not used when it is about how the project was organized.	The code 'design(ers)' is relevant to include because these fragments tell us something about the way a neighbourhood is designed and who worked on it. This helps us to understand the neighbourhoods better.

Appendix 4: Survey

Voor een afstudeeronderzoek, uitgevoerd vanuit de Erasmus Universiteit Rotterdam, ben ik op zoek naar Rotterdammers die informatie willen delen over ervaringen in hun wijk. Het onderzoek gaat over het effect van grootschalige wijkaanpakken en hoe inwoners dit over een langere tijdsperiode ervaren.

Uiteraard worden alle gegevens volgens de AVG-richtlijnen verwerkt en wordt uw anonimiteit, tenzij door u anders aangegeven, gewaarborgd. Uw deelname is vrijwillig. Mocht u gedurende de vragenlijst willen stoppen, om wat voor reden dan ook, is dit mogelijk. De data die tot op dat moment is verkregen kan worden gebruikt voor het onderzoek. U heeft daarnaast nog de mogelijkheid om aan te geven of u het wenselijk vindt dat uw data voor na dit onderzoek wordt opgeslagen.

Het invullen van de vragenlijst duurt ongeveer 5-10 minuten. Alvast heel erg bedankt voor uw hulp!

<u>Algemeen</u>

1. Ik stem in met het verwerken van de door mij gegeven data en het beveiligd opslaan hiervan voor een periode van twee jaar.
   a. Ja
   b. Nee
2. Woont u in Groot-IJsselmonde of Hoogvliet?
   a. Groot-IJsselmonde
   b. Hoogvliet
3. Wat is uw postcode? Alleen de cijfers zijn voldoende.
   Open vraag.
4. Hoelang woont u al in Groot-IJsselmonde of Hoogvliet?
   a. 0 – 5 jaar
   b. 6 – 10 jaar
   c. 11 – 15 jaar
   d. Langer dan 15 jaar.
5. Wat is uw geslacht?
   a. Man
   b. Vrouw
   c. Zeg ik liever niet/Anders
6. Wat is uw leeftijd?
   Open vraag.

Stellingen

Graag leg ik u een aantal stellingen voor over uw buurt (Groot-IJsselmonde of Hoogvliet). U kunt bij iedere stelling aangeven in hoeverre u het ermee eens bent (1 = volledig mee oneens, 10 = volledig mee eens). Er zijn 19 stellingen met enkele korte vragen tussendoor.

De buurt

7. Ik ben tevreden over mijn woonsituatie in Groot-IJsselmonde/Hoogvliet.
8. Ik wil oud worden in Groot-IJsselmonde/Hoogvliet.
9. Ik wil zo snel mogelijk weg uit Groot-IJsselmonde/Hoogvliet.
10. Ik zou anderen aanbevelen in Groot-IJsselmonde/Hoogvliet te (komen) wonen.
11. Over de stellingen over uw buurt: denkt/vond u dat de situatie vroeger beter was?
    a. Ja
    b. Nee
    c. Anders, namelijk: …
12. Over de stellingen over uw buurt: denkt/verwacht u dat de situatie in de toekomst beter zal zijn?
    a. Ja
    b. Nee
    c. Anders, namelijk: …

Voorzieningen

13. Groot-IJsselmonde/Hoogvliet heeft voldoende voorzieningen, zoals scholen en supermarkten.
14. Groot-IJsselmonde/Hoogvliet heeft een gevarieerd winkelcentrum.
15. Ik maak gebruik van het buurtcentrum/de ontmoetingsplek in Groot-IJsselmonde/Hoogvliet.
16. In Groot-IJsselmonde/Hoogvliet wordt de buitenruimte goed onderhouden.
17. Ik heb voldoende recreatiemogelijkheden in Groot-IJsselmonde/Hoogvliet.
18. Over de stellingen over voorzieningen: denkt/vond u dat de situatie vroeger beter was?
    a. Ja
    b. Nee
    c. Anders, namelijk: …
19. Over de stellingen over voorzieningen: denkt/verwacht u dat de situatie in de toekomst beter zal zijn?
    d. Ja
    e. Nee
    f. Anders, namelijk: …

