Power to the people:

Sustainable area exploitation through energy conservation in households

Lisa de Visser

Final version

Master thesis

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Colophon

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Sustainable area exploitation through energy conservation in households

Radboud University Nijmegen
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Department of Human Geography
Final version master thesis

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Voor Haarlem

Ik droomde me een man als een kunstwerk
en ik moest naar Haarlem gaan

Ik droomde van Oude Meesters, op een vingerknip
beschikbaar, om de hoek van de straat
en ik moest naar Haarlem gaan

Ik droomde me kunstenaars in galeries
kunstenaars op terrassen, kunstenaars als vrienden
en ik moest in Haarlem zijn

Ik droomde vaten vol kunstig bier
door bierkunstenaars gebrouwen en ik moest
in Haarlem drinken

Ik droomde me een stad die niet bestaat
een stad als een kunstwerk, uitgevouwen
over de grond door vaardige creatoren

een stad waarin ik rond zou lopen
o en ah zou zuchten

ik droomde me een stad
die bestaat
van mooi

Sylvia Hubers, city poet of Haarlem
10 November 2009

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Praefatio

Voor u ligt mijn master scriptie, het eindproduct van in totaal zeven jaar studeren, waarvan vijf jaar bij de afdeling Sociale Geografie. Met dit onderzoeksrapport sluit ik mijn master Economic Geography af en zal ik officieel afstuderen. Dit is echter niet zonder hulp van anderen verlopen! Daarom wil ik graag van dit voorwoord gebruik maken om iedereen te bedanken die mij heeft bijgestaan gedurende de studie en het scriptieproces in het bijzonder.

Speciale dank gaat hierbij uit naar Remko Cremers, mijn stagebegeleider bij Alliander. Het onderzoeksproces en uiteindelijke rapport zijn mede mogelijk gemaakt door alle tijd en energie die hij heeft vrijgemaakt om mij te begeleiden, stukken te lezen, feedback te geven, met mij de discussiëren etc. Dankzij zijn altijd kritische houding is de scriptie geworden wat het nu is: een stuk waar zowel ik als Alliander tevreden over kan zijn.

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Tot slot wil ik graag mijn scriptiebegeleider Frans Boekema bedanken. Zijn feedback, met name in de beginfase en op het onderzoeksvoorstel, hebben bijgedragen aan de vorming van de scriptie en het Economisch Geografische karakter. Hiervoor grote dank!

Veel leesplezier,

Lisa de Visser
Nijmegen, 24 juni 2013

Abstract

Our society is currently at a tipping point. Some indicators of this transition, that currently manifest themselves in the Netherlands, are a bottom-up revolution and semi-permanent crises of our economic system, our care system and the building sector. Worldwide, humanity sees itself confronted with food crises, climate change and looming crises of energy, materials and resources. Gunning, director at Akzo Nobel, states that these global problems have a hitherto unknown scope and complexity, for which we currently do not hold any sustainable solutions. “There is no manual. One thing is clear: we can’t continue on the same path” (Gunning, 2011).

This shift to a new paradigm is clearly visible in the development of Dutch urban areas and urban development policies. Besides the physical components, economic and social aspects have become more and more important in the sustainable development of neighbourhoods. A lot has been achieved in the past year, but the expensive approach of urban renewal has been overtaken by economic crises. Investments in the sustainable development of disadvantaged areas appear to come to a halt.

We need a new, radical innovative, approach to continue the economic, social and physical development of our neighbourhoods.

The concept of sustainable area exploitation offers interesting opportunities for such a new approach. This concept responds to societal changes that have altered and often limited the possibilities of the usual actors in urban renewal. Municipalities, social housing associations and other stakeholders see their roles changing due to a their new financial situation and political uncertainty. Furthermore, the distribution of power has changed over the past years. As Sorensen already pointed out in 1994 (p. 198): “our era is reconsidering the ends and means of governments in general in view of limited public finance; concerns over national economic efficiency; and a growing community preference for individual responsibility, self-help, and small government”. Enterprises have gained more power and citizens are forced to become more self-reliant. In neighbourhood development, a shift is visible from government to urban governance, in which new stakeholders are addressed on their societal responsibility. Governments are not only forced to seek cooperation with citizens and market parties due to the previously mentioned societal changes, but these other actors also desire themselves to be more involved. Residents and entrepreneurs want to have their say in their own residential, living or working environment. KEI and NICIS thus of “urban renewal on invitation” (2012).

This research has tried to explore the possibilities of sustainable area exploitation as a concept for sustainable urban renewal. The focus was hereby on energy conservation as a value creating intervention. Energy conservation meets the demands for sustainable development, as it does not only create economic, social and environmental value, but also saves financial or negative external costs in all these domains. Furthermore, energy conservation is the first step to a more durable energy system. The most sustainable energy is surely saved energy!

To study the possibilities of energy conservation within sustainable area exploitation, a case study was conducted in one neighbourhood in Haarlem: the *Slachthuisbuurt*. The central research question was formulated as follows:

To what extent can sustainable area exploitation through energy conservation realise successful urban renewal in the Slachthuisbuurt in Haarlem?

To answer this research question, three domains were studied: energy conservation, the neighbourhood Slachthuisbuurt and the sustainable area exploitation of the Slachthuisbuurt.

Sustainable area exploitation is an integral approach to urban areas. It focuses on optimising the different exploitation regimes within an area, such as the property and land exploitation, the exploitation of public space and (social) facilities and the eco-balance. The flows that form the metabolism of cities, such as energy, water, waste and transportation of people, goods and information, are important and considered locally as part of the integral area approach. By combining the organisation of construction, management, maintenance and development of an area, sustainable area exploitation creates value for the entire area, instead of pursuing sub-optimisation of different regimes and flow operations. The whole process and ways of funding of these interventions differ from the ‘old’ approach: individual and neighbourhood values stand central, participation and partnerships are essential and societal profit stands next to financial profit. New business cases arise from this approach, attracting other investors. We are shifting from ‘making a city’, to ‘being a city’ (KEI & NICIS Institute, 2012, p. 27). Starting point is to listen to the local demands, to use what is already present and to do so in a sustainable manner.

The mechanism of sustainable area exploitation to get to more desired and healthy neighbourhoods is *sustainable value creation*. Sustainable value creation is understood as the process that makes an area more valuable by implementing smart interventions, based on the local values. Interventions are considered smart if they create multiple value, from which not only the investor but also society benefits in direct and indirect ways. These interventions are designed and implemented by stakeholders, including entrepreneurs and the residents themselves, united in smart partnerships. Finally, these interventions need to be funded in smart ways.

A neighbourhood is the playfield of all kind of processes, disciplines and aspects. In practice, the search for a more sustainable area exploitation is also a search for new business models and investors. Business models that create multiple and blended value, which involve more than only the traditional partners. The necessary innovation has to come from these new partnerships and smart financing constructions. As Kersten, innovation manager at Enviu, argues: “our innovation is seldom seen in the technology, but rather in the model. Linking together the right partners, that did not cooperate before, so that new

opportunities occur. The core of business models is cooperation" (Kersten in Jonkers, 2012, p. 10). Pension funds, institutional investors, energy companies, health insurance companies and other institutions could be such new partners in value-oriented business models.

Energy measures could be part of these smart interventions or business models, when organised by new partnerships and funded with innovative schemes. To explore the societal value of technical, behavioural and community energy measures, this research has made a start with mapping the possibilities of energy measures in neighbourhoods and their societal effects. Energy conservation does not only contribute to environmental targets, it also has some strong social and economic aspects. Think of energy conservation as a means to get more control on the increase of monthly living expenses or as a boost for the construction industry, which is badly affected by the economic crisis. These relations of energy measures with individual and neighbourhood values were studied by using the *effects arena*; a tool that helps to map the societal outcome of interventions. After consulting several professionals, it can be concluded that neighbourhood economy, community culture (including social cohesion and reputation), individual sustainability, personal economy and personal development are values that are affected the most by energy measures.

It is important to keep in mind that value increase can only be seen as real and be monetised if the individual (potential) users recognise the added value and are prepared to pay for it. The willingness to pay thus reflects the actual value increase. For example, insulating a house increases its quality. Users or consumers are however not interested in the activity that is offered, the insulation of the house, but in the result, the actual value that is added. In this case, the added value is that the household experiences more comfort, less noise pollution, less cold, mould, draught and moisture, has lower energy costs and better health (even less health costs). In the end, it is this recognised added value that affects the property values and economic development of the neighbourhood.

Investing with energy measures in facilities, enterprises, the living environment, infrastructure and property results in added value that individuals actually experience and recognise. The added values are for example more successful facilities, better offer of entrepreneurs in the region, more purchasing power and economic activity in the area, a beautiful and promising living environment, more social contacts in the neighbourhood and increased social cohesion, better accessibility and possibilities for mobility and more comfortable living. These added values will boost the image of the neighbourhood and a better image is the *key* to actual higher property values. In other words: the valuation of individuals of the effects of energy measures lead to a better image of the neighbourhood, so that the area becomes more desirable. This is the actual principle of value creation.

After exploring the societal value of energy conservation, the Slachthuisbuurt in Haarlem was studied in a case study. This pre-war working class neighbourhood can be defined as a disadvantaged area. Accumulated problems of liveability and a concentration of disadvantaged households characterise the neighbourhood. In order to explore the possibilities of sustainable area exploitation with energy conservation in the Slachthuisbuurt, it was essential to first identify the local needs. Where professionals could formulate a lot of local themes, the residents hold a much smaller scope for their wishes in the neighbourhood. Their wishes concern mostly physical aspects, followed by social aspects. Needs concerning the physical aspects of the neighbourhood are the improvement of public space, improvement of the housing quality (and problems with noise pollution), redevelopment of the slaughterhouse terrain and improvement of the infrastructure of the neighbourhood. The most important need concerning the social aspects of the neighbourhood is improvement of the social cohesion in the neighbourhood.

Based on the analysis of the Slachthuisbuurt and the review of values, it can be concluded that energy conservation can play an important role in a sustainable area exploitation of the Slachthuisbuurt. Possibilities are decentralised generation with solar panels that benefits the economic position, improvement of the energetic quality of homes to decrease noise pollution, education to increase awareness and community energy programs that contribute to social cohesion. Furthermore, energy measures as part of an integral area exploitation can offer a positive business case to finance interventions.

The slaughterhouse area in the middle of the neighbourhood is especially an interesting opportunity to start with sustainable area exploitation in the Slachthuisbuurt. Three important themes in the neighbourhood, the elderly population, social cohesion and redevelopment of the slaughterhouse terrain, can all be addressed with an integrated approach in this area.

It would for example be an interesting possibility to change the Slachthuisbuurt to an assisted living area with an assisted living facility based on the former slaughterhouse terrain. Assisted living is an integrated approach to health, welfare and (independent) housing of elderly people and other vulnerable groups in the neighbourhood. The slaughterhouse area also offers opportunities for economic activity, for example by sheltering the many self-employed residents of the neighbourhood. The area provides a beautiful living environment at the water, which could be used to build more luxurious housing. Realisation of a mix of property-owned, rental, social and sheltered housing holds great opportunities for diversification of the housing stock, which would result in a more balanced population composition in the Slachthuisbuurt. Parts of the slaughterhouse area can be arranged as community vegetable garden, walking routes (wheelchair and walking frame proof) and a dog walking area. These places of functional and social greenery would serve as social meeting places in the neighbourhood.

Energy measures would have to play an important role in this approach. Energy efficient building, use of sustainable materials and energy efficient renovation of the monumental premises are central in the sustainable area exploitation of the slaughterhouse area. In addition, the possibilities for hot/cold storage with an aquifer thermal energy storage system can be studied for the buildings in the area. The existing buildings, such as the electricity station, the slaughterhouse and ICT-building,

have flat roofs. These roofs are very suitable for generation of electricity with solar panels. The area can be made completely energy neutral, which offers a positive business case to finance the redevelopment of the area.

Positive outcomes that can be expected are a more diverse housing stock and population composition, increased social cohesion and a positive impact on the image of the Slachthuisbuurt. This will attract new residents, retain current inhabitants, benefit property values, insurances costs and business vitality. Ultimately, this form of sustainable area exploitation leads to a healthy and desirable Slachthuisbuurt that meets the local needs.

The biggest obstacles for the realisation of these ideas are the raising of enough funding, the activation of residents, decompartmentalisation of organisations and departments and a change in culture and attitude. Organisations must make a turn from task organization to thinking and acting like social entrepreneurs and approaching the neighbourhood as an enterprise. By finding business opportunities, public and private interests can be linked in favour of a greater, common good. The redevelopment of the slaughterhouse area can be such a business opportunity, in which energy measures can play an important role.

From this research, it can be concluded that sustainable area exploitation through energy conservation can contribute to successful urban renewal in the Slachthuisbuurt in Haarlem. The redevelopment of the slaughterhouse terrain is an example of how sustainable area exploitation could be elaborated in practice. By identifying the stakeholders in the area, new initiators can arise, new partnerships can be formed and financing flows exposed. By recognising other means of exchange besides money, such as labour, vegetables, energy and warmth, innovative financing constructions can be made. Energy measures offer a positive business case to contribute to the funding of an integral approach.

In the end, the value-oriented neighbourhood approach is largely innovation on the job. As Kersten argues, it is also about just trying something and not an exact science (in Jonkers, 2012, p. 10). That would be the concluding message of this research: let us look over the borders of our departments and organisations and try something new!

Part 1

Introduction and relevance

1. Introduction

> **"The world as we think we know it, doesn't actually exist anymore. Because we do not see the future clearly, we hold, against better judgement, onto an outdated worldview. This worldview is still based on the ideology of the Second Industrial Revolution, that has caused, in particular in the years after World War II, unprecedented growth of wealth. Whoever looks around carefully, sees evidence everywhere for the proposition that we are currently also at such a turning point. Worldwide, we see a combination of crises: a financial crisis, an energy crisis and a climate crisis. These are global problems of a scope and complexity that we as humanity did not know before, let alone solved. There is no manual. One thing is clear: we can't continue on the same path."**
>
> Tex Gunning, Akzo Nobel
> 13 October 2011

"We can't continue on the same path". This is a quote from Gunning, member of the board of directors of Akzo Nobel, taken from his NIVOZ lecture. Gunning refers to a tipping point at the end of the 19th century: a process of modernisation changed our society completely. Now, it is argued that we stand at a new tipping point, in which we turn from an old paradigm, an old economy and old companies, to a new paradigm (Rotmans, 2013b). It is argued that we are shifting from an old worldview, with emphasis on economic profit, to a new worldview, with emphasis on societal profit (Rotmans, 2013b). Gunning states that economic growth has become a too limited concept. He sees it is time to exchange the idea of economic prosperity for the idea of a total prosperity: one that focuses on physical, intellectual, social and spiritual value creation (Gunning, 2011).

This research focuses on the prosperity of urban areas. The indications that we are at a tipping point in society manifest themselves and are clearly visible in urban areas. Semi-permanent economic crises, a bottom-up revolution, a climate change crisis, food crises and looming energy, materials and resource crises are some of these indications. They show us that the 'old system' simply doesn't work anymore.

Recent urban policies in the form of 'urban renewal' have already broadened their focus from physical and economic development to a more sustainable development, consisting also of social and ecological domains. But now, the sustainable development of disadvantaged areas appears to come to a halt. We need a new, radical innovative, approach.

In this introductory chapter, first the project framework of this research is debated. Next, the research objectives and a research model are discussed, followed by the research questions this study tries to answer. Then, the societal, scientific and geographical relevance are accounted for. The chapter ends with a reading guide.

1.1 Project framework

1.1.1 Societal changes

"Urban renewal is not a luxury, but a necessity," says Fackeldey, alderman in Lelystad. There have been times in which urban development was handled in a grand and compelling way. "Now, we have to make sure that the pilot flame remains lit" (Fackeldey in Dirks, 2012).

Maybe we should no longer speak of crises, but instead of dealing with permanent societal changes. Current economic, demographic, social and environmental changes influence our urban renewal policies and the capability of steering societal problems. They require a change in our planning and usage and make adjustments to housing and infrastructure necessary.

The political-administrative reality is that the money for large urban projects is starting to run out. What started as an on-going economic crisis has become a new economic situation. Budgets are cut back over the entire width by the central government, provinces, municipalities, market players and housing associations. The roles and possibilities of all concerned parties are changing (KEI & NICIS, 2012, p. 4).

Social housing associations are experiencing financial problems. Municipalities have to deal with a new role and limited opportunities, for example by losses by municipal land holdings. Financial losses and other problems are getting in the way of investments in neighbourhoods. The Investment budget for Urban Renewal (*Investeringsbudget Stedelijke Vernieuwing,* abbreviated as ISV) which granted financial support for urban regeneration in the past is expiring and will be terminated in 2014 (Heijkers, Velden & Wassenberg, 2012, p. 6).

Furthermore, the cabinets of Rutte I and II have made no additional money available for economically and socially distressed areas. Along with the abolishment of the Ministry of Housing, Spatial Planning and the Environment in 2010, this characterizes the withdrawal of the central government from housing policy and the reduced attention for neighbourhoods from the central government (Knol, 2012, p. 16/17).

Even though a lot has been achieved in disadvantaged neighbourhood, there is a strong need to preserve these early developments and to not let other areas slide downwards. To develop and maintain the desired vitality of communities, municipalities are forced to seek cooperation with market players and the actual users of the area, such as local entrepreneurs and residents. These private parties experience in turn their own problems, for example the jammed rental and sales market of dwellings and offices (Dirks, 2012).

Another permanent change is the growing diversity in our society due to demographic changes. Differences between areas are increasing; regional population decline emerges next to regional population growth, strong neighbourhoods emerge next to disadvantaged neighbourhoods. KEI expert centre on urban regeneration and the NICIS Institute even speak of 'hyper diversity': increasing social diversity between groups of people in our society. The composition of our population changes by the aging of the Dutch citizens and migration flows. Both public and private actors are influenced by the limitations and challenges that rise from these processes, for example in housing and infrastructure.

Finally, the environmental effects of our actions are becoming increasingly visible. Climate change and scarcity of resources require other ways of handling our environment (KEI & NICIS, 2012, p. 4). The current usage of materials is economically, socially and environmentally expensive and unsustainable.

The question is, if we can arrange our society in another way. If we can plan, use and adjust our cities in ways that make them flourish economically, without compromising the social and environmental aspects of urban life.

1.1.2 Sustainable area exploitation

This future urban renewal would require above all a new cooperative approach. A new way of dealing with urban regeneration, in which we no longer think in area *development*, but instead in area *exploitation.* Sustainable area exploitation is an approach in which the key concept is economic, social and environmental value creation for the entire area (Van Leent, 2006, p. 7). Compared to the current way of doing things within the policies of the ISV, this approach is less steering, less imposed, less interfering, on a smaller scale, but especially more facilitating and inviting (Heijkers, Velden & Wassenberg, 2012, p. 3). KEI and NICIS speak thus of "urban renewal on invitation": governments are not only forced to seek cooperation with residents and entrepreneurs due to the previously mentioned societal changes, these other actors also desire themselves to be more involved. Residents and entrepreneurs want to have their say in their own residential, living or working environment.

Sustainable area exploitation is to no longer "make cities", but instead "to be cities" (KEI & NICIS, 2012, p. 5). To be a city is to seek ways of organising construction, management, maintenance and development in coherence with each other and with all relevant parties. From linear, top-down means of controlling and planning to attacking the tasks locally, based on a local question and on what is actually happening in a neighbourhood, district, region or city. A focus on smaller projects instead of reducing the complexity of reality to national programs and a 'projects carousel'. And finally, a focus on the societal values and tangible effects, instead on the output of policy programmes. It is the final effect in society, the outcome, that matters, and which should be the starting point for change (Deuten & De Kam, 2005, p. 16; De Kam, 2008a, p. 9; KEI & NICIS, 2012, p. 5; Vrolijk, 2010, p. 67).

Generating value in old neighbourhoods, that is what urban renewal is all about, according to KEI-advisor Van der Velden. Interventions in neighbourhoods generate financial, physical, social and ecological values that benefit the area (De Kam, 2008a, p. 3). It is believed that investments in social and physical infrastructure can generate more value than traditional restructuring (Van Leent, 2006, p. 2). This vision is enterprising and driven by opportunity. The neighbourhood and its residents are approached as a (social) business case (Van Leent, 2006, p.3). The core thought is that all kind of parties can benefit from neighbourhood quality: a healthy and desirable neighbourhood provides and produces more and saves costs. By making interests explicit and transparent, it becomes clear which parties have interests and which parties can profit from the exploitation (Van Leent, 2006, p. 4; De Kam, 2008a, p. 3).

1.1.3 Energy conservation

One of those possible interventions that can generate value is energy conservation. Energy is one of the key problems which drive present-day urban renewal policies, apart from population decline, crises, healthcare and financing (KEI & NICIS, 2012, p. 4, see appendix 1 for an overview of the key drivers of urban renewal since WWII). Spies, the former Minister of the Interior, is of the opinion that energy saving measures provide new opportunities for urban renewal (Spies, 2012, p. 2). Energy conservation in the built environment provides new opportunities to improve the living environment and housing quality (Spies, 2012, p. 7). Furthermore, reducing energy consumption is one of the major challenges in the sustainable transition of cities. Energy conservation can provide a better grip on rising living and consumption costs for residents, it can realise an additional economic stimulus and it can contribute to achieving climate goals (Spies, 2012, p.9).

Energy conservation has thus many societal implications, as it has economic, physical, social and ecological dimensions. Within sustainable area exploitation, energy conservation can therefore be an intervention that generates values in neighbourhoods.

1.1.4 Blok voor Blok

One of the projects that meets the idea of sustainable area exploitation concerning energy conservation is the *Blok voor Blok* ('block by block') arrangement of the Ministry of the Interior and Kingdom Relations. In this experimental approach provinces, municipalities, social housing associations, enterprises and residents work together in pilot projects on household energy conservation in the built environment (Spies, 2012, p. 9/10). The current Minister of Housing for the Ministry of the Interior, whose name is (funny enough) Blok, is responsible for the *Blok voor Blok* project. Minister Blok is of the opinion that the *Blok voor Blok* approach is an example of an innovative way to realise urban renewal (Blok, 2012, p. 3). Different parties come together and formulate joint plans to make existing buildings more energy efficient.

This research analyses energy conservation and its societal impact in neighbourhoods. This is done by zooming in on one neighbourhood, the '*Slachthuisbuurt',* which is included in the *Blok voor Blok* project in the city of Haarlem. It is tried to unravel the relationship between outputs of energy conservation and their final societal effects. The objective is to find out how energy conservation as an intervention can contribute to urban renewal through the concept of sustainable area exploitation.

1.2 Objectives

1.2.1 Alliander and Blok voor Blok

The commissioning party for this research is Dutch energy network company Alliander. The demand for knowledge was submitted by Cremers, a project manager from the department of energy conservation. He represents Liander, one of the subsidiaries of Alliander, in the Haarlem *Blok voor Blok* consortium.

The goal of the *Blok voor Blok* project is to generate knowledge and gain experience with energy conservation in existing buildings. The different pilot projects in Dutch cities serve as experiments and it is tried to create a blueprint for large-scale deployment of energy saving measures in the built environment (Ministry of the Interior and Kingdom Relations, 2011, p. 7).

1.2.2 Watt voor Watt

Liander coordinates the *Blok voor Blok* pilot in Haarlem. This project is called *Watt voor Watt* ('Watt for Watt') and aims to energetically improve at least 1500 homes in Haarlem in two years (ambition is 3500 houses). Fifty percent is realised by social housing associations and the other half by commercial initiatives. The goal is to achieve higher energy ratings in these dwellings: an improvement of two energy labels or at least a certification of energy label B (second best).

However, *Watt voor Watt* has a broader objective then just saving energy by physical measures. Besides at least thirty percent energy savings in the selected homes, this project aims to lower the investment costs for energy conservation measures by scale advantages, to increase the value of houses and their residential environment, to improve the comfort of homes, to lower the energy costs, to develop innovative financial products, to improve the image of neighbourhoods, to improve the social cohesion, to strengthen the local economy, to accelerate the sustainable regeneration of Haarlem and finally, to generate sustainable energy (Weersink, 2012, p. 5-6).

These goals have in common that they represent or create a certain value. That is why one of the main pillars of energy conservation in *Watt voor Watt* is 'sustainable value increase'. This is defined by Weersink, former coordinator of *Watt voor Watt*, as "qualitative and quantitative value augmentation by improvements to houses, neighbourhoods and social structures". This project fits thus perfectly in the idea of urban renewal through sustainable area exploitation.

1.2.3 Research objective

To create value, one needs to explore the 'theory of change'. This is a theory on the relation between certain activities and their societal outcome by value creation, devaluation or retention. In this research we are focusing on the relation between energy measures and their impact in the neighbourhood. This relation has yet not been made explicit in literature, even though there are many assumptions. The proposition is that energy conservation is an intervention that can bring about outcomes that are desired for an area and depicted by stakeholders. The research objective is therefore formulated as follows:

> *The objective of this research is to contribute to successful implementation of 'Watt voor Watt', a 'Blok voor Blok' pilot project, in order to realise urban renewal through energy conservation in the built environment. This goal is pursued by a case study of the Slachthuisbuurt in Haarlem, providing insights in the required steps for sustainable area exploitation.*

1.3 Research model

A study of relevant scientific literature concerning theories on urban governance, sustainable development, urban renewal and energy conservation, as well as preliminary research, form together a research perspective. This perspective provides criteria for assessment, on the basis of which the possibilities for energy conservation and sustainable exploitation of the Slachthuisbuurt in Haarlem will be analysed. The preliminary research is displayed in appendix 2. Figure 1 is a schematic representation of the research model.

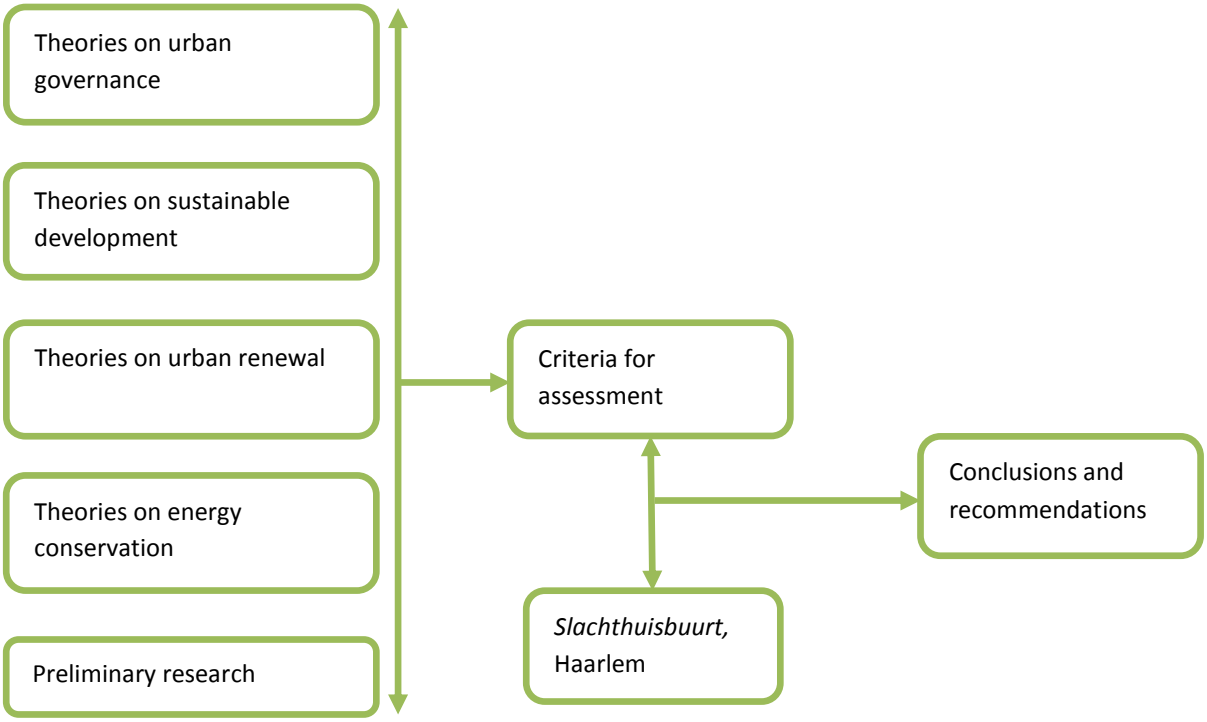


Figure 1: Schematic representation of the research model

1.4 Research questions

The research questions indicate which knowledge is necessary to achieve the research objective. From the considerations of the research objective, the following central question was formulated:

> *To what extent can sustainable area exploitation through energy conservation realise successful urban renewal in the Slachthuisbuurt in Haarlem?*

To answer this main question, three different dimensions have to be highlighted by means of answering eight subquestions. Answering these sub-questions will, together with the theory and methodology, formulate a concluding answer to the central question. The sub-questions are formulated as follows:

1. Energy conservation
- *1a. What is the current policy concerning energy conservation?*
- *1b. How can energy conservation create value in a neighbourhood?*

2. The neighbourhood
- *2a. What is the current policy concerning urban renewal the Slachthuisbuurt?*
- *2b. What is the current position of the Slachthuisbuurt?*
- *2c. What are the opportunities and constraints for energy conservation in the Slachthuisbuurt?*

3. Sustainable area exploitation
- *3a. Which societal values are of interest in the Slachthuisbuurt?*
- *3b. What role can energy conservation play in a sustainable area exploitation of the Slachthuisbuurt?*
- *3c. What are the possibilities to create value with energy in the Slachthuisbuurt?*

1.5 Societal relevance

1.5.1 Societal relevance of research on urban renewal

The pursuit of urban renewal has played an important role in the development of Dutch and other Western European cities. Tallon (2010) mentions that the theoretical and applied issues surrounding the critical concept of urban renewal are of "increasing importance to government and local populations, as well as to urban professionals and scholars".

As mentioned in the research objective, the goal of this research is to provide insights in urban renewal through energy conservation. This is highly relevant for several reasons. In first instance because other ways to renew our urban environment are needed. KEI and NICIS (2012, p. 4) state that "the reality is that we are dealing with lasting changes. Changes we do not have an answer to, in a dynamic which we have not foreseen. As a result, the urban renewal program itself has lost its dynamics". This research tries to find new dynamics in urban renewal, not in another overall top-down program, but in sustainable and customised interventions.

1.5.2 Societal relevance of research on energy conservation

Considering energy conservation, this study hopes to contribute to successful implementation of energy saving measures, through for example the *Blok voor Blok* arrangement. By making the relationship between energy conservation and society more concrete, hopefully energy saving measures will become more important to among all concerned parties in urban renewal.

The societal impact of energy conservation is substantial, because it has many physical, social, economic and ecological implications. For example, energy conservation can help reduce living expenses. "Higher energy bills deathblow low incomes", headlines the *Haarlems Dagblad* in June 2012. An increasing group of people is not capable of paying their energy bills (Steenwijk, 2012). According to a recently published report of Foundation *Milieu Centraal* (2012a), almost twenty percent of the Dutch households is worried whether they can continue to pay for their growing energy costs and 81 percent of the households wants to reduce their energy use (Milieu Centraal, 2012a). By saving energy individually or organising energy conservation collectively, households are capable of reducing their energy costs. Energy conservation can make a big difference, since a significant portion of our income goes to energy costs.

Obviously, besides this financial and social relevance of energy conservation, there are other probing economic and environmental reasons to organize our energy use and design our energy system differently. The Dutch energy supply is vulnerable and constructed unilaterally (Rotmans, 2006, p. 140). Our energy system runs mostly on fossil energy. However, the supply of fossil fuels is limited, we are dependent on politically unstable countries for our oil supply, import of fossil fuels and electricity weakens our economy and the use of fossil fuels has negative climatic influences and creates environmental damage. Fossil energy is thus a very unsustainable energy source: it is financially, socially and environmentally very expensive.

There is a strong need for sustainable solutions. This study hopes to contribute to these sustainable solutions, by showing that with smart interventions, partnerships and financial schemes, we can create value and develop our environment and society in a sustainable way.

1.6 Scientific relevance

1.6.1 Scientific relevance of research on urban renewal

It is clear that the subject of urban renewal is a hot topic in scientific and professional research. An explosion in research output on urban regeneration and renewal has taken place, as it has been recognised as a significant historical and contemporary urban process of economic, social, cultural and political importance (Tallon, 2010). Theory on urban renewal is, as mentioned in the previous paragraph, not only critical to governments and professionals, but also to scholars, students and researchers (Tallon, 2010).

The theory on the concepts of sustainable area exploitation and value creation lacks concrete elaboration. De Kam (2008a, p. 8) argues that it needs further operationalisation. There is a lot of discussion on the concept of value-oriented neighbourhood approaches, however it is far from fully developed (De Kam, 2008a, p. 8).

The conceptual model of this research is based on a Dutch approach called *Wijken van Waarde,* meaning 'neighbourhoods of value' (Van Leent, 2006). De Kam (2008a, p. 8) states that this approach has substantively the best opportunities for local application of the different value-oriented pilot projects. However, De Kam also argues that it is still mostly a process tool, that needs further operationalisation.

1.6.2 Scientific relevance of research on energy conservation

The intervention that is chosen to explore in this context is energy conservation. The subject of energy conservation is also hot topic in scientific research. Energy conservation is an important part of theories on energy transition. It is the first step of the three stepped strategy (or 'Trias Energetica'; Lysen, 1996) and its successor, the New Stepped Strategy (Van den Dobbelsteen, Doepel & Tillie, 2009).

Consumer and habitual behaviour are important components of energy consumption. Citizen-consumers and their daily practices are, according to Paredis (2009, p. 5), central actors in transitions. The biggest share of energy conservation comes from energy measures in the existing building stock (van Hoorn, Tennekes & Wijngaart, 2010, p. 31). This is why governmental energy programmes, such as *'Meer Met Minder', 'Energiesprong'* and '*Blok voor Blok*', focus on energy conservation in the built environment and households in particular (Van Hoorn, Tennekes & Wijngaart, 2010, p. 31; van Dril, 2009, p. 8).

This research on energy conservation in households tries to add to the existing theories on energy conservation in households and transitions, by showing the outcomes in society and its implications for urban renewal. Energy and conservation are often approached from a technical or behavioural perspective. This study hopes to add knowledge to the existing theory by showing what possibilities energy conservation has to offer for urban development and also by exploring what our urban environment can do for energy conservation.

1.7 Geographical relevance

1.7.1 Geographical relevance of research on urban renewal

Finally, this research has also geographical relevance. The urban environment and urban renewal are important research fields in human geography. As Knox and Marston (2007, p. 3) argue, "human geography is about recognising and understanding the interdependence among places and regions without losing sight of the uniqueness of specific places". The Slachthuisbuurt in Haarlem, the neighbourhood that is studied in this research, is a unique *place,* "a specific geographical setting with distinctive

physical, social and cultural attributes" (Knox & Marston, 2007, p. 3). Places and their physical living environment are never 'finished', they are renewing constantly. However, the key problems driving this renewal have changed over times. One of the key problems driving contemporary urban renewal is energy (KEI & NICIS, 2012, p. 4).

1.7.2 Geographical relevance of research on energy conservation

Energy is an important subject for all spatial sciences. "Energy is space", as Gordijn, Verwest and van Hoorn (2003) titled their article. Van Kann (2010) speaks of an "energy landscape", which implicates the relation between energy and space. Energy affects and is affected by the landscape. The strong link in the New Stepped Strategy of energy conservation and the urban environment also shows the importance of geography in energy conservation (Van den Dobbelsteen, Doepel & Tillie, 2009) (see also paragraph 2.9.3).

1.7.3 Geographical theory and techniques

"Geography […] is very much an applied discipline as well as a means of understanding the world" (Knox & Marston, 2007, p. 37). By studying one neighbourhood and linking energy conservation to urban development, this research uses geographic theories and techniques to understand and contribute to solving a specific problem. Urban and regional planning addresses and resolves physical, social and economic problems of neighbourhoods, cities and other areas by adopting "a systematic and creative approach". And according to Knox and Marston (2007, p. 38), it is geography that "offers the best preparation for specialised professional training in urban and regional planning. Planners work directly on preserving and enhancing the quality of life in communities, protecting the environment, promoting equitable economic opportunity, and managing growth and change of all kinds." This research hopes to contribute to this work by using the systematic and creative approach of sustainable area exploitation.

Geographical research is pre-eminently the kind of research that can contribute to solutions for current societal problems. Geographical research is able to contribute directly and significantly to society, because geographers use the geographic theory and techniques to "understand and solve a wide variety of specific problems", and undertake this research with an applied focus (Knox & Marston, 2007, p. 37).

1.7.4 Economic geography

In the field of economic geographical research, economic development is approached from a specific spatial context. Economy, sustainability and spatial quality are different, partially overlapping, domains that influence each other and the attractiveness of an area. A successful spatial-economic policy does not only consist of strengthening the economic structure, but also calls for policies on sustainability and quality.

Different values in a neighbourhood affect the attractiveness of the area. Neighbourhood values, such as housing and environmental quality, accessibility and the business and cultural climate, can be push and pull-factors in moving decisions of households and enterprises. Therefore, these values influence the economic development of an area.

By demonstrating the societal effects of energy measures (social, environmental and economic), this research shows that energy conservation, an in first sight ecological and technical measure, also contributes to spatial-economic development. This is done by exploring the mechanisms of value creation and the theory of change of energy conservation. By discussing how energy measures can increase the attractiveness of an area, this study adds knowledge to the current economic geographical theory. This has both scientific and societal relevance.

1.8 Research structure

This research report is divided into four parts:

Part 1: Introduction and relevance	**Chapter 1**
Part 2: Theoretical framework	**Chapter 2 and 3**
Part 3: Empirical framework	**Chapter 4, 5 and 6**
Part 4: Conclusions and recommendations	**Chapter 7**

After this introductory chapter, the theory and methodology of this study will be discussed in part 2. In chapter 2, the various theories that underlie this research are explored and form a conceptual model. In chapter 3, the methodological framework of this research is discussed.

Part three is the empirical analysis. In chapter 4, energy conservation and the relation with the urban environment is explored. The societal values of energy measures are also examined. Chapter 5 focuses on the Slachthuisbuurt. What is going on in this neighbourhood and what limitations and opportunities does it offer for energy conservation? And what are the desired outcomes for this neighbourhood? Chapter 6 discusses some possible interventions for the Slachthuisbuurt, based on the concept of sustainable area exploitation.

Finally, chapter 7 offers some conclusions and summarises the answer on the central research question. These conclusions, recommendations and reflections form the fourth and final part of this research.

Part 2

Theoretical and methodological framework

2. Theory

> "We do not live in an era of change, but in a change of eras."
>
> Herman Verhagen, Milieudefensie
> November 2011

Leonardo da Vinci once said: "he who loves practice without theory is like the sailor who boards ship without a rudder and compass and never knows where he may cast." We need theory to be able to interpret reality.

As mentioned before, we are at a tipping point in time; our society is in transition. We are shifting from national governments to urban governance and levels of analysis and policy change from nation states to networks of neighbourhood and cities. These places are in a constant state of flux and we are looking for ways to develop them in a sustainable way.

After discussing the changing distribution of power in the governance of the global and local and explaining the focus on the neighbourhood, this chapter discusses a new way of sustainable development: *sustainable area exploitation*. This is a holistic, sustainable and integral approach to area development. Rotmans calls it a*rea development 3.0* (Rotmans, 2012). This approach combines the organisation of construction, management, maintenance and development of an area. The content, process and funding are different: regimes and flows of a neighbourhood are brought together and optimised, values are central, participation is essential and societal profit stands next to financial profit. New business cases arise from this approach, attracting other investors.

Energy is one of the most important flows in the city. Energy conservation is proposed as a possible intervention that creates value in a neighbourhood within a sustainable area exploitation. The theoretical framework concludes with a conceptual model and operationalisation of the theory and research question.

2.1 Urban governance

The distribution of power in our society is changing due to globalisation, liberalisation and deregulating processes. The market versus government debate had been going on for more than a century, and more recently, also civil society and citizen participation had joined the debate of governance (Buitelaar, 2003, p. 215; Parés, Bonet-Martí & Martí-Costa, 2012, p. 239). Private involvement in traditional government activities has increased rapidly in an era of privatisation and reduction of governmental budgets. Governing has become more and more a matter of "governance" instead of governmental "steering" (Nuissl & Heinrichs, 2011, p. 47).

Governance appears in a variety of combinations, such as environmental governance and global governance. More recently, 'urban governance' has entered the discourse on urban and spatial development. As Sorensen points out:

> Our era is reconsidering the ends and means of governments in general in view of limited public finance; concerns over national economic efficiency; and a growing community preference for individual responsibility, self help, and small government. Planning is not immune to these trends. (Sorensen, 1994, p. 198)

Elwood (2003, p. 121) confirms that with the "increasing involvement of local citizens and community organizations in carrying out urban planning and service delivery functions formerly handled by state institutions, questions have emerged about their implications for the urban political role and influence of community level actors." New relations, often based around what Pike, Rodríguez-Pose and Tomaney (2006, p. 3) call 'partnerships', now dominate the governance of local development.

Who governs the city and also how is ruled has changed profoundly in the last century. Urban governance "operates through a range of geographical scales, and mobilizes a wide assortment of social actors" (Swyngedouw, 2011, p. 3). Not only is more power distributed to (new) actors of a higher level, such as the regional level, the European Union, the World Bank, IMF, United Nations, etc., but power is also distributed differently on the local level. Urban governance has more and more become "network governance", in which principles like "multilevel coordination, joined-up governance, public–private cooperation, and citizen participation, are increasingly serving as the inspiration for the management of this kind of policy" (Parés, Bonet-Martí & Martí-Costa, 2012, p. 239). Parés, Bonet-Martí and Martí-Costa (2012, p. 239) emphasize that "in recent years, we have witnessed profound and accelerated changes in the realm of urban policies in many European countries, and more specifically in what concerns urban regeneration policies carried out in disadvantaged neighbourhoods".

2.2 Levels of analysis and policy: the neighbourhood

2.2.1 Defining the neighbourhood

Following these changes in power distribution and urban policies, Pacione (2005, p. 32) distinguishes the neighbourhood as one of the levels of analysis when studying urban space. Apart from the world system of cities, the national system of cities, the region and the city, the neighbourhood has appeared as an appropriate scale for both analysis and policy. Urban policy emphasis has shifted from places to networks, from state to cities, and from cities to neighbourhoods. Neighbourhood political organisations are now part of the "popular struggle to control urban space" (Pacione, 2005, p. 32).

The neighbourhood is understood as "the area immediately around one's home" (Pacione, 2005, p. 32). More specifically defined, neighbourhoods are the administrative areas in which every city is divided in.

