Implementation Plan

Energiek Zuidoost – Amsterdam 2014.12.18

1. Preface

This implementation plan (IP) is delivered for the audience interested in working at district level of smart energy matters. This IP is part of 6 IP's cross over Europe which give a glimpse of this practise. This document reflects two years of working in an existing area where local parties did not collaborate on of smart energy matters yet. We started with ringing doorbells and in June 2015 we hope to be at the point of structural collaboration amongst energy providers, local enterprises, knowledge institutes and the city. Time frame 2020.

Besides helping ourselves (the municipality) and the local stakeholders to reach our goals, TRANSFORM's contribution is used to research ways of work and testing a development methodology for raising district oriented approaches, or Light House projects so to speak.

Is this the plan local stakeholders are going to use? Yes as a background to develop a common platform and communication material, more fit to their needs. We used this format in order to make cross European comparison possible.

2. Executive Summary

This implementation plan (IP) for the area of Amsterdam South East is meant to give insight in the working process as well as the actions about to be taken in this area. The main drive to report in this way is to enable other parties in the field to relate to the Amsterdam –and other TRANSFORM cities- experience. In the scope of the full TRANSFORM program, working on district level is meant as a way to move from planning to implementation and to relate the city's strategy making on Smart Energy topics with contextual specific of the district level. The district level becomes a laboratory for execution of the cities' planning methodologies and goals

The context

Amsterdam South East is mixed area of housing, offices, light industry, medical functions , datacenters and entertainment program. The energy consumption is relatively high: the area consumes app. 10% of the city's consumption and app. 5% of its gas consumption. The size area is app 2.3% of the city surface. The area is developed since 1960's and is strongly densified after the 1990's. The area is home to big comapies like the Amsterdam ArenA, ING bank, ABM bank, ROC education, AMC hospital, IKEA, Equinix, etc.

The ambition

As a guideline to set ambitions for the area the EU 202020 goals are used. Setting area specific goals is in development with local stakeholders. The experience is the the quantitative climate goals are not a usefull instrument for stakeholders to support. In essence the stakeholders in the area much more support the transition towards new economic concepts like the circular and smart economy. Also for each stakeholder, individual drivers –beyond the field of smart energy development- play a big role: financial drivers, visibility/branding, service development, etc. Besides individual goals, stakeholders are aware that collaboration is the way to success.

Way of work

Basically two important ways of work are tested during TRANSFORM:

1. Bottom up process supported by data.

   Working in a existing situation with very limited legal power to start transformation processes, means collaborating with local stakeholders. So this was done. The ideas of these stakeholders are related to broad data analyses of energy and waste. This way ideas of stakeholders are linked to possible structural changes in the area. Working this way, helps to set priorities.

2. Running an area in the 1st stage of plan development

   Starting up working on a district level was managed on three levels. First a small process management was installed for 2 years (TRANSFORM period). Secondly, the working on the development process was structured with interventions or feedback moments every half year. This created a continuous workflow Thirdly, project management was organised to develop ideas towards business cases (and possible implementation).

The project portfolio

At the time the work on the area started no collaboration projects existed. In the following years a project portfolio is continuously under development. Five projects groups are defined: energy: retrofit and saving, energy: smart balancing, energy: renewables, mobility, waste , knowledge, innovation, promotion and behaviour. Chapter 7 provides the overview of all projects. Key projects for impact on CO2 reduction are: using waste heat of the hospital, using local waste to generate (green) gas, retrofit of office buildings and providing sustainable fuels by an orange gas station.

Lessons learned

The Amsterdam approach to the relatively unknown task to set up a (energy) transition in the area of South East is a pragmatic one: learning by doing. Transition in the field of energy, in an existing urban context is complex so failing is inevitable. We experienced in working with stakeholders, always to engage both the operational and the CEO level, right from the start. This will optimize working procedures. A second lesson learn is that projects fail because of uncertainty about future developments. Thirdly, projects ideas stop because after research there is no sound business case. That's part of innovation.

One of the most important success factors is the commitment of local stakeholders. Commitment, strengthen with organisation power –facilitated by the city- brings the potential for transition. Inducing stakeholders can be done in various ways. Bringing business cases to the table or having proven projects in the area is of great help.

Secondly, through Amsterdam Smart City partners like Liander, energy data is available for the city. Data provided new insights and defined the specific challenges for this area. Also, data enable all kinds of parties like consultancy, foreign experts, business partners and students to get active in the area,

Thridly, a success factor was TRANSFORM. TRANSFORM provides the needed extra financial means to be able to test. Also TRANSFORM brings external expertise. They create a sense of urgency, but they also bring in knowledge and widen up the scope of possibilities. Being part of a European programme legitimates the actions in the SUL

Next steps

Thanks to TRANSFORM's contribution, stakeholders are at the verge of defining a structural collaboration till 2020. A public – private partnership to step by step transform the area into a circular economy is under contraction. The expenses of the governance will be paid by the partnership. In project development terms some projects will move to the validation and finance stage, before moving to implementation. Banks are about to join the PPS and the Amsterdam Climate and Energy Fund can support too.

3. Introduction

This implementation plan is made at the same time in the six participating cities in TRANSFORM: Amsterdam, Copenhagen, Genoa, Hamburg, Lyon and Vienna. Each SUL has a different approach and the documents vary in depth of elaboration. Nevertheless, the Implementation Plans were made on the base of the same comprehensive outline. This contributes to a better understanding of the differences – which is most relevant for the learning in the cities itself, partners in the projects and to those who are interested in transforming urban areas to low carbon areas.

Amsterdam has defined Energiek Zuidoost as its Smart Urban Lab (SUL) in Transform. The challenge is to transform this working area into a low carbon area. Since Energiek Zuidoost is a built up area within the city and since there is at the moment no a large urban development planned, the strategy is to define separate projects and test what results they deliver. By evaluating projects, the decision is - and will be - to continue projects, upscale them or to stop them. This Implementation Plan (IP) is about the setting up of this 'project machine' for the area in a more structural way. Therefore, the projects defined in this IP are to be understood as a snapshot in time.

Most important in the SUL Energiek Zuidoost is the cooperation with the local stakeholders. Because the area is a built up area, the users and owners in the area can make the difference. Since the beginning of TRANSFORM the partners in the area started working together. They created ideas and researched project proposals. During the Captains Dinner in fall 2014 the main stakeholders in the area committed themselves to continue together in this journey for a sustainable area.

Chapter 2 gives background information on the SUL Energiek Zuidsoost. Chapter 3 looks back on the development process since the beginning of TRANSFORM. Chapters 4 and 5 are forming the actual heart of the implementation plan, highlighting development visions, objectives and targets as well as the future organization and management of the SUL, including important measures to be set in a mid-term perspective. Finally, chapter 6 provides a preliminary assessment of experiences of the process from the viewpoint of the Smart Urban Lab Coordinators (SULCos).

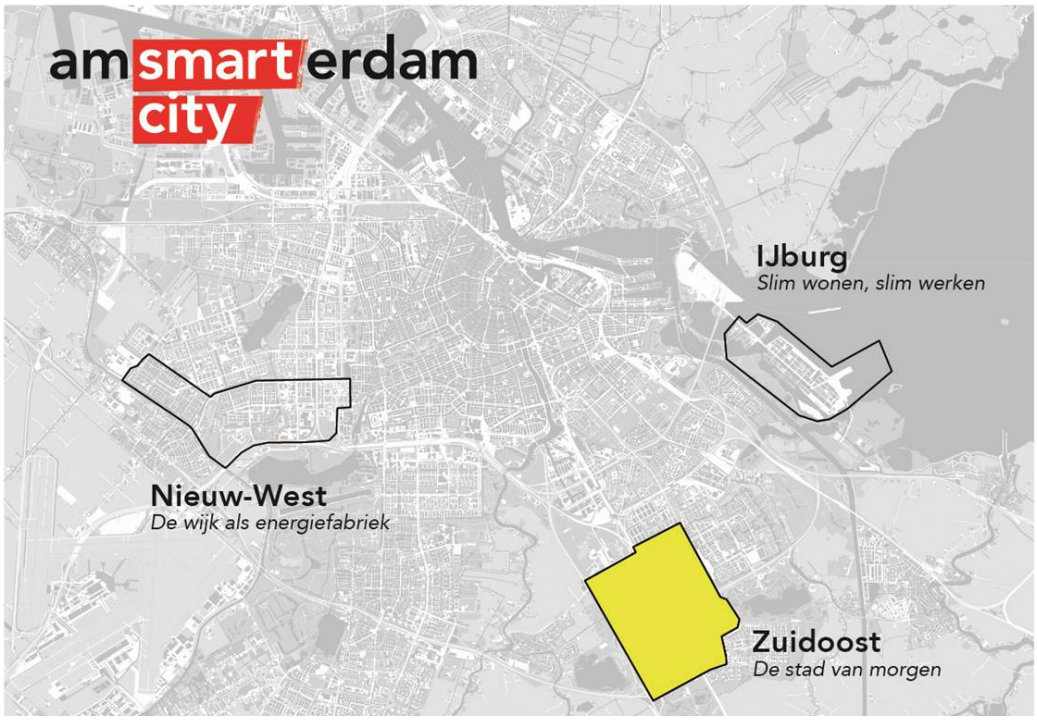
4. Background and context information about the SUL and the city

Amsterdam has chosen Energiek Zuidoost as the smart urban lab in the Transform project. It is part of one of the three areas within the programme of Amsterdam SMART City. The area is a relatively large energy consumer within the city, because of the presence of a large amount of big companies in the area. At the moment there are visions for the area, but no big development schemes. The area is strategically located between Amsterdam, Utrecht and Schiphol, well connected with infrastructures. Gradual development of the area will take place in the coming decennia.

