

# **What opportunities is shrinkage offering for sustainability?**

The case Heerlen

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***“You can never cross the ocean unless  
you have the courage to lose sight of the shore.”***

**- Christopher Columbus -**





## **Preface**

This Master Thesis is written as a completion of the Master Construction Management & Urban Development (Construction Management & Engineering) at the Eindhoven University of Technology. It is the result of a graduation research of six months and out of those six months, I was able to spend four months at the municipality of Heerlen. This has been an informative and interesting addition, both in the personal and professional field.

Preferably, I desired a thesis topic that incorporated several aspects; area developments, stakeholder management, project and process management, sustainability and last but not least, social aspects. I am very interested in social issues and a great example is currently occurring in Parkstad Limburg; shrinkage, or population decline. This is probably fuelled by the ties with my native soil, but also an issue that will be increasingly current and important in our discipline and beyond in the future, for both peripheral and central areas in our country and abroad.

My thanks go to the supervisors of the Eindhoven University of Technology, whose support has been of great value throughout the research. I have experienced it as very pleasant and valuable to be supported by Wim Schaefer, because of his knowledge of our discipline and his enthusiasm about my research topic. Bart van Weenen has been a pleasant and welcome support in the sustainability field.

In the first paragraph I already indicated the pleasure and importance of practical experience. Now, I would like to thank the municipality of Heerlen, especially the City Planning department, for making this research possible. A special word of thanks goes to Sylvia Göttgens, who supported me during the process and gave me practical and theoretical feedback. I experienced this as very helpful and pleasant.

Finally, I would like to thank my boyfriend Gerard and my family, especially my parents and my sister, for their infinite support and their trust in me and my ability, during this research and during my entire study career at the TU/e. Without you, this would not have been possible ... !

**Daniëlle Smeets**

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## Management Summary

With Parkstad Limburg as a leader, more and more regions in the country will be facing population decline (shrinkage) in the future. Demographic decline comprises three aspects; (1) numbers, (2) demographic composition and (3) household composition. Current trends are dejuvenation, aging, discoloration and population decline itself (less births and more deaths). The structural character of this situation is special.

Shrinkage is as common as growth; they belong to each other. Shrinkage offers conditions for new growth. There are roughly three causes for shrinkage; a socio-cultural, a (regional-)economic cause and a planning cause. Reduced attractiveness is also often a reason for migration. Shrinkage has effects on several aspects of society; housing market, living environment, spatial governance and demand for space. The housing market is directly influenced by shrinkage; households constitute the demand side. Changing demand-supply conditions have direct consequences on local level.

In The Netherlands a two-direction development is taking place; shrinkage in some areas while others are growing. Other countries like the USA, UK, Germany and Russia are also dealing with the shrinkage issue.

Heerlen, the centre city of Parkstad, is a pioneer in our country when it comes to shrinkage. The main cause is the closure of the coal mines in the last century and the subsequent increase of economical issues and social problems. The situation, together with the strong aging and dejuvenation of the population, is quite severe.

The municipality of Heerlen emphasize on sustainability, also in area (re)developments such as the restructuring of shrinkage districts. To measure the sustainability scores of districts the computer tool DPL ('DuurzaamheidsProfiel van een Locatie') is being used. The composition of this tool is used as a base for the further investigation of sustainability aspects and their relationship with shrinkage. Aspects like 'Use of Space', 'Energy', 'Mixing of Functions' and 'Flexibility' appear to have a string relation to shrinkage. Additionally, policymakers are asked by means of a survey for their opinion about the relation between shrinkage and sustainability. The municipality is already restructuring some of its most urgent districts and some sustainability aspects indeed seem to offer opportunities.

The advice to the department City Planning contains three parts; social, spatial and organizational. The improvement of the liveability is the most urgent need and this can be accomplished by the improvement of certain social and physical interventions (concerning use of space, flexibility, mixing of functions, facilities, green facilities etc). The organizational part is mostly about communication; within the municipality and between the municipality and its inhabitants. Awareness about the issues shrinkage and sustainability can make a large difference. Cooperation between stakeholders is also of great value.

The conclusion of the research is that shrinkage indeed offers opportunities for sustainability. Some sustainability aspects offer more opportunities than others, but fact is that the current restructuring project will not be offering opportunities again for the next 50 years, so big steps need to be taken now.



## Chapter 1: Introduction

*"Time is the architect, the nation is the mason."*

Victor Hugo, French writer, 1802-1885

With Parkstad Limburg, in the south of The Netherlands, as a leader, more and more regions in the country will be facing a population decline (shrinkage) in the future. They will get confronted with both vacancy and deferred maintenance, a depleted offer of educational facilities, medical care and retail in case of unchanged policies. The shrinking regions are positioned in a transition process that has to teach them to stay vital with less inhabitants. This transition usually comes together with restructuring tasks, but at the same time it could offer new opportunities, e.g. in the field of sustainability.

### 1.1 Problem Definition

In the municipality of Heerlen (one of the members of Parkstad Limburg) the shrinkage issue gave rise to consider the region's future: how do we maintain the liveability? While searching for solutions for the shrinkage problem, the emphasis was initially mainly on the enhancement of the economic structure. Lately, the possible opportunities for a sustainable improvement of the residential, working and living environment become clear.

So that means there is awareness of possible opportunities for sustainability measures in the context of shrinking areas, but especially because of the complex context it appears to be difficult to focus on these opportunities, clarify them and seize them.

### 1.2 Research Question

In order to try to solve the stated problem the following main research question is formulated and will be investigated:

*"Is shrinkage offering opportunities for sustainability in Heerlen?"*

### 1.3 Sub-Questions

The main research question consists of several sub-questions, namely:

- What is shrinkage and what does it mean?
- What does shrinkage mean for The Netherlands: which regions are dealing with it and to what extent?
- What is the extent of the shrinkage issue in (the region of) Heerlen (Parkstad Limburg)?
- What will be the effects of shrinkage for (the region of) Heerlen in the (near) future?
- What is the interaction between shrinkage and sustainability?
- How is the municipality of Heerlen dealing with shrinkage in relation to sustainability?
- What are possible improvements (product and process) concerning sustainability in shrinkage districts for the municipality of Heerlen?

## **1.4 Field of Research**

This research will cover but is not limited to the following research fields; environmental science, sociology, construction technology and spatial planning. Redevelopment of shrinkage districts is tangent to several fields of interest and involves several stakeholders. These research fields can be categorized into three areas; social, technical and political. The goal of this research is to investigate the influence of social, technical and political developments and their relation to possible opportunities for sustainability (measures) in shrinkage districts.

## **1.5 Relevance of the Research**

Urban restructuring in an area that is dealing with shrinkage (i.e. structural population decline) is a task that almost no one has experienced before in The Netherlands. The demographic lead of the Parkstad Limburg area in the south of The Netherlands gives the area a pioneering role. As a result of the demographic shrinkage, aging, and negative migration the built environment in Parkstad is not connecting to the desired housing and living situation. Drastic interventions will be needed during the process of shrinkage to ensure a good quality of life.

The drastic need to restructure a significant part of the housing stock/ districts in the area and the global demand for a more sustainable way of life, adds up to searching for opportunities for sustainability. Housing and districts that need intervention at this moment offer opportunities for the integration of sustainability. Interventions that are carried out now in districts, will not offer opportunities again for the next 50 years. So, seeing and seizing opportunities for sustainability in shrinkage districts has to take place at this particular moment. As a pioneer Parkstad Limburg functions as an experiment for the rest of the country, that will face shrinkage at some point in the (near) future.

## **1.6 Expected Result**

The result of this research will be an exploratory research into shrinkage and its relation to sustainability, plus it will contain an advice to the municipality of Heerlen concerning the approach of sustainability measures in its shrinkage districts. The advice will consist of several components; social, spatial and organizational. The goal of the advice is to support the municipality in their approach of redevelopment projects of shrinkage districts, especially in relation to sustainability.

## **1.7 Research Boundaries**

The time period in which this research should be conducted does not allow for a comprehensive and integral elaboration of all elements, which are important to generalize this research. The research is for a large part focused on the municipality of Heerlen; consequently the result of this research has to be adopted with keeping the local circumstances in mind. Concerning sustainability; it is interpreted in its broadest sense. That means not only technical measures are incorporated (e.g. energy saving measures or solar panels) but also liveability and social cohesion.

## **1.8 Organization of This Thesis**

Chapter 1 contains the introduction of this research, followed by an explanation of the research design in Chapter 2. Part A is a literature research, consisting of Chapter 3, about the context of the shrinkage issue. Chapter 4 is about the shrinkage situation in Heerlen and Parkstad Limburg. Finally Chapter 5 shows the sustainability approach in Heerlen. Part B of this thesis is focusing more on the application of this research. Chapter 6 investigates the relationship between shrinkage and sustainability. Subsequently chapter 7 contains an advice for the municipality of Heerlen about the approach of sustainability in the redevelopment of shrinkage districts. Finally Chapter 8 ends this thesis with conclusions and recommendations for further research.

Note: The concepts 'shrinkage' and 'population decline' will be used interchangeably in this research, but they both have the same meaning.





## Chapter 2: Research Design

*"If we knew what we were doing, it wasn't called research."*

Albert Einstein, German-American physicist, 1879-1955

This chapter contains the design of the research and the research methodology that is used.

### 2.1 Research Design

This research is executed according to the research model shown in Figure 1. It consists of three parts; the Literature Study, the Advice and the Conclusion. This research design functions as a kind of roadmap throughout the research.

Part 1, the Literature Study, has been used to identify the problem of this research by means of a desk research. The causes and effects of shrinkage that underpin the issue are mapped and what this means for the region of Heerlen.

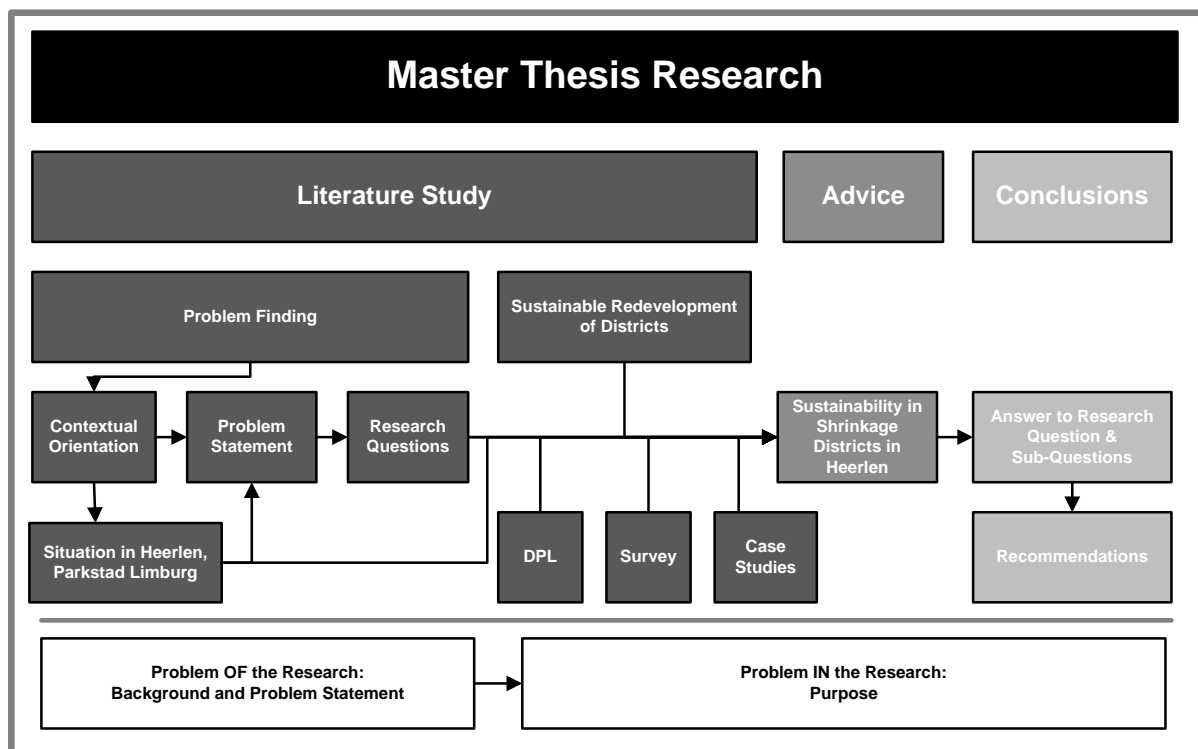


FIGURE 1 RESEARCH MODEL

This part also contains the investigation of sustainability, in means of the sustainable development of districts in general, the measurement of the sustainability performance of a district (DPL) and the way the municipality of Heerlen is approaching sustainability in its redevelopment districts at the moment. A survey about the relationship between shrinkage and sustainability taken among policymakers is also part of this elaboration.

Part 2 contains the advice, which is established from the knowledge gained from the contextual orientation about both shrinkage and sustainability, the tool DPL and the results from the survey and the case studies.

The last part, Part 3, is the conclusion of this research in which answers to the research questions are given and recommendations for further research are established.

## **2.2 Research Methodology**

For the most part, this research is characterized by a qualitative research strategy. That means a large part of the assumptions and justifications are of qualitative nature (i.e. not supported with figures). This is achieved by a significant portion of desk research with a thematic elaboration. However, in addition a survey was carried out to retrieve some quantitative support. The assumptions of several relations are of a quite subjective nature and therefore a well-founded theoretical foundation is still in its infancy. Additional research is needed to be able to generalize results.

## **PART A: Literature Research**

**A**



## Chapter 3: Contextual Orientation

*"All growth is a leap in the dark, a spontaneous, unpremeditated act without benefit of experience."*

Henry Miller, American writer, 1891-1980

While the world population is still growing, the number of Europeans is stagnating and will even decline by the year 2040. All countries in the European Union are aging and some members, like Germany and Romania, are shrinking already. (Hospers G.-J. , 2010) Since the Industrial Revolution in the 19<sup>th</sup> century our thinking has been based on two types of growth: growth of the population and growth of the economy. Now, at the beginning of the 21<sup>st</sup> century, the task is to think completely different: learning to think from a shrinkage perspective. (Blauwhof & Verbaan, 2009) What is shrinkage/ population decline exactly, what is growth at all, how do we see shrinkage versus growth, what are the causes of shrinkage, the effects, and which aspects are involved in this issue, like practices in other shrinking parts of the world, and what are the current policies? This will be elaborated in this chapter.

### 3.1 Exploration of the Definitions

In this paragraph the most important definitions concerning shrinkage will be explained.

#### 3.1.1 What is Shrinkage/ Population Decline?

The term 'shrinkage' itself is not that difficult, but the question we need to ask for the purpose of this research is: what exactly does shrinkage mean?

#### Definition Shrinkage

Van Dam *et al* (2006) state that

"demographic decline is mostly defined as a decline in the total population number in a certain area." In the course of this research this approach is too narrow. Furthermore it is stated: "demographic decline comprises three aspects: (1) numbers (population, households), (2) demographic composition (age, ethnicity) and (3) household composition (size, life stage, income). "

In the current situation the following trends are showing up in the demographic development: on one hand there are the factors that influence the *composition of the population*, like dejuvenation (fewer young people), aging (more elderly people) and discoloration (more non-western immigrants). On the other hand, a factor that is influencing the *size of the population* is present, namely the relatively new phenomenon of shrinkage. (Derks, Hovens, & Klinkers, De krimpande stad. Ontgroening, vergrijzing, krimp en de gevolgen daarvan voor de lokale economie, 2006)

The demographic development in the sense of the size of the population in a country is determined by births and deaths on one hand, and settlement and departure on the other.

In principle, shrinkage can be traced to developments in one of these four aspects. (van Dam, de Groot, & Verwest, 2006) For example, there may be a declining birth rate, an inclining death rate or a negative migration balance.

What is so special about the current population decline in certain parts of The Netherlands is the *structural character* of aging, dejuvenation, a smaller (potential) labour force and fewer households. (SER, 2011)

The above mentioned aspects of demographic development are summarized in Appendix 1. Highlighted are the aspects that play a significant role in the current shrinkage issue.

Furthermore in literature often two kinds of shrinkage are distinguished. However, the several sources disagree on the exact meaning. 'Tough shrinkage' is often explained as population decline (low birth rate, high death rate etcetera), but also as the physical side of shrinkage (the numerical side). 'Soft shrinkage' can either be a shift in population (dejuvenation, aging etcetera), or is about the social-cultural aspects (liveability etcetera). (Gebiedsplatform, 2011)

### **3.1.2 What is Growth?**

On the opposite side of shrinkage we find growth. What is growth then exactly?

#### **Definition Growth**

Growth is mostly seen as a linear process. Linear growth means an increase with a constant quantity per time unit. We speak of exponential growth when a quantity increases with a constant percentage per time unit. The amount gets bigger because the total accumulated amount increases.

Such an exponential growth is a usual process in biological, financial and many other systems in the world. Exponential growth is deceptive because it leads to enormous numbers very fast. The causes of exponential growth and the latter behaviour are relatively easy to understand in simple systems. However, when many different amounts are growing simultaneously in a system, and when all these amounts depend on each other in a complicated manner, an analysis of the causes of the growth and of the future behaviour of the system will be extremely complicated. (Meadows, 1972)

The Club of Rome in 1972 already posed the question of *The Limits to Growth*. "What will be needed to keep the growth of the world economy and population going; perhaps even beyond the year 2000?" (Meadows, 1972) There is a long list of necessary conditions to fulfil, but there are roughly two categories. The first one consists of the material conditions, upon which all physiological and industrial activities are based: food, resources, fossil and nuclear fuels and the ecological system of the planet. The world stocks of these material resources will ultimately define the determinants of the limits to growth on this planet. The second category comprises the necessary growth conditions in the social field. Even if the natural systems of the earth are able to nourish a much larger, economically more

developed population, then the actual growth of the economy and the population will still be depending on factors like peace and social stability, breeding, employment and steady technological progress. These factors are much harder to determine or to predict. Thus, growth can be stopped by social issues. (Meadows, 1972)

In the report of *The Limits to Growth* many difficult choice problems concerning food production, raw material consumption and the creation and suppression of pollution are mentioned. These choice problems arise from one simple fact: the earth is limited. In our modern society we never learned to recognize these problems and seize them. Apparently it is the goal of the current world system to produce more people with more (food, goods, clean air and clean water) for everyone. The report demonstrates that if the society proceeds to pursue this goal, it will ultimately reach one of the many earthly bounds. (Meadows, 1972)

On the opposite side of growth we can identify shrinkage. Considering the occurring shrinkage issues in the world nowadays and in the near future, some of the earthly bounds, the limits to growth, seem to have been reached. Shrinkage could be regarded as some kind of 'solution to growth'. Deteriorating circumstances in a growth area, like e.g. food shortage, could encourage people to migrate to a shrinkage area.

### **3.1.3 Shrinkage versus Growth**

Now it is clear what the terms shrinkage and growth mean in the course of this research. How do they relate to each other?

In fact, shrinkage is a very normal phenomenon. In *Schrumpfungen: Chancen für ein anderes Wachstum* the scientists Hager and Schenkel show that shrinkage occurs everywhere around us. (Hager & Schenkel, 2000) Growth and shrinkage belong to each other – together they form an organic, rhythmic process. There are numerous examples in nature. After summer there is autumn, just like ebb and flood. Flowers blossom, but after a while they start to wither. And how are we supposed to inhale if there is no way to exhale? How different these processes can be, they all have one thing in common: growth is always limited and temporary. In nature everything has the tendency to expansion, but at a certain moment it stops. The shrinkage that follows is a condition for new growth. Growth and shrinkage keep each other in balance; they are different sides of the same medal. (Hospers G.-J. , 2010)

There is nothing new to this for physicists. Mathematicians, biologists and geologists find it logical that growth does not follow a cyclic path. To them, growth is a process of rise, decline and revival. However, there has been little research done on shrinkage in the natural sciences and we cannot speak of a general shrinkage theory yet. Most social-economical theories are grafted onto growth because they were developed in the period of progression after the Industrial Revolution. Of course, in the 70s the Club of Rome already pointed at the limits to growth. More growth does not always lead to more prosperity, on the contrary: more growth could eventually have adverse effects. Despite these critical sounds the growth thinking stays dominant in the academic mainstream. It seems like growth thinking has become a goal of its own, with a simple principle: three is not just more than two, it is also better. (Hospers G.-J. , 2010)

But, why do we not learn from our old master, Mother Nature, that endless growth leads to falling over? Are the current economic models not forcing to plundering of Mother Earth? Is the current economical crisis not a sign that the limits are reached? (Hospers G.-J. , 2010)

In Figure 2 the demanded change in the way we think is pointed out; how do we make the transition from growth to shrinkage?

From growth ....	.... to shrinkage
Quantity	Quality
New business areas	Revitalizing existing business areas
New estate	Restructuring and demolition
Congestion at highways	Decreasing congestion
Pressure on space and environment	Relief of space and environment
Unemployment	Employment in specific sectors
Housing shortage	Housing surplus
Competition for employment	Competition for inhabitants and labour power
Mismatch at labour market	Connection education – labour market
Farewell to older employees	Investing in older employees
Expansion of facilities	Clustering of facilities and maintenance of small-scale

FIGURE 2 FROM GROWTH TO SHRINKAGE (DERKS, HOVENS, & KLINKERS, DE KRIMPENDE STAD. ONTGROENING, VERGRIJZING, KRIMP EN DE GEVOLGEN DAARVAN VOOR DE LOKALE ECONOMIE, 2006)



## **3.2 Context: Trends and Developments**

This paragraph is about the causes and effects of shrinkage.

### **3.2.1 Causes of Shrinkage**

There are roughly three causes identifiable for shrinkage: a socio-cultural (individualization, emancipation), a (regional-)economic cause, and a planning cause. Socio-cultural factors are mainly influencing the natural population turnover (especially birth numbers) and migration movements. (Regional-)economic and planning factors are influencing in particular the migration movements. And planning factors play a large role in shrinkage or growth at a regional level. (van Dam, de Groot, & Verwest, 2006)

Migration almost always has a selective character (age, life phase, income etcetera) and that leads to migration movements being strongly cross-linked to natural population growth. For certain groups of residents, reduced attractiveness is often a reason for migration from a particular area. Several aspects are of influence:

- The attractiveness of the region (employment);
- The attractiveness of a city/ municipality (quality of housing stock and service level);
- The attractiveness of the neighbourhood/ district (social/ physical characterizations of the district and the housing stock). (van Dam, de Groot, & Verwest, 2006)

These aspects will be elaborated for the region Parkstad Limburg and the municipality Heerlen later in this research.

#### **3.2.1.1 Socio-Cultural Developments**

Socio-cultural developments have impacted the number of births the most. Especially the emancipation of women in the 60s and 70s has played a major role in this. Due to the rise and use of birth control and the increasing education and labour participation, the Dutch fertility rate declined enormously (births per woman: from 3.1 in 1960 to 1.6 in 1980). The number seems to have stabilized around 1.7-1.8, which is significantly lower than the replacement factor of 2.1. Besides, more related developments are of influence on the birth rate. On average people are living together or getting married at an older age, many women have their first child later in life and an increasing number of couples remain deliberately childless, especially amongst higher educated people. (van Dam, de Groot, & Verwest, 2006)

Thus, these developments led to a significant dejuvenation as well as a strong aging. The composition of the Dutch population has changed dramatically over the past 40 years, and there is no end to this yet. The 'grey pressure' will increase, also due to an increased life expectancy, while the potential labour force will decrease. (van Dam, de Groot, & Verwest, 2006)

#### **3.2.1.2 Economic developments**

Fertility rates in the Western world have been declining for decades and are greatly influenced by economic factors. A cause is the desire of women to get an education and to participate in the labour market. The negative effect of labour market participation on the fertility rate is especially dependent on the possibilities to combine work and children. In

turn, these options are dependent on the economical, cultural and political context. (van Dam, de Groot, & Verwest, 2006)

Besides, people's trust in the economy influences the housing market, the purchase of expensive consumer goods and especially having children. The birth rate in The Netherlands was quite high in the period of economic boom around 2000, while the decline of the number of births from 2004 partly was caused by the economic downturn. (van Dam, de Groot, & Verwest, 2006)

The migration balance is also cyclic. Immigration increases when the economy is doing well, and the reverse is true for emigration. This connection is identifiable at both national and regional level. Migrants are attracted by rapid economic growth. (van Dam, de Groot, & Verwest, 2006)

The relation between economic, socio-cultural and demographic developments is mutual and therefore complex.

### **3.2.1.3 Regional Economy and Demography**

Most explanations to the causes of shrinkage of economic performance in urban regions focus on macro-economic aspects. After the crisis of 1929/30 many of the international markets for industrial commodities collapsed. Industries, capital and labour migrated to other regions, and the old industrial regions experienced several agglomeration disadvantages. Later on, technological innovations gave businesses the opportunity to become more footloose. This led to industries moving out a lot more; the de-industrialization. The economical structures perceived a new orientation towards services and market liberalization. Because the industrial model was closely linked to the development of cities, de-industrialization inevitably led to far-reaching crises for the cities. (Reckien & Martinez-Fernandez, 2011)

After other crises in the 70s and 80s, the global economic crisis at the end of 2008, beginning of 2009, brought a new wave of problems like mass lay-offs, collapses of large companies and slump in the SME sector. The number of distressed regions grew rapidly across the globe, bringing the topic of shrinking cities to life. (Reckien & Martinez-Fernandez, 2011)

Substantially less attention within the debate of the causes of shrinkage is given to potential reasons on the meso- and micro-scale, such as suburbanization and instituted behaviour. Important in this context, is the ongoing increasing longing for privacy and the demand for more personal space. This process has accelerated de-urbanization and suburbanization (or urban sprawl). (Reckien & Martinez-Fernandez, 2011)

Besides macro- and meso-level causes of urban decline, there are also contributing factors on the micro-level, that is, manifestations in individuals and households. This instituted behaviour can be thought of as embracing a wide spectrum from the informality of habits, norms and values, and routines to the formality of behaviour within the state and its constituent apparatuses and organization. The mentality of people can evoke or prolong the economic decline via their instituted behaviour. An example to this is particular place

loyalty: industrial city workers experienced a contribution to the growth and prosperity of the region, but with the breakdown of the industry, the pride might result in mental stubbornness towards change and also in a particular mental connection to the region. Some unintended habits take place as inflexibility and result in long-term economic and population decline. (Reckien & Martinez-Fernandez, 2011)

Besides the three mentioned causes – de-industrializations, suburbanization and instituted behaviour – there are many more reasons for shrinkage. For example war, epidemics, environmental disasters, political changes, hunger, and climate change. (Reckien & Martinez-Fernandez, 2011) But because other research shows these are not the causes for shrinkage in The Netherlands, these will not be further addressed in this research.

### **3.2.1.4 Planning**

The planning cause of population shrinkage (or growth) manifests itself mostly on a local scale; growth and shrinkage of municipalities in the past have been strongly influenced by the housing development. Up until and including the implementation of VINEX ('Vierde Nota Ruimtelijke Ordening Extra') this was without a doubt controlled to a great extent by the spatial planning policy of the central government. Well-known examples are the development of Flevoland (Almere) in the 'growth core policy', but also the 'no-growth' of municipalities has long been determined by the spatial policy at different administrative levels. (van Dam, de Groot, & Verwest, 2006)

### **3.2.2 Effects of Shrinkage**

Shrinkage has effects on several aspects of society: housing market, living environment, facilities, mobility, regional economy, environment, spatial governance and demand for space. In this research the focus will mainly be on the housing market, because it is consistent with the goals of this research and the master course Construction Management & Urban Development.

Shrinkage is of direct influence on the housing market. Not so much the decrease in total population, but especially the development of the number of households and the size of the households is relevant; households constitute the demand side.

The number of Dutch households will increase slightly in the upcoming 25 years, especially because of an increase in one-person households. Nevertheless, many municipalities will face a decreasing number of households, some even within a few years. The housing stock has to be adjusted in both quantitative and qualitative sense to the future housing demand. (van Dam, de Groot, & Verwest, 2006)

Changing demand-supply conditions at the regional housing market or in certain segments are having direct consequences on a local level. An oversupply of dwellings leads to vacancy, which is likely to concentrate in certain less attractive neighbourhoods and districts. An oversupply of owner-occupied dwellings presses the value and price. An oversupply of rental housing leads to decreasing revenues and probably financial problems for letters, like housing corporations. The above mentioned can be even more complicated due to specific regional circumstances. (van Dam, de Groot, & Verwest, 2006)

Besides the development of the number of households, the composition of households is also of importance to the housing market. This implies a shift in thinking in terms of quantity to quality. That also implies a shift in supply-oriented to demand-oriented thinking. Special attention is needed for the way in which the current housing stock has to be adapted, replaced or demolished. Especially the ongoing aging (= growth!) demands for special requirements. (van Dam, de Groot, & Verwest, 2006)

In regions with a tight housing market, population decline has other effects than in regions with a relaxed housing market. In short, population decline leads to problems with vacancy and livability in one region, while the other region greets population decline with joy. Moreover, differences in pressure on the regional housing market have close correlation with the extent of the unemployment in the region. (van Dam, de Groot, & Verwest, 2006)

The theory of markets always tending to balance is not always true in practice, especially not for the housing market. Vacancy is more than a temporary friction. There is a close correlation with regional-economical developments and a manifestation of the housing preferences, and the resulting housing choice behaviour. Even very low prices do not guarantee the selling and occupation of dwellings. Therefore, the choice for demolition and/or restructuring, dilution, greening of neighbourhoods, and a transitional privatization of the housing stock seems only logical. It raises the quality of the living environment, which contributes to the liveability. (van Dam, de Groot, & Verwest, 2006)

Dutch households are increasingly footloose, which means they are bound less to a specific housing location due to their work or age. This seems to offer opportunities for rural and peripheral regions: housing could act as a new economical bearer for the rural country. However, in shrinkage situations the demand is limited. That is even more because many more regions are focusing on the same strategies. Because of their social network, people are less inclined to move long distance. (van Dam, de Groot, & Verwest, 2006)

A less quantitative demand for dwellings does not imply less demand for space for dwellings. As an effect of dilution of households, in combination with individualization and an increasing prosperity the living space per person has inclined since the 50s, which resulted in a demand for larger dwellings. Thus, the trend of a growing space demand for housing does not seem over yet. (van Dam, de Groot, & Verwest, 2006)

### 3.3 Geographical Orientation of Shrinkage

Not only The Netherlands, but Europe too is facing a structural population decline. Have Europeans become too decadent to replicate themselves, like the American Laqueur posed in *The Last Days of Europe?* (Laqueur, 2007) With an average of 1.5 a European woman produces too few offspring to guarantee a stabile population. The era of the 'population pyramid' is over – the structure of the European population looks more like an urn and is on its way to become a mushroom very fast. Besides Cyprus, Ireland, Luxemburg, Malta and Sweden all EU-members will lose inhabitants in the upcoming 40 years. (Hospers G.-J. , 2010)

#### 3.3.1 The Netherlands

The Netherlands are already suffering from it: in line with the European average the tipping point from growth to shrinkage will be around the year 2040. Without the arrival of immigrants the European Union would in fact count 50 million people less by the year 2050 – ten percent of the current population number. (Berlin-institut für Bevölkerung und Entwicklung, 2008) Actually, these aggregated numbers are not that interesting. Within a country many spatial differences occur often. Growth and shrinkage are alternating. In Europe one in three regions is shrinking, and most of them are located in the periphery. (Hospers G.-J. , 2010)

In The Netherlands there is a 'two direction development': in one region the population is declining or will decline in the near future, while in the other region an expected ongoing population growth will occur in the next decades. The expectation is that especially agglomerate effects will result in a further concentration of economical activity in the core areas of the country. That is the reason why these economic core areas – roughly the Randstad and its outlet axes, with a single university city in the rest of the country – are expected to attract new economic activity and people in the upcoming decades. However, shrinkage is not an isolated phenomenon that only occurs in the periphery of The Netherlands. In the upcoming years many regions will follow, also regions in/ near the Randstad. (SER, 2011)

##### 3.3.1.1 Shrinkage Regions of the First and Second Generation

For policy making it is important to make a distinction between the current and future shrinkage regions. The first category comprises the *shrinkage regions of the first generation*; Parkstad Limburg, Noordoost-Groningen and Zeeuws-Vlaanderen. They get confronted with urgent bottlenecks, for example in the field of residents and dwellings (vacancy, deferred maintenance) and in the form of an impoverishment of the facility level (education, medical care, retail). These regions have to deal with a significant and urgent restructuring task. The sense of urgency in these regions emerged during the last years. (SER, 2011)

It is especially important that the awareness will increase in the *shrinkage regions of the second generation*: regions that are at the dawn of a new era with structural population decline. By anticipating in time on the demographic developments, adjustment processes can be put into motion and too much investment can be prevented. This demands regional governors, investors and entrepreneurs to become more aware of upcoming demographic changes and respond actively to this with long-term investments. Moreover, these regions

can learn from the experience elsewhere, in The Netherlands and also in other countries that have to deal with shrinkage. (SER, 2011)

### **3.3.2 What is the Case in Other Countries?**

Shrinkage is an issue people have to deal with worldwide. In what way is shrinkage brought forward in cities and regions in other countries and how do they deal with it? Appendix 2 gives a detailed explanation of the situation abroad and how those other countries are dealing with the issue.

## **3.4 Shrinkage in a Historical Perspective for The Netherlands**

*Structural* population decline is a completely new phenomenon in the world history and it defies all scientific disciplines and political and administrative policy fields. (Derks, Hovens, & Klinkers, *Structurele bevolkingssdaling. Een urgente nieuwe invalshoek voor beleidsmakers*, 2006) The issue of population decline and shrinking cities is not new, but the structural character of it gives the issue completely new features. A closer look is taken at the history of population decline.

