# heijmans

# UNIVERSITY OF TWENTE.

# The implementation of the social domain



**Bachelor Civil Engineering**

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# The implementation of the social domain

**Research period:**          September 2020 – January 2021

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# Preface

Dear reader,

This research was conducted for the purpose of graduating from my Bachelor Civil Engineering at the University of Twente. During my research period, from September until January, the COVID-19 pandemic was still ongoing, which created additional challenges to perform my research. With the help and guidance of a number of people, to who I would like to express my gratefulness, I was still able to conduct my research in these challenging times.

First of all, I would I like to thank Heijmans for allowing me the opportunity of conducting my research at their company. I want to thank all of the involved employees for their guidance, feedback and input during my research. A special thanks goes out to all of the interviewees for their input and time, as their experience was such an essential part of my research. One person that I would like to thank in particular is Michiel Wouters for his guidance. His enthusiasm and experience made working on my thesis all the more enjoyable.

Secondly, I would like to thank my supervisor from the University of Twente, Hans Boes, for his guidance and supervision during my research. His input truly helped my report come together as a concise and clear overview of my research.

Finally, I would like to thank my friends, family and roommates for their support and company during these strange times. Special thanks go out to Elles, for her support, feedback and new insights.


Sven

Enschede, January 2021

# Management Summary

This research is performed at Heijmans and focusses on the implementation of the social domain. Due to the upcoming importance on the topic of sustainability and the achievement of the SDG's, a shift in client demand can be seen. Municipalities have to deal with an Energy transition and a new Environment Act for example. Additionally, Heijmans' strategy to be the builder of the healthy living environment leads to implementation of the social domain in spatial development projects at Heijmans Vastgoed.

The lack of any implementation of the social domain at Heijmans Infra lead to this research. Heijmans aims to anticipate on the shifting market demand and intends to create a healthy living environment. In order to do so, this research formulated process measures Heijmans should implement to integrate the social domain in their corporate operations.

Based on a theoretical framework, 18 indicators for the implementation of the social domain are found, divided over two categories. Furthermore, their influence on the perception of social cohesion and social safety is determined. After completion of the theoretical framework, four interviews are conducted to question experts about the current implementation at Heijmans Vastgoed and Infra, as well as key aspects during the implementation of the social domain.

Important elements for the implementation of the social domain can be characterised by human aspects, process-related elements and conditions. The human aspects are mentioned by 75% of the interviewees and consists of the possession of social competencies, the amount of trust a contractor receives from inhabitants and the importance of the perception of an area. The process-related aspects are mentioned by 50% of the interviewees. This tier includes aspects such as: the importance of the participation process or the importance of the image/reputation of the contractor. The last key elements that came forward during this research concern the conditions to implement the social domain. Some examples are the necessity of money to create impact and the time it takes and money it costs to properly analyse the project area. The 18 indicators, that resulted from the research into the theoretical framework, are supplemented by 6 additional indicators that are deduced from the key elements that came forward during the interviews, as well as on the insights that are provided by experts. This resulted in a total of 24 indicators for the implementation of the social domain.

During the interviews, several improvements came forward, such as the creation of a personal connection to improve the relationship of trust with the inhabitants or the contribution to the perception of a neighbourhood via a clean and untarnished area. All of the results are translated into process measures and afterwards these measures are validated.

This research concludes with validated process measures that aid the implementation of the social domain in the corporate operations at Heijmans Infra. The first measure relates to the assignment of people with a socially oriented vision to projects in which the social domain has a dominant role. Social competencies, such as ability to align people and the ability to empathise with the inhabitants, creates confidence in the contractor and aids the successfulness of the participation process.

The second set of measures concern the participation process. It is important to assign a contact person during the project. This should be someone who is available at all times, because this ensures the approachability of the contractor. The contact person has to act as a trustee for the inhabitants as well. In addition, it is important to be honest and clear about the contractor's intentions and role. This creates confidence in the contractor. In order to create a successful participation process, the contractor has to explain how the participation process is organised, as well as what is to be expected from the inhabitants and how much influence they have. The third measure is to ensure a proper

information supply to the inhabitants. The information regarding the project and what the next step will be in the construction should be distributed via tools. A proper information supply contributes to the image/reputation of the contractor, the relationship of trust with the inhabitants, and a successful participation process. The final measure concerning the participation process is to get to know the inhabitants. Through an extensive demographic analysis, personal introduction of the contractor and a discussion of inhabitants' needs and desires, the contractor gets to know the inhabitants, which contributes to the successfulness of the participation process and the trust relationship with the inhabitants.

The last set of measures concern the spatial design. The first measure dictates the use of the ZETA method. Through the use of the ZETA method a positive perception of an area is created. The second measure concerns the necessity to create meeting opportunities through sharing facilities and meeting points, which lets neighbours get acquainted with each other and gives a perception of social cohesion. The last measure is to arrange proper maintenance including transfer of information, otherwise innovations become worthless.

Recommendations for further research consist of  amongst other additional research into the ZETA method, as well as additional investigation into the internally available competencies at Heijmans Infra.

# Contents

# 1. Introduction

This thesis serves the purpose of finishing my Bachelor of Civil Engineering at the University of Twente. I, Sven Lanting, will conduct my research at Heijmans. The thesis focusses on the implementation of the social domain in construction projects. Nowadays the market demand is changing and the importance of the social domain is rising. Therefore Heijmans is curious about this social domain, and how to implement it in their projects.

## 1.1 Context

Heijmans is a big contractor in the Netherlands. They started in 1923 as a paving company and eventually grew into the role of a building company for roads, stores, commercial buildings, and houses. They are also known for their development of residential areas, shopping malls and business parks. The development of these different objects is part of "Spatial Development". The definition of "Spatial development", according to TU Delft, is "the art of connecting functions, disciplines, parties, interests and cash flows with the purpose of (re)development of an area." (Praktijkleerstoel Gebiedsontwikkeling TU Delft, 2017). This means a key part of spatial development is the collaboration between different parties, such as municipalities, contractors, citizens and potentially citizen initiatives.



*Figure 1.1: The Sustainable Development Goals (Malou, 2017)*

Over the past couple of years, the societal topics of sustainability, circularity and climate adaptation have become a more important aspect in the construction world. More now than ever, these aspects have to be taken into consideration, as they are becoming more pressing issues. Hence, the UN has come up with seventeen Sustainable Development Goals (17SDG's in Figure 1.1). These are goals set for 2030 and range from no poverty or zero hunger to sustainable cities and communities (SDG Nederland, 2020). A rising number of construction companies are implementing these sustainability issues in their vision and strategy for the upcoming decades (Ballast-Nedam, 2020), (Heijmans, 2020), (ReintenInfra BV, 2020). Government bodies include these goals in their policy as well and translate this into societal questions when purchasing products or services (Rijksoverheid, 2020).

Since these goals are embedded in the government bodies' policy, there is a shift in the market demand. Generally, the assignments the municipality puts out are focussed on maintaining the public space. This ranges from paving roads to the establishment of greenery in the area. However, due to the added importance of sustainability and the SDG's, projects require the integration of different aspects than before. SDG's 7 and 11 for example, contribute to the energy transition, which means a lot of the municipal projects focus on making the environment more sustainable by detaching houses from the natural gas network or locally producing sustainable energy (Timmermans, 2020). SDG 12 created the tendence of greening the construction world.

The introduction of the new Environment Act is a good example of the integration of SDG 17. The new Environment Act dictates additional requirements concerning the involvement of inhabitants. This generates a greater importance of the participation process during municipal projects. Heijmans as a construction company wants to take a leading role in the sustainability of the living environment (Heijmans, 2020) and intends to be the builder of the healthy living environment according to their strategy.
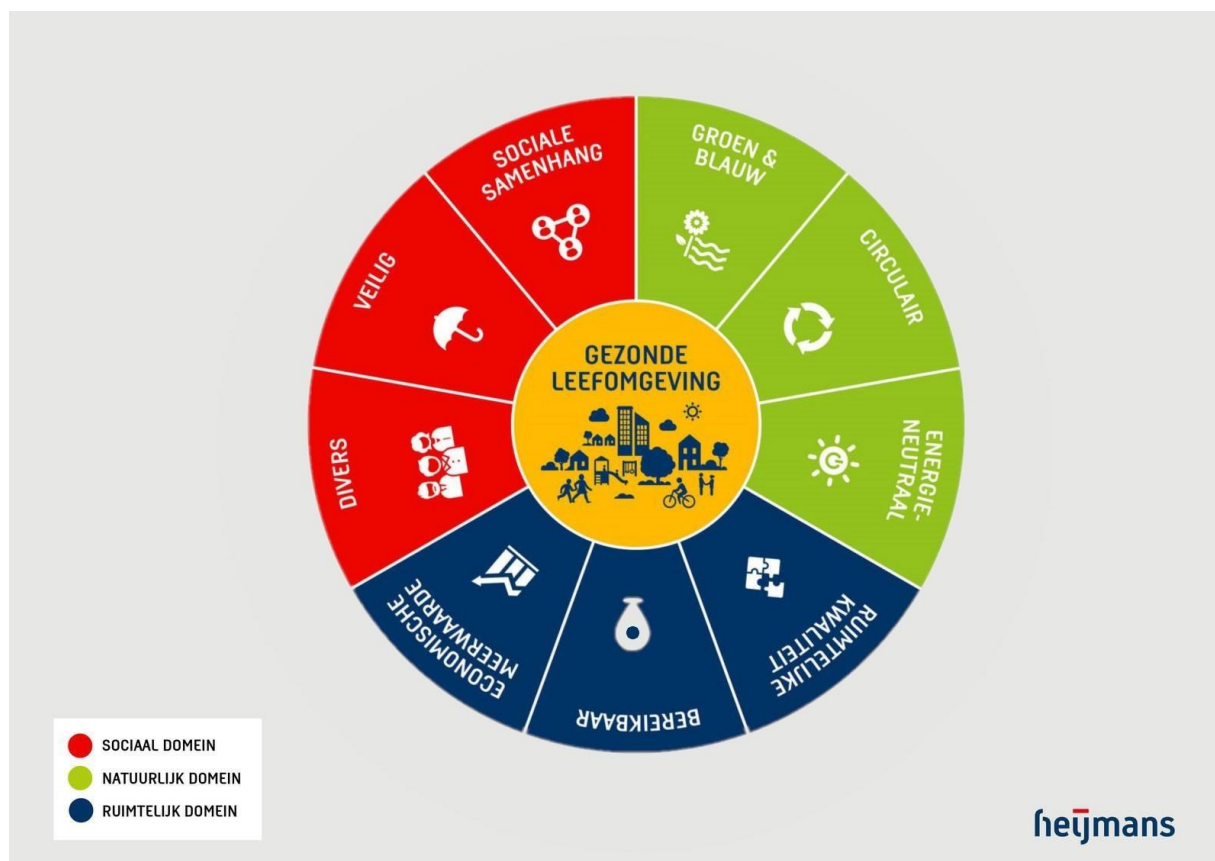