4.1 Description of the area and its overall development

Spatial context

The Smart Urban Lab (SUL) in Amsterdam South East contains an area of 300 hectares. It is a complex, mixed use area including the Ajax soccer stadium, offices, enterprises, leisure and entertainment industry, shopping malls, academic hospital, data centers, residential areas and an energy plant. A combination of a railway and a metro line splits the area into two parts. Roughly the companies are on the west side of the lines, while housing is on the east side. Within the area the functions are separated. There is an office-area, an area with light industry, a housing area and a leisure and shopping area. There are few hotels, restaurants and cafes. The highway A9 towards Almere is another divider in the area. The hospital is south of the highway.



Zuidoost within Amsterdam: pilot area


Looking from the ArenA stadium to the South

Part of the residential area has been retrofitted, part of the area has to be retrofitted. A new park will be created next to the railway line, and part of A9 highway infrastructure will be brought underground, covered by a park. The area is perfectly suitable for smart grid developments, both for thermic web and for electricity grid.

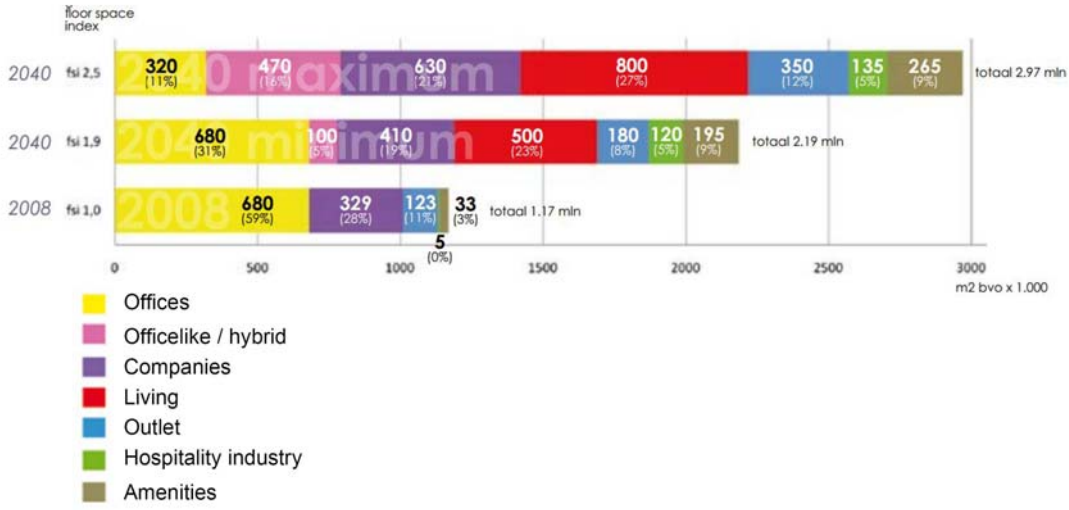
The Smart Urban Lab is part of the Amsterdam district of South-east, which is an area of 22 km2 and is home to 83.000 residents. The district of South East is the result of an expansion of the city in 1966. It is a close by satellite and is physically separated to the rest of the city. It is well connected to Amsterdam by train, highway and metro. The district of Southeast is also part of the daily urban system of the city of Utrecht.

Medium-long term: Strategic Plan (Amsterdam) and Vision Amstel 3

For the medium-long term Amsterdam has a strategic plan. This plan makes a distinction between the inner city, the urban and infrastructural circular zone around it and the area outside the circular zone. The SUL is located in the outside zone. In this zone the investments in the medium long term are mostly directed towards social and economic programs and less to area development. This zone is especially suitable for innovation and experiments, because of the relative low prices in combination with less restrictions: building groups, renovation, student housing, cultural entrepreneurship and middleclass renting homes.

The vision on the medium-long term for the SUL is to integrate housing into the office area and to make it a more lively, socially safe and attractive environment. This is written in the vision Amstel 3 (2009) and reconsidered in the strategy policy Amstel 3 (2011). Amstel 3 contains most of the area of the urban lab on the west side of the rail track: offices and industry. Investments in restructuring and transformation by housing corporations and project developers will be supported by the city. When investments in the physical environment are done the city will invest with social and economic programmes on energy, education and entrepreneurship on the neighbourhood level.

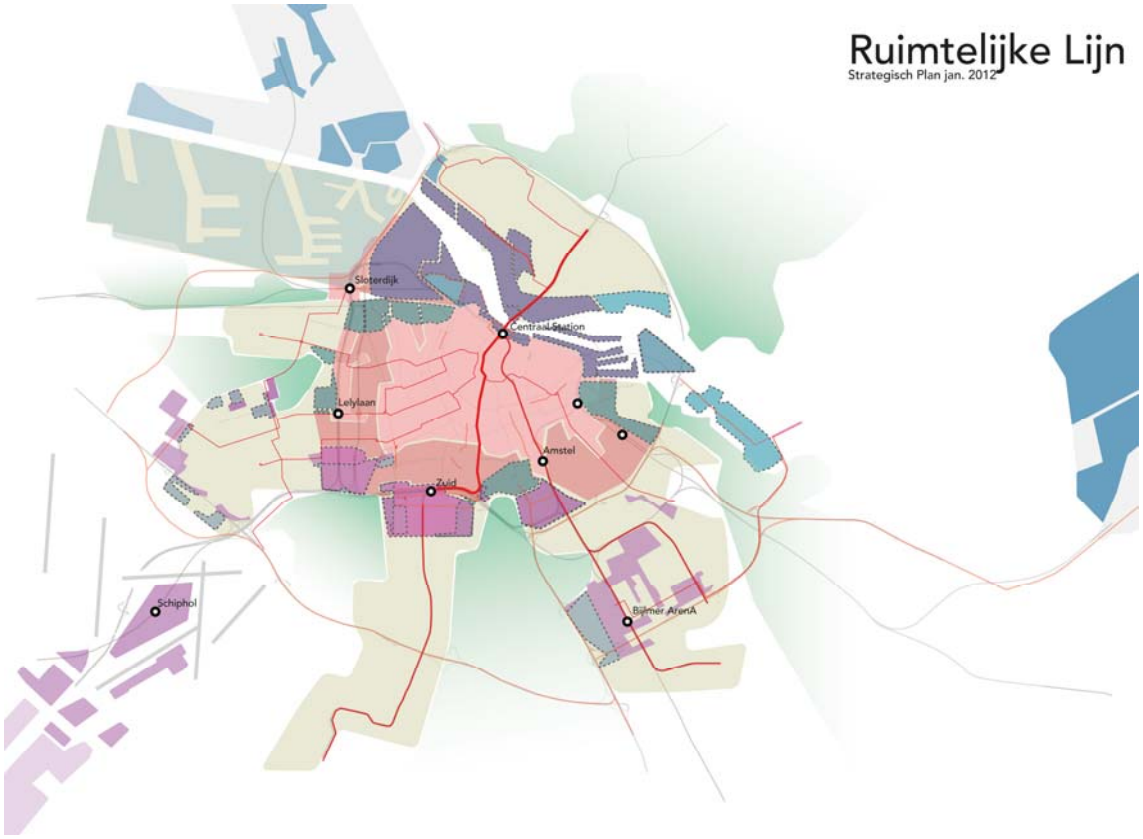
Programmatic vision for the transformation of Amstel 3 (2009)



Programmatic profile according to the strategy policy Amstel 3 (2011)

Area surface	2010	VISION 2010-2040		NEW 2010-2020	
	Amstel III	Vision Amstel III	Vision Amstel III	New Amstel III	New Amstel III
		minimum	maximum	minimum	maximum
offices	720.000	780.000	790.000	720.000	727.500
industry	329.000	410.000	630.000	329.000	361.900
outlets	151.000	180.000	350.000	160.000	160.000
retail	0	0	0	200	1.000
Hospitality industry	5.000	120.000	135.000	5.000	36.000
- hotels en congress	*0*	-	-	*0*	*30.000*
- restaurants/cafés/clubs	*5.000*	-	-	*5.000*	*6.000*
Amenities	33.000	195.000	265.000	40.100	54.000
- education				*1.000*	*8.000*
- culture				*500*	*1.000*
- sport/leisure				*300*	*2.000*
- religion				*300*	*5.000*
- civic				*5.000*	*5.000*
Housing	0	500.000	800.000	0	50.000
Unforeseen	0	0	0	0	0
Total per period	1.238.000	2.185.000	2.970.000	1.254.300	1.390.400
Addition 2010-2020				16.300	109.900
Addition 2010-2040		947.000	1.732.000		
				little m² little transformation	more m² more transformation