### **3.4.1 Population Growth**

The Baby Boom after the Second World War was responsible for a rapid population growth. Since the 70s the increase of people in The Netherlands has been very gradual. During the last 30 years the population growth has been highly dependent on foreign migration. Moreover, the population growth is muted due to a gradually decreased birth surplus. Also, the age structure of the population has changed significantly over the past 30 years. While the amount of young people decreased (dejuvenation), the amount of elderly people has increased strongly (aging). (van Dam, de Groot, & Verwest, 2006)

The population growth in The Netherlands varies considerably per region. During the last 30 years the population growth in the regions at the edges of the country and in the north and south wings of the Randstad lagged behind compared to the Dutch average. A stronger than average population growth occurred in Noord-Brabant, Utrecht, large parts of Drenthe and Overijssel, the north of Noord-Holland, and, of course, Flevoland. Some regions even showed a population decline: in and around Delfzijl and Haarlem. In the last ten years 't Gooi and Zuid-Limburg also faced a population decline. (van Dam, de Groot, & Verwest, 2006)

### **3.4.2 Shrinkage is Not New**

When we take a closer look at municipality level it appears that population decline is not a new phenomenon at all. Especially during the 70s many municipalities in the Randstad faced a heavy population decline. This affected especially the three large cities (Amsterdam, Rotterdam, Utrecht), but also Haarlem, 't Gooi and the Rijnmond. The municipalities outside of the Randstad also faced a population decline, especially in Noordoost- and Oost-Groningen, some municipalities around Arnhem and Nijmegen, and in Zuid-Limburg. During the last decade the amount of municipalities that has to deal with population decline has grown significantly, both in the western and eastern parts of the country as well as at the edges of The Netherlands, especially in Zuid-Limburg. (van Dam, de Groot, & Verwest, 2006)

### 3.4.3 Last 30 Years

During the last 30 years Rotterdam has been the leader, with a loss of 40,000 inhabitants, followed at a distance by Haarlem, Amsterdam, Den Haag and Hilversum. Relatively seen, the decline in the Gooi-municipalities Bussum, Laren and Hilversum was the largest. The main causes are dilution of households and suburbanization. Suburbanization is a form of selective migration (because of household composition and income) which mainly arises from the large cities. That led to an unbalanced composition of the population: many young people, many elderly people, and as a result of that many one or two-person households. The inflow of foreign immigrants only muted this process a little, and the relative impoverishment only got strengthened. Hence, suburbanization, dilution of households and aging are strongly interrelated processes. (van Dam, de Groot, & Verwest, 2006)

During the last ten years the picture has been slightly modified. The largest absolute decrease occurred in Zuid-Limburg, but the decline also went on in Delfzijl, Haarlem and Rotterdam. Six out of ten largest municipalities facing population decline are situated in Zuid-Limburg. The population decline is still mainly the effect of dilution of households and selective migration. (van Dam, de Groot, & Verwest, 2006)

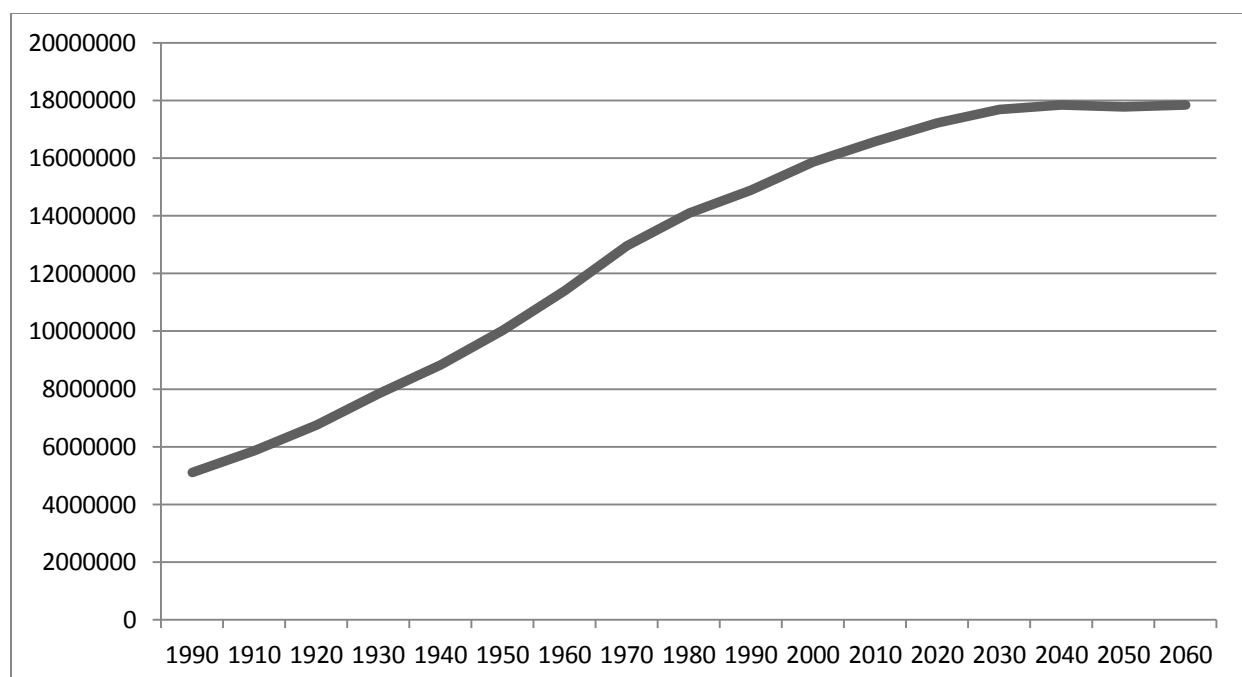


FIGURE 3 POPULATON DEVELOPMENT IN THE NETHERLANDS 1990-2060 (CENTRAAL BUREAU VOOR DE STATISTIEK, 2011)

Figure 3 shows that the population of The Netherlands will grow until the year 2035, but then the shrinkage will deploy in the entire country.

### 3.5 Shrinkage demands for a Custom-Made Approach

The demographical developments in The Netherlands consist of four components, namely dejuvenation ('ontgroening'), aging ('vergrijzing'), discoloration ('verkleuring') and population decline (see Appendix 1). These components combined lead to different situations from place to place, demanding for custom-made solutions.

According to analyses from the Centraal Planbureau (CPB) and the Centraal Bureau voor de Statistiek (CBS), The Netherlands will be strongly profiled in 2025: the Randstad will be more occupied, with more immigrants and more internationally focused – the border regions will be greyer and emptier. The combination of aging and dejuvenation strikes some regions earlier in time and more severe than others. In the upcoming decades the differences will increase and a dichotomy will threaten. (Blauwhof & Verbaan, 2009)

Population decline is more severe when it does not only comprise decline in separate cities or municipalities, or parts of those cities or municipalities. Attention is given to regular, predictable demographic developments in districts or villages (where there is a cycle of first aging, and afterwards juvenation again). Every municipality will encounter such demographic developments occasionally. Shrinkage in the long-term, which does not only involve a decline in population but also a decline in the number of households, has large consequences for the facility level and the economic perspective of the region, because it is attacking the necessary facility level and because the shrinking region will face a value loss (value creation is no longer achievable). Population decline as a separate appearance is hard to isolate. Dejuvenation, aging and population decline are developments that are mutually reinforcing. (Topteam Krimp, 2009)

### 3.6 Four Shrinkage Policies: 'Bagatelliseren', 'Bestrijden', 'Begeleiden', 'Benutten'

Shrinkage is a context which municipalities and regions have to take into account. To prevent a deterioration of the quality of life as a result of shrinkage, they have to ask themselves what they can do about it. Especially local governors are often stuck in their growth thinking. Shrinkage demands a serious paradigm shift. Of course, it is not only a problem of the government. Also project developers, housing corporations, associations and schools have to learn to deal with it – and do not forget the inhabitants itself. In practice one can distinguish four policy reactions on shrinkage and its geographical consequences: the so-called 'four B's of the shrinkage policy' in The Netherlands (in Dutch): (1) 'bagatelliseren' (play down), (2) 'bestrijden' (fight), (3) 'begeleiden' (guide) and (4) 'benutten' (exploit). (Hospers G.-J. , 2010)

#### 3.6.1 'Bagatelliseren' (Deny): It is not so bad ...

Some governors respond outraged to a prediction of serious population decline in their region. In the unexpected event that shrinkage would occur it will stay limited. They could actually be right: how much value should we attach to shrinkage forecasts? There is a cliché statement - *demography is destiny* - but it is only partly true. Population forecasts are covered in considerable uncertainty. Births and deaths are not that hard to predict, but migration flows belong to another category. Besides: the lower the scale level (country, region or municipality), the less robust the forecasts are. Most researchers admit their



estimations are no predictions. They also come back at previous calculations of demographic developments. In short, shrinkage numbers are not inevitable but directional. (Hospers G.-J. , 2010)

### **3.6.2 'Bestrijden' (fight): Our city has to grow!**

Between 1960 and 1980 the Dutch government conducted an active spatial scatter policy. (Engelen, 2009) The government itself gave a good example: a part of the government services was moved to the middle of the country and the periphery. Apeldoorn received parts of the Belastingdienst, Groningen received the Nederlandse Gasunie (and later on also the PTT) and Heerlen received the ABP and departments of the CBS. In this way Den Haag tried to unburden the Randstad and stimulate the economy of the mostly weaker regions. That policy has unmistakably given the periphery an impulse. In 2011, the government let regions and municipalities decide for themselves whether or not to fight shrinkage. Hoping to attract new inhabitants and still trying to grow most shrinkage area invest in city and region marketing. Parallel to these campaigns a lot of new dwellings are being built. Especially new living concepts are popular: 'Make your dream come true, against an affordable price and in a splendid scenery!' These strategies are questionable. In the end all municipalities and regions are fighting for the same people. People that are moving cause a shift of the problem. Besides this, most of the Dutch are very attached to their roots; they do not move that easily. Marketing is a trigger at most. (Hospers G.-J. , 2010)

### **3.6.3 'Begeleiden' (guide): We are learning to deal with it.**

The focus in the 'guiding' policy of the shrinkage issue is not on 'how do we attract new inhabitants?' but rather on 'how do we keep the current inhabitants from leaving?'. 'Warm marketing' is the answer to this. (Hospers G. , 2009) There are many initiatives unrolled to bind inhabitants: varying from baby bonuses to discount for starters, and from loans for rebuilding to maintenance of the facility level in small villages. Some municipalities are forced to moderate their new estate plans and to restructure the current housing stock. Less construction is a problem for most of the municipalities and project developers. Demolition is often chosen because it is the easiest way out. But restructuring and transformation are becoming more common solutions. Also strategies like 'smart demolition' and 'de-renting' are getting more attention: new estate is allowed but only if there are one or two dwellings demolished for each new dwelling. Demolition is not always the best solution. It costs quite a lot of money, and gone is gone. Besides, it evokes resistance, because there is no attention for alternatives. (Hospers G.-J. , 2010)

### **3.6.4 'Benutten' (exploit): Shrinkage offers plenty of opportunities!**

More and more people are pleading for taking the opportunities that shrinkage offers. They argue that happiness does not depend on population numbers, but more on the quality of our living environment. Regarded like this, shrinkage is a blessing to the landscape, nature and environment. Less people means less pressure and more space. A connection of shrinkage to sustainability and the leisure economy could lead to new economic value bearers. But the question remains: where do we get the money to develop those promising ideas? And the danger in this is that we all make the same marketing choice: all Dutch municipalities focusing on nature, space and leisure is not a solution. One thing is clear: if a municipality wants to seize the opportunity of shrinkage, then it has to do it primarily for the current residents. The German professor Sulzer pleads to not mention *shrinking cities*

anymore, but call it *waiting cities*. Cities that are waiting, slumbering, until their hidden values will be discovered. Patience is a virtue. (Hospers G.-J. , 2010)

### 3.7 Conclusion

Shrinkage is a complex issue that affects all policy fields. The decline of a population is not just about a decrease in the number of people, but even more about the composition of the population. Aspects like dejuvenation, aging and discoloration are of great importance for the development of households in that population and as a result, for the developments in all policy fields. The current shrinkage issue differs from the shrinkage issues that occurred before, because of its structural character. That means we are facing a task that has not been experienced before. That fact could scare us, but it is also possible to see it as an opportunity. Because the world is familiar with growth for hundreds, even thousands of years, there is fear for the relatively unknown structural shrinkage. Yet, the biggest fear is fear itself. There is no escape from this happening, so the best thing to do is to face it.

Nowadays it is known that there are certainly limits to growth, like The Club of Rome already pointed out in 1972. It is also known that the world is in the middle of several crises. The monetary crisis and the environmental crisis – to name the ones that are important in the course of this research – are urging people to take measures to decrease the pressure in several fields. Thus, shrinkage becomes a blessing instead of a threat.

Shrinkage is a development induced by several complex causes. Besides socio-cultural and economic developments, it is dependent on regional economy and demography. In turn, the effects are visible everywhere in society; on the housing market, in the living environment, in facilities, economy, environment and spatial developments. In The Netherlands there is a clear distinction between shrinkage regions of the first and second generation. The regions of the first generation are facing or will face shrinkage in the near future, while the regions of the second generation will follow later on. As a result, regions like Parkstad Limburg, Zeeuws-Vlaanderen and Noordoost-Groningen are pioneers concerning the shrinkage issue. This could give them a lead in the problem that in time everyone will have to face, but on the other hand attention has to be paid to the risk of them becoming a victim of the 'dialectics of lead' ('Wet van de Remmende Voorsprong'). In other words, they seem to be the expert in this field because of their initial experience, but at a certain point followers will learn faster and outrun them in their knowledge. They could be left in their problematic situation like this.

Other countries are also facing the shrinkage issues and a main cause seems to be the presence of a mono-industrial economy in earlier times. Besides, in most cases some additional regional-specific causes are mentionable. The shrinkage issue almost never comes alone. That implies the need for an integral solution. In The Netherlands we have faced shrinkage before, but that was not a structural problem. The fact that it now is structural, together with some specific circumstances, demands for a custom-made approach. There is not one correct approach; it has to be adapted to the region's characteristics. Playing down or fighting is a dead end anyway, because all regions will face shrinkage at a certain point in future. The best thing to do is to search for certain qualities and development opportunities that can give a region the impulse to at least maintain its level, and if possible upgrade it to make it sustainable and future-proof.

## Chapter 4: Parkstad Limburg – Heerlen

*"It is costly wisdom that is bought by experience."*

Robert Ascham, British writer, 1515-1568

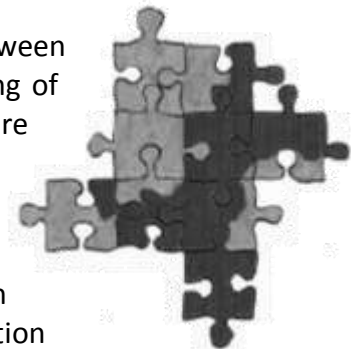
Parkstad Limburg and the municipality of Heerlen are the regions in The Netherlands that are pioneers concerning dealing with shrinkage. The large-scale impact of this issue is an interesting research field. This chapter will first focus shortly on Parkstad and then Heerlen; the geographical orientation, the history, the current issues and the future vision of the region. Then the focus will be on the shrinkage issue; what is the population and household development, the composition of the housing stock and what does this all mean in terms of effects?

### 4.1 Regional Level: Parkstad Limburg

Parkstad Limburg is a metropolitan region (a public entity) in the south of The Netherlands, in the province of Limburg, with a total population of almost 252,000 inhabitants. The region consists of eight municipalities, namely Heerlen, Kerkrade, Landgraaf, Brunssum, Nuth, Voerendaal, Simpelveld and Onderbanken (see Appendix 3, Figure 20). (Wikipedia, 2011) It is one of the largest metropolitan areas of The Netherlands.

The name 'Parkstad' refers to the high interdependence between urban and rural area, caused by the characteristic spatial planning of mini colonies that were separated by agricultural areas or nature (see Figure 4). (Wikipedia, 2011)

FIGURE 4 NETWORK OF 'PARK' AND 'STAD' (PARKSTAD LIMBURG, 2009)



Besides a green hilly landscape, Parkstad also comprises an urban area, with a total population number higher than the population number of the city of Eindhoven. The urban structure is mainly formed by the municipalities of Heerlen, Kerkrade, Landgraaf and Brunssum. This urbanization runs without interruption from Kerkrade in the south via Heerlen to Brunssum in the northeast and Landgraaf in the southeast. (Wikipedia, 2011)

In the part of the area that was formerly known as the 'Oostelijke Mijnstreek', between approximately 1900 and 1975 there was an industrial extraction of coal. Presently, all coal mines and mining sites are dismantled and redeveloped as residential, recreational and industrial sites. This restructuring is known as 'From Black to Green'. (Wikipedia, 2011)

The region is one of the most densely populated areas in The Netherlands; the Randstad is the unquestioned leader, but Parkstad Limburg, together with regions like Eindhoven, Enschede and Arnhem-Nijmegen, follows closely (see Appendix 3, figure 21 and 22).

Background information about Parkstad and its geographical orientation, its density, history, current issues, vision and SWOT-analysis can be found in Appendix 3.

## 4.2 Local Level: Heerlen

This paragraph is about the municipality of Heerlen; its geographical orientation, the history of the city, the issues that are currently under attention and the vision for the future.

### 4.2.1 Municipality of Heerlen

Heerlen is the largest municipality of Parkstad Limburg, situated in the centre of the urban region and is a young city with almost 90,000 inhabitants (2011). Heerlen is the centre of Parkstad Limburg and therefore partly determines the image. However, the centre cannot exist without the surrounding municipalities that provide support to the centre city. (Gemeente Heerlen, 2008)

### 4.2.2 Geographical Orientation of Heerlen



Heerlen is divided into four urban areas: Heerlerheide, Hoensbroek, Heerlen-Stad and Heerlerbaan. In turn, all urban areas are divided into districts. Another approach is the division into the areas Heerlen-Stad, Heerlen-Noord and Heerlen-Zuid. Compared to the earlier mentioned areas there is an overlap. The areas Heerlen-Stad, Heerlen-Noord and Heerlen-Zuid comprise the districts mentioned in Appendix 4.

FIGURE 5 LOCATION OF HEERLEN

### 4.2.3 History of Heerlen

The history of Heerlen dates six thousand years back in time, when there was a settlement of Michelsberg culture. However, the continuous habitation of Heerlen began with the arrival of the Romans. About two thousand years ago they founded a civil settlement with the name Coriovallum. Coriovallum stands for 'excellent located reinforcement' or 'army camp'. In 1940 the foundation of one of the main buildings of the ancient Roman buildings was discovered; the 'Thermen' (baths). These baths are now on display in the Thermenmuseum in Heerlen.

#### 4.2.3.1 Heerlen and its Centre Function

After the departure of the Romans in the fifth century AD, it became quiet in Heerlen. Until around the tenth century, when agriculture became well developed in entire Europe, Heerlen was shaped by the emergence of farm houses and mills along the valleys of the Caumerbeek, Geleenbeek and Schandelerbeek. In the beginning of the 20<sup>th</sup> century Heerlen was clearly a village, but even then there was some sort of centre function. In Heerlen one could already find the doctor, the veterinarian, the district court, the post office and even some shops. Several functions were housed in the town hall. (Gemeente Heerlen, 2011)

Thanks to the mining industry Heerlen grew explosively during the 20<sup>th</sup> century: from 7,000 inhabitants in 1900 to almost 100,000 inhabitants in 2000. Thousands of those miners with families needed housing. This was achieved by the massive construction of mine colonies, initially social housing concentrated outside the town. After the Second World War the colonies merged more and more with the city. In 1965 the Dutch government decided to

close the mines. Because Heerlen had focused entirely on the mining industry (mono-culture), the economy began to face hard times. Heerlen had to put its focus on attracting and providing work in other sectors. The black mine heaps were turned into green residential areas or parks. (Gemeente Heerlen, 2011)

Throughout the years the city has been built around the mines and in fact has developed itself as a city of neighbourhoods in a network, and not like most cities in The Netherlands as a city that spread from a historic centre (e.g. a church or a town hall) and developed itself concentrically. (Gemeente Heerlen, 2008)

#### **4.2.3.2 The Name 'Heerlen'**

There are several explanations for the name 'Heerlen'. This is elaborated in Appendix 5.

#### **4.2.4 Current Issues in Heerlen**

Several factors are traceable as causes for the current issues in Heerlen.

##### **4.2.4.1 Population Decline**

Heerlen and Parkstad Limburg are leaders in the shrinkage issue and have had to deal with a population decline since 1997, as the first urban region in The Netherlands; a trend that will continue for years. For Heerlen and the region this is a determining factor when it comes to developing an urban vision. The city cannot deny this development and considering the demographic forecasts the city has accepted this development as a reality. The city has to think differently, but the rapid growth of the past 100 years makes this transition very difficult. The focus of a shrinking city is different from the focus of a growing city, but not less promising. (Gemeente Heerlen, 2008)

##### **4.2.4.2 Individualization & Social Cohesion**

Throughout the history of the mining industry and the subsequent government support Heerlen has always been dependent on large employers. In the early days the mine colonies and the prominent place of the church in society created a strong social bond in the neighbourhoods, but on the contrary the government departments brought, in particular, office jobs and social fragmentation. The 'we'-feeling was largely lost, the identity of Heerlen faded which in return led to a decline of the inhabitant's pride. The centre of the city could not fill this gap, because it never developed that role from the past; the city centre never transcended the role of shopping centre in the mining period because the social cohesion in the neighbourhoods was that strong. (Gemeente Heerlen, 2008)

Despite a population number of about 96,000 in 2000, the measures in the economical field, the investments (conversion) in the physical environment and investments in the social infrastructure, Heerlen did not quite manage to recover; the municipality still faces a relative large amount of setbacks compared to other medium-sized municipalities (G27). When looking at the indicators population growth, employment, security experience, entrepreneurship, educational level and income, it is clear to see Heerlen scores below average. (Gemeente Heerlen, 2008)

The individualization of society has caused a reduction in social contacts within the living environment. For Heerlen this has had a major impact, because the city is built on the foundation of social cohesion within neighbourhoods. The individualization has resulted in a decrease of the social control which led to an increase of crime and thus a growing sense of insecurity. In recent years people have worked hard to combat crime, successfully, and now we see that the feeling of security amongst citizens has increased. Again, the history of the city can strengthen its future. The strong bond inhabitants traditionally have with their neighbourhood can be the foundation of a renewed social connection with each other. (Gemeente Heerlen, 2008)

#### **4.2.4.3 Globalization of the Economy**

Globalization of the economy has enormous consequences for the region Parkstad Limburg. Labour is expensive in The Netherlands, land prices are high and as a result agriculture and manufacturing are under increasing pressure to leave. Exactly those two sectors are represented above average in the province of Limburg. Large-scale economic opportunities based on comparative advantages are not presenting itself at a national level, but at a global level. For cities this scaling means that they have to cooperate more and more with other cities, while there also has to be paid an increasing attention to the distinctiveness of the own city, compared to cities in an increasingly wider environment. Heerlen has a major benefit in terms of its location, within Tripool (Heerlen, Sittard-Geleen, Maastricht), MAHHL (Maastricht, Aachen, Heerlen, Hasselt, Liège) and ELAT (Eindhoven, Louvain, Aachen Triangle). In the economy of the 21<sup>st</sup> century it is no longer about individual cities, but about urban networks and regions. Globalization thus offers opportunities for Heerlen. (Gemeente Heerlen, 2008)

#### **4.2.4.4 From Following to Steering**

The region and especially Heerlen were characterized by a 'following' character during the last century. The developments came quickly and were so unpredictable that the city could hardly anticipate. During the growth period of the city no one knew where it would end and so they approached the job pragmatically; the development pressure was so enormous that there was no other way. (Gemeente Heerlen, 2008)

The municipality had a particular interest in not frustrating the growth and went through all these efforts to give possibilities to people and businesses to settle and grow, consequently leading to the situation that in the field of spatial planning the consistency was hardly looked at. To meet the constant demand residential neighbourhoods were rapidly built at every available location. The employment was leading in the mining period. (Gemeente Heerlen, 2008)

After the closure of the mines there was mainly fear of exodus, particularly with regards to employment one was willing to make every effort to keep and/ or attract businesses. Almost every investment initiative, mainly of physical nature, was received with open arms. The city craved for renewal and sustainability at a time when few were willing to invest in Heerlen. (Gemeente Heerlen, 2008)

Since the end of the 20<sup>th</sup> century Heerlen has been relatively stable. The city has begun to fulfil the preconditions of its economic base and in doing so emerges self-confidence. By

developing policies in several fields, the municipality has increasingly demonstrated its 'steering' role during recent years. The policies however are sectoral in nature; therefore goals remain somehow incoherent. (Gemeente Heerlen, 2008)

Guiding/ steering is more than just showing which way to go; it is especially indicating what we should not do. Choosing is losing options. This requires enormous administrative power and that is why, on November 15 2005, the municipalities in Parkstad Limburg chose to acquire the WGR+ status (see Appendix 5). This step is of great importance because issues are no longer only addressed on their effects, but also on their regional impact. (Gemeente Heerlen, 2008)

#### **4.2.5 Future Vision of Heerlen**

Heerlen is a good example of a city that has changed continuously during the last 100 years. The location of Heerlen in Parkstad Limburg, its history, inhabitants, culture, companies and many other aspects form a unique combination of opportunities and threats for future developments. The SWOT-analysis of Parkstad Limburg is one of the things that functions as input for an urban vision (see Appendix 6). (Gemeente Heerlen, 2008)

The urban vision gives answer to the questions: 'What do we want?' and 'What do we have to realize to achieve that?'. The vision establishes the base for; 'How are we going to do it?', 'When are we going to do it?' and 'What are acceptable costs?' discussions in the social and political arena. (Gemeente Heerlen, 2008)

The current situation in Heerlen offers opportunities for the elaboration of experiments and innovation. Heerlen fits into the same category of cities as Rotterdam, Tilburg and Enschede; all cities with a (mono-)industrial past that have experienced a significant change and are opposites of historical cities like Amsterdam, Breda, Hengelo and Maastricht. Cities like Heerlen are characterized as modern cities with an innovative look in the field of e.g. architecture and sustainability. (Gemeente Heerlen, 2008)

##### **4.2.5.1 New Energy**

The presence of a huge labour potential in Heerlen and Parkstad Limburg, business locations ready for development and a very attractive environment make Heerlen the perfect breeding ground for new economic developments. The cluster 'new energy' plays a major role, a theme that has not appeared out of nowhere. Heerlen and the region Parkstad Limburg are inextricably connected to the theme 'energy'. In the 20<sup>th</sup> century it was all about fossil fuels. This connection gave the region an enormous boost during that period and made it the largest urban agglomeration in Limburg and one of the largest in The Netherlands. In the 21<sup>st</sup> century the emphasis for this region is on innovation, production and application possibilities of environmentally friendly fuels. (Gemeente Heerlen, 2008)

In collaboration with partners in Nordrhein-Westfalen, especially Stadt Aachen, Städte Region Aachen, IHK Aachen, RWTH Aachen and Forschungszentrum Jülich the transition to this 'new energy' is put into motion. This will be a boost for the area within the upcoming years, with a radiation to the entire Eindhoven-Louvain-Aachen Triangle (ELAT). With the establishment of the first Dutch solar cell factory and the implementation of the mine water project the first big steps have been taken. (Gemeente Heerlen, 2008)

#### 4.2.5.2 Heerlen: Energetic Heart of Parkstad Limburg 2026

Besides the history of the city as a guide for future developments, the municipality developed four other foci for the future:

- Central city;
- Entrepreneurial city;
- Youthful city;
- Network city.

They can all be captured under the theme 'New Energy'. On one hand this refers to the new vision at the historic link with energy in the region (mining of coal), and on the other hand it links the theme to the mutual dependence of Heerlen and its direct surroundings, concerning the above mentioned foci. This gives a central thought to the urban vision of Heerlen: Energetic Heart for Parkstad Limburg. (Gemeente Heerlen, 2008)

The general points of attention comprise the following:

- Broad support for the four chosen themes, focus on theme 'Central city';
- Heerlen used to have too many top priorities: the focus on four themes creates more of an identity;
- Make long-term choices and stick with them, show decisiveness and tenacity;
- Emphasize the distinctiveness of the region, the international surroundings;
- Clearly place Heerlen in its surroundings: Parkstad, Zuid-Limburg, ELAT, MAHHL etcetera;
- Inhabitants are proud of their city, dare to be positive, have ambition, communicate;
- **Make energy the central theme: it touches the soul of the city and its inhabitants.**

The separate foci comprise the detailed points of attention mentioned in Appendix 6.



### 4.3 Shrinkage Issue in Parkstad Limburg & Heerlen

This paragraph deals with the population development, household development, composition of the housing stock and the effects of shrinkage in Parkstad and Heerlen.

#### 4.3.1 Population Development

According to the prevailing population forecasts, the population number in Parkstad Limburg will decrease from almost 252,000 inhabitants in 2000 to 200,000 inhabitants in 2035. The worst-case scenario even assumes a number of 179,000, while the best-case scenario considers a number of 209,000 as possible. (Parkstad Limburg, 2006)

Scenario	2000	2005	2010	2015	2020	2035
Best-case		244,100	237,500	233,200	229,600	209,600
Main	251,200	244,100	237,500	232,000	226,100	200,300
Worst-case		244,100	234,900	224,900	214,900	179,300

FIGURE 6 SCENARIOS POPULATION DEVELOPMENT (PARKSTAD LIMBURG, 2006)

In Appendix 7 the extensive statistics for the population development, household development and composition of the housing stock can be found.

#### 4.3.2 Effects of Shrinkage in Heerlen

Heerlen is experiencing a negative development on the housing market that is set in by the shrinkage of the population. In the upcoming years this trend will continue. According to forecasts the number of households will first stabilize as a result of household dilution, but in time it will decrease. At this moment Heerlen is facing a vacancy of more than 5%. By doing nothing the surplus of dwellings will increase further. However, this does not mean there is no new estate needed in the city. The households are not only changing in numbers, but the composition will also change. There will be more elderly people (aging) and less (young) families in the future (dejuvenation). This involves other housing needs.

As a result of these developments certain housing segments are under pressure. The task is to put the housing market in balance in the upcoming decades, and keep it in balance. On one hand this can be realized by the construction of new housing; this meets the desire of a quality improvement in the housing stock. On the other hand, extraction from the housing stock is needed. (Companen, 2011)

In the housing research of Companen it has been investigated which market segments can be seen as promising or vulnerable in the upcoming years. (Companen, 2011) In other words; where will be surpluses and shortages?

##### 4.3.2.1 Rental Sector

In the rental sector housing for elderly people is especially promising. Together with the aging the demand for senior dwellings increases. Many elderly people are focusing on housing with a rent up to €550 per month. The cheaper rental apartments are the most vulnerable. Growers and leavers (from Heerlen to other municipalities) exchange these dwellings for a more spacious rental dwelling or owner-occupied dwelling. The cheap and

medium-expensive single-family rental dwellings are also under potential pressure. A considerable supply seems to be emerging, because families want to move from there to a larger (rental) dwelling and elderly people want to move to housing suitable for seniors.

#### **4.3.2.2 Owner-Occupied Sector**

In the owner-occupied sector cheap townhouses and apartment are promising. Starters and growers often demand a townhouse with a price up to €150,000. Apartments in this price category are popular among 'unbound people' and settlers. Besides, the (ground-based) dwellings for elderly people in the owner-occupied sector form a promising segment. The most additional demand focuses on the price segments of €150,000 - €200,000 and €200,000 - €300,000. Vulnerable are the medium-expensive townhouses (€150,000 - €200,000) and the more expensive semi-detached and detached houses (€200,000 - €300,000). Especially families are willing to exchange their townhouses for a more spacious (owner-occupied) dwelling. At the moment, the semi-detached and detached houses are mostly inhabited by households that want to leave the municipality when they move. (Companen, 2011)

#### **4.3.2.3 Housing Demand Forecasts**

For the determination of the future quantitative housing need the household development is even more important than the development of the population: it is households that are moving from one dwelling to another, not individual people. Each household stands for one dwelling.

The household forecasts show the following:

- The number of households will decrease less in the upcoming 20 years than the number of persons. This is associated with the ongoing household dilution mainly caused by the aging issue.
- In the period until 2020 there will be an absolute decrease of 600 households. However, the shifts between the age categories will be much larger in this relatively short term. The group of elderly people in the age category 55-74 years will increase with 20%, while the group of small households up to 35 years and of 35-54 years will decrease vigorously.
- Looking at the period till 2040 the number of households will decrease with 14%. Three household types will proportionally decrease the most:
  - The one and two-person households up to 35 years (-38%);
  - The one and two-person households in the age category 35-54 years (-42%);
  - Families with children (-52%).
- The number of 75-plus households will increase sharply in that same period: from 5.645 in 2011, to 9.425 in 2040 (+67%!).
- The number of households above 55 years will reach its peak around 2030. This means that around 2030 53% (!) of all households will consist of people older than 55 years of age. (Companen, 2011)

#### 4.4 Conclusion

Parkstad Limburg is an urban region with a specific history for Dutch standards; the coal mining brought a lot of prosperity during many decades in the 20<sup>th</sup> century, but the tide has turned. The population is subject to shrinkage and is the first and hardest hit region in The Netherlands. On one hand this is remarkable, because the location of the region within Europe is very advantageous and promising. The connections to Germany and Belgium are within reach, but this fact also uncovers the borders that are still somehow present.

After the closure of the mines in the 70s the area was transformed into a restructuring area. Practically the whole socio-cultural heritage has disappeared and together with this the identity of the region. To capture the problem of unemployment several government services were moved to Parkstad, but that did not have the effect they had hoped for; even today unemployment is one of the several problems.

The ongoing dejuvenation, aging and depopulation are also not helpful. Fortunately, Parkstad and Heerlen as the centre and largest municipality (and most shrinking city of the country) are aware of the situation and are not only accepting it, but also 'exploiting' it (= 'Benutten'). This step is of very great importance. It gives the region the impulse it needs to put its visor at the future and search for adequate and integral solutions. Because the region has been dealing with certain issues for decades already, the attention is present to get a hold of the situation. Strengths and opportunities for the region are clear which are developed in a vision for future developments.

For Heerlen it is important to make the city the energetic heart of Parkstad Limburg. Besides being the centre city, it is about being a network city in the cross-border region, being venturous and making the city young and vibrant. Where coal once functioned as the 'old energy', it is now time for 'new energy'. For Heerlen sustainable development is both logical and promising.

The shrinkage issue in Heerlen is quite severe. The number of households will decrease in the long term, but the shift between the age categories will be even more serious. Within 20 years there will be more elderly people than young people, which will result in issues in several fields. For the housing market this means a shift in (quality) demands and the anticipation to this problem needs a strong approach. The vacancy, that has already deployed, needs measurements to prevent districts from deterioration with all its consequences. Many existing districts need interventions and it is a great opportunity to use these moments to make them more sustainable.

However, a shrinking population does not instantly lead to more sustainable districts. When dwellings have been demolished, vacant spaces appear and become available for green facilities. But this is hardly an improvement; sustainability is more than that. Sure, the demolition and restructuring of dwellings in districts give the opportunity to physical improvement. It is a positive side-effect of shrinkage. But besides this, several negative consequences seem to be mentionable. Compared to a growing area, the creation of a sustainable local environment seems to be a more complicated process in a shrinking region area, with money not being the only reason.

As briefly discussed before, the municipality of Heerlen emphasizes on sustainability, also in area (re)developments such as the restructuring of shrinkage districts. To measure the sustainable scores of certain districts the computer tool DPL ('DuurzaamheidsProfiel van een Locatie') is being used.

The next chapter will take a closer look at sustainability and the deployment of the tool DPL at the municipality.

## Chapter 5: Sustainability and the Approach in Heerlen

*“The nation says: change makes people live. It would be more appropriate to say: change is life. Life is change”.*

Jan Greshoff, Dutch writer, 1888-1971

The municipality of Heerlen is committed to climate and (new) energy. Energy is traditionally an important theme for the city. During the Roman times Heerlen was a spa, where one could find energy to travel further. In the last century the mining brought economical prosperity and employment. Nowadays the new energy sector has partly taken over this role. Several initiatives have been deployed and they are contributing to the realization of (international) energy and climate goals. On one hand there is the desire of delivering a positive contribution to the improvement of the climate. On the other hand it is an opportunity to create employment in the new energy sector.

In area developments, sustainability is incorporated by using the tool DPL ('DuurzaamheidsProfiel van een Locatie'). This chapter is about this tool and its usefulness.

### 5.1 Sustainability Integration at the Municipality of Heerlen

In 1997 in Kyoto (Japan) the world made clear appointments about reducing the CO<sub>2</sub> emissions, which is one of the most important causes of the greenhouse effect. To avoid the earth to warm more than 2 degrees Celsius we have to decrease our global CO<sub>2</sub> emissions with 20%. Europe is planning to emit 20% less CO<sub>2</sub> in 2020, compared to 1990. Heerlen is joining these ambitions and adopted in its Climate Policy Plan a reduction of 20% of the CO<sub>2</sub> emissions in 2020 within the municipality borders, through a 20% energy reduction and a 20% sustainable energy generation. It is being tried to accomplish this by giving a good example and challenging and stimulating the stakeholders in the city to contribute to this. (Gemeente Heerlen, 2010)

With the city's history and its ambition to keep it this way in the future, it is safe to say that somehow energy is in the genes of Heerlen. Heerlen even wants to be an example on regional, national and European level regarding energy. The general goal of Heerlen focuses on energy savings and the application of sustainable energy. These are the first two steps of the Trias Energetica:

- Energy savings:  
The reduction of the energy demand; what is not demanded does not have to be generated.
- Sustainable energy:  
Wherever possible, try to generate the remaining energy demand in a sustainable way.
- Efficient use of fossil fuels:  
The energy demand that cannot be saved or generated in a sustainable way, we try to generate as efficiently as possible with fossil fuels. (Gemeente Heerlen, 2010)

Besides the Trias Energetica, Heerlen believes that its policy has to contribute significantly to a sustainable development. The way this is approached in area developments will be explained in the next paragraph. (Gemeente Heerlen, 2010)

## 5.2 DPL: ‘DuurzaamheidsProfiel van een Locatie’

DPL (‘DuurzaamheidsProfiel van een Locatie’ = Location Sustainability Profile) is a computer tool for measuring the sustainability of a district and comparison with a reference district. The tool supports stakeholders with the implementation of sustainability in area developments and restructuring of existing districts and gives connection points for improvement of the sustainability. (IVAM UvA BV, 2009)

The instrument is being used in area developments, restructuring projects and management of existing districts. Users are municipal project leaders, project developers, urban planners and environmental advisers. Among these parties there is often much confusion about the interpretation of the concept ‘sustainability’. DPL offers opportunities to make sustainability negotiable for the several target groups. This makes sustainability the engine for integral quality improvement of districts. (IVAM UvA BV, 2009)

DPL is based on the definition of sustainability in the Brundtland report ‘Our Common Future’:

“Sustainable development is the development that meets the needs of the current generation without compromising and reducing the possibilities for future generations to meet their needs.”