Sociaal leven

20. Ik voel me veilig in Groot-IJsselmonde/Hoogvliet.

21. Ik ben positief over Groot-IJsselmonde/Hoogvliet.

22. Ik voel mij thuis in Groot-IJsselmonde/Hoogvliet.

23. Ik heb goed contact met mijn buren in Groot-IJsselmonde/Hoogvliet.

24. Ik spreek regelmatig andere mensen uit Groot-IJsselmonde/Hoogvliet.

25. Over de stellingen over uw sociaal leven: denkt/vond u dat de situatie vroeger beter was?

    a. Ja

    b. Nee

    c. Anders, namelijk: …

26. Over de stellingen over uw sociaal leven: denkt/verwacht u dat de situatie in de toekomst beter zal zijn?

    a. Ja

    b. Nee

    c. Anders, namelijk: …

Participatie

27. Ik ben op de hoogte van wat er speelt in Groot-IJsselmonde/Hoogvliet.

28. Ik ontvang informatie over burgerparticipatiemogelijkheden in Groot-IJsselmonde/Hoogvliet.

29. Ik neem deel aan burgerparticipatiemogeljikheden in Groot-IJsselmonde/Hoogvliet.

30. Ik ben bereid een steentje bij te dragen aan Groot-IJsselmonde/Hoogvliet.

31. Ik heb het idee dat ik wat kan betekenen voor Groot-IJsselmonde/Hoogvliet.

32. Over de stellingen over participatie: denkt/vond u dat de situatie vroeger beter was?

    a. Ja

    b. Nee

    c. Anders, namelijk: …

33. Over de stellingen over participatie: denkt/verwacht u dat de situatie in de toekomst beter zal zijn?

    d. Ja

    e. Nee

    f. Anders,   namelijk: …

Vragen

Aanvullend stel ik u graag nog vier vragen. Het antwoord op deze vragen kunt u kort toelichten. Een enkele zin of enkele zinnen volstaan al prima als antwoord.

34. Waarom bent u in Groot-IJsselmonde/Hoogvliet gaan wonen?

35. Wat zou u graag verbeterd zien in Groot-IJsselmonde/Hoogvliet?

36. Hoe is de (woon)situatie in de loop der jaren in Groot-IJsselmonde/Hoogvliet veranderd?

37. Hoe verwacht u dat de toekomst in Groot-IJsselmonde/Hoogvliet eruit zal zien?

<u>Afsluitend</u>

38. Zijn er ten slotte nog opmerkingen die u kwijt wil?

39. Mocht u graag verder willen praten over uw ervaringen in uw wijk, hoor ik dat natuurlijk ook graag. Dat kan door uw emailadres en/of telefoonnummer hierbij achter te laten:

Mocht u graag nog verder willen praten over uw ervaringen in uw wijk, hoor ik dat natuurlijk ook graag. Dat kan door uw emailadres en/of telefoonnummer bij onderstaande vraag achter te laten.

40. Mijn emailadres/telefoonnummer voor eventueel contact is:

<u>Hartelijk dank voor uw medewerking!</u>
Hartelijk dank voor uw medewerking. Uw antwoorden maken dit onderzoek mogelijk! Mochten er achteraf nog vragen zijn, kunt u contact opnemen via 443376sw@eur.nl.
Uw antwoorden zijn pas opgestuurd als u op de onderstaande 'verzenden'-knop heeft gedrukt.

Appendix 5: Informed consent form interviews

Onder begeleiding van Saskia Ruijsink onderzoekt Shelley Wilson de woonbeleving van Rotterdammers uit Hoogvliet en Groot-IJsselmonde. Met de verzamelde data wordt gekeken of grootschalige wijkaanpakken (bijvoorbeeld de vernieuwing van woningen) van invloed zijn op hoe inwoners het wonen in de wijk ervaren. Hierbij wordt gekeken naar de situatie vroeger, nu en in de toekomst. Met behulp van uw deelname kan dit onderzoek worden gerealiseerd. Hartelijk dank daarvoor. Het invullen van dit toestemmingsformulier is noodzakelijk voor het interview.