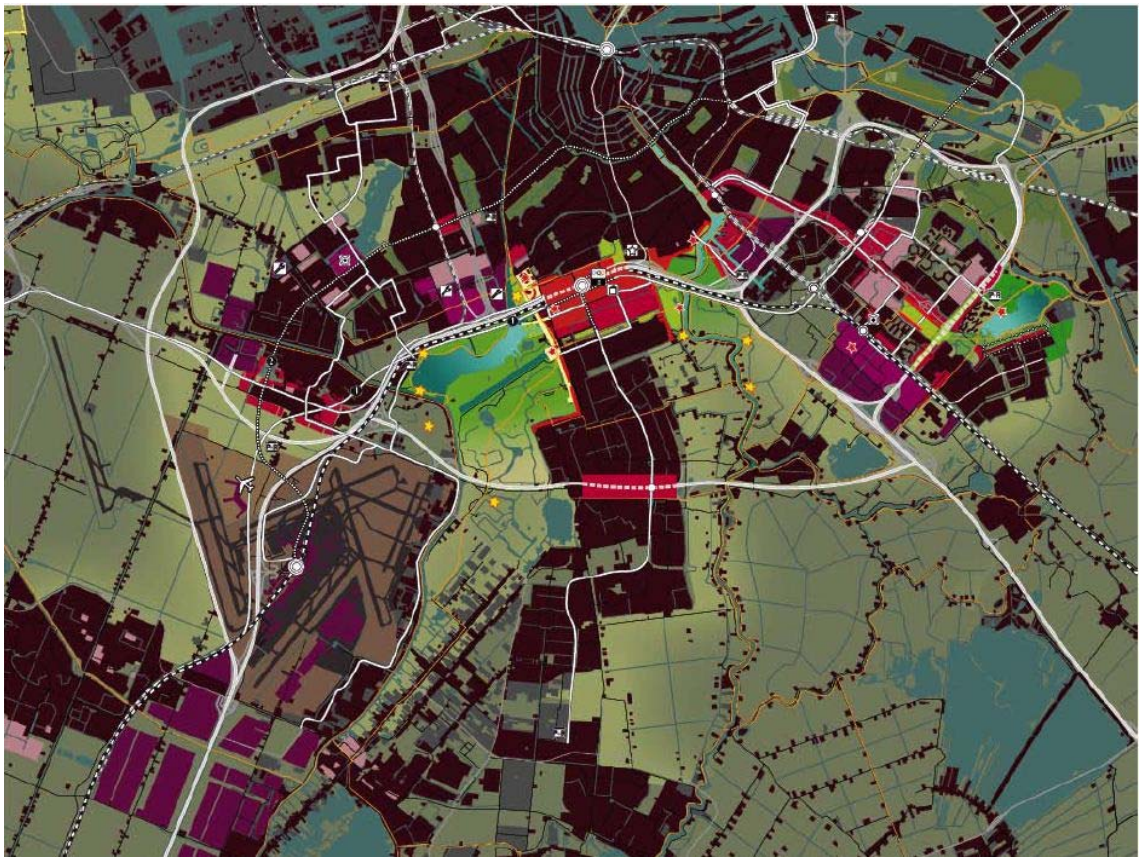
Next to this, the city district will keep investing in maintaining and improving the public space. This holds especially for local centres, like the Amsterdam Poort-ArenA area and green areas like the Bijlmerpark. Hereby Southeast can benefit from the national investments in lowering the A9 highway.



Map of strategic plan Amsterdam 2025

Long term

In the Amsterdam structural vision 2040 ‘Economically strong and sustainable’, the district of SUL is part of the southern flank of the city. Amsterdam’s southern flank is a succession of massive projects: the expansion of Schiphol Airport, the development of Zuidas and the intensification of the residential and business areas in Amsterdam-Southeast. Station-Zuid, at the heart of Zuidas, will become one of the most important public transport hubs in the Netherlands. The main driver of these developments is the large bundle of infrastructure that links Amsterdam with the other municipalities in the Randstad conurbation, with the rest of the Netherlands, with Europe and, via Schiphol Airport, with the world. New initiatives such as the development of the corridor between Schiphol Airport and Zuidas and the further urbanization of Buitenveldert are being implemented at a swift pace.



Map of structural vision 2040: South flank

4.2 Structure of population and businesses

Economical context

The average income in the area is 16.722 € per household. This is relatively low compared to South East (24.785€) and Amsterdam (29.708 €). Nineteen percent of the working population is unemployed, which is the highest number in comparison to other districts in Amsterdam (O+B, 2012). It is desirable that middleclass income households settle in the area, in order to create diversity in the area. For large scale leisure and shopping, South East is the center in Amsterdam. With megastores and buildings like ArenA, Heineken Music Hall, Pathé cinema, Villa ArenA XL and IKEA South East attracts a total of nine million visitors per year. The AMC hospital has also a reach for the whole Metropolitan Region of Amsterdam. A number of head offices is established around the heart of the area, but the vacancy of office space in the area is 25%. Companies are assembled in associations like the VAZO to addressing and finding solutions to improve the lack of occupancy.

Images: ArenA and shopping mall, datacenters, AMC Hospital

Social context

The area is used by different groups: white collar workers, visitors for entertainment, and people who live there. South East has a very diverse population with over 146 different nationalities (O+B, 2011). 23% of the inhabitants live on a minimum income, and the perceived safety is relatively low (O+B, 2012). On the other hand, in the past years the area has improved its image. A great number of communities are organized in local churches and sports clubs. There are multiple initiatives to improve the image

and find solutions for social and economic challenges, like Glamour manifest, Zuid Oost Partners, and Urbanisation.

Mix of colourfull and relative poor inhabitants in combination with white collar workers

	Status quo 2012	Projection 2025
Total area	300 ha	300 ha
Nr of population	18.000	20.000
Nr of households	7.000	8.000
Nr of enterprises, businesses, amenities	18.000	18.500

Basic data of the SUL

4.3 Status of the energy system and related themes and enabling themes

In this paragraph figures from the energy atlas are presented and commented on. The figures and numbers in the atlas are about the physical and built environment. The paragraph covers the following topics: current situation (energy use and infrastructure) in relation to the citywide use, energy goals and sustainable energy production potentials.

Energy atlas

Amsterdam made an energy atlas with detailed information about energy use, the existing networks and the possibilities for local sustainable energy production. Besides this there is more information on the the context of the area, like the age of buildings, average income, Floor Space Index, ownership and lack of occupancy. For more specific information, please look at: http://maps.amsterdam.nl/energie_gaselektra/?LANG=nl.

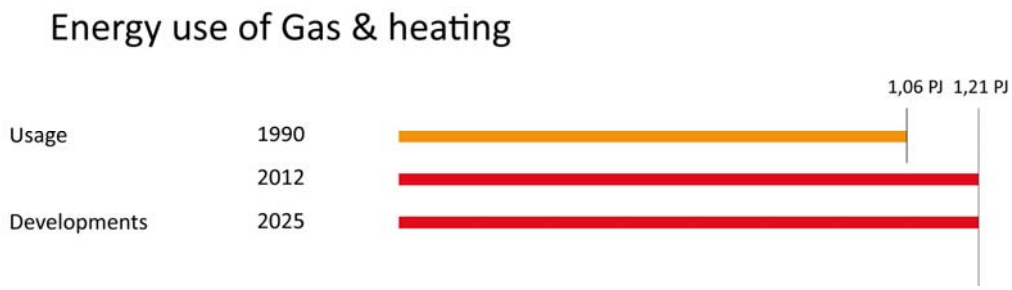
Energy use: Buildings, industry and services

In the plan area a total amount of 475.229 MWh of electricity was used in 2012 and an amount of 38.211 thousand m^3 of gas. This is 10% of the usage of electricity in Amsterdam and 4,8% of the usage of gas. The total energy bill for the plan area is 45 million euros for electricity and 16 million for gas.

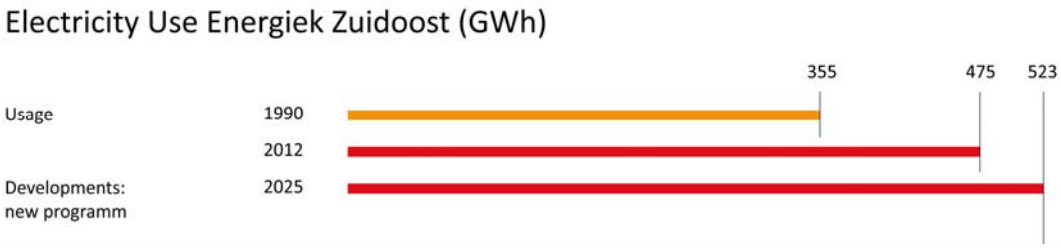
The area as a whole uses a lot of energy compared to Amsterdam as a whole. The reason is that there is a relatively large number of businesses in the area and that the businesses in the area are relatively big. The energy use per square meter of these businesses is high in comparison to living neighbourhoods and to smaller businesses. There are several big users like the datacenters, the AMC hospital and the soccer stadium ArenA.