Sustainability is therefore elaborated in three elements: environment (Planet), social (People) and economy (Profit). In sustainable area developments these three elements unite in order to develop liveable, vital districts with a high quality that spare the environment as much as possible. (IVAM UvA BV, 2009)

The three elements are divided into 11 themes and 24 sustainability aspects that DPL uses to measure the sustainability. The input connects to existing instruments like EPL, EPC, FSI, GRP Gebouw, SB enquête, CAR, GES, etcetera. (IVAM UvA BV, 2009)

To calculate the sustainability of an existing district or new estate plan with DPL the data of the district have to be completed for all 24 sustainability aspects in the program. It is about physical data of the district, statistical data like the crime number, and results of resident surveys (only for existing districts). DPL is a Windows Excel program. Every aspect has its own tab where requested data have to be filled out in the yellow cells. With these data and indicators DPL calculates the sustainability score per aspect. (IVAM UvA BV, 2009)

Because there are several types of districts, several options are possible to improve the sustainability of districts. Therefore several reference districts are introduced in the DPL program. To determine the sustainability of a district the reference district that corresponds the most in terms of buildings and functions has to be selected. The program then compares the performance of the ‘test district’ to the reference district. Agreed is that the reference

district represents a theoretical constructed district that does not have any special sustainable measures and that just meets the requirements of the regulations. The reference districts therefore score a standard grade 6, in other words 'sufficient'. (IVAM UvA BV, 2009)

The scores (grades) for every aspect in the test district are then compared to the reference district and shown in a graph. This sustainability profile is presented as a bar chart. This leads to an overview of all 24 aspects. An overview for the 11 elements or Triple-P aspects mentioned earlier is also possible. (IVAM UvA BV, 2009)

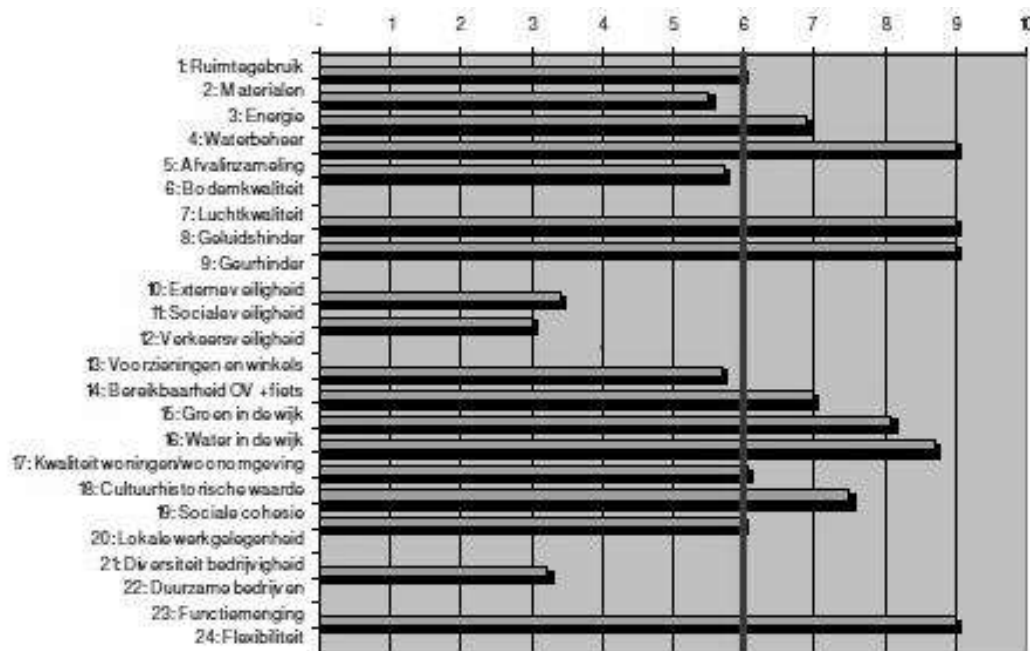


FIGURE 7 EXAMPLE OF A SUSTAINABILITY PROFILE CALCULATED BY DPL

Application is possible in several fields, including:

- The raise of the sustainability quality of a plan;
- A strengths-weaknesses analysis of the sustainability of a district or plan;
- The composition of ambitions;
- The comparison of several planning scenarios for the district;
- The selection of districts that are high priority on the list of districts that need to be tackled;
- The monitoring of the quality of a district in time (development). (IVAM UvA BV, 2009)

### **5.3 DPL as a Basis for Further Research**

The municipality of Heerlen is interested in the usefulness of the tool DPL and the measurability of sustainability in general. This measuring of sustainability seems to be quite difficult; it is a 'container concept' and therefore benchmarks are difficult to define. Also, the municipality functions as some kind of experiment for using DPL and the policymakers are questioning the usefulness of the tool too.

A positive side of DPL is that it probably covers the entire range of aspects that are involved in the total sustainability concept. Therefore it is chosen to use the aspects and components of DPL as a base for the shrinkage and sustainability research in the next chapters. There will also be given feedback to the tool itself and it will be included in the advice that will be given in the end.



## **PART B: Shrinkage & Sustainability**

**B**



## Chapter 6: Sustainable Redevelopment of Shrinkage Districts

*“Discontent is the first step in the progress of a man or a nation.”*

Oscar Wilde, Irish writer, 1854-1900

Approaching sustainable redevelopment of shrinkage district from the ‘there is no growth anymore’ viewpoint, is a too negative approach. A better approach is; making a local or regional situation future-proof, even regardless of growth or shrinkage. This involves the acceptance of shrinkage, responding to the forecasts and putting emphasis at existing qualities. In other words, it is *smart shrinking*; dilution, the connection of spatial developments, the search for spatial balance and flexible new estate. A flexible city is a city that possesses robust structures with certainties, where uncertain and undefined spots can react to the explicit desires of a specific moment and era. This chapter contains an explanation of the interaction between shrinkage and sustainability – resulting from previous research – and the opinion of the policymakers of the municipality, and a comparison between those two.

### 6.1 Interaction between Shrinkage and Sustainability

Sustainability in the built environment is often only focused on energy, i.e. energy saving, enhancement of the housing stock, energy poverty, residents’ behaviour, financing structures etcetera. But when it comes to sustainability in urban redevelopment projects in especially shrinkage areas, a more integral approach is demanded.

The subjects, themes and aspects concerning sustainability that are included in the instrument DPL covers a broad range of aspects that we consider to be involved in sustainability as a general concept. Therefore in this paragraph all 24 sustainability aspects of DPL will be elaborated in their relation to shrinkage. Some of the aspects have a clear relation with shrinkage, while others do not have a significant connection with neither shrinkage nor growth. This view is mainly my personal judgment, based on previous research. In Appendix 8 the extensive explanation of the interaction between shrinkage and sustainability can be found. Some keywords are given here that represent the complete explanations:

- *Usage of Space*: compact, environmental impact, nature, energy saving, limitation of mobility, multifunctional, scaling, central spots, dilution.
- *Energy*: energy performance, structural adjustment, energy saving measures, healthy indoor climate, energy stocks.
- *Materials*: production, design, construction, use, renovation, demolition, waste, re-use, life-cycle, choice of materials, unhealthy.
- *Water Management*: water demand, duration of water collection, natural conditions, re-use of rainwater, irrigation, cleaning, collected, stored, ‘wadis’, mixed-sewage system, infiltration, surface water, ground water.
- *Waste Collection*: waste, ‘ladder of Lansink’, prevention, generation, re-use, recycling, composting, burning with energy recovery, burning, dumping, consciousness, separation, underground containers, image, littering, biogas, supply chain management, composting.

- *Soil Contamination*: agriculture, industrial companies, pollution, surface water, soil remediation, general health, drinking water supply, real estate, energy production.
- *Air Pollution*: general health, traffic, industry, cluster facilities, 'traffic-magnetic-effect', road network.
- *Noise Nuisance*: health effects, biodiversity, road traffic, neighbours, industry, companies, road structures, clustered facilities, location.
- *Odour Nuisance*: sewage system, industry, companies, road traffic, neighbours, agriculture, waste, catering, subjective, road structures, main access roads, clustered facilities, larger distances, water.
- *External Safety*: risk of fatalities, production, storage, processing, transport, hazardous materials, location, borders.
- *Social Safety*: protection, feeling, harm, human behaviour, public space, living environment, social control, vandalism, crime, sense of security, liveability, structure.
- *Traffic Safety*: amount of traffic, traffic safety, place on the road, clarity, overview, redesign of road network, clustering of facilities, traffic pressure, transport intensity, reduction of displacement, traffic environment, consciousness.
- *Quality of Facilities*: number, quality, support, basic facilities, car use, effects, aging, central location, broad social facility, flexibility, 'life course steady'.
- *Accessibility*: public transport, intensity of use, motorized transport, network, support, clustering, demand, region, effects, subsidies, green energy, design, easy access and exit, slow traffic.
- *Green in the District*: enrichment, exercise, meet, play, develop, healthier, micro-climate, living environment, social safety, importance.
- *Water in the District*: flooding, rainfall, functions, perception, connection.
- *Quality of Dwellings and Surroundings*: value, surroundings, perception, offer, progression, influence, attraction, composition of the population, social safety, social cohesion, hierarchy, image.
- *Cultural-Historical Value*: singularity, recognition, bond, past, reference, awareness, spatial quality.
- *Social Cohesion*: basic needs, social resources, equality, participation, societal changes, quality of life, household composition, social status, image, support, inequality, spatial planning, 'life course steady', perspectives, safety, sense of security.
- *Local Employment*: jobs, activity, employment rate, support, supportive facilities, socio-economic.
- *Diversity of Activity*: range of companies, possibilities, scale levels.
- *Sustainable Companies*: sustainable business operation, sustainable facilities, local energy supply.
- *Mixing of Functions*: space, spatial planning, traffic flows, exchange of warmth and energy, public space, supervision, liveability, continuity, diversity, developments, vacancy, nuisance, infrastructure, centre, clustering.
- *Flexibility*: adaptation, functions, developments.

## 6.2 Shrinkage and Sustainability according to Policymakers

Because the municipality of Heerlen is concerned with the implementation of sustainability in the city and it is using the DPL-instrument to measure the sustainability performance of districts, it is interesting to investigate how policymakers feel about sustainability in relation to shrinkage.

### 6.2.1 Shrinkage and Sustainability as judged by Policymakers - Survey

Policymakers within the municipality are asked by means of a survey how they feel about shrinkage and sustainability and their mutual relationship. The survey was conducted among policymakers of the department of 'Stadsplanning' (City Planning). The number of approached policymakers is 27, the number of respondents is 14. That is 52%:

#	Discipline	#	Discipline
2	Urbanists	1	Plan economist & Construction cost expert
1	Project leader	1	Policymaker 'Urban Green Facilities & Landscape'
1	Policy advisor 'Cultural Heritage'	1	Technician 'Soil & Water'
1	Policy maker 'Housing'	1	Policymaker 'Soil & Water'
1	Policy maker 'Traffic'	1	Policy maker 'Noise' and 'Air Quality'
1	Policy maker 'Sustainability' and Supervisor 'Soil & Water'	1	Policy maker 'Environment'
1	Head of 'Environment & Sustainability'		

The first question posed to the policymakers of the municipality of Heerlen was about the topic 'sustainability'.

%	Question 1: The municipality of Heerlen pays a lot attention to the subject sustainability. What is your opinion about this statement?
21%	The municipality is actively engaged with the subject and doing well.
57%	The municipality is working on it, but more attention should be paid to the subject.
14%	In my opinion, there is not enough attention paid to sustainability.
7%	I do not have a clue about how the municipality is handling sustainability.
0%	Other, namely ...
100%	Total

The survey shows that a majority thinks that the municipality is paying attention to the subject, but that more attention and effort is needed to reach certain results. Stated is e.g. that; *"Sustainability often remains in ambitions. It should get a more prominent place in the area development process, more up-front. Maybe one fears that sustainability slows the project down. It is unknown if everyone is envisioning the same."* Another respondent states that; *"There is a lack of know-how."*

It also becomes clear that a minority thinks that the issue of sustainability is treated actively, while another minority finds it too minimal. A very small part of the respondents is not acquainted with the sustainability approach of the municipality.

It can be concluded that most policymakers are aware of the way sustainability is approached and treated within the municipality, but it also becomes clear that the communication about sustainability needs some improvements. Policymakers indicate that it is not obvious among colleagues what sustainability actually comprises for the municipality and how to deal with it. This, of course, can partly be addressed to the fact that sustainability is a 'container concept'. However, it is highly recommended to have a clear vision about the matter you are talking about and knowing how to deal with it. Otherwise, ambition will never become reality and in the end sustainability will then be substituted.

The second question connects sustainability to shrinkage.

%	Question 2: Do you see shrinkage as an opportunity or a threat for implementing more sustainability measures in area developments/restructuring projects, and why?
93%	Opportunity
7%	Threat
100%	Total

A vast majority of the policymakers sees shrinkage as an opportunity for sustainability. Important reasons mentioned for this are that *"area developments offer the possibility for transition, reconsideration about use of space, functions and opportunities for new contents."* And *"Shrinkage urges to tackle the transformation of the housing stock at an accelerated pace. So those area developments are in the first place an opportunity to do it right now and to do it sustainable. We will not have a second chance in those areas for the upcoming 50 years."* Traps are nevertheless also mentioned; *"There could be chosen for cheaper solutions; sustainability is difficult to express in terms of money."*

Shrinkage is mentioned as a threat only a few times and in general, the reason for that is money; *"Sustainability measures are conceived by almost all stakeholders as more expensive. With less financial resources and fewer earning capacity sustainability measures are seen as 'additional requirements' and therefore undesired."*

Question three is based on the Triple P approach. The score is the average of all the scores given.

	Question 3: What topic do you value most in the context of a sustainable (re)development of shrinkage districts? [scale 1 -3, 1 highest and 3 lowest]
1.50	People
1.64	Planet
2.43	Profit

People and Planet are valued the most, with People slightly more important than Planet. This indicates that the livability factor plays a bigger part in the sustainability issue than pure 'planet factors', e.g. energy, materials and stocks. The role of shrinkage in this context might be of more influence; i.e. policymakers are more concerned about the maintenance and improvement of the liveability due to a possible deterioration caused by the shrinkage, than they are concerned about the implementation of energy saving measures, depletion of stock and re-use of materials. Although Planet forms an important one; *"Man has damaged enough already, it is time to give something back to the earth"*, their first concern is to ensure a quality of life for all inhabitants; *"Sustainability begins with a piece of awareness (People). The planet provides food and resources and we ourselves have the key to handle them in a responsible way. Profit is less important because the crisis has taught us that 'profit thinking' is a dead end."* And; *"Protection of the planet and its valuables are of the greatest importance. The combination sustainability and environment is easily made. A nice but important side-effect is that this improvement comes along with profit, which can be used again for the planet. This leads to an exponential growth of sustainability."*

Profit is mostly mentioned at the third place, because most respondents think that people have to care for the planet and themselves, while money/ profit is a side issue. However, some respondents are indicating that Profit is the most important, because it all begins and ends with *"What does it cost?"* and *"What are the benefits?"*.

The next question is about the themes that are incorporated in the topics People, Planet and Profit.

<b>Question 4: What theme do you value most in the context of sustainable (re)development of shrinkage districts? [scale 0-10, 0 highest and 10 lowest]</b>		
<b>3.4</b>	Quality of Dwelling and District	People
<b>4.7</b>	Social Cohesion	People
<b>4.8</b>	Future Value	Profit
<b>5.1</b>	Green and Water	People
<b>5.7</b>	Local Environment	Planet
<b>5.7</b>	Safety	People
<b>6.4</b>	Economic Vitality	Profit
<b>6.6</b>	Nuisance	People
<b>7.4</b>	Sustainable Entrepreneurship	Profit
<b>7.6</b>	Facilities	People
<b>8.6</b>	Stocks	Planet

The first thing noticeable is that the theme People scored high again. Especially the 'Quality of Dwelling and District' and the 'Social Cohesion' are considered to be important for the sustainable development of a shrinkage district. The 'Future Value' also seems to be important. This theme belongs to the category Profit, but it remains a question as to whether the future value of the district as a whole is meant by the respondents (i.e. 'life course steady'), or the future value as meant in DPL, more aimed at the 'Mixing of Functions' (i.e. also employment, companies) and 'Flexibility'. The title 'Profit' is not entirely

clear in this context. This says more about the usefulness and clarity of the themes of DPL than about the opinion of the policymakers.

Planet is estimated relatively low, while this was the other way around at the previous question. Again, perhaps the themes are not clear enough, as to which 'triple-P aspect' they belong, because the next question - where the sustainability aspects are more specified – again shows a greater importance of People and Planet.

<b>Question 5: Which aspect do you value most in the context of a sustainable (re)development of shrinkage districts? [scale 0-10,0 lowest and 10 highest]</b>					
<b>8.1</b>	Energy	Planet	6.9	Social Cohesion	People
<b>8.0</b>	Green in the District	People	6.9	Water in the District	People
<b>7.6</b>	Quality of District & Dwelling	People	6.9	Local Employment	Profit
<b>7.6</b>	Water Management	Planet	6.6	Quality of Facilities	People
<b>7.4</b>	Air Pollution	Planet	6.6	Soil Contamination	Planet
<b>7.2</b>	Noise Nuisance	People	6.4	Mixing of Functions	Profit
<b>7.1</b>	Usage of Space	Planet	6.2	Sustainable Companies	Profit
<b>7.1</b>	Odour Nuisance	People	6.1	Waste Collection	Planet
<b>7.1</b>	Social Safety	People	6.1	External Safety	People
<b>7.0</b>	Materials	Planet	6.1	Flexibility	Profit
<b>7.0</b>	Accessibility	People	5.9	Cultural-Historical Value	People
<b>6.9</b>	Traffic Safety	People	5.6	Diversity of Activity	Profit

The judging of the sustainability aspects shows that the left column – with the highest scores – only contains Planet and People aspects. So as mentioned earlier, policymakers find sustainability in terms of liveability the most important issue to focus on while restructuring shrinkage areas. It also becomes clear that the best-known and most tangible/ concrete sustainability measures score highest; 'Energy' is a well-known and hot issue at the moment, so that speaks most to the imagination. Therefore aspects like 'Social Cohesion' and 'Cultural-Historical Value' could have dropped in the list.

Remarkable is that 'Mixing of Functions' and 'Flexibility' did not achieve a high score, while those aspects could deliver a large contribution to sustainability in a shrinkage district.

The next question is about sustainable development directions of the aspect in case of shrinkage and of growth.

**Question 6: For all 24 sustainability aspects a sustainable development directions can be determined, in the context of both shrinkage and growth. Write down for each aspect what you think is sustainable, for both growth and shrinkage. What is sustainable for the aspect in a shrinkage situation? What is sustainable for the aspect in a growth situation?**

Some remarkable answers will be elaborated here.



## Shrinkage

When it comes to shrinkage, policymakers are worried about the social aspects of shrinkage districts; they think inhabitants will get lonely. Restructuring however, is seen as a positive influence on the social safety, because there will be a better overview and more control. It is perceived that the social cohesion improves because of the shrinkage and restructuring of districts; inhabitants will be more acquainted with each other.

The 'Use of Space' is approached as *"the contrast between 'red' and 'green'"*; shrinkage offers opportunities for more green facilities and recreation, living in a spacious and green environment.

'Energy' is not seen as an aspect only related to shrinkage; *"It will become/ is an issue anyway, both in shrinkage and growth situations"*. But it is confirmed that shrinkage offers more space and less support, therefore local energy generation becomes more and more interesting. Besides, bad quality housing that is using a large amount of energy can 'easily' be demolished.

Some aspects, like 'Waste Collection', 'Soil Contamination', 'Air Pollution' and 'Odour Nuisance' do not seem to speak to the imagination and therefore do not evoke solution directions; only in particular cases these are mentioned by respondents.

Green and water facilities are seen as major contenders for improvements in a shrinkage district. The most important reason is more space, resulting in an increasing liveability and improvement of several other sustainability aspects, like air pollution, social cohesion and identity of the district.

The 'Quality of Dwelling and Surroundings' are also linked to this; improvement by restructuring enhances the quality of the district seriously and makes it future-proof. 'Cultural-Historical values' give the district its own identity; *"Be proud of the past and of the future"*.

Local and sustainable employment is seen as an additional value for the district, but it is also remarked that less support in terms of numbers of people does not always make this feasible.

In addition to this, 'Flexibility' is seen as an important value, because: *"Without flexibility, today's world is tomorrow's history"*. Together with a good 'Mixing of Functions' in a districts, support is created for facilities and it strengthens the power of the district and makes it more like a village within a city.

## Growth

When we take a look at the answers given for growth, we see that there are fewer worries about the social aspects. On the other hand, there are more worries about the 'Use of Space'; *"compact use of space"* is the term that is used as a solution many times.

In terms of energy, there are worries about more and more use of energy, but there are also opportunities mentioned e.g. for the support for local energy generation. The financing of new energy techniques is also seen as more opportunistic.

Aspects like 'Waste Collection', 'Water Management', 'Air Pollution' and 'Noise Nuisance' are seen as problematic issues, because growth will only enlarge the pressure. Innovative solutions have to be sought here.

In a growth situation, 'Cultural-Historical Value' is comparable to a shrinkage situation; *"Do not forget the past because it establishes respect for the future"*.

Local and sustainable employment offers opportunities in times of growth, because there is enough support in numbers of people and the urge to grow in a sustainable way is present nowadays.

In a growth situation there also has to be attention for the 'Mixing of Functions', but it offers less trouble because there is enough support available. 'Flexibility' is also important; *"Fast evolving developments ask for flexible solutions"*.

Question 7 asks the respondents if they missed certain aspects among the aspect surveyed.

**Question 7: Concerning the mentioned topics, themes and aspects; do you miss certain aspects, that according to you could offer additional value to the measuring of sustainability measured in shrinkage districts?**

The major part of the respondents believes that the 24 aspects cover the entire range of what sustainability comprises. Some respondents remark that it could be interesting to know how inhabitants feel about sustainability (measures) concerning their dwelling and district.

Finally question 8:

**Question 8: Do you want to add something, concerning shrinkage and sustainability, the measuring or other important points of attention?**

Concerning shrinkage, it is remarked to think about employment and children returning to their native soil. Others name the construction of 'life course steady' dwellings, because of the aging issue. And also; *"Sustainability is an umbrella term. It has two components: process and content. The process focuses on three dimensions: time (past, present, future), space (all relevant stakeholders in the project area and the surroundings) and value (thematic aspects)"*. This confirms the thought that sustainability is more than just technical measures concerning energy saving and depletion of stocks.

### **6.2.2 Ranking of Sustainability Aspects in Relation to Shrinkage according to Policymakers**

In the diagram in Appendix 9 the results for the 24 sustainability aspects as judged by the policymakers are shown. In the inner circle the first-order and most important aspects related to shrinkage according to the policymakers are presented, the middle circle shows the second-order aspects and the outer circle finally the least related aspects.

### **6.3 Comparison between My Opinion and Policymakers' Opinions**

It is interesting to see the similarities and the differences between the conclusion from my research and the policymakers' opinions. This provides insight into the way sustainability and shrinkage is regarded by the municipality in everyday practice, compared to my analytical approach. An illustration can be found in Appendix 10. The aspects that I would also expect to be in that specific category are green, the aspects that are highlighted in colour and framed are the ones I would expect in another position.

#### **6.3.1 Similarities**

In the core of the diagram it is noticeable that there are three sustainability aspects that I also found strongly related to a shrinkage situation, namely 'Use of Space', 'Energy' and 'Quality of Dwelling & Surroundings'. 'Use of Space' is probably the most appealing sustainability aspect in relation to shrinkage; less people means more space. Also, concerning 'Energy' there are many well-known sustainability measures and it is logical that policymakers see connections there (remember the mine water project in Heerlen), certainly in combination with the aspect 'Quality of Dwelling & Surroundings'. Restructuring of the housing stock and the living environment in a shrinkage situation is the most obvious measure, resulting in a more sustainable and liveable situation.

In the second shell we can see mostly similarities.

In the outer shell we can again see some similarities. We both find some aspects concerning 'Profit' weakly related to shrinkage; that is 'Sustainable Companies' and 'Diversity of Activities'. Also 'Waste Collection' does not seem to be extremely related to shrinkage. Remarkable is that policymakers find 'Cultural-Historical Value' a third-order aspect and I agree with that, although in the comments of the survey it came across that most of the respondents think that those values are of great importance for the identity and recognition of a district.

#### **6.3.2 Differences**

The first thing to notice is that the greatest difference is to be found in the first-order aspects. Certain aspects that are to be found in the inner shell in the diagram of the policymakers I did not find as important at all. So that is quite an extreme difference. We take e.g. a look at 'Noise Nuisance', 'Odour Nuisance' and 'Air Pollution' (the more technical measures); policymakers probably see a pretty large improvement of these aspects in a shrinkage situation, while my opinion is that those aspects will indeed improve, but a larger liveability is needed more and more related to shrinkage, resulting in the creation of support and conditions for other sustainability requirements.

I would expect 'Quality of Facilities' to be stronger related to shrinkage and I would expect 'Local Employment' to be weaker related. Furthermore I think that 'Flexibility' and 'Mixing of Functions' are very important conditions for the sustainable development of shrinkage districts. Policymakers think there is only a weak relation.

'Water Management' and 'Green in the District' are considered as strongly related to shrinkage by policymakers, while I found this is less the case. This is probably caused by the fact that the municipality of Heerlen focuses strongly on the opportunities for green and blue (water) facilities in their restructuring projects.

In the next paragraph we will take a look at how the municipality of Heerlen is dealing with shrinkage and sustainability in their restructuring projects at the moment.

#### 6.4 Case Studies: Sustainability Approach in Shrinkage Districts in Heerlen

The municipality of Heerlen has been dealing with the shrinkage issue for several years now. Some districts within the city are most urgent to tackle. In the context of this research three of those districts have been chosen to take a closer look at; Meezenbroek-Schaesbergerveld-Palemig (MSP), Vrieheide (Vrieheide-De Stack) and Aldenhof (Centrum-De Dem, Hoensbroek). All three of them are currently being restructured, though all in a different phase. For this research, the way restructuring is related to sustainability is interesting. Which sustainability measures are taken or which ambitions are there? Can we conclude from this information that shrinkage offers opportunities for certain measures?

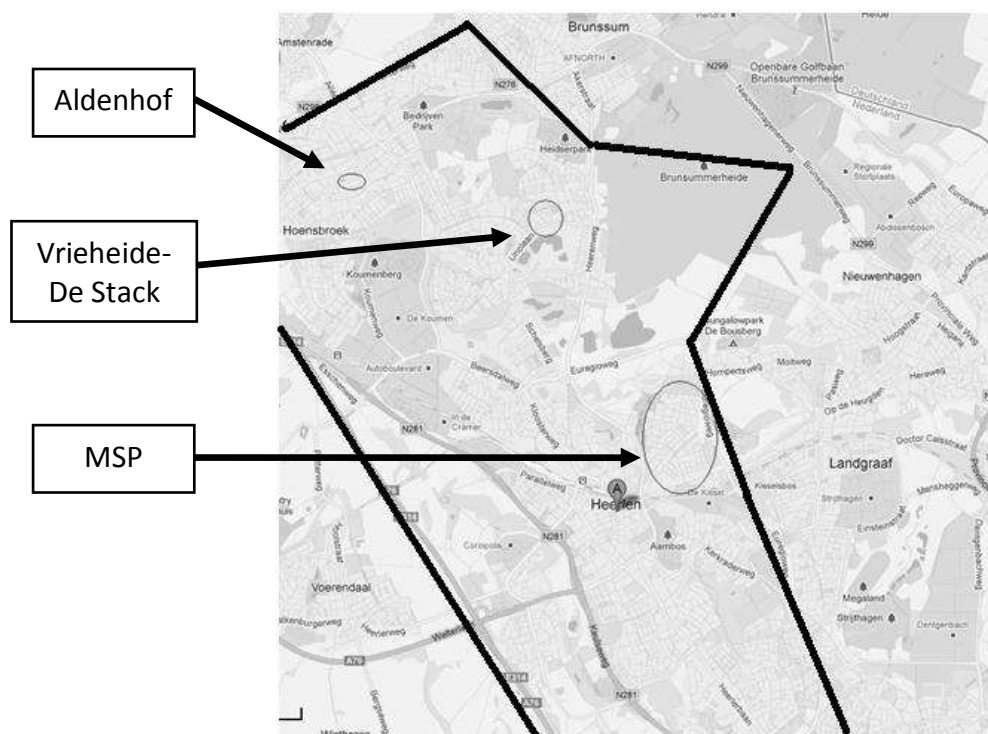


FIGURE 8 CASE STUDY DISTRICTS IN HEERLEN

Every case study will be briefly explained in the next paragraphs; a detailed explanation and background information can be found in Appendix 11, 12 and 13.

#### **6.4.1 MSP: Meezenbroek-Schaesbergerveld-Palemig (Heerlen-Stad)**

In the district MSP (Meezenbroek-Schaesbergerveld-Palemig) the municipality and housing corporations are cooperating to achieve spatial and socio-economic renewal. The district is dealing with socio-economic setbacks, an outdated housing stock and shrinkage. However, there are good starting points for renewal: the organically grown urban structure, the abundant low-rise buildings and the green location are offering good perspectives. Residents' participation is the guidebook in this. (KEI, 2011) MSP is one of the 40 'attention districts' of former minister Vogelaar; the so-called 'Vogelaarwijken'.

#### **Restructuring & Sustainability**

MSP is a district with many associations, involved inhabitants and nice qualities. However, there are extensive and urgent problems; youth nuisance, the housing and facility offer is not sufficient anymore and there are social problems. The district is undergoing a large restructuring. New facilities for elderly people are being built, together with the set-up of a care network that offers them opportunities to stay at home as long as possible. A new shopping centre as a heart of the district is also planned. Several facilities, including a primary school, will be combined in a broad social facility opposite of the shopping centre. Obsolete and unpopular dwellings, like some flats without lifts, will make room for fewer but larger and more sustainable dwellings. In MSP the green facilities are increasing in number and quality. The social side of the district will be improved by strengthening the social life (associations etc) and their facilities.

In Appendix 11 the (planned) measures in MSP that have to do with sustainability are illustrated, to show how the municipality of Heerlen is dealing with the shrinkage and sustainability issue in this district.

#### **Current State**

The restructuring of MSP started around the year 2007. Since then several, both social and physical, projects have accomplished some results. This includes the construction of pocket parks, demolition of dwellings, youth work and the set-up of a care network. The preparations for the construction of the new shopping centre are currently being carried out and the broad social facility is being prepared. (Inloopcentrum MSP, 2011)

#### **6.4.2 Aldenhof – De Dem (Hoensbroek)**

The Aldenhofpark in urban district Hoensbroek, situated in the current LTS-neighbourhood and at walking distance from the centre of Hoensbroek, needs restructuring. This small-scale project is aimed at improvement of the housing stock, physical situation and social cohesion in the district. The planned new estate and broad social facility surrounded in green are meant as a boost for the entire district.

#### **Restructuring & Sustainability**

The dwellings in Aldenhof are of bad quality. There have been interventions in the past, but not at urban level. Regarding the shrinkage issue, it is time to strengthen the urban structure of the district. All building blocks have to be restructured in order to use the total potential of the neighbourhood. This involves the demolition of 230 flats ('portiekflats'). They will be replaced by a maximum of 96 new estate dwellings and a broad social facility,

with amongst others a community school ('brede school') and a care support centre. Some meeting points with themes related to nature and playing will also be constructed. The construction of the community school in this district is necessary considering the urgent need for major maintenance of the current school. Aggregation of the Roman-Catholic and public school is needed quickly; otherwise the public education will disappear forever from the urban area of Hoensbroek. (Gemeente Heerlen)

The redevelopment of Aldenhof is ambitious in the context of sustainability. The hilly landscape of the area with its coal layers has formed an inspiration for the ground plan of the redevelopment area. The area is divided into several 'wedges' and functions are created into the depths of the wedges. The layer of the entire area (Aldenhofpark) is called the top layer. It will be the layer of the future, sustainably furnished with sustainable materials. The equipment should be preserved for years and offer space for residents and users. That also means social sustainability with enough space for common routes, large involvement and participation.

In Appendix 12 the planned measures in Aldenhof that have to do with sustainability are illustrated, to show how the municipality of Heerlen is dealing with the shrinkage and sustainability issue in this district.

### **Current State**

Between 2012 and 2015, work will be done both behind the scenes and on the scene (by demolishing in the area). To make it visible that a new park and new dwellings and facilities are on their way, these changes will be visibly communicated. These initiatives make sure that the public space will be used optimally in the meantime and the 'interspace' will enable the current residents to keep finding their home. Starting point is that these initiatives are always in line with the final plan. This creates an organic development that keeps the soul of the neighbourhood alive. It is an experimental way of discovering what makes the neighbourhood a beloved and properly used living environment.

#### **6.4.3 Vrieheide-De Stack (Heerlerheide)**

The restructuring task for a district like Vrieheide-De Stack is complex and dynamic. The restructuring of the housing stock is seen as particular, because it is characterized as exemplary (trend-setting) and of importance for more locations with the same issue in and outside the region. In the multi-annual administrative program of the municipality Vrieheide-De Stack is mentioned as one of the priority districts. The social and economic developments are of great influence on the liveability and future-proof nature of districts. Vrieheide-De Stack has to deal with shrinkage in a setting with mainly privately owned dwellings (especially in the neighbourhood Vrieheide). In February 2010 Parkstad Limburg and the municipality of Heerlen signed a project plan, which contains appointments for the development of a toolkit with instruments and strategies for the de-construction of privately owned properties in shrinkage areas. Intervention is needed in Vrieheide-De Stack, to prevent the district from further devaluation, vacancy and impoverishment. (BMC, 2011)

For background information about Vrieheide see Appendix 13.

## **Restructuring & Sustainability**

In the upcoming years the municipality wants to take a series of measures to improve the liveability in the district. The plans include the purchase of privately owned dwellings and the new estate and renovation of dwellings. Furthermore, eight to ten brownfields will be redeveloped. The preservation and re-use of the Christus Koningkerk is also a priority.

The approach is not only about 'bricks'. Family coaches will be used to prevent residents from getting financially stuck. There will also be interviews with the owners of dwellings to investigate what the needs are.

For Vrieheide there is no need to look at the 24 sustainability aspects of DPL, because there are no concrete plans and ambitions concerning sustainability yet. A vision for the district that will be formed in the near future will provide in this.

## **Current State**

In 2010/ 2011 a business case and execution plan were established for the restructuring. It is expected to proceed to execution of the project in 2014. In the meantime, the vision and designs will be established.