Mijn naam is: …

Informatieblad

Op deze pagina kunt u meer informatie vinden over dit onderzoek.

Waarom dit onderzoek?	Het doel van dit onderzoek is om te verklaren wat de invloed van grootschalige wijkaanpakken is op woonbeleving van Rotterdammers. Door dit inzichtelijk te maken, kan er in toekomstige projecten beter op de wensen van alle stakeholders worden ingespeeld. Dit onderzoek wordt uitgevoerd vanuit de Erasmus Universiteit Rotterdam.
Verloop	U neemt deel aan een onderzoek waarbij we informatie zullen vergaren door u te interviewen en uw antwoorden op te nemen via audio-opname. Er wordt een transcript uitgewerkt van het interview dat geanalyseerd wordt met het programma Atlas.Ti.
Vertrouwelijkheid	Wij doen er alles aan uw privacy zo goed mogelijk te beschermen. Naast de student zal alleen de scriptiebegeleider en de tweede lezer van de student toegang krijgen tot alle door u verstrekte gegevens. Er wordt op geen enkele wijze vertrouwelijke informatie of persoonsgegevens van of over u naar buiten gebracht, waardoor iemand u zal kunnen herkennen. In het onderzoek wordt u aangeduid met een verzonnen naam (pseudoniem), tenzij u expliciet toestemming verleend om uw naam te gebruiken.
Vrijwilligheid	U hoeft geen vragen te beantwoorden die u niet wil beantwoorden. Mocht u iets niet in persoon willen vertellen, maar wel op een andere manier, dan kunt u Shelley Wilson achteraf e-mailen of bellen. Uw deelname is vrijwillig en u kunt stoppen wanneer u wil. Als u tijdens het onderzoek besluit om uw medewerking te staken, zullen de gegevens die u reeds hebt verstrekt tot het moment van intrekking van de toestemming in het onderzoek gebruikt worden.

	Wilt u stoppen met dit onderzoek? Neem dan contact op met Shelley Wilson via 443376sw@student.eur.nl of via 06-29021400.
Dataopslag	In de scriptie zullen anonieme gegevens of pseudoniemen worden gebruikt, tenzij u expliciet toestemming verleend om uw naam te gebruiken. De audio-opnamen, formulieren en/of andere documenten die in het kader van deze scriptie worden gemaakt of verzameld, worden beveiligd opgeslagen. De onderzoeksgegevens worden bewaard voor een periode van twee jaar. Uiterlijk na het verstrijken van deze termijn zullen de gegevens worden verwijderd of worden geanonimiseerd zodat ze niet meer te herleiden zijn tot een persoon.
Indienen van een vraag of klacht	Indien u specifieke vragen heeft over hoe er met uw persoonsgegevens wordt omgegaan, kunt u deze stellen aan Shelley Wilson via 443376sw@student.eur.nl of via 06-29021400. U kunt daarnaast een klacht indienen bij de Autoriteit Persoonsgegevens indien u vermoedt dat uw gegevens verkeerd zijn verwerkt.

Toestemming

Door dit toestemmingsformulier te ondertekenen erken ik het volgende:

1. Ik ben voldoende geïnformeerd over het onderzoek. Ik heb het informatieblad gelezen en heb daarna de mogelijkheid gehad vragen te kunnen stellen. Deze vragen zijn voldoende beantwoord en ik heb voldoende tijd gehad om over mijn deelname te beslissen.
    a. Ja
    b. Nee

2. Ik neem vrijwillig deel aan dit onderzoek. Het is mij duidelijk dat ik deelname aan het onderzoek op elk moment, zonder opgaaf van reden, kan beëindigen. Ik hoef een vraag niet te beantwoorden als ik dat niet wil.
    a. Ja
    b. Nee

3. Ik geef toestemming om de gegevens die tijdens dit onderzoek over mij worden verzameld te verwerken zoals is uitgelegd in het bijgevoegde informatieblad.
    a. Ja
    b. Nee