The energy pattern in the area varies due to a broad range of functions and building qualities.

The graphs below show the amount of energy that is used in the SUL area that is associated with carbon emission.



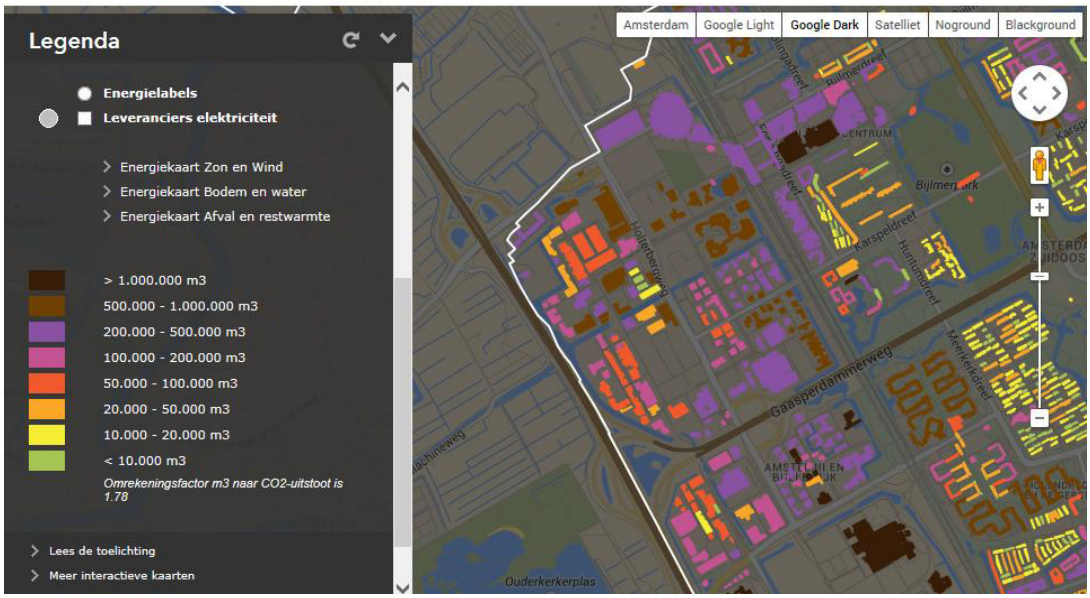
The development of carbon emission form the energy use of heating is estimated as non existent. The reason is that new programme will be connected to the city heating system.



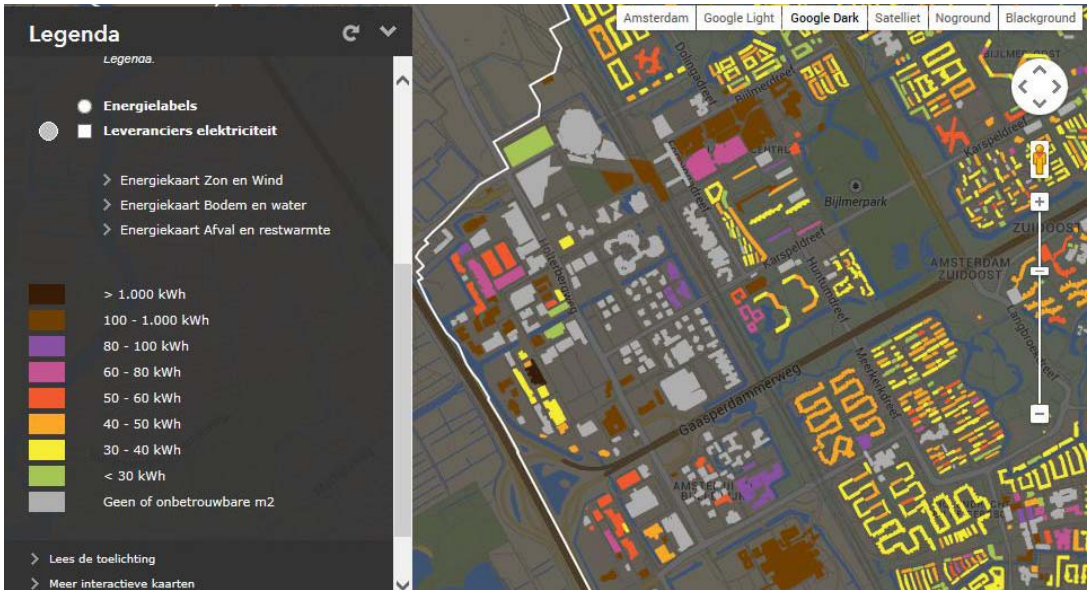
	Smart Urban Lab		South East		Amsterdam	
	Total (x 1.000)	Average per user	Total (x 1.000)	Average per user	Total (x 1.000)	average per user
Gas (m3)						
- Households	5.483	812	24.029	931	298.040	1.082
- Business	32.729	20.649	44.713	7.232	495.969	4.794
- Total	38.211		68.742		794.009	
Electricity (kWh)						
- Households	19.758	2.708	79.785	2.705	747.771	2.454
- Business	455.470	217.097	531.033	65.478	4.025.936	29.106
- Total	475.229		610.818		4.773.707	

Gas and electricity use compared for households and businesses

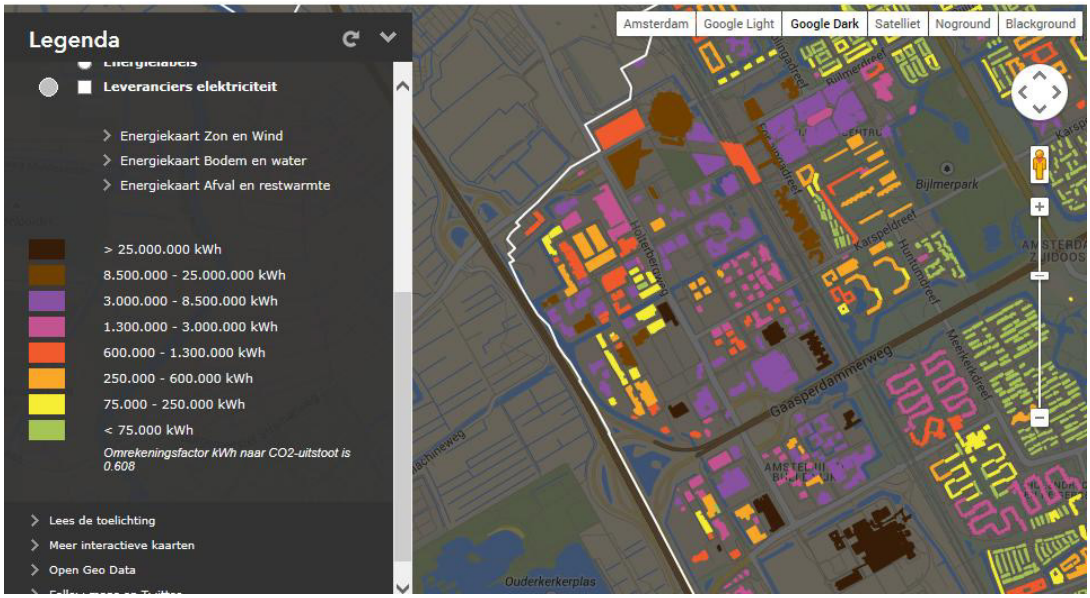
For more specific information on the energy use, you can go to the website of the energy atlas. Here are some examples of what you can expect on the website.