#### 6.4.4 Comparison between MSP, Aldenhof and Vrieheide-De Stack

The three districts that are observed as case studies in the context of this research have certain similarities, but also differences:

Aspect	MSP	Aldenhof	Vrieheide
# inhabitants	7,000	3,700	De Dem 5,800 1,700 Vrieheide-De Stack Vrieheide
# dwellings	3,500	1,900	De Dem 2,800 730 Vrieheide-De Stack Vrieheide
% rental dwellings	60%	72%	De Dem 58% 0% Vrieheide-De Stack Vrieheide
% privately owned dwellings	40%	28%	De Dem 36% 75% Vrieheide-De Stack Vrieheide
% rental dwellings, owned by investors	-	-	6% 25% Vrieheide-De Stack Vrieheide
Average property value	€110,000	€128,000	De Dem €117,000 €100,000 Vrieheide-De Stack Vrieheide
Demolition task	759	230	Aldenhof 1,600 Vrieheide-De Stack
New estate task	414 + 250	Max. 96	Aldenhof -
Restructuring task	470	-	-
Investment	€180mln	€28mln	Aldenhof -
Special characteristics	- Aimed at high social sustainability - Broad social facility and shopping centre - Many green facilities	- Small redevelopment area - Broad social facility - Cradle-to-cradle ambition for BSF ('BMV')	- Large share of private property - Reinforcing impoverishment

FIGURE 9 COMPARISON BETWEEN MSP, ALDENHOF AND VRIEHEIDE

They all have to deal with the issue of shrinkage and consequently several social and physical problems. They are characterized by a low average dwelling value and they are in need of large and rapid interventions.



Differences can be found in the composition of the housing stock. MSP and Aldenhof have many rental dwellings, while the dwellings in Vrieheide are predominantly privately owned.

MSP is an entire district that is being restructured, as is Vrieheide. Aldenhof, on the other hand, is a relative small-scale project within the district Centrum-De Dem.

In MSP there is a sharp focus on social sustainability, while in Aldenhof the focus is much more on the broad social facility. Vrieheide is still in the start-up phase, so it is unclear what its focus will be.

In Figure 10 an overview of the sustainability measures in the three districts is given. For a detailed explanation about every particular aspect see Appendix 11 and 12.

Subject	Theme	Aspect	MSP	Aldenhof	Vrieheide
<b>Planet</b>	Stocks	Usage of Space	-	X	-
<b>Planet</b>	Stocks	Energy	-	X	-
<b>Planet</b>	Stocks	Materials	-	X	-
<b>Planet</b>	Local Environment	Water Management	X	X	-
<b>Planet</b>	Local Environment	Waste Collection	X	X	-
<b>Planet</b>	Local Environment	Soil Contamination	-	-	-
<b>Planet</b>	Local Environment	Air Pollution	X	-	-
<b>People</b>	Nuisance	Noise Nuisance	X	-	-
<b>People</b>	Nuisance	Odour Nuisance	-	-	-
<b>People</b>	Safety	External Safety	-	-	-
<b>People</b>	Safety	Social Safety	X	X	-
<b>People</b>	Safety	Traffic Safety	X	X	-
<b>People</b>	Facilities	Quality of Facilities	X	X	-
<b>People</b>	Facilities	Accessibility	X	-	-
<b>People</b>	Green & Water	Green in the District	X	X	-
<b>People</b>	Green & Water	Water in the District	X	-	-
<b>People</b>	Quality of District and Dwelling	Quality of Dwellings and Surroundings	X	X	-
<b>People</b>	Quality of District and Dwelling	Cultural-Historical Value	X	X	-
<b>People</b>	Social Cohesion	Social Cohesion	X	X	-
<b>Profit</b>	Economic Vitality	Local Employment	X	-	-
<b>Profit</b>	Economic Vitality	Diversity of Activity	-	-	-
<b>Profit</b>	Sustainable Entrepreneurship	Sustainable Companies	-	-	-
<b>Profit</b>	Future Value	Mixing of Functions	X	X	-
<b>Profit</b>	Future Value	Flexibility	X	X	-

FIGURE 10 OVERVIEW OF SUSTAINABILITY MEASURES IN MSP, ALDENHOF AND VRIEHEIDE

## 6.5 Conclusion

The 24 sustainability aspects that are incorporated in the DPL-instrument have several relationships with shrinkage, varying in strength. I conclude from my research that some aspects offer specific opportunities and attention points in a shrinkage situation, e.g. 'Use of Space', 'Mixing of Functions', 'Flexibility' and 'Quality of Facilities'.

Comparing this to the opinions of policymakers of the municipality of Heerlen it shows that there are some similarities, but also some differences concerning the perception of the relationship of shrinkage and sustainability aspects. This could have several reasons; it could be the perception of the formulation of definitions. Policymakers perhaps interpret some definitions different than I do. This could be due to everyone's specific work experience. It could also be a kind of failure of DPL; the formulation of the themes and aspects do not cover its entire content.

The performed survey gave a nice insight into the more specific meanings and opinions of the policymakers. The result revealed, besides substantive information about sustainability and the working procedure within the municipality, also other attention points. It became clear that there are other aspects that need improvement before the implementation of sustainability can really succeed. An advice concerning this will be given in chapter 7.

All three case studies are dealing with problems caused by the shrinkage issue. MSP is probably the best-known example, because the district is known as a 'Vogelaarwijk'. The cases of Aldenhof and Vrieheide are somehow less well-known, but the urgency to intervene is no less. Every case has its own specific needs, caused by and adjusted to the local circumstances. However, main guidance in every case is a sustainable development, making the local situation 'future-proof'.

Remarkable is that both MSP and Aldenhof focus on social sustainability as a substantial part of sustainability in general (and energy, but that aside). Liveability is seen as the major translation of sustainability. Shrinkage is seized as an opportunity to restructure the areas and make them sustainable and future-proof. Important interventions like the establishment of broad social facilities and the implementation of several green facilities have been developed as solutions to the current issues in the districts.

The district Vrieheide forms a new challenge, as the proportion of privately-owned dwellings is substantial there. This new expression of the shrinkage issues demands for new and innovative approaches. Sustainability is a key word in this redevelopment; the future will reveal how this is going to develop.

## Chapter 7: Advice

*“Character without knowledge is more successful than knowledge without character.”*

Marcus Tullius Cicero, Roman statesman and writer, 106 B.C.-43 B.C.

As said before, the municipality of Heerlen already has some experience with shrinkage, restructuring and sustainability. The analyses in previous chapters present the current approach. This chapter will establish an advice to the municipality regarding the approach of shrinkage and sustainability.

The advice to the municipality of Heerlen contains several aspects. At first the advice obviously concerns the sustainability aspects related to shrinkage. But during the development of the research it became clear that there also is a ‘second layer’ of attention points for the sustainable development of shrinkage districts in Heerlen, e.g. the communication between policymakers and the communication to the inhabitants of the municipality. Also attention for stakeholders is important and the tool DPL needs some advice.

### 7.1 The Recipient of the Advice

The advice given in this chapter concerning the approach of sustainability in shrinkage districts in Heerlen is addressed to the municipality of Heerlen, department ‘Stadsplanning’ (City Planning). As shown in Appendix 14 the department consists of five subdivisions, the so-called ‘bureaus’ (agencies); ‘Ruimte’ (Space), ‘Milieu & Duurzaamheid’ (Environment & Sustainability), ‘Bestemmingsplannen’ (Zoning Plans), ‘Economie’ (Economy) and ‘Bedrijfsvoering Stadsplanning’ (Business Operations City Planning). The department is engaged with the spatial development of the municipality.

### 7.2 The Structure of the Advice

The structure of the advice given to the department ‘Stadsplanning’ is threefold:

Advice		
Social	Spatial	Organizational

FIGURE 11 THREEFOLD ADVICE

The social part of the advice contains the recommendations regarding liveability; liveability is seen as a base for the sustainable development of a shrinkage district. The spatial part of the advice is about the spatial developments needed for a sustainable development in a shrinkage district; the more ‘technical’ measures. The social and spatial parts are combined in the advice, because they have a strong interdependent relationship.

The organizational (process) part finally mainly discusses the communication within the municipality and between the municipality and the inhabitants; shrinkage and sustainability need a thorough explanation before an implementation of measures can be successful. A short advice about the involved stakeholders will also be given.

Shrinkage and sustainability seem to be combining well together. Certain sustainability aspects appear to be more related than others. According to the performed research, I conclude from paragraph 6.1 and 6.2 that there are specific aspects that are of particular influence on the sustainable development of a shrinkage district. The advice for the municipality is to focus on these aspects first while redeveloping a shrinkage district.

The final part of the advice will contain some recommendations concerning the computer tool DPL.

### 7.3 Social & Spatial Side of the Advice

For Heerlen it is extremely important to improve the liveability in shrinkage districts. Shrinkage is revealing itself by social problems in the district; that is what inhabitants see and experience. That is also what the performed survey is showing as an attention point. Liveability is an important component of sustainability.

Making a district more liveable means making it future-proof. An important component of this is the social side of the sustainability issue. This reasoning is supported by the theory of the 'Pyramid of Maslow':



FIGURE 12 PYRAMID OF MASLOW

Social sustainability consists of personal characteristics and institutional mechanisms. That means social sustainability can be influenced by government intervention. The pyramid of Maslow supports this; certain needs need to be fulfilled in order to reach the next level. Assuming that the most basic needs are fulfilled for all Dutch inhabitants (also due to the government), we can see that a feeling of safety and security within the living environment is the next step, followed by the need for social contacts. This indicates that social safety and social cohesion are important aspects for the sustainable development of a district. When these needs are fulfilled, people are capable of growing on the socio-economic ladder (further up in the pyramid).

Good conditions for this personal development of inhabitants must be provided to ensure a sustainable development of a district on the social side. The municipality can play an important role in this. Measures include the establishment of social facilities, e.g. a care network, youth work, a volunteer centre and job coaches, but also the construction of green facilities for meeting and playing, as performed in the district MSP.

However, this illustrates that making a district future-proof also requires certain physical measures, which lead to an improvement of the social aspects, resulting in more liveability and thus in a higher sustainability. This illustrates the interdependent relationship of shrinkage and sustainability:

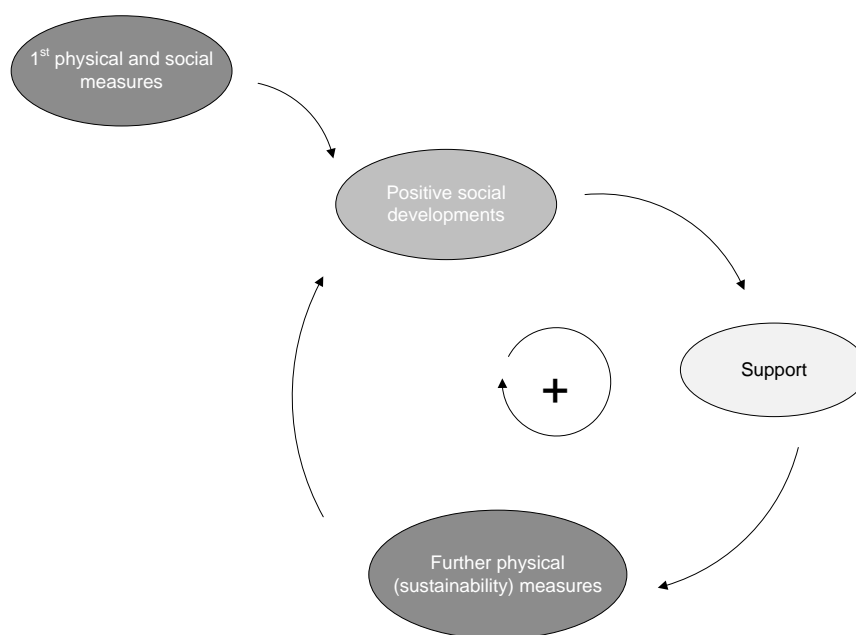


FIGURE 13 INTERDEPENDENCE SOCIAL & SPATIAL DEVELOPMENTS

Positive social developments create support among inhabitants and this forms a base for profound physical sustainability measures. This results in a feeling of identity, identification and 'ownership' for inhabitants, making them care for their living environment. That is 'future-proof' and 'sustainable'.

However, reaching these targets is somehow more difficult in a shrinkage situation. So, spatial conditions like attractiveness, mixing of functions, accessibility, identity and identification, and flexibility are basic conditions. The focus will be on some of the most important physical aspects that also followed from research elaborated in chapter 6:

- Mixing of Functions | Flexibility | Quality of Facilities

The support in most of the districts in Heerlen is too low to house all required facilities. Instead, it is desirable to have at least certain basic facilities. Those facilities have the greatest chance of success when they are combined in a central facility. This mixing of functions offers vivacity to a district and forms the basic conditions for a safe area. It also

requires flexibility; the demographic developments keep changing through the years and thus requirements for facility housing may be subject to change. Flexible buildings then offer opportunities for adaptation and make the facilities 'life course steady'. The combination of facilities at a central spot and their flexible nature strengthen their mutual power and thus their quality. The current plans in Heerlen for broad social facilities ('Brede Maatschappelijke Voorzieningen') meet this need. The advice is to implement more of these facilities in future restructuring plans and investigate a broader interpretation. To make it more feasible, e.g. take a look at opportunities for companies within a broad social facility; make it a bit less 'social' and a bit more 'commercial'. In other words, search for more and broader partnerships.

- Use of Space

The use of space connects to the previous point; a system is sustainable when it is so diverse and flexible it can adapt to future needs. Based on the fact that it is more sustainable to build in a compact manner, it is still advised to do that - regardless of the fact that there is more space available in Heerlen due to the shrinkage and dilution - but with certain footnotes. Compact building demands for more efficient and more effective design, resulting in a better plan formation and hopefully a better meeting of the requirements regarding flexibility. This could also improve the integration of e.g. energy saving measures and the use of (scarce) materials. Besides, compact building gives more space to green facilities in the district, enhancing the image and experience of the district and improving the social cohesion.

- Energy

Energy is a hot topic in sustainability debates. The municipality of Heerlen has a pioneering role in the use of mine water. It is recommended to investigate a broader and more extensive use of this sustainable energy source. This is also in line with the ambitions and vision of the municipality to use the former/ 'old' energy source as the basis for a new and sustainable energy source (see paragraph 4.2.5.1). Besides, the space that is released by the shrinkage offers opportunities to integrate smart grids and connect them to the mine water system where possible. Together with the knowledge that is available in the region concerning solar panels, there are many opportunities for integration and a more intensive use of smart grids.

- Quality of Dwelling & Surroundings

Quality of a dwelling and its surroundings is an important condition for the liveability in a district, the well-being of its inhabitants and the functioning of the district. Shrinkage resulting in dilution and restructuring offers opportunities for the improvement of dwellings and districts that will not be offered again in the upcoming 50 years. The dilution task is clear and there is a bright vision for restructuring of the remaining housing stock. The advice is to keep monitoring the (population) forecasts closely in order to be able to react adequately to these developments. When it comes to the sustainable development of the dwellings, a closer cooperation with housing corporations and other partners has to be established. There are plenty of ambitions but binding conditions are lacking.

- Green in the District

Green facilities are very important for the way inhabitants experience a district and the appearance/ image it possesses. Future-proof districts therefore need a sufficient amount and good quality green facilities. Shrinkage resulting in dilution and restructuring offers a lot of potential to green facilities. It is probably one of the most promising sustainability aspects in shrinkage districts; it is a quite logical completion of released space and it is relatively cheap. Compare it to a growing district where green facilities are under a lot of pressure and the liveability is under pressure. Together with the urge to improve the liveability in a shrinkage district, the enlargement of green facilities is an exquisite opportunity to get this done. The social side of sustainability will be positively influenced to a large extent and will reinforce the interdependent relation between the social and spatial components of sustainability again. A nice example is to be seen in the restructuring of the district MSP in the form of pocket parks etc. The advice to the municipality is to investigate this approach for more districts in the city.

The previous covered points are basic conditions for the sustainable development of a shrinkage district. Key point is the interdependence between social and spatial aspects. When they function sufficiently this is a base for profound sustainability measures.

The remaining aspects of the sustainability aspects of the DPL-instruments certainly all have a relationship with shrinkage, which was explained earlier in paragraph 6.1. But as said before, this relationship is stronger for one aspect than the other. Aspects like odour and noise nuisance and air pollution are important and need attention in the shrinkage issue, but at the same time those aspects will probably improve anyway regarding the shrinkage situation. For example, shrinkage means less people, less traffic and therefore less air pollution, noise and odour nuisance. No special attention is paid to these obvious effects. This advice is limited to the spatial and social aspects that I conclude from my research to be the most important in the shrinkage and sustainability issue.

## 7.4 Organizational/ Process Side of Advice

Besides improvable aspects in the spatial and social field (project) there are also aspects in the organization field (process) that deserve attention.

The main issue that came across in the surveys was 'communication'. Communication contains several components:

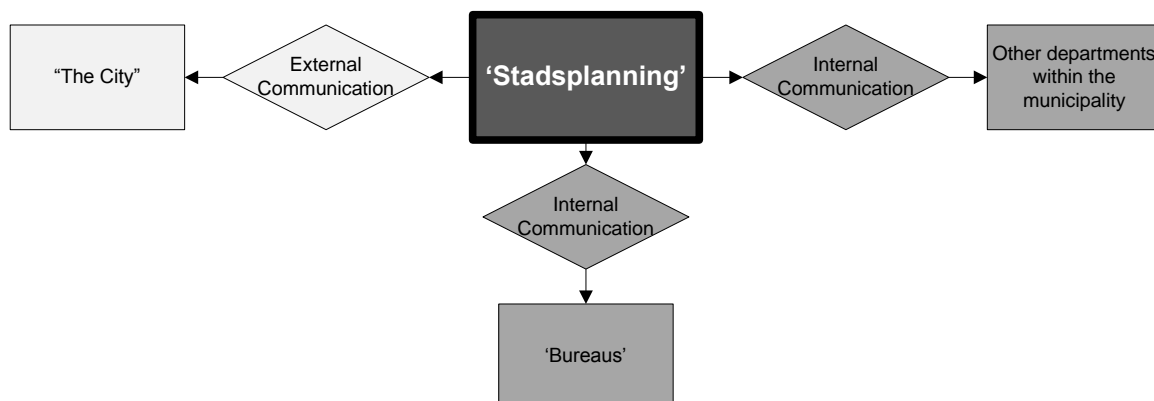


FIGURE 14 COMMUNICATION LINES DEPARTMENT OF CITYPLANNING

First, it is about the internal communication between the policymakers of the department 'Stadsplanning', the so-called 'bureaus' (see also Appendix 14). To be precise, there is a distinction between the employees within one 'bureau' and the employees of several 'bureaus' mutually.

Second, the internal communication between 'Stadsplanning' and the other departments of the municipality, e.g. 'Welzijn', 'Beheer & Onderhoud' and 'Projectmanagement', is a point of attention. For the policymakers of the several departments and 'bureaus' it appears to be difficult to have clear communication about sustainability. This is partly due to the fact that sustainability is a 'container concept'; everyone has its own conception of the meaning and interpretation of the issue. Although the willingness is present both within the political and executive (i.e. departments) setting it appears to be hard to define a guiding ambition. The SMART defining of this ambition also seems to be difficult.

The advice to the department 'Stadsplanning' is to try to make sustainability an integral part of the process. At the moment it still seems more of an afterthought than an obvious way of acting. This can be accomplished by enlarging the capacity of the 'bureau Milieu & Duurzaamheid' (agency Environment & Sustainability), which makes it possible to give priority to sustainability and execute ambitions in everyday practice.

Another way to accomplish this is to assign a 'sustainability ambassador' to every 'bureau' or every department and let them take care of the communication about sustainability and the initiation of certain required activities.

The SMART defining of ambitions can be stimulated by developing a kind of manual or roadmap that has to be used while developing sustainability ambitions/ targets. It provides the policymakers guidance in defining and lets them think twice about their formulation.

Finally, there is external communication; communication between the municipality and 'the city', e.g. inhabitants. This brings us back to the shrinkage issue again; shrinkage districts often do not possess a good image and consideration. Heerlen experiences the same. Inhabitants are often aware of that fact, but at the same time the shrinkage leaves socio-economically disadvantaged people behind in districts that only become more and more impoverished. The ambition of making a shrinkage district more sustainable – and seizing this opportunity because it is possible – is something that does not appeal to the imagination of those inhabitants. They are too engaged with their everyday life which makes them indifferent and unconcerned about the sustainable development of their district. Often, it is not the population group that gets triggered by the debate about sustainability.

However, as mentioned before it is of great importance to create support within a district. Social and spatial interventions partly contribute to this, but another important aspect is communication. If a district is willing to succeed (i.e. making it sustainable and 'future-proof') it is important to tell the inhabitants which issues are playing a role in the district, what the causes are and how they will be handled. In this case this concerns both shrinkage and sustainability. People somehow know about the fact that their surroundings are changing due to the declining population number, but giving them insight in the causes and letting them see that it offers opportunities creates support for the upcoming interventions.



They only read about it in the newspaper which often shows them only the negative side of the situation. Because of their background they are often not familiar with the exact meaning of sustainability and its importance for the future. Besides, it is important to give them the possibility of being heard; feedback on the approach is important and informative. Thus, communication and providing information is essential for the development of the district.

This approach could be successful, but regardless of what will be done, support and devotion is essential. So before the city can reach certain sustainability targets, the municipal organization concerning sustainability has to be in order.

## 7.5 Stakeholders

Creating support is a basic condition for every project to succeed. This applies especially to making a shrinkage district sustainable, simply because that is quite difficult in a shrinkage situation. Gathering support from inhabitants is discussed in the previous paragraph, as well as the support within the municipality concerning sustainability. Two remaining important stakeholders in the redevelopment process of shrinkage districts are housing corporations and commercial parties.

The municipality of Heerlen has shown in the redevelopment of MSP that cooperating closely with housing corporations is very important. The municipality cannot get the job done on its own; other parties are needed. Housing corporations have a special role, because they operate on the boundary of the social and the commercial field. Because shrinkage districts often possess a large amount of social housing the interest of housing corporations is large. The municipality has proven in the urban area Heerlerheide that cooperating with a housing corporation is also beneficial in the sustainability field (mine water project red.).

However, here it also seems to be difficult to integrate sustainability in the process. In the recent past there have been some attempts to develop performance agreements concerning making the housing stock more sustainable between municipalities and housing corporations. But in practice it still appears to be difficult to handle. The advice is to get more actively involved in this issue and try to get more out of it. Both the municipality and the housing corporations will benefit from this approach.

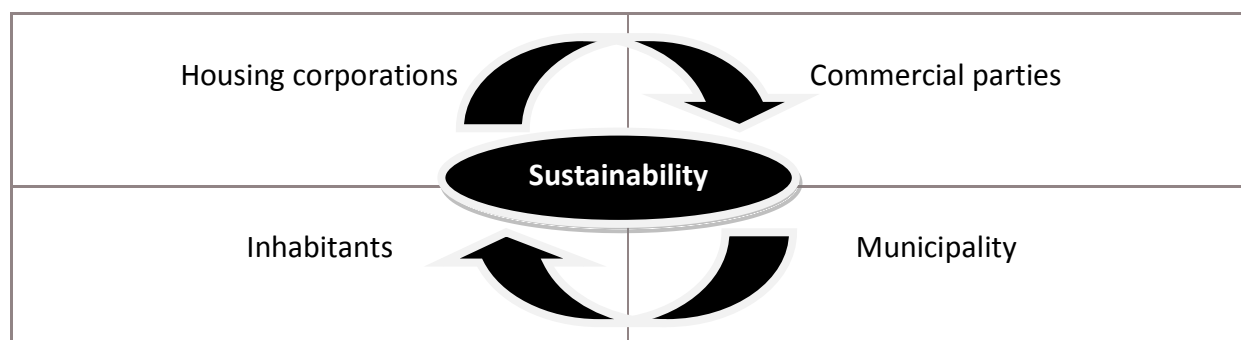


FIGURE 15 STAKEHOLDERS IN THE REDEVELOPMENT OF SHRINKAGE DISTRICTS

Finally, other stakeholders that are important are the commercial parties. This is especially difficult in a shrinkage district due to the little support, but it is necessary for its success

rate. Commercial parties make the redevelopment of the district feasible and besides, they deliver a substantial contribution to the (facility) offering in a district. This is not only about investors, but also e.g. commercial care providers. It is advised to search for more partnerships with commercial parties and trying to see this as the standard, because the world is changing in that direction and adaptation is needed to cope with that.

Concluding, collaboration is the key word; between all stakeholders and in this way creating support for the sustainable development of a district.

## **7.6 DPL**

The final part of the advice is about the computer tool DPL. After trying the tool myself and using it as a basis for my research, some specific points caught my attention.

The perception of DPL I had in the beginning of my research has been confirmed in general. I think it is a useful tool to get 'an idea' about the sustainability score of a district. But at the same time it is also not more than that. It gives quite a nice indication of the total progress or decline of a district concerning sustainability, especially when compared to a former or future situation.

When looking at the several themes and aspects, the sense of the scores become more and more blurry. In my opinion, the components that build-up the score for an aspect are not always as representative. The aspect 'Use of Space' e.g. needs a quite extensive amount of information before a sustainability score can be determined. But for some other aspects, e.g. 'Noise Nuisance' and 'Social Safety', inhabitants' surveys are being used to determine their score. I think that is quite subjective and not always as representative.

Another point is that some information is easier to track down than other. In other words, in case some information is not available – which could be quite possible in most cases – the sustainability score can never be very reliable. Also, the usefulness for shrinkage districts could be improved. Considering the fact that shrinkage will set in in the entire country at some point in the future, it could be wise to introduce a 'shrinkage reference district' in the list of reference districts of DPL. This enables a quicker and friendlier use of the tool and hopefully more comparisons between the sustainability scores of shrinkage districts.

Previous arguments are not mentioned to challenge the usefulness of DPL. As said before, it is a skilful tool, but I would only recommend it as a basis for profound sustainability investigation and as a starting point for design. If a shrinkage district is on the list for restructuring, DPL offers a quite fast and nice overview of its sustainability score. It also ensures no sustainability aspects will be forgotten; the advantage of DPL is that it is a very complete range of the 'container concept' that sustainability is. But after this first investigation I would recommend the DPL results as a basis for further research, specifically adjusted to the present district.

To the creators of the tool I would certainly recommend a further development of DPL, keeping the comments above in mind. The tool could certainly become more useful for shrinkage districts in the future.

## Chapter 8: Conclusion & Recommendations

*“If we knew what we were doing, it was not called research.”*

Albert Einstein, German-American physicist, 1879-1955

In this chapter the conclusion of this research is presented, together with a discussion and the recommendations for further research. The research questions as formulated in Chapter 1 will be answered.

This research was started with the assumption that sustainability offers opportunities in shrinkage areas. The municipality of Heerlen is aware of that, but it is still unclear which specific opportunities we are talking about and which direction of development is promising for the future. This problem statement has led to the main research question and sub-questions that will be answered below. It is also indicated which chapter(s) extensively discusses the matter.

### 8.1 Conclusion

#### 8.1.1 Answer to Main Research Question

The main research questions reads as follows:

*“Is shrinkage offering opportunities for sustainability in Heerlen?”*

The research as carried out in the previous chapters, concludes that shrinkage indeed offers opportunities for sustainability in Heerlen. The motivation for this will be explained by the answering of the sub-questions.

#### 8.1.2 Answer to Sub-Questions

The main research question contains several sub-questions that will be answered in the next paragraphs.

##### 8.1.2.1 What is shrinkage and what does it mean? [see Chapter 3]

Shrinkage is known as a decline in the total population number. This approach is too narrow; shrinkage is determined by several aspects; numbers (population, households), demographic composition (age, ethnicity) and household composition (size, life stage, income). Causes of shrinkage are socio-cultural developments, like emancipation of women, economic developments, e.g. people's trust in the economy, regional economic situation, e.g. the closure of a region's economic driver, and planning causes, like the stimulation of growth areas. Effects often expose on a local level; the housing market, living environment and facility level deteriorate, resulting in a less attractive surrounding, leaving the area in a negative spiral. Shrinkage is therefore often experienced as a negative occurrence. Besides, our world is furnished to growth; things seem to only go well when they are getting bigger. But considering the current world situation concerning sustainability shrinkage can be seen as a blessing. It reduces the environmental pressure, it could improve poverty problems and it could give way to solving the crisis.

### **8.1.2.2 What does shrinkage mean for The Netherlands: which regions are dealing with it and to what extent? [see Chapter 3 & 4]**

Shrinkage has already been performing itself in three regions of the country for several years now; Noordoost-Groningen, Zeeuws-Vlaanderen and Parkstad Limburg. They are called the 'shrinkage regions of the first generation'. Other regions will follow in the upcoming 25 years ('shrinkage regions of the second generation'). The issue in the three regions at the moment is quite severe; they experience urgent bottlenecks, like vacancy, deferred maintenance and an impoverishment of the facility level. Together with social problems, the situation forms a significant restructuring task. Fortunately, at the same time, there is some awareness that the entire country will face the issue sometime and that we should use the current regions as kind of experiments and learn from the approach. Opportunities are also identified, but a specific elaboration is still lacking.

Either way, shrinkage is a serious issue, not only because of its structural character and the urgency for some regions in the country at the moment. But also because the entire country will face the issue in the (near) future and the interventions cannot be limited to a minimum, otherwise leading to serious problems. The entire approach will cost a huge amount of money, but there is no way of ignoring the problem and it will eventually pay off, not directly in terms of money but in terms of liveability.

### **8.1.2.3 What is the extent of the shrinkage issue in (the region of) Heerlen (Parkstad Limburg)? [see Chapter 4]**

The region Parkstad Limburg is the pioneer in the field of shrinkage in The Netherlands. After the closure of the mines in Heerlen and its surroundings the (socio-)economic climate deteriorated and the situation ended up in a downwards spiral. Nowadays the perspectives are not positive; the shrinkage issue is severe and it affects all policy fields. The total population number is decreasing, while for the upcoming years the number of households will be stable (dilution). Within 20 years there will be more elderly than young people. Dejuvenation and aging are aspects that need a lot of attention; the housing demand asks for a significant adjustment of the housing stock, both in quantitative and qualitative regard. Because the city grew explosively in the previous century it could hardly anticipate to the developments. Today, instead of a following role, a steering role is needed. The municipality developed a future vision to accompany the developments.

### **8.1.2.4 What will be the effects of shrinkage for (the region of) Heerlen in the (near) future? [see Chapter 4]**

Vacancy and a mismatch between demand and offer are the first visible signals of the issue. Besides demolition this also demands for a certain amount of new estate. Aging and dejuvenation demand specific housing. Considering the future developments – shrinkage, but also the economic crisis and the call for more sustainability – a shift in thinking is needed. Fortunately the municipality of Heerlen already accepted its position in the shrinkage issue and is now exploiting possible opportunities. The concept of 'old energy' (mining) is used as guiding for the future; 'new energy'. Sustainability is an obvious and smart way of using the shrinkage issue, seeing it as an opportunity instead of a threat. Exploring the possibilities for a further integration of sustainability in the redevelopment of shrinkage districts is the next step.

### **8.1.2.5 What is the interaction between shrinkage and sustainability? [see Chapter 6]**

Sustainability is approached as a concept consisting of 24 aspects, varying from technical to social aspects. Some aspects seem to be stronger related to shrinkage than others. E.g. 'Use of Space', 'Mixing of Functions', 'Flexibility', 'Quality of Facilities' and 'Green in the District' appear to deserve specific attention in a shrinkage district. Regarding other aspects this relation is weaker, but this is mostly because they have more to do with side-effects. Nevertheless, every aspect has something to do with shrinkage, but not every intervention will have an equal effect and will be equally well noticed. Some other aspects, like the ones mentioned before, offer specific opportunities in shrinkage districts. They could make a difference between success and failure of a district; the functioning of the district by these aspects are influenced in such a way that it determines the liveability to a large extent. And exactly the liveability appeared to be the major translation of sustainability and that is one of the most urgent problems to tackle in the shrinkage issue.

### **8.1.2.6 How is the municipality of Heerlen dealing with shrinkage in relation to sustainability? [see Chapter 6]**

Heerlen has been facing shrinkage for several years already and in its restructuring projects it is anticipating to this issue. Sustainability is high on the agenda and put down as a focus point in desired future developments. Some districts are in an urgent situation and the approaches to tackle the issues vary. E.g. the district MSP is located in a quite advanced position. The main focus is on social sustainability; enhancement of the living environment in order to improve the liveability. Both in MSP and Aldenhof broad social facilities will be established to keep the facilities at a certain level. So, collaboration is sought in several fields. Most of the aspects that appear to have a strong relationship with shrinkage are addressed in the restructuring of the case study projects; 'Use of Space', 'Mixing of Functions', 'Flexibility' and 'Quality of Facilities' refer to the broad social facility, while 'Green in the District' appears to be a nice fulfilment of the released space, at the same time contributing to the improvement of the social sustainability. So, it can be concluded that the municipality of Heerlen is indeed already exploiting possible opportunities that shrinkage offers.

### **8.1.2.7 What are possible improvements (product and process) concerning sustainability in shrinkage districts for the municipality of Heerlen? [see Chapter 7]**

This research revealed that the advice to the municipality with possible improvements for the approach of shrinkage and sustainability contains several sides. Besides social and spatial aspects (product), that have a strong interdependent relationship, there are also organizational aspects (process) that deserve attention. Regarding the social and spatial aspects it is advised to emphasize certain physical sustainability aspects. Those aspects will put the positive social developments in the district in motion, which in turn will create support for profound sustainability measures. The focus has to be on the aspects that have the strongest relation to shrinkage, e.g. 'Mixing of Functions', 'Flexibility' and 'Quality of Facilities'. The path that is chosen with the establishment of broad social facilities appears to be a good one. Other basic interventions that are needed for a sustainable development

of shrinkage districts are the improvement of dwellings and surroundings. This can be accomplished by the taking energy saving measures, the dilution among the bad part of the housing and the placement of green facilities to improve the social situation and enhance the attraction of the district. The organization part of the advice is mostly about communication, both within the municipality and between the municipality and the inhabitants. Communication appeared to be a difficult but important point. A clear and bright roadmap to the future is needed, also demanding for support among stakeholder. Finally the use of DPL appeared to be useful, but not more than to obtain an impression and as a basis for further research concerning sustainability measures in a shrinkage district.

## **8.2 Discussion**

This research has been conducted with mostly information from sources, but some assumptions have also been made. This leads to discussion points.

- First of all, this research does not take into account the financial side of the story. This has been done consciously. The reason for that is that the calculation of the financial side is an entire research itself and therefore too extended for the duration of this research. Besides, the focus of this research is to purely investigate the opportunities for sustainability in shrinkage areas (and the relations between the aspects), assuming that financial support can be provided. In practice that is obviously more difficult – especially in shrinkage areas due to decreasing support – but this is chosen to not disturb the line of this research and not to lose its focus.
- The approach of the ‘container concept’ sustainability from the tool DPL ensures an integral approach of the concept, because almost all aspects that one could invent when thinking of it are integrated. This approach is chosen because it appeared logical from the work method used at the municipality (the use of DPL). So, it could be a discussion point whether or not another approach would be (more) useful.
- The relations between shrinkage and the sustainability aspects are largely based on information from sources. However, it is almost inevitable to incorporate an own opinion. Some relations could therefore come across as somehow subjective. That results in relations that another research maybe would define otherwise.
- Finally, the conducted survey among policymakers was very interesting, but at the same time the response is quite small in numbers. To achieve a more reliable result the number of respondents has to be enlarged and maybe even spread out over several fields. E.g. including other stakeholders; construction companies, housing corporations and inhabitants.

### **8.3 Recommendations for Further Research**

Because this research cannot give answers to all relevant questions and also new questions have emerged, this results in some recommendations for further research.