*Figure 1.2: Heijmans' vision on Smart City (Heijmans, 2020)*

To combine all the knowledge about the healthy living environment and translate this to concrete measures, Heijmans has created the Smart City concept. In Figure 1.2 the Smart City concept is shown including the domain division. The Smart City vision of Heijmans is divided into three different domains. Depending on the project's needs and desires one or more domains will be addressed. The red domain stands for the Social domain. The three different subdomains in the red area are: Diversity, Safety and Social cohesion. The subdomain Diversity relates to SDG 10 (Reduced inequalities). According to SDG Netherlands this means: "Everyone must have equal opportunities and must be involved in all social,

economic and political aspects of society." (SDG Nederland, 2020). "Inclusief bouwen" (Inclusive building) is the term which is used a lot nowadays to designate projects where eventually everyone can participate optimally in the community (Radar, 2020). The next subdomain is Safety, which naturally means that everyone feels safe in their living area. Social safety is the perception of safety that is caused through human action (Linguee, 2021). This is a combination of SDG 3, 6, 15 and 16. The last subdomain of the red part is Social Cohesion. Social Cohesion is the amount of internal bonding between a certain group, which in this case will likely be the inhabitants (Huygen & Meerde, 2008). The subdomains Safety and Social Cohesion play an important role in this research, as will be discussed in the Research scope. A more detailed analysis of the Smart City vision into SDG's can be found in Appendix A.

A spatial development project consists of different phases. Generally, four phases are depicted, namely: initiation, design, build and the management phase (Rijkswaterstaat, 2020).



*Figure 1.3: Phase division of a spatial development project (Rijkswaterstaat, 2020)*

In the initiation phase, the client comes up with an idea. Based on this idea a list of requirements (Programma van Eisen in Dutch) will be made up. Usually, the feasibility phase starts the moment the definition of the project is clear. The next step in the process is drafting a design which complies with every requirement on the list of requirements. During this phase, different drawings will be developed, each with a different degree of precision. Starting with a Preliminary design followed by a Final design and ending with an Execution design (Voorlopig, Definitief en Uitvoerings ontwerp in Dutch). The execution design will then be used during the preparation and realisation phase. In this phase, the Execution design is realised and eventually commissioned. After the commissioning of the building/project the management phase starts. In this phase, the building operates and has to be maintained.

Currently, Heijmans Vastgoed is working on some big integral spatial development projects where the social domain plays an important role. Big integral infrastructure projects do not involve the living environment of people and thus the social domain as presented in Figure 1.2. Large projects at Heijmans Infra tend to have other stakeholders as well, such as Rijkswaterstaat.

Some examples of integral spatial developments projects including the social domain are "Hart van Zuid" in Rotterdam or "Maanwijk" in Leusden. The social component in "Hart van Zuid" consists of a social program in which internships should be facilitated or events are organised (Heijmans, 2020). The project "Maanwijk" is a great example of providing a healthy living environment including a social aspect. In this newly designed living environment there are several characteristics which invite neighbours to have a conversation with each other. Some examples are the shared shed principle where all residents can borrow and share tools and the community gardens which are accessible for everyone (Heijmans, 2020).

## 1.2 Research structure
In this section, the research structure is discussed. The section starts with the problem of this research and is followed by the objective. The third sub-section will designate the scope of this thesis,

whereafter the research questions will be presented. Concluding with the research framework where the methods used in this research are explained.

### 1.2.1 Research problem

Currently, the implementation of the social domain has a substantial role in bigger spatial development projects. However, the market demand is changing due to the importance of sustainability. Together with the fact that the overall strategy of Heijmans, to be the builders of the healthy living environment, there is a tendence to implement the social domain in municipal projects. Therefore, the research problem is the implementation of the social domain in municipal projects at Heijmans Infra.

### 1.2.2 Research objective

For the research objective of my thesis, I want to refer back to the Smart City vision of Heijmans (Figure 1.2). While the spatial and ecological domains are fully integrated and the social domain is slowly implemented in bigger spatial development projects, the social domain is not being implemented in the corporate operations for municipal projects. In order to do so, Heijmans aims to obtain process measures to incorporate at Heijmans Infra. This consequently leads to the following research objective:

> "The objective of this research is to create process measures for municipal projects to implement the social domain."

### 1.2.3 Research scope

In the following section, the scope of this research will be discussed. This thesis will focus on two subdomains, namely: Safety and Social Cohesion. Diversity is not considered, since it could be perceived as independent research, because it would enhance my research if I focus solely on the subdomains Safety and Social Cohesion considering the 10 weeks that are available.

During my research the focus will be on the feasibility and realisation phase (see Figure 1.4). The process measures developed by this thesis will be utilised in the feasibility and realisation phase during projects. The translation to the client in for example tenders will be done by Heijmans.



*Figure 1.4: Building phases of spatial development project with realisation phase highlighted*

The projects on which this thesis focuses are projects where Heijmans (re)develops the living environment. This means the big integral projects discussed are not the big integral projects at Heijmans Infra, but the projects handled by Heijmans Vastgoed. However, the smaller municipal projects discussed in this thesis are handled by Heijmans Infra, since these projects do concern the living environment.

### 1.2.4 Research questions

The combination of the research problem, scope and objective leads to the following main research question of my Bachelor Thesis: "**Which process measures does Heijmans have to take to implement the social domain in smaller municipal projects?**". To answer this main question, I will answer the sub-questions listed below.

1. *What does literature state about the social domain and the implementation of it?*
   a. *What characteristics does the social domain have?*

        *b.   What are the common ways of implementing new policies?*
2. ***How is Heijmans currently implementing the social domain in bigger integral projects?***
        *a.   What is considered a big integral project?*
        *b.   What characteristics play a role in big integral projects?*
        *c.   What is the general role of Heijmans in the big integral projects?*
        *d.   What are they currently doing to implement the social domain during these type of projects?*
3. ***How does this compare to the current implementation of the social domain in smaller projects?***
        *a.   What is considered a small municipal project?*
        *b.   What characteristics play a role in small municipal projects?*
        *c.   What is the general role of Heijmans in small municipal projects?*
        *d.   What is Heijmans currently doing to implement the social domain during these smaller type of projects?*
4. ***What differences and similarities are there between the implementation of the social domain in bigger and smaller projects?***
        *a.   What are the similarities and differences between the characteristics of big integral projects and small municipal projects?*
        *b.   What are the similarities and differences between the role of Heijmans during big integral projects and small municipal projects?*
        *c.   What are the similarities and differences between the current implementation of the social domain in big integral projects and small municipal projects?*
5. ***What important lessons for smaller projects can be drawn from the implementation in bigger projects?***
        *a.   Is it possible to treat small municipal projects the same as big integral projects?*
        *b.   What is important during implementation in the big integral projects?*
6. ***Which specific measures for smaller municipal projects can be deduced from important aspects in big integral projects?***
        *a.   How does one translate the answer of sub-question 5 to specific measures for smaller municipal projects?*
7. ***Which process measures help the implementation of the Social domain in smaller municipal projects?***
        *a.   What measures can be deduced from the answers to sub-questions 5 & 6?*
        *b.   Are there additional measures to be taken in smaller municipal projects?*

## 1.3 Methodology

In this section, the methodology of this research is discussed. The first sub-section involves the methods used for this research. Followed by an explanation on the way data is gathered. This section concludes with an elaboration on the data analysis used in this research.

### 1.3.1   Methods

For the theoretical framework a literature review is performed. For this literature review Scopus is used to find useful researches. In addition to these researches, tender documents have been used to provide context and give insights in the demands of clients.

In addition to a literature review, five semi-structured in-depth interviews of approximately sixty minutes were conducted. Four of these interviews were used to collect the results presented in Chapter 3. The interviewees consisted of an environment manager, a program manager of a social

program, a program manager of a social safety program, and an environment psychologist. All of these people are either employees of Heijmans or were taken on by Heijmans in projects.