4. Ik geef toestemming om tijdens het gesprek geluid- en/of video-opnames te maken en mijn antwoorden uit te werken in een transcript om vervolgens te analyseren voor de doeleinden van dit onderzoek.

    a. Ja
    b. Nee

5. Ik geef toestemming om mijn antwoorden te gebruiken voor quotes in de scriptie van de student.

    a. Ja
    b. Nee

6. Ik geef toestemming om de bij mij verzamelde gegevens te bewaren en in gepseudonimiseerde vorm te gebruiken voor al het verdere onderzoek dat er later mee gedaan kan worden.

    a. Ja
    b. Nee

Ondertekening

Als u op de 'verzenden'-knop drukt, ondertekent u dit formulier.

Appendix 6: Interview guide

<u>Introductie</u>

Hi, mijn naam is Shelley Wilson en ik studeer Urban Governance aan de Erasmus Universiteit Rotterdam. Die studie gaat over stedelijke ontwikkeling en hoe je dit het beste kan sturen.

Zoals ik heb aangegeven, doe ik voor mijn afstudeerscriptie onderzoek naar de woonbeleving van Rotterdammers in Hoogvliet en Groot-IJsselmonde. In Hoogvliet is een grootschalige wijkaanpak geweest en in Groot-IJsselmonde is dat niet het geval. Ik ben dan ook benieuwd naar of dat effect heeft op hoe mensen hun buurt ervaren. Met behulp van dit interview hoop ik daar meer inzicht in te krijgen.

Allereerst wil ik u hartelijk bedanken voor uw toestemming voor dit interview. Alle informatie zal worden verwerkt zoals aangegeven op het toestemmingsformulier. Mocht er iets niet duidelijk zijn, hoor ik het graag. Ik ben natuurlijk altijd bereid om zaken toe te lichten. Het interview zal maximaal een halfuur duren.

Zijn er op voorhand al vragen?

<u>Vragen</u>

De onderstaande vragen zijn algemeen en dienen in elk van de interviews terug te komen. Daarnaast worden de vragen afgestemd en uitgebreid op basis van de antwoorden die respondenten in de enquête hebben gegeven. Het doel van het interview is om meer inzicht in de achterliggende redenen van respondenten te krijgen.

1. Zou u uzelf kort kunnen introduceren?
2. Hoe zou u de wijk omschrijven?
3. Wat zijn positieve punten aan de buurt?
4. Wat zijn negatieve punten aan de buurt?
5. Hoe is het onderlinge contact in de wijk?
6. In hoeverre voelt u zich betrokken bij de wijk?
7. Zou u een voorbeeld kunnen omschrijven van iets dat vroeger anders was in de buurt?
8. Zou u een voorbeeld kunnen omschrijven van iets waarvan u hoopt dat dat in de toekomst anders is?

<u>Afsluiting</u>

Dat was mijn laatste vraag van dit interview. Is er nog iets dat u zou willen toevoegen?

Dan wil ik u nogmaals bedanken voor de medewerking. Zou u het nog leuk vinden om de resultaten van de scriptie te ontvangen? Zo ja, dan ontvangt u deze naar alle waarschijnlijkheid in augustus.

Nogmaals hartelijk dank en een fijne dag.

<u>Afsluiting</u>

Dat was mijn laatste vraag van dit interview. Is er nog iets dat u zou willen toevoegen?

Appendix 7: Additional findings and results

7.1 Document review

Table: Findings document review.

Source: Own construct based on indicated authors.