- The relationship between shrinkage and sustainability can be further investigated. The chosen approach in this research followed from the tool DPL, but another approach may be more interesting. A more fundamental basis from practical experience can also be helpful in the future.
- At first, it was intended to collect DPL-profiles from several shrinkage districts and compare them to find out if and which relation there is between shrinkage and sustainability. This appeared to be impossible, because not enough data and DPL-profiles were available yet to use in this research. This would have been a more quantitative basis for the relation between shrinkage and sustainability. It is recommended to search for more quantitative data and investigate this side of the issue.
- The sustainability approach and its elaboration are still quite in their infancy, despite the fact that there is a huge amount of knowledge present among stakeholders. A well-known but important recommendation is to investigate a quicker and more profound implementation of the sustainability knowledge that is available. As shrinkage districts show the great opportunities are showing up now.
- The performed research is quite adjusted to the situation in Heerlen. As elaborated, shrinkage needs customization. So in order to generalize the advice and the conclusions or use it in other shrinkage districts, more research in this field is required.





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## **PART C: Appendices**

**C**



## Appendix 1: Demographic Development

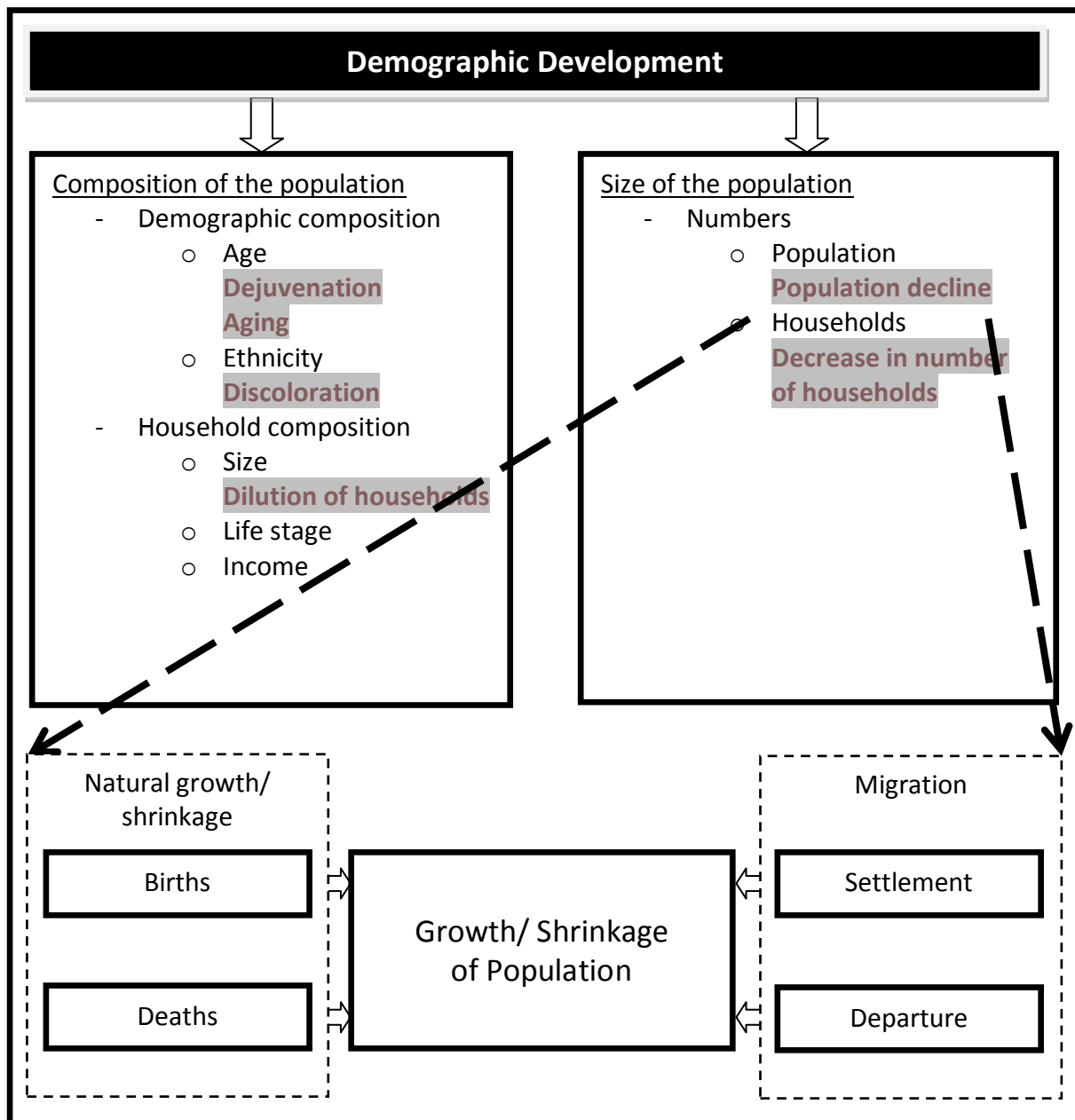


FIGURE 16 DEMOGRAPHIC DEVELOPMENT

## Appendix 2: The Shrinkage Issue in Other Countries

### Germany

The situation of East German cities is quite special, compared to the rest of the world. But what makes their situation after the reunification so different from the situation of other cities? Several ingredients of shrinkage came together here in an accelerating situation. After the 'Wende' (the unification of East (former DDR) and West Germany (former BRD) in 1990) almost all industrial companies were closed in a time span of three years. The competition in the new capitalist system appeared to be too hard for them. There was no immediate alternative employment for those who lost their jobs. There were also no commercial services, because that was undesirable in the socialistic DDR. Many people moved to West Germany to seek refuge, as it offered more future perspectives and higher salaries. (Bontje, 2004)

These negative processes in East German cities got even enhanced by policy failures both in the past and after the reunification. Old city neighbourhoods were neglected systematically. While the population of most cities was stagnating or declining already, large housing estates were built along the city borders. These flats fitted better in the ideal of the 'socialistic city' than the working-class districts of the 19<sup>th</sup> and early 20<sup>th</sup> century. Suburbanization was subsidized for years through tax arrangements after the reunification. The aim was to give all expropriated (by the DDR/ nazi regime) properties and plots back to their rightful owners or heirs, but that led to an unintended extra stimulus for suburbanization. The dream of living in a green area appeared to be disappointing for many people: instead of detached houses apartment blocks were built. When the tax arrangements got put down, the artificial character of the suburbanization appeared. The movement from the city to the suburbs was exchanged for a movement to the West. (Bontje, 2004)

There is one thing that makes the East German situation particularly special: there is hardly any perspective on a recovery of the population growth on the long-term. In the early years after the 'Wende' the birth rate dropped at a spectacular level: in 1991 there were 45% less births than in 1988. Many people waived the idea of having children in those uncertain years, because of a lack of future perspectives. Around 2004 the birth rate of East Germany approached the birth rate of West Germany again, but the 'gap' of the early 90s has its effects on future generations. The migration to West Germany had a selective nature, with many young people and educated people moving, strengthening the aging and in the long-term the population decline. According to demographic forecasts the German population will be halved in the upcoming 50 years. Also cities that are doing quite well at the moment have to take into account a significant increasing shrinkage. (Bontje, 2004)

*Dejuvenation* is a decline in the number of young people, as a result of a decline of the birth rate.

*Demographic echo effect* is a decline of the birth rate, as a result of dejuvenation: less potential parents means less births.

(van Dam, Galjaard, Harkink, McCann, & van Wissen, 2010)



The scenario we see in Dutch large cities, the partly removal of vacancy through the emergence of smaller households (family dilution), is not applicable to German cities. The population decline in the 90s in East Germany was that large, that the emerging one or two person households are not able to occupy all the vacant dwellings. There are also fewer differences between successful and less successful districts than in Dutch districts in the 70s. Shrinkage and vacancy are touching all neighbourhoods; however the major hits are striking the pre-war working-class districts and the socialistic flat districts. (Bontje, 2004)

## Leipzig

Leipzig is one of the many German cities that got confronted with population decline and economic downturn both during the DDR regime and the period thereafter. The city has a rich legacy, but that did not prevent it from becoming a shrinking city during the 90s, mainly due to the loss of the mining and heavy industry. The population peaked in 1920, with a number of 700,000 people. This number was kept relatively stable for a long time, but in 1989 there was a backdrop, to 340,000 inhabitants in 1993. (Teerds, 2007)

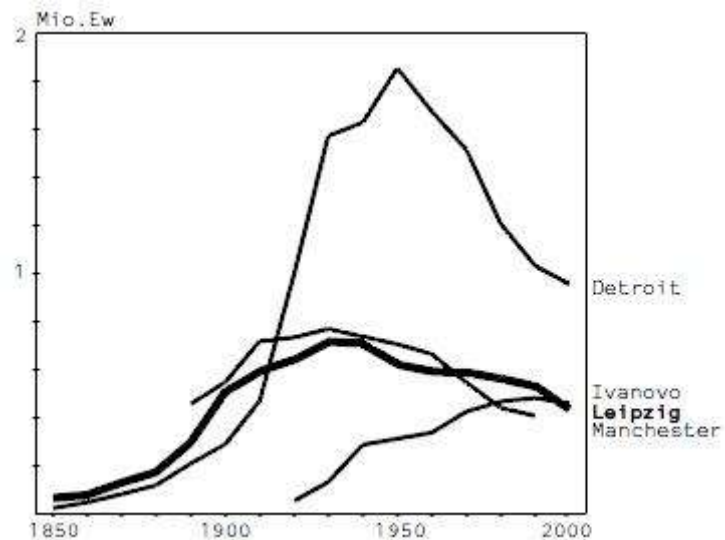


FIGURE 17 SHRINKAGE IN LEIPZIG, COMPARED TO DETROIT, IVANOV AND MANCHESTER (SHRINKINGCITIES.COM, 2004)

Compared to many other cities Leipzig is doing relatively well during the last years. At this moment there is stabilization, after a population decline of 20% in the 90s. (Bontje, 2004) Some neighbourhoods near the city centre are even experiencing a minor population growth since the year 2000. Most of the tough economic hits seem to be behind and new positive developments are taking place. Take a look at the new employment opportunities, like package carrier DHL that chose the airport as a *hub*, and the car manufacturers BMW and Porsche that opened an assembly line. (Teerds, 2007)

Nevertheless, the city has ‘an oversized jacket’ and is not released from its problems by far. There is still a dwelling vacancy rate of 20%, and meanwhile the unemployment rate is also balancing around 20%. Furthermore many business locations are vacant, and the attraction of the BMW plant, that delivers 5,000 jobs plus possible thousands of jobs at suppliers, solves these problems only for a small part. (Bontje, 2004)

Problems lead to gloom, and gloom does not stimulate creativity and enthusiasm, which is quickly a self-fulfilling prophecy. A shrinking city needs faith, and courage to travel new roads. The city still has a significant excess, but especially that ‘oversized jacket’ gives space and leads to opportunities for this growth. (Teerds, 2007)

The strategy of the city was mainly aimed at the creation of support. There is hope, as long as the citizens experience Leipzig as 'mein Leipzig'. Urban debates formed solutions for problems, and led to instruments to tackle the shrinkage issue. (Teerds, 2007)

Three periods are distinguishable in the urban revitalization. In the beginning the one crucial question was: 'Can we save the city at all?'. The stake was mainly put at the preservation of the old buildings, the *Gründzeit* (1880-1920), because this is crucial for the image of the city and is highly appreciated by the inhabitants. After this the focus moved to the public space that was in really bad condition. The last period comprised a movement from quantity to quality in the approach of the urban fabric. In the year 2000 the renovation of the urban blocks was completed for 74%, but there was no demand for the remaining 26%. Fifteen thousand dwellings were vacant and there was no actual destination available. As an answer to this a strategy of dilution and creative reuse was being developed. Less valuable buildings were demolished. In consultation with the citizens parks were built in those places. The surroundings of these parks are increasing in value, which in return offers opportunities for project developers. (Bontje, 2004)

Other vacant city blocks were offered to local initiatives, in return of the payment of gas, water and electricity, which stimulates the creative use of the space. This leads to new perspectives and a continuing involvement between building, program and neighbourhood. However, reuse is not always the solution; that is why the focus is on the search for unexpected solutions. (Bontje, 2004)

To keep the middle class in the city, the city board involves them actively in the development of new city dwellings. It is also the only way to build those types of houses: banks would not want to finance these projects, while they are always willing to support individuals with the construction of their own house. (Bontje, 2004)

In the current crisis Leipzig is searching for a balance between the too ambitious growth thinking and the unnecessary doom thinking. The measures taken in the physical environment are not enough to get the city out of the crisis. Restructuring does not lead automatically to new residents and new business activities. The city has to find its way out of the vicious circle of stagnation. The economical problems are reaching far more than vacancy and demolishing. The local and regional labour market have to improve, otherwise the growth may be of short duration. (Teerds, 2007)

During the last couple of years the city tried to sell itself by developing several initiatives. Events, advertising campaigns, the reputation in the field of its classical music culture, and the bid for the Olympic Games 2012 were launched to try to get some steps further ahead. (Teerds, 2007) It is the story of a shrinking city that found a narrow way up.

## United States of America

### Detroit

The 'Big Three' – Chrysler, Ford and General Motors – once stood at the base of the ultimate 'Motor City'. Detroit was the first one to surface a street with concrete and also the first motorway, Davison Freeway, was built here. Economic growth was the carrier of the city. The number of inhabitants rose from 285,700 in 1900 to 1.85 million in 1950, and the city served as a unique model for a new type of metropolis and a modern society. (Shrinkingcities.com, 2004)

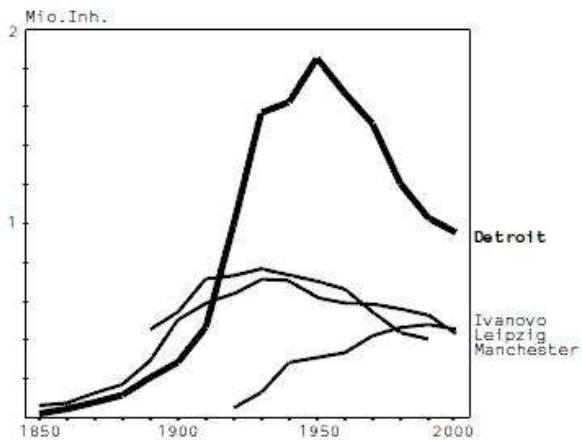


FIGURE 18 SHRINKAGE IN DETROIT, COMPARED TO IVANOVO, LEIPZIG AND MANCHESTER (SHRINKINGCITIES.COM, 2004)

After 1950, Detroit became one of the first to experience the phenomenon of urban sprawl. There were two causes; the first one was the rise of the car, the other was racial tension. Between 1940 and 1960, the proportion of blacks in the population grew to one-third. The white middle-class, that was full of resentment against the black lower classes, sought its refuge in the periphery. The suburbanization brought a dramatic reduction in density. Nowadays, one third of the entire city area lies derelict. Many buildings have been demolished, 4,000 of those still standing are vacant and abandoned. After 1950, the huge factories were decentralized. Due to the oil crisis in 1973 and increasing foreign competition, Chrysler, Ford and General Motors suffered immense losses; 208,000 between 1970 and 1980. (Shrinkingcities.com, 2004)

## United Kingdom

### Manchester & Liverpool

Manchester and Liverpool are both cities in the northwest of England, barely 35 miles apart. They both were at the base of the Industrial age in England. In the 30s the population of both cities peaked at just below 900,000 inhabitants, and each lost around a half of its population when de-industrialization led to a large population decline. In that perspective, Manchester and Liverpool were pioneers in the world and they struggled and even succeeded in shaking off the image of decay. The 90s formed a period of urban renewal and gave them a sense of new optimism. (Shrinkingcities.com, 2004)

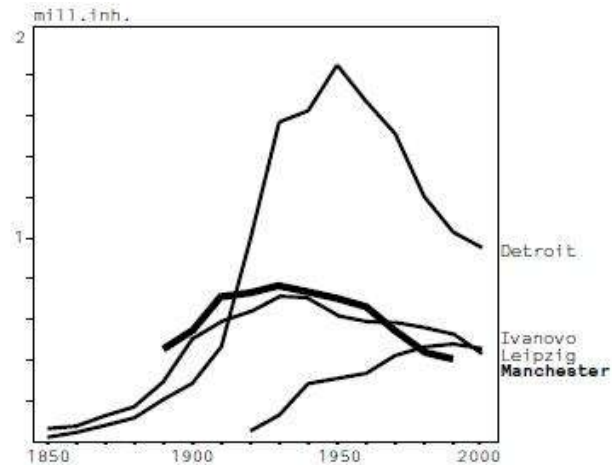


FIGURE 19 SHRINKAGE IN MACHESTER, COMPARED TO DETROIT, IVANOVO AND LEIPZIG (SHRINKINGCITIES.COM, 2004)

Despite the similarities, the relationship between the two cities is complex. There is rivalry at several fronts; football teams, music, cultural institutions and receiving funds from the European Union, the Central Government or the Lottery. This rivalry is bottomed in century-long differences in economy, social constitution and urban culture, and even that is despite the fact that they were famously linked by the first passenger railway in the world. Manchester was the logistical centre for cotton and textile industries while Liverpool's strength was formed by the power of its docks and global trade connections. The inherent difference between the two cities can also be seen in the way issues of population decline and restructuring have been approached. (Shrinkingcities.com, 2004)

## Russia

### Ivanovo

Ivanovo lies almost three hundred kilometres north-east of Moscow. The region counts as one of the poorest areas in the Russian Federation. In the middle of the 19<sup>th</sup> century the region began to develop from rural settlements into a centre of the Russian textiles industry. Some of the most important events of the Russian Revolution of 1905 took place in Ivanovo; the first 'soviet' was set up here. Around 1935 the city became the Soviet Union's main centre for the manufacturing of clothing. The economy flourished. Between 1920 and 1980, the population grew explosively. (Shrinkingcities.com, 2004)

In 1920, Ivanovo was a small town of 52,000 inhabitants. Due to the industrialization it grew to 285,000 people in 1940. In 1990 the figure was around 480,000. Since then, the region has experienced a sharp decline in birth rate, while more people are dying than before. Women make up 55% of the population; a fairly high proportion. Since they live on average ten years longer than men do, this number will probably increase. Migration and thus compensation by attracting people from surrounding areas (former Soviet republics in the south, or Asia) is not possible, because they are not welcome. (Shrinkingcities.com, 2004)

As early in the 40s the region began to suffer from lack of investments of any sort, because the Five-Year Plans of the USSR concentrated all resources on the development of heavy industry. The textile industry became increasingly side-lined as a result. The siting of new mechanical engineering works during the 50s was due not least to the lack of work for men in the textile factories. Shrinkage, albeit concealed, could thus have been observed in Ivanovo back then. It was not until the end of the Soviet Union, however, that the city fell into an economic crisis. The transition from a centralised economy into a free market led to a decrease in the volume of production: in 1998 there was only 22% left of the volume of 1989. (Shrinkingcities.com, 2004)

During the mid-90s young people, especially higher-educated, continued to leave the city to look for work in Moscow. The birth rate too was decreasing. The cities of the Russian Federation are characterized, in respect of their economies, by dual developments: on one hand, the continued existence of inherited Soviet structures, on the other the growth of new locations, of which some are improvised and low-level, while others, more investment-intensive, are oriented towards global models. Ivanovo, however, lacks modern industries of any kind whatsoever. (Shrinkingcities.com, 2004)

The mono-structural character of the industry became the city's downfall. Nowadays the unemployment is very high. The population number sank by 5.8%, almost one-fifth of the population in certain areas moved away. Their vast, prefabricated housing could not seduce them to stay. (Shrinkingcities.com, 2004)

Today, Ivanovo suffers from unprecedented social polarisation and segregation. Individuals and whole groups of people have to put enormous energy in day-to-day survival. The cityscape is going through changes. There is given way to projects large and small, but an enormous amount of work remains. (Shrinkingcities.com, 2004)

### Appendix 3: Parkstad Limburg

Municipality	Number of inhabitants [2010]	Area
Heerlen	89.216	45.50 km <sup>2</sup>
Kerkrade	47.408	22.17 km <sup>2</sup>
Landgraaf	38.177	24.69 km <sup>2</sup>
Brunssum	29.381	17.29 km <sup>2</sup>
Nuth	15.594	32.63 km <sup>2</sup>
Voerendaal	12.665	31.55 km <sup>2</sup>
Simpelveld	10.952	16.03 km <sup>2</sup>
Onderbanken	8.016	21.24 km <sup>2</sup>
<b>Total</b>	<b>251.409</b>	<b>211.10 km<sup>2</sup></b>

FIGURE 20 MUNICIPALITIES IN PARKSTAD LIMBURG AND ITS NUMBER OF INHABITANTS (WIKIPEDIA, 2011) & (PARKSTAD LIMBURG, 2011)

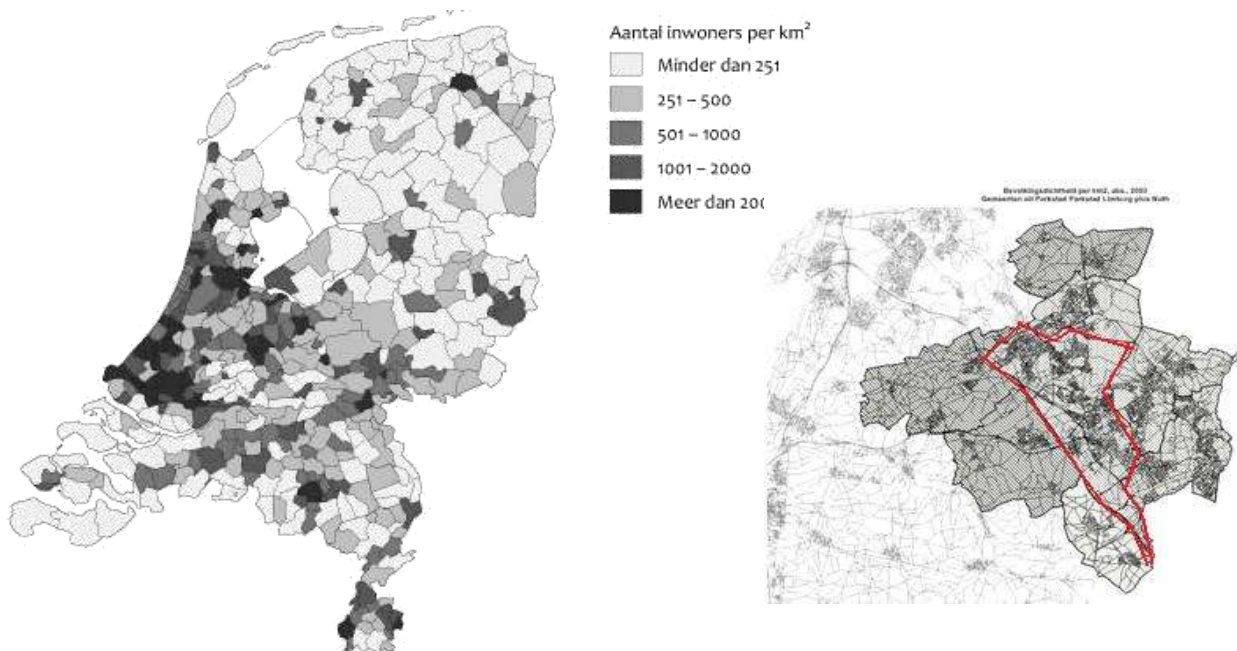


FIGURE 21 POPULATION DENSITY IN THE NETHERLANDS (CENTRAAL BUREAU VOOR DE STATISTIEK, 2011)

FIGURE 22 POPULATION DENSITY IN PARKSTAD LIMBURG (PARKSTAD LIMBURG, 2011)

Figure 22 is showing the population density in Parkstad Limburg in a map. It is clear how Heerlen is functioning as a centre for the urban region. Partly because of its position within the urban region and it is emphasized by the 'dark spots' that represent the highly dense areas.

Figure 23 is showing the picture also outlined in Figure 7 of the report; the network of 'Park' and 'Stad' (= city). The four municipalities on the left-hand side represent the urban part of the region, while the four municipalities on the right-hand side form the park-like structure.

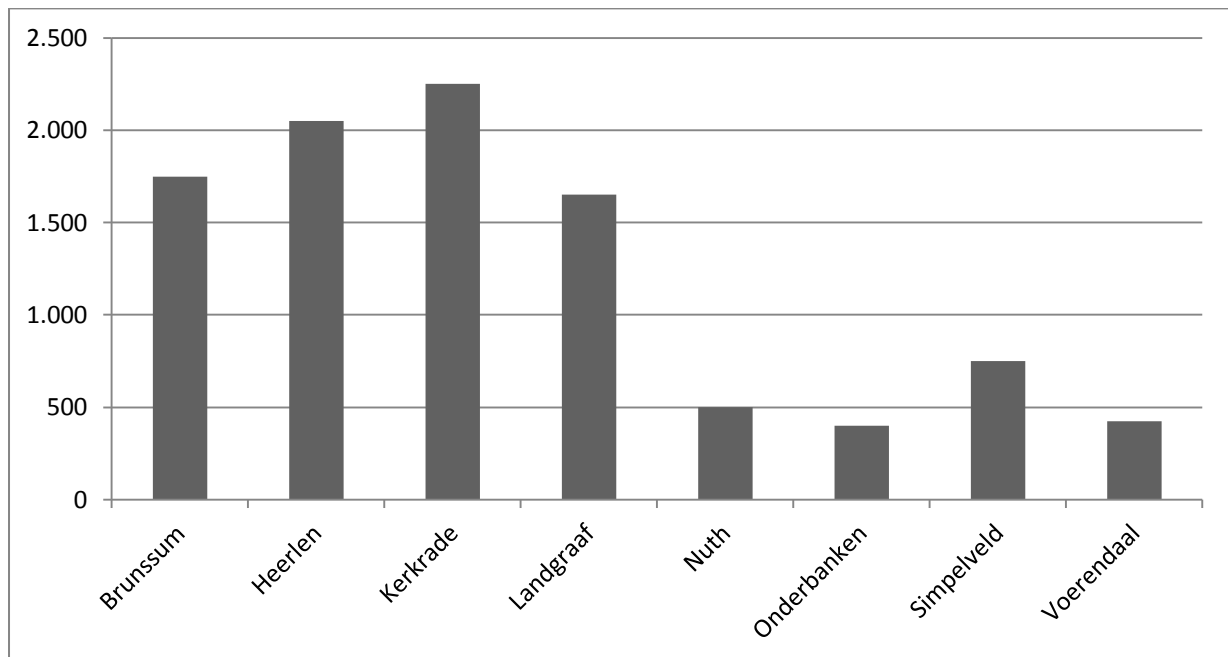


FIGURE 23 POPULATION DENSITY PER MUNICIPALITY PER KM2 IN 2003 (PARKSTAD LIMBURG, 2011)

## Geographical Orientation of Parkstad Limburg

Parkstad Limburg is located in the south of The Netherlands, in the southeast of the province of Limburg, between the green hills of Limburg and the foothills of the Eifel in Germany. The region is part of the 'Stedelijk Netwerk Zuid-Limburg' (Urban Network Zuid-Limburg), in which also the regions Sittard-Geleen and Maastricht-Heuvelland are participating. There is signed a letter of intent with the Städteregion Aachen (City Region Aachen) for cross-border cooperation in the field of Education & Labour Market, Mobility & Landscape and Regional Promotion. This responds to the designation of the triangle Eindhoven – Louvain – Aachen (ELAT) as a top technology region. (Parkstad Limburg, 2009) By cooperation with Euregional partners the regions will strengthen each other's economies and benefit from each other's mutual knowledge. Through this collaboration Parkstad Limburg forms a transnational network city with one labour market that covers an area of over 800,000 people. (Wikipedia, 2011)



FIGURE 24 LIMBURG IN THE NETHERLANDS



FIGURE 25 PARKSTAD LIMBURG EXCEPT NUTH



FIGURE 26 MUNICIPALITIES

There are two highways crossing the region: the A79 (Maastricht – Heerlen) and the A76 (Louvain – Sittard – Heerlen – Aachen – Cologne). Besides there is an urban motorway; the former highway N281. For public transport there are direct connections to Maastricht, Aachen and Sittard. At the moment the focus is mainly on the intraregional rail traffic by light rail/ IC and the development of the 'Buitenring Parkstad Limburg' ('outer ring'). (Parkstad Limburg, 2009)



FIGURE 27 LOCATION OF A79 - A76 - N281



## History of Parkstad Limburg

The region Parkstad Limburg possesses centuries of history of genesis (geomorphologic) as well as occupancy patterns (human influence). The area is rich in archaeological remains, most of them dating from the Roman period. Heerlen was e.g. an important military and civil settlement, mainly due to the location at crossroads. The area stayed inhabited during the Middle Ages and the New Age, which is witnessed by many historical centres, fortified farms and castles. (Parkstad Limburg, 2009)

Before the constitution of municipalities in the 19<sup>th</sup> century, the power was defined by lordships. This power was fragmented and changed regularly. These 'villages' were small, usually only four or five farms in the territory. Each village was surrounded by a generally modest amount of farmland. Most villages were situated in valleys along rivers and streams. Also the main connection roads between the settlements were mainly through the valleys. Around the villages, but also along these roads and in the valleys there were farmlands; on the highest plateaus there were mostly wastelands. (Parkstad Limburg, 2009)

In 1893 the establishment of the Private Company for exploitation of the Limburgian Coal Mines (Oranje-Nassau) led to the first large-scale mining. Between 1900 en 1974 the mining put its mark on all aspects of the Limburgian society on the northeast side of the current A76/N281. The ancient agricultural landscape with villages here and there, changed rapidly in an industrial landscape. Railroads and the rapidly growing mine colonies in the vicinity of mines were built with the remains of the ancient cultural landscape in between. (Parkstad Limburg, 2009)

The disappearance of the mining industry in the 60s and 70s transformed the area from what was once a thriving mining area into a restructuring area. A lot of the industrial heritage from the mining time has been demolished. Practically the whole socio-cultural heritage of this period disappeared and together with that a piece of common history and recognizable built environment (identity). An exception are the former mine colonies; they are still visible; some even have received the status of protected heritage. (Parkstad Limburg, 2009)

In the 70s and 80s with the help of funds and subsidies from Zuid-Limburg and Europe an economical structural enhancement was employed. One of the most known spatial examples is the operation 'From Black to Green', where 750 acres of former mining area received a new destination with parks and housing. To capture the unemployment caused by the closure of the mines the government stimulated the establishment and expansion of companies in Zuid-Limburg. As a result they moved several government services to Parkstad Limburg, e.g. the Centraal Bureau voor de Statistiek (CBS), Ministry of Defense, NATO, AID and the Algemeen Burgerlijk Pensioenfonds (ABP). (Parkstad Limburg, 2009)

There was no coordination between the municipalities and the landscape was handled quite rigorously. Urbanization in the mining and restructuring period tended to spread in places where nature is most vulnerable, namely at the edges of the city. The current urban metropolitan area exhibits once again a fragmented picture. The A76 and N281 form a separation between the green, rural Zuid-Limburg at the southwestern side and the urban and polycentric former mining area at the northeastern side. (Parkstad Limburg, 2009)

After the restructuring period (90s – present) many initiatives for the strengthening of the landscape and economic structure of the region are established. In landscape terms the restoration and restructuring of Terworm, the start of the construction of the cross-border nature park Rodebach/ Roode Beek and the realization of the Grote Boslocatie Landgraaf/ Kerkrade are mentionable. Besides, large-scale leisure complexes like SnowWorld, Mondo Verde and Gaiapark were constructed in the scenic setting of the landscape park Gravenrode. During this period the provincial museum Continuum (former Industrien) was opened. There has also embarked on a 're-naturing' of streams like the Geleenbeek, Caumerbeek and the Roode Beek/ Rodebach. (Parkstad Limburg, 2009)

In economical sense there is sought for strengthening in the construction of business locations and central functions. Likewise, the municipal reclassification of Landgraaf gave rise to the strengthening of the central function of this municipality (Op de Kamp). As a result of the spread of caravan sites large-scale business locations are being developed. The construction of De Koumen and the development of the Woonboulevard are well-known examples. The same applies to Dentgenbach.

Stakes are put on the strengthening of the main economic axis along the N281/ A76 with areas like Zorgvallei, Trilandis, De Locht and Avantis. That last one is a cross-bordering business location where is attempted to give shape to international economic strengthening together with Aachen. There have also been directed investments in the educational field. Example is the 'education boulevard' with the Arcuscollege, Hogeschool Zuyd and the Open Universiteit. In the Dutch/ German border area cross-border initiatives have evolved and people are cooperating closely (e.g. in the municipalities of Herzogenrath, Übach-Palenberg, Landgraaf and Kerkrade; HÜLK). This leads to projects like Grensland Wormdal, Pferdenlandpark and the Minestone-project.

At De Locht the Parkstad Limburg stadium has been constructed which boosts the further development of the leisure functions and other developments. Finally new meaningful roads that cross the old radial road structure are being constructed. (Parkstad Limburg, 2009)

### **Current Issues in Parkstad Limburg**

Parkstad Limburg is one of the three regions in The Netherlands that are facing rejuvenation, aging and depopulation at the same time. The population number in Parkstad is declining at high speed. That is a different situation from the rest of the country. According to forecasts the population number in the period 2008-2030 is declining with a comprehensive number of 44,000 people (Prognose Parkstad Limburg 2008-2040, E'til 2008). This decline is affecting all policy fields; housing, health care, retail, education and green, nature and landscape. The meaning of this forecast differs per policy field. The housing need e.g. has to deal mainly with the household development instead of the population development. The number of households is declining with more than 10,000 in the same period.

At the same time aging and rejuvenation are striking Parkstad harder than the rest of Limburg and The Netherlands. It is of great importance to see the effects of the population decline and change in the perspective of ambitions and the resulting developments.

Ambitions are significantly defining the effects of population decline, which leads to a different population development than forecasted. Evident is that the approach of shrinkage, through its broad impact on all policy fields, asks for an integral strategy and work method.

### **Future Vision of Parkstad Limburg**

The current issues in Parkstad Limburg have a lot to do with the positioning of the region in interregional, provincial, national and international contexts. Where can one find the region's strengths and its weaknesses? How can we clearly drop the region's potentials and translate these into spatial terms in the field of housing, employment, leisure and spatial quality?

The frame of mind is resting on two pillars: social and economic growth and the creation of spatial quality. Based on this, six foci are formulated:

- Landscape leads
  - The green and cross-border landscape is the basic quality and leading in the spatial development.
  - One main centre
  - One high urban centre for the region with a Euregional allure.
- Energy as a foundation
  - Energy as a (cultural-historical) foundation, as an imagination of economic opportunities for the future, and as an imagination for the region with historical and current high economical dynamics.
- Network of Park and Stad (= city)
  - A high quality network of 'park' and 'stad' (= city), with high quality borders and cross-border relationships.
- Economic artery N281
  - West side and city avenue N281 form the main axis for the economy and is carrier of identity, makes the economic dynamics visible.
- Buitenring = Parkstadring (= 'outer ring')
  - The Buitenring and the N281 are the 'Parkstadring' and development axis for the economy, where at the west side of Parkstad the emphasis is on the economy and at the east side on the 'new' economy in the field of leisure and tourism. (Parkstad Limburg, 2009)

These are all general development directions. In the course of this investigation it is interesting to know the direction for the field of housing. Parkstad is pursuing three goals there:

- See shrinkage as an opportunity: through demographic developments and development of the housing demands the region will take control to get the housing market in balance again and keep it in balance by bringing together demand and supply, quality and quantity.
- Giving a quality boost to the housing in Parkstad by stimulating innovation and renewal, to seduce the housing consumer, to achieve image enhancement and position the region as an activating power that stimulates good initiatives.
- Offer more opportunities to inhabitants to realize their housing needs by creating supply that is more connecting to the housing needs of (future) inhabitants. (Parkstad Limburg, 2006)

### **SWOT-analysis Parkstad Limburg**

To find answers to these questions and to formulate some strategies, a SWOT-analysis (Strengths, Weaknesses, Opportunities and Threats) is elaborated.