A neighbourhood usually contains a homogeneity of housing type and groups of the same ethnicity and socio-cultural values. It is the locus for processes of decline, revitalisation and segregation. The formation of shared interests and development of community solidarity appear within neighbourhoods. It is therefore that the neighbourhood has been emphasised in urban policy as offering a locus for urban renewal in the past two decades.

2.2.2 Urban renewal and neighbourhood approach

Neighbourhoods are changing constantly. There are in a constant state of flux and the dynamics are often difficult to analyse, predict or steer. As Pacione (2005, p. 208) argues:

> [...] neighbourhoods do not follow a predetermined course of growth and decline. At any stage in the neighbourhood's decline it may reverse direction (owing to inward investment) and begin a period of revitalisation. Similarly, upwardly mobile neighbourhoods may have their progress halted owing, for example, to negative externalities (such as the construction nearby of a noxious facility). (Pacione, 2005, p. 208)

The extremes of a neighbourhood's decline or revitalisation, abandonment and gentrification, are well known. However, there are many stages in which a neighbourhood can find itself and there are many factors that influence the susceptibility of a neighbourhood to decline or revitalize. Restructuring and development of neighbourhoods is therefore a very complex activity.
It is also very costly. Due to a deteriorating economic position, the money for major restructuring and social projects has ran out. With the arrival of some significant societal changes, as discussed in subsection 2.1, policy makers and other involved actors seek new ways to continue neighbourhood development.

The neighbourhood is for this moment the appropriate scale for both analysis and policy. An important public interest is served by the development of innovative practices to gain momentum in the urban renewal and sustainable development of urban areas (De Kam, 2008a, p. 4).

2.3 Sustainable development

2.3.1 Defining sustainable development

The original definition of sustainable development, established by the Brundtland Commission (1987), is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". This concept is based on three principles: intergenerational equity, social justice and transfrontier responsibility (Pacione, 2005, p. 606). Sustainable development thus has a temporal and spatial dimension, which means that our problems here may not be solved by passing them in time or place to later, to others or to elsewhere.

Hardoy, Mitlin and Satterthwaite (1992, p. 181) formulated four components of sustainable development, as displayed in figure 2. Energy conservation is an element of sustainable development, as it is part of one of the components of sustainable development ("minimising use of non-renewable resources"). Satterthwaite (1997, p. 1681) elaborated these components further for application to the city. He devised multiple goals, which are displayed in figure 3. The seven goals formulated by Satterthwaite can be classified as economic, social, political and environmental needs.

The concept of sustainable development and the concerns it represents have become pervasive, however the term and its implications remain highly contested (Pike et al., 2006, p. 4). Sustainability is often mistakenly reduced to only environmental sustainability. However, it is precisely the (spatial) interdependence of economic, social and environmental problems that ask for sustainable solutions.

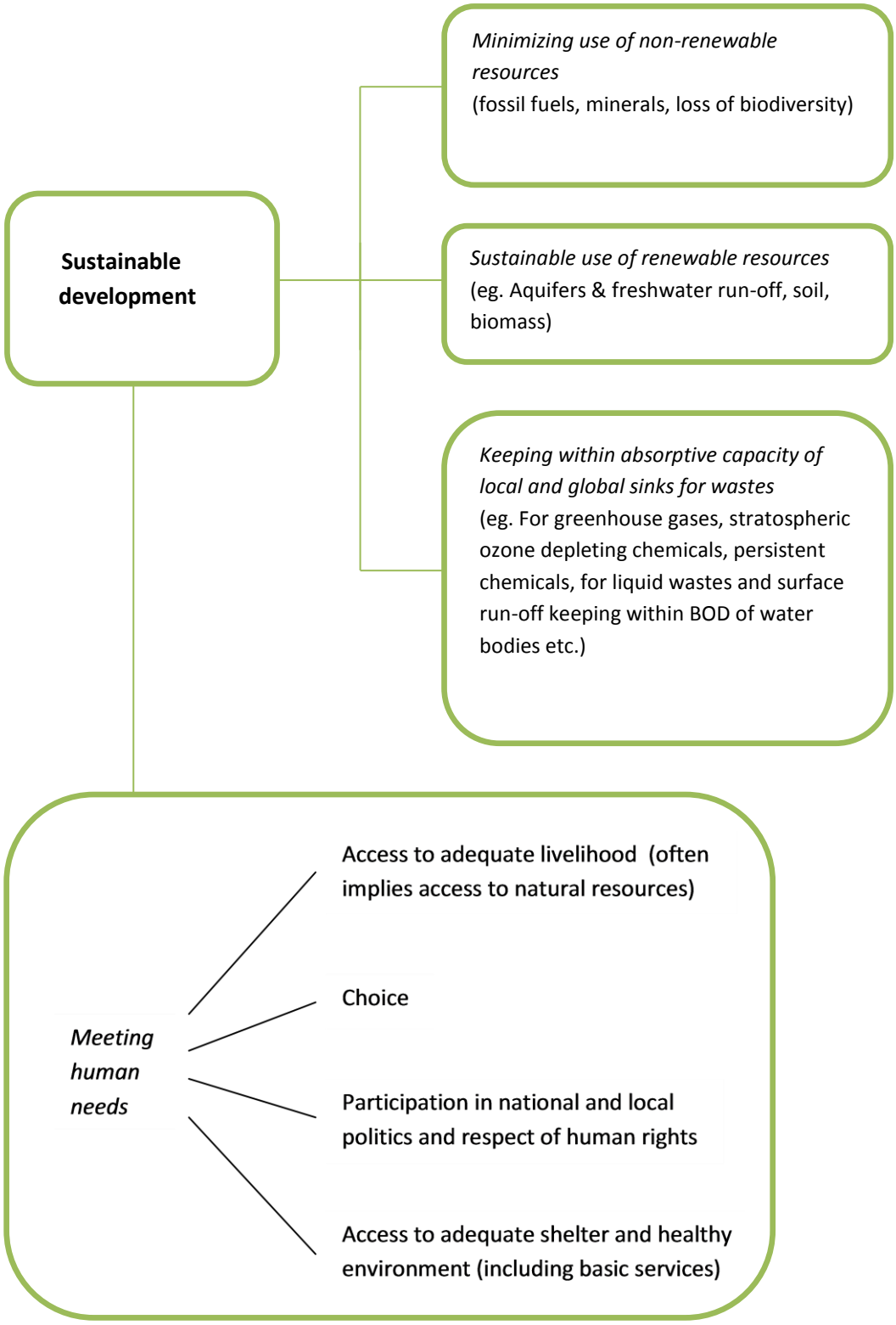


Figure 2: The different components of sustainable development
(Source: Hardoy, Mitlin and Satterthwaite, 1992, p. 181)

Table 1. The multiple goals of sustainable development as applied to cities

Meeting the needs of the present....

Economic needs—includes access to an adequate livelihood or productive assets; also economic security when unemployed, ill, disabled or otherwise unable to secure a livelihood.

Social, cultural and health needs—includes a shelter which is healthy, safe, affordable and secure, within a neighbourhood with provision for piped water, sanitation, drainage, transport, health care, education and child development. Also, a home, workplace and living environment protected from environmental hazards, including chemical pollution. Also important are needs related to people's choice and control—including homes and neighbourhoods which they value and where their social and cultural priorities are met. Shelters and services must meet the specific needs of children and of adults responsible for most child-rearing (usually women). Achieving this implies a more equitable distribution of income between nations and, in most, within nations.

Political needs—includes freedom to participate in national and local politics and in decisions regarding management and development of one's home and neighbourhood—within a broader framework which ensures respect for civil and political rights and the implementation of environmental legislation.

.... without compromising the ability of future generations to meet their own needs

Minimising use or waste of non-renewable resources—includes minimising the consumption of fossil fuels in housing, commerce, industry and transport plus substituting renewable sources where feasible. Also, minimising waste of scarce mineral resources (reduce use, re-use, recycle, reclaim). There are also cultural, historical and natural assets within cities that are irreplaceable and thus non-renewable—for instance, historical districts and parks and natural landscapes which provide space for play, recreation and access to nature.

Sustainable use of finite renewable resources—cities drawing on fresh-water resources at levels which can be sustained (with recycling and re-use promoted). Keeping to a sustainable ecological footprint in terms of land area on which city-based producers and consumers draw for agricultural and forest products and biomass fuels.

Biodegradable wastes not overtaxing capacities of renewable sinks (e.g. capacity of a river to break down biodegradable wastes without ecological degradation).

Non-biodegradable wastes/emissions not overtaxing (finite) capacity of local and global sinks to absorb or dilute them without adverse effects (e.g. persistent pesticides, greenhouse gases and stratospheric ozone-depleting chemicals).

Source: Developed from Mitlin and Satterthwaite (1994).

Figure 3: Multiple goals of sustainable development as applied to cities
(Source: Satterthwaite, 1997, p. 1681)

2.3.2 Operationalisation of sustainable development

Sustainable development is both related to the environment (physical geography) and economic, technological, social, political and cultural processes and changes (human geography) (Knox & Marston, 2007, p. 490). This makes sustainable development a very complex concept, that cannot be unequivocally described and applied. As Rotmans, Grosskurth, Van Asselt and Loorbach (2001, p. 2) point out:

> Sustainable development is a concept launched by politicians and the result of a political compromise. Because of its inherent normativity, subjectivity and ambiguity, sustainable development is difficult to operationalise for implementation in practice. However, that does not mean that sustainable development cannot be made socially applicable from a scientific basis. (Rotmans et al., 2001, p. 2)

Rotmans et al. (2001, p. 3) are of the opinion that sustainable development can be made operational along the axes of three dimensions. The first axis is the temporal dimension of sustainable development and has everything to do with passing of negative consequences in time. The second axis is the spatial dimension of sustainable development, and deals with passing of negative consequences in space and scale. Sustainable development thus includes a micro and macro scale. The third axis are the societal domains of sustainable development: the economic, environmental and socio-cultural domain (Rotmans et al., 2001, p. 3).

Summarising, sustainable development is understood as local development, with a policy span of at least 25 years, a micro and macro view and in which economic, environmental and socio-cultural development is accounted for. To achieve and measure such development, new indicators are required. Mainstream conceptions of local development have been focusing on traditional indicators of *growth*, which offer only a partial measurement of *development.* As Pike et al. (2006, p. 4) put it, they look too 'economistic', against the concept of sustainable development. Traditional indicators like jobs, incomes and characteristics of the housing stock are insufficient to measure development. New metrics of the broader quality of life are necessary to indicate the local development (Pike et al., 2006, p. 4). As Parés (p. 239) points out in the case of disadvantaged neighbourhoods: "the agenda of transformation for this kind of neighbourhoods has come to include more and more innovative vantage points, including environmental sustainability, multiculturalism, and social inclusion." Despite the introduction of urban renewal as a policy concept, based on the idea of a continue process of development, management and maintenance to make and keep neighbourhoods liveable, the social pillar remains lagging behind. Therefore, Peek (2010, p. 1) argues that the time of

area development is over. The power to develop has to come from the neighbourhoods itself in a more organic way, instead of the past marriages of convenience between municipality and known big developers. “These marriages have now been dissolved, or one is in divorce” (Peek, 2010, p. 1). With this new orientation, in which the municipality acts as stimulator and facilitator of local initiatives, and investor in infrastructure, public space and facilities, the emphasis shifts from development to the *exploitation* of the area. An integral sustainable area exploitation arises.

2.4 From area development to sustainable area exploitation

The urban environment consists of different regimes of exploitation, such as the exploitation of property, land, public space, (social) facilities and the eco-balance. It is furthermore characterised by flows, such as energy, water, waste, transportation of people and goods and information (Van Leent, 2006, p. 7; Peek, 2010, p. 1; Peek, 2012, p. 6). These exploitation regimes have certain relations with each other and influence on one another through ‘balancing entries’. Van Leent (2006, p. 7) argues that “if a party focuses primarily on such ‘balancing entries’ to optimise its own results, this goes directly at the expense of the result of another party”. The profits are thus just distributed, not earned.

Sustainable area exploitation offers a concept to create value for the entire area instead of the pursuit of such sub-optimisation. It is based on three key principles: “use what you already have, do so in a sustainable manner and ensure that it meets the demand of the users” (Peek, 2012, p. 5). Linking the different exploitations and flows for optimisation offer important chances for neighbourhood development with sustainable area exploitation.

The KEI centre and NICIS institute (Heijkers, van der Velden & Wassenberg, 2012, p. 5) speak of the ‘new’ urban renewal as existing of more natural and organic activities, characterised by small interventions. As Peek argues, the power to develop has to come from the neighbourhoods itself in a more organic way. This is another approach to urban renewal than what we are used to: “less steering, at a smaller scale, less interfering, but more facilitative and inviting” (Heijkers, Van der Velden & Wassenberg, 2012, p. 3). From *making the city* to *being a city*.

Sustainable area exploitation and its related concepts are understood as a different way of thinking about and approaching and managing of neighbourhoods then we have done so far. From program to instrument, from project to process, from curing to preventing, from developing to managing, from thinking in costs and averages to thinking in opportunities and benefits, from a large-scale approach to customization, and finally from top-down to bottom-up (KEI & NICIS, 2012, p. 27, see figure 4). This concept represents not only the area development, understood as the land exploitation and realisation of property, but as a integral area exploitation, including area managing, maintenance, upkeep and flows in a continuous process, instead of separate activities.

making a city

‘What we want’
Urban renewal as a program

Project-based interventions
Curative
Developing
Steering on average increase
Economies of scale
Decided and closed process

being a city

‘What they want’
Urban renewal as an instrument

Continuous process
Preventive
Developing management
Recognizing opportunities
Sum of the small scale
Open and inviting process

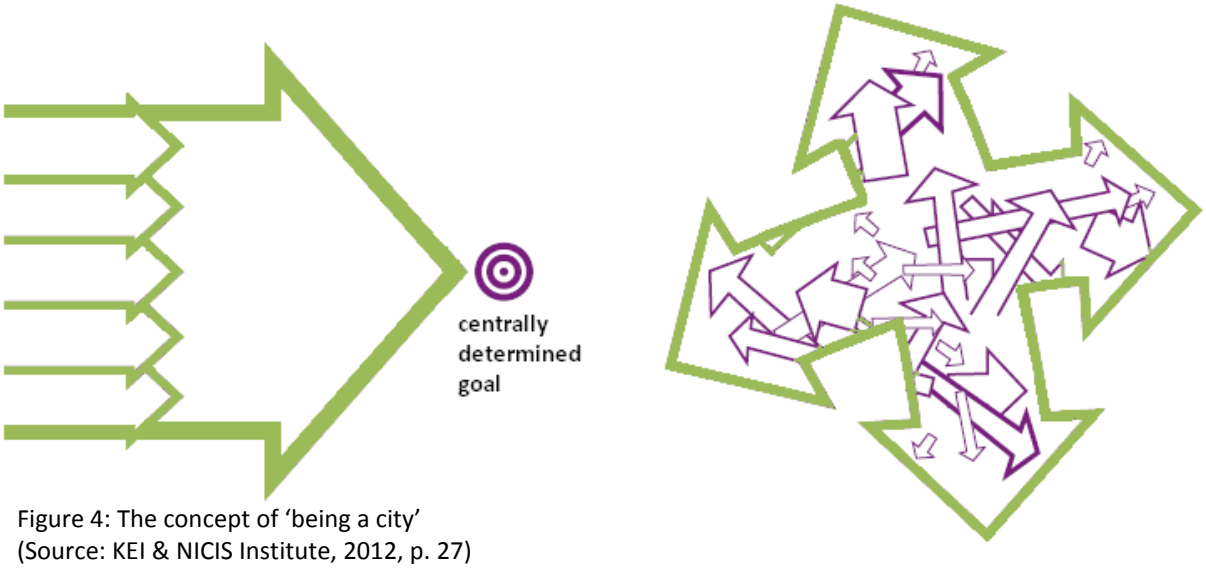


Figure 4: The concept of ‘being a city’
(Source: KEI & NICIS Institute, 2012, p. 27)

2.5 Sustainable value creation

2.5.1 Defining sustainable value creation

In the end, urban renewal is about generating value in old neighbourhoods: a process of value creation. Sustainable value creation is a complex and ambiguous concept. Den Exter (2012, p. 17) defines value creation as follows:

> The (co) identifying and making explicit of hard and soft values[1] of stakeholders (in a neighbourhood) and taking these as a starting point for neighbourhood development, whereupon can be sought for 'smart interventions', that create, where possible sustainable (social, ecological/spatial and economic), value. Yield is, where possible, qualified and quantified and related to the societal ambitions and the financial situation of the stakeholders. This way, (new / smart) partnerships and funding structures arise. (Den Exter, 2012, p. 17)

Four elements of value creation can be extracted from this definition: (1) measurement of values and inventory of hard and soft values of stakeholders, (2) smart/new interventions, (3) smart/new partnerships and (4) smart/new financing mechanisms (Den Exter, 2012, p. 17). These elements can be seen as part of a sustainable area exploitation as a mechanism, in which value creation is the process and value increase the ambition.

The concept of value creation and its meaning have been discussed during sessions of the thematic working group on value creation, affiliated with the *Watt voor Watt* consortium. Based on these discussions and literature (i.a. Van Leent, 2006; Den Exter, 2012) the following definition for sustainable value creation is applied in this research:

Sustainable value creation is understood as a process that makes it more attractive to live and work somewhere, with the emphasis on the end users of the area and how they perceive these values. Value creation is also a positive incentive and a convincing argument for social housing associations and other stakeholders to invest in the area. This way, it functions as a spiral, in which one step leads to another. Value can be created by working together in partnerships and designing and implementing smart interventions. Smart interventions strive for optimisation for the area, take advantage of the momentum and approach the area as a business case. Optimisation of economic, social and environmental values result in so-called win-win-win situations. One plus one than equals three. This way, the process of value creation makes a sustainable urban renewal possible.

Of course there are different perspectives from the various individuals and groups acting in the area: the residents ('educators', working people and 'the resting'[2] (Mulder, 2006, p. 23)), entrepreneurs, institutions, governments, etc. What is of value to one actor, can be unimportant to the other. What is considered a value increase can mean a value decrease to another. For example, the construction of a playground will be of value to educators and will result in an increase of values like social cohesion, safety, happiness. On the other hand, the playground can be a decrease of values like the peacefulness of the neighbourhood, and can increase nuisance for elderly people. One has to take into account these different preferences and look at the area through different perspectives. From previous studies it can be concluded that valuation by residents varies greatly according to lifestyle and inhabitants characteristics (De Kam, 2007, p. 9).

2.5.2 Preconditions for value creation

Three important preconditions can be identified as point of departure for sustainable area exploitation and value creation: trust, awareness, social homogeneity and long-term perspective (J. Grünfeld, personal communication, 15 February 2013).

Trust in the different stakeholders is absolutely necessary to get involved in value creating interventions. Especially in disadvantaged neighbourhood, trust in authorities and institutions. Van der Woude, fellow worker at *Haarlem Klimaat Neutraal 2030,* argues that in such neighbourhoods, residents are more vulnerable due to financial troubles and are less involved with each other, resulting in lower trust in society (M. van der Woude, personal communication, 15 February 2013).

In advantaged neighbourhoods, often characterised by richer and higher educated residents, trust in society is remarkably higher. Van der Woude (Personal communication, 15 January 2013) states that these residents deal with the same perception and themes concerning the neighbourhood, such as energy conservation, energy generation, care for each other and 'greenery and vegetables' in the neighbourhood. This benefits the social homogeneity of the neighbourhood.

In disadvantaged neighbourhoods, often characterised by poorer and lower educated residents, other common themes are shared, such as (un)employment, safety, nuisance and future perspective. These themes are more dividing and less uniting.

Apart from trust, awareness is necessary to get people in motion to change anything and a long-term perspective is inherently part of any sustainable development. These tree elements are understood as point of departure for sustainable area exploitation: they are the first step of the spiral of value creation. That is why, when applying sustainable area exploitation and

[1] Hard values are understood as direct financial benefits, such as housing prices and cost savings. Soft values as indirect, often not monetised, values, such as social cohesion, comfort and environmental quality (Den Exter, 2012, p. 10). not monetised, values, such as social cohesion, comfort and environmental quality (Den Exter, 2012, p. 10).

[2] This classification of target groups is derived from Mulder (2006, p. 23). It is based on the 'use' of the neighbourhood (public space, facilities, living behaviour, contact): educators (adults with childeren), working people and the resting (elderly pensioners). Residents can be in more than one group at a time.

value creation, it must be inventoried to what extent there is trust awareness and long-term perspective in a neighbourhood. They determine, along with the measurement and inventory of values of neighbourhood and stakeholders, the entry point in the process of value creation.

2.5.3 Mechanisms of value creation

Now that the concept of value creation has been explored, some concretisation of the mechanisms of value creation are in order. Mulder (2006, p. 21) created a 'rollercoaster' that represents the principles of value creation (figure 5). This rollercoaster shows two 'loops' or ways of value creation: that of the desired neighbourhood, in which "houses are sold better and faster to future residents - and thus yield more profit", and that of the healthy neighbourhood, where current residents are doing well, are happy to contribute to the quality of their surroundings and community (their literal environment) "and do better in terms of health, work and school" (Mulder, 2006, p. 21).

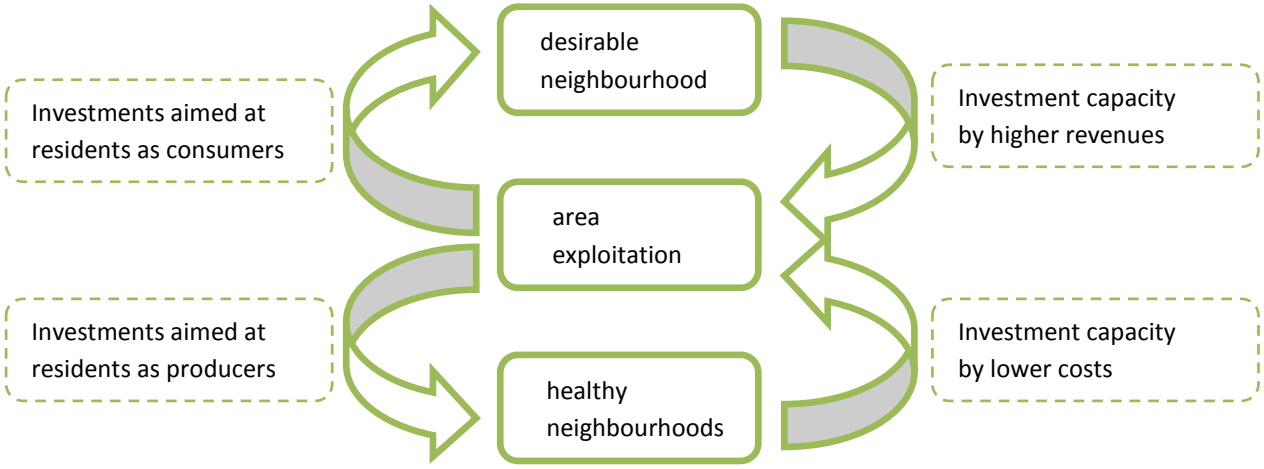


Figure 5: The principles of value creation within sustainable area exploitation
(Source: Mulder, 2006, p. 21)

The 'desired neighbourhood' addresses the residents as consumers, which will pay higher rent or purchase prices for property in a popular neighbourhood. The higher revenues provide more investment capacity. The 'healthy neighbourhood' refers to the image of an organism which can recover from problems or diseases without too much help or 'medications' from the outside. It is a neighbourhood with a higher self-reliant capacity. Investments in such a neighbourhood are aimed at the residents as producers and result in lower costs – think of saving expenses on management, supervision, monitoring and care - and thus provide more investment capacity in the end (Mulder, 2006, p. 21; Holt & Van Leent, 2009, p. 43). These two loops affect each other:

> Although actual proof is lacking, the dominant idea is that investing in "desired neighbourhoods" also contributes to the health thereof. Conversely, when investing in healthy neighbourhoods, the market position of these areas will also benefit. Thus, the two loops form a rollercoaster together. (Holt & Van Leent, 2009, p. 43)

In a desired neighbourhood, values like employment, residential composition, availability and quality of facilities, public water, public green, residential quality, culture and home quality, influence the extent to which it is desired and property values. In a healthy neighbourhood, values like employment, liveability and social cohesion influence its health. Value increase then leads to savings on health care consumption, savings on management and supervision and cost savings on social assistance benefits and vocational rehabilitation (Holt & Van Leent, 2009, p. 43/44).

2.6 Actors and partnerships

Thinking in values and demonstrating the economic, social and environmental returns of investments could be the ingredients for stronger and new partnerships and the attraction of new actors in urban renewal (De Kam, 2008a, p. 3). Cooperation is the necessary basis of any value creating exploitation. As Den Exter (2012, p. 5) argues: point of departure for value creation is seeing chances and opportunities and looking into the interests of different actors. An inventory of the values in an area and the possible revenues can then be the inspiration to establish cooperation. By linking investments to their societal returns, it becomes clear who can profit from them and how collaboration can increase these returns. The interests from different actors become transparent (De Kam, 2008a, p.3). Opportunities to work on stronger cities and neighbourhoods arise where different parties find each other in common interest and vision (Vos, Holt & Hulsker, 2012, p. 7).

There are many stakeholders with interests in a healthy and desired area. Some actors that can serve as partners in neighbourhood development are the residents themselves, local entrepreneurs, enterprises such as supermarkets, care institutions, health care insurers and other insurance companies, hospitals, social housing associations, property developers,

brokers, facilities (culture, sports, etc.), police, justice, other actors of law enforcement, water authorities, national and provincial governments, institutional investors, pension funds, energy companies and all kinds of departments of the municipality (as risk bearer on the Employment and Assistance Act (*Wet werk en bijstand*), sheltered employment, poverty policies, the Social Support Act (*Wmo*), participation policies, energy targets and various other policies of importance in the neighbourhood).

All these stakeholders have different interests that are strongly intertwined. The users of a neighbourhood have interests in different values such as pleasure (to live, work, recreate somewhere), liveability, comfort, proximity/distance, accessibility and property value. Providers of care, welfare or housing services have interests in a sales area, with limited competition. Owners of real estate have interests in their exploitation areas and assets. The municipality has interests in a neighbourhood as a constituency, exploitation area, basis for spatial planning, focus for integration of various policies, the neighbourhood as a tax base, etc.

However, the different parties with certain interests in a neighbourhood, often behave like 'task organisations': they only pursue their own objectives. "That is not our job", is frequently thought. Yet, there is often an obvious interest at stake for the actor, outside its own, sometimes in the law enshrined, task. Take for example social housing associations. Its core business is the building, managing and renting of affordable houses. But there are other things in the neighbourhood that influence the rentability and value of these dwellings. Those may not be part of the core business of the social housing associations, but there an evident interest is at stake.

Another example to illustrate this point further is the municipality. The municipal government is risk bearer on the Employment and Assistance Act (*Wet werk en bijstand*), sheltered employment, poverty policies, the Social Support Act (*Wmo*), participation policies, energy targets, and various other policies of importance in the neighbourhood. All these targets and means are associated with different departments of the municipality. So in practice, even though Social Services has great interest in a healthy neighbourhood, this department is seldom partner in the development of neighbourhood strategies. The same is true for insurance companies. A healthy neighbourhood is an attractive perspective for insurers, yet despite of the recent expansions in this sector, the funders of health care are rarely partner in neighbourhood development.

Decompartmentalisation and cultural change are thus essential to smart partnerships (Holt & Van Leent, 2009, p. 43/44; Van Leent, 2006, p. 4; E. Boele de Zeeuw, personal communication, 15 January 2013). Culture and attitude are identified as the biggest obstacles for a sustainable area exploitation by Van Leent (2006, p. 4). The parties involved in a neighbourhood must make a turn from task organization to thinking and acting like *(social) entrepreneurs* and approaching the neighbourhood as an enterprise. By finding business opportunities, public and private interests can be linked in favour of a greater, common good (Den Exter, 2012, p. 77). Value increase and 'neighbourhoods of value' are the ambition, value creation the process and sustainable area exploitation is the mechanism (Van Leent, 2006, p. 4).

2.7 Theory of change

"The idea that certain problems can be managed or resolved by interventions, and that these interventions do not only cost money, but (can) also generate value is based on assumptions about causes and consequences" (De Kam & Deuten, 2008, p. 2). The theory of change can offers a bridge between the area exploitation and strategic management of certain values, to get to desired societal effects. This concept is based on a number of assumptions about the relations between input, that lead to activities, resulting in output and societal outcome. The theory of change reflects the set of assumptions on how output affects desired societal effects (the outcome). It is a cause-and-effect reasoning that is not necessarily scientifically tested, but describes the expectations and estimates of the ones that are involved (Deuten, 2007, p. 11).

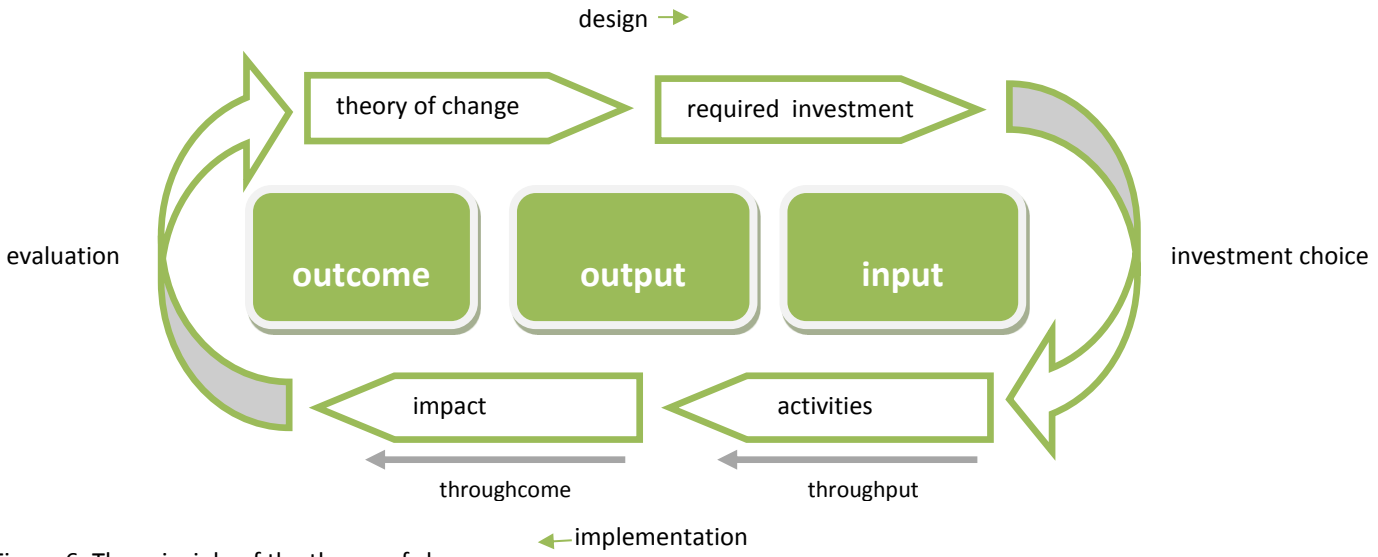


Figure 6: The principle of the theory of change
(Source: Deuten & De Kam, 2007, p. 8)

Figure 6 is a schematic representation of this system. This diagram can be read in two directions: left to right is the direction of design of interventions and right to left the direction of implementation of interventions. The direction of design is about determination of desirable values. These values are expressed in desired societal effects. From these desirable *outcomes* of interventions is reasoned which investments and activities are required. The scheme of implementation starts at the *input* of a number of resources, and leads from the realisation of *output* to outcomes in society. Output is realised from input through activities, the so called *throughput*. Outcome is realised from the impact of the output, the so called *throughcome*.

The investments and activities together form the interventions. The assumptions about the causal relationship between an intervention, output and outcome is what is called the *theory of change*. Deuten and De Kam (De Kam, 2008b, p. 8; Deuten & De Kam, 2008, p. 2) argue that the more powerful this theory is, the better it can serve to underpin interventions, get support for measures, motivate (new) parties to make a contribution and monitor and evaluate effect. And the more robust the theory of change is, the greater the likelihood that interventions will have indeed the desired effects and societal impact, as was previously expected or hoped (Deuten & De Kam, 2008, p. 2).

The difference between output and outcome can be showed by two examples. Directly related outcome can be the increase of quality of life of a homeless person by offering him a room in a shelter, whereas the output is the fact that this person has a place to sleep. Indirectly linked outcome, which shows on a longer term, is for example desired independence of tenants with debt problems after years of counselling (Deuten & De Kam, 2005, p. 15). The output would be that tenants have gotten counselling and are more educated. Output is strongly endogenous, while outcome is heavily influenced by many exogenous factors.

The ratio between the revenues and costs of an investment is the *return on investment*. The return on investment is the compensation for the risk that the issuer runs by investing its equity (Deuten & De Kam, 2005, p. 13). Whereas direct return on investment benefits only the investor, indirect and societal return on investment also effect other parties. The societal return of an investment can be defined as the *impact* of an investment on society. Using societal return on investment, one can review investments not only financially, but also socially and environmentally, and thus thereby assess the 'blended value' instead of just financial value (Deuten, 2007, p. 50).

2.8 Value-oriented neighbourhood approach

In a value-oriented neighbourhood approach, the indirect and societal returns on investments are important. Direct investments do not meet the demands for sustainable value creation, as they only benefit the investor, A value-oriented neighbourhood approach is the result of all the concepts and ideas of this theoretical description. Urban governance, neighbourhood policies, sustainable development, sustainable area exploitation, sustainable value creation, the theory of change and return on investment all come together in this integral, holistic, value-oriented and sustainable approach to neighbourhood renewal.

De Kam (2008b, p. 1) argues that "this approach is based on the idea that interventions create value in neighbourhoods, and that this phenomenon can be utilised as a positive incentive for private and public actors involved in neighbourhood development". As an example De Kam (2008b, p. 4) mentions implementing a package of safety measures. This intervention, consisting of an investment and activities, obviously costs money. However, the residents appreciate the package of measures, crime rates decrease and the neighbourhood gets a better image because of the intervention. This is expressed in higher property values and costs savings in physical and social management. These effects of value increase and cost decrease together make investing in the safety measures much more attractive than it would be when just looking at the costs of the intervention. And the value creation does not only involve a value increase in property prices and cost decrease in management, also other social and environmental values are improved, like safety in the neighbourhood, social cohesion and quality of the living environment. One can thus speak of 'blended' value increase.

This example shows that one intervention in a neighbourhood, which needs certain input of different actors, like money, effort, time and other resources, will eventually lead to societal outcomes. This process of value creation can be organised in a sustainable area exploitation of the neighbourhood. The first step would be to determine the status of the societal values of the neighbourhood. Next, the actual users of the neighbourhood should be consulted to identity what their wishes are for the area, the users' objectives, and what they designate as important values. Subsequently, the interests of different actors in the neighbourhood are explored; specifically the interests in the societal resources of which the neighbourhood consists. It is tried to get these parties to the table and involved in a sustainable exploitation of the neighbourhood. Partnerships are formed, that get to work on smart interventions. These interventions are financed in innovative and smart ways. They lead to *win-win-win-situations*, which contribute to the objectives of the investors, users and other stakeholders. To accomplish this, the connection is sought between property, flows, usage, actual users and existing processes. Finally, this will result in a neighbourhood that the users themselves are happy and comfortable with: a better neighbourhood.

2.9 Urban energy conservation

2.9.1 Urban energy strategies

Now that the concept of a value-oriented neighbourhood approach has been discussed, it is interesting to explore the possible interventions.

Energy is fundamental to urban areas. There are several theories on how to create an efficient energy supply to make sustainable development of these urban areas possible. As Brooks points out at the WCED Public hearings in 1986:

> Energy is, put most simply, the fundamental unit of the physical world. As such, we cannot conceive of development without changes in the extent or the nature of energy flows. And because it is so fundamental, every one of those changes of flows has environmental implications. The implications of this are profound. It means that there is no such thing as a simple energy choice. They are all complex. And they all involve trade-offs. However, some of the choices and some of the trade-offs appear to be unequivocally better than others, in the sense that they offer more development and less environmental damage. (Brooks in Brundtland Commission, 1986, para. 7.12)

2.9.2 Trias energetica

One concept to an efficient energy supply that has remained the standard for a long time is the *Trias Energetica* (Lysen, 1996). In the trias energetica concept, the most sustainable energy is saved energy. Figure 7 schematically shows the concept of the trias energetica.

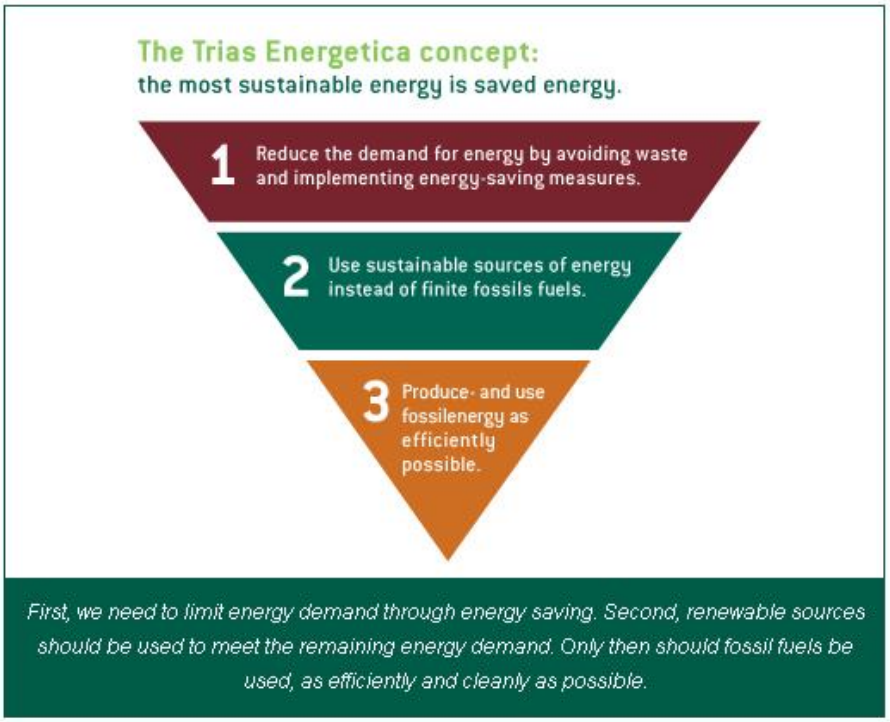


Figure 7: The Trias Energetica
(Source: Eurima, n.d.)

When applying this concept to urban areas, the first step would be to avoid energy demand by architectural measures. The second step is to generate renewable energy on the building level and the final step is to generate energy clean and efficiently with fossil resources on the building scale.

Van den Dobbelsteen (2009, p. 12) argues that this scheme has not brought sufficient sustainable progress in the past twenty years. Particularly the second step, "to generate from renewable energy sources", has still not fully been taken. Furthermore, Van den Dobbelsteen claims that sustainable building mainly concentrates on generating energy clean and efficiently with fossil resources on the building scale (step 3), which is often considered to be the first step.

2.9.3 New stepped strategy

Because the trias energetica turned out to be inadequate, Van den Dobbelsteen, Doepel and Tillie developed a new approach to sustainable urban areas or even complete energy neutral cities: the 'New stepped strategy'. This strategy adds an important intermediate step in between the reduction of consumption and generation through sustainable sources: it incorporates a waste products strategy (partially inspired by the Cradle-to- Cradle philosophy), in which waste heat, waste water and waste material are optimally used. The revised three steps of the new stepped strategy are:

> **01** Reduce consumption (using intelligent and bioclimate design);
> **02** Reuse waste energy streams;
> **03** Use renewable energy sources and ensure that waste is reused as food;
> **04** ~~Supply the remaining demand cleanly and efficiently.~~
> (Van den Dobbelsteen, 2009, p. 12)

The fourth step, supply energy clean and efficiently with fossil resources, will remain necessary for the coming years, but Van den Dobbelsteen (2009, p. 14) argues that the use of fossil fuels will eventually be no longer possible, nor desired. "The development of new areas or the re-development of existing areas should already take this into account, because the fourth step will remain a painful necessity in many other regions" (Van den Dobbelsteen, 2009, p. 14). The new stepped strategy is summarised in figure 8:

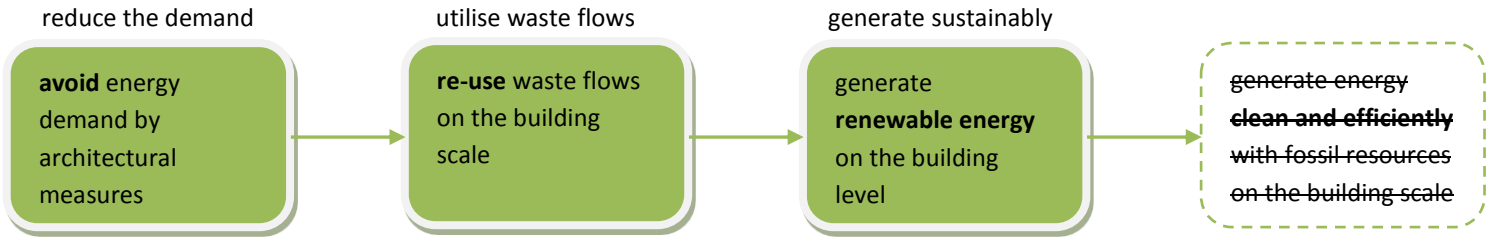


Figure 8: New stepped strategy on the building level
(Source: Van den Dobbelsteen, 2009, p. 12)

Applying the new stepped strategy to individual buildings is possible, but it requires a huge investment. According to Van den Dobbelsteen (2009, p. 16), it is thus better an idea to consider a cluster of buildings "and to determine whether energy can be exchanged, stored or cascaded". Also the use of waste streams and setting up sustainable generation needs to be optimised at a cluster level. "Although solar panels and solar collectors or a heat pump with ground collector systems can be installed in each individual building, it is much more economical to set these up at cluster level" (Van den Dobbelsteen, 2009, p. 18). In the energy approach and planning methodology of Van den Dobbelsteen, Doepel and Tillie, this is called 'from building to neighbourhood'. The next steps are to go from neighbourhood to district and from district to an entire city and beyond. Appendix 3 shows the new stepped strategy on building and neighbourhood level.