Author	Title	Main finding
Hage, K. (2005)	Van Pendrecht tot Ommoord: geschiedenis en toekomst van de naoorlogse wijken in Rotterdam.	Enabled to write the introduction to the cases. It explains the history of both neighbourhoods, the building principles/methods, and the motivations to build/expand the area.
Provoost, M., & Vanstiphout, W. (2000)	WiMBY! Welcome into My Backyard!	Enabled to write the introduction to the case of Hoogvliet. It explains the urban regeneration and tells about the history of the neighbourhood, identifies the problems and drivers for the regeneration and describes the structure of the urban regeneration.
Meier, A. T. F., & Sophie, F. M. (1999)	Imago-onderzoek Hoogvliet. Enquête.	Enabled to create a picture of the past situation in Hoogvliet (mostly for social sustainability). This document provides statistics about how people felt about Hoogvliet in 1999. It was also used as a guideline for the survey.
Kleinhans, R., Veldboer, L., Doff, W., Jansen, S., & Van Ham, M. (2014)	Terugblikken en vooruitkijken in Hoogvliet. 15 jaar stedelijke vernieuwing en de effecten op wonen, leefbaarheid en sociale mobiliteit.	Enabled to create a deeper insight into some of the dimensions of social sustainability in Hoogvliet and the urban regeneration project that took place there and its effects over time.
Stouten, P. L. M. (2010).	Changing Contexts in Urban Regeneration: 30 years of Modernisation in Rotterdam.	Enabled to understand how the municipality of Rotterdam sees urban regeneration and what principles it takes as guidelines and why.

Table: Statements from the Wijkprofielen used for the document review

Source: Own construct based on Gemeente Rotterdam (2020a) and Gemeente Rotterdam (2020b).

Statement of dimension	Groot-IJsselmonde	Hoogvliet	Rotterdam
Amenities and social infrastructure			
The average CROW-score (outdoor space quality indicator) for the pillar clean.	3.78	3.70	3.65
The proximity of various facilities in the area (distance and amount).	87	82	102
The percentage of homes with tram, bus and/or metro stops within a standard distance.	60.7%	53.3%	71.3%
Social and cultural life			
The percentage of residents that has lived in the area for a long time (at least ten years).	44.5%	51.0%	42.0%
The percentage of residents that has weekly contact with neighbours.	59.0%	61.0%	51.0%
The average score for perceived victim probability in their own neighbourhood.	2.2	1.96	2.0
Voice and influence			
The percentage of people that is content with its own participation.	63.5%	66.0%	66.0%
The percentage of residents that has been involved in making plans for the neighbourhood or city.	22.0%	23.0%	30.0%
The percentage of people that has been active as a volunteer in a certain area.	19.0%	19.0%	23.0%

7.2 Survey

Table: Items used to create scales, including the score for internal consistency.

Source: Own construct based on Meier and Sophie (1999) and a survey for this research (n=210), conducted in 2020.

Item	Statement	
General image of the neighbourhood		**Cronbach Alpha = 0.862**
7	I am satisfied with my living situation in Groot-IJsselmonde/Hoogvliet.	
8	I want to grow old in Groot-IJsselmonde/Hoogvliet.	
9	I want to leave Groot-IJsselmonde/Hoogvliet as soon as possible.	
10	I would recommend others to (come) live in Groot-IJsselmonde/Hoogvliet.	
Amenities and social infrastructure (one item deleted)		**Cronbach Alpha = 0.622**
13	Groot-IJsselmonde/Hoogvliet has sufficient facilities, such as schools and supermarkets.	
14	Groot-IJsselmonde/Hoogvliet has a varied shopping centre.	
16	The outdoor space is well maintained in Groot-IJsselmonde/Hoogvliet.	
17	I have plenty of recreational opportunities in Groot-IJsselmonde/Hoogvliet.	
Social and cultural life		**Cronbach Alpha = 0.833**
20	I feel safe in Groot-IJsselmonde/Hoogvliet.	
21	I am positive about Groot-IJsselmonde/Hoogvliet.	
22	I feel at home in Groot-IJsselmonde/Hoogvliet.	
23	I have good contact with my neighbours in Groot-IJsselmonde/Hoogvliet.	
24	I regularly speak to other people from Groot-IJsselmonde/Hoogvliet.	
Voice and influence		**Cronbach Alpha = 0.733**
27	I am aware of what is going on in Groot-IJsselmonde/Hoogvliet.	
28	I receive information about citizen participation options in Groot-IJsselmonde/Hoogvliet.	
29	I participate in citizen participation opportunities in Groot-IJsselmonde/Hoogvliet.	
30	I am willing to contribute to Groot-IJsselmonde/Hoogvliet.	
31	I feel like I can do something for Groot-IJsselmonde/Hoogvliet	
Social sustainability		**Cronbach Alpha = 0.817**
All the above items combined.		