The last interview that was conducted was used as validation of the preliminary conclusion of the results. The validation of all the determined process measures can be found in Chapter 4. The interviewee is a property developer at Heijmans Vastgoed and has knowledge about the current implementation of the social domain in big integral projects.

Due to the COVID-19 pandemic, the interviews were conducted through Microsoft Teams. Before starting the interview, the interviewee was asked to approve a recording of the interview. After conduction of the interview a transcript was made and sent to the interviewee for approval. These transcripts are confidential and therefore not present in this thesis. The structure of the interviews can be found in Appendix D. Due to the semi-structured nature of the interview and the long time span it was possible to ask additional questions and elaborate very extensively if necessary.

### 1.3.2 Data-gathering

Since insights into the current situation as well as key elements for the implementation are required, a qualitative form of interviews was used to gather the required information. Additionally, information was withdrawn from meetings with employees of Heijmans or external and internal supervisors. Tender documents or other useful publicly available documents have provided insights as well.

### 1.3.3 Data analysis

The analysis of the interviews was done via encoding. Where important statements in the transcripts were given a label, called Open encoding (Dingemanse, 2019). Labels that belonged together were grouped through Axial coding (Dingemanse, 2019). Finally, selective encoding provided the key elements that were deduced from the interviews.

# 2. Theoretical Framework

The theoretical framework of the social domain is determined in this chapter. It is important to determine the indicators, since it is necessary for providing a framework to answer the main research question.

## 2.1 Indicators of the social domain

An important aspect, which is becoming more important, is co-creation with the inhabitants of the neighbourhood, see Appendix B. Through co-creation, the social cohesion of the neighbourhood is likely to improve (Smaniotto Costa et al., 2019). In this context, social cohesion has two principle societal goals (Bal-Domańska & Sobczak, 2016), the first goal is about reducing disparities, inequalities and social exclusion within a society. Social exclusion in this context is defined as the impairment of social cohesion caused by the way in which institutions regulate and thereby constrain access to goods, services, activities and resources, which are generally associated with citizenship rights (Lu et al., 2007).

The second goal is to strengthen the social capital in a society. Social capital is defined as the density and quality of relationships, interactions between individuals and groups as well as mutual feelings of commitment and trust due to common values and norms(Lu et al., 2007). These definitions are important to understand what social cohesion in this context implies.

Social cohesion is linked directly to the individual quality of life of the inhabitants in a certain area (Lu et al., 2007), so part of the characteristics of the social domain are indicators of the quality of life. The indicators are amongst others about quality of the built environment, quality of public spaces or the quality of social environment (Orhan et al., 2020). By improving these QoL (Quality of Life) indicators some of the societal challenges set by the client could be resolved.

The relevancy is determined through the scope, as the focus is on the municipal projects. Therefore the accessibility from the neighbourhood to the city centre is irrelevant in this research. Indicators such as Quality of Air or Existence of qualified educational services are irrelevant as well, given the fact these indicators cannot be influenced by a contractor in these municipal projects.

In addition to the relevant QoL indicators there are other indicators for social cohesion and the perception of social safety in a neighbourhood as well. The first supplementary indicator is Place making. It contributes to Place Attachment by generating positive memories in an area (indicator 6) (Cranen, 2019). Organising events, festivals, concerts or buskers are all examples of things that can contribute to Place Attachment. Therefore Place Making is an indicator that improves the Place Attachment and influences the perception of social cohesion.

Place Dependence is the next aspect, which is about the reason a person decides to travel to a certain place (Cranen, 2019). This could be his or her favourite grocery store or the fact it is the only grocery store close-by. A much harder indicator due to its uncontrollable nature is Place Identity. Place identity is about the emotional connection with a neighbourhood, for example with friends and family who are living nearby (indicator 17) (Cranen, 2019). It is hard to influence this aspect, since it is usually defined by youth memories.

Finally, the perception of safety is based on the perception of a place. An example is the Broken Windows theory, where it is stated that this broken window is a sign of criminality and that this broken window harms the perception of safety in that area (Psychology Today, 2020). Following the same reasoning, a clean and intact environment contributes to the perception of safety. So, cleanliness and an untainted area are indicators for the perception of safety. Another important factor which

determines the perception of safety is the lighting in an area (Omgevingspsycholoog.nl, 2013). The perception of a place is integrated with the indicators 11, 13 and 14 in Table 2.1a.

### 2.1.1 Layout of Table 2.1

In the first column of Table 2.1, the main category of indicators is shown, which are Place Attachment/Dependence and Place Identity. The reason for this division comes from the fact that these two categories illustrate the amount of attraction to a certain area. Place Attachment and Place Dependence include the characteristics of the environment itself, while the Place Identity covers the emotional connection with an area or neighbourhood. The reason Place Attachment and Place Dependence are put together is due to the fact that they are both affected by the same indicators. Take for example the peace and calmness in the neighbourhood, if a certain area scores highly on this indicator, people are more likely to choose this area over another area. This is related to Place Attachment, since it generates positive memories. On the other hand, this could be the only area with such high scores and this performance could move people to want to live in that area. This is an example of Place Dependence, because there is no other place where there is such an amount of peace and calmness. Therefore, Place Attachment and Place Dependence together form a main category.

The second column indicates what sub-categories the main category consists of. These sub-categories are factors, which are important in a spatial redevelopment project (Orhan et al., 2020). The fourth column shows the indicators on which the assessment of safety and social cohesion is based. The fifth and sixth column of Table 2.1 shows the influence of the indicator.

*Table 2.1: Indicators for the perception of social cohesion and social safety based on literature review*

| Main category | Sub-Category | Nr | Indicators | Safety | Social Cohesion |
|---|---|---|---|---|---|
| Place Attachment / Dependence | **Internal accessibility** | 1 | Width of streets | | X |
| | | 2 | Adequateness of parking lots | | X |
| | | 3 | Appropriateness of streets for pedestrians (including handicapped) | | X |
| | **Open Spaces** | 4 | Quality and maintenances of green areas | X | X |
| | | 5 | Accessibility of green areas | | X |
| | **Place Making** | 6 | Organized events in the area | | X |
| | | 7 | Experienced events in the area | X | X |
| | **Recreational services** | 8 | Adequacy of cultural facilities | | X |
| | | 9 | Adequacy of sports facilities | | X |
| | **Environmental Health** | 10 | Peace and calmness in the neighbourhood | X | X |
| | | 11 | Cleanliness of the street | X | X |
| | **Maintenance and care** | 12 | Existence of vacant or unbuilt areas | X | |
| | | 13 | Untarnished environment | X | |
| | | 14 | Street lighting | X | |
| | | 15 | Quality and maintenance of roads | X | |
| | | 16 | Adequacy of sewage and drainage systems | X | |
| Place Identity | **Social relations** | 17 | Social relations in the neighbourhood | | X |
| | | 18 | Sense of belonging to the neighbourhood | | X |

### 2.1.2    Influence of indicators

The relevant indicators for the perception of social cohesion and social safety are shown in Table 2.1. These indicators can influence the perception of social safety, the perception of social cohesion or both. Indicators 1 through 5, 8 through 10, 17, and 18 are QoL indicators (Orhan et al., 2020), and therefore contribute to the perception of social cohesion in an area. Other indicators which influence the perception of social cohesion in an area are indicators 6 and 7, since positive memories contribute to Place Attachment (Cranen, 2019).

Indicators 4 and 11 through 16 are all indicators that contribute to the perception of safety in a neighbourhood, because these indicators are examples of the Broken Windows theory (Psychology Today, 2020). Indicator 7 also influences the perception of safety, since experienced events can form an image about a certain area. If one has experienced an unsafe incident, it is likely he/she would describe that area as unsafe. Indicator 10 influences the perception of safety as well. The reason for this is that commotion does not contribute to a feeling of safety, which on the other hand means that peace and calmness does aid the perception of safety.

## 2.2 Implementation of a new corporate policy

To implement the social domain into the corporate operations of Heijmans it is necessary to investigate important aspects during this integration. According to CROW, an important tip is to clarify the purpose and goal of the new measures for the organisation. In case of this research, the reason is the upcoming changing market demand, where the social domain is becoming more important not only in big integral projects, but in smaller municipal projects as well. Heijmans wants to stay competitive in the construction world and therefore anticipates on this market demand. Since Heijmans is a corporate construction company their ultimate goal is to generate revenue, and in order to do so, they have to adapt to the market demand.

Another important advice is to start with a pilot (Eelants, 2014). Utilisation of a pilot ensures the possibility to assess if the desired results are achieved. There is an opportunity to adjust the measures if necessary or the possibility to develop adequate supporting tools. Providing adequate supporting tools is important for the implementation of a new policy (Eelants, 2014).

The final important aspect for implementation of a new corporate policy is the knowledge transfer throughout the organisation. It is important for the management to determine the strategy, but even more important is the fact that employees understand the listed process measures to carry out that strategy (Van der Maas, 2020).

# 3. Results

In the following sections the results of the interviews are discussed. First, the current situation is assessed. The next sections discuss the outcomes of the interview analysis. In this section, several key elements for the implementation of the social domain are presented. Based on these key elements additional indicators are added to Table 2.1. Thereafter methods or solutions to these key elements are presented. The last section of this chapter concludes with process measures.