It is clear that energy conservation is the first and most important step of a sustainable energy supply and that the neighbourhood level is the appropriate level to cluster energy saving measures. Because buildings contributes to 30 percent of the total energy consumption in the Netherlands, it is especially interesting to concentrate on the built environment. It has great potential for savings and can therefore contribute to a more sustainable neighbourhood and city (Ministry of the Interior, 2011, p. 3). There is a recursive relationship between energy systems and urban structure at all scales, from the individual building to the metropolitan region (Pacione, 2005, p. 614). It makes energy one of the most important flows in the city, which is deeply rooted in everyday (urban) life. Energy is therefore an important part of a sustainable area exploitation and energy conservation can be an interesting intervention in the process of value creation. In chapter 4 of the empirical framework, the energetic and societal values of energy conservation is discussed further.

2.10 Conceptual model

This conceptual model is intended to show the relationship between the input of resources and outcomes in society. The internal left side of the model takes place within the organisations and partnerships. The external right side of the model it takes place outside of the organisations, within society.

Input, output and *outcome* refer to the 'production process' of return on investment. *Input* are financial, personal and material resources that an organisation has available for its activities. Also immaterial matters, such as available network, effort, time, knowledge or goodwill can serve as input. The input of resources makes energy-related activities possible. However, the ability to put in resources and the availability of resources is influenced by the *preconditions* of trust, awareness, long term vision and social homogeneity in the neighbourhood.

Energy related activities are energy saving measures. Together, the investment and activities form an *intervention*. The preconditions are also interacting variables, influencing the relationship between the intervention and its output.

The relationship between input and output is called the *throughput*, which consists of activities that can vary in their efficiency and expediency.

The intervention generates certain *output*, both within and outside of organisations and partnerships. This is the performance of energy measures. The output are endogenous actions, which in turn influence exogenous developments. This leads to tangible *results.*

The relation between output and outcome, via results, is called the *throughcome*. The impact of the throughcome, the intended and actually realised goals, varies. This is the effectiveness or the contribution to the mission of an intervention.

The *outcomes* are the societal effects of interventions. Like the outcome, outputs and results also have individual returns, but only if something changes in the behaviour, knowledge, functioning or in the possibilities of people, one can speak of societal outcome. Outcome are short term or long term societal effects that can be directly or indirectly linked to the output, can be intentionally or unintentionally, positive or negative and a results of output or a result of other external factor (Deuten & De Kam, 2005, p. 15; Deuten, 2007, p. 36).

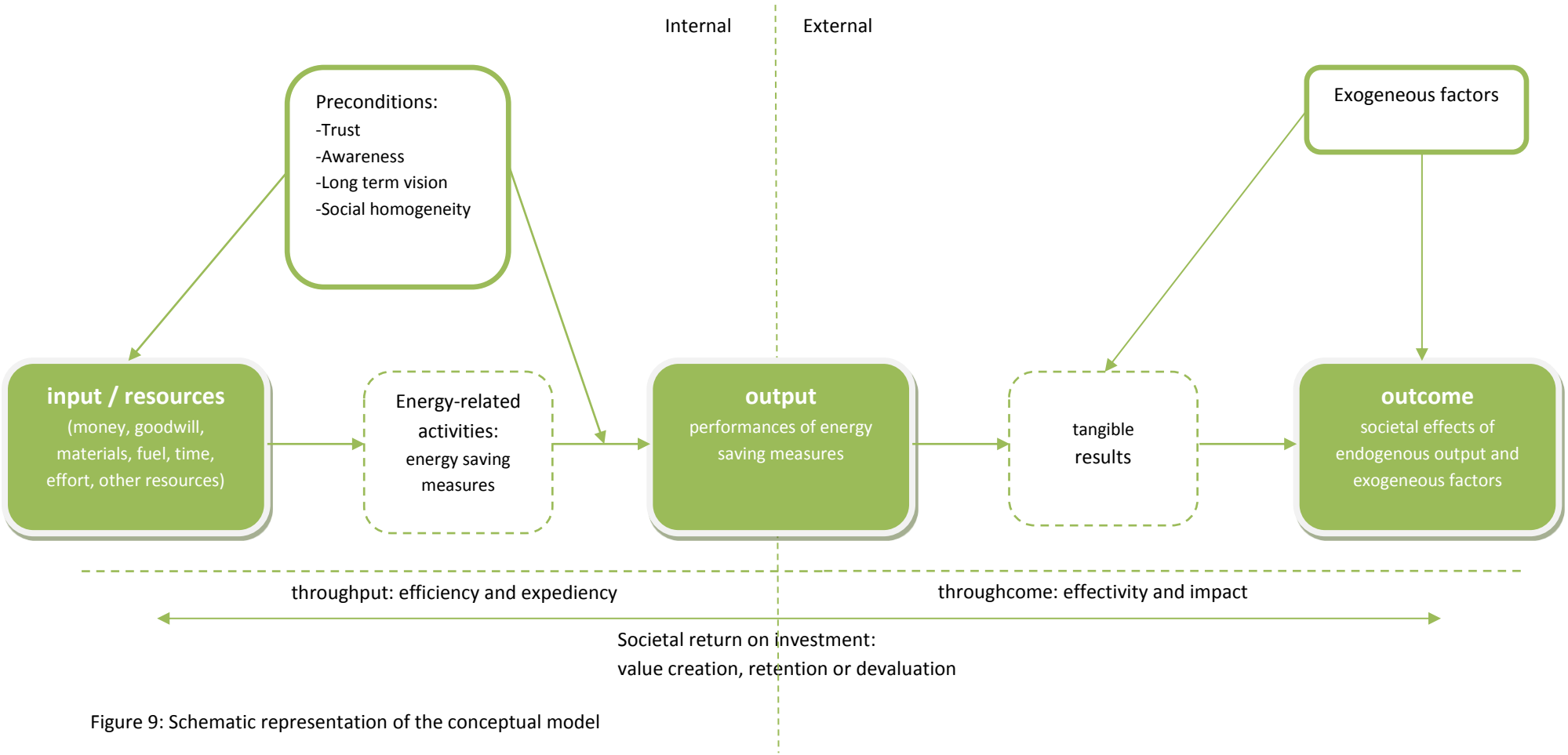


Figure 9: Schematic representation of the conceptual model

Summarising: output follows from interventions; result is the influence of output on exogenous developments; outcomes are the societal effects; and societal return on investment is the impact (outcome minus 'what would have happened anyway', regardless of any intervention). Figure 9 is a schematic representation of the conceptual model.

2.11 Operationalisation

2.11.1 Glossary:

Input: investment of resources, such as money, goodwill, materials, fuel, time and effort.

Preconditions: varying levels of trust, awareness, long term vision and social homogeneity present in the neighbourhood. These preconditions influence the choice and ability to invest and availability of resources for investments.

Energy-related activities: technical, behavioural and community energy measures. Together, the input and activities form an intervention.

Output: internal and external production generated by interventions. Internal output is a product within organisations and partnerships and external output within society.

Throughput: the relation between input and output, via activities, which can vary in its efficiency and expediency.

Tangible results: the effects brought about by endogenous influence, the output, on exogenous developments.

Outcome: the actual change in behaviour, knowledge, functioning and possibilities of people. Outcome is the societal effect of the result, which is in turn a product of the output of interventions. The societal effect says something about people and neighbourhoods, in contrast to output, which has to do directly with the investment.

Throughcome: the relation between the output and outcome, via results, which can vary in its effectiveness and impact.

Societal return on investment: this is the process of investment and impact in society. Impact is the outcome, the changes to social systems, minus the exogenous developments, or "what would have happened anyway" (Maas, 2009, p. 33).

Value: Maas (2009, p. 8) defines value as "a judgment made by individuals and communities that emerge in the context of interactions among economic actors and those that seek to influence them. Together they enact the specific value provided for the firm, society, and ecosystems". Value is attributed by individuals or social groups to physical objects, services, or activities that are perceived as desirable (Maas, 2009, p. 8). In economic terms, one could say that added value is the difference between the customer's willingness to pay and the supplier's opportunity cost. From a more broader point of view, value creation, retention or devaluation are the acknowledged changes in status of a societal stocks. For a definition of value creation as a process, see p. 12.

2.11.2 Societal effects of energy measures

To measure the societal effects of energy measures it was important to operationalise what *societal effects* and *energy measures* are. The *EffectenArena* (effects arena, Deuten, 2009) was used as a tool to visualise possible outcome for the individual and neighbourhood. This arena can be seen as a process, which is preferably completed with input of professionals. To let this input of selected professionals come to its full potential, the concept of energy measures was not pre-defined in this research. The respondents were challenged to use their creativity, knowledge and experience to design a couple of energy measures and map out their results and outcome for residents and neighbourhood.

2.11.3 Current position of Slachthuisbuurt

The current position of the neighbourhood Slachthuisbuurt was studied according to its deviating characteristics, the opportunities and threats for sustainable development, a property value curve and the potential of the actors and the area.

The municipality of Haarlem developed a neighbourhood profile of the Slachthuisbuurt. The values discussed in this document formed the basis: land use, population, housing, economy, facilities, social status, liveability, safety and attitude towards politics, government and society.

The economic position of the Slachthuisbuurt is assessed by a property value curve of Haarlem. The value curve is a concept of Nijenhuis, Busman, De Kievit and Van Leent (2006, p. 41) and is based on the market value of dwellings, adjusted to housing type and the size of dwellings. This is operationalised by using the assessed value (*WOZ-waarde*) of dwellings of the different neighbourhood of Haarlem, adjusted for type and size by limiting the comparison to single-family homes and by comparing the value per m^3. This way, the value comparison is 'cleaned' of differences that are not caused by location, but by dwelling characteristics. The value of property in Slachthuisbuurt can be compared with the value of dwellings elsewhere in the municipality of Haarlem. This provides us with an indication of the relative position of this area compared to other locations.

The estimation of the potential of actors and the Slachthuisbuurt is based on a model developed by Heijkers, Van der Velden and Wassenberg (2012, p. 17, see figure 10). The Slachthuisbuurt is classified in one of the quadrant (A, B, C or D),

according to the potential of the area and actors. This tells us something about the opportunities for smart interventions and partnerships and the expected role of the government. The actors are residents, entrepreneurs and other users located in the neighbourhood. The potential of the area represents strong and disadvantaged areas. Strong areas are growing and developing and are characterised by attractive housing, a favourable location, energy efficient buildings and a balanced market for offices, dwellings, premises, monuments, schools, etc. Disadvantaged areas are shrinking and need extra attention. They are characterised by anonymous housing, an unfavourable location, energy leaking buildings and deficits or surpluses on markets. In short: the location, price, quality and product determine the potential of the area (Heijkers, Van der Velden & Wassenberg, 2012, p. 17).

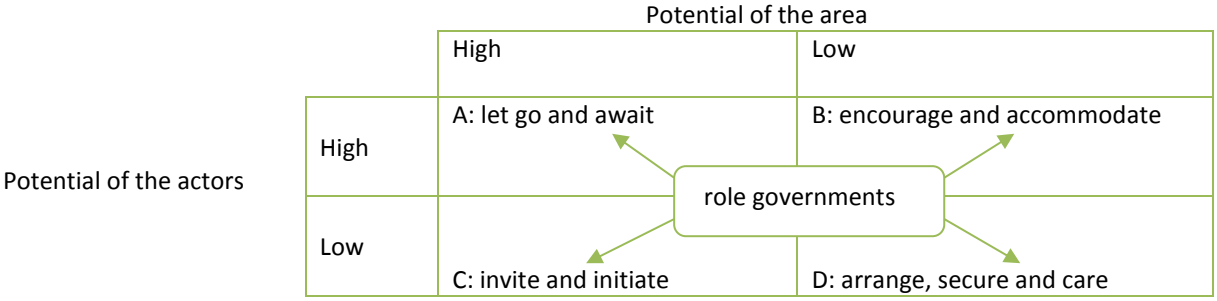


Figure 10: Model for the potential of areas and parties in urban renewal
(Source: Heijkers, Van der Velden, Wassenberg, 2012, p. 17)

2.11.4 Mapping effects of energy conservation in Slachthuisbuurt

To map the effects of energy conservation in Slachthuisbuurt another tool was used that is developed by Deuten (2007, p. 34): the *Effectenkaart* (map of effects). The map of effects is a further elaboration and local customisation of the effects arena. Local effects of interventions are assessed by asking three questions: who are experiencing effects? What are the effects? How does one achieve those effects? This helps to identify stakeholders, output and outcome of interventions in the neighbourhood and contributes to further construction of the theory of change.

2.11.5 Sustainable area exploitation in Slachthuisbuurt

In this context, sustainable area exploitation is operationalised as smart interventions, which answer to the local needs, that come about through the involvement of new or other actors, that are funded in innovative ways and in which energy plays an important role. By designing a couple of such smart interventions, in a participatory process, this study demonstrates how energy measures can contribute to a sustainable area exploitation of the Slachthuisbuurt.

2.11.6 Empirical roadmap

1. Gather information on energy conservation;
2. Gather information on urban renewal;
3. Identify and measure values in the neighbourhood;
4. Entry point in process:
   make an inventory of the level of trust, awareness, long-term perspective and social homogeneity in the neighbourhood;
5. Identify the needs of stakeholders and local question;
6. Design smart interventions, partnerships and financing mechanisms.

3. Methodology

> **"The test of our work must be found in results, in literally changing the world, in impact. […] What endures […] is not how hard we try, or how clever we may be, or even how much we care. […] But ultimately, what is remembered is how we have been able to improve lives."**
>
> Judith Rodin, The Rockefeller Foundation
> January, 2007

3.1 Research strategy: case study

Rodin speaks of the impact of their work on society, in the 2006 Annual report of The Rockefeller Foundation. But to state that you have improved lives and that the work had thus positive societal impact, one has to figure out ways to measure and prove this. How can we measure whether we have improved lives? Or if our work has any impact? How can we prove societal return on investment?

In the glossary on p. 19 we established that value has something to do with the perception of stakeholders. Furthermore, we concluded that the assessment of values has to be done in a participatory process with societal actors. We have operationalised that the first step would be to determine the status of the societal values of the neighbourhood. Next, the actual users of the neighbourhood should be consulted to identify what their wishes are for the area; the users' objectives, and what they designate as important values. Subsequently, it has to be figured out how to reach these objectives by smart interventions. To accomplish this, the connection is sought between property, flows, usage and already existing processes. Finally, this would have to result in a neighbourhood that the users themselves are happy and comfortable with: a better neighbourhood.

To test this hypothesis, a case study was performed on one neighbourhood in Haarlem: the *Slachthuisbuurt.* The research strategy was that of the *single case study*: a qualitatively oriented and small-scale study. The goal was to find insights in a process with a small amount of research units. The research objective was to get knowledge on urban renewal with energy conservation as an intervention. In this research there is only one research unit: the neighbourhood Slachthuisbuurt. This is a selective sample, not a random generated research unit. Even though the study is qualitatively oriented, (semi-)quantitative data was also used to analyse the research object. This will be discussed further in the next paragraph on research techniques.

In a single case study, it is important to find depth though *triangulation*. The scientific nature and validity of the research will benefit from using different types of triangulation. *Theory triangulation* was applied by using several theoretical schemes in the interpretation of the research phenomenon. *Data triangulation* was applied by using several sources of information. *Methodological triangulation* was applied by using more than one method to gather and analyse data. The combination of different theories, sources, methods and techniques results in a more valid and reliable assessment and analysis. The theoretic framework of chapter 2 is based on theory triangulation. In the next paragraph 3.2 on research techniques, the data and methodological triangulation are discussed.

3.2 Research techniques

To ensure the scientific nature and validity of this single case study, different data and knowledge sources were used for information and different research techniques were used to derive the right information from these sources.

	Main category	Research object	Expected sources
1. Energy conservation			
1a. Policy	Situation	Current policy concerning energy conservation	Data
1b. Societal values	Process	Relation between energy output and societal outcome	Knowledge
2. The neighbourhood			
2a. Policy	Situation	Current policy concerning urban renewal	Data
2b. Position	Situation	Current position of Slachthuisbuurt	Data
2c. Opportunities and constraints	Situation	Opportunities and constraints for energy conservation	Knowledge/data
3. Sustainable area exploitation			
3a. Societal values	Situation	Assessment of societal values	Knowledge /data
3b. Map of effects	Process	Relation between energy output and desired societal outcome	Knowledge
3c. Smart interventions	Situation/items/ process	Smart interventions involving energy conservation	Knowledge

Figure 11: Main categories and research objects of the research question

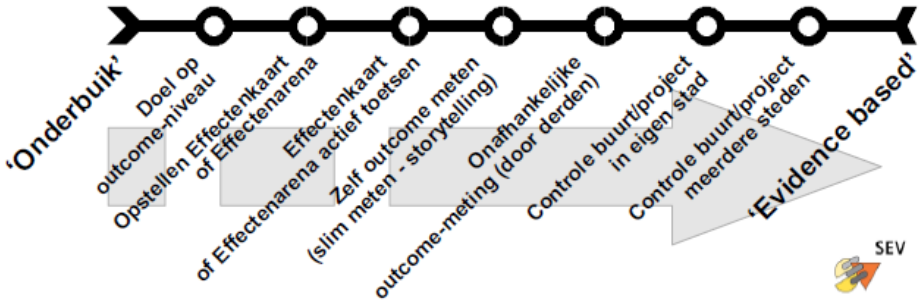
An analysis of the main categories of the research questions, the research objects and the expected kind of sources are displayed in figure 11.

Research techniques are necessary to extract the right data from the sources of information. Four research techniques were used in the empirical analysis, to ensure the scientific nature and validity of this single case study: interviews, content analysis, desk research and observation.

Interviews were conducted with both individuals and with groups. These interviews varied from open-depth interviews, semi-structured interviews and general consultations to open conversations and a workshop. Appendix 1 offers an overview of the respondents consulted in the preliminary and theoretical research and appendix 4 is an overview of the respondents that have been consulted for the empirical research. The research techniques that were used are summarised in appendix 5.

3.3 Methods for the analysis of societal return on investment

Specific methodology on societal return on investment has been used to explore the societal value of energy measures. Societal return on investment and the process of value creation are fairly recent concepts in science and there is not a lot of evidence based material available. De Kam and Deuten (2008, p. 3) argue that a theory of change can start as a simple gut feeling and become evidence based using different methods (see figure 12).



Figuur 1: verschillende maten van 'evidence-based'. De verschillende methoden verwijzen naar de methoden zoals die zijn ontwikkeld binnen het offensief 'Het maatschappelijke harder' van de SEV (zie www.sev.nl of Deuten, Jochum (2007), Praktijkboek Maatschappelijk rendement. Deel 1: methoden, SEV, Rotterdam)

Figure 12: The different phases of an evidence-based theory of change
(Source: De Kam & Deuten, 2008, p. 3)

This research can be placed on the left side of this scheme: by drafting an effects arena and map of effects, it was explored which output of activities can be expected from energy measures in general and in Slachthuisbuurt, what the theory of change is, what societal effects can be expected and who the local stakeholders are. This research can therefore be placed on the 'design-side' of the theory of change (see figure 6).

The first step was to explore the results and societal effects of energy measures in general. This was done by using the effects arena (Deuten, 2009). We have consulted several professionals with the following question: think of a couple of energy measures and use your knowledge, creativity and experience to reason which results and individual or neighbourhood effects we can expect. The results of this process are described in chapter 4 (paragraph 4.5).

In order to identify the local question (see step 5 of the empirical roadmap, page 20), local stakeholders needed to be consulted. The local objectives can be formulated by professionals, but especially the input of residents is interesting and necessary. This input was gathered by interviews and secondary material of interviews in the neighbourhood. Because discussion between the participants seems interesting here, a group interview seemed eligible and was held in the Slachthuisbuurt. A list of themes and desired societal outcome in the neighbourhood was the result of the analysis of the primary and secondary research material. Chapter 5 on the Slachthuisbuurt was the basis for the identification of important themes in the neighbourhood.

In chapter 6, three themes were chosen to elaborate further. The final step was to design smart interventions, partnerships and financing mechanisms (see step 6 of the empirical roadmap on page 20). To realise this we have organised a workshop with several professionals. To predict the effects of energy conservation for Slachthuisbuurt, the map of effects was used to identify stakeholders, results and effects.

Part 3

Empirical framework

4. Energy conservation: energetic and societal value

> **"Energy is not so much a single product as a mix of products and services, a mix upon which the welfare of individuals, the sustainable development of nations, and the life-supporting capabilities of the global ecosystem depend. In the past, this mix has been allowed to flow together haphazardly, the proportions dictated by short-term pressures on and short-term goals of governments, institutions, and companies. Energy is too important for its development to continue in such a random manner. A safe, environmentally sound, and economically viable energy pathway that will sustain human progress into the distant future is clearly imperative. It is also possible. But it will require new dimensions of political will and institutional cooperation to achieve it."**
>
> Brundtland Commission
> 1987

This chapter discusses the energetic and societal value of energy conservation. First, the Dutch energy system is discussed. Then, the interconnectedness of energy and the urban environment is examined. Next, the technical and behavioural aspects of energy conservation are considered. How can we actually save energy? This followed by the project description of *Blok voor Blok* and the local Haarlem project: *Watt voor Watt*. Subsequently, the societal implications of energy conservation will be discussed. Using the 'effects arena' (Deuten, 2009), the societal effects and outcome of energy conservation is displayed. Finally, the chapter ends with a short conclusion.

4.1 Energy transition: towards a new sustainable energy system

The Dutch energy supply was until quite recently based mostly on biomass and coal. Mid-20th century, the first natural gas reserve was found in Slochteren and the gas infrastructure was extensively expanded. This led to an energy transition from coal to natural gas, that would change the entire Dutch energy system. Thanks to its own extensive natural gas reserves, the Netherlands can provide for most of its domestic demand for energy (Energiezaak, 2011, p. 7; Rotmans, 2007, p. 39).

Right now, we are at another tipping point in time. Our energy system is slowly changing again, towards a more sustainable and competitive system. In recent years the electricity and gas market have been liberalised, based on European legislation (Directive 96/92/EC; Directive 2003/55/EC; Directive 2009/73/EC). Renewable energy sources and decentralised energy have made their entrance into the energy system.

Following the liberalization of the electricity and gas market, the management of the energy grid was separated from the production, trade and supply of energy. An independent grid was necessary to keep it accessible for everyone under equal conditions, now that consumers can choose their own energy supplier or generate their own energy. With the Independent Network Operation Act (*WON*), all network companies officially became independent companies in January 2011 (Ministry of Economic Affairs, 2007, p. 1). Alliander as a network company already separated itself from N.V. Nuon in 2009 and operates independently since then. This includes the two subsidiary grid operators: Liander and Endinet (Alliander, 2009, p. 8; Alliander, 2010, p. 7/8).

These shifts in the energy system are part of an energy transition. A transition is defined by Rotmans (2007, p. 37) as "a fundamental change of the dominant structure, culture and methods on system level". The current energy transition is a "process to an energy supply that is clean, available and affordable for everyone" (Cremers, 2010, p. 2). The need for such a transition is obvious: a deeply rooted fossil regime in our society, path dependency and one-sidedness of the current energy supply, contributions to global climate change and dependence on imports from politically and economically unstable countries (Rotmans, 2007, p. 40, see figure 13).

The multi-level scheme of the Dutch energy supply (figure 13) shows the different processes on the macro, meso and micro level. On macro level there are different developments and trends that match with the necessity and possibilities for a sustainable energy transition. On micro level there are also many hopeful and innovative experiments.

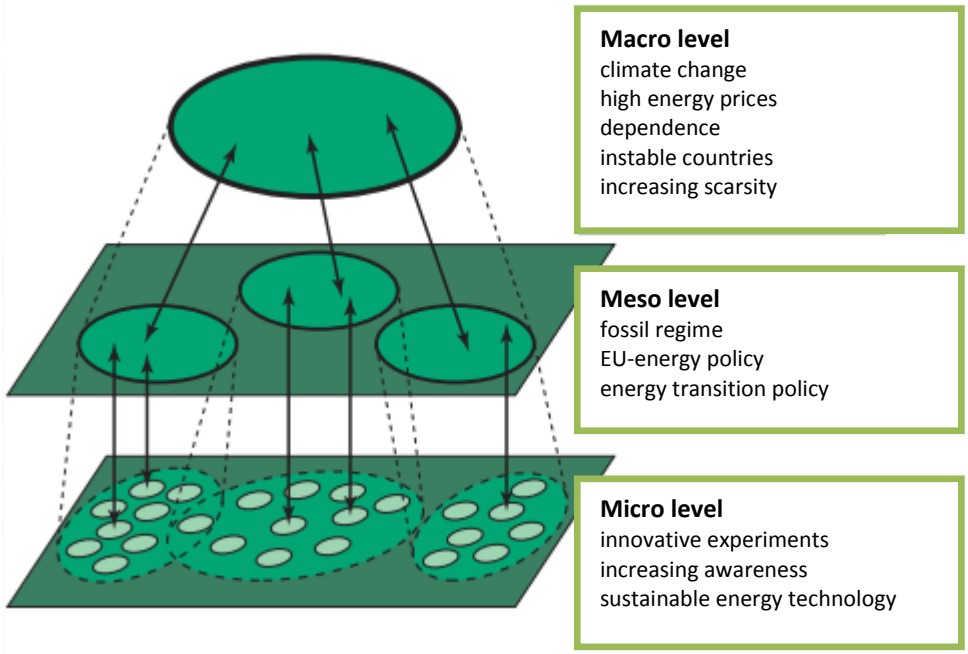


Figure 13: Multi-level scheme of the Dutch energy system (Source: Rotmans, 2007, p. 40).

Cremers identified seven general trends on the macro, meso and micro level that can be noted as developments that have been put in motion over the past years:

1. The security of supply decreases as fossil fuels are running out and we are becoming increasingly dependent on the import of fossil fuels;
2. More and more renewable energy is required and generated;
3. Energy production is increasingly decentralised (mainly decentralised generation of sustainable energy);
4. There is a growing demand for electricity, which will only increase in the coming years (also due to electric mobility and transport);
5. There is a shift from one-way traffic on the energy grid to a system of two-way traffic;
6. Fossil energy is becoming more expensive, while renewable energy is becoming cheaper;
7. Intelligence is introduced in the energy landscape (smart grids, generation, transport) (Cremers, 2010, p. 8).

Increasing competitiveness in the energy market can be added to these developments. The energy system is dealing with two different levels: on the one hand there is the wholesale of energy on Northwest-European scale, with more international competition and upscaling of suppliers. On the other side there are 'glocalisation' processes that lead to the emergence of decentralised and sustainable energy systems in the built environment. The potential of this local track is big: thermal solutions, smart energy meters connected to smart grids and storage capabilities through electric cars (Energie-Nederland, n.d.).

The main bottlenecks and barriers for a sustainable energy transition are at the meso level: the dominant regime of fossil energy and European and national policy (Rotmans, 2007, p. 41). Rotmans (2013a) identified four barriers or bottlenecks for a transition towards a sustainable energy supply:

> **01** laws and regulations (European tending systems, licenses and permits, unsuitable instruments);
> **02** financing (inadequate loans and subsidies);
> **03** entrepreneurship (inadequate market);
> **04** governance (resistance of the energy industry, grid operators and governments).

The next paragraph will zoom in, from energy policy and system transition, to energy and the inextricable connection with the urban environment.

4.2 Energy and the urban environment

Our world has been changing into a global urban society. Pacione (2005, 605) foresees great challenges in caring for, feeding, housing and employing the urban population in the future. Pacione gives particular attention to two basic problems when it comes to sustainable urban development: waste management and energy consumption. Together with other flows, energy and waste form as it were the metabolism of cities (2005, p. 605).

With a growing urban population, the urban energy consumption and energy-related problems are also increasing and are likely to intensify in the course of the century (Pacione, 2005, p. 611). Energy-related pollution in cities, deforestation around

urban areas and global climate change are just a few examples of the negative environmental impacts of urban energy consumption on the local, regional and global scale.

Nevertheless, the demand for energy is still rising (Pacione, 2005, p. 611-613).The expectation is that in 2025, 65 percent of the world's population will be urban dwellers. With a growing use of energy per capita and the fast industrialisation of less developed countries, a spectacular rise of energy consumption in the coming decades can be expected.

The development of our modern society has been made possible by the energy surplus of fossil fuels (Cox, 2011, p. 17). Our industrialised society of today was created by the introduction of coal, natural gas and oil. This energy revolution had tremendous consequences for mobility and transportation, and made it thus possible to build cities in not so obvious places. Water, food, energy, materials and other necessary resources for the development of cities and regions can be transported anywhere (Cox, 2011, p. 17). This process and other technological developments, such as the information- and communication technologies, have led to the incredibly complex globalised world of today. Cox (2011, p. 18) wonders, following Tainter (1988), how complex societies can afford to be. Historically seen, complex societies can only survive by evolving and thus further increasing its complexity and energy demands. However, a society can only be as complex as the energy costs it can bear. Cox argues that when the costs of energy become too high for any society, an energy deficit instead of a surplus will occur. The diminishing returns on social complexity will slow down and eventually stop the development of cities and regions. It could even bring down an entire society (Cox, 2011, p. 18; Tainter, 1988, p. 92).

It can be concluded that we have to design a different and more sustainable scenario for the future. A low-energy path that is based on energy efficiency, energy conservation and renewable resources. Because towns and cities are major energy consumers, Pacione argues that it is the key question how this low-energy path may be achieved in an urban context. Rotmans (2013a) states that a system change in energy also demands a different kind of spatial development. Smart grids, decentralised generation of sustainable energy and electric transport or mobility are inextricably linked to each other and to their spatial environment (Rotmans, 2013a). This asks for a new approach, such as sustainable area exploitation, or area development 3.0 as Rotmans calls it, in which energy is a core element.

4.3 Energy conservation

Energy conservation is the first step of a strategy towards a more sustainable urban energy system: the most sustainable energy is saved energy. A lot of energy can be saved in the urban environment, for example by smart architectural measures, but there is especially a lot of 'profit' to be earned with energy measures in the existing building stock. These profits benefit the investor in energy measures directly, but also directly and indirectly benefit other actors and society. Energy conservation thus fits the idea of sustainable development well, as it is multi temporal: it stretches out over time and prevents passing of externalities in time. It is also multi spatial: measures are more effective as they stretch over space and prevent passing of externalities in space. Finally, it is multi-dimensional: it benefits the environmental, social and economic domain.

You could say that energy conservation does not only benefit these three domains, but also consists of these three components: a technical and physical component (environment), a behavioural and human component (social) and a financial component (economic).

The physical component consists of the technical measures in the built environment to save energy. They require a certain space. The behavioural and human component consists of measures that a household themselves take to save energy by their own behaviour and the influence of social processes on saving energy. Finally, the financial component consists of the economic implications of energy conservation. In the next subparagraphs these aspects of energy conservation are discussed.

4.3.1 Technical aspects of energy conservation in households

An energy-efficient home insulates, ventilates and generates to provide in its own heating, cooling and energy. A lot of energy can be saved by technical measures. By implementing these measures, a household can significantly reduce its electricity and gas use, energy costs and CO_2 emissions. In return, the house gets also a lot more comfortable. Figure 14 shows some examples of these physical measures for energy conservation by insulation, heating, ventilation and generation. Appendix 6 gives an overview of technical measures for insulation, heating, cooling, ventilation and generation in households.

4.3.2 Behavioural aspects of energy conservation in households

Besides the technological aspects of energy, behavioural aspects also determine the energy consumption of households. Research indicates that households can even save up to fifty percent of their direct energy use by changes in their consumption and purchasing behaviour (Steg, et al., 2002, p. 7). Behavioural measures can thus lead to substantial energy conservation

According to Heijs, household energy use has a very strong habitual component as it is repetitive and embedded in daily life. This makes it more difficult to realise behavioural change, as habitual choices and actions happen mostly unconsciously. There are different methods that help provide insights and break through the habitual behaviour, such as energy feedback, education and financial instruments (Heijs, 1999, p. 2; Kang, Cho and Kim, 2012, p. 121; Steg et al., 2002, p. 8).

Appendix 7 gives an idea of the possible measures a household can take to save energy by behaviour in heating, cooking, showering, washing, drying and living in general.

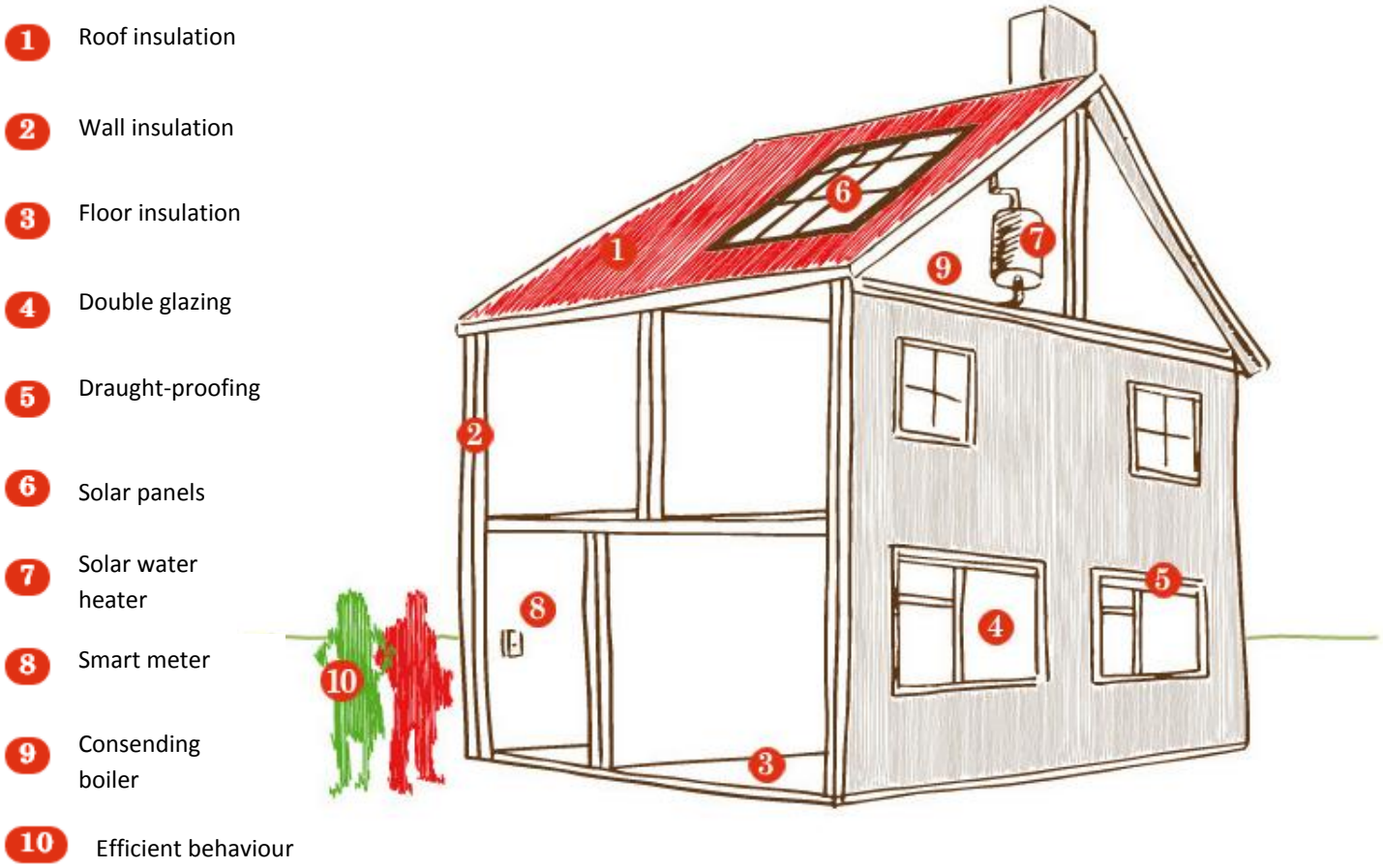


Figure 14: Example of an energy efficient house
(Source: Het Energie Gezelschap, n.d.; Milieu Centraal, 2012b)

4.3.3 Financial aspects of energy conservation in households

The costs for improving the energetic quality of a house depends on different factors: year of construction, performance on the energy index and type of dwelling. Figure 15 shows how the energy index of buildings has improved over the years. Houses built before 1965 form the biggest share of the Dutch housing stock: 39 percent, with an average energy index of 2,71 (energy label F) (NL Agency, 2011c, p. 11). It can thus be concluded that there is still a lot be done to improve the energetic quality of buildings in the Netherlands. Appendix 8 offers an overview of the average costs.

To finance energy measures, there are different programs, subsidies, fiscal arrangements, mortgages and loans. Some programs do not only help to get the financial means for investments, but also try to take away obstacles and to stimulate energy conservation. Appendix 9 provides an overview of these financial products.

Using these subsidies or loans, the owner of a house can invest in energy saving measures. Energy costs will decrease after installing the measures, so it would only take some years to earn back the investment. The problem is that by then, the owner might have already moved to a new home, never financially profiting from the investments. Because energy measures, as will be discussed in paragraph 4.5, have societal value and can create added value for the individual and neighbourhood, financing by other investors might also be an option.

This kind of financing of energy conservation seems to be quite difficult in practice so far, because of a split incentive: the one investing is not automatically the one that is earning from it, due to ownership issues. The users, households (or businesses), collect the revenues of energy measures, because their energy costs are reduced. If someone else, a public or private party, would be investing, they would not see revenues in return. For governments, investing from economic, social or ecological motives, this would not have to be such a big problem. For private parties however, such a skewed distribution could be a reason not to invest whatsoever, despite a demonstrable value increase of the neighbourhood.

De Kam (2008, p. 16-17) calls this a 'mismatch' between investing and collecting. This mismatch or split incentive is typical for the mix of the private and public goods and services that 'make' a neighbourhood (De Kam, 2008, p. 16). The government is taking a step back in neighbourhoods, and thereby assumes that other parties take over. Social enterprises like housing associations or commercial parties like health care providers could be those other parties.

Figure 15: Energy index versus year of construction[3]
(Source: Agentschap NL, 2011b, p. 9)

De Kam offers three options for overcoming this mismatch. One is convincing hesitant investors by showing the long term profit, providing them with compensation or by pointing out their societal responsibility and the positive effect on the organisation's image. The other two have to do with adjusting the institutional framework. They change the rules of the game: value capturing and redistribution of property rights. Further research on these possibilities is necessary.

A fourth option can be added to these options that seem particularly interesting for energy conservation: innovative and smart financial arrangements. Examples are performance contracts such as Green lease and ESCO (Energy Service Company) or smart maintenance (DMOP). These arrangements can help to overcome the split incentive of energy investments, by distributing the benefits and burdens in a different way. These arrangements are now mainly focused on businesses or utility buildings but could be transformed for households. An innovative application could be to arrange the possibility for households to pay for energy measures spread over the years by their grid connection. Then, if the household moves to another house, the new owners continue the payments in their connections costs and enjoy the advantages of the taken energy measures. To finance decentralised generation, an option is to convert the fixed payment to energy companies to a loan from the bank. With this loan, one can invest in solar panels and generate his own energy (Jonkers, 2012, p. 25).

4.3.4. Community energy measures

Besides technical and behavioural household energy measures, there are also other scales at which energy measures can benefit residents, for example in the neighbourhood, the city or even nationally. There are already examples of community energy measures. When we approached professionals for the effects arena, it turned out that there are also many ideas for new opportunities at this scale.

Some examples of these current and new energy measures are: decentralised and local energy storage; exchanging energy within the neighbourhood; generating renewable energy with the neighbourhood, instead of individually, for example by adopting a wind turbine, or by placing solar cells on utility and public buildings, business premises, at public places, etc.; founding of local sustainable energy companies (LDEBs); placing (and assimilating) of solar cells in infrastructure, such as in roads and cycling paths; education on energy conservation in schools and sports clubs; an energy feedback display for the entire neighbourhood, instead of only for one household (makes reference of average use and own use possible); development of 'no worries' packages for sustainable improvements for dwellings or housing blocks and renewable energy in the neighbourhood (with guaranteed quality); placing of charging stations for electric cars and the organisation of energy drinks, energy meetings, energy competitions and other social energy happenings in the neighbourhood (L. van der Pol, personal communication, 4 March 2013; C. van Stralen, personal communication, 12 March 2013; R. Schellekens, personal communication, 13 March 2013;

[3] The energy index (EI) is the indicator for the energy performance of a house or building, ranging from 0,50 or lower (energy label A+++) to 2,91 or higher (label G) (Foundation Meer met Minder, 2013a).

T. Vermeer, personal communication, 14 March 2013; R. den Exter, personal communication, 14 March 2013; J. Gorris en W. van Doezelaar, personal communication, 14 March 2013; J. Italianer, personal communication, 14 March 2013; F. Teitink, personal communication, 15 March 2013; R. Cremers, personal communication, 15 March 2013; L. van Hees, personal communication, 20 March 2013).

The financing of these measures is more difficult and complex than individual energy measures, but there are also many more possibilities and business models in energy measures on neighbourhood level.

4.4 Energy conservation policy

The national, provincal and municipal governments have stimulated energy conservation over the past years with several programs. This paragraph discusses some of these policy programs.

4.4.1 Schoon & Zuinig

In 2007, the cabinet of Balkenende IV introduced the program *Schoon & Zuinig* (Clean and Efficient). Objective was to realise the most efficient and clean energy supply of Europe, by achieving a change in trends and by creating a solid market for energy conservation. Because of the premature ending of the cabinet Balkenende IV in 2010, this program lost its urgency. Even so, some important lessons were learned from this policy program. For one, it was concluded that the desired market development seems to be achieved mostly on local level, but that local entrepreneurs are difficult to get in motion by national programs and campaigns. The challenge seems to lie within the market parties, to support and strengthen the upcoming market on a local level and to grasp the opportunities that come along (Ministry of the Interior, 2011, p. 2).

4.4.2 Plan of action energy conservation in the built environment

In 2011, the Ministry of the Interior presented the *Plan of action for energy conservation in the built environment* (Ministry of the Interior, 2011). The two leverage points are user behaviour and energetic quality. Based on the program *Schoon & Zuinig*, market parties are explicitly addressed on their responsibility to grasp passing opportunities. The role of the government is to create optimal conditions, but private actors must carry the load (Ministry of the Interior, 2011, p. 2). It is emphasised that different parties can benefit from investments in energy conservation. Some of these benefits are a lower energy bill, higher living comfort, property value increase, reduction of CO_2 emissions and increase of employment in the construction industry (Donner, 2011, p. 1).

The Ministry introduces different tools to support private and societal initiatives, such as relieve of regulatory burden on citizens and enterprises and the *Blok voor Blok* approach.

4.4.3 Blok voor Blok

The *Blok voor Blok* approach aims for acceleration of energy conservation in the built environment, by introducing a large-scale approach in the existing building stock (Ministry of the Interior, 2011, p. 4). This major breakthrough must by achieved by putting the directive role at the local level. The instruments are standardised packages, investments from market players like institutional investors and efficient consuming behaviour of users.