Gas: Total use, carbon emission per cityblock

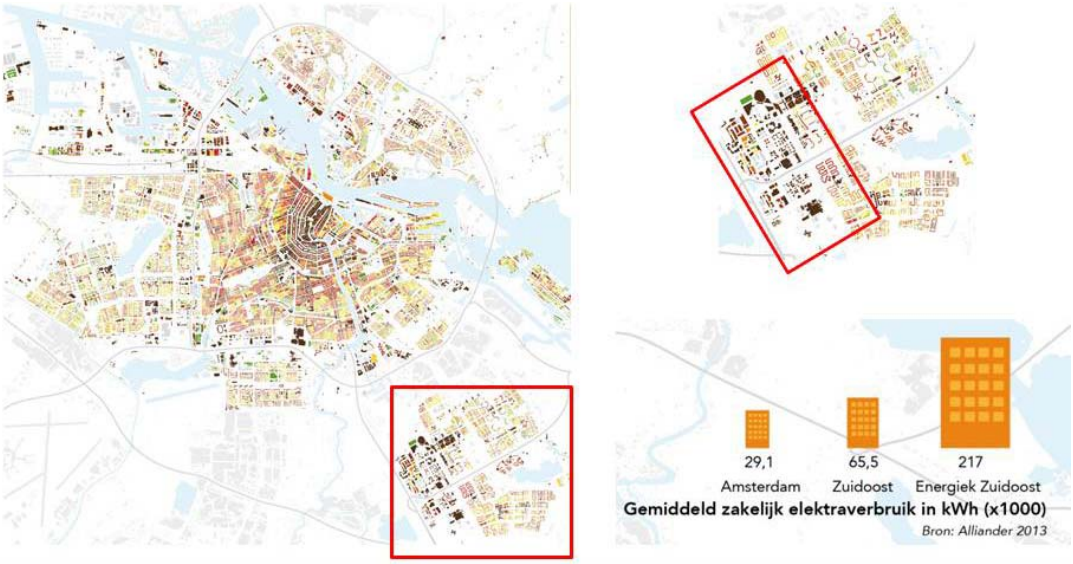


Electricity: Average use per square meter



Electricity: Average use per square meter

Energy use in relation to the city



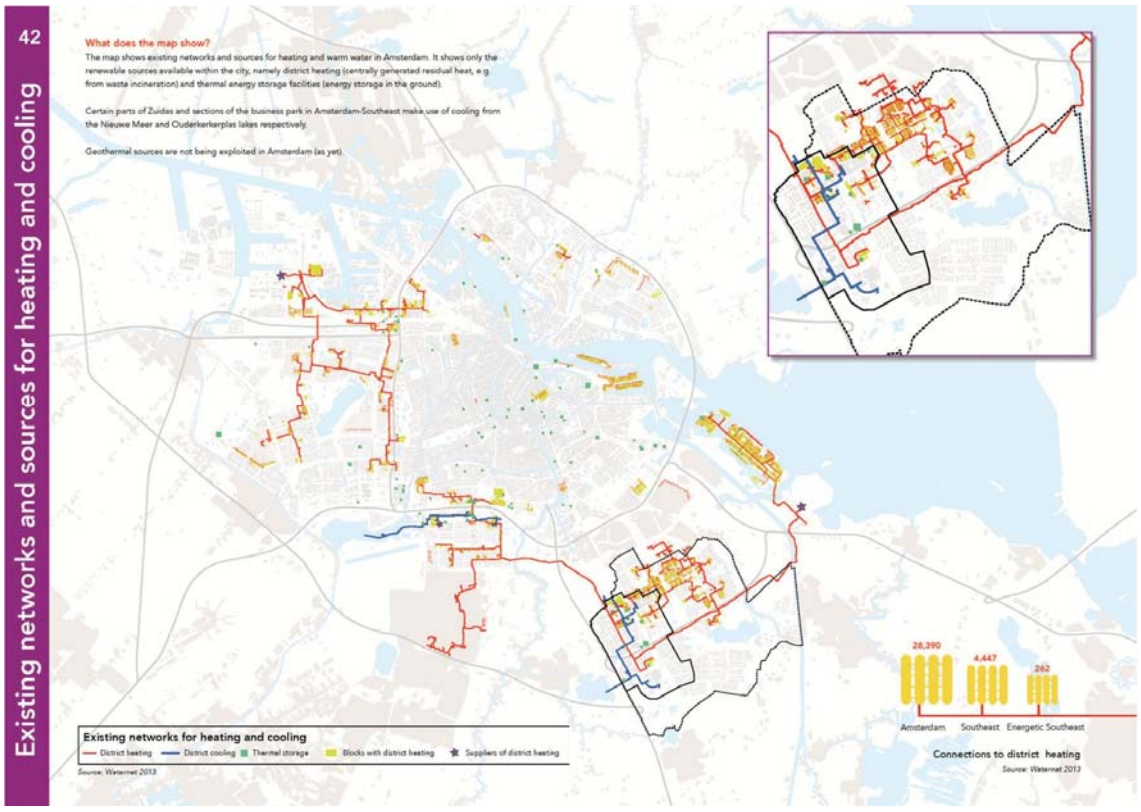
Map on electricity use in comparison to Amsterdam

The exception on the relatively large use of energy in the area is the relatively small gas use in the area for households. The reason is that a part of the households in the area is connected to the city district heating system. A district heating system and a cooling infrastructure is available in the whole area, but only connected to approximately 3% of the gas connections. Heat and cold storage is used in 7 places in the office area.

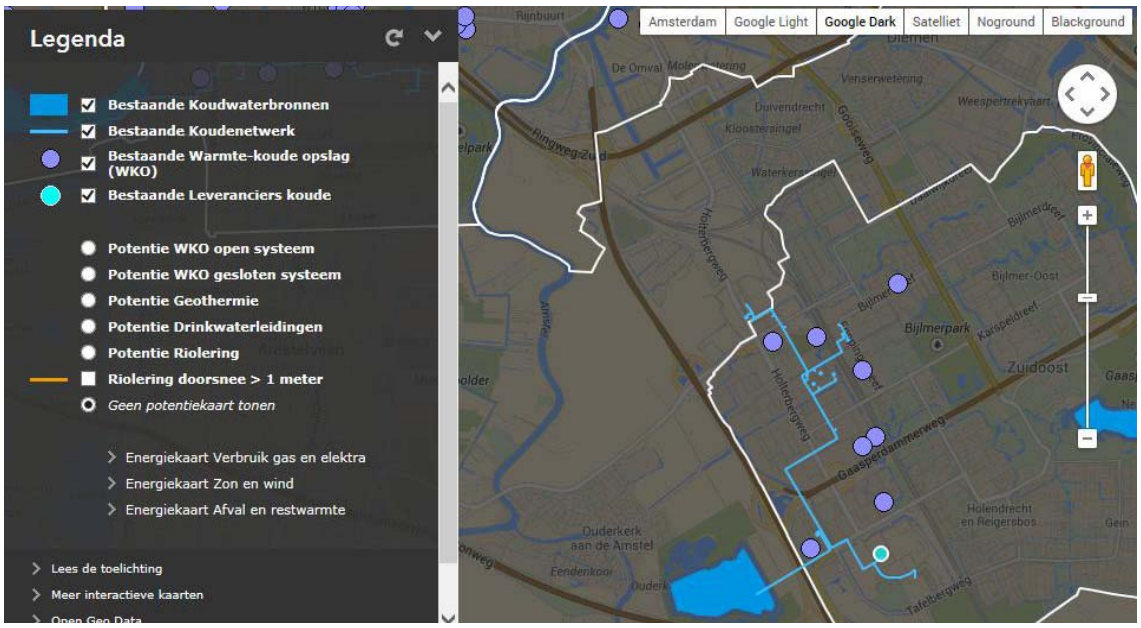
Energy systems and networks

Currently, gas and waste heat of a gas fired electricity plant (district heating) are used as sources for heating. Cooling is mostly 'traditionally' resolved through cold machines, powered by electricity. Also, a district cooling is available, with a lake as the source. The area has different levels of connectivity of sustainable energy infrastructure. The district heating and cooling is available in the whole area but only connected to approximately 15 % of the buildings. Heat and cold storage (UTES) is used in 7 places in the office area.

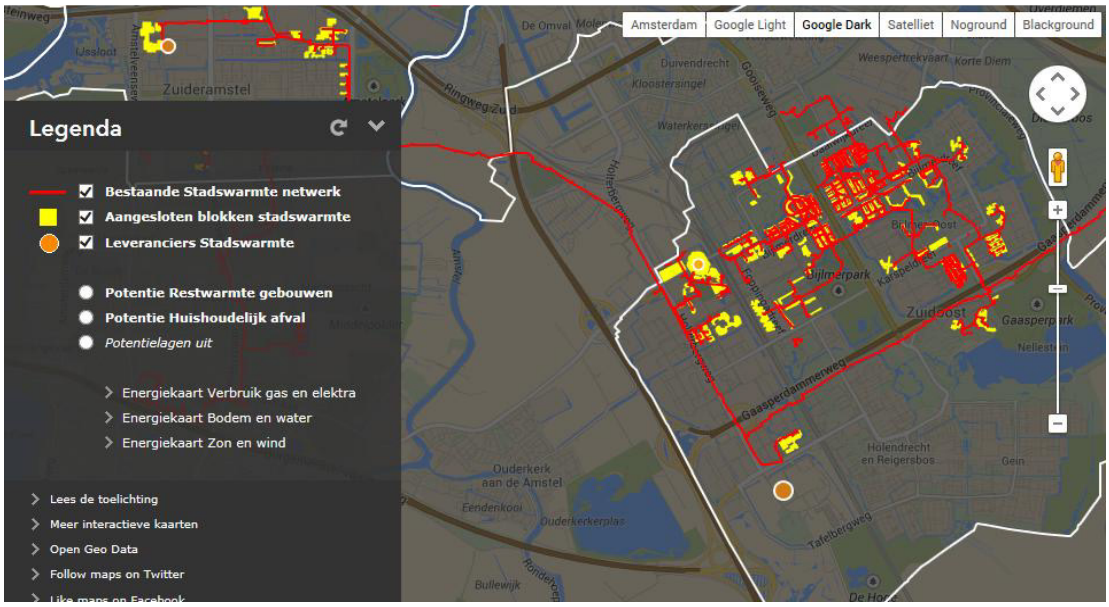
The service of thermal energy is nowadays offered by a number of companies, depending of the service which is used. (add graphic of chain) . The gas grid is owned by grid operator Alliander and the suppliers of gas are numerous. It's up to the consumer to select one. The district heating and cooling are both owned by grid operator and producer Nuon/Vattenval. Heat and cold storage is self-owned by the user but the governance on the soil is done by province of Noord Holland.