Based on the strengths, weaknesses, opportunities and threats a regional vision on the restructuring of the housing stock and the living environment as an answer to the expected shrinkage issue is elaborated. This restructuring will be focusing on a sustainable residential environment, characterized by healthy housing market ratios. In other words, housing for all target groups in a reasonable time span and at reasonable costs, and connectedness of residents to a living environment where the facilities (health care, education and other) are tuned to a need. (Parkstad Limburg, 2009)

## SWOT-analysis

<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• High-quality business locations</li> <li>• Cooperation in WGR and region</li> <li>• Cooperation with chain partners</li> <li>• Social cohesion (neighbourhood connectivity by citizens)</li> <li>• Price/ quality ratio of housing</li> <li>• Cultural infrastructure and programming</li> <li>• Location in Zuid-Limburg, with Aken, Louvain, Eindhoven, Europe at short distance</li> <li>• Strategic agenda</li> <li>• Landscape, spatial quality and diversity</li> </ul>	<p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>• Aging</li> <li>• Dejuvenation</li> <li>• No industrial SMEs</li> <li>• Low educational level and entrepreneurship</li> <li>• Few high-end housing</li> <li>• Large number of social housing</li> <li>• Low economic participation rates</li> <li>• High unemployment rate</li> <li>• Image/ identity</li> <li>• Bad 'internal' accessibility</li> <li>• Limited international public transport</li> <li>• Little coherence between residency and employment</li> </ul>
<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Euregional (knowledge) infrastructure</li> <li>• Sustainability/ new energy</li> <li>• Work force potential</li> <li>• Participation rate of women</li> <li>• Labour shortage (especially health care sector)</li> <li>• RWTH development (campus and ECCE; European Cardiovascular Centre of Excellence)</li> <li>• Cultural capital</li> <li>• Tourism</li> <li>• Space created by shrinkage</li> <li>• Euregional labour market/ border bonus</li> <li>• First-time-buyers/ settlers on the housing market</li> <li>• Better internal and external connections</li> <li>• High-quality cross-border public transport network</li> <li>• Experimental/ eccentric living environments, live-work and high-urban environments</li> <li>• As a result of aging, extramuralisation and individualization an increasing demand for new dwellings</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• 'De-greening'</li> <li>• Many large employers and few SMEs</li> <li>• Border crime</li> <li>• Self-reinforcing shrinkage affecting the investment climate and declining neighbourhood connections (attractiveness of the neighbourhoods)</li> <li>• Brain drain (exodus of highly educated people)</li> <li>• Relatively little confidence in politics</li> <li>• Increasing sense of insecurity</li> </ul>

FIGURE 28 SWOT ANALYSIS PARKSTAD, BASED ON (PARKSTAD LIMBURG, 2009)

## Appendix 4: Districts in Heerlen

Heerlen		
Heerlen-Stad		
Heerlen-Centrum <ul style="list-style-type: none"> <li>• Eikenderveld</li> <li>• Gelein</li> <li>• Lindeveld</li> <li>• Op de Nobel</li> </ul>	GMS <ul style="list-style-type: none"> <li>• Grasbroek</li> <li>• Musschemig</li> <li>• Schandelen</li> </ul>	Meezenbroek <ul style="list-style-type: none"> <li>• Palemig</li> <li>• Schaesbergerveld</li> </ul>
Heerlen-Noord		
Heerlerheide <ul style="list-style-type: none"> <li>• Beersdal</li> <li>• Ganzeweide</li> <li>• Heksenberg</li> <li>• Litscherveld</li> <li>• Maria Christinawijk</li> <li>• Nieuw-Einde</li> <li>• Passart</li> <li>• Pronsebroek</li> <li>• Rennemig</li> <li>• Schelsberg</li> <li>• De Stack</li> <li>• Versiliënbosch</li> <li>• Vrieheide</li> <li>• De Wieër</li> </ul>	Hoensbroek <ul style="list-style-type: none"> <li>• De Dem</li> <li>• Maria-Gewanden/ Terschuren</li> <li>• Mariarade</li> <li>• Nieuw-Lotbroek</li> <li>• Overbroek</li> <li>• Schuureik</li> </ul>	Zeswegen <ul style="list-style-type: none"> <li>• Nieuw Husken</li> </ul>
Heerlen-Zuid		
Heerlerbaan <ul style="list-style-type: none"> <li>• Bautsch</li> <li>• Douve Weien</li> <li>• Giezenveld</li> <li>• De Rukker</li> </ul>	De Hees <ul style="list-style-type: none"> <li>• Aarveld</li> <li>• Bekkerveld</li> <li>• Caumerveld</li> <li>• De Erk</li> <li>• Heesberg</li> <li>• Heeserveld</li> <li>• Vrusschemig</li> </ul>	Molenberg <ul style="list-style-type: none"> <li>• Schiffelerveld</li> </ul> <hr/> Welten <ul style="list-style-type: none"> <li>• De Kommert</li> </ul>

FIGURE 29 DISTRICTS IN HEERLEN, BASED ON (WIKIPEDIA, 2011)

## Appendix 5: The Name 'Heerlen'

There are several explanations for the name 'Heerlen'. The first one refers to the word 'Heer' (= lord), that would lead to 'Chorio', 'Charities', 'Har', 'Cherr' that leads to 'Heri' and means 'dry'. The suffix 'len' would arise from the Frankish 'loo', that means 'forest'. Together 'Heerlen' would then mean 'dry forest'. The Roman 'Coriovallum' indeed seems very similar to 'Chorio', but does not have a similar meaning. It is therefore likely that the Romans adapted the name 'Chorio' from the indigenous people. Completely against the grain 'wet forest' is also defensible. Think of the still existing small-scale water forest between the Geleenbeek and Caumerbeek. The part 'or' in the name 'Coriovallum' then would refer to the Celtic word 'Ar' that means 'stream'. A third explanation is less exotic. 'Heerlen' would mean 'Heerbos' ('len' then would mean 'loo' = 'forest'). A fourth explanation is based on the German 'Haria' that means 'army' and the German 'walla' that refers back to the Latin 'vallum' and means 'wall'. This structure gives 'Heerlen' the meaning of 'walled army camp'. (Rijckheyt, 2009)

As for the Roman name of Heerlen, people always assumed that it was 'Coriovallum', which means 'army camp'. This is strange, because Heerlen has never been a military camp. Another explanation can be found in the Latin word 'Corium' that means 'clay' or 'potting compost'. Reasonably plausible when you consider that Heerlen was particularly rich in Roman pottery. However, research has shown the possibility that the Roman name has not been 'Coriovallum', but 'Cortovallio'. For example, that is also the way the name was listed on the famous Peutinger map. This name was a German/ Celtic degeneration of 'Corio-valio' or 'Hariwalia', which means something like 'fortified hospitable place'. That is also more consistent with the facts. The Roman Heerlen was not a military camp but a civil settlement. (Rijckheyt, 2009)

## WGR+ status

### WGR+

In March 2002 the Executive Board of Parkstad Limburg and a group of business representatives, knowledge institutions and CSOs gave commission to the elaboration of an integral and a cohesive vision for the development of the region Parkstad Limburg. This resulted in the report 'Op Hete Kolen'. This report and the recommendations have led to an accelerating path to the WGR+ status. This is a new model for regional cooperation that is focusing on a transfer of tasks, like living and economy, from municipalities to Parkstad Limburg. The status is obtained on March 23, 2006 with the following mission:

*"The establishment of an economical structure enhancement of the region."*

And the goal:

*"Perspective for inhabitants of Parkstad, sustainable development through the creation of an attractive living/ working/ staying climate."*

(Rekenkamercommissie Parkstad Limburg WGR+. 2009)

## Appendix 6: Four Vision Themes Municipality of Heerlen

<ul style="list-style-type: none"> <li>• Central city</li> <li>• Create a strong concentration of the shopping area, if not possible, create good and attractive connections;</li> <li>• The city centre needs more inhabitants, not only in the top segment;</li> <li>• It is all about liveliness, creativity and quality for old and young;</li> <li>• Housing in the centre has many advantages, limited nuisance may not be any problem;</li> <li>• Make sure that neighbourhoods will not become the victims of encouragement of downtown housing, watch for too many large and expensive projects;</li> <li>• Districts outside the city centre also deserve attention, especially the investment areas;</li> <li>• Fight vacancy, be tough on owners of deteriorated buildings and sites;</li> <li>• Choose for quality and creativity in the spatial planning and architecture;</li> <li>• Provide a clearer place for housing and excellent living environments;</li> <li>• Educational institutions belong in the centre;</li> <li>• Close the city centre off to traffic, take away parking spaces and create space for activity;</li> <li>• A mining museum or monument in the city centre;</li> <li>• A strong city centre is also good for the neighbourhoods and the entire region.</li> </ul>	<ul style="list-style-type: none"> <li>• Entrepreneurial city</li> <li>• Everything is about employment;</li> <li>• The development of economic clusters takes decades, select and hold on;</li> <li>• Entrepreneurship is the source of dynamics in economy;</li> <li>• Voluntary work and care ('mantelzorg') are also work;</li> <li>• The cost of education have to be cut;</li> <li>• The participation rate should be raised, turn back the cuts in welfare;</li> <li>• Sustainable and corporate social responsibility is important in every city;</li> <li>• Provide more internships in consultation with businesses;</li> <li>• Provide a spot to tourism, if only from the potential of Zuid-Limburg and Parkstad;</li> <li>• Tourism and the potential around the Sigrano Groeve;</li> <li>• Cooperate, but make sure you are not led (especially by project developers).</li> </ul>
<ul style="list-style-type: none"> <li>• Youthful city</li> <li>• Be clear about the approach towards aging and shrinkage;</li> <li>• Heerlen is a young city, that means almost every citizen is an immigrant (i.e. roots outside the city);</li> <li>• Also elderly people like a young city, use the mining history;</li> </ul>	<ul style="list-style-type: none"> <li>• Network city</li> <li>• Improve the public transport between towns/ neighbourhoods and to the city;</li> <li>• Public transport should be free;</li> <li>• Cities that are inaccessible or concentrating too many activities outside the centre will become</li> </ul>



- Modern architecture is good, but cherish the pearls from the past;
- Create spaces where study associations and youth groups can meet;
- Many more accessible cultural activities, small scale is an advantage;
- Provide perspective to the youth to bind them;
- Make the Van Grunsvenplein a creative meeting place for youth (culture);
- Establish a primary school in the city centre;
- It is too quiet in the city centre after 7pm;
- The youth is the future.
- residential areas and slowly die;
- There are millions in Brussels, maybe there are more possibilities than one might think;
- Inspire each other;
- The train connection to Aachen (via Avantis) should be a priority;
- The different networks are increasingly important in an increasingly regionalization economy and labour market;
- Heerlen, Parkstad and Zuid-Limburg are inseparable, add the cities along the border and you should be positive about the opportunities.

FIGURE 30 FOUR VISION THEMES, BASED ON (GEMEENTE HEERLEN, 2008)

## Appendix 7: Statistics

### Population Development

#### Parkstad Limburg

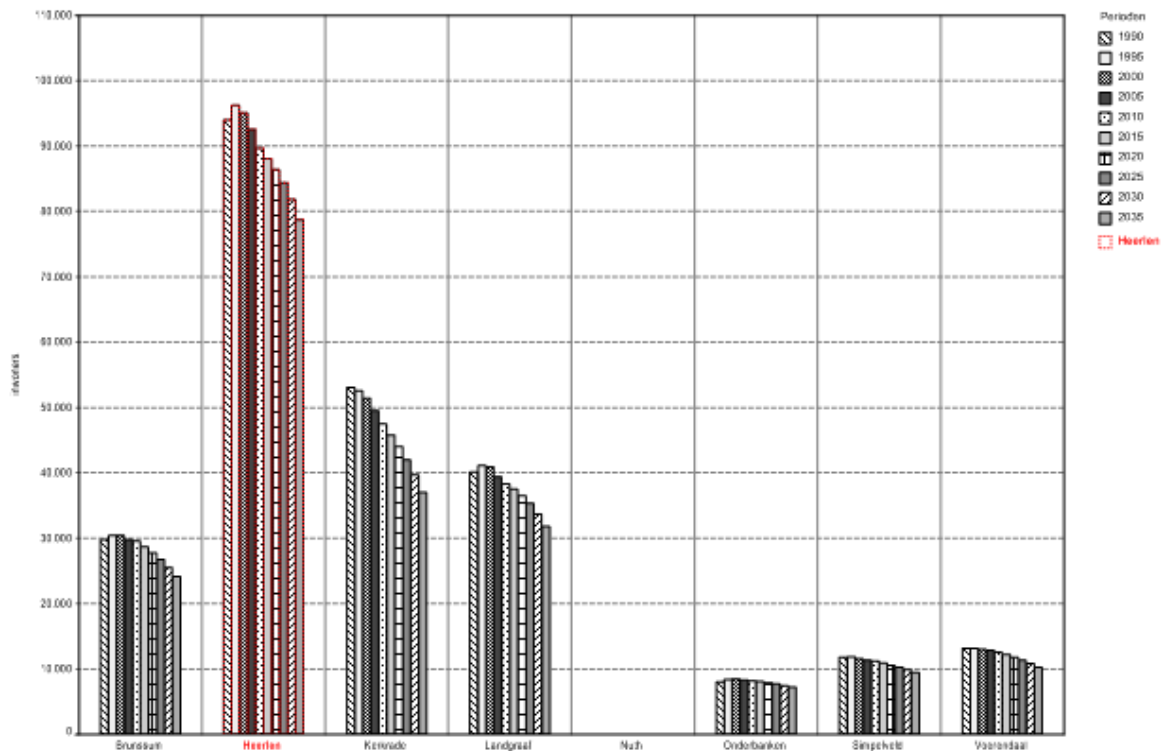


FIGURE 31 POPULATION NUMBER IN 1990-2035 IN MUNICIPALITIES OF PARKSTAD LIMBURG (PARKSTAD LIMBURG, 2011)

When we split the period of 1990-2035 into intervals of five years each, we see that all municipalities in Parkstad Limburg show a population growth until the year 1995 (Figure 31). After 1995 the graph shows a population decline; the decline is stronger in the urban municipalities (left four, Heerlen in red) than in the rural municipalities (right four). Heerlen and Kerkrade will face the hardest decline; both a loss of around 16,000 inhabitants between 1990 and 2035. For Heerlen this means 16% (18% from 1997-2035), but for Kerkrade it is even 30%.

## Heerlen

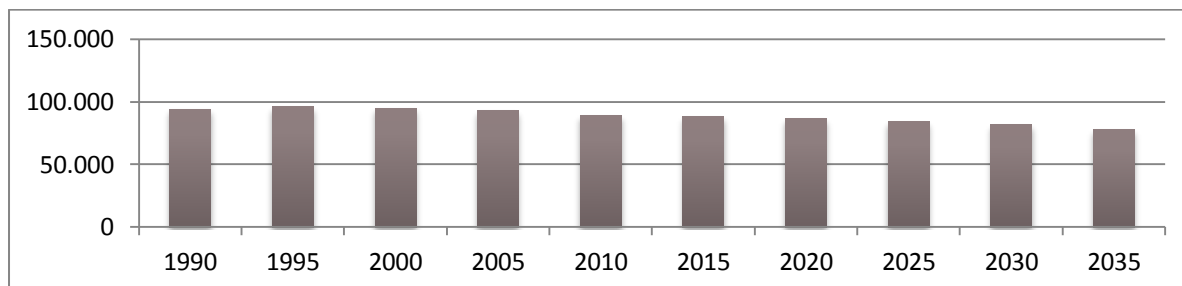


FIGURE 32 POPULATION NUMBER IN 1990-2035 IN HEERLEN (PARKSTAD LIMBURG, 2011)

Focusing on the situation for Heerlen, we see the following (Figure 32). After a growth from 94,000 inhabitants in 1990 to 96,000 in 1997, there is a population decline with a forecast to 78,000 in 2035. That is a decline of 16% between 1990 and 2035.

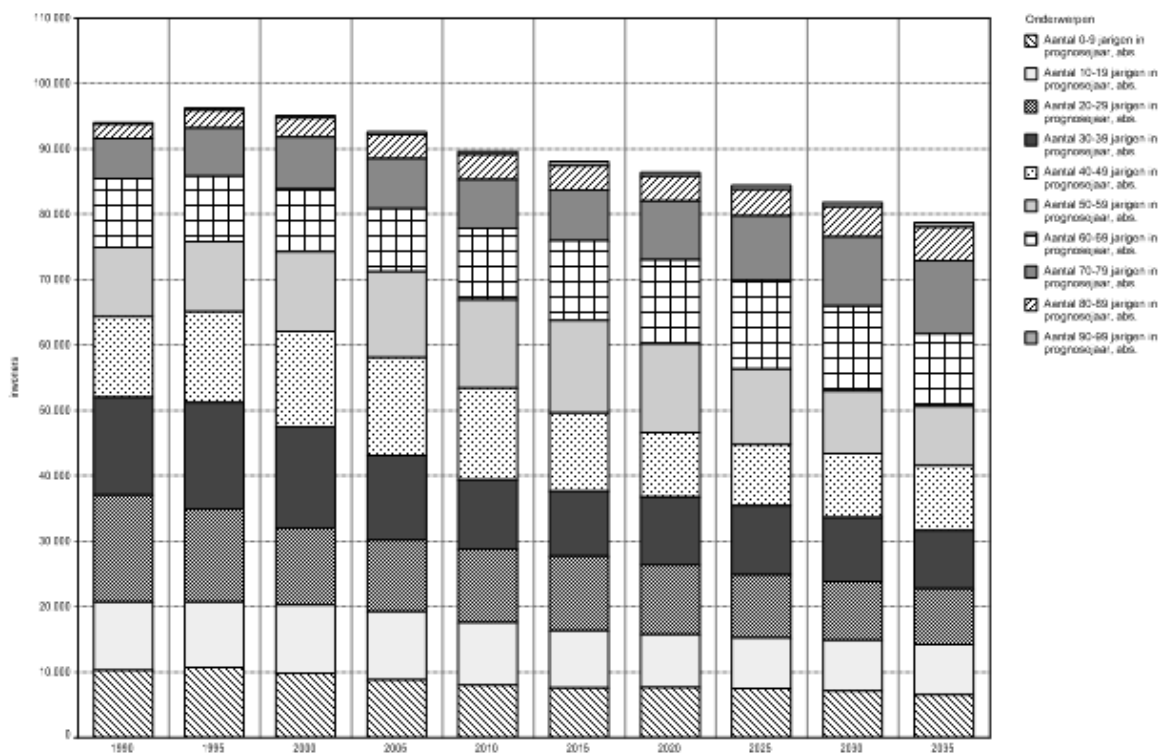
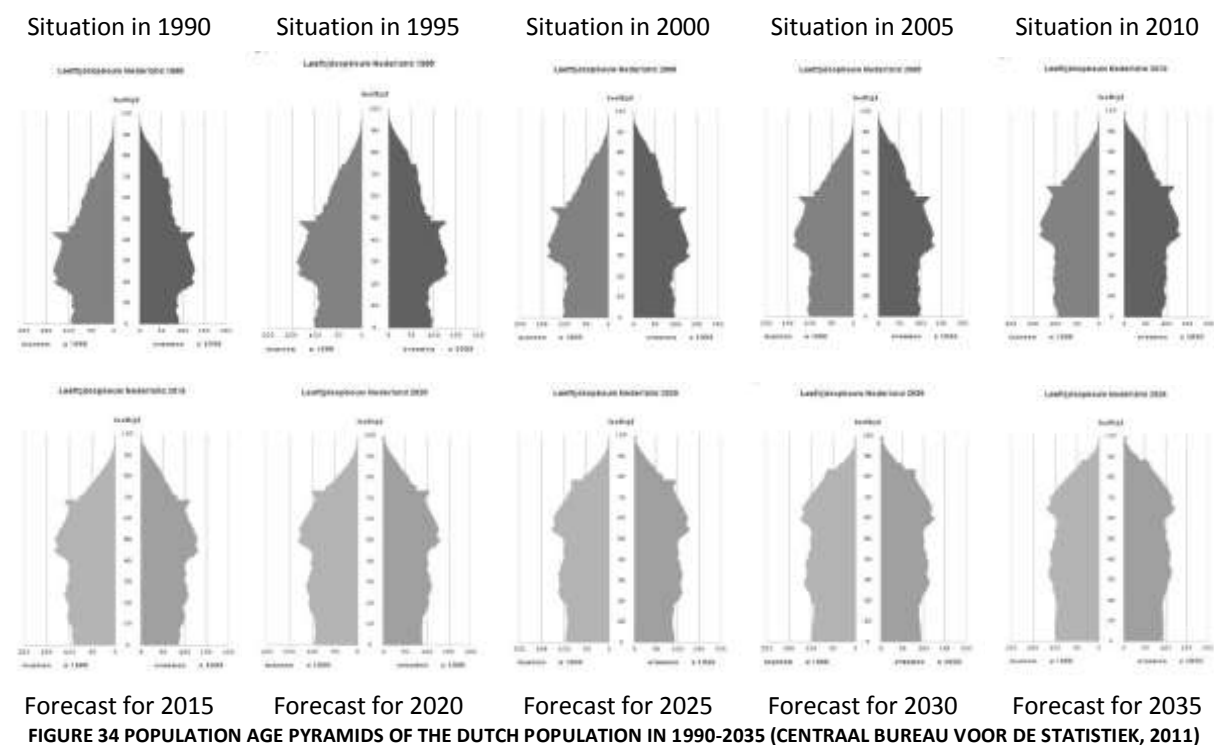


FIGURE 33 10-YEAR INTERVALS FOR AGE CATEGORIES IN 1990-2035 IN HEERLEN (PARKSTAD LIMBURG, 2011)

Figure 33 shows the 10-year intervals for the development of age categories in the period 1990-2035 in Heerlen. There we can see the two important aspects of the demographic developments and the shrinkage issue. On the one hand we see the occurrence of 'dejuvenation'. There is a significant decline in the age categories 0-9 years, 10-19 years, 20-29 years and even 30-39 years. The decrease in the youngest age categories is related to the decrease in the fertile age categories: less fertile people means less births. The other side of the coin shows also the 'aging'; an increase in the age categories 60-69 years, 70-79 years and 80-89 years. The number of people older than 75 years will increase with 76% up to 2040. Up to 2020 the number of people in the age categories 50-70 years will increase with 20%, but in the period of 2010-2040 this group will decline with 8% in total. Dejuvenation and aging are both causes of shrinkage.

This observation goes along with the population age pyramid of the entire Dutch population (Figure 34), men left-hand side, women right-hand side). We see that the population in the entire country is developing according to the dejuvenation and aging principle, similar to the situation in Parkstad Limburg and Heerlen.

The first things to notice are the ‘two parallel peaks’ visible in all graphs. These peaks in the birth of both men and women represent the Baby Boom; the birth wave in many Western European Countries and the United States after the Second World War. Obvious is the shifting of this population group through time. This historical development is of course also part of the causes for dejuvenation, but especially for aging. The birth wave made the group of Baby Boomers exceptional in size, and the transition of age of this group in time explains the aging issue we will be facing soon (started in 2010 already, when the first Baby Boomers reached the retirement age). But also the dejuvenation is partly determined by the Baby Boomers; after the birth wave at the end of the 40s and during the 50s, there has never been such a high birth rate again. In fact, as mentioned earlier the birth rate is even still decreasing, caused by, amongst others, the emancipation of women. In other words, we will not have enough labour force to care for our retired people.



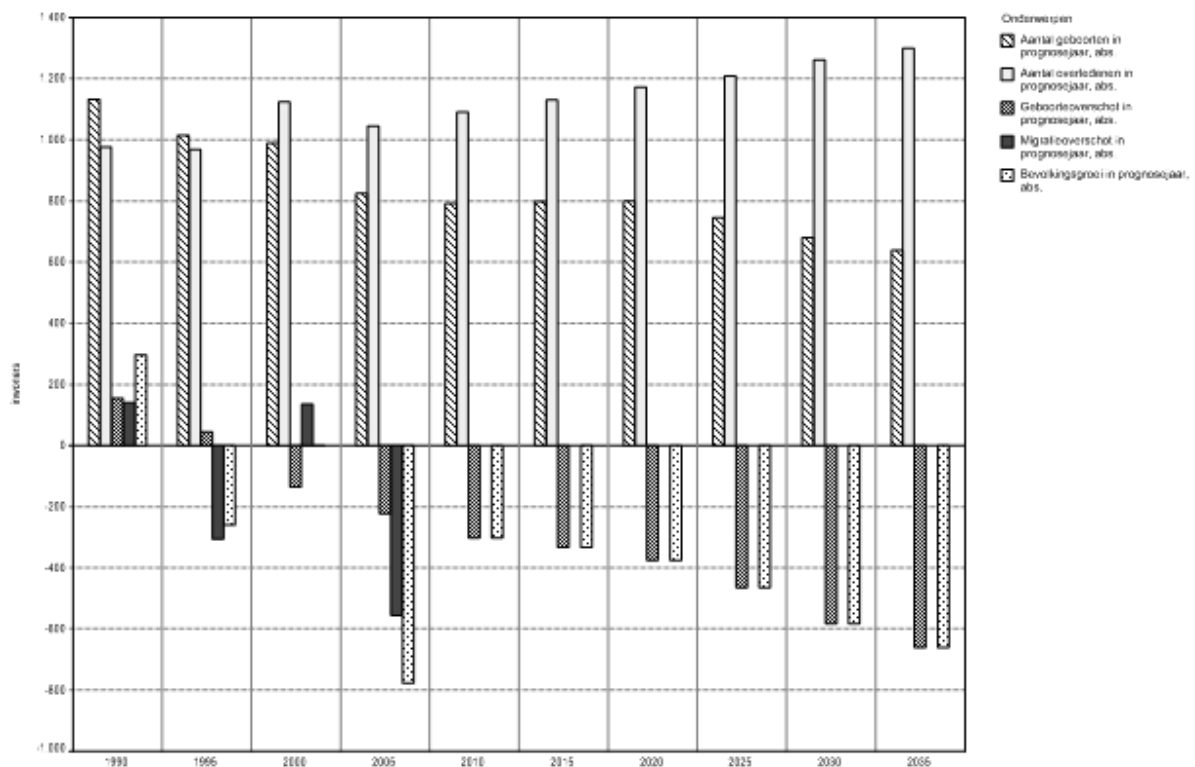


FIGURE 35 POPULATION STREAM IN 1990-2035 IN HEERLEN (PARKSTAD LIMBURG, 2011)

When focusing again on the situation in Heerlen, we can take a look at Figure 35 that shows the number of births and deaths, the excess of births and migration, and the population growth. The excess of births and migration are obviously only known for the finished years, and the number of births and deaths, and the resulting population growth for the upcoming years are forecasts. We can conclude from the graph that from the period of 1995-2005 there is a change in demographic development; (1) the number of births is decreasing (dejuvenation), (2) the number of deaths is increasing (aging), (3) consequently, the excess of births is negative and (4) the population growth is becoming more and more negative, i.e. there is severe shrinkage of the population in Heerlen.

## Household Development

As we have seen in Chapter 3, shrinkage is not only about a decline in the population number, but it also comprises household numbers and composition.

### Parkstad Limburg

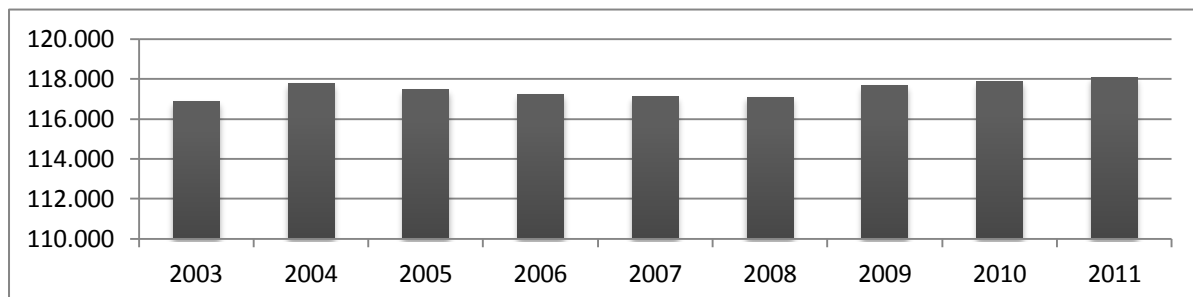


FIGURE 36 TOTAL NUMBER OF HOUSEHOLDS IN 2003-2011 IN PARKSTAD LIMBURG (- NUTH) (PARKSTAD LIMBURG, 2011)

Figure 36 shows the total number of households in Parkstad (minus Nuth) for the period 2003-2011. Remarkable is the fact that there has been a slight decrease in the total number, followed by a slight increase in the total number of households. Ending in a total number just above the largest total number in this period (2004). An explanation for this could be the aging that has currently set in; elderly people nowadays are getting older compared to some years ago, especially women. This category often comprises single people, living on their own. This could be one explanation for the growing number of households. Another explanation could be that nowadays we find more single-parent families. A family that once consisted of two parents and their children and was counted as one household is split into two households after separation of the parents. A third explanation is that young people stay longer single nowadays; they often focus first on studies and career and settle afterwards.

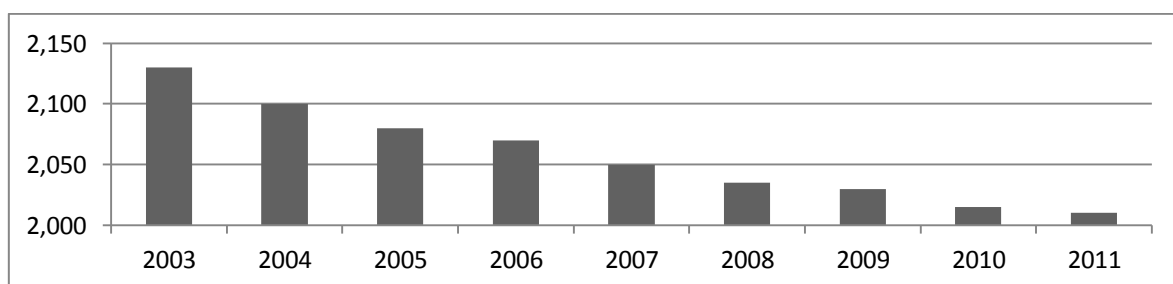


FIGURE 37 AVERAGE HOUSEHOLD SIZE IN 2003-2011 IN PARKSTAD LIMBURG (+ NUTH) (PARKSTAD LIMBURG, 2011)

The reasons just mentioned are supported by the average household size in Figure 37. During the period of 2003-2011 the average household size in Parkstad decreased from 2.13 to 2.01. This supports the proposition that more people are living on their own.

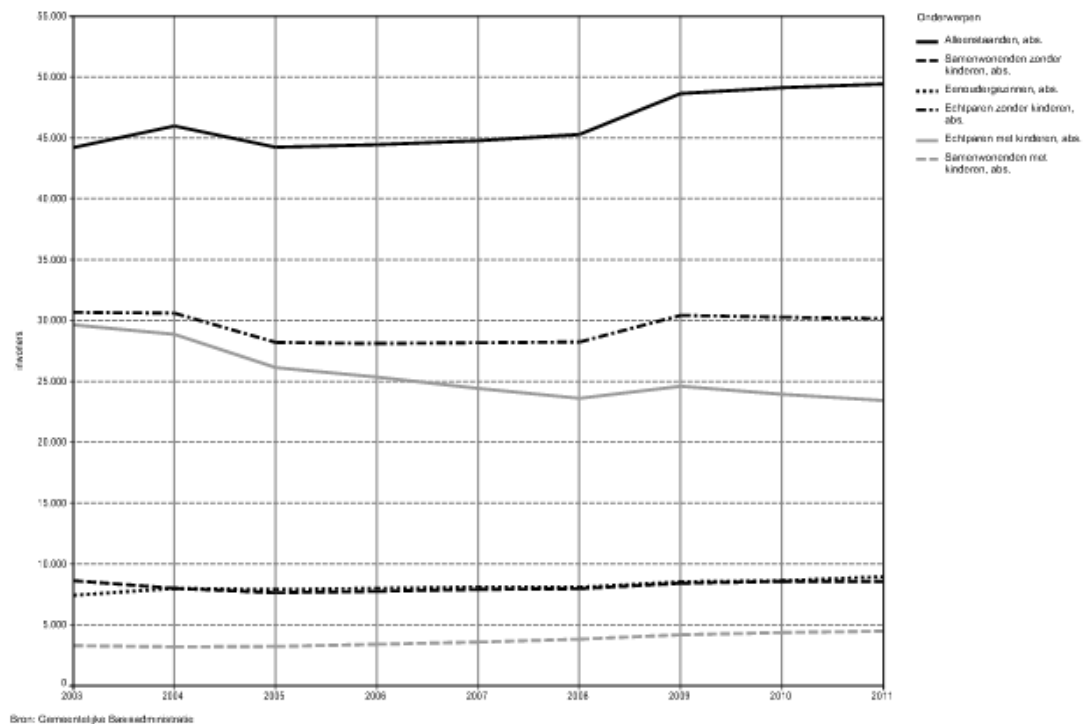


FIGURE 38 HOUSEHOLD COMPOSITION IN 2003-2011 IN PARKSTAD LIMBURG (PARKSTAD LIMBURG, 2011)

Another supportive graph for the mentioned reasons is Figure 38. It shows indeed that there is an increase in singles from 2006 (can be both elderly people and young people). It also makes clear that there is a slight increase in single-parent families.

## Heerlen

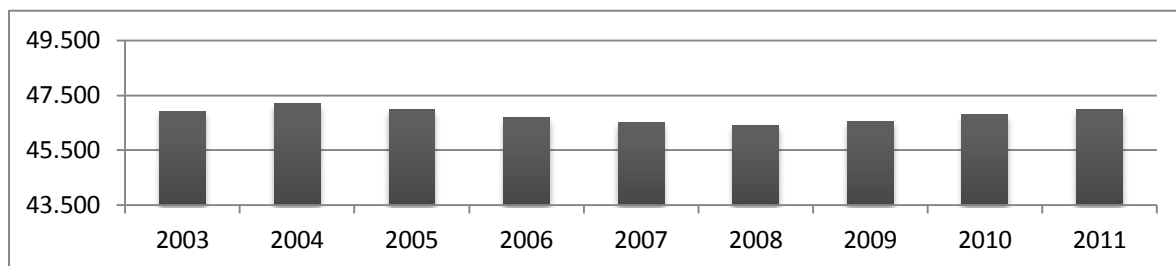


FIGURE 39 TOTAL NUMBER OF HOUSEHOLDS IN 2003-2011 IN HEERLEN (PARKSTAD LIMBURG, 2011)

For the situation in Heerlen concerning the total number of households (Figure 39) we can see the same pattern as in the region Parkstad; first a decrease, than an increase again. The only difference is that the initial decrease in the total number in Heerlen is larger than in Parkstad, and in 2011 there are not more households than in 2004, which is the case in Parkstad.