## 3.1 Current situation

Based on the answers provided during the interviews the current situation can be assessed. Which areas of the social domain are already implemented in the corporate operations of Heijmans. First, this is assessed for integral projects. Subsequently, the current situation for smaller municipal projects is presented. This section is concluded with a sub-conclusion, where all similarities and differences are stated.

### 3.1.1 Integral projects

The big integral projects at Heijmans Vastgoed can range from the construction of new buildings to a revitalisation of a neighbourhood. The current implementation of the social domain in these projects is discussed next.

*Role of Heijmans in integral projects*

The research shows several roles could be taken on by Heijmans. Generally, the job of Heijmans in big integral projects contains a certain amount of responsibility. For the project Maanwijk in Leusden, see Appendix C, Heijmans is developer. This role allows for Heijmans to have some freedom in the construction, but as the developer is in charge of every aspect in the project, Heijmans also bears the risk for the duration of the project (Vree, 2020).

*Characteristic of integral projects*

During large spatial (re)development projects the scope of the project is much larger in comparison to a smaller spatial development project. Due to the larger nature of the project more interests and governmental policies will be touched upon. The amount of concerned interests and governmental policies in turn mean the project will become more complex.



*Figure 3.1: Indicators for NL Area label (NL Gebiedslabel, 2020)*

*Current implementation of the social domain*

This research indicates the social domain is currently being implemented in the general operations of Heijmans. It has already been adopted in the sustainability vision of Heijmans Vastgoed, since Heijmans Vastgoed has the desire to obtain an NL Area label A (NL Gebiedslabel A) for all new projects where Heijmans is developer. One of the sub categories of the NL Area label requires stimulation of social cohesion and participation from inhabitants as can be seen in Figure 3.1 (NL Gebiedslabel, 2020). Therefore, the social domain has to be implemented in the corporate operations of Heijmans Vastgoed. However, this does not mean there is a standardised approach to implement the social domain in big integral projects at Heijmans Vastgoed.

## 3.1.2   Municipal projects

This section states the current situation at Heijmans Infra in municipal projects and what methods or procedures are currently being used to cope with the challenges of the social domain.

*Role of Heijmans in municipal projects*

This research shows an upcoming demand for more integrally organised projects. This creates the necessity of other contracts, such as construction team or RCC (Rapid Circular Contract). During these more integrally organised projects, Heijmans is a participant in the design process. It is the job of Heijmans to realise the policy goals of the municipality concerning sustainability. They have to assist in providing adequate solutions to build sustainably and environmental friendly.
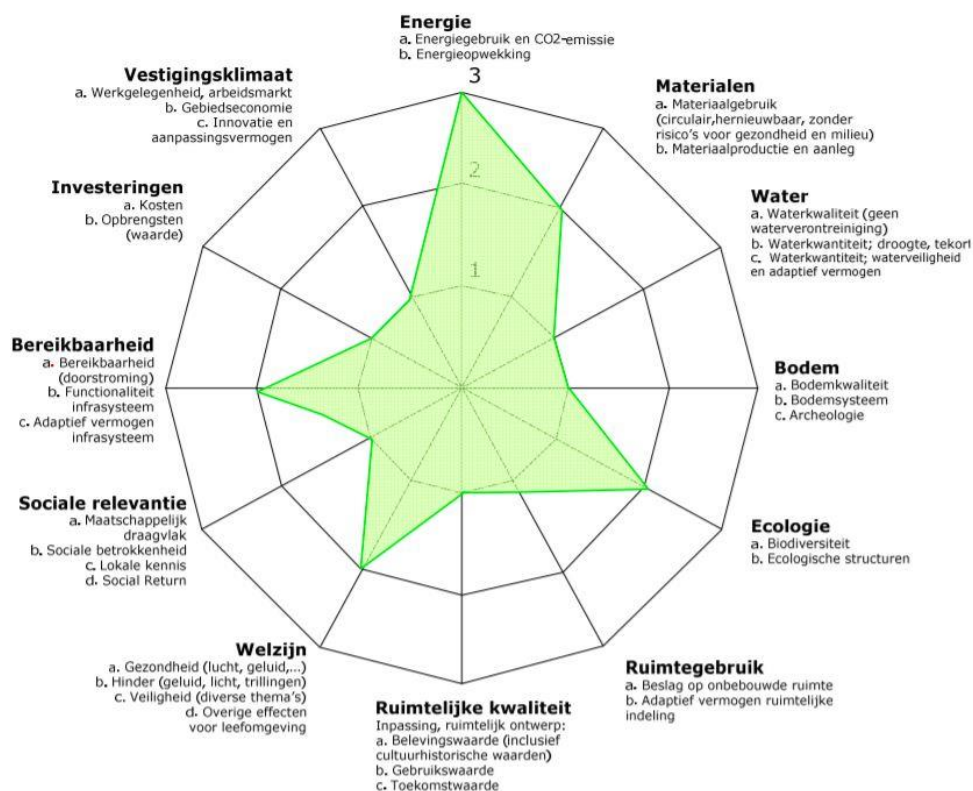


*Figure 3.2: GWW Ambitieweb (Duurzaam GWW, 2018)*

Naturally, stakeholder management is important for every project, however for the smaller projects stakeholder management is relatively more important. The reason for this is the distance to the inhabitants/stakeholders of the project environment. As the contractor is working in such close quarters, it may be disturbing for the inhabitants who are living in that area, since their normal behaviour is affected. This may negatively impact the image of the contractor before the start of the project. That image is very important for the trust stakeholders have in the contractor during a project and thus the amount of wiggle room a contractor has with regards to delays and other unforeseen circumstances.

*Current implementation of the social domain*

There is no standardised approach which dictates the actions necessary to apply the social domain in municipal projects. Currently, the municipalities are working to prepare the living environment on the sustainability goals. This raises the contractors' awareness to implement the social domain in their corporate operations. To do so, they use the tool 'GWW Ambitieweb', shown in Figure 3.2. However, the GWW Ambitieweb does not include social cohesion or social safety and is therefore unusable in most of the municipal projects with this type of social component.

### 3.1.3 Sub-conclusion current situation

In this section, the differences between the current implementation of the social domain in big integral and smaller municipal projects are discussed.

*Role of Heijmans*

Based on the insights provided above, one could say the responsibilities and freedom a contractor has in big integral projects is higher in comparison to the smaller municipal projects.

However, due to the uprise of more integrally organised municipal projects, integral contracts are becoming more common. This means Heijmans is co-designer in these projects. As a co-designer Heijmans has to incorporate new innovations in the area of sustainability, either because the client has set this requirement or Heijmans wants to innovate and present what they are capable of. Combined with the fact that a new Environment Act will shortly be introduced, the role of Heijmans in municipal projects will develop to one with more responsibilities as well as freedom.

*Characteristics of projects*

One of the largest differences concerning the characteristics of the project is the complexity. A larger project contains a bigger scope, and therefore more governmental policies and interests will be touched upon.

The image inhabitants have of the contractor is important for the continuation of the project. This is the case for both spatial development projects at Heijmans Vastgoed, as well as municipal spatial development projects at Heijmans Infra. Creating a positive image as a contractor is important to gain support of inhabitants and build confidence within the community, since support is necessary to ensure cooperation from the neighbourhood (ITC Groep, 2020).

An important factor during construction projects is the communication. Especially in smaller municipal projects, communication is of the utmost importance. Even though communication with the stakeholders is essential in every spatial development project, the effect of improper communication is more drastic in smaller spatial development projects. The reason for this is the distance to the inhabitants.

*Current implementation*

Concluding, the current implementation of the social domain in big integral projects at Heijmans Vastgoed is still in its infancy. There is no standardised approach yet, even though there are a lot of solutions and methods, as can be seen in the showcase project Maanwijk (Appendix C). The utilisation of NL Greenlabel is a step forward regarding the implementation of the social domain. Although the social domain is integrated in the strategy of Heijmans Vastgoed, it is still lacking integration in the corporate operations of Heijmans Infra. The use of the GWW Ambitieweb does not consider the social domain used in the redevelopment of the living environment. A type of label such as the NL Area Label has not been developed yet for municipal projects.

## 3.2 Key elements for the implementation of the social domain.

In this section the important elements in the implementation of the social domain are presented. The first column of Table 3.1 shows the key aspects that came forward during the interviews. The second column represents the percentage of interviewees, who mentioned that aspect as an important element for the implementation of the social domain. The aspects are ranked from high to low based on percentage.

There are different characterizations per tier. The first tier concerns the human aspects during projects. This soft side of the construction contains feelings, relationships and perceptions of inhabitants. The second tier relates to the key elements during the project, the so-called process-related aspects. The image/reputation of the contractor during the project is important, as well as the involvement of every inhabitant during the participation process. The last tier of important aspects can be characterised as requirements or conditions to properly implement the social domain in corporate operations of Heijmans.