Existing networks and sources for heating and cooling in Amsterdam



Existing systems in the SUL: city cooling infrastructure and thermal storage in the underground



Existing systems in the SUL: city heating infrastructure

4.4 Local renewable energy sources

There are chances in the area to reduce the energy use and to produce renewable energy. The energy household of the area can improve by retrofitting, smart balancing

– smart energy grids, ICT, mutual exchange – and by producing green energy: renewables.

Energy saving

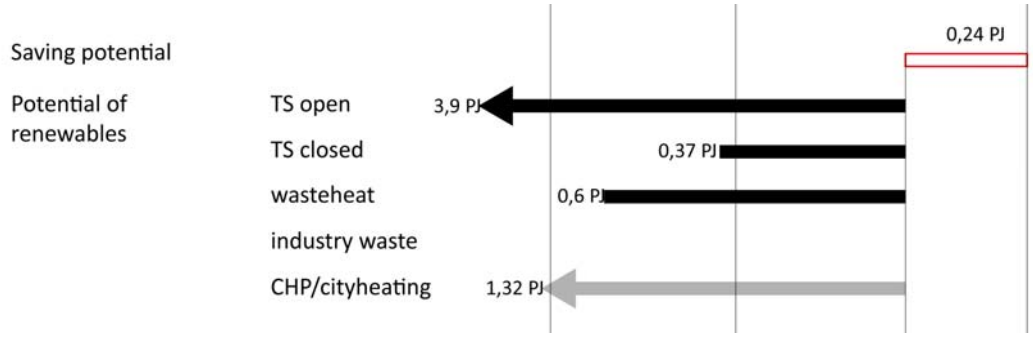
There are chances in the area to reduce the energy use. The energy demand can improve by insulation and retrofitting. The chances and challenges for retrofitting differ per sector:

- Housing: housing corporations are long term responsible stakeholders. Restraints are the split incentives, rights of tenants to choose your own energy provider, tenant participation.
- Offices: big potential for insulation. Constraints are owners at a distance, lack of familiarity with ESCO's, diversity of ownership, lack of information about investment moments.
- Light Industry: Least chance because of high investment costs and mostly short term contracts.

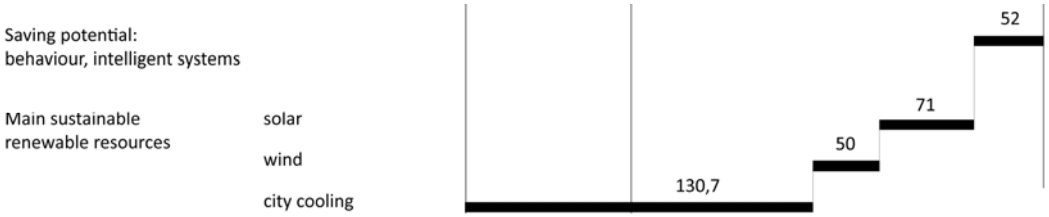
The energy household of the area can also be improved by being more energy-efficient: using waste heat,. Sources for waste heat in the area are datacenters, offices, supermarkets and the hospital.

Renewables

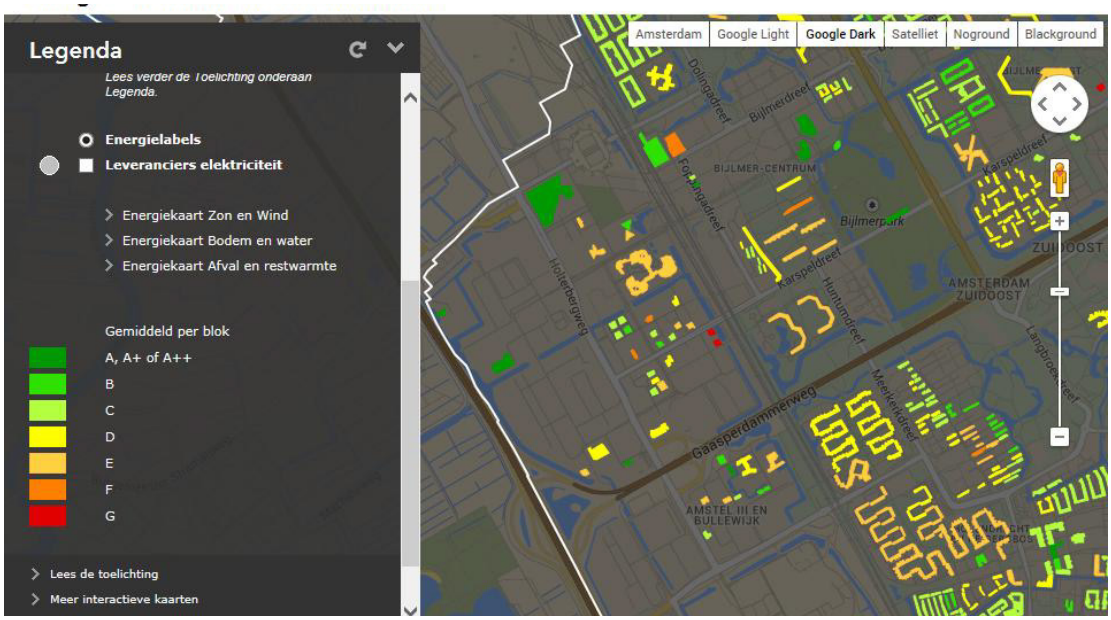
Part of the Amsterdam energy atlas is the potential for renewable energy. This was also calculated for the SUL. There are possibilities for producing renewable energy, by using water for cooling, solar energy and windmills. The abbreviation of TS stands for thermal storage in the underground.



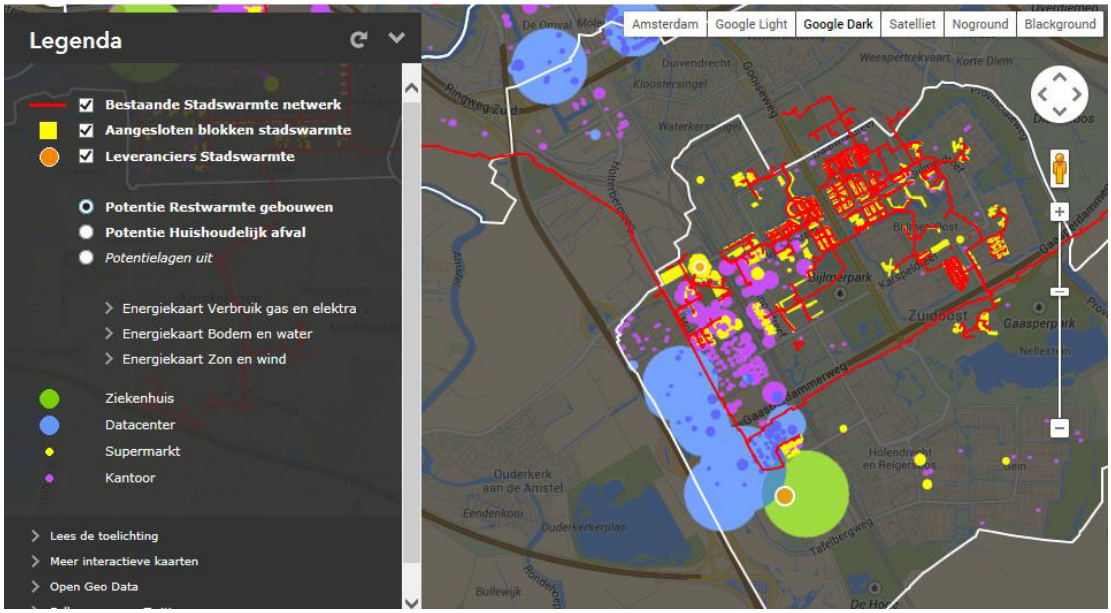
Potentials on clean alternatives for heating according to the energy atlas (PJ)



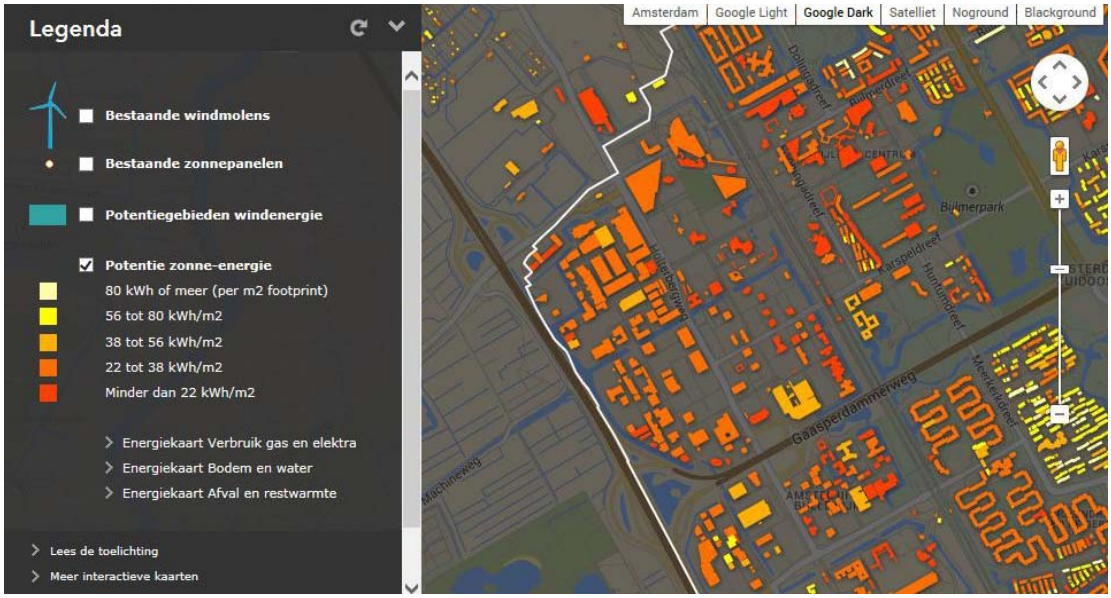
Potentials on saving on electricity use with carbon emission in the SUL (GWh)