This approach is first tested in fourteen pilot projects[4]. The objective of these pilots is to gain experience and knowledge for a national introduction. The pilot is considered successful if it is demonstrated that the *Blok voor Blok* approach is operable for nationwide deployment (Donner, 2011, p. 1; Ministry of the Interior, 2011, p. 4).

Only consortia with at least three market actors can participate in the *Blok voor Blok* arrangement and claim subsidy from the national government. The consortia consist of municipal or provincial governments, foundations and (semi-)market players such as social housing associations, construction companies, contractors, energy companies, grid operators, real estate entrepreneurs, consultancy agencies and others (NL Agency, 2011a).

4.4.4 The role of grid operators

Netbeheer Nederland has closed a *Green Deal* with cabinet Rutte I in name of all grid operators. Participating in and contributing to the *Blok voor Blok* arrangement is one of the agreements in this deal, for example by supplying municipalities and social housing associations with data of energy consumption on postcode area level. Grid operators also committed to the contribution of financial solutions for energy measures. As mentioned in subparagraph 4.3.3, one of the problems with financing of energy measures is that property owners move prematurely, before the investment has been recouped. The *Blok voor Blok* pilots must be used to explore, experiment and gain experience with possible solutions, such as linking payment of energy saving measures to the dwelling instead of the owner (Ministry of Economic Affairs, Agriculture and Innovation, Ministry of the Interior and Kingdom Relations, Ministry of Infrastructure and the Environment & Netbeheer Nederland, 2011, p. 3-4).

Another way in which grid operators agreed to contribute to energy conservation in the built environment is by taking initiatives, together with other market actors, for pilots with energy saving services, displays and related services.

[4] Amersfoort, Amsterdam (two), Breda, Den Bosch, Deventer, Eindhoven, Groningen, Haarlem, Hardenberg, Rotterdam, Tilburg, Utrecht and Overijssel.

Effects on consumption behaviour of smart meters is monitored in cooperation with the NL Agency (Ministry of Economic Affairs, Agriculture and Innovation, et al., 2011, p. 3-4).

4.4.5 Different programs in perspective

Besides *Blok voor Blok,* there are other programs that focus on energy conservation in the built environment. The NL Agency states that these programs, such as *Meer Met Minder* and *Energiesprong*, work together and side by side in achieving energy conservation in the built environment, but each with their own approach and perspective.

Meer Met Minder (*MMM*) is a joint initiative of the national government and construction, installation and energy companies (industry associations *Bouwend Nederland*, *UNETO-VNI* and *Energie-Nederland*) and focuses on a small-scale approach of existing techniques in the existing buildings (Meer Met Minder, n.d.).

Innovation program *Energiesprong* focuses on innovative techniques and approaches on a small scale and is meant as a booster to realise an energy neutral built environment. The goal is to create a market for energy neutral buildings: dwellings, offices, stores and public buildings with no energy bill (Energiesprong, 2013).

In contrast of these programs, *Blok voor Blok* focuses on existing techniques applied in an innovative and large-scale approach (NL Agency, 2011a). It is tried to save energy in the existing buildings in a comprehensive way. At least 23.500 dwellings need to become energy efficient by drastic savings. Former Minister of Housing, Donner, argued that the pace and extent of the approach needs to go up, as should the investments by market players in the implementation of measures. In Haarlem, this is done by the *Blok voor Blok* pilot project *Watt voor Watt.*

4.4.6 Watt voor Watt

Watt voor Watt is a public-private partnership in Haarlem, accommodated in a consortium of seven parties: network company Alliander, the Municipality of Haarlem, social housing associations *Ymere, Pré Wonen* and *Elan Wonen*, property fund *Altera Vastgoed* and *VVE Tuinwijk Noord* (owners association).

Watt voor Watt is built on three approaches for different target groups and neighbourhoods: a commercial approach, based on commercial initiatives and property owners; a social housing association approach, meant for social dwellings; and a combination approach, in areas with mixed social and privately owned housing (Weersink, 2012, p. 20).

This combination approach is especially interesting in this research, because it has is additional attention for value creation. The Slachthuisbuurt and Amsterdamse Buurt are the two neighbourhoods in which will be experimented with this approach (Weersink, 2012, p. 19). The capacity in these areas for energy saving measures is less than in other neighbourhoods. Cooperation in the neighbourhood is additionally stimulated and facilitated (Weersink, 2012, p. 20).

Social housing association Pré Wonen is improving the energetic quality its of social property in the neighbourhood Slachthuisbuurt. Furthermore, with an integral approach, Watt voor Watt strives for blended value creation in the Slachthuisbuurt. In a separate working group of *Watt voor Watt,* based on the theme of value creation, it is figured out how energy conservation can be used as flywheel to realise sustainable development of a neighbourhood. This process has just begun and is still in an experimental phase.

Another crucial element of this approach is the search for and deployment of local energy ambassadors. The residents themselves know best what is happening in a neighbourhood and what moves people. The energy ambassadors can inspire and enthuse other residents in the area to participate in energy saving projects within *Watt voor Watt* (Weersink, 2012, 16/21).

4.5 Societal effects and outcome

In the combination approach of *Watt voor Watt,* energy measures will be deployed as flywheel to increase local value. But what neighbourhood effects are to be expected from energy measures and how can energy conservation create sustainable value?

In paragraphs 4.1 and 4.2 it has been demonstrated that energy and the urban environmental are deeply interconnected, as energy affects all aspects of cities. In this paragraph, this relation between society and energy measures is further looked into, to explore the possibilities for energy conservation within the combination approach of *Watt voor Watt.*

4.5.1 The effects arena

Societal effects of energy measures are explored with use an *EffectenArena* (effects arena). This tool, developed by Deuten (2009, helps to map societal effects of certain activities. The effects arena was converted into a short survey and eleven professionals, that work with energy conservation and society on a daily basis, were consulted as respondents (appendix 4). The survey asked these respondents to think of a couple of energy measures, already existing or in development. The next step was to elaborate which results and individual and neighbourhood effects can be expected from these measures, based on their knowledge and experience. This way it was tried to map the possible outcome of energy measures.

Eleven respondents submitted in ten surveys, with in total 48 measures. After editing, 29 different energy measures remained (some measures were submitted multiple times or interchangeable and could be combined, some measures were non-energy and left out). As it is impossible to discuss all the submitted energy measures, only three themes will be highlighted, containing different technical, behavioural and community energy measures. The social, environmental and economic effects of these measures are briefly discussed.

The societal effects are classified into different individual or neighbourhood values derived from the effects arena. These values are so-called 'stocks' with a certain status (for example their quality, value, presence, etc.). The individual and neighbourhood values presented in the effects arena are displayed in figure 16. For a more extended summary of the effects arena of energy measures, see the appendix 10.

Societal individual values	
Health	Physical; mental; quality of life
Economy	Work; sufficient income; financially self-reliant; consumption patterns; financial security
Sustainability	Ecological footprint; energy consumption; lifestyle
Living situation	According to own lifestyle; feeling safe; living pleasure / convenience; feeling at home
Independence	Living at home longer; reliance on care; autonomy
Pleasant life	Comfortable; leisure; mobile life
Personal development	Self-respect / -consciousness; educational attainment; social upsurge; participation / influence; social capital; cultural capital; social skills; development
Societal neighbourhood values	
Facilities	Education; sports; shopping; recreation; health care; leisure; hospitality; welfare
Dwellings	Price; quality; supply / choice; according to taste (desires); value neighbourhood
Accessibility	Bicycle; public transport; parking; car; reachability
Living environment	Clean, intact, safe; urban structure / architectural style; child friendly; greenery; beautiful; promising environment due to design
Culture	Community spirit; bonding to the neighbourhood; social cohesion; population composition; image / reputation/ status; integration; mutual trust; social capital
Economy	Economic activity; entrepreneurial network; employment; premises; entrepreneurship; purchasing power neighbourhood; number of visitors
Support	Synergy / coordination and tuning of programs; cooperation frontline; available help

Figure 16: Individual and neighbourhood values in the effects arena
(Source: Deuten, 2009)

4.5.2 Insulation

With insulating for example the glass, floor, roof or façade of a house, one can reduce their energy consumption. This benefits the sustainability of a household. This is one way in which technical energy measures can affect the different individual and neighbourhood values associated with the environmental and physical domain in the effects arena. Insulating a home results in a better insulated and energy efficient dwellings with less energy loss. The CO_2 emissions also decrease with the resulting lower energy use and the ecological footprint of the household gets smaller. This obviously benefits the environment.

Concretely this will lead to a better energy label for the home and a house of better quality. This way insulation also benefits the economic values of the individual and the neighbourhood: houses of better quality are more valuable and marketable. If several houses are involved, this makes the neighbourhood as a whole more valuable. This is strengthened by a better image of the neighbourhood, making it more desirable.

Individually you can say that the investment thus pays back for itself quickly: a quicker sale of a more valuable dwelling leads to the wanted return of investment. Also the decrease of monthly housing and living costs (because of the lower energy bill) is a financial return on the investment for insulating the house. Households have more disposable income left after paying their monthly costs, possibly spend in the neighbourhood and leading to another consumption pattern (R. den Exter, personal communication, 14 March 2013; R. Cremers, personal communication, 15 March 2013; R. Schellekens, personal communication, 13 March 2013). Figure 17 shows the one-off costs of technical measures and their yearly revenues in cost savings. In this example, insulating the roof, glass, cavity wall and floor will cost 11.200 euro. With yearly costs savings of 1.690 euro this would financially be earned back in 6,5 years by savings on the energy costs (Milieu Centraal, 2012b).

One of the social aspects of insulation is that an insulated home is a more comfortable home as it leads to less draught, mould, cold, noise pollution, moisture in the house, etc. This benefits the quality of life, physical health and living pleasure. Damp and mould can harm human health, particularly elders are at risk for infections, allergy and toxicity. One can also save medical expenses by insulating and ventilating the house well. There is evidence that investing in insulation has a direct effect on human health and visits to the GP or hospital (e.g. Woodcock, 2007, p. 746).

Insulating your home can also lead to a feeling of pride, a feeling of doing something good for the environment. It can stimulate neighbourhood contact: visible activities to houses can create conservation between residents. When streets or owners associations work together on the insulation of their homes this can benefit the community spirit (R. den Exter, personal communication, 14 March 2013; R. Cremers, personal communication, 15 March 2013; R. Schellekens, personal communication, 13 March 2013). Kang, Cho and Kim (2012, p. 121) have evidence that collective energy-saving activities, driven by residents' participation, contribute to their feeling of pride in their neighbourhood. This was tested in apartment complexes, where

collective energy-activities contributed to the establishment of community spirit within the complex (Kang, Cho & Kim, 2012, p. 191).

4.5.3 Energy saving competition

One way to get attention for energy conservation and spread knowledge and awareness is to start some sort of energy saving battle in a neighbourhood. Energy saving competitions can be organised in several forms, with for example a basis of comparable family composition and housing type. Energy conservation can be linked to investments in one's home or neighbourhood: every watt/m^3/euro an individual saves (compared to today) is donated to a good cause in the neighbourhood or can be spend on energy measures in your one home (R. Cremers, personal communication, 15 March 2013; R. Schellekens, personal communication, 13 March 2013; C. van Stralen, personal communication, 12 March 2013).

If such a competition is organised properly, and possibly sponsored, households can get truly enthusiastic on saving energy in competition with their neighbours. The game results in personal development, by growing knowledge and awareness on energy conservation and growing insights in one's own energy consumption. The combination of increased knowledge and awareness and a positive attitude leads to actual behavioural change and energy conservation. A decrease of energy consumption results in a decrease of energy costs. Big results in saving of energy and expenses can be achieved if a substantial part of the households in a neighbourhood participates (R. Cremers, personal communication, 15 March 2013; R. Schellekens, personal communication, 13 March 2013).

If it is set up as a neighbourhood activity, meeting of new people in the neighbourhood can be a social neighbourhood effect of the game. Households participating in this neighbourhood activity may experience a feeling of collectivity and togetherness, as energy conservation is approached as a team sport. The competition with and against each other and the resulting social interaction benefit the neighbourhood culture. Households are proud of their achievements in the competition and proud to be part of such a social cohesive neighbourhood (R. Cremers, personal communication, 15 March 2013; R. Schellekens, personal communication, 13 March 2013).

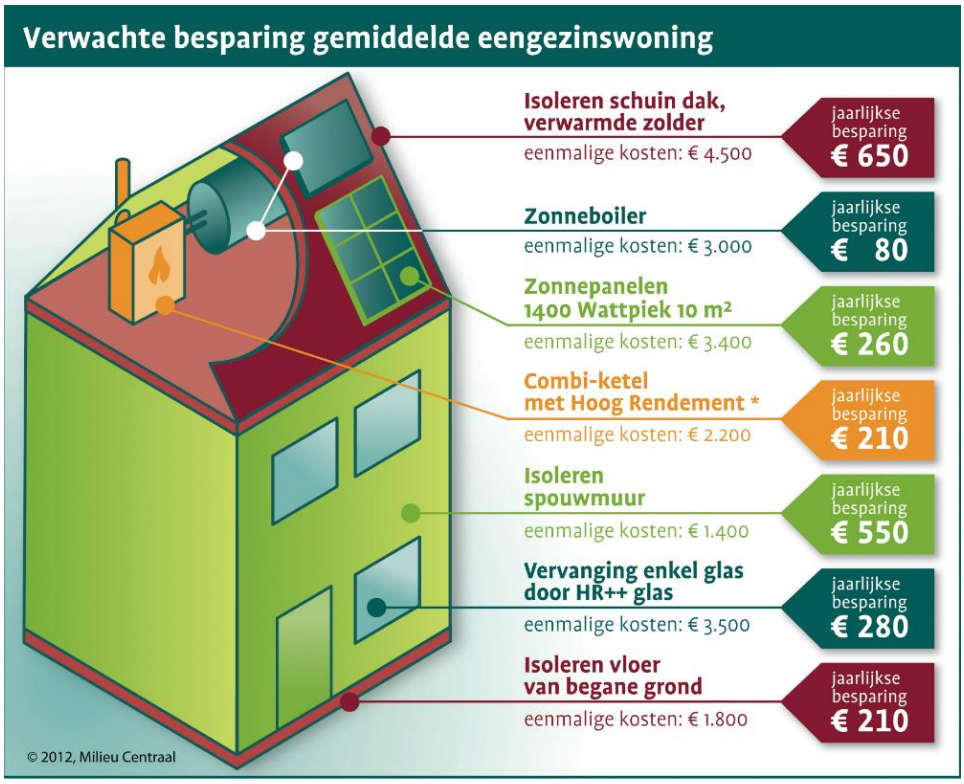


Figure 17: Estimated costs and revenues of technical energy measures (Source: Milieu Centraal, 2012b)

4.5.4 Decentralised generation

Decentralised energy can be generated with renewable energy sources, alone or together with one's neighbourhood. Hundred percent own generation is already possible. If a neighbourhood can produce the necessary investments, whether or not with entrepreneurs and government parties, one option is founding a Local Sustainable Energy Company (*Lokaal Duurzaam Energie Bedrijf, LDEB*) (L. van der Pol, personal communication, 4 March 2013). The challenge of community energy is to realise an energy company that is profitable, reliable, competing, sustainable and local.

Solar panels are the most obvious technique for neighbourhoods to generate their own energy, as they are relatively cheap to purchase and easier to get a permit for than for example wind turbines. Households can place solar panels on their own home, but there are other options to generate community energy, such as making public places and roofs available for residents to generate energy, placing solar panels on local facilities (such as schools and sports clubs), assimilating solar panels in local infrastructure (such as bicycle paths and roads) or making it possible for residents to 'buy' solar panels that are placed on local stores (such as the Gamma in the neighbourhood).

Research indicates that households can save up to fifty percent of their direct energy use by changes in their consumption and purchasing behaviour (Steg, et al., 2002, p. 7). If a household can save for example thirty percent of their consumption and generate the rest with solar panels, they are completely independent in their electricity supply. This is an important social dimension of decentralised generation of electricity: households become self-sufficient and electricity is available and affordable at all times. It also promotes a sustainable and social lifestyle. Collective actions brings neighbours together, benefiting the community spirit and pride.

Generation one's own energy can lead to a substantive cost reduction. A household can even make money by generating more power than they use and exchanging or selling the redundant electricity. This way, the investment pays back for itself quickly. Van Stralen (personal communication, 12 March 2013) argues: "after a period of cost recovery (approximately seven years for solar panels), you get free energy!". The expenses that are saved benefits the purchasing power of the neighbourhood. The increased disposable income is possibly spend in the neighbourhood itself, leading to more economic activity and employment. It can also be agreed on that part of the revenues are invested in the neighbourhood itself, in for example playgrounds, a community center or other facilities.

Generating your own electricity has thus an important economic dimension: cost reduction of monthly energy costs and even making money when feeding back into the grid. Property get more valuable, and when generating collectively, the neighbourhood gets more valuable. Buying solar panels collectively with a street or neighbourhood also provides additional purchasing advantages (for example with *Meer met Minder*; Zoncollectief, n.d.)

The solar panels contribute to the spatial-economic development of the neighbourhood. The new look of the neighbourhood, organisation of collective action and realisation of community energy, all provide the neighbourhood with a more innovative and positive image, which also benefits property values and desirability of the neighbourhood.

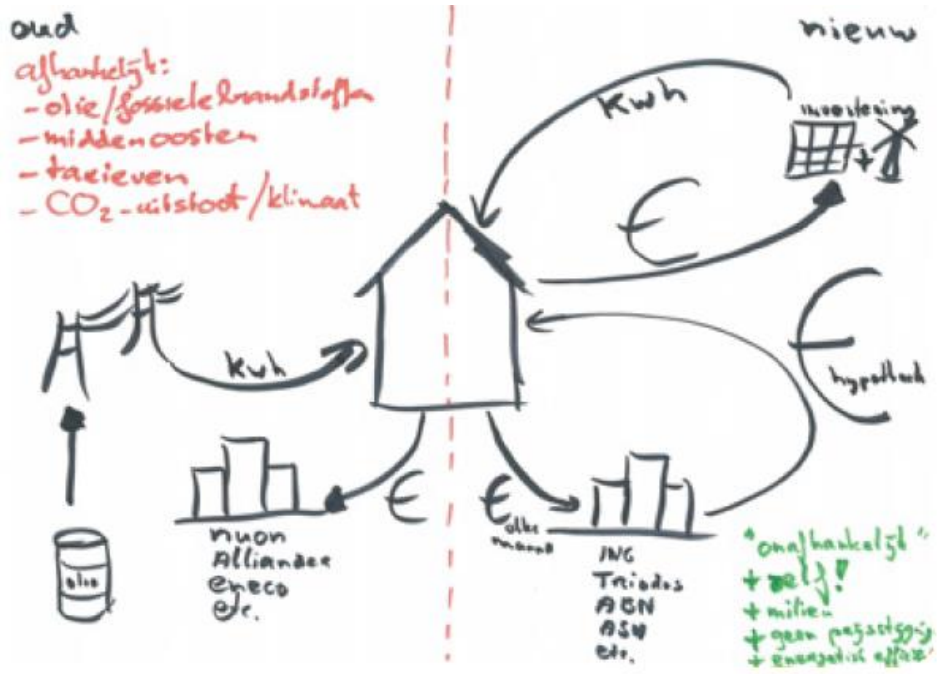


Figure 18: Old and new business model of the energy supply
(Source: Mooij in Jonkers, 2012, p. 21)

Finally, the environment obviously benefits from local generation and consumption of electricity from renewable sources. Less or none fossil energy is necessary and CO_2 emissions are reduced, decreasing the ecological footprint of households. The resulting cleaner air benefits the health and living pleasure of residents (R. Cremers, personal communication, 15 March 2013; L. van Hees, personal communication, 20 March 2013; J. Italianer, personal communication, 14 March 2013; C. van Stralen, personal communication, 12 March 2013; F. Teitink, personal communication, 15 March 2013; T. Vermeer, personal communication, 14 March 2013).

Figure 18 shows how the energy system could go from the old and traditional business model to a new value creating business model. The business model itself changes, as do the stakeholders and other partners involved in the sector: from big energy distributors and foreign oil to local entrepreneurship and renewable sources. This new business model does not only

contribute to changing the energy sector, it can also be positioned on other aggregation levels, such as on street, neighbourhood or village levels (Jonkers, 2012, p. 21).

4.5.5 Societal effects on individual and neighbourhood values

It can be concluded that energy measures can affect the different individual and neighbourhood values associated with the environmental and physical domain, the economic and financial domain and the social and human domain of the effects arena. Classifying the effects of every measure into the different neighbourhood and individual values (see figure 16) gives an idea of the values that are strongly effected by energy measures and the values that are less influenced.

The categories in which most of the neighbourhood effects were classified are neighbourhood economy and community culture, respectively 22 and 24 times (of 29 measures). The categories in which most of the individual effects were classified are individual sustainability (27 times), personal economy (22 times) and personal development (22 times). See appendix 11 for a synopsis of the assigned categories to each intervention.

By effecting the community culture, including social cohesion, community spirit, mutual trust, social capital, integration and bonding to the neighbourhood, (community) energy measures contribute to the social development of the area. There is evidence that strong social relations inside the neighbourhood significantly reduce the intentions of residents to move (Andersen, 2008, p. 79). Also the fight against energy poverty and increase of the accessibility and affordability of energy for everyone benefit the social development of the area. Energy poverty, also known as 'fuel poverty', means that household is not capable of paying its energy bills after paying costs of housing and living (Veenstra in NL Agency, 2013). Veenstra argues that "given the relatively constant energy consumption of households, the low price elasticity of demand and the constantly rising prices of fuel, it is expected that energy poverty in the Netherlands will increase rapidly" (in NL Agency, 2013).

By increasing sustainability of households, reducing energy consumption, narrowing the ecological footprint and promoting a sustainable lifestyle, energy measures contribute to the environmental development of the area.

Energy measures can also contribute to the economic-spatial development of an area. Property prices, quality and values are involved in fourteen of the edited energy measures. Technical energy measures increase the housing quality, which positively influence the assessed value of property. But, as De Kam (2008a, p. 10-11) argues, this value is only real and monetised if (potential) users are actually prepared to pay for it. Consumers are not interested in the activity that is offered, such as insulation of a house, but in the result, the actual value that is added (Van Dam, 2013, p. 1). In this case, the added value is that households experience for example more comfort, less noise pollution, less cold and have lower energy costs. The willingness to pay increases if individuals recognise these increased values.

Physical concerns (e.g. low housing maintenance), social concerns (e.g. neglect of 'neighbouring') and economic concerns (e.g. negative house value speculation) can all be positively influenced or even taken away by energy measures. Social, physical and economic concerns are factors that influence the reputation of a residential area. Apart from housing, the image and ambience in the neighbourhood are important factors in the settlement of new residents (Aalders, Bakkeren, Kok & Twigt, p. 4). Image and reputation thus play an important role in the desirability and economic-spatial development of a neighbourhood. There is also evidence of a strong connection between the residents' perception of the reputation of their neighbourhood and their plans to move away (Andersen, 2008, p. 79). Furthermore, the subjective evaluations and the reputation of a neighbourhood have an impact on the property prices, insurance costs and business vitality (Kenyon, 1997, p. 290).

Investing with energy measures in facilities, enterprises, the living environment, infrastructure and property results in added value that individuals actually experience and recognise. The added values are for example the presence of more facilities, better offer of enterprises in the region, more purchasing power and economic activity in the area, a beautiful and promising living environment, more contacts in the neighbourhood, increased social cohesion, better accessibility and possibilities for mobility and more comfortable living. These added values will boost the image of the neighbourhood and a better image is the *key* to actual higher value of property. In other words: the valuation of individuals of the effects of energy measures lead to a better image of the neighbourhood, so that the area becomes more desirable (De Kam, 2008a, p. 11). This is the actual principle of value creation.

4.6 Conclusion

Energy is interwoven with the urban environment and a necessity for daily urban life. More and more world residents concentrate themselves in cities and global energy demand keeps on rising. We stand for a huge challenge in providing everyone with energy in the future as the use of fossil fuels is unsustainable and limited.

The built environment is responsible for one third of the energy consumption and offers great opportunities for saving energy, with architectural measures, technical measures, behavioural measures and community measures. As households are responsible for one fifth of the energy consumption, they can significantly contribute to energy conservation in the Netherlands.

Energy measures do not only have environmental effects, by reducing energy consumption, CO_2 emissions and decreasing the ecological footprint, but also affect social and economic aspects of urban life. Especially neighbourhood economy, neighbourhood culture, personal economy, personal sustainability and personal development are values that are affected by energy measures.

Energy measures add certain value to the facilities, dwellings, living environment, infrastructure and the like. These added values do not only make the neighbourhood as a whole more valuable, but also contribute to the culture and image of the area. Strong community culture and a positive reputation influence in turn the intentions of residents to stay or move, the settlement of new residents, prices of real estate, insurance costs and business vitality, and thus ultimately contributes to the economic-spatial development of the area.

It can be concluded that technical, behavioural and community energy measures have recognisable societal effects and outcome that lead to healthy and desirable neighbourhoods. Energy measures can be part of interventions that create value and contribute to the sustainable development of an area.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5. Slachthuisbuurt

> "There is no power greater than a community discovering what it cares about."
>
> Margaret J. Wheatly
> 2002

In this chapter, the current position of the Slachthuisbuurt is discussed. An outline of the neighbourhood is sketched on the basis different aspects, from which some conclusions can be made on the potential of stakeholders, the value of the neighbourhood, opportunities and limitations for energy conservation and a review of societal values in Slachthuisbuurt according to professionals and residents.

First in paragraph 5.1, a short introduction on the neighbourhood is given. In the next paragraph, 5.2, the different policies and programs that are currently important in the neighbourhood will be discussed. Paragraph 5.3 and 5.4 discuss the opportunities and threats of the neighbourhood for sustainable development. The value of the neighbourhood is discussed in paragraph 5.5, by assigning Slachthuisbuurt a position of the value curve. Paragraph 5.6 elaborates further on the stakeholders in the neighbourhood and discusses their potential for urban renewal. From these paragraphs, some conclusions are drawn on the opportunities and limitations for energy conservation in Slachthuisbuurt in paragraph 5.7. The perception of professionals and residents is reflected in paragraph 5.8. Finally, in paragraph 5.9 concludes on the current position of the Slachthuisbuurt and the values that are important in the neighbourhood.

5.1 Introduction Slachthuisbuurt

Slachthuisbuurt is a pre-war working class neighbourhood in the district Haarlem-Oost. The slaughterhouse, of which the neighbourhood derives its name, was built in 1907. In this period, the development of the Slachthuisbuurt as a neighbourhood began. Most of the current housing stock was built in the 1920s (Kuijpers, 2011, p. 30). The neighbourhood is now characterised by a high residential density, with not much public space and greenery.

Compared to the rest of Haarlem, Slachthuisbuurt has some deviating characteristics. These characteristics are summarised in figure 19. Appendix 12 illustrates the differences between Slachthuisbuurt and other neighbourhoods in Haarlem on different aspects.

The Slachthuisbuurt can be characterised as a disadvantaged neighbourhood, as it scores poorly on almost all the basic indicators and on direct and mediating indicators that influence liveability in a neighbourhood[5] (see also paragraph 5.4).

The housing stock consists for the most part of social housing, which is related to in income segregation, high unemployment rates and an overrepresentation of elderly households. This concentration of disadvantaged households is related to poor liveability in the neighbourhood (Berkhout & Leidelmeijer, 2012, p. 2).

The Slachthuisbuurt is the poorest area of Haarlem, together with the adjacent neighbourhood *Parkwijk* (also in district Haarlem-Oost). The low socioeconomic status and income are illustrated by low average household income, high unemployment rates and number of social assistance receivers.

	Slachthuisbuurt	Haarlem
Size	65 ha	3.209 ha
Population	4.943	153.080
Housing stock	2.606	71.975
Ownership	78% social housing, 18% owner-occupied	32% social housing, 53% owner-occupied
Average standardised household income	€ 19.000	€ 24.500
Low-income group	19%	10%
Unemployment rate	6,1%	3,5%
Social assistance receivers	4,3%	1,8%
Population decrease since 1980	25%	4%
Land use	89% cultivated, 4% infrastructure, 3% water, 4% recreation, 0% non-urban land use	60% cultivated, 7% infrastructure, 9% water, 7% recreation, 16% non-urban land use

Figure 19: Characteristics Slachthuisbuurt
(Sources: Kuijpers, 2011; Municipality of Haarlem, 2013a)

[5] Direct indicators are for example criminality, nuisance, noise pollutation, greenery and possibilities for recreation. Mediating indicators are facilities and socioeconomic indicators. Basic indicators concern the population composition and physical living environment (Iersel, Leidelmeijer & Schijf, 2006, p. 8-9).

Concerning the population, the neighbourhood has more older people (65+) than the rest of the city, and less younger people (0-19). One-third of the population is of immigrant origin, with an overrepresentation of residents from Turkish origin. The population has decreased with one quarter over the past decennia, which is much more than in other neighbourhoods.

5.2 Policy and programs

5.2.1 Urban renewal

Urban renewal is a policy program that strives for sustainable development. Also in the Slachthuisbuurt, such investments in the social, economic and physical domain are of great importance.

The housing stock is of poor quality and up for large-scale renovation (see also paragraph 5.4), making investments in the living environment necessary. Maintaining a large share of social housing in the Slachthuisbuurt also means a greater concentration of vulnerable groups, that need a higher level of provisioning. Apart from physical investments, social housing associations, the municipality and other societal actors have to invest in the social status and amenities of the neighbourhood (Municipality of Haarlem, 2009, p. 11).

In 2009, the municipality concludes that in the years before, all in all a lot has been achieved in the physical dimension. The results in the social dimension however, are not sufficient and need extra impulses. To trigger this necessary boost, the municipality applied for a *Preventiebudget 40+ wijken* (prevention budget 40+ neighbourhoods) (Van der Molen, 2009, p. 1).

5.2.2 Prevention budget 40+ Zomerzone

The prevention budget is a national subsidy of two million euros. The budget is meant to prevent disadvantaged neighbourhoods from sliding down to unacceptable levels. These neighbourhoods are not considered to be priority areas, but have similar problems with liveability and quality of life (Van der Molen, 2009, p. 1).

Together with adjacent neighbourhood Parkwijk, the Slachthuisbuurt received the prevention budget in 2009. The budget is used to realise the policy program '*Zomerzone als preventiewijk*' (Summer zone as prevention neighbourhood). This program consists of three pillars: (1) stimulating participation, encounters, art and culture; (2) strengthening education and sports; and (3) encouraging economic activity, work guidance and entrepreneurship (Municipality of Haarlem, 2009).

By focussing on integration, learning, growing and working, the different projects have to provide a positive impulse to the social status of the Slachthuisbuurt and Parkwijk (Van der Molen, 2009, p. 1). This is consistent with the *Wmo* policy: 'meeting, connecting and participating' (Municipality of Haarlem, 2009) and neighbourhood renewal policies.

5.2.3 Local policies

In Slachthuisbuurt there are also other policies and partnerships, such as the 'neighbourhood contract' (*wijkcontract*). In this contract, different organisations commit themselves to make and keep the neighbourhood clean, intact and safe. The neighbourhood contract and prevention budget 40+ Zomerzone are part of the *Stadsdeeluitvoeringsprogramma* (district implementation program). Many other projects in the Slachthuisbuurt are in preparation or implementation, for example the area development of the slaughterhouse area and redevelopment of the south part of the neighbourhood. The involved parties, i.a. the municipality, social housing associations, local police force and welfare organisations, strive to match these different programs and the neighbourhood contract as much as possible. The district director (*Stadsdeelregisseur*) is responsible for the coordination (Municipality of Haarlem, 2011, p. 7-8; Municipality of Haarlem, 2012c, p. 11-12).

5.2.4 Watt voor Watt

Energy pilot project *Watt voor Watt* is active in the Slachthuisbuurt with their combination approach. One goal in this neighbourhood is to realise energy conservation on a large-scale. The idea is that frontrunners become energy ambassadors and enthuse their own neighbours to also take energy measures. This approach is mainly focused on property owners. However, since there are only 468 dwellings in Slachthuisbuurt that are owner-occupied, there is another approach for the other 2.138 houses in the (social) rental sector.

Most of these houses are owned by social housing associations and some blocks are slated for improvement. Pré Wonen has for example started with insulating some of its housing blocks in Slachthuisbuurt. *Watt voor Watt* also strives for a more integral neighbourhood approach in the Slachthuisbuurt, as explained in paragraph 4.4.6. There is additional attention for (blended and multiple) value creation in this neighbourhood. Energy conservation serves as the flywheel for social, economic and environmental development. An overview of some of the *Watt voor Watt* projects in Haarlem can be found in appendix 13.

5.3 Opportunities

Despite some negative characteristics, Slachthuisbuurt also offers many opportunities for sustainable development in the future. or one, the neighbourhood has a favourable location in Haarlem. It is close to the city centre and beautifully located at the water (*Spaarne, Zomervaart* and *Gouwwetering*). Furthermore it is easily accessible and can be considered as the entrance into Haarlem, as it lies between the important roads into the city (N205, *Schipholweg,* A200, *Amsterdamsevaart*, A9).

The south strip of the neighbourhood is getting a compete facelift and will have to serve as a transition between two worlds: "on the one hand, there is an area right along the *Schipholweg* which must be given a dynamic and urban look and must

become the 'business card' of Haarlem. On the other hand, the planning area is adjacent to the existing residential area, that has a small scale and 'village-like' look" (Municipality of Haarlem, 2012d, p. 33).

Approximately 600 homes in this area have been demolished and will be replaced with a mixed housing stock consisting of both homes in the social rental sector as homes meant for sale. To reduce CO_2 emissions and energy consumption, 200 highly energy-efficient homes are realised (at *Hof van Sevenhuijsen* and *Hof van Dumont*) and social housing associations Elan Wonen and Ymere proposed to provide an additional 200 homes in the Slachthuisbuurt with solar panels (Municipality of Haarlem, 2012a, p. 11; Municipality of Haarlem, 2012b, p. 18-19).

Another area that provides opportunities for redevelopment is the old slaughterhouse terrain (*Slachthuisterrein*) in the middle of the Slachthuisbuurt. Because of a long-running conflict between the real estate developer that owns the premises and the municipality, which owns the grounds, the redevelopment of the terrain has been postponed several times over the past ten years. However, the area offers great opportunities to combine a residential function with (light) economic activity (Municipality of Haarlem, 2005, p. 3; Municipality of Haarlem, 2013b). Hamer (in Laribij et al., 2013a, p. 345): "the terrain of the old slaughterhouse now looks dilapidated, but it does have the potential to become something beautiful".

The redevelopment of the south area and the slaughterhouse terrain contribute to a more varied housing stock, improves the (energetic) quality of property, benefits the living quality and the image of the Slachthuisbuurt. This should attract new residents, stimulate the throughput of residents in the neighbourhood and realise a more varied population composition (Laribij et al., 2013a, p. 345). These positive impulses would benefit property values, rentability and the economic-spatial development of the Slachthuisbuurt.

Finally, there is an interesting result of the Omnibus survey[6] (2010) that is worth mentioning. For the first time in years, the sense of shared responsibility (ownership) has increased. Residents indicate that their feeling of joint responsibility for the neighbourhood and its liveability has grown. In 2010, 85 percent of the residents felt responsible for the area, compared with only 72 percent in 2007. This offers opportunities to actively involve residents in improving the neighbourhood and living environment (Kuijpers, 2011, p. 54; Waal, 2011, p. 75).

5.4 Threats

Against these opportunities stand of number of processes that could threaten the sustainable development of the area. One of these threats is the unbalanced population composition with the overrepresentation of certain groups in the Slachthuisbuurt, such as elderly and Turkish immigrants. National aging processes, the large share of social housing and a trend among younger people and social climbers to move, leaves the neighbourhood with a concentration of disadvantaged households.

These factors negatively affect the social quality of the area. Social cohesion decreased in the past years, as the residents became divided into different groups: elderly and youth, original inhabitants and newcomers and residents of immigrant and Dutch origin. These groups live alongside each other and have little reciprocal contacts. In 2010, 34 percent of the residents had insufficient social contacts or wanted more social contacts, compared to 20 percent in 2007 (Kuijpers, 2011, p. 47). Residents in Slachthuisbuurt rate the social quality with a 5,5 (Kuijpers, 2011, p. 67). Especially newcomers and young residents give low ratings to the social quality (Waal, 2010, p. 93). The town council confirms that "if there is social contact, it is usually between residents that have lived here whole their life" (G.G.D. in Wijkhuisen & De Boer, 2012, p. 6). Salah, employee of welfare organisation DOCK Haarlem, also emphasizes the importance of social contact: "it would be a big improvement if the different groups would come into contact with each other" (in Laribij et al., 2013a, p. 353).

The elderly population is also associated with related problems of health, mobility, loneliness and social isolation. With an aging population, these problems will increase in the coming years (Laribij et al., 2013a, p. 353).

The pre-war housing stock of the Slachthuisbuurt consists of small houses of poor quality (Municipality of Haarlem, 2009, p. 12). This negatively affects the image of the neighbourhood, property values, social status and health of the residents. One-third of the residents experienced noise pollution in 2010 (Kuijpers, 2011, p. 57). Kibar, Neighbourhood manager (*Wijkbeheerder*) confirms that most of the complaints he receives from residents are about noise pollution, which is mostly caused by the construction of the houses (in Laribij et al., 2013a, p. 348).

Apart from the social status and living environment are facilities and economic activity important factors in the liveability of a neighbourhood. "Entrepreneurs make a significant contribution to the physical and social viability of the area and have an important role in the perspective on growth of the neighbourhood" (Aalders, Bakkeren, Kok & Twigt, 2008, p. 5). In the Slachthuisbuurt are not many facilities located, there is not much public space for children to play and youth to hang out, there are almost no shops in the neighbourhood, and the small shopping areas (*Hannie Schaftstraat* and *Schalkwijkerstraat*) are poorly rated by the residents (Kuijpers, 2011; Municipality of Haarlem, 2006). In the future image of the area, the municipality even wishes to see all economic activity disappear from the neighbourhood, in favour of the *Amsterdamstraat.* This shopping street in adjacent neighbourhood Amsterdamse Buurt must become the centre of economic activity (Municipality of Haarlem, 2006, p. 22). This choice is questionable, as the Slachthuisbuurt population is aging, which has related mobility problems. The municipality also ignores the importance of economic activity for the economic development and liveability of the neighbourhood.

[6] The Omnibus is the result of a yearly omnibus survey conducted among a large population of Haarlem, that treats several themes, such as mobility, work, health, safety and quality of the public space.

The neighbourhood quality is furthermore threatened by nuisance and criminality. Speeding, rubbish and dog poo on the streets, bike theft, home burglaries, drug nuisance and nuisance of other residents are most mentioned (Kuijpers, 2011, p. 72). The share of residents that feels unsafe at times in the neighbourhood has grown the past years to almost half the population in 2010 (Kuijpers, 2011, p. 69-70). The number of home burglaries, domestic violence incidents and other violence incidents in the neighbourhood are relatively high (Municipality of Haarlem, 2013a). Vacant premises that are waiting to be demolished or re-designated, mostly in the south part and on the slaughterhouse terrain, are partially responsible for the attraction of criminality, prostitution, drug use and dealing. These areas become 'ghost towns' (B. Tangerman, personal communication, 3 April 2013). In the south strip, most of the buildings are now gone. When this area will be inhabited again, the criminality will probably decrease (Kibar in Laribij et al., 2013a, p. 351).

Future perspective for the local youth is important to break the negative cycle of disadvantaged families. Van der Vegt, director of Foundation Rebup[7], explains that there are many problems in the neighbourhood that negatively affect the youth, often hidden behind closed doors: domestic violence, sexual violence, poverty, criminal behaviour of both children and parents, parents that are imprisoned, substance abuse, unemployment, debts, (threat of) eviction by rent arrears, traumatised children and vandalism (M. van der Vegt, personal communication, 3 April 2013). This is confirmed by the local teachers of primary school *De Talenten*: 25 percent of their students is raised in a multi-problem family (Laribij et al., 2013a, p. 345).

Concentration of disadvantaged households, social incoherence, poor quality of housing and living environment, nuisance, criminality, poverty, hopelessness and poor liveability threaten the future of the Slachthuisbuurt. Municipality, social housing associations and other societal organisations invest in social, economic and environmental interventions to address these problems and improve the quality of life (see paragraph 5.2). It is therefore a final threat that the position and the possibilities of the municipality and social housing associations are changing (as discussed in paragraph 1.1.1). The resulting retreating movement of the municipality, together with return of social housing associations to their core business, threaten further investments in the area. The challenge is to identify other stakeholders and to get them committed to investing in the Slachthuisbuurt. Furthermore, it is the challenge to empower the residents themselves to take initiatives.