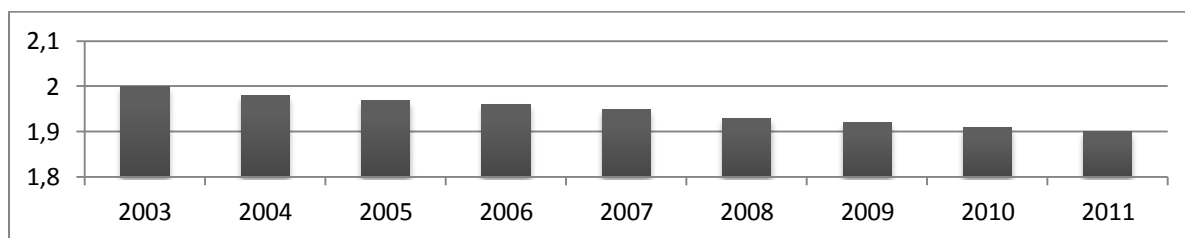


FIGURE 40 AVERAGE HOUSEHOLD SIZE IN 2003-2011 IN HEERLEN (PARKSTAD LIMBURG, 2011)

When we take a look at the average household size Figure 40, we see a difference compared to Parkstad. In 2003 the average size was 2, so that means a smaller size than the average size in Parkstad (even compared to 2.01 in 2011). In Heerlen the average household size in 2011 is 1.9. This difference can be explained by the fact that the average household size in Parkstad is calculated by taking the average of all municipalities in the region. As we already know, four of these municipalities are urban (smaller average household size, including Heerlen), while the other four are rural (larger average household size). The outcome of this calculation consequently lies somewhere in between.



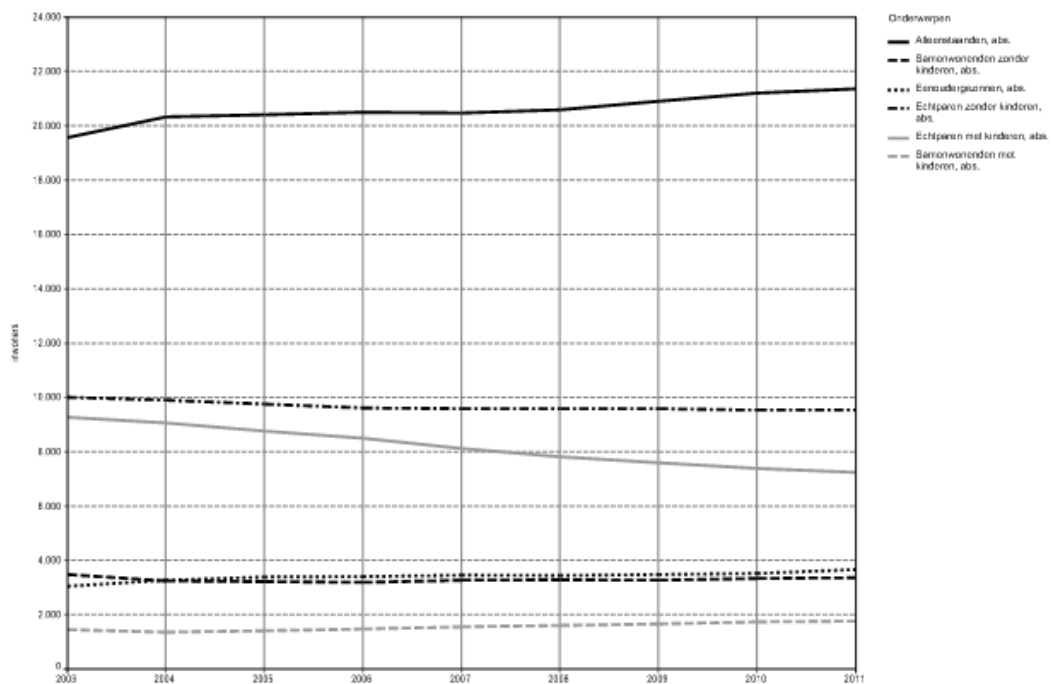


FIGURE 41 HOUSEHOLD COMPOSITION IN 2003-2011 IN HEERLEN (PARKSTAD LIMBURG, 2011)

Figure 41 also shows that, similar to Parkstad, in Heerlen there is an increase in singles, but only from 2008 (can also be both elderly people and young people). It also makes clear that there is a slight increase in single-parent families in Heerlen. Both developments are again supportive for the proposition that the number of households in Heerlen is increasing while the average household size is decreasing.

## Composition of the Housing Stock

The composition of the current housing stock is important to know, because then it becomes visible at which locations in the city specific effects of shrinkage are more likely to express.

### Heerlen

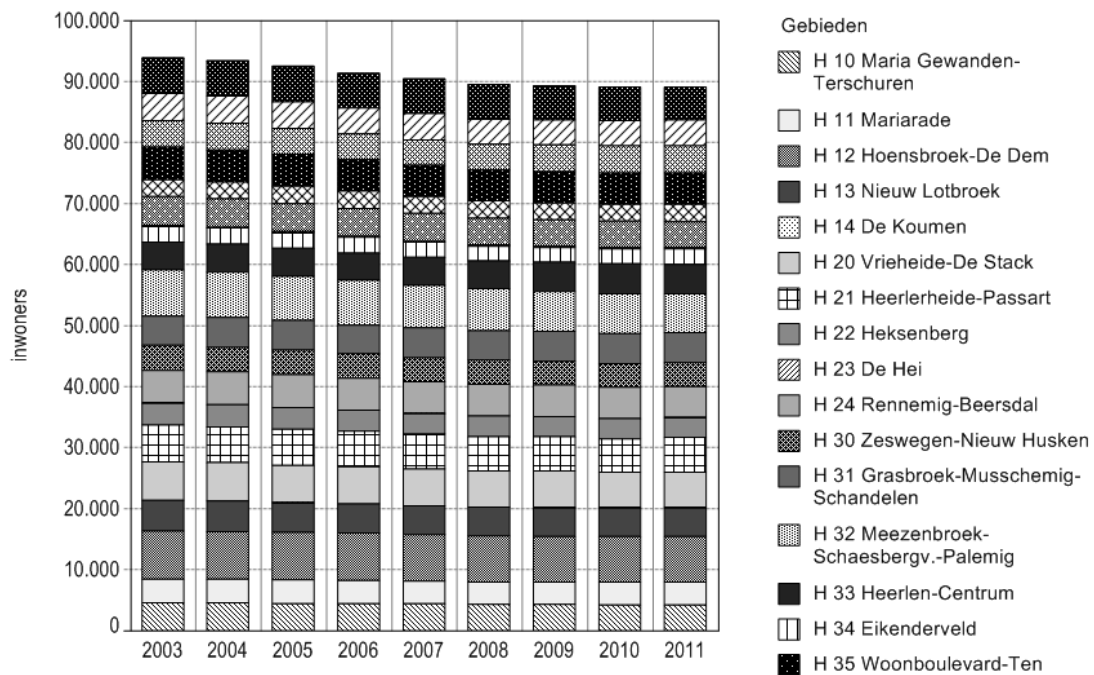
We are comparing the municipality of Heerlen with its four city districts in Figure 42.

In the entire municipality 45% of the households is living in a owner-occupied dwelling and 55% in a rental dwelling. More than 40% of the housing stock consists of single-family townhouses and more than one third consists of apartments. The following differences between the four city districts are remarkable:

- The city district Heerlerbaan possesses relatively more rental dwellings (62%) than other city districts;
- The city district Heerlen-Stad as a city centre logically has relatively many stacked dwellings (apartments);
- The city district Heerlerheide has relatively many townhouses compared to other city districts;
- The city district Hoensbroek possesses a high proportion (semi-)detached houses compared to other city districts.

	Municipality of Heerlen	Heerlerheide	Heerlerbaan	Heerlen- Stad	Hoensbroek
<b>Ownership ratio</b>					
<b>Rental</b>	55%	52%	62%	55%	54%
<b>Owner-occupied</b>	45%	48%	38%	45%	46%
<b>Total</b>	44.787	9.474	4.563	20.710	10.040
<b>Dwelling type</b>					
<b>Townhouses</b>	42%	52%	41%	38%	42%
<b>Semi-detached/ linked dwellings</b>	16%	15%	18%	13%	21%
<b>Detached dwellings</b>	5%	4%	7%	5%	6%
<b>Apartments</b>	35%	26%	33%	42%	31%
<b>Senior dwellings</b>	1%	1%	1%	1%	0%
<b>Other</b>	1%	2%	0%	1%	0%
<b>Total</b>	44.787	9.474	4.563	20.710	10.040

FIGURE 42 COMPOSITION OF THE HOUSING STOCK IN HEERLEN IN 2010 (COMPANEN, 2011)



**FIGURE 43 POPULATION NUMBERS IN DISTRICTS 2003-2011 (PARKSTAD LIMBURG, 2011)**

It is supposable to think that problems as a result of shrinkage (e.g. social problems, deterioration, etcetera) are more likely to express in districts like Heerlerbaan, because of its high share of rental dwellings. This gives insight in the prioritization of the restructuring task.

Figure 43 shows the districts in Heerlen that are facing the largest shrinkage. Especially MSP (Meezenbroek-Schaesbergerveld-Palemig), GMS (Grasbroek-Musschemig-Schandelen), Hoensbroek and Vrieheide are well-known districts regarding shrinkage.

## Vacancy

In The Netherlands in 2008, 5.7% of all dwellings was not officially inhabited. That is more than 400,000 out of 7 million dwellings. This does not mean they are all vacant, but no one is registered in the population register for these dwellings. (Centraal Bureau voor de Statistiek, 2011)

Especially the coastal municipalities possess a high percentage of non-inhabited dwellings. This is related to a large number of second dwellings in these municipalities. (Centraal Bureau voor de Statistiek, 2011)

When we compare the vacancy rate in Parkstad Limburg and Heerlen in Figure 44 to the vacancy rate in Heerlen in Figure 45, we see a discrepancy.

FIGURE 44 VACANCY RATE [%] IN THE NETHERLANDS IN 2008  
(CENTRAAL BUREAU VOOR DE STATISTIEK, 2011)

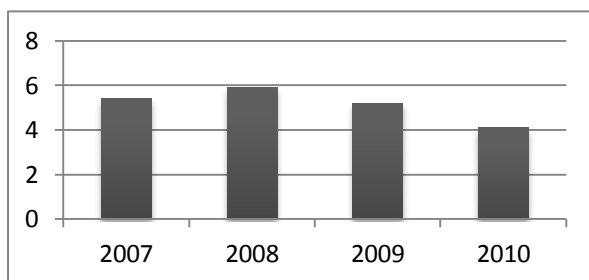
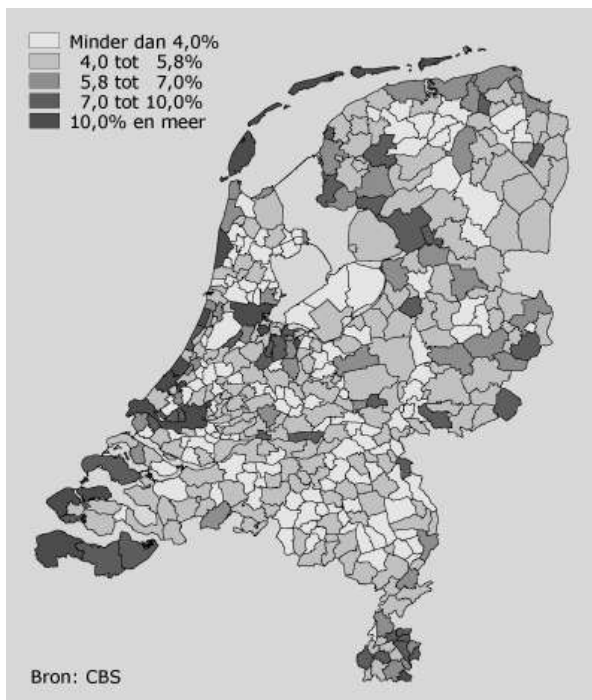


FIGURE 45 VACANCY RATE [%] IN HEERLEN (E'TIL, 2011)

According to Figure 44 the vacancy rate in Heerlen in 2008 was around 7-10%, but in Figure 45 it is 5.9%. An explanation for this discrepancy could be that there is a difference in the way 'vacancy' is being approached. Which dwellings are taken into account: the ones that are explicitly vacant, or also dwellings that do have an owner but are only used as second/ holiday dwellings. Besides, some approaches take into account the dwellings that are on the list for demolition, while others do not.

However, a vacancy rate of 7% on average is still a high percentage. Especially compared to other regions in the country.

Figure 45 shows that the vacancy in Heerlen has decreased since 2008. However, a vacancy rate of 4.1% in 2010 is still a too high percentage. A vacancy rate of 2% is healthy for the housing market. (Adviescommissie Deetman, 2011) This type of vacancy is called 'friction vacancy': the vacancy that is necessary for the functioning of the housing market, caused by the dwellings that are temporarily vacant due to movements, sales or renovations. (Encyclo MMX, 2011)

The vacancy in Heerlen is an effect of the shrinkage issue and considering the population developments there is not a significant reduction of the rate to be expected, unless there will be taken serious interventions.

Interventions consist of additions and extractions. Extractions speak for itself to combat the vacancy, but additions ask for an explanation. This is partly discussed before, but another aspect comprises the quality improvement of the existing housing stock. Partly this will be accomplished by restructuring several dwellings, but also the addition of new dwellings adapted to specific needs (e.g. senior and care dwellings) belongs to this.

### **Additions and Extractions**

Companen executed a survey among inhabitants of Heerlen which led to a view on the housing demand. Together with the envelopes in the 'Herstructureringsvisie voor de woningvoorraad' of Parkstad Limburg the extent of the housing demand for Heerlen is mapped.

Heerlen will be having more elderly people in the future. Their housing needs are also changing. The most extensive task in new estate is to serve this group. Especially senior housing with a rental price up to €650 will be demanded more in the future. There is only a small group of elderly people that would want to buy a dwelling in the more expensive segment. For families and small households there is a less extensive addition to the housing stock needed. The demand of these groups is mainly a quality demand: in several segments additions to the existing offer are demanded. Here we can find the link to sustainability; a sustainable improvement of the quality of the residential, working and living environment is needed to ensure the future state of the region. (Companen, 2011)

In directing the addition and extraction of dwellings at a municipal level the following points of attention are important:

- Additions to the stock are mainly important in facilitating the demand of elderly people.
- The extraction task lies mainly in the rental sector. Both single-family dwellings and apartments in the rental sector are vulnerable. In all city districts there is a task that will mainly precipitate on the poorer quality segments.
- Also in the owner-occupied sector there is a big task, especially in the ground-based dwellings. At an urban level there is both a new estate task and an extraction task. The demand for these dwelling types is especially present in Heerlen-Stad and Heerlerbaan, while the extraction task mainly covers Heerlerheide and Hoensbroek. Here we note that it is not obvious to extract owner-occupied dwellings of good quality (mainly semi-detached and detached houses). The task will mainly focus on townhouses in general and detached houses and semi-detached houses of poorer quality. (Companen, 2011)

		Addition through new estate or transformation			Extraction through demolition or transformation
		Small hh < 55	Families	Seniors	
<b>Rental</b>	Price range				
<b>Single-family dwellings</b>	< €650	0-50			1500-1700
	> €650		50-150		
<b>Apartments</b>	< €650	0-50		50-150	1700-1900
	> €650	0-50	0-50	0-50	
<b>Senior dwellings</b>	< €650			700-800	
	> €650			50-150	
<b>Owner-occupied</b>					
<b>Townhouses</b>	< €150k	200-300		0-100	700-900
	€150k-€200k				
	> €200k	0-100		0-50	
<b>Semi-detached and detached dwellings</b>	< €150k	0-50	0-50		700-900
	€150k-€200k	50-150	0-100		
	€200k-€300k	0-50	0-50		
	> €300k	0-100	0-50		
<b>Apartments</b>	< €150k	50-150		0-100	50-150
	€150k-€200k	0-50		0-50	
	> €200k	0-50		0-100	
<b>Senior dwellings</b>	< €150k				
	€150k-€200k				
	> €200k				
<b>Subtotal</b>		600-700	200-300	1300-1400	
<b>Total</b>		2,100 (excl. care dwellings)			Max. 4900

FIGURE 46 EXTRACTION TASK IN HEERLEN (COMPANEN, 2011)

## Appendix 8: Interaction between Shrinkage & Sustainability

### Shrinkage and Sustainability

#### Subject 1: Planet

##### Theme 1: Stocks

##### Aspect 1: Usage of Space

The more compact a district is built, the less the environmental impact, so the higher the sustainability score. Compact construction has several advantages, like preventing the affection of nature areas, possible energy savings and a contribution to the limitation of mobility.

The more mono-functional a district is, the more risks there are involved. Sustainable is a system that can adapt to the future, which means the more functions there are combined in a building or a district, the better. Facilities are undergoing expansion as a result of the developments on the market (e.g. scaling = 'schaalvergroting'). Shrinkage is intensifying this process. Small-scale facilities are being replaced by larger ones at central spots functioning for a larger area.

At the housing market shrinkage could lead e.g. to combining two dwellings into one dwelling. This is working against the principle of compact building. Also the dilution amongst dwellings can be regarded as less sustainable, because it is not contributing to a more compact use of space. On the other hand, dilution offers opportunities for more green and nature facilities, which would be increasing the sustainability of a district.

##### Aspect 2: Energy

The lower the energy use, the higher the energy performance of the buildings is, resulting in a higher sustainability score.

Restructuring of a district as a result of shrinkage mostly leads to structural adjustments of the dwellings, in turn leading to a higher energy performance. Shrinkage thus offers opportunities for energy in relation to sustainability. Sustainable means taking energy saving measures and taking care of a healthy climate within the dwelling. Energy saving is focused on insulation, reducing electricity consumption, use of green energy, the local supply of energy (a mine water project, a local electricity power station or smart grids) etcetera. For a healthy indoor climate also heating, cooling and ventilation are playing an important role.

Besides, energy stocks will be depleted at a slower rate than in a growth situation.

##### Aspect 3: Materials

During the construction, use, renovation and demolition phase of a dwelling many things can be done to minimize the environmental pressure. That involves already keeping in mind the function and life-cycle of a building during the design phase.

The same goes for the choice of materials. It involves the use of materials with low environmental impact: both in production and application as both the use and waste phase. Besides, old and less environmental-friendly - maybe even unhealthy - materials can be eliminated during the restructuring of the district. Shrinkage offers opportunities to reconsider material use in a district.

## Theme 2: Local Environment

### Aspect 4: Water Management

Sustainable water management comprises several aspects; it is about the management of the water demand (the used amount of water is minimized), the duration of water collection in a district is maximized, and the natural conditions are maintained and improved where possible.

Sustainability measures in restructuring projects include e.g. the re-use of rainwater for irrigation, cleaning etcetera. The rainwater can be collected and stored in the district in so-called wadis. This prevents the relatively clean rainwater from collecting in the mixed-sewage system and ending up in the sewage treatment plant. In this way the rainwater can infiltrate into the soil, be delayed discharged to the surface water and the ground water can be supplemented.

When shrinkage urges to restructure a district, demolition, dilution and new estate offer good opportunities to integrate sustainable water measurements.

### Aspect 5: Waste Collection

Sustainable waste collection is concerning the way waste is treated in a district. In this context the 'ladder of Lansink' is often being used. The ladder consists of several steps; first it is tried to prevent the generation of waste, second the re-use is attempted, and then recycling, the fourth step is composting, then burning with energy recovery, after that just burning and finally dumping. This is partly involving the consciousness of inhabitants of a district. They have to be encouraged to handle their waste (generation) consciously. Second, the separation of waste within a district needs attention. Underground containers with a large volume and a clear mapping of separate containers per waste type contribute to waste separation. The underground containers are not spoiling the image of the streets and they reduce littering.

The waste collected in the district can contribute to the total amount of waste generated in an entire city or region. When this amount of waste is substantial it can be used to generate biogas. Therefore biomass is fermented which produces biogas, which in turn is cleaned into biomethane. Garbage trucks used in the districts to collect waste can use biomethane as a fuel. The supply chain management is optimized by the waste collection and waste processing.

Shrinkage and restructuring offer space and therefore opportunities to integrate underground containers into the streets and other clever ways to collect, handle



and process waste. An interesting example is composting in the district; it seduces inhabitants to separate their waste and teaches them the usefulness of compost in e.g. their own garden, or in the allotments that are located at the areas that were formerly occupied by buildings.

#### Aspect 6: Soil Contamination

Contaminated soil is mostly caused by agriculture and industrial companies. This can lead to several problems, e.g. the pollution of the surface water. A sustainable approach is soil remediation which delivers benefits for the general health, drinking water supply and real estate. Besides soil remediation there are also examples of energy production in the soil, e.g. geothermal energy. These sustainability measures can be considered when soil in a district is contaminated and therefore needs to be removed.

Shrinkage and restructuring offers more opportunities to examine and remediate the contaminated soil in a district. Restructuring plans could be adjusted to the extent and amount of contaminated soil.

#### Aspect 7: Air Pollution

Air pollution is often undervalued but it is important for the general health of inhabitants of a district. The most important causes of air pollution are traffic and industry.

Shrinkage and restructuring offer opportunities to cluster facilities and thus reduce the motorized traffic. Also roads that are designed without a 'traffic-magnetic-effect' are a more sustainable way of handling traffic within a district. It has also to be kept in mind that highways have to be at sufficient distances from residential areas. Concepts like LARGAS ('LAngzaam Rijden GAat Sneller' = 'driving slower is faster') can contribute to the local environment. This all means that the traffic network in the district has to be adapted to the occurrence of air pollution. Industry and companies that are causing air pollution could be removed from the district in restructuring plans.

### Subject 2: People

#### Theme 3: Nuisance

#### Aspect 8: Noise Nuisance

The health effects of noise nuisance to inhabitants are quite severe, leading to absenteeism and reduced productivity. Considering the environmental disruption noise nuisance is mainly affecting the biodiversity. Noise nuisance is mainly caused by road traffic, in the second place neighbours and finally industry and companies.

Shrinkage and restructuring make it possible to integrate sustainable solutions for noise nuisance; reforming the road structures reduces the road traffic, which in turn reduces the noise nuisance. Main access roads from and to the clustered

facilities in the shrinkage district reduce the traffic in other parts of the district. In restructuring plans the location of companies, railways and catering in relation to residential areas has to be chosen in the most beneficial way for all stakeholders.

#### Aspect 9: Odour Nuisance

Odour nuisance is mainly caused by the sewage system, industry and companies, road traffic, neighbours, agriculture, waste and catering. Likewise noise nuisance, this nuisance also has health effects. However the difference is that odour nuisance is subjective; what one may find disturbing the other might tolerate.

Shrinkage and restructuring offer comparable opportunities to odour nuisance as to noise nuisance concerning sustainable solutions. A sustainable solution for odour nuisance is reforming the road structures which reduces the road traffic and in turn reduces the odour nuisance. Main access roads from and to the clustered facilities reduce the traffic in other parts of the district. In restructuring plans the location of companies, railways and catering in relation to residential areas has to be chosen in the most beneficial way for all stakeholders. Because there is more space available there are also opportunities for larger distances between dwellings and companies. (These solutions also apply to noise nuisance.) The problems with sewage can be solved together with the water management.

### Theme 4: Safety

#### Aspect 10: External Safety

The external safety of a district concerns the risk of fatalities by fire, explosion or the release of toxic substances during production, storage, processing and transport of hazardous materials.

The external safety of a district can be improved and thus become more sustainable by locating risky activities outside or at the borders of districts, far enough from residential areas, not in relation with facilities like health care and education. In a shrinkage district the restructuring can be used as an opportunity to eliminate those risks by choosing a suitable location for the several stakeholders.

#### Aspect 11: Social Safety

Social safety concerns the protection or feeling protected from harm caused or threatened by human behaviour in the public space.

Shrinkage leads to physical decay, impoverishment and vacancy, in turn leading to less social control and supervision in the living environment, resulting in vandalism and crime. This reduces the social security.

The social security can be increased after restructuring because it enlarges the liveability in a district and thereby reduces the number of crimes. The sense of security among residents will be enlarged because the district receives a new and

clear structure, a positive future vision and thereby gets a 'boost'.

#### Aspect 12: Traffic Safety

The traffic safety in a district is partly determined by the amount of traffic. Traffic measures can enlarge the traffic safety by appointing a certain place on the road to every road user. Clarity and overview also contribute to traffic safety and can be accomplished by redesigning the road network within a district.

Shrinkage and restructuring offers space and opportunities for the restructuring of the road network. Besides this, the clustering of facilities gives way to one important access road to and from these facilities, lowering the traffic pressure on the rest of the district. Shrinkage also leads to a reduction of displacement (aging) and thus to a reduction of transport intensity. The linking of car-free zones, parking facilities, public transport networks and bicycle networks also leads to a safer traffic environment. These measures are also contributing to the experience of inhabitants, which makes them act more conscious in traffic.

### Theme 5: Facilities

#### Aspect 13: Quality of Facilities

The number and quality of facilities are of great importance for the success rate of a district. A shrinkage district often has too little support to maintain certain facilities. However, residential areas without basic facilities are not sustainable. Districts that offer basic and good quality facilities are discouraging car use and that has its effects on air quality, noise nuisance, traffic safety etcetera. Besides, the shrinkage issue often is characterized by a strong aging, which demands good qualities at a central location within the district, easily reachable. The establishment of broad social facilities meets this demand; it concentrates all former fragmented facilities in one central spot, creates flexibility and is 'life course steady' ('levensloopbestendig'), which is sustainable. It enhances also the quality of the facilities, because the functions can reinforce each other.

#### Aspect 14: Accessibility

The quality of public transport determines the intensity of use and indirectly the use of other forms of transport, like the car. Public transport is a more sustainable form of transport than individual motorized transport. However, for a good quality public transport network a certain support is needed (in numbers of people). In a shrinkage situation this can constitute a problem. This situation is comparable to the situation of facilities. Clustering of the facilities is also part of the solution for the public transport network within a district. Bus lines can be located along the main access roads in a district and follow their routes along the central facilities. This is where most inhabitants will gather and this creates demand for public transport. The bus lines need a good connection to nearby train stations to ensure connections within the region. Good quality public transport also makes car use redundant and to a lesser extent discourages it and that is affecting other

sustainability issues like air pollution, noise nuisance, traffic safety etcetera. The aging population of a district also benefits from good public transport. To encourage them to intensify the use of it, subsidies should be issued to them for free or discounted traveling. The same goes for pupils and children; this also teaches them the importance of sustainability and it offers them opportunities to develop themselves outside of the district (education, work). For the public transport vehicles it is recommended to use green energy. Also, the design of spacious bicycle paths and connections to the public transport network form a contribution.

Considering car use, the district has to be designed for easy access and exit, but in a sustainability perspective only at certain main roads. The other roads have to be designed for slow traffic. This discourages car users to use other roads in the district as shortcuts.

#### Theme 6: Green and Water

##### Aspect 15: Green in the District

Green facilities are important for a district because they enrich a district; they encourage inhabitants to exercise and meet each other, children can play and develop, people are feeling healthier and the green facilities contribute to the micro-climate.

Inhabitants of a shrinkage district – mainly elderly people and people with a lower social-economic status – are profiting the most from improving green surroundings, because they spend more time than average in their direct living environment. A nice and suitable living environment indirectly also improves the social safety in a district. Furthermore green facilities around a broad social facility (in particular the school) show children the importance of nature and sustainability for the environment. Dilution and restructuring of a shrinkage district offers opportunities to improve the situation concerning green facilities.

##### Aspect 16: Water in the District

In general, districts without or with little water have a greater risk of flooding in case of heavy rainfall. Besides, water can fulfil other functions in the district that increase the perception of the environment, like fishing and boating. The water structure functions at its best when it is connected to the green structure. The most appreciated aspects for the perception are combined then; green in the district, visible water and water to walk and cycle along.

By restructuring and dilution of a shrinkage district the proportion of water in the district can become higher and easier to realize.

## Theme 7: Quality of District and Dwelling

### Aspect 17: Quality of Dwellings and Surroundings

The quality of a dwelling determines its value, but also the quality of its surroundings, i.e. the neighbourhood and district. Besides, it is of influence on the perception of residents.

In general, a shrinkage district has a poor offer of good quality dwellings. A declining number of people leads to vacancy, impoverishment and physical decay. Mostly the inhabitants have a lower socio-economic status and that does not contribute to a desired progression of the district. They do not have the (financial) possibilities to improve the situation. At the same time the negative signals from the dwellings and its surroundings are of negative influence on the perception of the residents. This encourages vandalism and crime, ending up in a negative spiral, with effects reinforcing each other.

Restructuring of a shrinkage district improves the quality of dwellings and surroundings and at the same time the diversity of dwellings. Putting in motion the attraction of residents from outside the district, to ensure a more balanced composition of the population. This positively influences the perception of residents and in turn is contributing to the social safety, social cohesion etcetera.

Hierarchy in the structure of buildings, infrastructure, green and water and facilities offers a clear and bright image of the district and this is in the interest of all inhabitants.

### Aspect 18: Cultural-Historical Value

Cultural-historical values in a district give the inhabitants a feeling of singularity and recognition of their spatial surroundings. It creates a bond between them and the environment which makes them look after and care for it. The past can function as a reference. Cultural-history is a knowledge source for history education; it strengthens the historical awareness. It offers a starting point for the establishment of the spatial quality of the future; recreation, tourism, aesthetics, ecological value, maintenance of biodiversity etcetera. The 'future value' is then sustainable and a shrinkage district offers space and opportunities to use these values of the past.

## Theme 8: Social Cohesion

### Aspect 19: Social Cohesion

Social sustainability will be achieved by providing the basic needs of people, offering access to social resources, when equality is being achieved and participation is encouraged. Social sustainable districts have to be able to capture future societal changes and offer future residents a good quality of life.

The social cohesion in shrinkage areas is partly affected by the change in household composition and aging. This influences the social status and the image of the district; it leads to a certain extent of homogeneity. Positive side is the mutual support among residents, negative is the lesser attention of residents for their surroundings.

Social factors and environment/ sustainability are inextricably connected. Environmental issues have to be accompanied by social issues, like the combat of poverty and inequality. Spatial planning creates the preconditions that strengthen the social cohesion between inhabitants. This has to be considered in an early stage of the restructuring. Inhabitants have to feel at home in their living environment, which in turn assures the social safety. That demands for a 'life course steady' public space.

Restructuring contributes to the offering of new perspectives for the residents; more attention for the living environment, awareness of (economic) activity in the district and possible new employment etcetera. Resulting in a more positive experience of the quality of life which in turn is contributing to the safety and the sense of security.

### Subject 3: Profit

#### Theme 9: Economic Vitality

##### Aspect 20: Local Employment

The amount of jobs in a district determines its economic vitality. Restructuring of a shrinkage district can offer opportunities for the positioning of activity in the district. This can improve the employment rate. However, shrinkage goes along with less support for facilities and companies, so this does not offer a lot of possibilities for new activities. The addition of certain supportive facilities, like social facilities (employment agencies, interview training), and public transport can enlarge the employment opportunities for residents in another district or part of the city. This in turn lets them grow at the socio-economic ladder and slowly improves the socio-economic situation within the district.

##### Aspect 21: Diversity of Activity

For the diversity of activity the same story goes as for local employment. With the addition that a diverse range of companies offers more perspective in bad economic times. But again, a shrinkage district has to dilute and will therefore not have to offer enough possibilities for companies. This kind of support has to be sought at another scale, e.g. at city level or even at regional level.

#### Theme 10: Sustainable Entrepreneurship

##### Aspect 22: Sustainable Companies

Due to a decreasing support the number of companies will probably decrease within a shrinkage district. The number of companies with a sustainable business

operation will therefore be few.

However, sustainable entrepreneurship could be sought in sustainable facilities, e.g. an energy-neutral broad social facility. Another option is local energy supply, like a mine water project or a local sustainable energy power station.

## Theme 11: Future Value

### Aspect 23: Mixing of Functions

The mixing of functions is useful considering sustainable urban development and spatial planning. Mixing offers opportunities to save space. Living and working closely situated offers possibilities to e.g. decrease traffic flows and exchange warmth and energy.

Other examples are of social nature. In a mixed-use area at several points of time throughout the day people are present in the public space, which leads to an increase of supervision. Children that live in a mixed-use area are experiencing what working comprises, so it is not an abstraction to them. The mixing of functions thus can have a positive influence on the liveability.

Another possible advantage is the greater chance of continuity in using the buildings. The diversity of buildings is increasing and this stimulates the possibility of catching the social, technological and economic developments. A diverse multifunctional area decreases e.g. the possibility of vacancy because the buildings are suitable for several groups of users (functions).

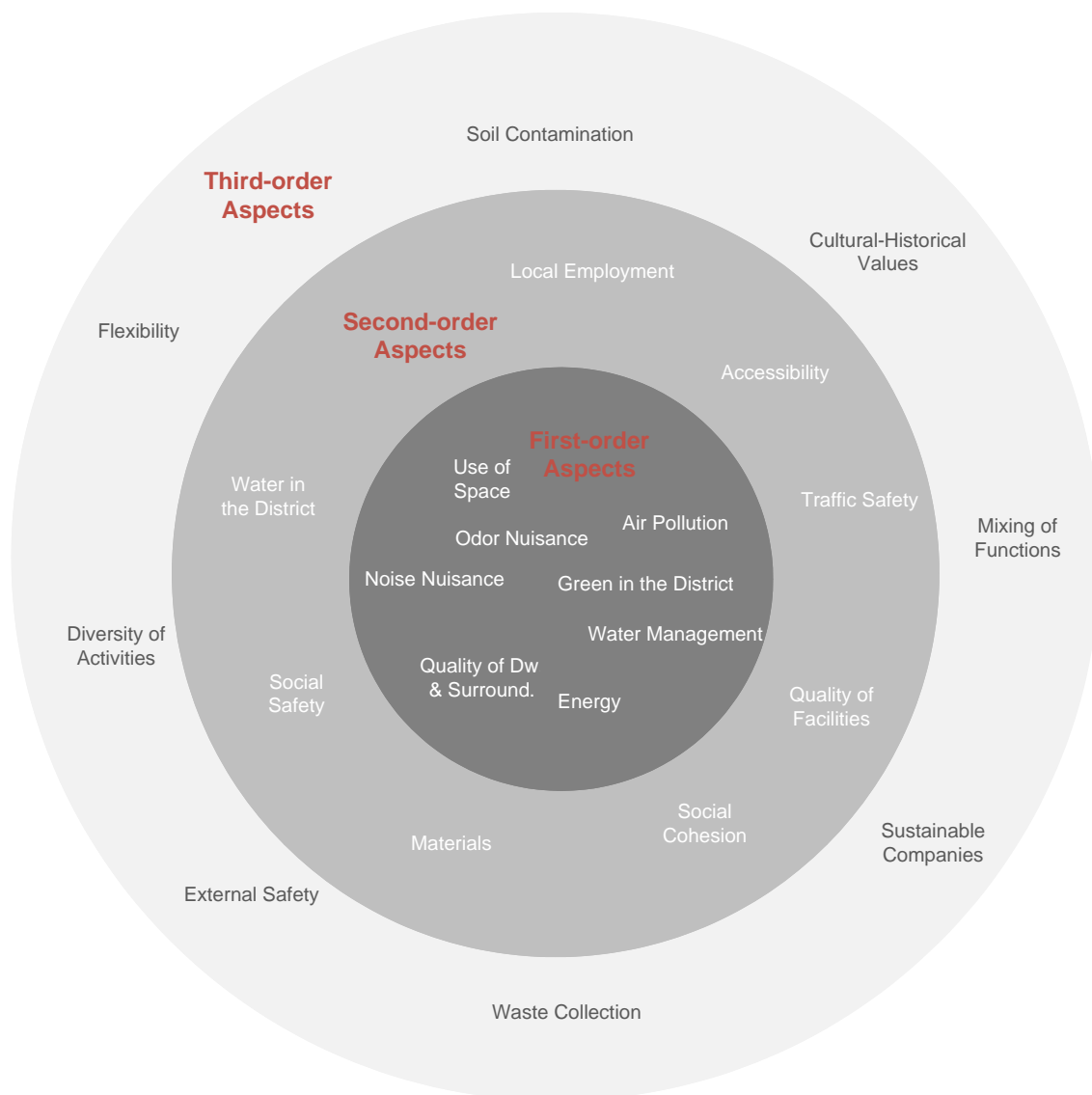
On the other hand there is a greater chance of nuisance in a mixed-use area. Traffic nuisance for residents seems to be the most important one. The infrastructure has to be adapted otherwise it will yield traffic and parking pressure. But a good urban design can overcome these obstacles.