Average energy label per block (where available)



Potential to use waste heat Average energy label per block (where available)



Potential to use solar energy on roof

5. Development process (so far)

5.1 Insight in the ongoing development process

In the beginning of 2012 local stakeholders of South-East set out together on a journey towards common sustainability projects. Amongst the stakeholders are companies, nongovernmental organisations and public parties. Important stakeholders are the Amsterdam Medical Centre, the ArenA Stadium, Evoswitch Datacentre, Stadgenoot Housing Corporation, IKEA, grid company Alliander , NUON/Vattenfall, waterworkscompany Waternet and the Amsterdam Smart City Consortium.

Two paths were taken before the Intensive Lab Session:

1. Service design thinking

2. Data Analysis and Energy Atlas

Service design thinking is about creating user-friendly services according to the needs of customers and participants, and about value sharing between stakeholders. This can be financial values, but also other values may be involved like talent, space and marketing.

The sessions, with stakeholders having positions in the area as renters, owners, or as shop owner, service provider, housing corporation and other, resulted in 7 projects (kitchen grinder, LED public space, targeted at CO2 reduction – and resulted in connections forged between stakeholders in the area.

The second path involved the gathering and analyzing of data. This resulted in the Energy Atlas for the area and for Amsterdam as a whole. The energy atlas provided insight about energy use and new potential energy sources for the area. Next to the energy atlas, an energy balance was created for the area (rough calculations on demand and and potential sources for renewable energy) and also a monitor system, to benchmark projects against city wide targets on CO2. Using data this way, it structures the approach form the area (what are key elements for change) and validates bottom up projects on their relevance for the approach.

Intensive Lab Session (ILS)

The Intensive Lab Session was an intervention proposed by the TRANSFORM consortium to bring in extra knowledge, accelerate, and ask prying questions. The ILS was held in June 2013. For this Intensive Lab Session three themes were chosen to discuss: (1) sustainable heating and cooling, (2) the role of the private sector in retrofitting and (3) public action. The ILS was the basis for the setup of a programme with these three themes as the basis. Different project were defined to research and test. During the second half of 2013 and 2014 the programme grew with new programmatic lines and new concept projects coming up and also ending. The current status of the programme is found in paragraph 4.4. The ILS added expertise and new visions to the work on the district. In a very short time frame the work on the area was put forward. Also it brought a broad view of both public and private parties on the themes mentioned in the ILS. Especially this was of value on the topic of ECSO. It generated a range of different forms of ESCO's: a state of the art, delivered by international experts. Also the ILS generated projects which are work out in the SUL (e.g. solar gambling and waste heat of the hospital).

Leadership & Roles

The stakeholders will be together responsible for the final outcome. The Amsterdam Energy and Climate Office started as the accelerator of the process, and also took the initiative. The Office is part of the urban planning department, to make sure energy and planning are combined. The people from the Amsterdam TRANSFORM-team work for this organisation.

The office of Climate and Energy, part of the Physical Planning Department, was most likely seen by other parties to have the role of leadership of the process and the setting up of the programme, but this role was never not institutionalized. The office defined the process interventions that build the network and the knowledge base. Activities were the setting up of the energy atlas, workshops, working groups, bilateral contacts. The status on the end of 2014 is that the Amsterdam ArenA, NUON (producer of heat and cold and also distributer) and AMC hospital have actively been taking the role of leadership together with the city of Amsterdam and the city districit of South East.

The Amsterdam Climate Office has not been selected. It just started and took the initiative. Strong points of the Climate Office to start the intervention in South East were:

- connections with the main stakeholders on the city level – within the cooperation of
- Amsterdam SMART city -, strong in network building, the knowledge base of the
- physical planning department, the potential to translate knowledge in understandable
- products, the focus on sustainability, an impartial position in the area of South East, the
- possibility to test plans by the city alderman and connections with the national ministries and know how of funding possibilities.

From the beginning on companies like the ArenA Soccer stadium, the hospital (AMC) and IKEA took initiatives from their own perspectives. They might not see the municipality as initiator, but they follow their own agenda's and timelines. These organisations are responsible for a lot of the separate projects in the area.

The city district of Southeast was involved from the beginning. They are responsible for the relation with other domains relevant in the area, like schools, waste, attraction new businesses, local area development. During the TRANSFORM period a big change in the governance structure is the abolishment of the political democratic structure of the city districts and the reorganization of the municipal administration. There is still a chosen political committee per city district, but it is smaller and with less formal powers than in 2013. The public administration of the districts and the central city are being merged. This process is to take place in the end of 2014 and the beginning of 2015. In the making of the sustainability paragraph for the Southeast district development strategy there was already cooperation between the civil servants of the office of Climate and Energy and their colleagues working at the district.

Another change of roles is the role of NUON (producer of heat and cold and also distributer). They moved their headquarters into the SUL-area in the beginning of 2014. This was an impulse to get more involved. Especially their relation with the ArenA on directors level was a trigger to be more involved in formulating an ambition for the area and to invest in new partnerships.

For the post-TRANSFORM-period a new public private partnership will be in the lead. This is written more elaborative in paragraph 4.3.

Instruments and techniques

The Climate and Energy office can only decide on the input of human resources. The office does not own assets and is does not have the competency to enforce e.g. the environmental act. The instruments were all about facilitating in a positive way without legal enforcement. The energy has been mostly directed on informing and connecting to foster cooperation and startup new markets (precompetitive procurement). The Climate and Energy office has no resources to invest other than the Amsterdam investment funds of 60 million for which projects can apply and compete. The climate and energy office and all other partners contribute in kind to support the project management. Each of the projects is funded individually by the partners concerned. However through the Amsterdam Funds the city is able to support projects throughout the city in the first phase of the development with loans, guarantees and shares.

5.2 Basis for decisions – available data and detailed knowledge

Energy atlas

Several initiatives have been taken to provide a solid knowledge basis. This basis is meant for new initiatives, for decisions and as a reality check. The energy atlas is the main basis for the sustainable transformation of the area. Other initiatives were mostly directed at checking business cases to stimulate market uptake.

This analysis shows the amount and type of energy used in the area, the possible sources for local pgarbaroduction, and gives insight in the context. The analysis has a focus on possibilities for energy demand reduction, production of renewables and efficiency – without ignoring the relation with the urban fabric, uses in the area, and possible links with the water system, waste treatment and mobility. The energy atlas is open to the public and can be found on an internet page: http://maps.amsterdam.nl/energie_gaselektra/?LANG=nl.

The energy atlas helps to locate opportunities. It is also used in the definition of the goals of the implementation. The energy atlas is a starting basis. For individual projects more detailed research is needed. The atlas gives no information on the building level or the individual user, but on the block level with a cluster of at least five different users.

To enhance the user friendliness of the Energy atlas, the tool that is being developed by Accenture and AIT can be helpful.

Organising (counter-)expertise

Knowledge has also been created by involving external organisations. The calculations of the energy atlas have been checked by the research institute Ecofys. The case for wasteheat for the industrial site of Evoswitch has been checked by two other organisations. And the company Fosbury energy is hired to investigate the possibilities of collecting waste and gaining energy from it. The presenting of the energy atlas and the SUL Southeast in national expert meetings and peer reviews has been a check on the knowledge basis.

Internal expertise

In depth knowledge and regional wide experience is brought to the project by the Climate and Energy Office. On the topics of heating and cooling, solar energy and commercial users expertise content wise, policy wise and legislation wise is available.

More information

With the energy atlas there is a huge amount of information available, which is getting more and more known to private companies, the public and within the public sector. Even though the current available information is not yet used to its full potential, there is always a need for more and more precise information. An interesting question is for what are the exact buildings that have a business case for retrofitting. A project will be defined that goes into this question.

5.3 Legal framework, tax incentives, aid schemes

Overview – Listing and descriptions:

Financial

There are three citywide funding schemes:

- the Amsterdam Investment fund for which projects can apply and compete. The new political coalition enlarged this fund from 60 to 100 million. This funds is for the whole of Amsterdam and not only for Southeast. The funds gives loans at a rate of 2%, where the market rate is 8,0%.