5.5 Value curve

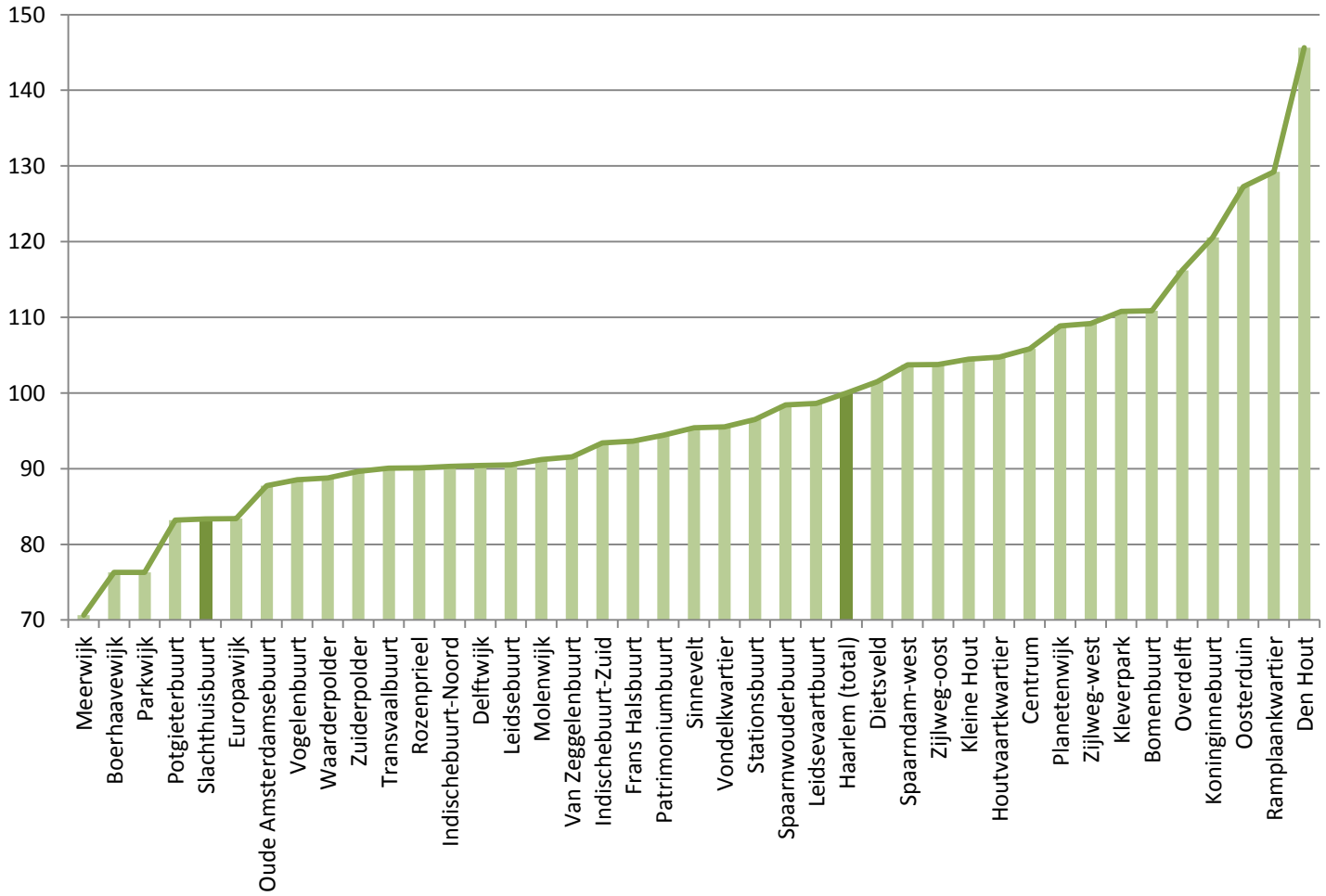

Figure 20: Indexed value curve of Haarlem in 2013 (Haarlem = 100)
(Sources: C. Otto, personal communication, 7 May 2013; Municipality of Haarlem, 2013a)

[7] Rebup is a meeting place and activity center for children and youth in Slachthuisbuurt, run by volunteers.

The property value curve is a concept of Nijenhuis, Busman, De Kievit and Van Leent (2006, p. 41) and provides insights in the relative position of neighbourhoods. Figure 20 represents the indexed value curve of Haarlem. Appendix 14 is a table of the average building year of one-family homes, the number of one-family homes, average volume in m^3, average assessed value in euros, average assessed value per m^3 in euros and the relative position compared to the total Haarlem average.

Slachthuisbuurt has a relative poor position compared with the Haarlem average with an average assessed value that is seventeen percent lower than the average municipal value: € 702 euros per m^3 compared to € 842 / m^3 in Haarlem. It is striking that all neighbourhoods in the lowest top seven are located in the districts Schalkwijk and Haarlem-Oost.
Because the value comparison is 'cleaned' of differences that are caused by dwelling characteristics, it is plausible that the average property values in these districts are lower because of other characteristics than type or size. Location characteristics, such as the large share of social housing, less than average owner-occupied housing, relatively many home burglaries[8] and relatively little public space, are presumably responsible for the low property values (Municipality of Haarlem, 2013a).

5.6 Stakeholders

5.6.1 Key organisations

There are many organisations active in the Slachthuisbuurt that have an interest in a healthy and desirable neighbourhood. These organisations are mostly focused on care and welfare and improving the personal living situation and liveability of the neighbourhood[9]. Important meeting places in the neighbourhood are *De Hamelink* (community center*), Kwiq Fit* (local gym), *Rebup* (children/youth activity center) and *Kindervreugd* (playground and activity center). Other key organisations are social housing associations Elan Wonen, Ymere, Pré Wonen, Foundation DOCK, Youth for Christ, primary schools *De Talenten* and *Sint Bernardusschool*, the town council Slachthuisbuurt, the municipality and the local police.

5.6.2 Lifestyles

The most important stakeholders are the residents of the Slachthuisbuurt themselves, as the end users of the area. Consultancy agency SmartAgent developed the BSR-model (Brand Strategy Research Model), which classifies people into 'lifestyles', according to their personal values. All people, in their different roles, are driven by their own motives, values and needs. These intrinsic values determine how someone lives, in what kind of house, in which environment or neighbourhood, etc. People with the same values will thus cluster together and on the basis of their shared values.

Communities can be classified into four lifestyles: a yellow lifestyle aimed at harmony, a red lifestyle aimed at vitality, a green lifestyle aimed at security and a blue lifestyle aimed at control (SmartAgent, 2012, p. 8-20). Figure 21 shows the results of SmartAgent lifestyle research in Slachthuisbuurt. SmartAgent concludes that 39 percent of the residents has a yellow lifestyle, 39 percent a green lifestyle, 19 percent red and 5 percent blue. Yellow and green lifestyles are thus the dominant lifestyles in the Slachthuisbuurt.

Figure 21: Lifestyles in the Slachthuisbuurt
(Source: SmartAgent, n.d., p. 17).

[8] Evidence suggests that the fact that a neighbourhood becomes known for burglary incidents, may depress property values, although this relation is not uncontested and quite complicated (UN-Habitat, 2007, p. 75).

[9] Candle Stichting; De Hamelink; Stichting Sport4Health; Stichting Pitanga; Stichting Jongerencentrum Troll; Stichting Bevrijdingspop; Speeltuinvereniging Kindervreugd; Elan Wonen; Schoon, heel en veilig buurtbeheer; Pré Wonen; Ymere; Huurdersvereniging De Waakvlam; Stichting Meerwaarde; Nieuw openbare ruimte; De Raakspoort; Politie Kennemerland; Burgernet; Indicatiestelling & Behandeling Brijder Jeugd; Stichting Spaarnesant; Stichting de Wolkenfietser; De Kwiq Fit; Basisschool de Talenten; Stichting Rebup; Stichting Bewonersinitiatieven Slachthuisbuurt; 5e Kwartier; Haarlem Effect Centraal Bureau; Youth for Christ Haarlem; Stichting Regionale Dierenambulance Haarlem; Zorgbalans: Stichting Apotheek der Haarlemse Ziekenhuizen; HOED Leonard Springer (GP); Energy Healing Centre Haarlem; Bureau Lindhoek; Zorggroep Reinalda; Stichting SHDH; Zorgbalans Haarlem en Heemstede; BUUV Buurtmarktplaats voor Slachthuisbuurt, J, Parkwijk en Zuiderpolder; Kontext Ouderenadviseurs; De Zonnebloem; Humanitas, afdeling Zuid-Kennemerland e.o; Stichting Thuiszorg Gehandicapten; Tandem; Rode Kruis Haarlem e.o.; Schuldhulpverlening; De Voedselbank; MEE; Stichting DOCK.

According to the SmartAgent methodology, residents that are classified as having yellow lifestyles are very social, open, spontaneous, honest and outgoing. Family and community life stand central in this lifestyle. "Because of the importance that is attached to family life and social contacts in the neighbourhood, most people in the yellow world feel most at home in an ordinary residential area" (SmartAgent, n.d., p. 32).

People in the green world are also focused on groups, but are more introverted than people with a yellow lifestyle. Like people in the yellow world, the social world of the green lifestyle takes place close to home. They usually live a quiet life and move in a small circle of family, friends and neighbours (SmartAgent, n.d., p. 34). Appendix 15 gives an overview of the values associated with the four lifestyles.

These lifestyles are of course ideal types and every resident will be different in practice. All kind of factors, such as the living environment, neighbourhood processes, social patterns, group dynamics and habits, also influence the actual behaviour and social world of residents.

5.6.3 Preconditions

In chapter 2, different preconditions that influence and the opportunities for interventions in the neighbourhood have been discussed. These preconditions are the level of trust in institutions and each other, level of awareness of the own environment and certain problems, long term vision on oneself and environment and social homogeneity of the community (see the conceptual model, paragraph 2.12).

The level of trust in institutions is lower in the Slachthuisbuurt than the municipal average, but is not alarmingly low. The vast majority of the neighbourhood has some or a lot of confidence in the local politics and government (Kuijpers, 2012, p. 75). On the other hand, residents of the Slachthuisbuurt are not very interested in politics. The elections of 2012 for the House of Representatives got 62 percent of the residents to vote, which is less than other neighbourhoods (Haarlem average was 75,5 percent) (Municipality of Haarlem, 2013a). Both Haarlem-Oost and Schalkwijk, which can be characterised as disadvantaged districts, remain behind in the turnout for the elections. 55 percent of the residents is only interested in municipal politics it if it concerns local issues in the neighbourhood that affect them directly, forty percent is not interested at all (Kuijpers, 2012, p. 76).

This may also say something about the awareness and long-term vision of residents, but it is difficult to make hard conclusions. It is plausible that residents in the Slachthuisbuurt have less interest in politics and awareness for certain issues such as environmental problems and the need for energy conservation, because of a lower level of education or insufficient knowledge of the Dutch language. The high level of accumulated problems in disadvantaged neighbourhoods may also indicate the lower levels of interest, awareness and long-term vision. It is plausible that daily worries overshadow other long-term concerns in multi-problem families (see also Den Exter, 2012, on Boerhaavewijk in this respect). De Cock, Neighbourhood coach Haarlem-Oost (*Wijkcoach*), notes that the people do not look further than their own patterns. "They are more concerned with their own interests and less with their environment" (in Laribij et al., 2013, p. 362). It can be concluded that there is a sufficient level of trust in institutions, but that the residents are not really interested in or aware off what happens beyond their own street.

Social homogeneity refers to the degree to which the preferences of individuals in a community tend to be alike. The residents of the Slachthuisbuurt are divided into different groups with high social homogeneity. Members of these groups share the same background, ethnicity, culture or age. Strictly speaking, we can say that the population of the Slachthuisbuurt is social homogeneous. When considering the living situation and socioeconomic status, the residents are comparable. Still, social cohesion is low and the neighbourhood cannot be considered to be an united community. The common themes, such as nuisance, have more dividing powers than that they are uniting. This negatively effects the organisational power of the Slachthuisbuurt community. Yellow and green lifestyles do represent social people that have intense relationships with their family, friends and environment. The residents of Slachthuisbuurt will probably not look for social contact far from their home, but maintain their social life in the street, at the local club or at the dinner table (SmartAgent, n.d., p. 32). This provides opportunities to increase the social status of the neighbourhood.

5.6.4 Potential

The potential of the area and stakeholders for sustainable development can be classified in a scheme developed by Heijkers, Van der Velden and Wassenberg (2012, p. 17). The Slachthuisbuurt is classified in quadrant D, according to the low potential of the area and actors (see figure 22).

Slachthuisbuurt can be classified as disadvantaged neighbourhood, which the government also confirmed by 'awarding' the neighbourhood with the prevention budget 40+ neighbourhoods. The location, price, quality and product that determine the potential of the area are seen as lagging behind, with an exception that the neighbourhood does have a favourable location. The area offers a building stock of small houses of poor quality, that is in need of renovation and insulation (Laribij et al., 2013, p. 14; Municipality of Haarlem, 2009). There is no real market for offices, dwellings and premises, as most of the neighbourhood's building stock is owned by social housing associations. There is no favourable business climate as basis for economic activity and retail. These sectors are of no priority in the area (see paragraph 5.4). It can be concluded that the potential of the area is low. The favourable location does offer opportunities to improve the potential of the area.

The potential of the actors is also classified as low. Socioeconomic status and living situation, as discussed in paragraph 5.1 and 5.4, confirm this low potential for residents. Other actors, such as entrepreneurs also have a low potential, as there is little economic activity. There are relatively many self-employed residents in the area (*ZZP'ers*). Residents do not seem to be

very interested in politics and government, which makes it less likely that they will participate actively in society. De Cock, as neighbourhood coach, has consulting hours every week in the Slachthuisbuurt or Amsterdamse Buurt. These meetings are meant for residents to discuss ideas to improve the liveability of the neighbourhood. De Cock notes that unfortunately, almost no residents even show up, have ideas or take initiatives (in Laribij et al., 2013, p. 362).

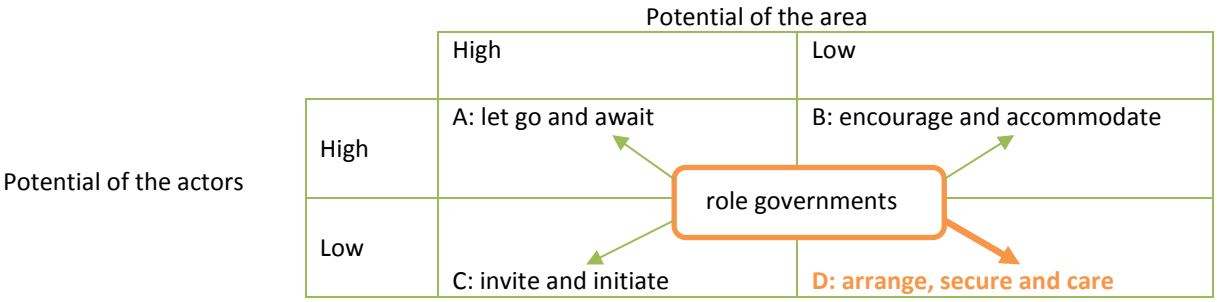

Figure 22: Model for the potential of areas and parties in urban renewal
(Source: Heijkers, Van der Velden, Wassenberg, 2012, p. 17)

The classification of Slachthuisbuurt as a D-neighbourhood also tells us something about the opportunities for smart interventions and partnerships and the expected role of the government. The potential of the area is low, but can grow to greater potential, with the right interventions and coaching. People usually do care about what happens in their own street. This could stimulate the residents to become higher potential, if they get the right tools to develop themselves and take initiatives.

The government has a more severe role in this neighbourhood, to take initiatives, arrange and organise things, secure basic qualities and care for the residents and neighbourhood. The next step is to empower the actors themselves to take initiatives.

5.7 Opportunities and constraints for energy conservation

5.7.1 Energy consumption

Appendix 16 provides an overview of the average gas and electricity consumption in Haarlem. From both maps it can be concluded that Slachthuisbuurt uses relatively little energy compared to other neighbourhoods. Figure 23 is a reflection of the electricity consumption in Slachthuisbuurt for 2012. Most areas are in the green or yellow zone of very little to little electricity consumption. The orange zone, 3.140 – 3.600 kWh, represents the yearly average Dutch electricity consumption (3.250 in 2011). In 2012, a household in Slachthuisbuurt consumed an average of 2.500 kWh, which cost € 548 euros (€0,22/kWh) (A. Sjoerdsma, personal communication, 21 March 2013; H. Bueno de Mesquita, personal communication, 26 March 2013).

Figure 23: Electricity consumption Slachthuisbuurt
(Source: A. Sjoerdsma, personal communication, 21 March 2013)

When one compares this with figure 24 of the consumption of natural gas, it is first notable that gas consumption is higher in areas where electricity consumption is lower. This can probably be explained by the hypothesis that there are many old houses, some still with gas heaters instead of central heating or old and not efficient boilers. Most areas in the neighbourhood are in the yellow zone of 1.410 – 1.570 m^3, which also represents the Dutch yearly average (1.450 m^3 in 2011) or green zone of 1.210 - 1.410 m^3. In 2012, a household in Slachthuisbuurt consumed an average of 1.370m^3 natural gas, which costs €891 euros (€0,65/m^3). This brings the average total energy costs in 2012 on €1.439 (excl. standing charges) (A. Sjoerdsma, personal communication, 21 March 2013; H. Bueno de Mesquita, personal communication, 26 March 2013).

Figure 24: Natural gas consumption Slachthuisbuurt
(Source: A. Sjoerdsma, personal communication, 21 March 2013)

Residents of the Slachthuisbuurt are more efficient with their energy consumption than the national average. The lower energy consumption cannot be attributed to energy efficient homes, but may be explained by the fact that the houses are relatively small and that residents are presumably more efficient in their behaviour.

5.7.2 Knowledge, attitude and behaviour

In 2012, a survey was conducted in Haarlem among private property owners and social tenants on their knowledge, attitude and behaviour concerning energy conservation. In the Slachthuisbuurt, 63 social tenants were approached, but only 18 respondents completely filled out the survey (N = 18). Eight of the respondents were male, ten female. Four respondents had higher education, the rest only completed high school or did a lower vocational program. Three of the respondents are or a non-Dutch origin. The results of this survey are thus not generalisable to the entire population, but it is still interesting to briefly look to at the results.

From the results it can be concluded that these respondents think that they know little about energy conservation, but on the other hand they indicate that they do know hów to save energy within the house. Most of the respondents have a positive attitude towards energy conservation, but the environmental awareness seems to be less: half of the respondents do not feel responsible for the greenhouse effect. Financial motives are a more important factor in the positive attitude towards energy efficient behaviour. Almost al the respondents are trying to save energy one way or another. Turning the heat lower or off before going to bed and changing lamps with efficient lighting sources are two popular energy measures

5.7.3 Physical opportunities

Because the housing stock is outdated and of poorer technical quality, it offers plenty of physical opportunities for energetic improvement. The social housing associations are responsible for the quality of eighty percent of the housing stock in Slachthuisbuurt.

The neighbourhood also offers plenty of possibilities for decentralised generation of energy, as figure 25 shows. The green roofs on the map are very suitable for the generation of solar energy, yellow roofs are suitable and red roofs are less

suitable[10]. Some areas are clearly eligible for decentralised generation, such as the area at the *Graaf Willemstraat* and the *Gouwstraat*. Also a very suitable area for solar energy is the old slaughterhouse terrain. The *Slachthuisterrein* and its possibilities are discussed further in chapter 6.

Figure 25: Suitability of for solar panels in Slachthuisbuurt
(Source: Klimaatverbond Nederland, n.d.)

Suppose that an average household in the Slachthuisbuurt reduces its energy consumption with thirty percent by behavioural measures (up to fifty percent is possible, see Steg, et al., 2002, p. 7). The remaining 1750 kWh (2.500 – 750 kWh) can be generated by 2187,5 Wp of power by solar panels, for which they would need 14,5 m^2 roof available[11]. They could even make some money with the solar panels, by generating more than they consume.

5.7.4 Opportunities and constraints

The Slachthuisbuurt offers plenty of physical opportunities to save energy or to even become energy efficient. Taking such measures would also answer a local need: when it comes to the physical aspects of the neighbourhood, improvement of the quality of dwellings is one of the most mentioned needs by residents that (Laribij et al., 2013b, p. 14). The housing stock is outdated and especially central heating, double glazing and insulation are necessary energy measures. With an aging population, this issue also becomes more pertinent. Elderly are expected to consume more energy than others, as they usually are less mobile, more at home and sometimes even homebound. Due to poorer blood circulation when one gets older, elderly also experience cold faster than younger people, which is aggravated by their inaction during the day.

Household energy consumption in the area is lower than the national average, which may be attributed to financial motives. Because the area is characterised by a high residential density and single person households, accumulated neighbourhood consumption may give rise to also take physical measures. To reduce the CO_2 emissions and energy use of the entire area, the next step would be to increase the energetic quality of the housing stock.

Besides the social housing associations, there is a small group of property owners in the area. Until now they have showed little interest in taking energy measures within the project *Watt voor Watt*. Energy meetings have been organised for potential energy ambassadors in the Slachthuisbuurt and Amsterdamse Buurt, but of the attendees were only a few residents of the Slachthuisbuurt.

[10] A green roof is a very suitable roof surface which is at least 11m^2 (1,25 kWp) and has a strong yearly sun radiation (at least 900 kWh/m^2). A yellow roof is a suitable roof surface which is at least 11m^2 and has a minimum yearly solar radation of 700 kWh/m^2.

[11] 1750 / 0,8 (80 kWh/100Wp) = 2187,5 / 150 = 14,5 (150 Wp/m^2). This is an approximate calculation, the suitability of the roof, radiation factor and sun hours determine the actual generation of power and m^2 of solar panels needed.

Besides the improvement of the housing quality, financial situation and living comfort, energy measures can also contribute to the local liveability. An integral approach with energy measures can stimulate the local economy, increase the social cohesion and contribute to the personal development and feeling of pride in the neighbourhood. This way, smart energy interventions could contribute to the potential of the area and its actors and the liveability in Slachthuisbuurt.

5.8 Review on societal values

In this paragraph, the local needs in the Slachthuisbuurt as formulated by professionals and residents are discussed. The identification of these needs is based on five sources: the first important source for information is Laribij et al. (2013b), which is an extensive research on the needs of the residents of the neighbourhood. This report includes the results of a survey conducted among hundred residents and summaries of interviews with six best persons in the neighbourhood. The second source is a group interview conducted on 3 April 2013 with potential energy ambassadors in the Amsterdamse Buurt and Slachthuisbuurt. The third source is an interview conducted with Van der Vegt, founder and director of youth center and foundation Rebup (M. van der Vegt, personal communication, 3 April 2013). The fifth source is a summary of an interview with the town council, conducted by the G.G.D. in Slachthuisbuurt (Wijkhuisen & De Boer, 2013, p. 6-7). The last important source is the neighbourhood contract, which contains a list of 47 of the complaints and wishes of the residents of the neighbourhood (based on a survey conducted by the town council) (Municipality of Haarlem, 2011).

5.8.1 Professionals

Primary and secondary material from interviews with six key persons from the neighbourhood has been used to determine the professional review on societal values in Slachthuisbuurt. These six experts are Hamer, Kibar, Salah, Derissen, De Cock and Van der Vegt (see appendix 17 for further information on these respondents). From analysing this material, it can be concluded that the different themes are important and pertinent for the Slachthuisbuurt. In figure 26, these individual and neighbourhood values are classified in the categories as formulated in the effects arena (Deuten, 2009).

Societal individual values	
Health	Self-reliance residents; Quality of life
Economy	(un)Employment; Socioeconomic status; Income; Self-reliance
Sustainability	-
Living situation	Upbringing, multi-problem families, divorce; Criminality and safety; Nuisance of other residents; Disputes between neighbours; Noise pollution; Loitering youngsters
Independence	Self-reliance of residents
Pleasant life	Population composition (i.a. mobility elderly); Quality of the housing stock (i.a. comfort)
Personal development	Personal development; Position of the social ladder; Education and school dropout; Socioeconomic status
Societal neighbourhood values	
Facilities	Facilities for children and youth
Dwellings	Quality and diversity of the housing stock; Property values (social housing associations)
Accessibility	Population composition (i.a. mobility elderly)
Living environment	Rubbish on the streets; Basic neighbourhood qualities (clean, intact, safe); Criminality and safety; Nuisance of other residents; Noise pollution; Loitering youngsters; Liveability
Culture	Social cohesion; Social contacts; Population composition (i.a. aging processes, social isolation elderly); Disputes between neighbours; image and reputation
Economy	Economic activity; Property values
Support	Cooperation and communication between organisations

Figure 26: Professional review of societal values
(Source: Laribij et al., 2013a, p. 345-373; M. van der Vegt, personal communication, 3 April 2013; Wijkhuisen & De Boer, 2013, p. 6-7)

It is interesting that no values were named that are related to sustainability. This is not a surprise, as sustainability is not on the top of one's mind in deprived neighbourhoods. The ecological footprint and a sustainable lifestyle are values more associated with upper-class neighbourhoods, such as *Garenkokerskwartier* in Haarlem. As a neighbourhood coach from Boerhaavewijk argues: "it is really about the basic needs from the pyramid of Maslow: a roof over your head, taking care of your children, food

on the table. There is no room for things like greenery, the environment and energy conservation" (in Den Exter, 2012, p. 29). This does not mean however, that activities concerning sustainability cannot contribute to other economic and social goals in the neighbourhood. For example, insulation leads to a lower energy bill (more income), a more comfortable home (quality of life), a better living situation (less noise pollution), etc. (see also paragraph 4.5). So, even though sustainability is not one of the main themes or goals in the neighbourhood, interventions concerning sustainability can contribute to achieving the wishes that are high on the agenda of the residents in the area.

5.8.2 Residents

The elaboration of needs formulated by residents is shown in figure 27.

Societal individual values	
Health	-
Economy	-
Sustainability	-
Living situation	-Improve the social status of the neighbourhood: Need for more reciprocal contacts between all residents, but mainly between old and new residents; Need for more solidarity or togetherness between residents of Dutch and immigrant origin, integration (for example in the community center); Need for more social contacts in general; Need for more social/emotional support from neighbours and residents; Need for assistance in daily household and with groceries or chores (elderly people)
Independence	-
Pleasant life	-
Personal development	-
Societal neighbourhood values	
Facilities	-Improvement of local facilities: Need for more facilities, such as shops and supermarkets; An atm or bank in the neighbourhood; More playgrounds for children; More activities or meeting places for young people
Dwellings	-Quality of houses: Need for insulation and double glazing; Complaints about noise pollution, mould, moisture, uncomfortable dwellings and bad effects on health
Accessibility	Improvement of the mobility in the neighbourhood: Need for more bicycle paths; Complaints about parking problems, need for more parking spots or permits; (is related to the public space)
Living environment	-Clean: Complaints about dog poo on the streets; Rubbish on the streets; Dirt and rubbish around bins and containers (empty the bins and containers more often) -Intact: Complaints about unequal pavement; Loose tiles (fall incidents older people); Vandalism -Safe: Complaints about speeding cars and unsafe crossroads (*Merovingenstraat / Kruistochtstraat*); Drug nuisance; Dealing; Prostitution; Loitering youngsters; Need for quieter and calmer streets and more bicycle paths -Redevelopment of the slaughterhouse and the slaughterhouse terrain: Give it a function again for the residents
Culture	-Improve the social status of the neighbourhood: Need for more reciprocal contacts between all residents, but mainly between old and new residents; Need for more solidarity or togetherness between residents of Dutch and immigrant origin, integration (for example in the community center); Need for more social contacts in general
Economy	-
Support	-

Figure 27: Residents' review of societal values
(Sources: Laribij et al., 2013b; Wijkhuisen & De Boer, 2013, p. 6-7).

What stands out is that the residents mostly formulate needs that concern the physical and social status of the neighbourhood and formulate less personal needs. Laribij et al., (2013, p. 15) also conclude that “people can formulate needs for the neighbourhood more easily than for themselves”.

Economic aspects are not mentioned, apart from the complaint that there are not enough facilities such as shops. This may also be explained by the fact that residents see their financial situation as a personal business and not a neighbourhood complaint (Laribij et al., 2013a; Laribij et al., 2013b; Potential energy ambassadors, personal communication, 3 April 2013; Wijkhuisen & De Boer, 2013, p. 6-7).

5.9 Conclusion

Slachthuisbuurt is a pre-war disadvantaged neighbourhood in Haarlem. It is characterised by a low socioeconomic status, an old social housing stock of poor energetic quality, a high residential density and an unequal population composition. All these aspects negatively influence the liveability of the neighbourhood. By use of an urban renewal program and the Zomerzone prevention budget, it is tried to increase the liveability of the Slachthuisbuurt.

However, the urban renewal of the area is threatened by different factors: retreat of the municipality and social housing associations from the neighbourhood, increase of elderly people in the neighbourhood with related problems, poor quality of the housing stock, insufficient offer of facilities, public space and economic activity, decreasing social cohesion because of the large group of (disadvantaged) newcomers in the area, nuisance and criminality and a large amount of multi-problem families. All these accumulated problems threaten the urban renewal and sustainable development of the neighbourhood.

On the other hand, there are also developments that that give hope: opportunities to improve the area. These opportunities are for example the redevelopment of the slaughterhouse terrain, the favourable location of the neighbourhood, the restructuring of the south strip of the neighbourhood, the possibilities of the prevention budget, the emphasis on energy efficiency in new constructions, improvement of the energetic quality of some housing blocks by Pré Wonen and finally, the increase of shared responsibility of residents. This last point offers opportunities to actively involve residents in improving the neighbourhood and living environment.

The involvement of residents does not come naturally in Slachthuisbuurt. The potential of the actors is low, as is the potential of the area. Personal development is important to empower the residents. Becoming more self-reliant is one of the key needs in the neighbourhood formulated by professionals. Other important needs are to improve the living situation, living environment, housing quality and social quality in the neighbourhood and to strive for a more balanced population composition.

The residents themselves agree that improving the living environment is one the most important needs of the neighbourhood, as is the improvement of the housing quality and social cohesion in the neighbourhood. Redevelopment of the slaughterhouse terrain is also a cherished wish of the residents of Slachthuisbuurt.

Concerning energy conservation, Slachthuisbuurt offers many possibilities. The old housing stock requires energetic improvement, but it also offers many suitable locations for decentralised generation with solar panels. It can be concluded that energy measures could contribute to the liveability of the neighbourhood and to the local needs as formulated by professionals and residents.


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6. Sustainable area exploitation

> **"For the optimists, the glass if half full. For the pessimists, the glass if half empty. Flip thinking is based on a third approach: where is the tap?"**
>
> Berthold Gunster
> 2010

Gunster (2010) introduced the word 'flip thinking' to describe the process of transforming 'yes-but' to 'yes-and' behaviour. Yes, we have to deal with a new situation in our society and our neighbourhoods - and this offers us many possibilities to try new things!

This chapter is a first attempt to design sustainable interventions in Slachthuisbuurt, that meet the standards of sustainable area exploitation. The first paragraph introduces the sources and methods that form the basis of this chapter. The second paragraph sketches the practical operationalisation of sustainable area exploitation for the Slachthuisbuurt. The following paragraphs provide outlines of possible interventions that meet the local needs, concerning the following three themes: the slaughterhouse area (6.3), elderly in the neighbourhood (6.4) and social cohesion (6.5). The final paragraph 6.6 is a short conclusion.

6.1 Introduction

6.1.1 Three themes

From the analysis in chapter 5, it came forward that there are certain opportunities, threats and needs in the area. Nine themes have been identified as being of importance in Slachthuisbuurt, according to professionals and residents: public space, safety, housing quality, the slaughterhouse terrain, facilities, activities in the neighbourhood, mobility, nuisance and social cohesion. This chapter focuses on approaching three of these themes: the redevelopment of the slaughterhouse area, elderly in the neighbourhood (is related to all nine themes, see paragraph 6.4) and social cohesion in the neighbourhood. These three themes are selected because they were recurring topics in the analysis of the Slachthuisbuurt.

The slaughterhouse area threatens the neighbourhood because the vacant premises and abandoned terrain attract criminality, nuisance of drugs and dealing and other problems. It is also one of the greater opportunities for the development of the neighbourhood. It offers plenty of space for sustainable land development with mixed social housing, owner-occupied housing and light economic activity. The area and especially the old slaughterhouse are industrial heritage and have great historical and cultural value for the neighbourhood. The residents themselves formulated the redevelopment of the slaughterhouse terrain as of their wishes for the area: give it a function again for the neighbourhood.

Elderly people are overrepresented in the population composition of the neighbourhood. They have related problems of mobility, health, social isolation, loneliness, high energy consumption, etc. that threaten the sustainable development of the area. But, maybe they can also be an opportunity for the area! Elderly people have things that younger people do not: time, experience and life knowledge. The question is how we can deal with an aging population and if these elderly residents can also be of value for the neighbourhood.

Finally, the decreasing social cohesion is a problem in Slachthuisbuurt. Different groups in the neighbourhood, the newcomers of Dutch and immigrant origin, original residents, older people and younger people, live alongside each other with little contact. It would benefit the social capital, living pleasure and image of the neighbourhood if residents would maintain more social contacts with one another. A social neighbourhood is a more healthy and desirable neighbourhood.

6.1.2 Workshop and map of effects

We organised a workshop '*Sustainable value creation with energy conservation in Slachthuisbuurt*' on 16 April 2013 at Alliander Haarlem. The objective was to design possible solutions for these three themes and their related problems,. Eleven professionals from Haarlem were invited and came to learn about and discuss the concepts of sustainable area exploitation and value creation and the possibilities in the Slachthuisbuurt with energy conservation (see appendix 4 for the participants of the workshop).

After a presentation and short discussion on the theory of sustainable area exploitation and Slachthuisbuurt, the three themes were presented for the participants. Subsequently, they formed three groups, each with their own theme, and went to work on innovative solutions. The mission each group had was to make an overall plan that benefits the formulated problem, in which energy has an (important) role.

After this brainstorming session, each group had to present two end products: one was a form they had to fill out and the other was a poster they had to make. One the basis of these two products, each group presented their plans to the other participants. These end products also form the basis for paragraphs 6.3 to 6.5 of this report. The seven questions each group had to answer were based on the map of effects (2007, p. 34):

1. What does the intervention look like, out of which activities and measures does the plan exist?
2. What role does energy have in the plan?
3. Who has to the initiative; who guides the process?

4. Who are possible investors; which parties have an interest?
5. How can it be financed (smart plan)?
6. Who collects; who are experiencing effect of the intervention?
7. Which other partners can be involved in the plan; who do you need?

The map of effects consists of three questions: who are experiencing effects? What are the effects? And how does one achieve those effects? In this context, the effects are the three formulated needs. How we can answer to these needs is discussed in the overall plans (questions 1, 2, 3, 4, 5, 7). Finally, who are experiencing effects, the harvesters, are discussed in answering question 6. The resulting map of effects helps identifying stakeholders, output, outcome and the theory of change related to energy conservation in the neighbourhood.

6.2 Sustainable area exploitation and value creation

6.2.1 General conclusions from the workshop

The workshop revealed several interesting and difficult issues. One of these issues is the realisation of necessary funds for innovative plans. By identifying new and alternative stakeholders, the funding may still be arranged in a smart way. Energy conservation and generation do appear to hold a positive business model, which also contributes to the values in the area.

Another issue is the question who should be in charge of the sustainable area exploitation and what roles are assigned to residents and policy officers. Even though ideally the residents themselves should take the lead in bottom-up initiatives, there are a number of complicating factors. Such a factor is the voluntary and noncommittal character of these local initiatives. Active residents work on these plans in their free time and often unpaid. Against this group of active 'usual suspects' stands a large group of passive residents. One mechanism to activate such residents is by emphasising the influence of such initiatives on property values. However in the Slachthuisbuurt, where most residents are social tenants, it is more difficult to internalise ownership of the neighbourhood.

Culture, attitude and resistance to change are also complicated factors in this respect. It takes time for all the involved actor to assume new roles. Residents need time to get activated, but government officials also need time to let go. Professionals should only be facilitators and supporters of the locals[12]. This asks for a cultural change in the way governments work and think. An illustrating example was the sub-group 'redevelopment slaughterhouse terrain' of the workshop. The results of a survey conducted by the town council, on the wishes of the local residents concerning the slaughterhouse area, were offered to this group as input for their plan. Instead of considering the results of the survey, the participants of this sub-group demonstratively pushed the papers aside. "We won't do that, in any case", was the statement. This illustrates the existing culture and attitude, in which is thought that the opinion of professionals is of more value than the preferences of end users.

It is clear that governments, market and society will all have to assume new roles in the context of the current societal changes (paragraph 1.1.1). The roles of initiator and orchestrator of interventions will rotate between different actors. Municipalities, town councils, social housing associations, community enterprises, facilitating companies, energy companies, grid operators, project developers, investors, owners and users will all take and get different roles in different initiatives and situations. In complex projects, such as the (re-)development of the slaughterhouse terrain, there is still a need for a powerful director. It remains to be seen which parties will take this role.

The question is if governments will actually trust the market and society with such extensive and comprehensive interventions. The results will sometimes deviate from what the policy maker would want. But the value-oriented neighbourhood approach is largely innovation on the job. As Kersten, innovation manager at Enviu, argues: "it is also about just trying something, it is not an exact science" (in Jonkers, 2012, p. 10).

6.2.2 Sustainable area exploitation and value creation in the Slachthuisbuurt

The idea of value creation is finding its way into the local social housing associations. Elan Wonen is closely involved in the working group on value creation in Slachthuisbuurt, incorporated in the *Watt voor Watt* project. The others, Pré Wonen and Ymere, keep track of the developments as well. The idea that the living environment effects property values, and that investments in this environment thus also benefit the property owners, has been around longer. Also the awareness of societal impact, besides financial profit, as part of the business operation is increasing.

Value creation is not only value increase, it is also saving costs with preventive investments. An example is the appointment of Kibar as neighbourhood manager in the Slachthuisbuurt. On the one hand, the three social housing associations invest resources in hiring such a professional. On the other hand, Kibar prevents higher costs of curing investments.

Kibar has built up a relationship of trust and a good reputation in the Slachthuisbuurt, by maintaining accessible contacts with the local residents and using his Turkish background as a power to approach residents of non-Dutch origin. Kibar therefore observes problems in an early stage and prevents escalation. Examples of problems that Kibar deals with are neighbourhood disputes, small problems indoors, nuisance of rubbish in the streets, noise pollution, criminality and loitering youngsters (Laribij et al., 2013a, p. 348-352).

Another objective is Kibar is to do more for younger people. An example is the Cleanup project, in which Kibar involves local first and fourth year students. He received a lot of complaints concerning rubbish on the streets. It turned out that students

[12] Which of course does not mean that the residents themselves cannot also be professionals. All residents have their own professional background and expertise.

of the Haarlem College were the main causers. Now, the students themselves are involved in keeping the neighbourhood clean. In this context, Kibar also offers Societal internships for students from the Haarlem College. Together with the students, Kibar observes problems in the neighbourhood, such as pollution. The students themselves address polluters on their behaviour, coached by Kibar. The commitment of the students in the Cleanup Project (once a week) and Societal internships already have positive effects on the neighbourhood: Kibar sees young people clean up their own mess at their hangouts (Laribij et al., 2013a, p. 352). Kibar also often plays soccer with the local youth and if something needs to be done in the neighbourhood, he can rely on the youngsters to help him. "Until now they have never said no" (Laribij et al., 2013a, p. 351).

Van der Vegt, director of youth center Rebup, also tries to involve youth in the neighbourhood, for example by letting the children supervise their own neighbourhood. By taking the children seriously and giving them responsibility, the children learn to take their own neighbourhood seriously. The youngsters e.g. address other children on their behaviour. Van der Vegt also has the local youth do jobs in the neighbourhood in exchange for a small fee. One example in interviewing local entrepreneurs and publishing these interviews on the Rebup website, for other youth to read. This way, Van der Vegt tries to get the local youth in contact with entrepreneurship and work, and hopefully provide them with a positive future perspective (Laribij et al., 2013a, p. 370).

These are all examples of how people are already trying to contribute to a better Slachthuisbuurt with innovative and value-oriented ideas. By investing in preventive measures, problems can be solved or prevented and curative money and effort can be saved. The following paragraphs are plans based on the workshop, which incorporate energy conservation in a value-oriented approach of the Slachthuisbuurt.

6.3 Slaughterhouse area

6.3.1 Problem definition

There are different problematic factors influencing the future of the slaughterhouse terrain. Even though there have been plans to redevelop this area for years, nothing has been realised yet, as the municipality and the owner have been in a stalemate since 2002. Cobraspen Vastgoed B.V. and Haarlemse Slachtlijn B.V. want a coherent and integrated exploitation of the area with a healthy financial and economic basis. They accuse the municipality, the owner of the grounds, of showing little integral vision.

The slaughterhouse has not been in use for some time and the terrain has no function for the neighbourhood right now. There are also a small business area (ICT Center), a trailer park and a 50kV Liander transfer station in the area. The municipality opposes to any new economic activity and the settlement of a supermarket or other retail activities (see also paragraph 5.4 and Municipality of Haarlem, 2006, p. 22). They only sees a societal, social and cultural destination for the area. The owners however, think that these functions alone are not financially feasible.

The town council conducted a survey among the residents in the Slachthuisbuurt in 2011 (N=505). The results show that the residents do want economic activity in the area, apart from a residential function. Most residents want a postal service point, followed by an atm (there is none in the neighbourhood right now), a supermarket (Jumbo), retail and a health center (pharmacy, physiotherapist).

During the years, the municipality has sticked to a societal destination for the area, even though it is clear that realisation without subsidies is not possible and the owners and residents repeatedly stressed the importance of economic activity. The municipality now sees ending the leasehold with the owners as the only way out of this deadlock.

6.3.2 Question

Despite that the wishes of the different parties are far apart, it is clear that the area is in need or redevelopment. The buildings are old and dilapidated and the abandoned area attracts squatters and criminality. The slaughterhouse terrain has a special and historical position in the neighbourhood. Many residents have witnessed the slaughterhouse being in use or have worked there themselves. Can we redevelop the site to:

-a high quality and energy-efficient area
-with preservation and restoration of historic buildings (such as the old slaughterhouse)
-in such a way that the area regains a function for the inhabitants of the district
-and in which energy efficiency, saving and / or generation plays an important role?

6.3.3 Intervention

The sub-group 'slaughterhouse area' was formed by Van Buuren (volunteer user quality at VAC Haarlem), Jansen (area manager south/west at the municipality of Haarlem) and Van der Vegt (founder and director of youth center Rebup). Figure 28 shows one of the end products of this plan: a summary of the plan in the form of a poster.

In this plan, the slaughterhouse terrain is renamed as the Slaughterhouse-courtyard (*Slachthuis-hofje*), which has a nicer tone to it. The basis is an integrated approach for the whole area: not only the terrain surrounding the old slaughterhouse, but also the other parts of the area, the trailer park, the ICT-building (*Richard Holkade* 10 / *Oorkondelaan* 65), the playground (Kindervreugd), the Liander 50kV-station and the *Oosterpark*, must be involved in the redevelopment of the site. The municipality sees the integration of the ICT-building and electricity station as the most difficult tasks in the redevelopment (Municipality of Haarlem, 2013b).