*Table 3.1: Important aspects based on the interview analysis*

| Important aspects | Percentage of interviewees (n=4) |
|---|---|
| **Tier 1 – Human aspects** | |
| Other qualities necessary | 75% |
| Relationship of trust with inhabitants | 75% |
| Perception of place is important | 75% |
| **Tier 2 – Process-related** | |
| Image/Reputation | 50% |
| Co-creation or participation process | 50% |
| Involving everyone is hard | 50% |
| Create opportunities to meet | 50% |
| **Tier 3 - Conditions** | |
| Measurability is hard | 25% |
| Logical function layout | 25% |
| Money is necessary to create impact | 25% |
| Dynamic of corporate differs from neighbourhood | 25% |
| Analysis takes time and costs money | 25% |
| Participation is becoming more important | 25% |
| Governmental policies are addressed | 25% |

### 3.2.1 Human aspects

The first tier consists of the elements which were mentioned by 3 out of 4 interviewees. The first key element is the necessity of other competencies. Lots of interviewees mentioned employees have to be empathic and should be able to bring the inhabitants together during the project. A social person who can easily conversate is important for the communication with inhabitants. Furthermore, the research shows the amount of trust the contractor has from inhabitants is important. The inhabitants' willingness to participate during a project is related to the relationship of trust and therefore is essential for the flow of the project. The third essential aspect for the implementation of the social domain is the significance of perception. The perception of a place is important for the perception of social cohesion and social safety in a neighbourhood.

### 3.2.2 Process-related aspects

The second tier of process-related key aspects consists of elements, which are mentioned by 50 percent of the interviewees. The first element is the importance of image/reputation during the project. A positive image reduces the resistance against the project, which therefore means progression in the project can be maintained. The second element this research shows is the importance of co-creation or participation by inhabitants. A problem that came forward during the research as well, is the fact not every inhabitant is involved during this co-creation or participation process, which is necessary to create an environment for everyone. The final important aspect from the second tier is the creation of meeting opportunities. Mainly it comes down to facilitating or creating a place where inhabitants can conversate and get acquainted with each other.

### 3.2.3 Conditions

The third tier of aspects concern conditions. These are all aspects, which are of less importance based on the interviews' outcomes, but, based on the interviewee's expertise, it was decided which aspects are included in Table 3.1. The first aspect is the difficulty to measure and quantify social cohesion and social safety. The interviewee mentioned research organizations are currently performing an investigation in the quantification of social cohesion and social safety. However, another interviewee stated the amount of connections in an area is a quantification of social cohesion in that area.

The next element in the third tier is to ensure a logical function layout as this creates social cohesion and social safety. Another aspect which was mentioned during the interviews was the necessity of money to create an impact. Therefore, it is interesting to see that a lot of projects are concerned with governmental policies and interests, which can result in subsidies. An element which was pointed out as well is the amount of money and time it costs to properly analyse the project area. The last element is the upcoming importance of participation during projects. Partly as result of the new Environment Act, which states participation with stakeholders is obligatory.

### 3.2.4 Sub-conclusion key elements

Concludingly, the key elements that are found through this research can be seen in Table 3.1. These aspects are divided into three tiers, where tier 1 relates to the human aspects of the social domain. The human aspects that are important for the social domain are the social competencies, the relationship of trust with inhabitants and the importance of the perception of place. The second tier consists of process related aspects, such as the image/reputation of the contractor, co-creation, involvement of inhabitants, and the creation of meeting opportunities. Finally, the third tier consists of the conditions that are important to implement the social domain, such as the necessity of money to create an impact or the introduction of the new Environment Act.

## 3.3 Indicators

In this section, additional indicators are deduced from the key elements presented in the previous section. Ultimately, this section concludes with a new version of Table 2.1. This new version (Table 3.2) is used as a framework to generate process measures. Not every element is an useful indicator, and therefore some elements are not included in Table 3.2.

*Table 3.2: Indicators social cohesion and social safety based on literature review and interview analysis*

| Main category | Sub-Category | Nr | Indicators | Safety | Social Cohesion |
|---|---|---|---|---|---|
| Place Attachment / Dependence | Internal accessibility | 1 | Width of streets | X | X |
| | | 2 | Adequateness of parking lots | | X |
| | | 3 | Appropriateness of streets for pedestrians (including handicapped) | | X |
| | Open Spaces | 4 | Quality and maintenances of green areas | X | X |
| | | 5 | Accessibility of green areas | | X |
| | | 6 | Colour in the area (buildings, playground etc.) | X | X |
| | | 7 | Lines of sight in the area | X | X |
| | | 8 | Positioning of functions in the area | X | X |
| | Place Making | 9 | Organised events in the area | | X |
| | | 10 | Experienced events in the area | X | X |
| | Recreational services | 11 | Adequacy of cultural facilities | | X |
| | | 12 | Adequacy of sports facilities | | X |
| | Environmental Health | 13 | Peace and calmness in the neighbourhood | X | X |
| | | 14 | Cleanliness of the street | X | X |
| | Maintenance and care | 15 | Existence of vacant or unbuilt areas | X | |
| | | 16 | Street lighting | X | |
| | | 17 | Untarnished neighbourhood | X | |
| | | 18 | Quality and maintenance of roads | X | |
| | | 19 | Adequacy of sewage and drainage systems | X | |
| Place Identity | Social relations | 20 | Social relations in the neighbourhood | | X |
| | | 21 | Sense of belonging to the neighbourhood / location | | X |
| | | 22 | Possibility to meet other people | | X |
| | Participation process | 23 | Amount of co-creation/participation during project | | X |
| | | 24 | Trust from inhabitants | | X |

From Table 3.1 the following indicators have been added: 6, 7, 8, 22, 23, and 24.

Indicator 6 is an example of the Broken Windows theory and therefore contributes to the perception of a place, and thus the perception of safety in the neighbourhood. Lines of sight (indicator 7) provide clarity and ensure social control, which both contribute to the social safety in a neighbourhood. Furthermore, one of the interviewees mentioned that social cohesion can come from two aspects,

namely the participation of people and the space itself. Therefore, indicators 6 and 7 also contribute to the social cohesion in an area.

The same holds for indicator 8, which was added based on the element logical function layout from Table 3.1. The key aspect of creating meeting opportunities has been implemented in Table 3.2 by the means of indicator 22, since this contributes to the social cohesion in an area.

The sub-category Participation process is implemented through indicators 23 and 24. These indicators concern the aspect of trust to ensure a successful participation. Additionally, the research shows the amount of participation/co-creation also influences the social cohesion in a neighbourhood.

### 3.3.1 Sub-conclusion indicators

Concludingly, some of the key elements shown in Table 3.1 are implemented into Table 2.1. Indicators 6, 7, 8, 22, 23, and 24 have been added, because they function as indicators for the social domain. The merging resulted in Table 3.2.

## 3.4 Solutions

In this section the solutions and methods provided during the research are presented. Not for every key aspect presented in Table 3.1 methods or solutions became evident, for example the measurability of social cohesion and social safety.

### 3.4.1 Human aspects

Firstly, the first tier of elements are addressed. The research shows several competences aid the implementation of the social domain, as shown in Table 3.3. All of these competencies aid the successfulness of the participation process and the trust gained from the inhabitants.

Table 3.3: Competencies required for the implementation of the social domain

| Competencies | Percentage of Interviewees (n=3) |
|---|---|
| Ability to align people | 100% |
| Ability to empathise with people | 67% |
| Ability to factor people in during projects | 67% |

The second element in the first tier is the relationship of trust with the inhabitants. This research shows there are several methods to ensure this relationship of trust based on the answers provided during the interviews, shown in Table 3.4. It is important to open up and be vulnerable to create a relationship of trust. Furthermore, it helps to make a personal connection with the inhabitants. This humanizes the contractor and gives a sense of acquaintance, which reduces the resistance against the execution of the project. The approachability of the contractor refers to the ease with which inhabitants are able to ask questions and conversate.

Table 3.4: Solutions to build relationship of trust with inhabitants/participants

| Solutions | Percentage of Interviewees (n=3) |
|---|---|
| Being vulnerable | 100% |
| Personal connection | 100% |
| Being approachable | 67% |
| Keep the inhabitants/participants posted | 67% |

The third element is the perception of a place. Research shows lighting and colour contribute to this perception (see Table 3.5). The other solution to create a positive perception of the environment is its

cleanliness and wholeness. Finally, positive memories contribute to a positive feeling people get of a certain area.

*Table 3.5: Solutions to create a positive perception in the area*

| Solutions | Percentage of Interviewees (n=3) |
|---|---|
| **Lighting and colour usage in the area** | 100% |
| **Clean and whole** | 100% |
| **Positive memories** | 25% |

### 3.4.2   Process-related aspects

In the following section the methods to deal with the process-related key aspects are presented. The research shows various ways to create a positive image/reputation of the contractor in Table 3.6. A second solution is to enlarge the importance of decency while working, since this creates a positive experience with employees and thus the contractor from the inhabitants' point of view.

*Table 3.6: Solutions to create positive image/reputation*

| Solutions | Percentage of Interviewees (n=2) |
|---|---|
| **Keep the inhabitants/ participants posted** | 100% |
| **Decent employees** | 100% |

The second element in the list of process-related key elements is the participation process. Various solutions came forward during this research (see Table 3.7), such as being honest and clear about the participation process, and explaining how much influence participants have and what is expected from them. In addition, it is important to discuss people's needs and desires before the start of the project.

*Table 3.7: Solutions to aid the participation process*

| Solutions | Percentage of Interviewees (n=2) |
|---|---|
| **Socially oriented people** | 100% |
| **Keep the inhabitants/ participants posted** | 50% |
| **Honesty and clarity about role division, intentions and influence** | 50% |
| **Discuss needs and desires** | 50% |

The third process-related key aspect is the ability to involve everyone in the participation process. The social program manager stressed the fact humans are scared of new things. This fear demonstrates that it is important for Heijmans to take the first step in approaching people (see Table 3.8). Additionally, she mentioned that addressing the people in their native language creates a stronger urge to participate in the process.