Mixing is especially desired in the centre of districts; this is valuable for both companies and residents. Restructuring in a shrinkage district often leads to the clustering of facilities in the centre of the district. Resulting in a higher quality of life and thus in a higher sustainability.

### Aspect 24: Flexibility

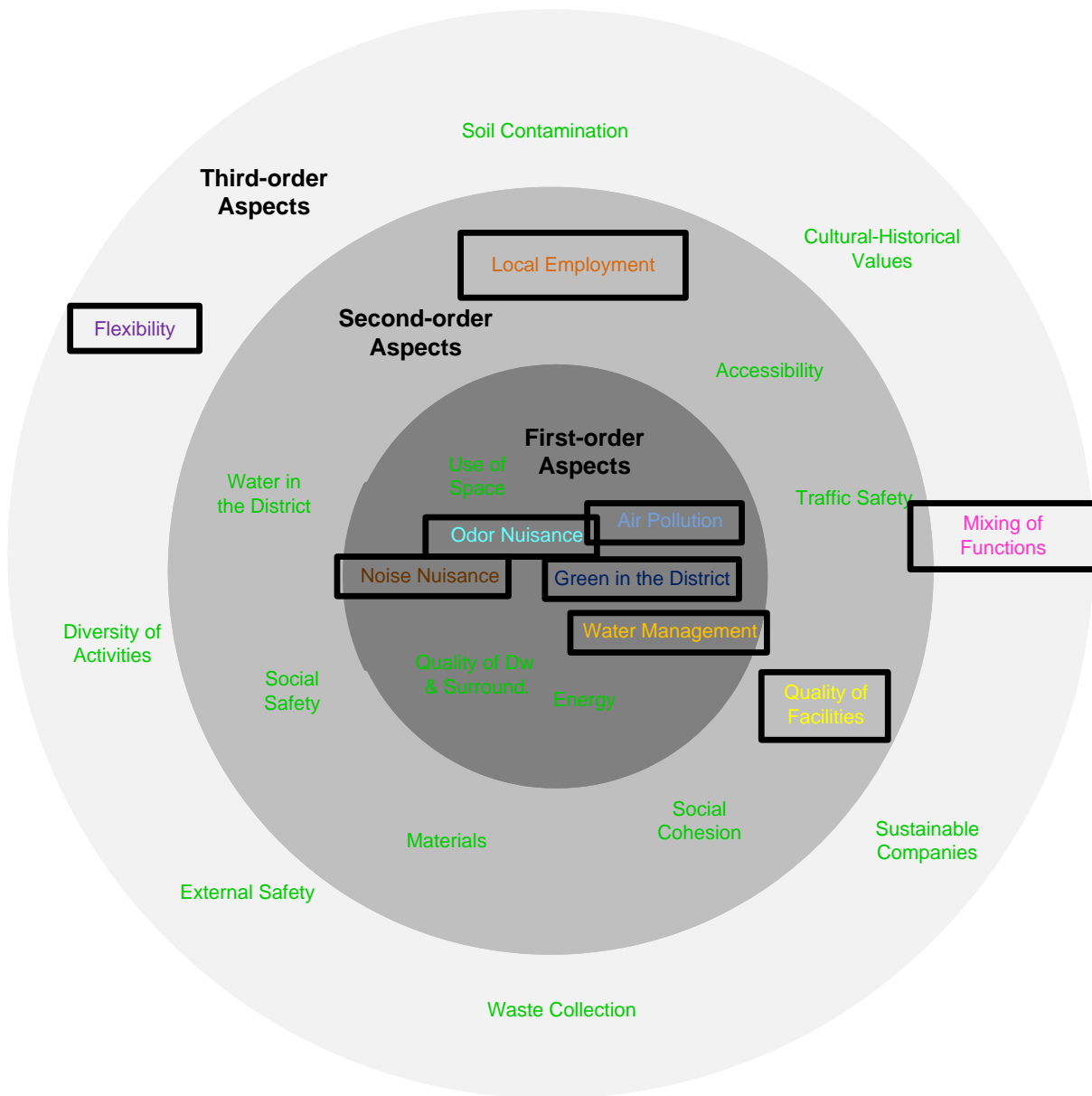
In general, flexibility of the offered space is crucial for companies and to a lesser extent for residents. But in a shrinkage area it could be even as important for residents. It namely is important to have the possibility in the future to adapt (residential) locations to other functions ('life course steady') and like this keeping the liveability at an acceptable level. Unfortunately, flexibility makes the developments also more expensive. But on the other hand it is advantageous to be operating in a shrinkage area, because due to demolition and restructuring more space becomes available.

## Appendix 9: Ranking of Sustainability Aspects – Policymakers





## Appendix 10: Striking Points



## Appendix 11: Meezenbroek-Schaesbergerveld-Palemig

### Location

De neighbourhoods Meezenbroek, Schaesbergerveld and Palemig were all built around the 1920s. In 2007 they were bundled as a priority district with the name MSP. De district lies within walking distance from the city centre and is part of the urban area Heerlen-Stad, located in the former Limburgian mining are. (KEI, 2011)

### Spatial Characteristics

The district has green borders, but there is hardly any green to find within the district. The streets are narrow, resulting in parking and accessibility problems. The three neighbourhoods all have their own history and identity:

- Meezenbroek: A high housing density with many small dwellings. The neighbourhood was built around an old core during the 50s, 60s and 70s. A part of this core, a historic mining colony, is maintained.

- Schaesbergerveld: Mainly built in the 60s and 70s and has a high housing density. In the south of the neighbourhood there is a cluster of national monuments (1905-1907), built by the Oranje-Nassau mines.

- Palemig: This neighbourhood in the north has a rural appearance and borders to the landscape. There are few facilities and meeting points. (KEI, 2011)

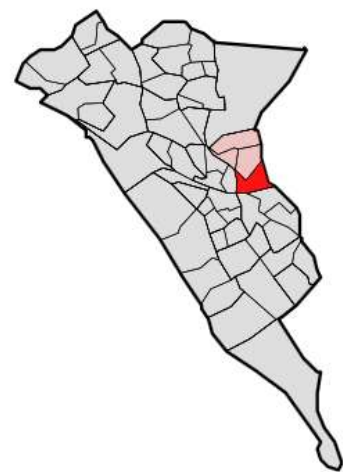


FIGURE 47 MSP: MEEZENBROEK IN THE MIDDLE, SCHAESBERGERVELD IN THE SOUTH AND PALEMIG IN THE NORTH

### Inhabitants

MSP has 7,000 inhabitants. The three neighbourhoods are traditionally characterized by a relatively one-sided socio-economic composition of the population. The district has to deal with drug nuisance, youth nuisance, a high (youth) unemployment rate and a predominantly low educational level. Furthermore inhabitants are having a feeling of inadequate safety and the facility level is low. (KEI, 2011)

### Housing Stock

The district mainly consists of townhouses, the total number of dwellings is 3,500. Before the initiated renewal a quarter of the housing stock consisted of stacked dwellings. In the meantime this is less. Sixty percent of the dwellings belong to the social housing sector. They are owned by housing corporations De Voorzorg, Woonpunt and Weller. (KEI, 2011)

### Shrinkage

The shrinking and aging population are posing an additional challenge for MSP. The approach of the housing stock is connecting to the demographic developments of the district and is focused on the housing of elderly people with a growing demand for care. Besides, it has to be possible for inhabitants to make a housing career within MSP, several

income groups must be able to reside and it is attempted to keep the middle-class. The housing corporations will demolish 759 dwellings in total and will rebuild 414 dwellings. Besides, 470 dwellings will be renovated. The construction plans of project developers – that were approved before the shrinkage set in – accommodate for about 250 dwellings, which means that the shrinkage target probably will not be reached. (KEI, 2011)

## Financing

For the urban restructuring of MSP in the period of 2008-2020 in total about €180 million will be drawn:

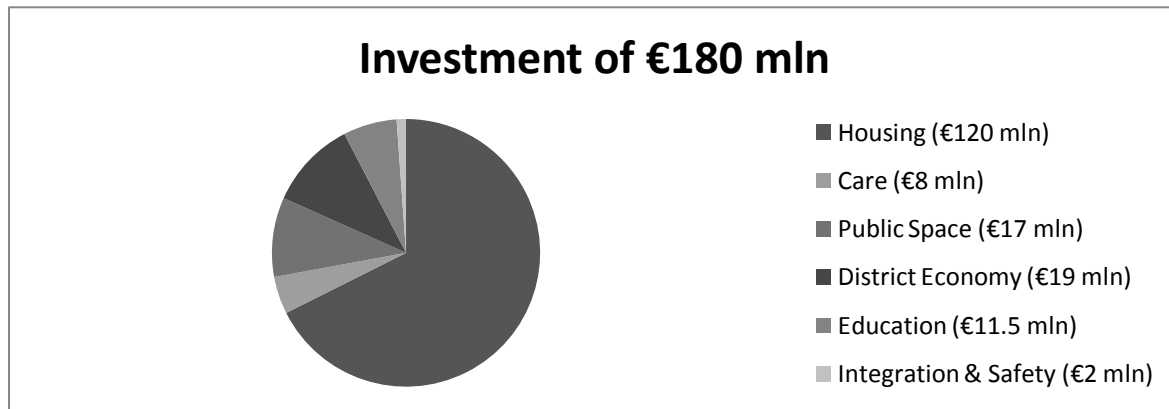


FIGURE 48 INVESTMENT IN MSP (KEI, 2011)

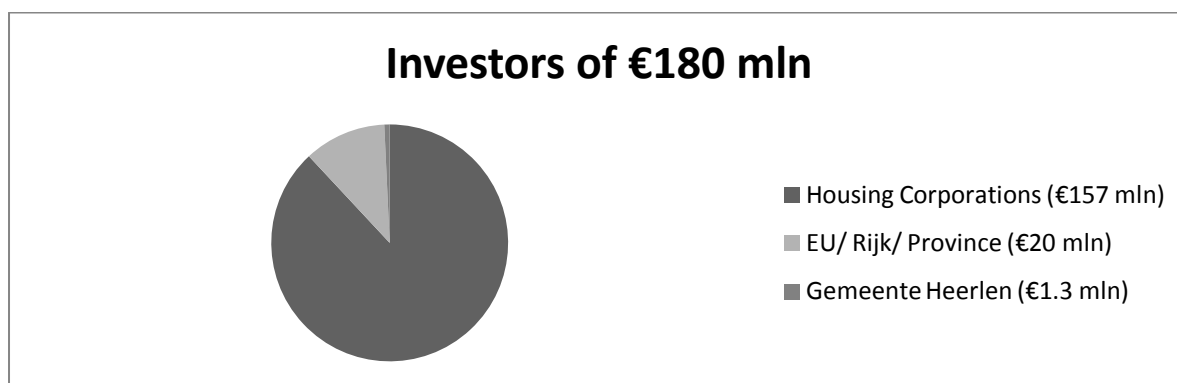


FIGURE 49 INVESTORS IN MSP (KEI, 2011)

## Strengths & Weaknesses

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>- Cultural heritage</li> <li>- Location within stream valleys, nature and leisure area</li> <li>- Location near the city centre</li> <li>- Near public transport</li> <li>- Binnenring (= 'inner ring') will reduce 'sneak traffic'</li> <li>- Organically grown urban structure</li> <li>- Large amount of low-rise buildings</li> </ul>	<ul style="list-style-type: none"> <li>- Bad image</li> <li>- No obvious entrances to the district</li> <li>- Few air and space in the form of public green</li> <li>- Bad relationship with the green borders</li> <li>- Interrupted historical structures</li> <li>- Missing links and bottlenecks in cycling routes</li> <li>- One-sided housing offer</li> <li>- Poor quality living environments</li> <li>- Decay</li> </ul>

- Fragmentation of shops and facilities
- Outdated school buildings
- Lack of central care facilities
- Little cultural offer
- Little offer for youth
- Poor interior of public space
- High parking pressure, especially in Meezenbroek and Schaesbergerveld

FIGURE 50 STRENGTHS AND WEAKNESSES OF MSP (GEMEENTE HEERLEN, 2008)

## Restructuring & Sustainability

### Shrinkage and Sustainability in MSP

#### Subject 1: Planet

##### Theme 1: Stocks

###### Aspect 1: Usage of Space

-

###### Aspect 2: Energy

-

###### Aspect 3: Materials

-

##### Theme 2: Local Environment

###### Aspect 4: Water Management

Separated sewage system in Palemig

###### Aspect 5: Waste Collection

'Clean MSP'; activities for all inhabitants to contribute to a cleaner and nicer surrounding and a positive experience of the district

###### Aspect 6: Soil Contamination

-

###### Aspect 7: Air Pollution

'MSP-allee'; a boulevard straight through the district, for slow traffic, to walk, bike, skate, jog, meet etc. The car is a guest at some parts

#### Subject 2: People

##### Theme 3: Nuisance

###### Aspect 8: Noise Nuisance

'MSP-allee'; a boulevard straight through the district, for slow traffic, to walk, bike, skate, jog, meet etc. The car is a guest at some parts

###### Aspect 9: Odour Nuisance

-

##### Theme 4: Safety

###### Aspect 10: External Safety

-

###### Aspect 11: Social Safety

Project 'Together Strong'; the combat of vandalism and nuisance  
Graffiti project; place for youth to legally use graffiti, as a form of art  
District police officers; to combat the nuisance and give prevention education

		<p>Aspect 12: Traffic Safety</p> <p>'MSP-allee'; a boulevard straight through the district, for slow traffic, to walk, bike, skate, jog, meet etc. The car is a guest at some parts</p>
		Theme 5: Facilities
		<p>Aspect 13: Quality of Facilities</p> <p>'MSP-allee'; a boulevard straight through the district, the connection between neighbourhoods, other city parts and facilities</p> <p>'Centre heart'; clustering of facilities and shops that strengthen each other and attract a sufficient amount of users to create support for the maintenance of these facilities</p>
		<p>Aspect 14: Accessibility</p> <p>'MSP-allee'; a boulevard straight through the district, the connection between neighbourhoods, other city parts and facilities</p> <p>'City ring'; a ring-shaped internal road connection the urban parts of Parkstad</p> <p>Railway station 'de Kissel'; an additional station in the direct surroundings of MSP, connection to Heerlen central station and further to Maastricht and Belgium, and the other direction to Landgraaf, Kerkrade en Germany</p>
		Theme 6: Green and Water
		<p>Aspect 15: Green in the District</p> <p>Pocket parks; mini parks for meeting and playing</p> <p>An orchard and a kitchen garden</p> <p>Park Bredastraat; nice walking area, with picnic tables and benches, a hangout for youth, an outdoor fitness facility and connections to the surrounding nature areas</p>
		<p>Aspect 16: Water in the District</p> <p>Water basins in the Park Bredastraat</p>
		Theme 7: Quality of District and Dwelling
		<p>Aspect 17: Quality of Dwellings and Surroundings</p> <p>More diversity in offer of dwellings</p>
		<p>Aspect 18: Cultural-Historical Value</p> <p>Authentic, rural character of Palemig is retrieved</p>
		Theme 8: Social Cohesion
		<p>Aspect 19: Social Cohesion</p> <p>Pocket parks; mini parks for meeting and playing</p> <p>'MSP-allee'; a boulevard straight through the district, for slow traffic, to walk, bike, skate, jog, meet etc</p> <p>An orchard and a kitchen garden; inhabitants can look after it together and learn about fruit and vegetables and teach their children</p> <p>Park Bredastraat; nice walking area, with picnic tables and benches, a hangout for youth, an outdoor fitness facility and connections to the surrounding nature areas</p> <p>New building for the scouting</p> <p>'Reading activities' for children in the district; organised by the library</p> <p>New playgrounds at several places in the district</p> <p>Neighbourhood coach; for the establishment of activities in the district</p>

	<p>'MSiP'; cooperation project in the field of care and welfare</p> <p>Neighbourhood assistance; inhabitants helping others with chores</p>
	<b>Subject 3: Profit</b>
	<b>Theme 9: Economic Vitality</b>
	<p>Aspect 20: Local Employment</p> <p>'Centre heart'; clustering of facilities and shops that strengthen each other and attract a sufficient amount of users to create support for the maintenance of these facilities</p> <p>'Ondernemerskoempel'; for the 300 independent entrepreneurs that are active in the district, including many starters, offering free business support</p>
	<p>Aspect 21: Diversity of Activity</p> <p>-</p>
	<b>Theme 10: Sustainable Entrepreneurship</b>
	<p>Aspect 22: Sustainable Companies</p> <p>-</p>
	<b>Theme 11: Future Value</b>
	<p>Aspect 23: Mixing of Functions</p> <p>'Centre heart'; clustering of facilities and shops that strengthen each other and attract a sufficient amount of users to create support for the maintenance of these facilities</p> <p>The broad social facility concentrates several facilities and functions at a central spot in a flexible way, which offers opportunities for the future.</p>
	<p>Aspect 24: Flexibility</p> <p>The broad social facility creates support for the different facilities within and reinforces the mutual existence. The combination of facilities offers flexibility for the future.</p>

FIGURE 51 SUSTAINABILITY IN MSP

## Appendix 12: Aldenhof

### Location

Aldenhof is situated in the neighbourhood De Dem, which in turn is situated in district Centrum-De Dem in the urban area Hoensbroek. Besides De Dem and Centrum, also Slak, Horst and Metten are part of the district. The district is more of an administrative unity than it is forming a unity in the experience of the inhabitants. (Onderzoeksinstituut OTB, 2005)

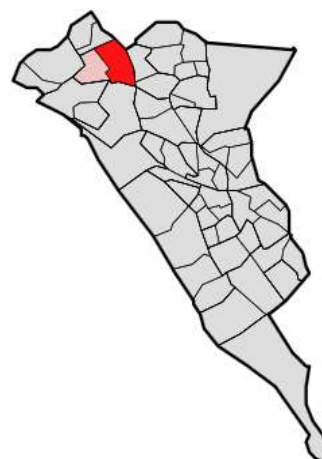


FIGURE 52 HOENSBROEK-CENTRUM TO THE WEST, DE DEM TO THE EAST

### Spatial Characteristics

Centrum-De Dem is a differentiated area with pre-war and post-war housing and has known several periods of growth. The district consists of a multitude of housing types and atmospheres; from mansions to shops and impoverished units. There are several (potential) spots for children and youth, like playgrounds, a 'chat box' and undeveloped land. (Onderzoeksinstituut OTB, 2005)

### Inhabitants

In 2005 the district Centrum-De Dem counted 7,700 inhabitants. The population density is high, namely almost 2.5 times the average in Heerlen. The district has relatively many elderly people (compared to the average in Heerlen) and a small middle group of 20-65 year olds. Immigrants count for 11% of the population. Also, there are quite a lot of singles (46%) and the educational level is low. Centrum-De Dem is rated poorer than other districts in Heerlen and Hoensbroek and this rating has only declined the past years. There is spoken of an increasing impoverishment and deterioration of relationships, mainly caused by youth and residents in the near surroundings. (Onderzoeksinstituut OTB, 2005)

### Housing Stock

The housing stock in De Dem consisted in 2003 of 1,900 dwellings. About 22% of this number in the entire district is stacked and 72% are rental dwellings, which is high compared to the average in Heerlen. Privately owned is 28% and almost half of all dwellings are townhouses. (Onderzoeksinstituut OTB, 2005)

### Shrinkage

Shrinkage is a determining factor for the restructuring of Aldenhof. Currently there are 230 dwellings in the redevelopment area and all of them will be demolished. There will be rebuild a maximum of 96 dwellings, mainly focused on the target group elderly people, but they are also suitable for families with children; the aim is to make them 'life course steady' ('levensloopbestendig'). The shrinkage urges to combine schools and accommodations.

## Financing

For the urban restructuring of Aldenhof in total about €28 million will be drawn:

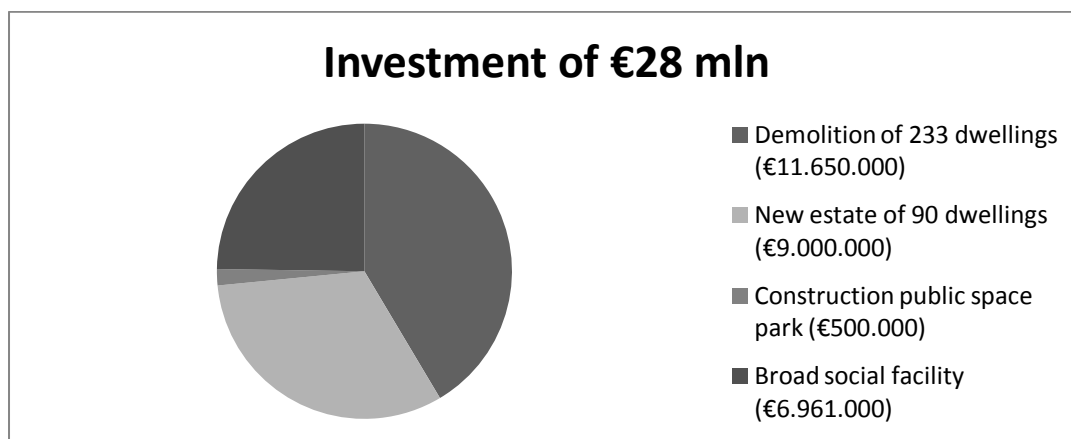


FIGURE 53 INVESTMENT IN ALDENHOF (GEMEENTE HEERLEN)

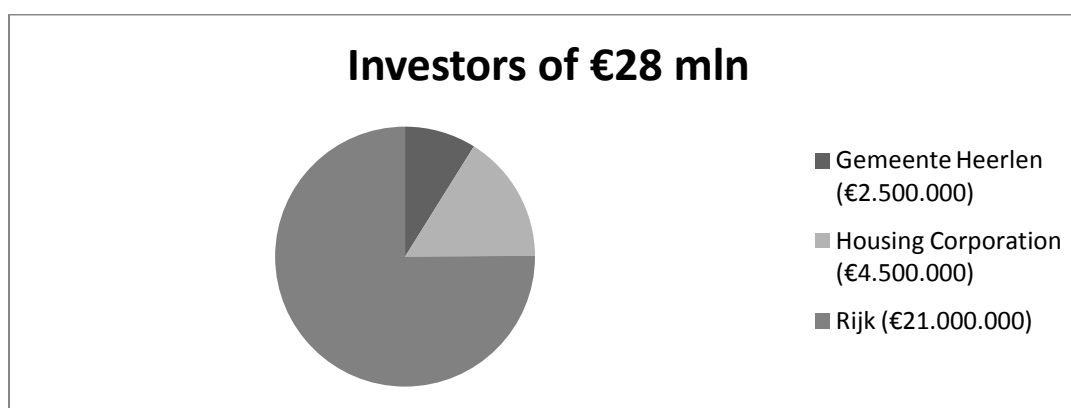


FIGURE 54 INVESTORS IN ALDENHOF (GEMEENTE HEERLEN)

## Strengths & Weaknesses

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>- Inhabitants feel connected due to meetings in social atmosphere (associations etc)</li> <li>- Present natural height gradient as a basis for nature facilities</li> <li>- Location near centre of Hoensbroek</li> <li>- Character of Hoensbroek</li> <li>- Some existing urban qualities</li> <li>- Village-like centre</li> <li>- Cultural heritage as a former mining colony</li> </ul>	<ul style="list-style-type: none"> <li>- One-sided housing offer</li> <li>- Poor quality housing</li> <li>- Poor quality living environments</li> <li>- Decay</li> <li>- Traffic situation</li> <li>- Poor quality green facilities</li> <li>- Outdated school building</li> <li>- Urban structure</li> <li>- Social safety</li> <li>- Low average dwelling value</li> <li>- Low appreciation by inhabitants</li> <li>- Low educational level of inhabitants</li> </ul>

FIGURE 55 STRENGTHS AND WEAKNESSES OF ALDENHOF



## Restructuring & Sustainability

### Shrinkage and Sustainability in Aldenhof

#### Subject 1: Planet

##### Theme 1: Stocks

###### Aspect 1: Usage of Space

Spacious ground plans offer flexibility

The broad social facility enhances the use of space for facilities by concentrating them at a central location within the neighbourhood

###### Aspect 2: Energy

Mine water as a heat exchanger

Low EPC-standard

###### Aspect 3: Materials

Materials from the region, natural stone, baked materials from own stone factories

##### Theme 2: Local Environment

###### Aspect 4: Water Management

Clean water drainage will be completely disconnected from the sewer; therefore a storage pond is included in the plan. This pond is sufficient for this purpose. Desirable is also the storage of water from the centre

###### Aspect 5: Waste Collection

The removal of 'hot spots' (concentrated litter) and the displacement of underground containers

###### Aspect 6: Soil Contamination

-

###### Aspect 7: Air Pollution

-

#### Subject 2: People

##### Theme 3: Nuisance

###### Aspect 8: Noise Nuisance

-

###### Aspect 9: Odour Nuisance

-

##### Theme 4: Safety

###### Aspect 10: External Safety

-

###### Aspect 11: Social Safety

Meeting along the borders of the park for an increasing social safety

###### Aspect 12: Traffic Safety

Improvement of traffic safety;

New main access road, wide roadway with bicycle lane and broad sidewalk.

Other roads small scale and informal

Increasing number of parking places, mainly situated in green surroundings.

Kiss & ride spots at broad social facility

##### Theme 5: Facilities

###### Aspect 13: Quality of Facilities

The broad social facility enhances the quality of facilities available and

	<p>reduces the problem of little support for facilities spread out over the neighbourhood</p> <p>Play ground</p> <p>Social sustainable park; a park from and for the residents, special attention for spots that are more for staying than only for meeting, the joint maintenance of the park, active involvement of the residents for the furnishing and use of the park</p>
	<p>Aspect 14: Accessibility</p> <p>-</p>
	<p>Theme 6: Green and Water</p>
	<p>Aspect 15: Green in the District</p> <p>Grass roofs, min. 30%</p> <p>Large park in the centre of the restructuring area</p> <p>Green ribbons along the streets</p> <p>Mixed offer of green facilities</p>
	<p>Aspect 16: Water in the District</p> <p>-</p>
	<p>Theme 7: Quality of District and Dwelling</p>
	<p>Aspect 17: Quality of Dwellings and Surroundings</p> <p>Living at the park</p> <p>Sustainable, low energy bill</p> <p>Spacious ('life course steady')</p> <p>Village silhouette with clear park edge</p> <p>Image quality of the redevelopment is typical Limburgian and recognizable</p> <p>Several ways of connecting the dwellings in order to create as many unique volumes as possible</p>
	<p>Aspect 18: Cultural-Historical Value</p> <p>Construction materials from the region</p> <p>Image quality of the redevelopment is typical Limburgian and recognizable; binding element are the white facades</p> <p>Village silhouette with clear park edge</p>
	<p>Theme 8: Social Cohesion</p>
	<p>Aspect 19: Social Cohesion</p> <p>Creative use of the area</p> <p>Making use of talents that are present amongst children and inhabitants</p> <p>Broad social facility ('BMV') for the fusion of facilities and people</p> <p>Social sustainable park for all generations; a park from and for the residents, special attention for spots that are for staying instead of only meeting, the joint maintenance of the park, active involvement of the residents for the furnishing and use of the park</p>
	<p>Subject 3: Profit</p>
	<p>Theme 9: Economic Vitality</p>
	<p>Aspect 20: Local Employment</p> <p>-</p>
	<p>Aspect 21: Diversity of Activity</p> <p>-</p>

	Theme 10: Sustainable Entrepreneurship	
	Aspect 22: Sustainable Companies	-
	Theme 11: Future Value	
	Aspect 23: Mixing of Functions	The broad social facility concentrates several facilities and functions at a central spot in a flexible way, which offers opportunities for the future
	Aspect 24: Flexibility	Spacious ground plans offer flexibility Life-proof dwellings The broad social facility creates support for the different facilities within and reinforces the mutual existence. The combination of facilities offers flexibility for the future

FIGURE 56 SUSTAINABILITY IN ALDENHOF

## Appendix 13: Vrieheide

### Location

Vrieheide-De Stack is located in the north of Heerlen in the urban area Heerlerheide, not far from the nature area Brunssummerheide (part of the Natura2000 network). The district dates from the 60s. It consists of the neighbourhoods Vrieheide, Nieuw-Einde, De Weggebekker and Versiliënbosch.

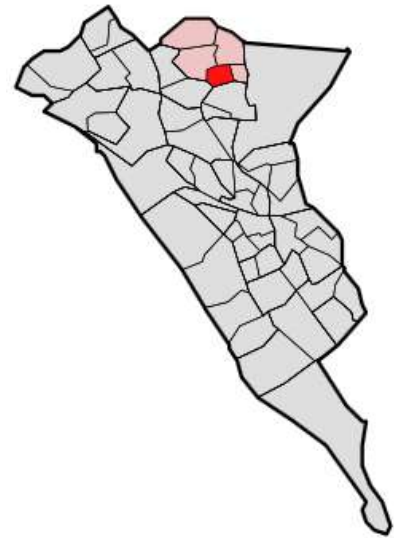


FIGURE 57 VRIEHEIDE-DE STACK, VRIEHEIDE IN THE SOUTH

### Spatial Characteristics

Characterizing for the neighbourhood Vrieheide are the uniformity and the massiveness: almost 1,000 identical dwellings in one type and one colour, alternated by a certain number of tower blocks. In the urban design it is attempted to incorporate the dwellings as sloping as possible into the green landscape. Several forms of (open) allotments are used with strip allotments as the dominant form. The allotments, dwelling types and architecture do not score well on the housing market, followed by an accelerated value decrease through a bad image, with scale, uniformity and massiveness being of negative influence on the decay process. This domino-effect is a danger for several districts from the 60s that have the same characteristics and are in a shrinking market. (Verweij & Talma, 2011)

### Inhabitants

Vrieheide-De Stack has 5,800 inhabitants. The district has a relatively young age structure; the age categories 0-15 years and 25-45 years are relatively strong represented in comparison to the municipality of Heerlen as a whole. The percentage of people older than 65 years is even lower than the average in Heerlen. However, the theory of dejuvenation and aging will be applicable here in the near future. The educational level of the district is low, it has a high unemployment rate and the level of income is significant lower than in the rest of Heerlen. (BMC, 2010)

### Housing Stock

The district Vrieheide-De Stack counts 2,800 dwellings; partly owned by a housing corporation, partly privately owned and partly owned by investors. Fifty eight percent of the housing stock consists of rental dwellings. About half of the housing stock counts for townhouses (the so-called drive-in dwellings) and also many apartments and semi-detached houses are situated in the neighbourhood. Vrieheide-De Stack is the cheapest district of Heerlen in terms of housing prices. The architectural and constructive conditions of the dwellings are bad.

## Shrinkage

The challenge in Vrieheide is special because there is a wish to dilute the bad quality housing stock in the low price segments, while the main part of those dwellings is privately owned. The municipality attempts to involve the inhabitants in the plans for the future. In the entire district Vrieheide-De Stack 1,600 dwellings have to be removed to meet the shrinkage target.

## Financing

Concerning the funding of the restructuring of Vrieheide, there is no information available yet. The reason for this is that the formation of the vision has to take place first.

## Strengths & Weaknesses

Strengths	Weaknesses
<ul style="list-style-type: none"><li>- Certain group of inhabitants that love the district and want to stay there</li><li>- (Former) special district in Heerlen: 'rough diamond'</li><li>- Room for experiments concerning shrinkage</li><li>- Cooperation between all stakeholders</li></ul>	<ul style="list-style-type: none"><li>- One-sided housing offer</li><li>- Poor quality housing</li><li>- Poor quality living environments</li><li>- Decay</li><li>- Problems in the public space</li><li>- Social problems</li><li>- Large amount of dwellings is privately-owned</li><li>- Low educational level of inhabitants</li><li>- High unemployment rate</li><li>- Low average dwelling value</li><li>- Vacancy</li></ul>

FIGURE 58 STRENGTHS & WEAKNESSES OF VRIEHEIDE

## Appendix 14: Organizational Chart Municipality of Heerlen

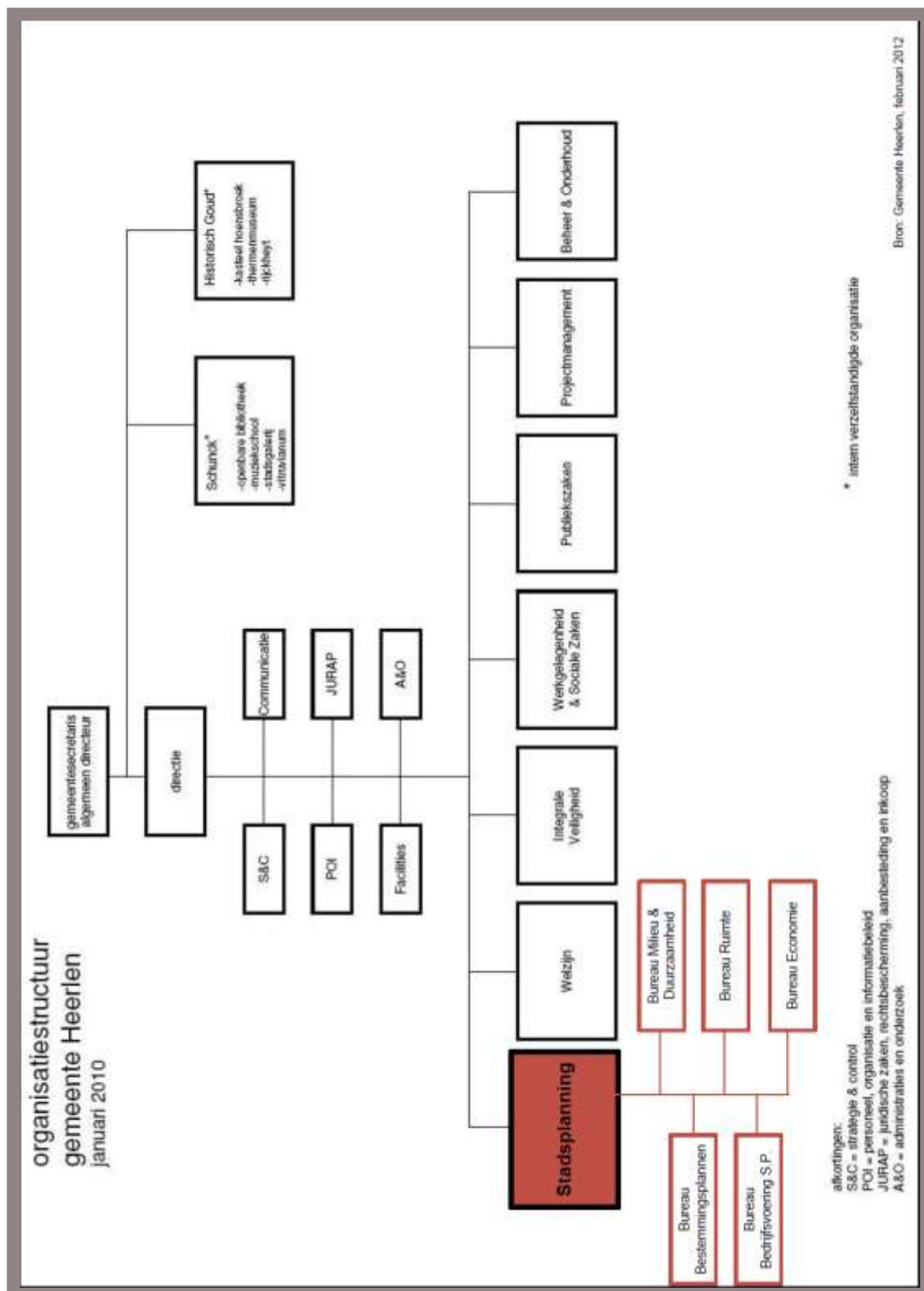


FIGURE 59 ORGANIZATIONAL CHART MUNICIPALITY OF HEERLEN