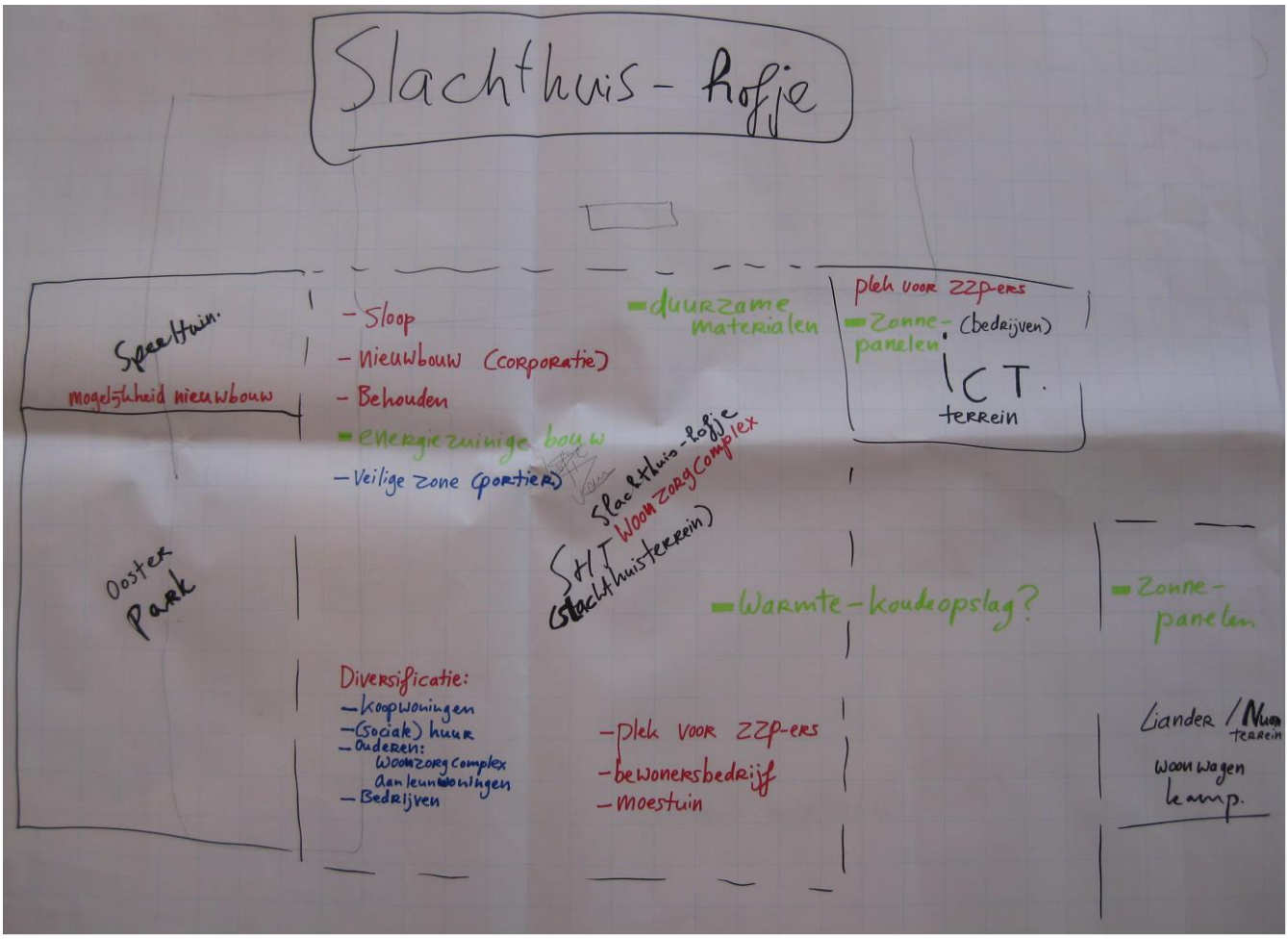

Figure 28: Redevelopment slaughterhouse terrain
(Source: T. van Buuren, A. Jansen & M. van der Vegt, personal communication, 3 April 2013; Edited by L. de Visser)

The redeveloped area has to meet the local needs, such as the need for more safety in the Slachthuisbuurt. Safety thus must be guaranteed on the Slaughterhouse-courtyard. Because the elderly population is increasing in the neighbourhood, this plan is based on the creation of an assisted living facility on the Slaughterhouse-courtyard. The assisted living facility is a multifunctional community center that provides housing for the most vulnerable groups, but also offers integrated care and services for more independent elderly.

The Slachthuisbuurt becomes an assisted living area, which is an area with facilities to have elderly live at home as long as possible. Municipality, social housing associations, health care organisations, welfare organisations and community organisations work together to offer well-coordinated services (Aedes-Actiz, n.d.). With the assisted living facilities, the Slachthuisbuurt can become 'life course proof'. Residents can stay in their own neighbourhood if they want to, even when they become less mobile or have to deal with other constraints.

An impact study shows that frail elderly in assisted living areas are less likely to deteriorate and live longer independently than older people in 'normal' living environments. Their quality of life increases and costs of housing, care and welfare decrease. Elderly people in an assisted living area feel more secure, because of the offered facilities as 'backstop' (SEV, 2012).

There are many self-employed residents in the Slachthuisbuurt. It is estimated that there are 400 *ZZP'ers* in Slachthuisbuurt (independent professionals without personnel). These professionals have to play an important role in the development of the area. The idea is to bring these self-employed professionals together and use their expertise for the design and realisation of the redevelopment. This will create employment in the neighbourhood.

The most important question for the redevelopment is which buildings have to be preserved and which have to be demolished. Some buildings have a monumental status. Energy efficient construction and the use of sustainable materials are central in this plan. What is preserved must be renovated and made energy efficient. One of the preserved or new buildings is meant for the self-employed professionals. Sharing knowledge, network and experience in one building benefit the entrepreneurial network of the neighbourhood. Bringing together local professionals and the companies that are settled in the office building in the south part (the ICT-building), also creates economic activity and momentum in the neighbourhood.

A community enterprise or community development corporation could also settle in the Slaughterhouse-courtyard. Instead of paying rent, the self-employed professionals and members of the neighbourhood company could renovate and refurbish their building themselves and take care of the maintenance. This could be in cooperation with the Haarlem College,

which is across the street. Students could be linked to professionals within (societal) internships, learn and work programs, or other forms. A community enterprise or neighbourhood manager could coordinate the maintenance and daily businesses on the terrain when it is realised. Students could be involved, for example with the landscape maintenance and playgrounds.

The remaining land gets a residential function, meant for diversification of the housing stock. The social housing associations build a mix of different housing types for sale and rent. A part is designated as social housing. The diverse housing supply will attract new residents from outside the Slachthuisbuurt and improve the flow of residents in the neighbourhood. Local professionals can be employed for the construction and maintenance. In the past, it has been proven that a standard for attracting of local professionals is possible[13]. This would benefit the local employment.

The east side of the area, adjacent to the *Gouwwetering*, provides a beautiful living environment at the water. This could be used to build more luxurious sheltered housing. It is possible that the playground *Speeltuinvereniging Kindervreugd* at the *Godfried van Bouillonstraat* would have to move from its current location. The playground itself is now closed due to lack of volunteers, but the building is still in use for neighbourhood activities. The possibility for other play and sports facilities in the Slaughterhouse-courtyard is considered.

Other facilities on the courtyard could be a community vegetable garden or home vegetable gardens. Perhaps, this is a good link to the plan for more social cohesion in the neighbourhood with a community vegetable garden (see paragraph 6.5). In general, the realisation of these plans for the area can create a movement within the area that also strengthens the social cohesion in the neighbourhood.

6.3.4 Energy measures

Energy efficient building, use of sustainable materials and energy efficient renovation of the preserved and monumental premises are the central energy measures in this plan for redevelopment of the slaughterhouse area to a Slaughterhouse-courtyard. In addition, the possibilities for hot/cold storage with an aquifer thermal energy storage system should be studied.

The existing buildings, such as the electricity station, the slaughterhouse and ICT-building, have very suitable roof surfaces for generation of electricity with solar panels. The former slaughterhouse has 10.561 m^2 roof surface, of which 5.261 m^2 is very suitable and 294 m^2 is suitable for solar panels. The maximum total power is 236 kWp, which makes the expected electricity 200.900 kWh each year (Klimaatverbond Nederland, n.d.). The roof surface of the Liander electricity station is expected to generate 26.100 kWh yearly with solar panels and the ICT-building 113.600 kWh. With an average consumption of 2.500 kWh, a total of 136 households in the Slachthuisbuurt can be provided with power with panels of these roofs. In addition, it saves 238 tons of CO_2 emissions. The revenues can benefit the whole area.

Finally, greenery, water and ecology are important aspects of the Slaughterhouse-courtyard. The public space must be designed in such a way that it is integrated with the water and greenery. The (community) vegetable garden could be a good example.

6.3.5 Initiators and integrated approach

An approach to the area redevelopment that suits the ideas of sustainable area exploitation is the integrated approach. The focus is on creating of value and a continuous process, instead of connected business models. Exploitation is more important than realisation and ownership of property becomes less important. The initiative for the development is also different than in the tradition area development (Schouten, 2013, p. 61).

The initiative can be taken by the municipality, the owners, the social housing associations, the healthcare or welfare organisations, the community organisations, a community enterprise or community development corporations, foundations in the neighbourhood such as the town council, etc. It can be done within a mandate of the joint self-employed professionals in the neighbourhood. The sub-group redevelopment of the slaughterhouse terrain see the municipality take the role of process manager. However, it could also be well possible that a market party would take the lead.

The main success factor for projects in the integrated approach is communication. Other key success factors are identifying and involving actors, building a business case, seeking common goals and using decisions and agreements (Tauw, 2013, p. 3).

6.3.6 Stakeholders and partners

Possible stakeholders are health-, welfare- and community organisations, the municipality (welfare, public space, the environment, education), the Haarlem College, the local police, enterprises in the ICT building, Liander, foundations from the neighbourhood, such as De Hamelink and Rebup and residents from the neighbourhood (youth, elderly, professionals).

6.3.7 Financing

Within the integrated approach, money flows for the redevelopment also become different. Instead of two one-time transactions (grounds and property), the new model focuses on recurrent fees on a longer term. This could be within rental constructions or other forms of subscription. This also brings new parties into the picture besides the municipality and project developer, such as the users, the owner of the location, (institutional) investors, energy companies and facilitating companies

[13] e.g. social housing association Talis in Nijmegen agreed with her contractors that at least five percent of the employees for maintenance operations have to be recruited in the neighbourhood itself (Van Hees, 2013).

(Schouten, 2013, p. 39). In short: we are going from traditional land development (*grondexploitatie*) to new business cases, in which the municipality performs as facilitator instead of director. A group of initiators, market actors, owners, users and residents go through an organic process of planning, the determination of a program, images and preconditions (Timár, 2013, p. 32-33).

In the case of the slaughterhouse terrain, this could mean that retail becomes part of the area exploitation, against the will of the municipality. The government would have to show confidence in the market to let go and see what the organic development would bring for the Slachthuisbuurt. This is possible with flexible land-use planning (*bestemmingsplan*) that permits different functions at the same time on different places (Timár, 2013, p. 13).

The social housing associations invest in the housing. This investment is earned back with property sales and on the long term through the rent and revenues of solar panels. Collective privately commissioned housing is also an option for a part of the area.

The assisted living facilities could be managed by an association of health care, welfare and community organisations. A possible investor could be the social housing associations or health care insurers. By cooperating with health care organisations and by housing certain care groups, funding can (partially) be covered.

Other options for involvement in financing of the redevelopment are energy companies or grid operators, self-employed professionals and the residents themselves.

6.3.8 Societal outcome

This intervention affects the neighbourhood in a positive way. Elderly get to live longer independently, which results in a better quality of life, saves costs of housing, health care and welfare. Elderly that need more care can live on the terrain and thus stay in their own neighbourhood. The new area offers more possibilities for the local youth, for example to do an internship or be involved in other ways in their neighbourhood. The area also becomes safer. The empty premises now attract criminality, drugs nuisance and prostitution. With the area in operation again, these problems will disappear.

The area will furthermore provide in its own energy with generation by solar panels and possible thermal heat storage. This saves resources and decreases CO_2 emissions. The investments will be quite high, but can be earned back in nine to twenty years (Klimaatverbond Nederland (n.d.). Energy costs will decrease, the area would become self-sufficient and eventually energy neutral. A local energy system could contribute to a positive business model for the area.

As a whole, the neighbourhood gets more attractive for new people and for the current residents to stay in the Slachthuisbuurt. The image of the neighbourhood gets better, which positively affects property values. Economic activity also increases, due to the concentration of enterprises and self-employed professionals within the courtyard.

It can be concluded that this plan benefits the social, environmental and economic development of the Slachthuisbuurt.

6.3.9 Harvesters

The residents benefit the most from the redeveloped Slaughterhouse-courtyard. Elderly get to live longer independently in the Slachthuisbuurt, or in the assisted facilities on the terrain. Residents of the Slachthuisbuurt see the area get a function again for the neighbourhood. Self-employed professionals benefit from the increased employment and the sharing of knowledge, inspiration, experience and expertise within the area. The enterprises currently settled in the ICT-building benefit from the increased economic activity in the neighbourhood. The municipality of Haarlem benefits from the area becoming beautiful and safe again, with a function for the residents. The social housing associations benefit from their property becoming more valuable, both new constructions within the Slaughterhouse-courtyard, as adjacent premises. The owner of the buildings (the former slaughterhouse and ICT-building), benefits from the area becoming more valuable. The Haarlem College and local youth benefit from the internships and other possibilities the area offers for students. Criminality, drugs nuisance, prostitution and other problems will expectedly decrease. The local police benefits from the increased safety of the area. Finally, the whole neighbourhood benefits from a more beautiful, functional and safer area.

6.4 Elderly in Slachthuisbuurt

6.4.1 Problem definition

The population composition of the neighbourhood is one-sided, as discussed in chapter 5, with an overrepresentation of elderly. The total population decreased the past decades in a much faster rate than the rest of Haarlem. Especially the younger people moved away from the neighbourhood, leaving an aging population. Aging processes are thus a serious problem in the Slachthuisbuurt.

Elderly people are associated with certain problems, they are for example more vulnerable for loneliness and social isolation. This does obviously not benefit the social cohesion of the neighbourhood. They are also prone to more health problems. Infrastructure, public space and houses in the Slachthuisbuurt should be adjusted to elderly, as they are less mobile and sometimes use wheelchairs or walkers. There are especially complaints about loose tiles and unequal pavements that provoke fall incidents (Municipality of Haarlem, 2011). Speeding cars and unsafe crossroads are also often heard complaints. Furthermore, a lot of the houses are of poor energetic quality and elderly already usually consume more energy than others. As discussed in paragraph 5.7, elderly people are usually more at home and experience cold faster than younger people.

As discussed in paragraph 5.4, there are not a lot of facilities in the neighbourhood. Almost no shops, except one supermarket (*Aldi*) on the outskirts of the neighbourhood. For other shops, residents have to go to the *Amsterdamstraat* in an adjacent neighbourhood. For immobile elderly, this is a considerable problem.

6.4.2 Question

Can we think of a plan, that addresses these problems in the neighbourhood and in which energy efficiency, conservation and / or generation plays a role? By contributing to the needs of elderly in the neighbourhood, for example with:

-Improving the public space;
-Improving their mobility;
-Improving their social situation;
-Addressing the poor quality of unhealthy houses (e.g. social domotica)

Or by countering aging in the neighbourhood and working on a better population composition?

6.4.3 Intervention

The sub-group 'elderly in the neighbourhood' was formed by Boele de Zeeuw (social innovator, initiator of an community enterprise in the Leidsebuurt and energy pioneer), Bueno de Mesquita (senior account manager of the environment at the municipality of Haarlem) and Van den Tillaart (urban planner at the municipality of Haarlem). Figure 29 shows one of the end products of this plan: a summary of the plan in the form of a poster.

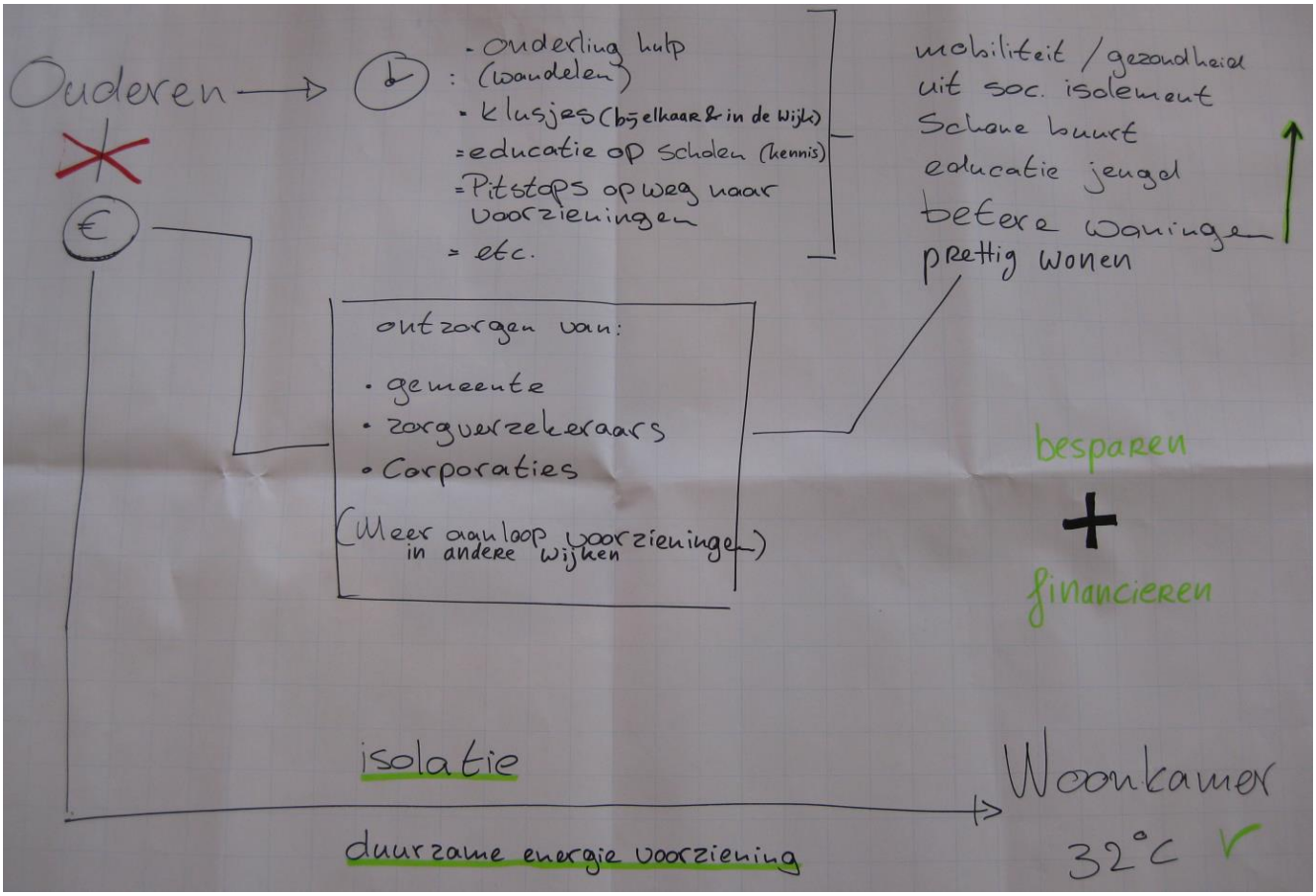

Figure 29: Elderly in the Slachthuisbuurt
(Source: E. Boele de Zeeuw, H. Bueno de Mesquita & J. van den Tillaart, personal communication, 3 April 2013; Edited by L. de Visser)

Elderly people usually like a warm home. on the post, the exaggerated ideal living room temperature of an elderly person is 32°C. By insulation and a renewable energy system, we can realise this ideal in a sustainable way. Elderly people in the Slachthuisbuurt usually do not have enough capital to invest their own money in such adaptations. But, there are other means of exchange than money. Elderly people are of course of value, also when they are not wealthy. They have for example a lot of time and experience. The idea of this plan is to let elderly people pay for the necessary investments by investing their own time, knowledge and experience in the neighbourhood. The accompanying goal is to involve the elderly more in the neighbourhood again, by making them more important. The sub-group 'elderly in the neighbourhood' thought of some ideas of how elderly people can invest in the neighbourhood:

(1) Elderly people could help each other, e.g. with taking a walk, helping wheelchair users, doing small jobs for immobile or sick people ('the social carpenter'), grocery shopping, etc. Some elderly are still capable of doing a lot, where other elderly are immobile, sick or otherwise vulnerable. Because most shops are quite far away, it is not possible for everyone to do their own groceries and such. An idea would be to install 'pit stops' at sick or immobile elderly, at which fit and healthy elderly could make a short stop, for a small talk or to bring by some groceries.

(2) Making safe walking routes with benches in front of the doors. Elderly people could come into contact with each other, by using 'wheelchair and walker proof' walking tracks in the neighbourhood.

(3) Realisation of a health center on the slaughterhouse terrain (e.g. Rebup for elderly. This could be linked with the plan for the slaughterhouse area.

(4) Involvement of elderly people in education ('old stories in school'). Elderly people know a lot and have a lot of experience. They could therefore be deployed for education.

(5) Facilitating child care by elderly with more flexible arrangements.

(6) Greenery maintenance in the neighbourhood by elderly, perhaps together with the local youth.

(7) Deployment of elderly as ambassadors for energy conservation. The message is: make elderly people important again, do not just put them away in their homes. They have time, are of value and often still capable of doing things. Get them inside of schools, for stories, environmental education and knowledge on energy conservation. Elderly people are a huge source of knowledge!

6.4.4 Energy measures

The goal is to realise a warm living room for elderly people in a sustainable manner. Lowering the monthly costs for the elderly is thus important. In general, elderly people turn the heating higher than other and are more at home. This leads to higher heating bills. Elderly people in the Slachthuisbuurt do not have a lot of money (in general), but they do have time. Compensating the investment with doing small jobs and the like could be a possibility. The investments consist of insulating the houses (by the social housing association) and installation of solar panels. With the generation of electricity, the investments can be earned back in time.

6.4.5 Initiators

The social housing associations take the lead in insulating and generation of electricity. Subsequently, a system must be developed in which the elderly, by working in the neighbourhood, can 'pay back' for these investments.

6.4.6 Stakeholders and partners

Possible partners are the schools in the neighbourhood (De Talenten, Haarlem College), the municipality, the facilities in the neighbourhood, health care insurers and other residents.

6.4.7 Financing

The social housing associations own most of the housing stock in the neighbourhood. They are thus the most obvious investors. Resources also becomes available through the reduction of energy costs, care costs and housing costs. Generation with solar panels bring revenues after recouping the investments. Furthermore, health care insurers have an enormous interest in healthy, active and independent elderly. They could be involved as co-investors, as they would save money in care costs. Funds can also be requested by using the Wmo (social support act). Residents themselves can also invest, or raise money, for example with crowd funding. To pay back for the investments, a system of 'social working hours' is a possibility. The elderly do social work in the neighbourhood as compensation. This system could be expanded to other residents of the neighbourhood.

6.4.8 Societal outcome

The effects are more healthy, social and mobile elderly, with higher quality of life. in turn, they also contribute to a better neighbourhood, for example by youth education. If elderly help each other, social housing associations would not have to be called for every small problem, which can save money. Furthermore, the housing quality improves. This benefits the property values, housing comfort and the image of the neighbourhood. All and all it contributes to more pleasant living in the Slachthuisbuurt.

6.4.9 Harvesters

The elderly themselves profit the most, from their comfortable dwelling and increased pleasant living in the neighbourhood. They become more healthy and active. The local youth and other residents benefit from this plan as well, for example through education, a more beautiful living environment, maintenance of greenery, etc. The municipality, health care insurers and the social housing associations profit from healthy elderly that live independently at home longer. The social housing associations also benefit from elderly doing small jobs for each other, as expenses on hiring a professional can be saved. The facilities in the adjacent neighbourhood benefit from more run-up because of the pit stops or because elderly can go to the shops again with help of others.

6.5 Social cohesion in the Slachthuisbuurt

6.5.1 Problem definition

From chapter 5 we can conclude that the residents in the neighbourhood have a lot of social needs, such as less nuisance, dealing with loitering youth and more social contacts, especially between original and new residents. They illustrate the division of residents in different groups.

In the Slachthuisbuurt, there has been a strong change in the demographic composition in recent years. The greater diversity in the neighbourhoods leads to a reduction of the social cohesion. The Slachthuisbuurt scores lower or even much lower on all aspects of social quality compared to the city average: only half the residents think that the people get along well, forty percent of the residents feel at home, thirty percent has a lot of contact with other residents and thirty percent feels that they live in a nice neighbourhood with a lot of solidarity. All aspects scored lower in 2010 compared with 2007 (Kuijpers, 2011, p. 65-66).

There is a lot of nuisance of (loitering) youth. The need has been formulated that older and younger people should get to know each other better. There are not a lot of facilities, activities and meeting places for younger people to go to. Foundation Rebup is the only place where younger people can meet under supervision (outside school).

Laribij et al. (2013b) argue that there is also a need for more solidarity between original and newcomers in the neighbourhood, especially those of non-Dutch origin. There is a community center, De Hamelink, with harbours primary school De Talenten and Foundation DOCK. Some quotes of residents however, illustrate the division in the community center: “in de Hamelink, immigrants all speak their own language. I feel excluded” and “they are all wimpy activities meant for immigrants”.

Since 2005, some has been achieved in the physical area with use of ISV-budgets. The results in the social domain however, have been insufficient and extra incentives are needed.

6.5.2 Question

Can we think of a plan, in which energy efficiency, conservation and / or generation play a role, that brings residents into contact with each other, so that the social cohesion in the neighbourhood increases again?

6.5.3 Intervention

The sub-group ‘social cohesion in the neighbourhood’ was formed by Cremers (project manager *Watt voor Watt* at Alliander), Grünfeld (policy officer at Elan Wonen), Van Wieringen (researcher at Milieu Centraal and energy pioneer) and Veldkamp (volunteer user quality at VAC Haarlem). Figure 30 shows one of the end products of this plan: a summary of the plan in the form of a poster. The goal of this plan is to overcome the differences between different groups by connecting them with each other. Connecting and communication are the most important elements. Summertime and wintertime both offer different opportunities to bring people into contact with each other.

In the spring and summer, social meeting places are the spindle of this plan. A community vegetable garden should become the central meeting place in the neighbourhood. A community vegetable garden is a garden where local residents can meet each other and grow vegetables and fruit together. This ‘social greenery’ offers opportunities to improve social cohesion and liveability in the neighbourhood. The department of Urban Development in the district *Amsterdam Nieuw-West* has a lot of experience with community vegetable gardens and they conclude: “realising a (temporary) community vegetable garden is a good way to revitalise public greenery together with the residents and to keep the neighbourhood liveable during urban renewal” (Lems & Van der Veen, 2011, p. 3). The community vegetable garden could be situated anywhere in the public space: between housing blocks, on unused land in the neighbourhood or in (neglected) public greenery. A green strip or plantation at the slaughterhouse area could be a good place to place a community vegetable garden. The residents manage the garden themselves and carry joint responsibility for it. They usually pay little or no rent. Every volunteer could get his or her own individual piece of land in the community garden.

Another idea is to create eat-teams in the neighbourhood, with members of different origins. They could give cooking workshops with locally grown food, share recipes with each other, give courses on cheap cooking and the like. This way, groups of different origin come into contact with each other.

Close to the community garden, a recreation and dog walking area should be realised where residents can also meet each other. To make walking more attractive and safer for elderly, walking strips or routes around the community garden should be designed. These routes are ‘walking frame proof’. This ‘walk around the block’ could be expanded with facilities on the way, such as a coffee corner. This could for example be situated in community center De Hamelink or at the playground Kindervreugd.

For the local youth, reopening the playground is important. Volunteers have to be recruited that can supervise the playing children. Children and parents can meet each other in a fun and child friendly environment. The playground can become another social meeting place in the Slachthuisbuurt.

In fall and wintertime, the emphasis is less on meeting each other outside. Energy plays a bigger role in the fall and winter, during heat season (October to May). Elderly people could perform as energy coaches (e-coaches), with their knowledge and experience. This could be linked with the plan for elderly in the neighbourhood: make elderly important and useful again. This help could be useful, for example if a resident gets new (energy) facilities in the house. Instructions on paper work not as well as an experienced other resident that comes by to explain the possibilities. Exchanging knowledge and experience promote

savings. Residents can learn from each other. The energy coaches could also be involved in education. Parents are reached through the education of their children.

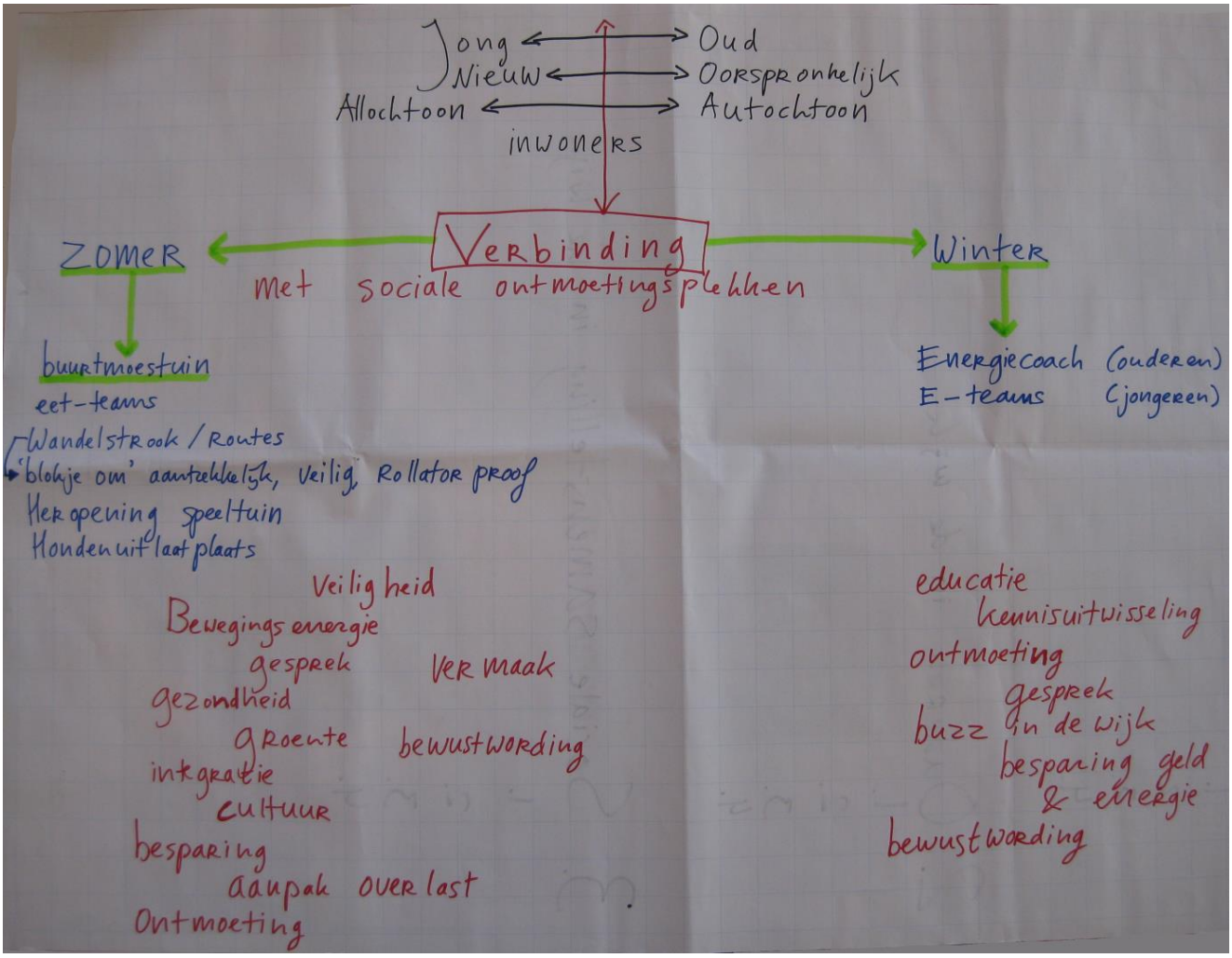

Figure 30: Social cohesion in the Slachthuisbuurt
(Source: R. Cremers, J. Grünfeld, J.T. van Wieringen & J. Veldkamp, personal communication, 3 April 2013; Edited by L. de Visser)

6.5.4 Energy measures

The conversation about energy conservation can take place at social meeting places. Starting a conversation on energy with your neighbours is also easier when you know each other and have had a chat in the past. The community vegetable garden raises awareness and knowledge on health and the environment and it reduces need for transportation.

A conversation on energy is started in the neighbourhood because of the increased awareness and knowledge, the meeting places, e-teams and e-coaches. The coaches contribute to energy-education, the teams to the implementation.

This plan will furthermore contribute to the release of a certain social energy and bring the neighbourhood in motion.

6.5.5 Initiators

The town council could take the initiative for the social meeting places. *Watt voor Watt* could take a role in the e-teams and e-coaches. A community maintenance company could take care of the maintenance of the community vegetable garden and the other meeting places. Social housing association A community development corporation could coordinate the whole plan. The teams and coaches could become part of the community companies, possible combined with learn and work programs for students.

6.5.6 Stakeholders and partners

The municipality, social housing associations and health care insurers are possible partners. But also supermarkets or other neighbourhood shops could be involved, for example to sell the local food. Local self-employed professionals could be involved in this plan. The interaction in the neighbourhood could possible contribute to the local facilities as well.

6.5.7 Financing

The municipality invests the lands necessary for the community garden and walking areas. Social housing associations and the residents themselves are possible other investors of resources.

Other parties can also become interested, such as health care insurers, who benefit from a healthy neighbourhood.

Founding a community maintenance company, community enterprise or community development corporation is a possibility to manage the different initiatives. The already existing community center could take the lead. The construction of the community vegetable garden could be financed with funds, such as the *Oranjefonds* and other funds social housing associations have available.

finally, a system is possible in which residents work as volunteers in exchange for land or vegetables. Instead of paying for the garden or food, residents can earn LETS-credits in a local exchange trading system with working hours in the neighbourhood. They could for example do small jobs, maintenance or public space and greenery or work in the community center. The credits can be spent in the community garden and center.

6.5.8 Societal outcome

The effect of connecting people with social meeting places is that encounters and conversations take place. The emergence of conversation contributes to the integration of the different groups with each other and contributes to awareness. The community vegetable garden delivers healthy vegetables and fruit. This promotes healthy eating and living and also saves money, because growing and eating fruit and vegetables from the garden is cheaper than buying them at the store.

Social cohesion arises when people feel connected with each other and take joint responsibility for their living environment. The community garden can help to increase this feeling of ownership of the neighbourhood and a sense of joint responsibility. A green environment benefits people's health. Public greenery is also an important precondition for the liveability and design of the public space. Furthermore, greenery seems to have a positive effect on the social cohesion in a neighbourhood (Lems & Van der Veen, 2011, p. 6).

Collective efficacy, defined as social cohesion among neighbours combined with their willingness to intervene on behalf of the common good, can be linked to more informal social control in the neighbourhood. "Examples of informal social control include the monitoring of spontaneous play groups among children, a willingness to intervene to prevent acts such as truancy and street-corner 'hanging' by teenage peer groups, and the confrontation of persons who are exploiting or disturbing public space" (Sampson, Raudenbush & Earls, 1997, p. 918). So, if residents feel more connected with each other and have a sense of joint responsibility, the neighbourhood would become safer and more pleasant to live. Social quality thus also contributes to a more 'healthy' and self-reliant neighbourhood, as described in paragraph 5.1.3. The costs that are saved can create space for investments.

The re-opening of the playground also promotes a healthy lifestyle and helps in the fight against obesity. It offers a possibility for children to play and have fun.

Nuisance in the public space is fought with the safe walking routes and dog walking area. The neighbourhood becomes safer because of the attractive walking routes with safe crossroads and without loose tiles to prevent fall incidents with elderly residents. Nuisance of dog poo on the streets decreases with the attractive dog walking area.

The energy coaches and energy teams contribute to education on the environment and exchange of knowledge on the domains of the climate, environment and energy. In addition, encounters between different groups contribute to the awareness in the neighbourhood on the possibilities of energy measures and how you can actually save energy and money. This creates a buzz in the neighbourhood for energy conservation.

6.5.9 Harvesters

The residents themselves are the most important target group of this plan. They benefit the most from a better social cohesion in the neighbourhood. The municipality and social housing associations also benefit from independent, healthy and happy residents. Finally, also the police would benefit from increased social control in the streets, because of the improved social cohesion in the neighbourhood.

6.6 Conclusion

It can be concluded than all three plans partially overlap and complement each other. Each sub-group has tried to think of an innovative plan that contributes to the local needs of the Slachthuisbuurt and fits in the ideology of sustainable area exploitation and value creation.

The biggest traps of all plans are the financing and possibilities of actual implementation. A cultural change is necessary to get residents activated and policy officers to let things run their course, even when the outputs are not what the municipality is aiming for. Residents need to realise that they cannot simply sit back and wait for the professionals to improve their living environment. By uniting in community development corporations they can realise social advancement of the individuals in the neighbourhood, and the neighbourhood itself.

It is the residents turn to move, but the professionals need to facilitate their plans, for example by making licensing processes more flexible, eliminating barriers and offering help and expertise if necessary.

Finally, market players should seize their chances. Health care insurers, social housing associations, energy companies, project developers and other traditional or new (semi-) commercial partners in neighbourhoods can realise their own objectives, by contributing to the environmental, social and economic development of the neighbourhood.

Part 4

Conclusions and recommendations

7. Conclusion

> **"Insanity is doing the same thing over and over again and expecting a different outcome."**
> (Attributed to) Albert Einstein

This research contributes to the available knowledge on societal impact of energy conservation and the possibilities of sustainable area exploitation with energy measures. The Slachthuisbuurt, a neighbourhood in Haarlem, was studied as a case to gain insights on how energy measures can create value. Three integral plans were designed, in which energy plays a significant role.

Paragraph 7.1 provides feedback on the previously set research questions, paragraph 7.2 discusses recommendations for everyone who is involved in socio- and economic-spatial development of neighbourhoods and paragraph 7.3 is a critical reflection on the research process with recommendations for future research.

7.1 Sustainable area exploitation and energy conservation

The central question of this research is:

To what extent can sustainable area exploitation through energy conservation realise successful urban renewal in the Slachthuisbuurt in Haarlem?

This research question was divided into three dimensions: energy conservation, the neighbourhood Slachthuisbuurt and sustainable area exploitation. Based on a theoretical framework, a conceptual model was formed. The operationalisation of this model offered different indicators to study (empirical) reality. In the following four subparagraphs, the different dimensions are discussed and a conclusion is made on the central question.

7.1.1 Energy conservation

The global energy supply is changing. Fossil fuels are depleting and their negative external effects meet more and more opposition. Furthermore, consumers are looking for affordable ways to become more independent of big energy companies. Our energy system is in transition towards a more decentralised, competitive and sustainable system of renewable energy sources. A process to an energy supply that is clean, available and affordable for everyone. However, the first step towards a more sustainable use of energy is to reduce the actual consumption. Because the most sustainable energy is saved energy!

Energy and the urban environment are strongly intertwined. Energy can be saved through architectural measures and smart design, but the already built environment also holds great potential for savings. The Dutch building stock is responsible for one third of the Dutch energy consumption and is therefore able to make an important contribution to the realisation of climate objectives, also in the longer term. A significant part of the housing stock has aged and is up for renovation and households contribute to one-fifth of the energy consumption. Households thus hold an important opportunity for energy conservation.

The Dutch government pursues certain policies to stimulate the energy transition and energy conservation. Several programs have been introduced in the past years: *Schoon en Zuinig*, the plan of action energy conservation in the built environment, *Energiesprong, Meer Met Minder* and *Blok voor Blok* are some examples. *Blok voor Blok* is a national project for household energy conservation in the built environment. Fourteen local pilots are testing this approach for large-scale implementation. One of these pilot projects is *Watt voor Watt* in Haarlem. This public-private partnership is built on three pillars, aimed at different target groups and neighbourhoods: a commercial approach, based on commercial initiatives and property owners; a social housing association approach, meant for the social rental sector; and a combination approach, based on cooperation in a neighbourhood.

The combination approach is a community approach with additional attention for sustainable value creation. In two neighbourhoods, the Slachthuisbuurt and Amsterdamse Buurt, the possibilities for value creation with energy measures are explored. The capacity to privately invest in energy measures is less in these communities and the economic and social development of these neighbourhoods is lagging behind. Energy conservation thus has to serve as a flywheel for community development.

This research has made a start with mapping the possibilities of energy measures in neighbourhoods and their societal effects. Energy conservation does not only contribute to environmental targets, it also has some strong social and economic aspects. Think of energy conservation as a means to get more control on the increase of monthly living expenses or as a boost for the construction industry, which is badly affected by the economic crisis. These relations of energy measures with individual and neighbourhood values were studied with help of the *effects arena*, a tool that helps to map the societal outcome of

interventions. After consulting several professionals, it can be concluded that neighbourhood economy, community culture (including social cohesion and reputation), individual sustainability, personal economy and personal development are values that are affected the most by energy measures.

Value increase can only be seen as real and be monetised if the individual (potential) users recognise the added value and are prepared to pay for it. The willingness to pay thus reflects the actual value increase. For example, insulating a house increases its quality. Users or consumers are however not interested in the activity that is offered, the insulation of the house, but in the result, the actual value that is added. In this case, the added value is that a household experiences more comfort, less noise pollution, less cold, mould, draught and moisture, has lower energy costs and better health (even less health costs). In the end, it is this recognised added value that affects the property values and economic development of the neighbourhood.

Investing with energy measures in facilities, enterprises, the living environment, infrastructure and property results in added value that individuals actually experience and recognise. The added values are for example the presence of more facilities, better offer of entrepreneurs in the region, more purchasing power and economic activity in the area, a beautiful and promising living environment, more social contacts in the neighbourhood and increased social cohesion, better accessibility and possibilities for mobility and more comfortable living. These added values will boost the image of the neighbourhood and a better image is the *key* to actual higher property values. In other words: the valuation of individuals of the effects of energy measures lead to a better image of the neighbourhood, so that the area becomes more desirable. This is the actual principle of value creation.

7.1.2 The neighbourhood

The Slachthuisbuurt is a pre-war working class neighbourhood in the district Haarlem-Oost. The neighbourhood can be characterised by a relatively large share of social housing, a low socioeconomic status, overrepresentation of elderly households, immigrants of non-Dutch origin and single-person households and a high residential density. Several programs have been introduced to improve the liveability of the Slachthuisbuurt. An urban renewal program with ISV-budgets, the prevention budget '40+ neighbourhoods' and other neighbourhood policies, such as the neighbourhood contract, have to provide positive impulses for the physical and social development of the neighbourhood. These programs had positive effects to some extent, but there is still a long way to go. *Watt voor Watt* is also active in the Slachthuisbuurt. With a community approach, focussed on energy ambassadors and local cooperation, this public-private partnership aims for energy conservation and value creation in the neighbourhood.

Opportunities for the sustainable development of the Slachthuisbuurt are its favourable location in Haarlem, the current restructuring of the south strip of the neighbourhood and resulting diversity in housing stock and population, the possibilities for redeveloping of the slaughterhouse terrain and a growing sense of joint responsibility for the liveability and neighbourhood.

Processes that threat the sustainable development of the Slachthuisbuurt are uncertainty within the municipal government and social housing associations and their changing possibilities, the unbalanced population composition and process of aging of the population, poor housing quality and resulting noise pollution and discomfort, low level of facilities in the area, decreasing social cohesion, criminality, nuisance and other accumulated problems that threaten the future perspective of local youth.