*Table 3.8: Solutions to involve everyone in the co-creation or participation process*

| Solutions | Percentage of Interviewees (n=2) |
|---|---|
| **Taking the first step** | 50% |
| **Address person in their native language** | 50% |

The final element in the second tier is the facilitation of opportunities to meet. According to the research, there are several methods to facilitate opportunities to meet as can be seen in Table 3.9.

*Table 3.9: Solutions to create opportunities to meet*

| Solutions | Percentage of Interviewees (n=2) |
|---|---|
| Sharing facilities | 100% |
| Meeting points | 100% |

### 3.4.3 Conditions

Not for every key aspect in the third tier a method or solution was found. For the measurability of social cohesion straightforward methods or solutions are absent. According to two of the interviewees, the number of social relations in the area gives a good representation of the social cohesion in that area. However, institutions are currently performing research to see how one can quantify social cohesion and social safety.

*Table 3.10: Solutions to the third tier of key elements*

| Solutions |
|---|
| Regularly zoom out and asses the function layout |
| Investigate opportunities to apply for funding |
| Combine analysis for projects in the same city or area |

Table 3.10 shows the solutions to the third tier key elements. The first solution should take care of the logical function layout. The second solution provides the ability to allocate more money for projects and therefore create a bigger impact in the project area. In addition, because lots of municipal projects touch upon governmental interests, they are likely to get funding from the government. The third solution relates to the time and money it takes to properly analyse the project area. Usually the analysis or at least a part of the analysis is useful for a second project in the same area or city as well.

There are some sidenotes to keep in mind during the execution of the project. These sidenotes are the dynamic of a corporate and the upcoming importance of participation in projects. The dynamic of a corporate differs from the dynamic a neighbourhood, according to one of the interviewees. A driving force for a contractor is the urge to make a profit. However, the neighbourhood under construction has a totally other driving force. The thoughts of the contractor concern the moment construction can start and the finalisation of the project. While the thoughts of the inhabitants are set on a longer timeline, since it takes a long time to get acquainted with a contractor. The other element to keep in mind is upcoming importance and necessity of the participation process during projects. Based upon to the new Environment Act, contractors are obliged to include the inhabitants and other stakeholders in the process.

### 3.4.4 Sub-conclusion solutions

During this research several solutions or improvement methods came forward to cope with the key elements shown in Table 3.1. An overview of all the solutions corresponding to key elements can be found in Appendix E. No solution was mentioned for the measurability of social cohesion and social safety.

## 3.5 Process measures

Based on the methods, solutions and indicators presented in the previous sections several process measures were deduced. These process measures are discussed in this section, which is divided in three main categories, namely: the procurement of new employees, participation process and spatial design. Several process measures are formulated, these are discussed in the following sections.

### 3.5.1 The procurement of new employees

The first process measure dictates the requirement of different/additional competencies compared to the current skill set available internally. The social domain requires a more people-oriented approach during the project. This means employees should be able to empathize with inhabitants, have the ability to align people and factor these people in during the project. Other competencies are the ability to easily conversate with different people and the possession of decent manners.

### 3.5.2 Participation process

The following measures were deduced concerning the participation process to aid the implementation of the social domain.

1. Assign a contact person.
    a. Easily approachable all the time even outside office hours via mails, calls or meetings.
    b. Assign 1 contact person per approximately 200 residents.
    c. Act as a trustee for the inhabitants and stand up for them.
2. Be honest and clear about the contractors intentions and role.
    a. Explain what the purpose of the participation process is and how it works.
    b. Clearly indicate and keep indicating the contact person during meetings or other possibilities.
    c. Be upfront about the amount of influence the participants have.
    d. Be honest about the contractors intentions.
3. Keep the inhabitants informed.
    a. Make use of tools to inform inhabitants during the project, such as a periodic newsletter.
    b. Familiarize participants with the project through explaining what is happening and what the next step will be.
4. Get to know the people.
    a. Execute an extensive demographic analysis.
    b. Personally introduce contact person/contractor, ideally in the inhabitants native language.
    c. Discuss their needs and desires.

The first measure is the assignment of a contact person. This contact person ensures the contractor is easier to reach, which contributes to the approachability of the contractor. Crucial for this person is to stand up for the participants and act as a trustee during the project, in order to gain the trust of the inhabitants.

The next measure is the necessity to be honest and clear about the contractors intentions and role. A clear explanation of the project should be part of the introduction. Explain what the purpose of the project is and what is to be expected from the inhabitants during the participation process. Furthermore, it is important to clarify the contractors intentions at this point, as well as how much the input of participants is taken into consideration. This honesty contributes to the relationship of trust with the inhabitants and therefore improves the participation process.

The third process measure concerning the participation process is the information supply to the inhabitants. The use of a periodic newsletter is an adequate and easy tool to ensure a proper information supply, which results in a positive image of the contractor.

The last process measure concerning the participation process in projects is the necessity to get familiarized with the inhabitants. This can be done via an extensive demographic analysis, combined

with a personal approach by knocking on doors and speaking with the people, preferably in their native language as this creates a stronger urge to participate and a better personal connection.

### 3.5.3 Spatial design

The following process measures relate to the spatial design in order to implement the social domain:

5. Utilise the ZETA method to ensure social safety via light and colour usage.
6. Create meeting opportunities.
    a. Via sharing services (bicycle, mopeds, cars or other facilities).
    b. Via the facilitation of meeting points.
7. Ensure the maintenance contracts are arranged to optimize the effects of any measures taken.
8. Acquire or educate employees to utilise light and colour in their design.
9. Acquire or educate employees to create a logical allocation of functions.

The first measure relates to CPTED (Crime Prevention Through Environmental Design). This CPTED can be done by utilising the ZETA method, which are guidelines to design an open space in such a way that it increases the social safety in an area. See Appendix F for a broader explanation of the ZETA method.

The second measure is the creation of meeting opportunities for inhabitants, since this lets neighbours get acquainted with each other and thus results in social cohesion. The third measure is to ensure a proper organisation of the maintenance contracts, because costly innovations are depreciated. The last two process measures show the need for competent people. By having employees with proper knowledge of light and colour, Heijmans can improve social cohesion and social safety through utilising this knowledge in the spatial design. The same holds for the last measure, where employees can create a logical allocation of functions that contribute to the spatial design, which in turn contributes to the social cohesion and social safety in the neighbourhood.

Finally, it is useful to investigate the possibility to apply for funding, which can be used to have a bigger impact on the neighbourhood.

# 4. Validation

This chapter discusses the validation of the results shown above. A property developer at Heijmans Vastgoed was used as expert and was asked to validate the results. The developer has experience with different projects as well as the social domain used in NL Greenlabel.

## 4.1 Current situation

The interviewee confirmed there is indeed no standardised approach present at Heijmans Vastgoed and Heijmans Infra. Although the ambition of a NL Area label A includes the social domain, it is still a sub-category and thus it is not top priority during projects.

## 4.2 Process measures

The process measures that were found are validated as well. The first measure concerns the procurement of new employees. According to the expert, the required competencies are present at Heijmans. The key is in the utilisation and organisation of these competencies. Instead of acquiring new employees, he considers it is wiser to re-organize the current employees.

The next measures that are validated concern the participation process. All of the process measures concerning the participation process are appropriate and the problems, that were mentioned, are acknowledged. However, there are some slight remarks that have to be made. First of all, regarding the newsletter, as some municipalities tend to send out the newsletters themselves. This way of working creates an obstacle, since both the contractor and municipality have to agree on the content. Furthermore, some of the newsletters are send to people living outside the project area. Therefore it is important to know the target group while sending newsletters. In addition, another expert mentioned the time in between newsletters should be a maximum of two weeks. Usually, the first week is to receive questions and interpret the reactions of the inhabitants. The second week is generate the newsletter itself. Experience shows a period of 4 weeks is too long for inhabitants.

Another remark that has been made by the expert regards the time it takes to knock on doors in person. Although the personal contact contributes to the participation process a lot, it might be too costly to execute. It is something that has to be evaluated for every project, in order to see if the added value outweighs the added cost.

The measures formulated for the spatial design are validated next. Although some characteristics of the ZETA method are present in the profession of architects/designers, it is convenient to make use of a structured guide. The need for creating meeting opportunities is acknowledged by the expert. Concerning the organisation of the maintenance contracts, it is important to make sure the information transfer is done correctly. There is a standard maintenance period for the contractor, after which the municipality takes over the maintenance. If the information transfer is not done correctly, this could result in costly mistakes.

The expert stated that the last two process measures are already part of the profession. Architects and designers studied to create a logical allocation of functions, and light and colour are already incorporated in the design.

# 5. Conclusion

Based on the results presented in Chapter 3 a conclusion can be drawn to answer the main research question. This main research question was: "**Which process measures does Heijmans have to take to implement the social domain in smaller municipal projects?**".

It can be concluded that the social domain is currently not being implemented in the corporate operations at Heijmans Infra. At Heijmans Vastgoed however, the NL Greenlabel has led to the utilisation of the social domain, but it still is not fully integrated. Based on the results and validation of this research, one can formulate the following process measures in order to implement the social domain.