Table: Mean scores and standard deviation for items used in survey.

Source: Own construct based on survey for this research (n=210), conducted in 2020.

Statements to measure a dimension	Groot-IJsselmonde (N=83)	Hoogvliet (N=127)	Significant difference between means?
Amenities and social infrastructure			
Combined score for scale	M = 6.55 SD = 1.24	M = 6.25 SD = 1.34	No t(208)=1.645, p>0.05
Groot-IJsselmonde/Hoogvliet heeft voldoende voorzieningen, zoals scholen en supermarkten.	M = 7.69 SD = 1.44	M = 8.11 SD = 1.42	Yes t(208)=-2.106, p<0.05
Groot-IJsselmonde/Hoogvliet heeft een gevarieerd winkelcentrum.	M = 6.27 SD = 1.78	M = 5.45 SD = 2.27	Yes t(200.942)=2.910, p<0.05
Ik maak gebruik van het buurtcentrum/de ontmoetingsplek in Groot-IJsselmonde/Hoogvliet.	M = 3.14 SD = 2.46	M = 2.55 SD = 2.28	Yes t(208)=1.790, p<0.05
In Groot-IJsselmonde/Hoogvliet wordt de buitenruimte goed onderhouden.	M = 6.05 SD = 1.77	M = 5.60 SD = 2.10	Yes t(195.022)=1.673, p<0.05
Ik heb voldoende recreatiemogelijkheden in Groot-IJsselmonde/Hoogvliet.	M = 6.22 SD = 1.96	M = 5.85 SD = 2.06	No t(208)=1.286, p>0.05
Social and cultural life			
Combined score for scale	M = 7.31 SD = 1.34	M = 6.99 SD = 1.62	No t(208)=1.495, p>0.05
Ik voel me veilig in Groot-IJsselmonde/Hoogvliet.	M = 7.30 SD = 1.87	M = 6.52 SD = 2.10	Yes t(208)=2.753, p<0.05
Ik ben positief over Groot-IJsselmonde/Hoogvliet.	M = 7.16 SD = 1.80	M = 6.58 SD = 2.05	Yes t(208)=2.081, p<0.05
Ik voel mij thuis in Groot-IJsselmonde/Hoogvliet.	M = 7.57 SD = 1.78	M = 7.07 SD = 2.12	Yes

			t(208)=1.758, p<0.05
Ik heb goed contact met mijn buren in Groot-IJsselmonde/Hoogvliet.	M = 7.57 SD = 1.53	M = 7.13 SD = 2.21	Yes t(207.261)=1.704, p<0.05
Ik spreek regelmatig andere mensen uit Groot-IJsselmonde/Hoogvliet.	M = 6.94 SD = 1.77	M = 7.63 SD = 1.81	Yes t(208)=-2.724, p<0.05
Voice and influence			
Combined score for scale	M = 5.30 SD = 1.59	M = 5.25 SD = 1.54	No t(208)=0.220, p>0.05
Ik ben op de hoogte van wat er speelt in Groot-IJsselmonde/Hoogvliet.	M = 6.84 SD = 1.84	M = 6.98 SD = 1.63	No t(208)=-0.581, p>0.05
Ik ontvang informatie over burgerparticipatiemogelijkheden in Groot-IJsselmonde/Hoogvliet.	M = 5.31 SD = 2.42	M = 5.62 SD = 2.43	No t(208)=-0.903, p>0.05
Ik neem deel aan burgerparticipatiemogeljikheden in Groot-IJsselmonde/Hoogvliet.	M = 3.28 SD = 2.16	M = 3.44 SD = 2.37	No t(208)=-0.507, p>0.05
Ik ben bereid een steentje bij te dragen aan Groot-IJsselmonde/Hoogvliet.	M = 6.29 SD = 1.84	M = 5.37 SD = 2.45	Yes t(204.039)=3.097, p<0.05
Ik heb het idee dat ik wat kan betekenen voor Groot-IJsselmonde/Hoogvliet.	M = 4.77 SD = 2.28	M = 4.83 SD = 2.51	No t(208)=-0.186, p>0.05

Appendix 8: Quotes

Table: Quotes of survey and interview respondents used in this study.