Furthermore, the economic-spatial development of the Slachthuisbuurt is lagging behind. There is almost no retail in the neighbourhood, which is consistent with the municipal policy to concentrate the economic activity of Haarlem-Oost in the Amsterdamse Buurt. This choice is however questionable, as economic activity and business vitality are important factors in the liveability of a neighbourhood. Furthermore, the Slachthuisbuurt is confronted with an aging and less mobile population. The former slaughterhouse area offers opportunities for expanding economic activity in the neighbourhood. Some companies are already settled in the ICT-building there. The property value curve further illustrates the economic-spatial development of the neighbourhood. Slachthuisbuurt has an average property value[14] that is seventeen percent lower than the Haarlem average. Only four other neighbourhood score lower on the value curve.

Concerning energy measures, it will be difficult to get residents in the Slachthuisbuurt organised and enthused for collective energy conservation. Levels of interest, awareness and long-term vision seem to be not sufficient and the community is quite social heterogeneous. Original residents and newcomers, youngsters and elderly and Dutch and non-Dutch residents live besides each other without many reciprocal contacts. This has led to a decline of social cohesion in the past years and negatively affects the power of the Slachthuisbuurt community to organise itself.

For financial reasons, locals have already adopted efficient behaviour, resulting in a relatively low average household energy consumption. The neighbourhood offers more opportunities for energy conservation in the physical domain. Especially the housing stock, which is of poor energetic quality, offers many possibilities for improvement. As the social housing associations in Haarlem own most of the housing stock in the Slachthuisbuurt, they are responsible for the (energetic) quality. Some areas in the neighbourhood, such as at the Graaf Willemstraat, the Gouwstraat and the slaughterhouse terrain offer very suitable roof surfaces for generation of electricity by solar panels.

The need for energy measures is illustrated by the wishes of the residents themselves. Research shows that improvement of the quality of dwellings is one of the most mentioned physical needs in the Slachthuisbuurt. The aging

[14] The average property value is an indexed value for one-family homes per m^3, to clean the comparison of differences in housing type or size.

population also demands intervening, as elderly people usually experience discomfort and cold faster, have more health problems and generally consume more energy. Finally, energy measures also contribute to the liveability of the neighbourhood. An integral approach of smart energy interventions with energetic improvement of the housing stock, organisation of community energy programs and education benefit the sustainable development of the Slachthuisbuurt, e.g. by reducing noise pollution, increasing the quality of the built environment, stimulating the local economy, increasing social cohesion and contributing to the personal development and feelings of pride in the neighbourhood.

7.1.3 Sustainable area exploitation

In order to design smart energy measures for the Slachthuisbuurt, it was essential to identify the local needs. Where professionals could formulate a lot of local themes, the residents hold a much smaller scope for their wishes in the neighbourhood. Their wishes concern mostly physical aspects, followed by social aspects. Needs concerning the physical aspects of the neighbourhood are the improvement of public space, improvement of the housing quality, redevelopment of the slaughterhouse terrain and improvement of the infrastructure of the neighbourhood. The most important need concerning the social aspects of the neighbourhood is improvement of the social cohesion in the neighbourhood.

Based on the analysis of the Slachthuisbuurt and the review of values, it can be concluded that energy conservation can play an important role in a sustainable area exploitation of the Slachthuisbuurt. Possibilities are decentralised generation with solar panels that benefits the economic position, improvement of the energetic quality of homes to decrease noise pollution, education to increase awareness and community energy programs that contribute to social cohesion. Furthermore, energy measures as part of an integral area exploitation can offer a positive business case to finance interventions.

The slaughterhouse area in the middle of the neighbourhood is especially an interesting opportunity to start with sustainable area exploitation in the Slachthuisbuurt. Three important themes in the neighbourhood, the elderly population, social cohesion and redevelopment of the slaughterhouse terrain can all be addressed with an integrated approach in this area.

It would for example be an interesting possibility to make the Slachthuisbuurt an assisted living area with an assisted living facility on the former slaughterhouse terrain. This offers an integrated approach to health, welfare and (independent) housing of elderly people and other vulnerable groups in the neighbourhood. The slaughterhouse area also offers opportunities for economic activity, for example by sheltering the many self-employed residents of the neighbourhood. The area provides a beautiful living environment at the water, which could be used to build more luxurious housing. Realisation of a mix of property-owned, rental, social and sheltered housing holds great opportunities for diversification of the housing stock, which would result in a more balanced population composition in the Slachthuisbuurt. Parts of the slaughterhouse area can be arranged as community vegetable garden, walking routes (wheelchair and walking frame proof) and a dog walking area. These places of functional and social greenery would serve as social meeting place in the neighbourhood.

Energy measures would have to play an important role. Energy efficient building, use of sustainable materials and energy efficient renovation of the monumental premises are central in the sustainable area exploitation of the slaughterhouse area. In addition, the possibilities for hot/cold storage with an aquifer thermal energy storage system can be studied for the buildings in the area. The existing buildings, such as the electricity station, the slaughterhouse and ICT-building, have flat roofs. These roofs are very suitable for generation of electricity with solar panels. The area can be made completely energy neutral, which offers a positive business case to finance the redevelopment of the area.

Positive outcomes that can be expected are a more diverse housing stock and population composition, increased social cohesion and a positive impact on the image of the Slachthuisbuurt. This will attract new residents, retain current inhabitants, benefit property values, insurances costs and business vitality. Ultimately, this form of sustainable area exploitation leads to a healthy and desirable Slachthuisbuurt that meets the local needs.

The biggest obstacles for the realisation of these ideas are the raising of enough funding, the activation of residents, decompartmentalisation of organisations and departments and a change in culture and attitude. Organisations must make a turn from task organization to thinking and acting like social entrepreneurs and approaching the neighbourhood as an enterprise. By finding business opportunities, public and private interests can be linked in favour of a greater, common good. The redevelopment of the slaughterhouse area can be such a business opportunity, in which energy measures can play an important role.

7.1.4 Conclusion

It can be concluded that sustainable area exploitation through energy conservation can indeed realise successful urban renewal in the Slachthuisbuurt in Haarlem. A neighbourhood is the playfield of all kind of processes, disciplines and physical-spatial, technical, legal, political, economic, demographic, ecologic and sociocultural aspects. In practice, the search for a more sustainable area exploitation is also a search for new business models and investors. Business models that create multiple and blended value, which involve more than only the traditional partners. The necessary innovation has to come from these new partnerships and smart financing constructions. As Kersten, innovation manager at Enviu, argues: “our innovation is seldom seen in the technology, but rather in the model. Linking together the right partners, that did not cooperate before, so that new opportunities occur. The core of business models is cooperation” (Kersten in Jonkers, 2012, p. 10). Pension funds, institutional investors, energy companies, health insurance companies and other institutions could be such new partners in value-oriented business models.

Sustainable area exploitation is a holistic, sustainable and integral approach to area development, which combines the organisation of construction, management, maintenance and development of an area. Key elements are: combining what you have already got, optimisation of regimes and flows, attraction of new investors and focusing on economic, social, and environmental values. The local needs are the starting point.

Energy is one of the most important flows in the city and strongly intertwined with urban life. Energy measures, such as technical measures, behavioural measures and community measures, can create societal value and thus contribute to the local needs in a neighbourhood. Energy measures have a positive business case, because investments result in environmental, social and economic value creation.

The redevelopment of the slaughterhouse terrain is an example of how sustainable area exploitation can work in practice. By identifying the stakeholders in the area, new initiators can arise, new partnerships can be formed and financing flows exposed. By recognising other means of exchange besides money, such as labour, vegetables, energy and warmth, innovative financing constructions can be made. Energy measures offer a positive business case to contribute to the funding of an integral approach.

In the end, the value-oriented neighbourhood approach is largely innovation on the job. As Kersten argues, it is also about just trying something and not an exact science (in Jonkers, 2012, p. 10). That would be the concluding message of this research: let us look over the borders of our departments and organisations and try something new!

7.2 Recommendations

Based on this research, I would recommend all stakeholders involved in the urban environment to ask themselves: what is my interest in these neighbourhood(s)? How can this interest be pursued in another, more sustainable way? What can I do or what can I do different? And which other partners would I need? Residents, local entrepreneurs, governments, semi-governments, corporations - in the end, all these different actors have some interest in neighbourhoods. Whether it is because it is their living environment, working environment, service area, market or community, everyone deals with neighbourhoods or communities on a daily basis. They are the locus for processes of decline, revitalisation and segregation, the formation of shared interests and development of community solidarity.

Poverty, school dropout, unemployment, language deficiencies, unhealthy life expectancies, lack of prospects and hopelessness are concentrated in a limited number of neighbourhood. For these neighbourhoods, I would want to challenge (semi-)government organisations that are active in land development or urban renewal to ask themselves if they want to be a mere task organisation, or a successful social entrepreneur. I would like to challenge enterprises to perceive their societal performance as being as important as their financial performance. As Dijkhuis puts it powerfully: “profit in an enterprise is like breathing: you cannot do without, but if breathing is the goal of your life, you are missing out on something” (Jonkers, 2012, p. 18).

Grid operator Alliander also has a huge interest in residential areas, both under and above the ground. In this respect I would like to challenge Alliander to take a closer look at her own mission and vision:

> We strive for a better society in the regions with which we are connected.
> Through our connection with society, we deliver our services quickly, innovative and reliable. Customers experience the network company Alliander as the best enterprise of its kind.
> We are in dialogue with our stakeholders. From our ambition to continuously improve, we contribute to the growth of all our stakeholders.
> In the regions with which we are connected, we are driven to work on a better society.
> (Alliander, n.d.)

Alliander tries to meet these ambitious words, for example by participating in the *Blok voor Blok* pilot projects in Haarlem, Amsterdam and Eindhoven and investing in research, development and services for energy conservation. To some extent, Alliander is already more than a task organisation, approaching her regions as enterprises and participating in public-private partnerships, such as *Watt voor Watt.* The search for new (business) opportunities continues, and by linking public and private interests in favour of a greater and common good, Alliander could truly contribute to the neighbourhoods with which she is connected. Blended value increase is the ambition, value creation the internal and external process and sustainable area exploitation could be the mechanism.

Sustainable area development or exploitation is in need of a powerful director. This could pre-eminently be a role for semi-government organisations such as social housing associations and network companies. I would recommend Alliander to consider this role. Dare to start small, to get engaged in neighbourhoods, to start a conversation, to make new mistakes and above all, dare to try something new.

7.3 Critical self-reflection

For this master thesis, I had a limited time available, which forced me to make choices. Therefore, I chose to study only one neighbourhood as a case. The choice for Slachthuisbuurt was based on several factors. For one, it was one of the neighbourhoods of interest in the *Watt voor Watt* thematic working group on value creation. Also, as a disadvantaged

neighbourhood, it got rewarded ISV-budgets and the 40+ neighbourhoods intervention budget. Thus we got the feeling that there was a momentum in the Slachthuisbuurt, of which we wanted to take advantage. Of course there are other neighbourhoods in Haarlem that are interesting to explore further in future research, especially in Haarlem-Oost and Schalkwijk. It would also be interesting to further investigate a completely different neighbourhood, such as a really prosperous area of Haarlem. Also, other scales or cases should be looked into, such as infrastructural projects or the economic development of area that are confronted with regional population decline.

I hope that this research demonstrates the mind-set of sustainable area exploitation, area development 3.0, value creation, organic development, or whatever name you want to give to this new, innovative and sustainable approach to neighbourhood development. The core is that this approach unites spatial planning, sustainable development, urban renewal, business operations and management in one organic process. This is tailor-made work for every community, neighbourhood or district. There is no blue print, there are no general buttons to push. Therefore, this research is only limited and shows only some possibilities in one case.

The theoretical framework can contribute a dime to the theoretical discussion that is going on right now on urban renewal, but this is also only limited: I am convinced that the future of neighbourhood development is an organic process that can go either way.

The methodological choice for qualitative research and content analysis, interviews and the workshop gave a lot of possibilities. By extensive theoretical research, I was forced more than once to reject my own hypotheses. Even though every researcher tries to perceive the world through an open visor, it is insurmountably human to have some assumptions in advance. These were sometimes proven wrong when studying the many available texts. This has definitely benefited the quality of my research.

The encounters I had in my empirical research were also at times surprising, challenging or eye-opening. Especially meeting Marion van der Vegt was a special moment in my research process and also some sort of turning point. Until then I saw the Slachthuisbuurt as any Dutch disadvantaged neighbourhood, but when hearing her stories and by actually seeing the children these stories were about, I observed the Slachthuisbuurt in a completely different way. As geographers we are used to analysing areas to their local characteristics, but by experiencing the neighbourhood by its stories gave a deeper dimension to my research. Also the walking tour through the Slachthuisbuurt with Bart Tangerman really brought the neighbourhood to life. A good experience to be confronted with the fact that any area is more than its accumulated statistics.

The workshop was the final element of my research. I invited several professionals to discuss the possibilities of sustainable area exploitation for the Slachthuisbuurt. Unfortunately, the time we had for the workshop was limited. If I could do it again I would use an entire day or organise two meetings, to come to deeper discussions. I would also choose other participants. I realise now that I focussed too much on the input of professionals, where I should have focussed more on the users. For a next time, I would invite both users and professionals for a group discussion and workshop.

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Appendices

Appendix 1: Dutch urban renewal since WWII

Kernproblemen	Tijd	Beleid	Sturing
Oorlogsschade, woningnood	'45 – '70	Wederopbouw, sanering, reconstructie	Rijk
Woningkwaliteit, 19e-eeuwse wijken	begin '70 – eind '90	Stadsvernieuwing	Rijk> gemeente
Leefbaarheid, naoorlogse wijken, attractieve steden	eind '90 – half '10	GSB, ISV, wijkenaanpak	Gemeente, corporaties
Krimp, crisis, energie, zorg, financiering	nu	Vernieuwing op uitnodiging	Markt, burgers, gemeente

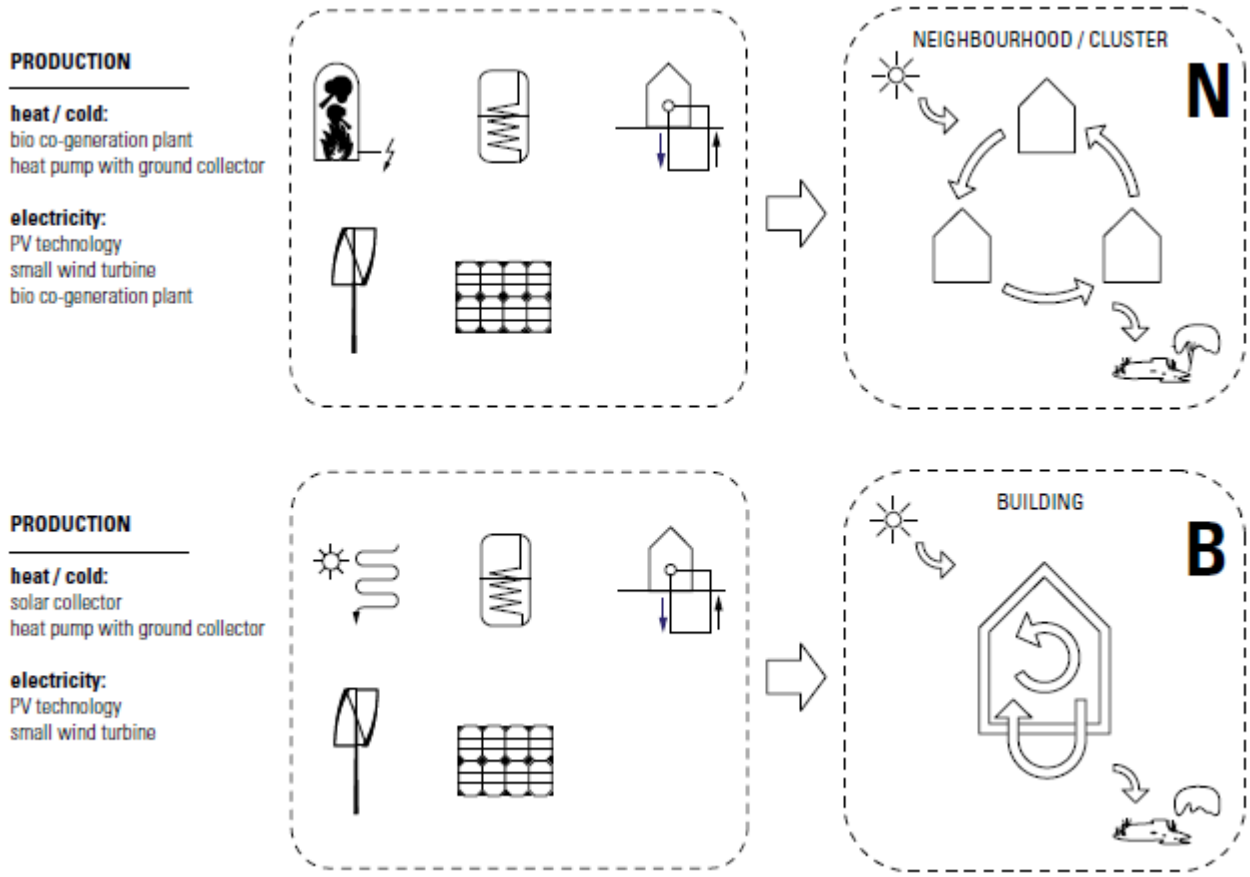
Stedelijke vernieuwing sinds WO II

(Source: KEI & NICIS, 2012, p. 4)

Appendix 2: Preliminary research

Exploratory discussions	
Name	***Organisation***
Remko Cremers	Project manager, Alliander (Department of Energy conservation)
Tanja Vermeer	Consultant, KruijerVermeer & Amsterdam Smart City: Slimme Sportparken
Renske den Exter	Trainee, Alliander (Department of Strategy) Former intern at municipality of Haarlem
Hans Bueno de Mesquita	Senior account manager, municipality of Haarlem (department of Environment)
George de Kam	Professor of Social initiatives in the property market, Radboud University Nijmegen
Exploratory meetings	
Name	***Organisation***
Internal project meetings "Watt voor Watt" Several meetings since 13 September 2012	Alliander, several departments involved
Kennis- en inspiratiebijeenkomst wijkondernemingen: De wijk verdient het! 11 October 2012	Ministry of the Interior; Aedes; Bouwstenen; LSA; Kennisland
Netwerkdag Amersfoort 033Energie 21 November 2012	Ministry of the Interior; NL Agency; Energiesprong; Foundation Meer Met Minder; Platform 31; 033Energie
Working group on value creation Several meetings since 11 December 2012	Members of thematic group on value creation, affiliated with the Haarlem consortium (*Watt voor Watt)*: Alliander; Agentschap NL/Rijkswaterstaat; DGMR; Elan Wonen; Energiepionier Haarlem/New Tribes Civil Society Projects; Municipality of Haarlem; Ymere.
Consortium meeting Watt voor Watt 15 January 2013	Members of the Haarlem consortium (*Watt voor Watt*): Alliander; Elan Wonen; Agentschap NL/Rijkswaterstaat; DGMR; Municipality of Haarlem; Pré Wonen; DWA Installatie- en Energieadvies.

Appendix 3: New stepped strategy: from building to neighbourhood (heat/cold and electricity)



(Source: Van den Dobbelsteen, 2009, p. 20)

Appendix 4: Overview respondents

Interviews: ***general*** *Name*	*Organization*	*Stakeholder type*	*Type of communication*	*Type of consult*
Remko Cremers	Alliander	Project manager Blok voor Blok (Haarlem & Amsterdam) Coordinator *Watt voor Watt*	Personal, by telephone, by e-mail	General consultation
Peter Molengraaf	Alliander	Chief Executive Officer Chairman of the Board of Directors Alliander	Personal	General consultation of the basis of dialogue questions
Rik Berbé	Humap ENERGY8	Change navigator, management consultant Director, founder	Personal	General consultation
Philip Helder	Humap, Philip Helder	Change facilitator, management consultant Owner, director	Personal	General consultation
Hans Bueno de Mesquita	Municipality of Haarlem	Senior account manager, municipality of Haarlem (department of Environment)	Personal, by telephone, by e-mail	General consultation
Respondents: ***effects arena energy measures***				
Remko Cremers	Alliander	Project manager Blok voor Blok (Haarlem & Amsterdam) Coordinator *Watt voor Watt*	By –email	Survey energy measures
Wineke van	Alliander	Senior advisor	By –email	Survey energy

Doezelaar		Marketing communication *Watt voor Watt*		measures
Renske den Exter	Alliander	Technical trainee Strategy, ESCOs *Watt voor Watt*	By e-mail	Survey energy measures
Josefien Gorris	Alliander	Management trainee Marketing communication *Watt voor Watt*	By e-mail	Survey energy measures
Luuk van Hees	Alliander	Management trainee Marketing communication *Watt voor Watt*	By –email	Survey energy measures
Justine Italianer	Alliander	Consultant Amsterdam Smart City	By e-mail	Survey energy measures
Linde van der Pol	Alliander	Project manager Renewable Energy Blok voor Blok (internal)	By e-mail	Survey energy measures
René Schellekens	Rijkswaterstaat	Senior advisor Local climate policies and sustainable building	By –email	Survey energy measures
Carla van Stralen	Alliander	Manager	By e-mail	Survey energy measures
Fleur Teitink	Alliander	Management trainee Amsterdam Smart City	By e-mail	Survey energy measures
Tanja Vermeer	KruijerVermeer	Consultant Slimme Sportparken / ASC	By –email	Survey energy measures
Interviews: ***Slachthuisbuurt***				
Marion van der Vegt	Foundation Rebup	Founder and director	Personal	Open interview
Bart Tangerman	Resident	Administrator Facebook page Slachthuis Haarlem	Personal	Open interview and guided tour in Slachthuisbuurt
Arturo van Haag	Resident	(potential) energy ambassador *Watt voor Watt* Slachthuisbuurt / Amsterdamse Buurt	Personal	Group discussion
Inge Veltmeijer	Resident	(potential) energy ambassador *Watt voor Watt* Slachthuisbuurt / Amsterdamse Buurt	Personal	Group discussion
Bax van Heezik	Resident	(potential) energy ambassador *Watt voor Watt* Slachthuisbuurt / Amsterdamse Buurt	Personal	Group discussion
Ron ??	Resident	(potential) energy ambassador *Watt voor Watt* Slachthuisbuurt / Amsterdamse Buurt	Personal	Group discussion
Frank Verhagen	Resident	(potential) energy ambassador *Watt voor Watt* Slachthuisbuurt / Amsterdamse Buurt	Personal	Group discussion
Jaime Murray	Resident	(potential) energy ambassador *Watt voor Watt* Slachthuisbuurt / Amsterdamse Buurt	Personal	Group discussion
Jaap Hartenhof	Resident	(potential) energy ambassador *Watt voor Watt*	Personal	Group discussion

		Slachthuisbuurt / Amsterdamse Buurt		
Rob Bruijnen	Resident	(potential) energy ambassador *Watt voor Watt* Slachthuisbuurt / Amsterdamse Buurt	Personal	Group discussion
Workshop: ***'Sustainable value creation with energy conservation in Slachthuisbuurt'***				
Remko Cremers	Alliander	Project manager Blok voor Blok (Haarlem & Amsterdam) Coordinator *Watt voor Watt*	Personal	Workshop
Hans Bueno de Mesquita	Municipality of Haarlem	Senior account manager, municipality of Haarlem (department of Environment)	Personal	Workshop
Joost van den Tillaart	Municipality of Haarlem	Urban planner (department of Spatial Policy)	Personal	Workshop
Alex Jansen	Municipality of Haarlem	Area manager (south/west) (department of Area management)	Personal	Workshop
Marion van der Vegt	Stichting Rebup	Founder, director	Personal	Workshop
Tanja van Buuren	VAC Haarlem	Volunteer user quality	Personal	Workshop
Joke Veldkamp	VAC Haarlem	Volunteer user quality	Personal	Workshop
Joram Grünfeld	Elan Wonen	policy officer strategic stock policy	Personal	Workshop
Erik Boele de Zeeuw	New Tribes Civil Society Projects Community Enterprise Leidsebuurt	Founder and social innovator Initiator Energy pioneer Haarlem	Personal	Workshop
Jan Tjemme van Wieringen	Milieu Centraal	Researcher Energy pioneer Haarlem	Personal	Workshop
Marie-José Brandsma	Municipality of Haarlem	Education officer sustainability (Natuur en Milieueducatie Centrum)	Personal	Workshop

Appendix 5: Research techniques and variants per research question and material

Q.	Source	Technique	Variants:
1a.	Media	Content analysis	Qualitative
	Documents	Content analysis	Qualitative
	Literature	Content analysis	Qualitative
1b.	Persons	Interview: Effects arena	By e-mail
	Documents	Desk research	Literature study
	Literature	Desk research	Literature study
2a.	Media	Content analysis	Qualitative
	Documents	Content analysis	Qualitative
	Literature	Content analysis	Qualitative
2b.	Persons	Group interview	Face-to-face
	Media	Content analysis	Qualitative
	Reality	Observation	Free variant
		Desk research	Secondary research
	Documents	Content analysis	Qualitative
		Desk research	Secondary research

2c.	Media	Content analysis	Qualitative	
		Desk research	Secondary research	
	Reality	Content analysis	Qualitative	
		Desk research	Secondary research	Literature study
	Documents	Content analysis	Qualitative	
		Desk research	Secondary research	Literature study
	Literature	Content analysis	Qualitative	
		Desk research	Secondary research	Literature study
3a.	Persons	Interview: Individual and group	Face-to-face	
	Documents	Content analysis	Qualitative	
		Desk research	Secondary research	Literature study
	Literature	Content analysis	Qualitative	
		Desk research	Secondary research	Literature study
3b.	Persons	Interview: Workshop	Face-to-face	
	Media	Desk research	Secondary research	Literature study
	Reality	Desk research	Secondary research	Literature study
	Documents	Desk research	Secondary research	Literature study
	Literature	Desk research	Secondary research	Literature study
3c.	Persons	Interview: Workshop	Face-to-face	
	Media	Desk research	Secondary research	Literature study
	Reality	Desk research	Secondary research	Literature study
	Documents	Desk research	Secondary research	Literature study
	Literature	Desk research	Secondary research	Literature study

Appendix 6: Technical measures for energy conservation

Insulation	Heating	Cooling	Ventilation	Generation
Roof insulation	Solar thermal technologies: solar thermal collector, solar water heater	Micro and mini cogeneration: combined heat and power (CHP) installation	Heat recovery: heat exchanger and high efficiency air filter	Solar panels, PV solar cells
Double glazing, insulated glazing, high-efficiency glass	High-efficiency condensing boiler	Heat pump (combi, hybrid)		Micro and mini cogeneration: combined heat and power (CHP) installation
Wall insulation, cavity wall insulation, façade insulation	Micro and mini cogeneration: combined heat and power (CHP) installation	Heat recovery: heat exchanger and high efficiency air filter		
Floor insulation	Heat pump (combi, hybrid)			
Draught-proofing: windows, doors, loft hatches, electrical fitting, suspended floorboards,	Heat recovery: heat exchanger and high efficiency air filter			

pipework, ceiling-to-wall joints. Weatherstripping and radiator foil.				

(Source: Het Energie Gezelschap, n.d.; GE Energy, n.d.; Loket over Energie, n.d.; Milieu Centraal, n.d.c; Milieu Centraal, 2012b)

Appendix 7: Ways to save energy with efficient behaviour

Heating	Cooking and kitchen	Showering	Washing and drying	House
Purchase and install efficient appliances (energy label A or energy saving products), such as the boiler	Purchase and install efficient appliances (energy label A or energy saving products), such as the dish washer	Purchase and install efficient appliances (energy label A or energy saving products) such as the shower	Purchase and install efficient appliances (energy label A or energy saving products) such as the washing machine	Purchase and install efficient appliances (energy label A or energy saving products), such as the television
Turn down the heating one hour before leaving or going to bed	Use eco-program or mode on appliances, such as the dish washer	Use eco-program or mode on appliances, such as the eco mode on showers	Use eco-program or mode on appliances such as the washing machine	Turn off devices that are not being used or that are on stand-by, such as the computer
Turn the heating lower in general	Only turn the dishwasher on if its full	Take quicker showers	Only turn the washing machine on if its full	Ventilate the house, fresh air heats faster
	Defrost the freezer regularly		Wash at a lower temperature (30°C)	Close the doors and only heat the rooms that are used
	Defrost food in the refrigerator and don't put hot food in freezer or refrigerator		Use a clothesline instead of a dryer	

(Source: 033 energie, n.d.; Milieu Centraal, n.d.a; Watt voor Watt, 2013a)

Appendix 8: Costs for energetic improvements

Estimated costs to improve an average dwelling in the Netherlands to the practically best feasible energy label (according to housing type and building year)

Detached house	Label improvement[a]	Costs[b]	Two-family home	Label improvement	Costs
until 1964	G to B	15.510	**until 1964**	F to B	13.400
1965-1974	F to A	16.870	**1965-1974**	E to B	13.990
1975-1991	D to B	16.490	**1975-1991**	C to B	14.230
1992-2005	B to B	2.580	**1992-2005**	B to B	3.680
Terraced house	Label improvement	Costs	**Maisonette dwelling**	Label improvement	Costs
until 1945	G to B	11.480			
1946-1964	F to B	7.880	**until 1964**	G to B	7.810
1965-1974	E to B	8.980	**1965-1974**	D to A	7.900
1975-1991	D to B	8.240	**1975-1991**	C to B	6.830
1992-2005	C to B	1.000	**1992-2005**	B to B	450
Apartment	Label improvement	Costs	**Tenement dwelling**	Label improvement	Costs

			until 1945	F to B	11.201
until 1964	D to B	3.550	**1946-1964**	E to B	6.084
1965-1974	E to C	5.340	**1965-1974**	D to B	3.700
1975-1991	C to B	5.214	**1975-1991**	C to B	4.110
1992-2005	B to B	770	**1992-2005**	B to B	2.390

Flat dwelling (other)	Label improvement	Costs
until 1964	E to B	5.634
1965-1974	E to C	4.900
1975-1991	C to B	5.304
1992-2005	B to B	50

[a] Current labels are based on the most common label for this housing type and building year, the improved label is based on the expected practically feasible label with a package of saving measures.

[b] The costs are based on research by PRC (2006).

(Source: NL Agency, 2011b)

Appendix 9: Overview of programs and arrangements for energy conservation in households

National programs	National subsidies	National fiscal arrangements	Provincial and municipal subsidies or loans	Haarlem	Mortgages and loans
Meer Met Minder	SDE+ (Stimulering Duurzame Energieproductie); subsidy on sustainable energy production	Rebate on interest of loans used in order to improve a house by energy saving measures	Duurzaamheidsleningen; loans with attractive conditions for investments in energy saving measures	Groene mug; municipal sustainability program	Several banks: Groenhypotheken[a]
Energiesprong (Platform 31)	Rijkspremie Zonnepanelen; a national premium on purchase of solar panels	Cheaper VAT rates (6%) on insulation of dwelling within the Building Act	Several subsidies on energy saving measures, such as insulation, differs for every municipality	Duurzaamheidslening; local loan with attractive conditions for investments in energy saving measures	Huis en Energie; Alfam consumer credit; F Plus; Energieremmers: offer special mortgages and loans for investments in energy saving measures[b]
Blok voor Blok			Subsidies for investments in specific innovative measures, such as green roofs; differs for every municipality	Watt voor Watt (pilot project Blok voor Blok in Haarlem)	

[a] The number of steps a house improves in its energy label determines the maximum amount of the loan. Because of the rebate on interest of energy saving measures, this mortgage offers an appealing mortgage interest.

[b] These companies offer different possibilities to finance the investment for energy saving measures: getting a new mortgage, raising the existing mortgage, taking a second mortgage or by using credit in the form of a personal loan or continuous credit.

(Sources: Energiesprong, 2013; Foundation Meer Met Minder, 2013b; De Groene Mug n.d.; NL Agency, 2010; NL Agency, 2011a; Tax and Customs Administration, 2013; Watt voor Watt, 2013b)

Appendix 10: Effects arena energy measures

Edited list:

1. Insulation (floor, roof, façade, glass)
2. (re)build dwelling to a passive house level
3. Energy saving competition (game) or energy battles
4. Model home: example of an energy efficient house, realised by local entrepreneurs
5. Generating all of your own energy in a sustainable way, alone or with your neighbourhood
6. Action/game in which energy conservation is linked to investments in one's home or neighbourhood, every watt/m3/euro an individual saves (compared to today) is donated to a good cause
7. Sports clubs working together to save and generate energy
8. Organise an event in the neighbourhood such as the 'energetic city'. With as question: how do you think that the future looks like?
9. Official launch energy project such as *Watt voor Watt* with all the partners and media
10. Launch of a website on energy conservation in the neighbourhood, such as www.wattvoorwatt.nl
11. Meetings for residents to become energy ambassadors, such as in Slachthuisbuurt/ Amsterdamse Buurt (*Watt voor Watt*)
12. Publicity in the media, such as an article in the 'Klimaatkrant' *Watt voor Watt*
13. Internal communication within partners of an energy consortium, such as Liander in project *Watt voor Watt*
14. Let people decide at any moment which kind of electricity they use and from whom (from NUON, wind, sun, my aunt…)
15. Sell redundant generated energy (after own consumption) with one push on a button to someone in an emerging economy (i.e. Kenya)
16. Founding of a Local Sustainable Energy Companies (LDEBs / LSECs) by residents, possible together with entrepreneurs and government parties
17. Financing of energy saving measures by network costs (connection to the grid)
18. Stimulating electric driving, with for example: municipal taxes, placement of public charging stations, issue of permits only for electric shared cars, etc.
19. Generate local electricity with solar panels. For example by: placing solar panels on your own home, placing solar panels on local facilities, such as clubs houses of sports clubs, making public places and roofs available for residents to generate energy, making it possible for residents to 'buy' solar panels that are placed on a local entrepreneur (such as the Gamma in the neighbourhood) or by assimilating solar panels in infrastructure (such as bicycle paths, roads, soccer fields, etc.)
20. Decentralised storage stations in the neighbourhood for electricity
21. Making sustainability a fashion object, by letting examples (people, icons) flaunt with sustainability
22. Exchanging own generated energy within the neighbourhood
23. Create a neighbourhood display: current balance of energy generated and consumed, compared with balance on own energy use in the home
24. Smart logistics concerning (energy) operations in the public space (digging, earthwork, roadwork, replacing pipework, power lines, etc.)
25. Open house (master class): how did I rebuilt my house to an energy efficient home and/or how do I behave in house, what efficient energy behaviour (reference home)
26. Energy saving classes, on primary schools (and for example sports clubs)
27. Placement of a smart meter and energy feedback system
28. Energy drinks and thematic energy meetings (neighbourhood activities)
29. 'No-worries packages' for sustainable home improvements, by using one contact that selects builders and installers and guarantees a certain level of quality

Top ten summary:

1. René Schellekens, Remko Cremers and Renske den Exter		causes effects:	
Activities	Results	For the neighbourhood	For the individual
Insulation of for example glass, floor, roof, façade	Better insulated and energy efficient dwellings (less energy loss)	Good for the image of the neighbourhood and good for the environment	Lower energy use, smaller ecological footprint, a better energy label, more comfort (less draught, cold, noise pollution), so that the quality of life enhances
	More valuable property, higher assessed value	Better neighbourhood, good for the image of the neighbourhood and thereby benefits a desirable neighbourhood. Value increase of dwellings (when more houses are involved, value increase of the neighbourhood)	Better house, more desirable dwelling, value increase house, return on investment (it pays back for itself quickly)
	Better marketable dwellings	Quicker sale, valuable neighbourhood, desirable neighbourhood to live	Quicker sale of the house
	Lower housing and living costs and therefore lower monthly costs (because of lower energy costs)	More disposable income and different consumption patterns benefit the local economy. Residents have more money left that is potentially spent in the neighbourhood	More disposable income, lower energy bill, more money left for other things. Return on investment (it pays back for itself quickly) also leads to another consumption pattern
	More comfortable dwelling, higher living pleasure, less noise pollution, less cold.	Increase of the quality of houses leads to higher living pleasure in the neighbourhood. People that are happy with their dwelling are happier and make other people in the neighbourhood happier.	Greater comfort in the house, enhancement of the quality of life because of less noise pollution, higher living pleasure, less draught, moister, mould and cold, warm feet, healthier living and less medical expenses.
	Visible activities to the houses in the neighbourhood	Creation of conversation between residents, such as neighbours	
	More employment, work for contractors and the like	Employment when hiring local employees, such as contractors, installers, etc.	
	Personal development		Feeling good about yourself by doing something good for the environment

2. René Schellekens		causes effects:	
Activities	Results	For the neighbourhood	For the individual

(re)build dwelling to a passive house level	Affordable and comfortable houses	Residents reduce their energy costs	Sustainable, affordable, healthy and comfortable dwelling, leaving extra budget/money
	Better quality of the houses	Longer exploitation dwellings	Lower living expenses
	Face lift for the neighbourhood	Tendency to tackle other problems in the neighbourhood and deal with the neighbourhood environment, leading to a face lift for the neighbourhood	Attention for the (neighbourhood) environment
	Employment	More employment for the building sector	More financial security
	Attention for the neighbourhood	Neighbourhood becomes popular, better image	
	Pride	Everybody wants to belong and join, residents are proud of their neighbourhood.	Positive vibe and mood because of a new neighbourhood.

3. René Schellekens and Remko Cremers		causes effects:	
Activities	Results	For the neighbourhood	For the individual
Energy saving competition (game) or energy battles (on the basis of comparable family composition and housing type)	Energy conservation (battle to save energy)	Decrease of energy consumption and energy costs	Decrease of energy consumption and energy costs
	Activities are organised	Activities in the neighbourhood	Participation in activities
	Meeting new people, doing it together	Feeling of collectivity and togetherness, saving energy as a team sport. The game is a neighbourhood activity (which is talked about), social interaction, competition, with and against each other	Feeling of belonging, out of isolation. Being part of a group, feeling really connected with the neighbourhood. Also more interaction within families
	Growing awareness and knowledge	Fertile ground for other projects	More awareness and knowledge
	Pride	Everybody wants to belong and join, residents are proud of their neighbourhood.	Positive feeling if results are achieved, pride
	Growing insights in energy	Insights in the possibilities of energy conservation by comparing energy	Insights in the own consumption and possibilities for saving energy

		consumption / benchmark with others	

4. Carla van Stralen		causes effects:	
Activities	Results	Activities	Results
Action/game in which energy conservation is linked to investments in one's home or neighbourhood Every watt/m3/euro an individual saves (compare to today) is donated to a good cause.	Incentive to get busy with energy conservation; do it not just for yourself but for a good cause (other than only the environment)	As a neighbourhood, faster independent in your energy supply (if you generate half of your own use and save the other half, you become completely independent)	Becoming independent in your energy supply faster (if you generate half of your own consumption and save the other half, you are completely independent)
	Money becomes available to invest in your home or in the neighbourhood	New source of income to invest in the neighbourhood (in facilities, for children, elderly, a care farm, etc.)	New source of income to invest in your home (in solar panels, insulation, etc.)
	Social interaction	Social impact: saving energy together for a good cause results in social cohesion	More in contact with your neighbours and others in the neighbourhood
	Insights in energy use	Getting insights in what you're consuming en what you're saving is motivating. Just having insight already leads to 4% saving on your energy bill. This is about 6-8 euro a month. Can you imagine how much money you will have saved in one year if you try to save energy with the whole neighbourhood!	Getting insights in what you're consuming en what you're saving is motivating. Just having insight already leads to 4% saving on your energy bill

5. Remko Cremers, Luuk van Hees, Justine Italianer, Tanja Vermeer and Fleur Teitink		causes effects:	
Activities	Results	For the neighbourhood	For the individual
Generate local energy with solar panels. For example by: -placing solar panels on your own home -placing solar panels on local	Generation of decentralised sustainable energy and less fossil energy consumption	More electricity is locally generated and consumed. This is better for the environment and climate. Good for image of the neighbourhood. The neighbourhood is positive and innovative in the news	Smaller ecological footprint, more living pleasure, promotes a sustainable lifestyle
	Lower energy bills	Less expenses on energy in the neighbourhood (residents, entrepreneurs, facilities)	Less expenses on energy, more disposable income

facilities, such as clubs houses, sports clubs -making public places and roofs available for residents to generate energy -making it possible for residents to 'buy' solar panels that are placed on a local entrepreneur (such as the Gamma in the neighbourhood) -or by assimilating solar panels in infrastructure (such as bicycle paths, roads, soccer fields, etc.)	Own generation of energy is possible	The value of the houses increases and as example does follow, the whole neighbourhood increases in value	More self-sufficient and independent in the energy supply, lower energy bills
	High return on investment because of a positive business case	Increasing disposable income for the neighbourhood. Benefits stimulation of the local economy. The value of the neighbourhood increases. In the vase of facilities: more money is left for i.e. materials (like balls, a water field, etc.)	Energy bill decreases, property value increases, return on investment (it pays back for itself quickly)
	Organisation of information meetings and PR campaigns	More knowledge is shared on energy generation and more social cohesion and community spirit because of the meetings and a joint investment	More awareness, knowledge and participation and an action perspective on energy generation possibilities

6. Luuk van Hees and Carla van Stralen		causes effects:	
Activities	Results	For the neighbourhood	For the individual
Stimulating electric driving. With for example: municipal taxes, placement of public charging stations, issue of permits only for electric shared cars, etc.	Placement of public charging stations	The neighbourhood gets a modern and innovative appearance	
	Charging of electric cars becomes possible	Threshold to purchase an electric vehicle decreases	Threshold to purchase an electric car decreases. Approximately 75 percent saving on fuel costs (and costs saving due to not charging any costs for charging stations (yet))
	Charging an electrical vehicle becomes more easy	Incentive for sustainability in the neighbourhood	Incentive for a more sustainable lifestyle. As an individual, becoming a trendsetter or fashion icon because it propagates a progressive lifestyle
	Cleaner air and quieter environment	More pleasant living environment by less noise and less air pollution. CO2 emissions decrease	Quality of life and living pleasure enhances, living in the neighbourhood is more comfortable
	More social interaction	Increased social interaction by getting questions about electric driving one gets from his environment	Increased social interaction by getting questions about electric driving one gets from his environment

7. Luuk van Hees and Linde van der Pol	causes effects:

Activities	Results	For the neighbourhood	For the individual
Decentralised storage stations in the neighbourhood for electricity	Renewable energy can be generated and stored locally	Possibility to use each other's energy	Ability to use your own generated power
	More households that will purchase solar panels	Better image as a neighbourhood (position as leader) and the value of property in the neighbourhood increases. Self-sufficiency increases.	More energy is generated locally, more self-sufficiency
	Grid losses of transport decrease	Continuity of electricity supply increases	Continuity of electricity supply increases

8. Renske den Exter and Remko Cremers		causes effects:	
Activities	Results	For the neighbourhood	For the individual
Energy saving classes, on primary schools (and for example sports clubs)	More knowledge on energy use and possibilities to save energy	More sustainable-minded neighbourhood residents. Broad understanding of and knowledge on the theme.	Lower energy bill, devices and appliances (e.g. lamps) last longer and more control on the energy bill
	Activated children to save energy, more enthusiasm to save energy.	Children affect each other and can help cause a connection within the neighbourhood (social cohesion). Child ambassadors as an example: children tell how cool energy (conservation) is.	Children and parents become aware of the possibilities and confronted with own behaviour,
	Energy is saved in the neighbourhood because of increased awareness, enthusiasm and knowledge	Energy is saved in the neighbourhood because of increased awareness, enthusiasm and knowledge	Feeling good about yourself because you do something good for the environment and benefits the relationship with your child (doing something together at home)
	Energy as a theme taught in primary schools		Understanding and publicity amongst the youngest target group, that want and have to use energy for still a long time to come (young learned is well invested)

9. Renske den Exter, Josefien Gorris and Wineke van Doezelaar		causes effects:	
Activities	Results	For the neighbourhood	For the individual
Placement of a smart meter and energy feedback system	Getting insights in energy use	Possibly: increased social cohesion if neighbourhoods compare energy use and feedback with each other	Less energy use, lower energy bill, more money left for other things
	Increased knowledge on economical and		More control on the energy bill, living more

	efficient energy behaviour		healthy due to increased knowledge on energy behaviour
	More awareness on your own energy behaviour		Increased awareness, more control on the energy bill
	Getting insights, knowledge and awareness leads to energy conservation (energy efficient behaviour and taking measures)		More power/force because of the offered action perspective (tips), lower energy consumption, lower living costs and more control on costs of housing and living due to increased knowledge and awareness, smaller ecological footprint, feeling good about yourself because you do something good for the environment and fun because of the game element of saving energy

10. Renske den Exter, Remko Cremers and René Schellekens		causes effects:	
Activities	Results	For the neighbourhood	For the individual
Energy drinks and thematic energy meetings (neighbourhood activities)	Talks and conversation on the theme of energy, attention for the subject	Joint dialogue on the theme of energy, exchange of experiences and thoughts, creation of more ambassadors, the theme starts to live in the neighbourhood, it creates a buzz	Theme starts to live, conversation is continued at home, people start to think on what they can do
	Feeling of collectivity and togetherness, fun, cosiness, sociability	Good atmosphere in the neighbourhood.	Social interaction, fun to take part and live here, fun because of the game element.
	More insights in the possibilities of energy measures	Insights in the possibilities of energy conservation in the neighbourhood	People get some perspective and tools to handle their own living expenses
	More activities in the neighbourhood	Increased social cohesion, fight against social exclusion, greater living pleasure because of a more cosy and active neighbourhood	More living pleasure in a cosy and active neighbourhood. Fear for social exclusion increases, so people would want to belong and join in the conversation after taking measures
	Better contacts in the neighbourhood	Increased living pleasure. People live longer in this neighbourhood and the neighbourhood gets a better image. Increased social cohesion (and corresponding effects of less criminality, better health, value increase dwellings, etc.)	You get to know more people, resulting in more enjoyable living, so potentially you'll be living here or be connected to this neighbourhood longer. It is fun to be in contact with the neighbours.