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*Process Measures*

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*Regarding the organisation of knowledge:*

1. Assign people with a socially oriented vision to projects in which the social domain has a dominant role.

*Regarding the participation process:*

2. Assign a contact person.
    a. Easily approachable at all times, even outside office hours via mails, calls or meetings.
    b. Assign 1 contact person per approximately 200 residents.
    c. Act as a trustee for the inhabitants and stand up for them.
3. Be honest and clear about the contractors intentions and role.
    a. Explain what the purpose of the participation process is and how it works.
    b. Clearly indicate and keep indicating the contact person during meetings or other possibilities.
    c. Be upfront about the amount of influence the participants have.
    d. Be honest about the contractors intentions.
4. Keep the inhabitants informed at least every two weeks.
    a. Make use of tools to inform inhabitants during the project, such as a periodic newsletter.
    b. Familiarize participants with the project through explaining what is happening and what the next step will be.
5. Get to know the people.
    a. Execute an extensive demographic analysis.
    b. Personally introduce the contact person/contractor, ideally in the inhabitants native language.
    c. Discuss their needs and desires.

*Regarding the spatial design:*

6. Utilise the ZETA method to ensure social safety via light and colour usage.
7. Create meeting opportunities.
    a. Via sharing services (bicycle, mopeds, cars or other facilities).
    b. Via the facilitation of meeting points.
8. Ensure the maintenance contracts are arranged and the information transfer is controlled.

# 6. Recommendations

This research serves the purpose of formulating process measures to implement the social domain into the corporate operations of Heijmans. Based on the conclusion provided in Chapter 5, my recommendation to Heijmans is to adopt the formulated process measures. This research has shown these process measures aid the implementation of the social domain in projects.

Even though no extensive research has been performed on the ZETA method, my recommendation is to still utilise these guidelines. The reason for this is the fact that the information of the ZETA method is present at Heijmans (Heijmans, 2020), but not known throughout the whole company. Therefore, it would be cheaper, quicker and easier to implement the ZETA method instead of performing research into alternatives. The integration of the measures gives Heijmans a head start in the implementation of the social domain and thus the competition, because the demand for the social domain is rising and becoming more important.

## 6.1 Recommendations for further research

This research was performed specifically for Heijmans. It means the outcomes of this research are not necessarily applicable to another contractor. Therefore, it is advisable to perform additional research to see what the current situation is at the concerned contractor and how the corporate operations differ from those of Heijmans.

During this research, a minor investigation was done in what is to be expected from a contractor by clients, such as municipalities. These clients did not have a prominent role during this investigation, which leaves room for improvement. Further research in the clients' demands and desires might contribute to the establishment of better working relations. This will result in a better compliance with the clients demands and therefore more assignments.

The NL Area label from NL Greenlabel also played a role in this research. It became evident there was no adequate label to work towards during municipal spatial redevelopment projects. Therefore it might be interesting to perform research into labelling or to develop a label in cooperation with NL Greenlabel for these type of projects.

For this research a total of five interviews were conducted. All of the interviewees have experience with the social domain. One of the interviews serves the purpose of validating the preliminary results. Due to time constraints, it was impossible to conduct more interviews. However, it would be beneficial to perform additional interviews for the purpose of validating the formulated process measures. Furthermore, the conduction of interviews amongst a bigger group of interviewees, with some preferably in the same profession, would aid the reliability of the research.

The human aspects that came forward are held widely amongst the interviewees. Therefore it might be useful to further investigate these human aspects or to do further research into other human aspects that might contribute to the implementation of the social domain. An example for further research is the investigation in how a contractor can improve the relationship of trust with inhabitants.

One of the process measures was to re-organize the available competencies internally at Heijmans. To ensure this is done in a proper way, these competencies have to be mapped in order to assess how much re-organisation is necessary. In addition, research has to be performed into the cost and benefits of assigning people with additional tasks, to see if it is feasible in terms of their workload.

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## Appendix A

The different aspects of each domain lead back to the Sustainable Development Goals. The green domain indicates the ecological domain in the Smart City concept. As the name suggests this domain focuses on the natural aspects of a Smart City. Three different subdomains are present in this domain, namely: Green & Blue, Circularity and Energy-neutral.  Green & Blue stands for the nature in the area, such as trees, bushes and ponds. The green domain relates to the SDG's concerning the climate and nature (SDG 7, 12 and 13).

The next domain is the Spatial domain (blue). The Spatial domain consists of three subdomains, namely: Spatial quality, Accessibility and Economic value. Spatial quality refers to SDG 6, 9, 11 and 15 and translates to the overall quality of the living environment. The quality of among other the residential areas, roads, highways and the ability to cope with precipitation. Accessibility is related to SDG 9.  Finally, the added economic value relates to a lot of SDG's (3, 4, 6, 8, 9, 11 and 15). Since the Economic value is a broad term and it could be interpreted in a lot of different ways a lot of the SDG's relate to this subdomain. For example, quality education in a certain area will improve the economic value of the residential areas in that neighbourhood. Although a lot of the SDG's are related to this subdomain, it does not necessarily mean that an SDG is always related. In some situations, the number of SDG's contributed to is lower.

# Appendix B

Traditionally, clients put their contractor to work, based on fully elaborated plans. Nowadays, it is much more common clients put out a tender where the imagination and interpretation of the contractor is important. In a recent tender for the reconstruction of neighbourhood "De Pas" in Winterswijk a social component is present. The project's goal is to make the neighbourhood future-proof. In addition, the municipality's goal is to facilitate housing for inhabitants of neighbourhood "De Pas" in the happiest manner possible. In addition to the neighbourhood climate, the project partners intent to look at the desires of the inhabitants in the future (Gemeente Winterswijk, 2020). Aspects such as housing demand, level of facilities, safety, liveability, care needs and mobility could be thought of during the reconstruction of the neighbourhood. The philosophy of the municipality is to cooperate with the inhabitants and stakeholders, so the desires and needs in the neighbourhood can be identified. This type of cooperation is called co-creation and is important for the social cohesion in the neighbourhood.

Another tender contains a social component as well. In Nijmegen, the municipality wants to reconstruct the Emmalaan, Perzikstraat and Plutostraat. One ambition the municipality set for this project is: "To create a public space which is optimally designed for well-being, safety and positive experience.". The assessment of contractors is awarded with the full score if co-creation is part of the execution plan (Hoogen, Frank Van den, 2020).

They stated some requirements to address for the submission of the action plan, namely:

1. Optimize the spatial quality:
   a. A high quality design which connects the street/ public space with the simple architecture of the neighbourhood.
   b. Providing space to pedestrians and cyclists.
   c. Play and meet
   d. A green artery through the streets
   e. Road design which connects to the neighbourhood
   f. Relation with greenery and scenery of the recently completed reconstruction in the vicinity to Plutostraat
   g. The optimization of safety in technical terms for mobility which is linked to the viability and perception of the environment.
2. To provide insights and demonstrate the added value concerning the matters of this ambition.

In the tender from the municipality of Nijmegen the requirements are rather abstract and not quantified. In a new tender which is put out by the municipality of Helmond, in cooperation with the foundation Brainport Smart District, the requirements set are elaborated in an extensive manner. The tender is for the development of the so-called BSD (Brainport Smart District) in Helmond. This BSD should be one of the smartest neighbourhoods in the world (Stichting Brainport Smart District, 2020). This project is based on eight different themes with indicators and guidelines that must be satisfied. As mentioned before, these guidelines are elaborated very extensively in comparison to the tender in Nijmegen. For the BSD in Helmond, inhabitants of the BSD have to meet about twice a month. In addition, meeting opportunities for inhabitants should be realised as well as sharing facilities. Another example of the extensive elaboration is a statement about social safety in the neighbourhood: "To ensure social safety all buildings should be facing the street and the view out of the windows should be on the public space such as: streets, pathways and greenery." (Stichting Brainport Smart District, 2020). Although the tender for the BSD in Helmond is very detailed, this is not always the case.

## Appendix C

The project Maanwijk in Leusden is one of the showcases at Heijmans. In these pilots Heijmans can put all their qualities on the table and show what they are capable of. Through lots of innovations the social domain was implemented in that project. An example is the height of the fences in the garden, these were deliberately limited to a height of 1.5 meters. Together with the fact the houses including garden are elevated ensures that privacy is safeguarded. However, it is still possible to have a quick conversation with your neighbours and have a view of the street. The overview of the street gives a sense of safety, since one can see what "strangers" are entering the street. According to the developer(s) all of this contributes to the social cohesion and perception of safety in the neighbourhood. Another example is the placement of sharing facilities such as car sharing or a shed where all neighbours can borrow tools from. Additionally, this shed serves the purpose of parcel depot for the neighbourhood. All of these things ensure there is possibility to meet neighbours, which was the underlying goal of the developer. All of the above are good examples of ways to improve the social cohesion and perception of safety in a neighbourhood.

## Appendix D

Dit interview is in het kader van mijn bachelor eindopdracht. Ik doe daarbij onderzoek voor Heijmans naar de aanpak van sociaal maatschappelijke vraagstukken. Heijmans wil graag de bouwer van de gezonde leefomgeving zijn en heeft daarvoor een Smart City concept opgesteld, zie figuur in bijlage 1. Dit is verdeeld in drie domeinen: Ruimtelijk, Ecologisch en Sociaal domein. Ik richt me daarbij op het sociale domein dat weer onderverdeeld is in 3 sub domeinen. Deze sub domeinen zijn Diversiteit, Veiligheid en Sociale samenhang. Voor mijn onderzoek kijk ik voornamelijk naar Veiligheid en Sociale samenhang en hoe dat verbetert kan worden tijdens kleine infra projecten waarbij een deel van een wijk/gebied ook aangepakt dient te worden. Hoe kan Heijmans er nou voor zorgen dat er meer Sociale samenhang is en dat mensen zich veiliger voelen. Dit heeft de volgende reden: deze uitvragen komen steeds vaker voor en deze maatschappelijke vraagstukken worden al wel aangepakt in grotere projecten, maar dit is nog niet volledig geïntegreerd in de kleinere projecten. Daarover wilde ik graag wat vragen stellen. Het eerste deel zal wat meer op de organisatie gericht zijn en tweede deel zal meer gericht zijn op de benodigde processen. Het kan voorkomen dat sommige vragen niet worden gesteld door het feit dat dit specifieke vragen zijn en niet door iedereen beantwoord kunnen worden.