Source: Own construct based on survey (n=210) and interviews (n=8) for this research, conducted in 2020.

Quote in Dutch	Translated in English	Where to find?
Vroeger kon je gewoon naar het lokale bakkertje voor vers brood. Nu moet ik naar de grote supermarkt.	In the past, I could just go to the local bakery for some fresh bread. Now, I have to go to the large supermarket.	**Results, p.43**
Vroeger pakten we meer samen op, we hielpen elkaar.	In the past, there was more joint action, we helped each other.	**Results, p.43**
Er is een periode geweest waarbij er meer criminaliteit was en dat wordt weer beter nu.	There was a period of more crime and that is getting better now.	**Results, p.43**
We hadden zeker steun van bewoners in de eerste jaren.	We certainly had support from the residents in the first years.	**Results, p.44**
Alleen daar zie je dan eigenlijk ja wel dezelfde gezichten.	Only there you do actually always see the same faces.	**Results, p.44**
Ik vind zeg maar de voorzieningen voor de jeugd niet helemaal optimaal. Dan heb ik het over zeg maar de puberjaren. Weet je, er zijn niet echt speciaal plekken daarvoor ingericht of er wordt niet veel, genoeg, voor gedaan.	I think the facilities for the youth are not quite optimal. Then I am talking about the adolescent years. You know, there are not really any special places set up for them or not much, enough, is done for them.	**Results, p.45**
Ja, dat is wel in Hoogvliet een Huis van de Wijk, maar niet direct in de buurt. En dat is weer een eind hiervandaan.	Yes, there is a community centre in Hoogvliet, but not close by. That is a long way from here.	**Results, p.45**
Het beleid is geen prullenbakken. […] Maar het zou wel wat schoner kunnen.	The policy is no trash bins. […]. But it could be a bit cleaner.	**Results, p.45**
We groeten elkaar netjes en ja. […] Het is ook zo dat er […] mensen die hier geboren zijn, die blijven ook hier wonen. En hun onderling contact is uiteraard sterker dan dat contact met mij.	We greet each other nicely and yes. […]. It is also true that people who are born here, they also stay here. And their mutual contact is, of course, stronger than the contact they have with me.	**Results, p.46**

Er is een mooi park – de Twee Heuvelenpark – dat echt fantastisch mooi aangepakt is.	There is a beautiful park – the Twee Heuvelenpark – which is really beautifully upgraded.	**Results, p.47**
Ik we spreken de politie daar ook verschillende keren op aan. Maar ja zegt 'ie ik kan er niks aan doen.	[…] I, we, addressed the police several times. But yes, he says we cannot help it […].	**Results, p.49**
Ik vind wel dat er veel veranderd is in IJsselmonde.	I think a lot has changed in IJsselmonde.	**Results, p.50**
Alles zal duurder en minder sociaal worden.	Everything will be more expensive and less social.	**Results, p.50**
Ik ben bang voor meer criminaliteit.	I am afraid of more crime.	**Results, p.50**

Appendix 9: Regression results

Table: Regression results large-scale urban regeneration and dimensions of social sustainability.

Source: Own construct based on survey for this research (n=210), conducted in 2020.

	Variable	B	95%CI	β	t	P	R2
Social infrastructure and amenities	(Constant)	6.252	[6.02, 6.48]		54.12	0.000	0.013
	Groot-IJsselmonde	0.302	[-0.06, 0.67]	0.113	1.65	0.102	
Social and cultural life	(Constant)	6.986	[6.72, 7.25]		51.87	0.000	0.011
	Groot-IJsselmonde	0.320	[-0.10, 0.74]	0.103	1.50	0.136	
Voice and influence	(Constant)	5.250	[4.98, 5.52]		37.950	0.000	0.000
	Groot-IJsselmonde	0.048	[-0.39, 0.48]	0.015	0.220	0.826	

* (Constant)=Hoogvliet, CI = Confidence interval for B.