	Possibility to network	Drinks can be used as meetings to network, increased innovation and employment in the neighbourhood	Possibility to network in the neighbourhood
	Increased knowledge on economical and efficient energy behaviour, more awareness on their own energy behaviour. This leads to actual energy conservation	Action perspective on saving energy with the neighbourhood	Less energy use, lower energy bill, more money left for other things, more control on the energy bill. Power/force because of the offered action perspective (tips). Feeling good about yourself because you do something good for the environment

Appendix 11: Content analysis effects arena

Neighbourhood and individual values (categories) that are directly or indirectly effected by energy measures

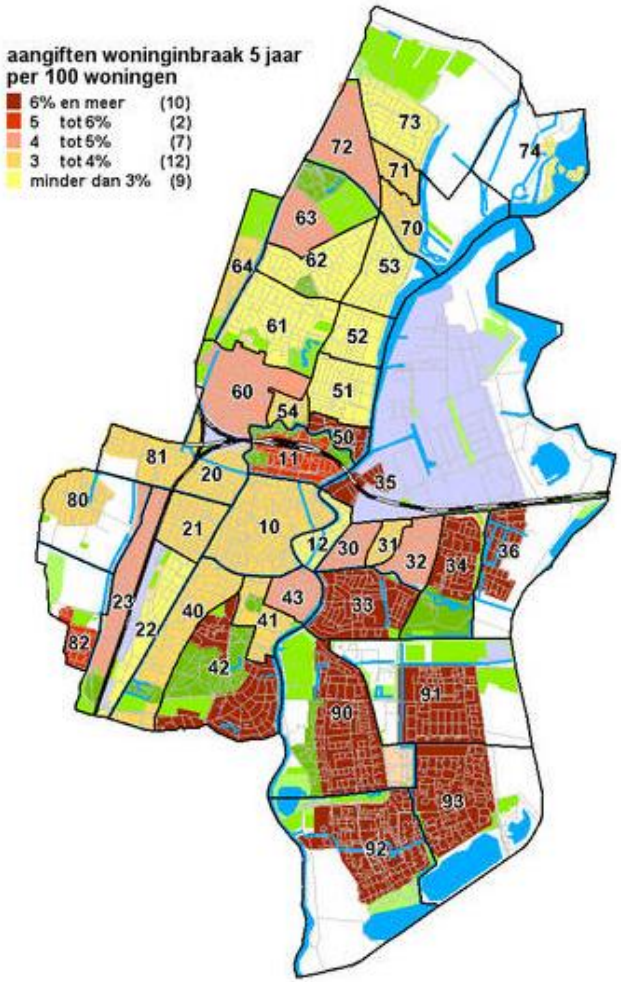
Intervention	Neighbourhood values (tags)	Individual values (tags)
Insulation (floor, roof, façade, glass)	Dwellings, Culture, Economy	Health, Economy, Sustainability, Living situation, Pleasant life, Personal development
(re)build dwelling to a passive house level	Dwellings, Living environment, Culture, Economy	Health, Economy, Sustainability, Living situation, Independence, Pleasant life, Personal development
Energy saving competition (game) or energy battles	Culture, Economy	Economy, Sustainability, Living situation, Personal development
Model home: example of an energy efficient house, realised by local entrepreneurs	Culture, Economy	Economy, Sustainability, Personal development
Generating all of your own energy in a sustainable way, alone or with your neighbourhood	Facilities, Dwellings, Living environment, Culture, Economy	Economy, Sustainability, Living situation, Independence, Pleasant life, Personal development
Action/game in which energy conservation is linked to investments in one's home or neighbourhood, every watt/m3/euro an individual saves (compared to today) is donated to a good cause	Facilities, Dwellings, Living environment, Culture, Economy	Health, Economy, Sustainability, Living situation, Independence, Pleasant life, Personal development
Sports clubs working together to save and generate energy	Facilities, Living environment, Culture, Economy	Sustainability, Pleasant life
Organise an event in the neighbourhood such as the 'energetic city'. With as question: how do you think that the future looks like?	Culture	Sustainability, Personal development
Official launch energy project such as *Watt voor Watt* with all the partners and media	Culture, Support	Sustainability, Living situation
Launch of a website on energy conservation in the neighbourhood, such as www.wattvoorwatt.nl	Culture, Economy, Support	Health, Economy, Sustainability, Independence, Personal development
Meetings for residents to become energy ambassadors, such as in Slachthuisbuurt/ Amsterdamsebuurt (*Watt voor Watt*)	Dwellings, Living environment, Culture, Economy, Support	Health, Sustainability, Living situation

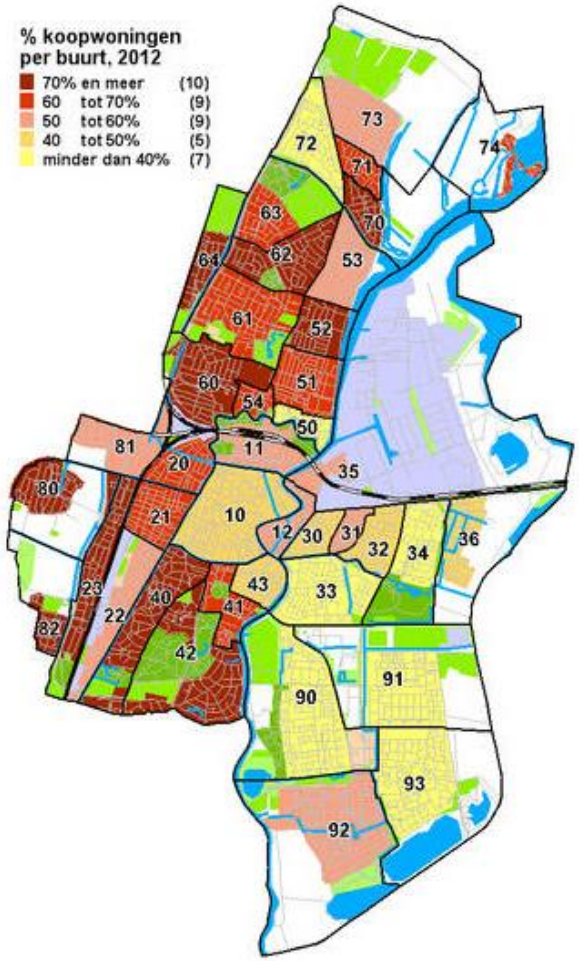
Publicity in the media, such as an article in the 'Klimaatkrant' *Watt voor Watt*	-	Sustainability
Internal communication within partners of an energy consortium, such as Liander in project *Watt voor Watt*	-	Sustainability, Personal development
Let people decide at any moment which kind of electricity they use and from whom (from NUON, wind, sun, my aunt…)	-	Economy, Sustainability, Living situation, Independence, Personal development
Sell redundant generated energy (after own consumption) with one push on a button to someone in an emerging economy (i.e. Kenya)	Economy	Economy, Independence, Personal development
Founding of a Local Sustainable Energy Companies (LDEBs / LSECs) by residents, possible together with entrepreneurs and government parties	Dwellings, Living environment, Culture, Economy, Support	Economy, Sustainability, Living situation, Independence, Personal development
Financing of energy saving measures by network costs (connection to the grid)	Dwellings, Culture, Economy	Economy, Sustainability, Living situation, Pleasant life,
Stimulating electric driving, with for example: municipal taxes, placement of public charging stations, issue of permits only for electric shared cars, etc.	Dwellings, Accessibility, Living environment, Culture, Economy	Health, Economy, Sustainability, Living situation, Pleasant life, Personal development
Generate local electricity with solar panels. For example by: placing solar panels on your own home, placing solar panels on local facilities, such as clubs houses of sports clubs, making public places and roofs available for residents to generate energy, making it possible for residents to 'buy' solar panels that are placed on a local entrepreneur (such as the Gamma in the neighbourhood) or by assimilating solar panels in infrastructure (such as bicycle paths, roads, soccer fields, etc.)	Facilities, Dwellings, Accessibility, Living environment, Culture, Economy	Economy, Sustainability, Living situation, Independence, Pleasant life, Personal development
Decentralised storage stations in the neighbourhood for electricity	Dwellings, Living environment, Culture, Economy	Economy, Sustainability, Living situation, Independence, Pleasant life
Making sustainability a fashion object, by letting examples (people, icons) flaunt with sustainability	Dwellings, Culture, Economy	Economy, Sustainability, Personal development
Exchanging own generated energy within the neighbourhood	Culture, Economy	Health, Economy, Sustainability, Living situation, Independence, Personal development
Create a neighbourhood display: current balance of energy generated and consumed, compared with balance on own energy use in the home	Dwellings, Culture, Economy	Economy, Sustainability, Personal development
Smart logistics concerning (energy) operations in the public space (digging, earthwork, roadwork, replacing pipework, power lines, etc.)	Accessibility, Living environment, Support	Health, Living situation, Pleasant life

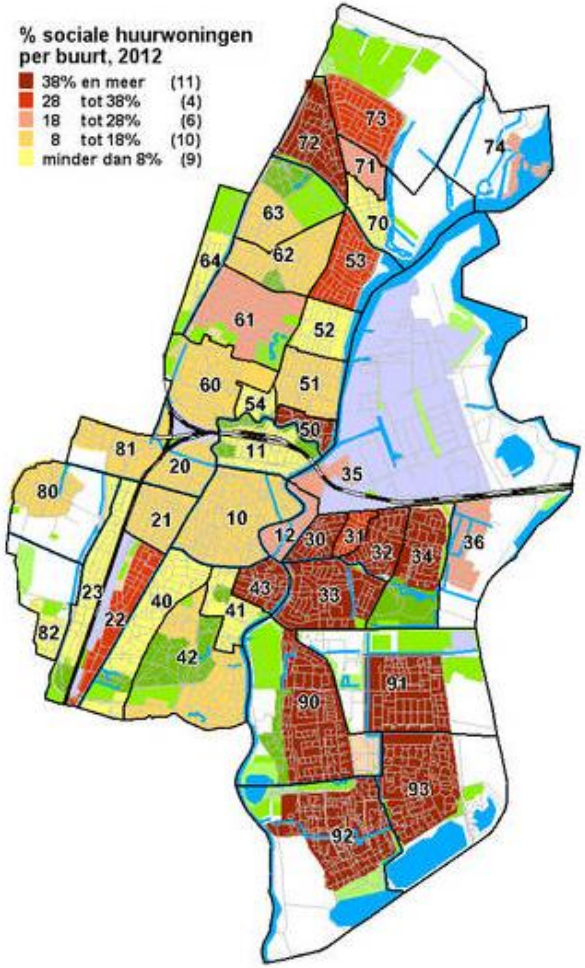
Open house (master class): how did I rebuilt my house to an energy efficient home and/or how do I behave in house, what efficient energy behaviour (reference home)	Culture, Economy, Support	Economy, Sustainability, Personal development
Energy saving classes, on primary schools (and for example sports clubs)	Facilities, Culture, Economy, Support	Economy, Sustainability, Independence, Personal development
Placement of a smart meter and energy feedback system	Culture	Economy, Sustainability, Living situation, Independence, Personal development
Energy drinks and thematic energy meetings (neighbourhood activities)	Facilities, Dwellings, Culture, Economy	Health, Economy, Sustainability, Living situation, Independence, Personal development
'No-worries packages' for sustainable home improvements, by using one contact that selects builders and installers and guarantees a certain level of quality	Dwellings, Culture, Economy	Health, Economy, Sustainability, Living situation, Pleasant life, Personal development

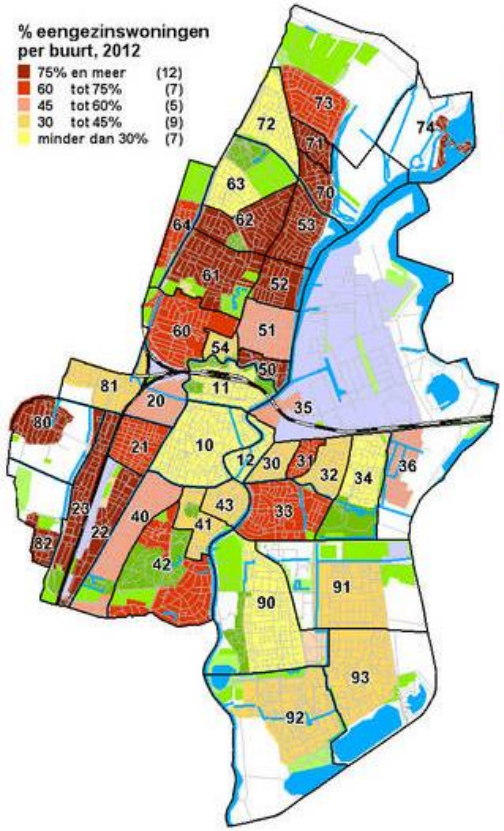
Appendix 12: Maps of Haarlem with neighbourhood characteristics

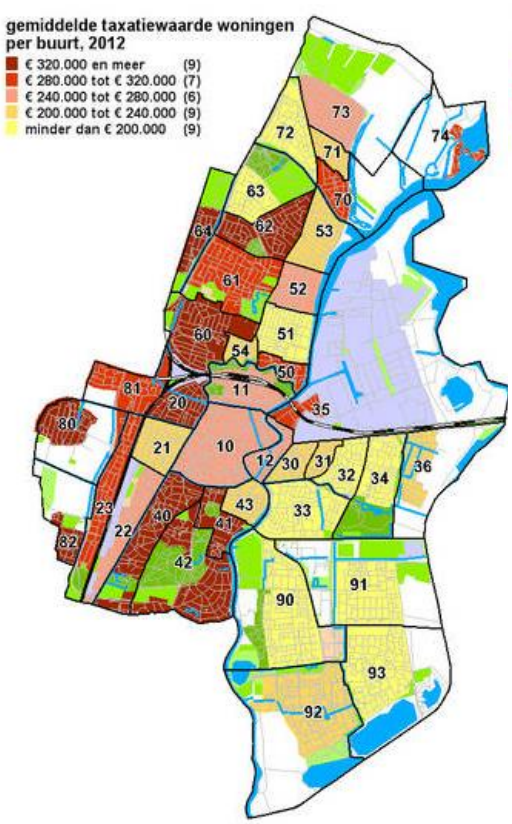
10-12 *Oude Stad*
20-23 *Spoorbaan Leiden*
30-36 *Haarlem-Oost* **(33 = *Slachthuisbuurt*)**
40-43 *Haarlemmerhoutkwartier*
50-54 *Westoever N.Buitenspaarne*
60-64 *Ter Kleef en Te Zaanen*
70-74 *Oud Schoten en Spaarndam*
80-82 *Duinwijk*
90-93 *Schalkwijk*

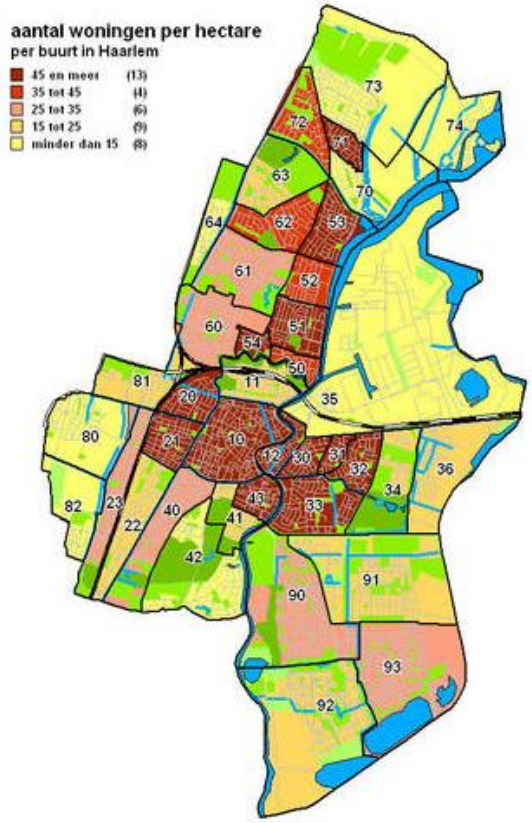


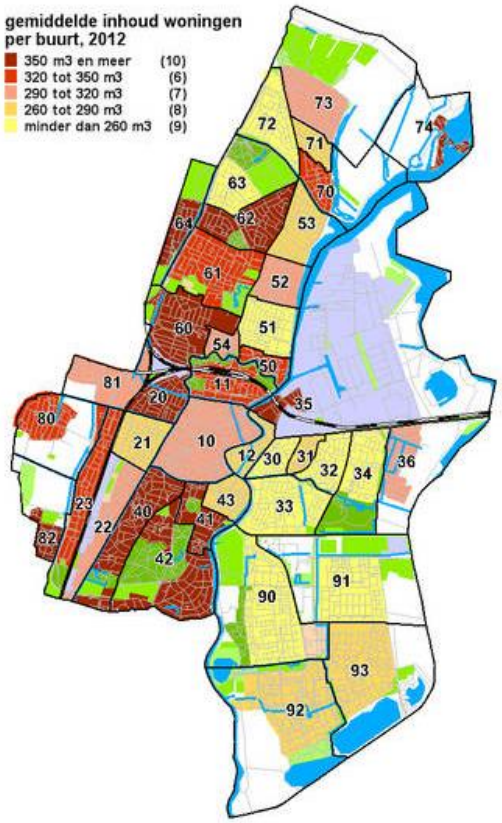






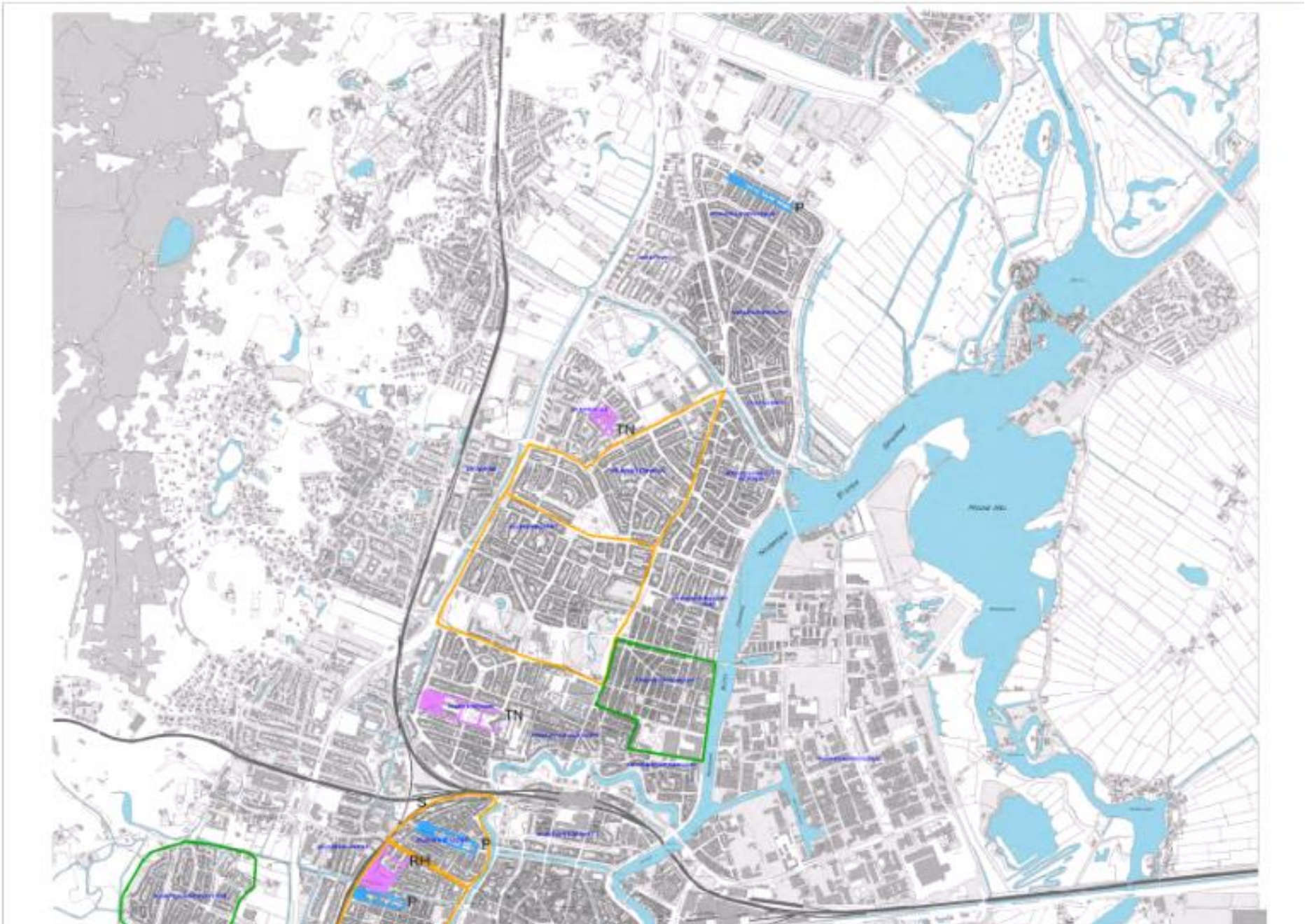


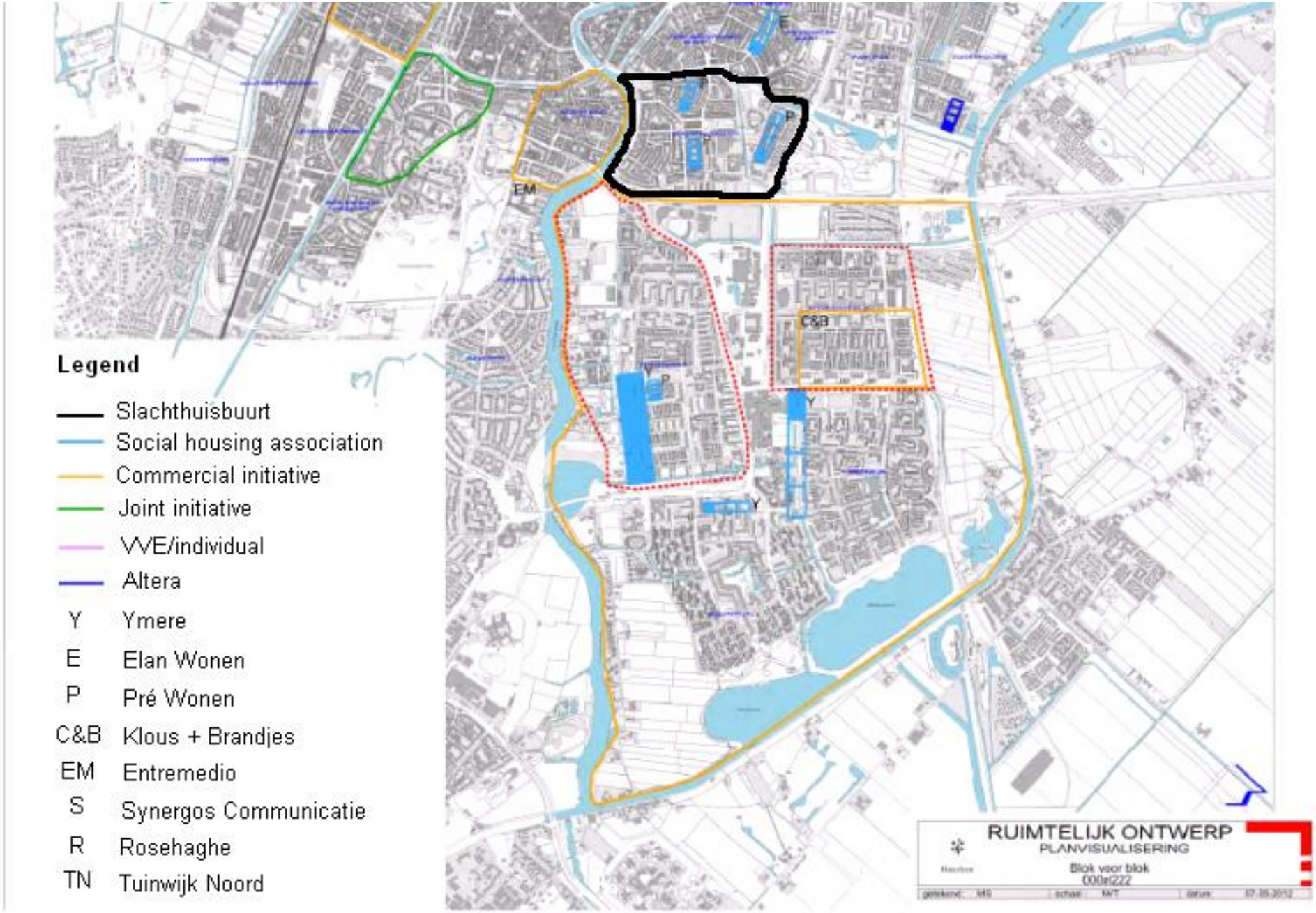




(Source: Municipality of Haarlem, 2013)

Appendix 13: *Watt voor Watt* map of Haarlem





(Source: Municipality of Haarlem, personal communication)

Appendix 14: Property values in Haarlem

Neighbourhood	Year built[a]	# of one-family homes[b]	Volume in m^3 [c]	Assessed value[d]	€ per m^3 [e]	% relative to average Haarlem[f]
1. Meerwijk	1975	1320	356	211836	595	71
2. Boerhaavewijk	1977	1087	320	205651	643	76
3. Parkwijk	1980	465	323	207631	643	76
4. Potgieterbuurt	1926	597	294	206109	701	83
5. Slachthuisbuurt	**1933**	**1630**	**260**	**182594**	**702**	**83**
6. Europawijk	1976	1322	359	252196	702	83
7. Oude Amsterdamse Buurt	1958	602	327	241728	739	88
8. Vogelenbuurt	1930	869	285	212564	746	89
9. Waarderpolder	1983	399	404	302180	748	89
10. Zuiderpolder	1984	810	351	265038	755	90
11. Transvaalbuurt	1910	1304	278	210896	759	90
12. Rozenprieel	1939	737	337	255788	759	90
13. Indischebuurt-Noord	1936	1792	279	212273	761	90
14. Delftwijk	1950	701	310	236181	762	90
15. Leidsebuurt	1903	1485	306	233328	763	91
16. Molenwijk	1978	1488	363	278935	768	91
17. Van Zeggelenbuurt	1936	766	287	221407	771	92
18. Indischebuurt-Zuid	1919	996	317	249414	787	93
19. Frans Halsbuurt	1903	309	425	335307	789	94
20. Patrimoniumbuurt	1925	485	356	283184	795	94
21. Sinnevelt	1959	234	344	276530	804	95
22. Vondelkwartier	1947	1609	320	257502	805	96
23. Stationsbuurt	1869	285	547	444716	813	97
24. Spaarnwouderbuurt	1898	373	357	296019	829	98
25. Leidsevaartbuurt	1925	1095	310	257531	831	99
26. Total Haarlem	**1941**	**36974**	**361**	**304119**	**842**	**100**
27. Dietsveld	1944	665	362	309478	855	101
28. Spaarndam-west	1922	267	361	315419	874	104
29. Zijlweg-oost	1907	828	459	401289	874	104
30. Kleine Hout	1915	302	520	457606	880	104
31. Houtvaartkwartier	1939	1505	367	323852	882	105
32. Centrum	1852	1301	378	337078	892	106
33. Planetenwijk	1932	1775	373	342103	917	109
34. Zijlweg-west	1942	293	563	517833	920	109
35. Kleverpark	1920	1633	445	415261	933	111
36. Bomenbuurt	1928	2102	340	317560	934	111
37. Overdelft	1953	354	394	385720	979	116
38. Koninginnebuurt	1926	1106	644	654089	1016	121
39. Oosterduin	1960	341	452	484522	1072	127
40. Ramplaankwartier	1939	1074	341	371269	1089	129
41. Den Hout	1935	668	707	867277	1227	146

[a] Average year one-family homes were built

[b] Number of one-family houses in the neighbourhood

[c] Average volume of one-family houses in m^3

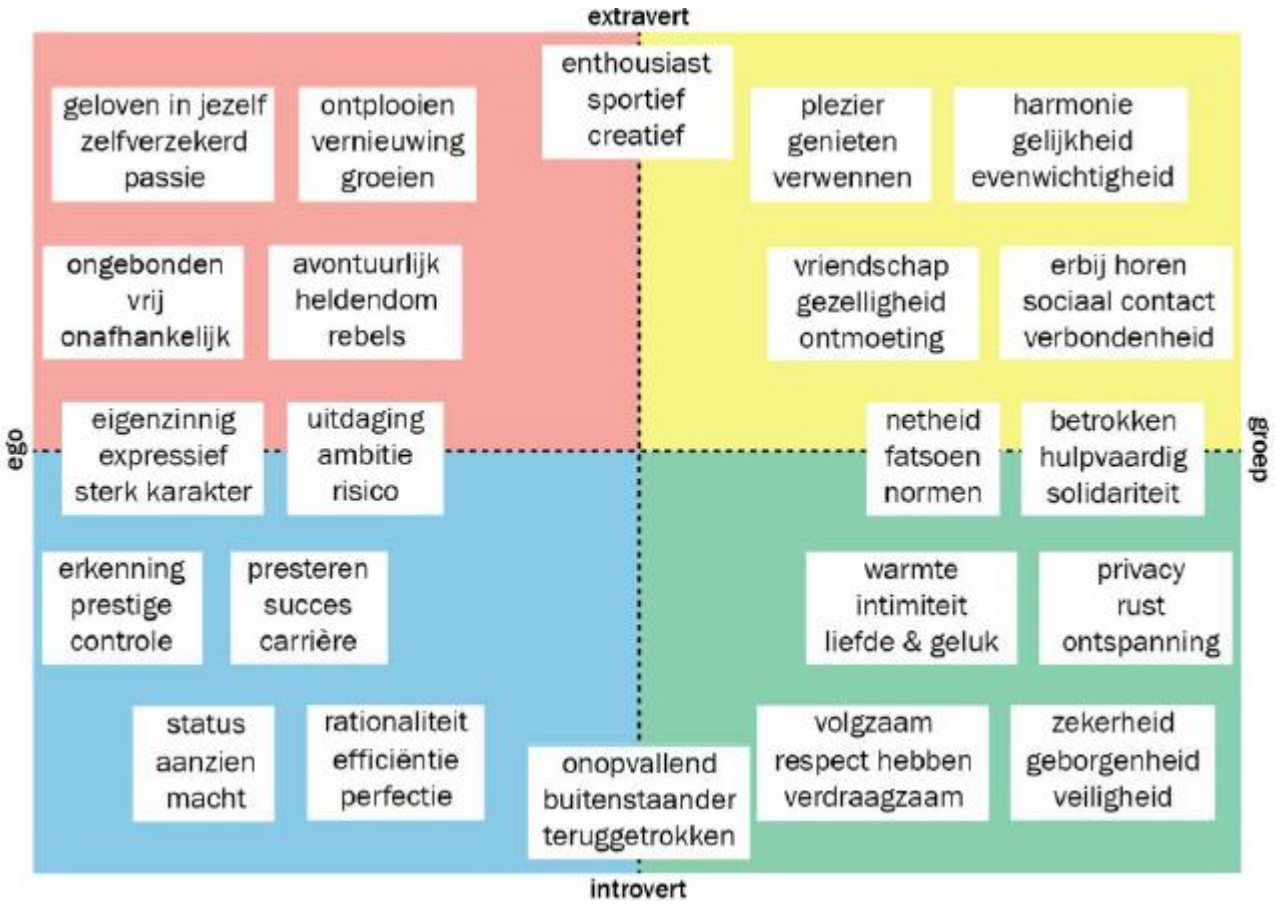
[d] Average assessed value of one-family homes

[e] Assessed value converted to value in euros per m^3

[f] Value per m^3 expressed in the relative deviation from the total Haarlem average

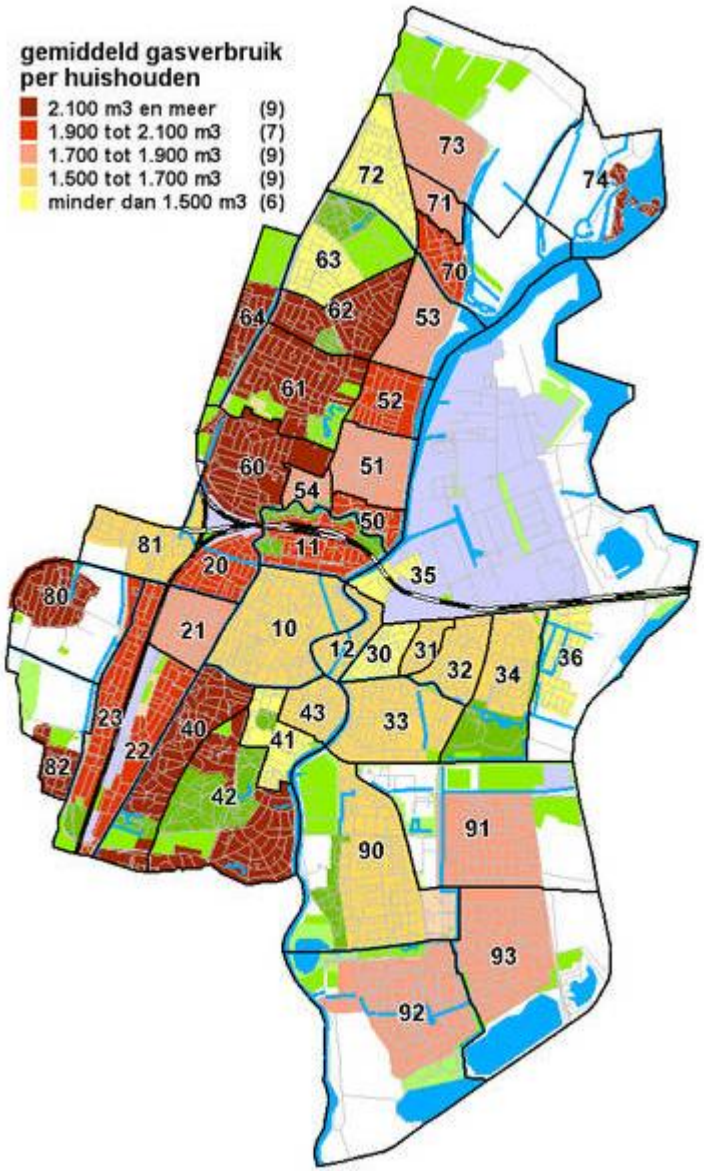
(Sources: C. Otto, personal communication, 7 May 2013; Municipality of Haarlem, 2013a)

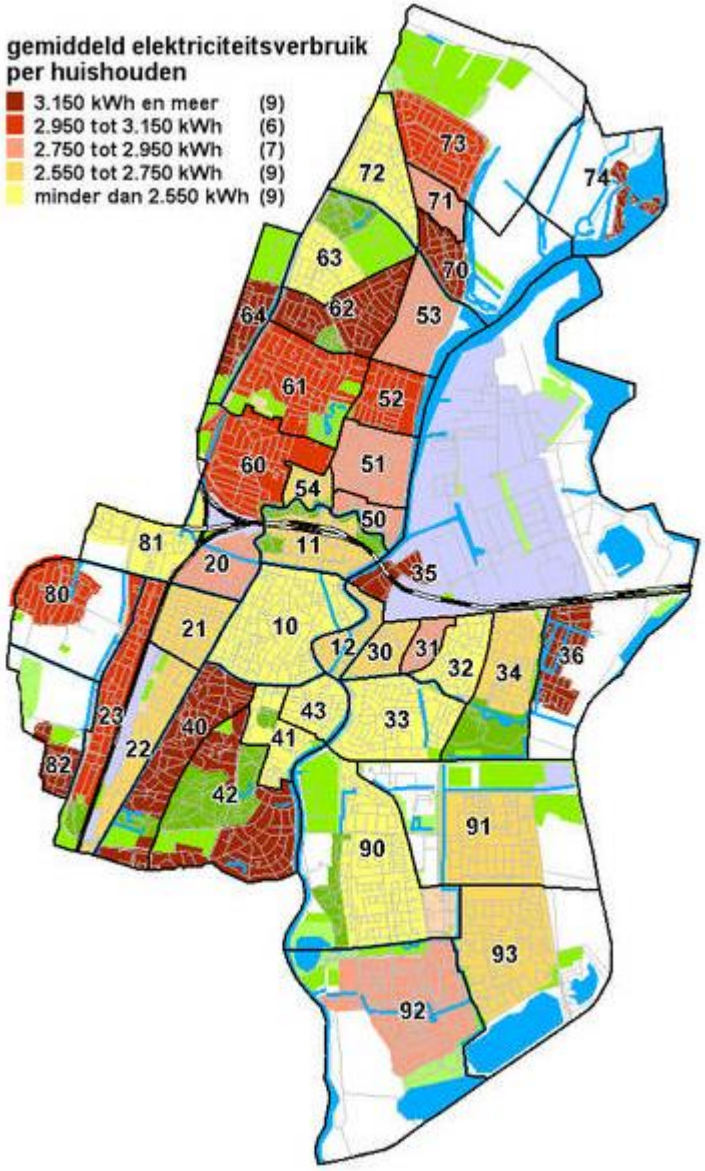
Appendix 15: Personal values classified in lifestyles



(Source: SmartAgent, n.d., p. 5)

Appendix 16: Average gas and electricity consumption of households in Haarlem





(Source: Municipality of Haarlem, 2013)

Appendix 17: Respondents professional review of societal values

Respondent	Source	Relevant function	Organisation
Hamer	In Laribij et al., 2013, p. 345-347	until recently District director Haarlem-Oost (*Stadsdeelregisseur*)	Municipality of Haarlem
Kibar	In Laribij et al., 2013, p. 348-352	Neighbourhood manager Slachthuisbuurt (*Wijkbeheerder*)	Elan Wonen, Pré Wonen and Ymere
Salah	In Laribij et al., 2013, p. 353-354	Employee welfare Slachthuisbuurt	DOCK Haarlem
Derissen	In Laribij et al., 2013, p. 355-361	Neighbourhood director Haarlem (*Wijkregisseur*)	Pré Wonen
De Cock	In Laribij et al., 2013, p. 362-366	Neighbourhood coach Haarlem-Oost (*Wijkcoach*)	Elan Wonen
Van der Vegt	M. van der Vegt, personal communication, 3 April 2013; Laribij et al., 2013, p. 369-373	Owner and director children/youth meeting place and activity center Slachthuisbuurt	Foundation Rebup

There is no power greater than a community discovering what it cares about.

Ask "What's possible?" not "What's wrong?" Keep asking.

Notice what you care about.
Assume that many others share your dreams.

Be brave enough to start a conversation that matters.
- **Talk to people you know.**
- **Talk to people you don't know.**
- **Talk to people you never talk to.**

Be intrigued by the differences you hear.
- **Expect to be surprised.**
- **Treasure curiosity more than certainty.**

Invite in everybody who cares to work on what's possible.
- **Acknowledge that everyone is an expert about something.**
- **Know that creative solutions come from new connections.**

Remember, you don't fear people whose story you know.
Real listening always brings people closer together.

Trust that meaningful conversations can change your world.

Rely on human goodness. Stay together.

Margaret J. Wheatley
(2002). *Turning to One Another.* San Fransisco, CA: Berrett-Koehler Publishers