### Vragen

- Mag dit gesprek opgenomen worden? Moeten de gegevens anoniem worden gepresenteerd?
- Wat is uw functie (binnen Heijmans)?
- Bent u bekend met sociaal maatschappelijke vraagstukken binnen projecten?

Zo niet, wordt er een korte uitleg gegeven over deze sociaal maatschappelijke vraagstukken.

- Hoe wordt er op dit moment invulling gegeven aan deze sociaal maatschappelijke vraagstukken?
  - Zijn hier al standaard maatregelen (procesmaatregelen) voor opgesteld? Zo ja, welke voorbeelden kunt u noemen?
  - Wat zijn problemen die voorkomen tijdens het beantwoorden van deze sociaal maatschappelijke vraagstukken?
  - Kan Heijmans dit intern regelen of wordt dit met behulp van externe partners gedaan?
  - Zitten er grote verschillen tussen de sociaal maatschappelijke vraagstukken in grote en kleine projecten?
- Hoe vraagt een opdrachtgever om oplossingen voor deze sociaal maatschappelijke vraagstukken in een uitvraag?
  - Welke voorwaarden worden er meegegeven voor de vormgeving?
  - Hoe breed kunnen/mogen we dit invullen binnen een project? Hoe vrij zijn we om hieraan invulling te geven?
- Welke menselijke aspecten zijn volgens u belangrijk bij de beantwoording van de sociaal maatschappelijke vraagstukken in uw projecten?
  - Welke competenties vraagt dit van Heijmans medewerkers?
  - Zijn deze competenties aanwezig binnen Heijmans?

Tijdens mijn onderzoek zal ik mij voornamelijk focussen op de onderdelen sociale cohesie en veiligheid. De volgende vragen zijn daarom wat specifieker van aard.

- Wat zijn manieren/voorbeelden die de sociale cohesie in een gebied kunnen verbeteren?

- - Hoe kan Heijmans sociale cohesie in een gebied meetbaar maken?
    - Welke valkuilen of obstakels zijn er tijdens het verbeteren van de sociale cohesie?
    - Welke rol zou Heijmans kunnen innemen om de sociale cohesie verbeteren?
  - Welke manieren/voorbeelden kunnen het veiligheidsgevoel verbeteren volgens u?
    - Hoe kan Heijmans het veiligheidsgevoel in een gebied meetbaar maken?
    - Welke valkuilen of obstakels zijn er tijdens het verbeteren van de sociale cohesie?
    - Welke rol zou Heijmans kunnen innemen om het veiligheidsgevoel verbeteren?
  - Als ik nog aanvullende vragen heb, mag ik deze via de mail/ telefonisch nog nabellen of vragen?
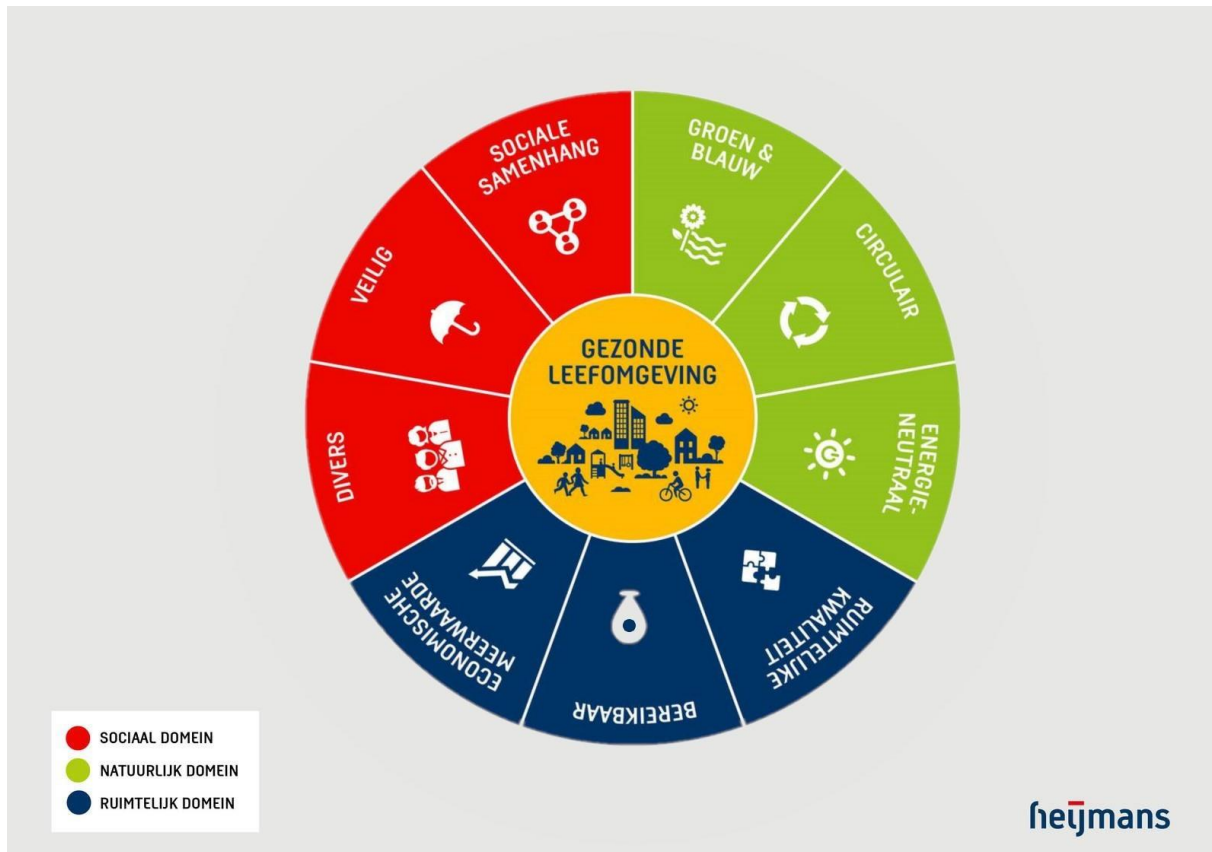
## Bijlage 1



*Figure 0.1: Smart City concept Heijmans*

# Appendix E

*Table 0.1: Overview solutions corresponding to key elements*

| Key element | Solution | Percentage of interviewees |
|---|---|---|
| **Tier 1** | | (n=3) |
| **Required competencies** | Ability to align people | 100% |
| | Ability to empathise with people | 67% |
| | Ability to factor people in during projects | 67% |
| **Relationship of trust** | Being vulnerable | 100% |
| | Personal connection | 100% |
| | Being approachable | 67% |
| | Keep the inhabitants/participants posted | 67% |
| **Perception of place** | Lighting and colour usage in the area | 100% |
| | Clean and whole | 100% |
| | Positive memories | 25% |
| **Tier 2** | | (n=2) |
| **Image/Reputation** | Keep the inhabitants/ participants posted | 100% |
| | Decent employees | 100% |
| **Co-creation/Participation process** | Socially oriented people | 100% |
| | Keep the inhabitants/ participants posted | 50% |
| | Honesty and clarity about role division, intentions and influence | 50% |
| | Discuss needs and desires | 50% |
| **Involvement of inhabitants** | Taking the first step | 50% |
| | Address person in their native language | 50% |
| **Meeting opportunities** | Sharing facilities | 100% |
| | Meeting points | 100% |
| **Tier 3** | | (n=1) |
| **Logical function layout** | Regularly zoom out and asses the function layout | 100% |
| **Money is necessary to create impact** | Investigate opportunities to apply for funding | 100% |
| **Analysis takes time and costs money** | Combine analysis for projects in the same city or area | 100% |

# Appendix F

The ZETA method sets guidelines for the design of public (open) spaces. It stands for Visibility Uniformity Accessible and Attractive (Zichtbaarheid Eenduidighuid Toegankelijk Aantrekkelijk). This method is used to systematically analyse the design or the environment on social safety (Heijmans, 2020).

Visibility refers to the amount of overview an environment has and the ability to be seen. It is important to design the area based on the function of the space. When opening hours are present it means the area can be closed off during the closed period.

Uniformity is important for the appearance a space has. It should be clear what the function of the area is and who is allowed (Heijmans, 2020). This provides clarity for the users of the public space. It also applies during the execution phase of the project where detours have to be indicated.

Accessible concerns the accessibility of the building, which should be appropriate for the function of the building (Heijmans, 2020). Is there a closing period? In that case the building should be able to be locked.

Attractive refers to back to the Broken Windows theory. The use of clean and undamaged materials is important, as well as colour usage and pleasant lighting (Heijmans, 2020). Examples that are mentioned are graffiti proof coating or plenty of lighting in parking garages.

For more information: https://www.geenongevallen.nl/toolbox/veiligheid-in-het-ontwerp/sociale-veiligheid