- The city of Amsterdam has a subsidy on retrofitting social housing, called “building the city”.
- Energyloan

There is a national subsidy (SDE) for sustainable energy.

Regulatory

City heating is obliged for new buildings. The city policy is to roll out the heating network, also in the existing city. The price for the heating is regulated.

Changing national tax regulation will make it more difficult to use property of others for renewable energy production. Smart initiatives created business cases for small users on the property of big users. The business case on renewable energy production for small users is far better, because they pay a higher energy price. New tax regulation will hinder these initiatives.

A hick/up in the transformation of social building complexes is that social housing corporations are restricted to raise the rent. The allowed amount to raise the rent is not enough to pay for the investments, even though the financial benefits for the users are big enough to compensate for a higher rent.

Main laws with short explanation

In the Netherlands the Algemene Wet Milieubeheer (Law on the environmental maintenance) is an important law concerning spatial and sustainability issues. The law states that for big energy users – like datacentres – all arrangements have to be made that have a return of investment of at least five years. There is room in the law for the municipality to make arrangements to enforce this. Amsterdam has brought its norms even higher in a covenant. Although the Amsterdam norms are not legally binding, the big users are following these norms. This means it is easy enough for them to make it to these norms. For new buildings the norms are even more strict. The gains on a city level are high. Another covenant is made with hospitals.

5.4 Achievements and experiences

In general the SUL team in Amsterdam has done three activities: setting up of a project organization within the city, organizing events in the process that built the network and

the knowledge base, and the general projectmanagement (see §3.1). This resulted in a new alliance for the implementation plan (see §4.5).

5.4.1 Products and achievements

Analysis of the area energy household

The analysis is based on the data produced for the energy atlas. Steps in the process were:

(a) Contact actors with relevant data (source holders)

(b) Start working together with relevant stakeholders within 'Amsterdam Smart City'

(c) Collect data and make the data workable

(d) Transform the data into information by mapping

(e) Generate general information and overview by calculation and graphs.

(f) Analyse the data visualization with local stakeholders

(g) Make an analysis that serves as an information tool during workshops

(h) Share with stakeholders final analysis

2. Mission statement for the Area

The municipality took the lead in creating the mission statement in close cooperation with Amsterdam ArenA, and also with NUON and AMC. This process has become part of the setting up of a new public private partnership (see 4.5).

3. Funnel of projects

The strategy has been to start with potential projects instead of planning it top down. In a way Amsterdam created a projectmachine. The process is described in §3.1 and the projects are presented in §4.4 and chapter 5. By generating a lot of project proposals, cooperating with the parties until there is a business case, there are projects coming but also going. In §3.4.2 there is written which projects stopped and the lessons we

learned. An appealing result in the area during the TRANSFORM period was the covering of the roof of the Amsterdam ArenA with solar panels.

The following activities created the list of projects:

(a) Design thinkers: meetings with the local stakeholders to brainstorm about possible project on CO2 reduction. A first selection of projects is made. Values are shared and concepts are built.

(b) Match making: bringing the relevant actors together on a promising project.

(c) 1 on 1 contact: get projects more clear and appoint ownership.

(d) Intensve Lab Session (ILS) helped in defining projects, especially around the key challenge of public participation and for the theme Heating & Cooling.

Costs

For the programme during the last years costs have been made on human resources. This is programme management by the Office of Climate and Energy together with costs for external research and advise. Other partners also invested in kind to the cooperation. For individual projects costs were made by the involved organisations.

This programme could only be run with this intensity because of the financial help of the European Commission by backing the TRANSFORM project. When the European help stops the programme can be continued because the involved local institutions will contribute to the projectmanagement.

5.4.2 Experiences: lessons learned

Succesfactors

The Amsterdam TRANSFORM team is very happy with the achievements that were made in the SUL during the TRANSFORM period. Next to the results that were mentioned in the previous paragraph the team is especially satisfied that the major institutions in the SUL area – even commercial companies – committed themselves to the spirit of TRANSFORM and signed to contribute to these goals in the coming years.

The methodology to start in the area and bundle existing enthusiasm and projects was of crucial importance. There were already good relationship with some of the major stakeholders in the area, like the ArenA stadium. Without the enthusiasm of the ArenA and the involvement of NUON and AMC and others this would not have been possible. To make an innovative transformation plan in a specific area, it is necessary to have strong and committed actors in the area itself. These partners can more easily reach and stimulate other organisations in the area.

The second success factor was that some members of the Amsterdam TRANSFORM team were part of Amsterdam SMART city. Amsterdam SMART City is a strategic partnership between many actors who strive for a better world and willing to search for new solutions. With the public, semipublic and private partners participating in Amsterdam SMART City Amsterdam had the perfect network to gather data from these partners and make the energy atlas. The energy atlas was the underlying knowledge base to stimulate people to think about sustainability and hinted at possible solutions.

The third successfactor was TRANSFORM. Transform made it financially possible to organize the necessary human resources. Transformation in an existing area is not a task that goes without saying. But TRANSFORM also provided a platform of interesting partners. The involvement of these partners within the Intensive Lab Session is of great importance. They create a sense of urgency, but they also bring in knowledge and widen up the scope of possibilities. Being part of a European programme legitimates the actions in the SUL.

Failfactors

The strategy was to let thousands flowers blossom and then with a good processmanagement let this grow into a realistic and coherent programme. In this course there were also ideas that seemed interesting, but did not work out in the end. Reasons varied. A general remark is that sometimes it would have been better to test at an early stage whether the big bosses of possible partners were enthusiastic or not and to involve them if they were. Especially in the cooperation with IKEA this turned out to be a problem. Others failfactors were: no business case and uncertainty about future developments. Here are some examples of pilot projects that are not continued with an explanation.

AMC Solar:

A project proposal was to use the roof of the AMC Hospital for solar panels. In 2013 different financial models were discussed: using money from funds and financial institutions, crowd funding or by an external organisation (ESCO). There was enthusiasm and a business model: small users could use the roof and because they pay a higher price for electricity the Return on Investment would be better. The reason the project stopped is that the hospital might build an extra story on top of their building. The possible merger with another hospital made them realise the space that might be needed and that could be available in the future.

Lighthouse IKEA:

The project idea was to make a showcase within the IKEA store in South East of a sustainable house equipped with solar panels, insulation and IKEA's sustainable products, and a normal house without energy saving measures and basic products. By visualizing the reduction in energy usage and the amount of saved money in € and actual groceries, it would create greater public awareness. The grid company Liander was involved to promote their SMART meter and SMART behaviour.

The reason the project stopped was that the management team of IKEA is very reticent in cooperating with other organisations. In their view there is a risk of confusion of brands, and the brand of IKEA should not be 'contaminated'. If a partner makes a mistake this might otherwise backfire on IKEA. Lesson learnt is that it is very important to do a check with the higher management on feasibility of the project. In cooperating with different organisations: all parties should invest in the cooperation from the beginning on.

Waste heat Datacentrer

After an expert research, including a second opinion, it turned out that the using of waste heat of the datacentre does not make a business case. The user of the waste heat should be real close by and a big user. With the current businesses around it would be cheaper to use heating pumps using the heat from the air. The attempt to attract a big user of heat, like a tropical swimming pool, did not bring about any results.

5.4.3 Challenges for the next phase

There are two challenges for the next phase: (1) quantitative targets (2) stay alert.

Quantitative targets

The emphasis has been so far on building a network and starting projects. Although there is a compelling amount of information available, the projects were not deducted from a specific target on for example CO2. In the next phase this link should be made explicit. It would be strange to steer only on these targets, but by monitoring a learning process on efficacy should start. The challenge is to keep the enthusiasm in the network by working in a bottom-up way, but combining this with a more explicit link to quantitative targets.

Stay alert

After the setting up of the network the leadership role in the coming period will be less clear. With partners who have a strong position within the area, less urgency might be felt for new and innovative solutions. Therefore it will be the role of the city and the knowledge partners to stay alert and to foster openness, learning and experiments.

6. Overall development visions, objectives and targets, future organization and management of the SUL from the policy perspective

6.1 Qualitative goals, quantitative guides

Amsterdam Southeast is a real transformation area with a lot of local stakeholders and without a big urban development in the near future. Therefore it is at this moment important to set qualitative goals. The goals are oriented towards the organisation of a cyclical process of continuous learning. This process must stay open for new partners, new ideas and new projects. The cooperation is all about plan-do-act.

It is also important to relate the projects to overall goals and monitor the results. These goals are citywide quantitative goals. These quantitative goals are guides for the SUL and not seen as hard targets. The Smart Urban Law will continue to be an area for experimentation, learning and becoming more sustainable.

6.2 City wide quantitative guides

2025 and 2040

With the European targets as a starting point, the city of Amsterdam has its own policy with specific targets on reducing carbon emission. The ambitious energy and climate ambitions for the city as a whole are the basis for the objectives of the SUL area. With the newly elected politicians these targets are changing. The objectives as they were clear in August 2014:

2025: 40% CO_2 reduction (by reduction in energy use and production of renewables)

2040: 75% CO_2 reduction

Graph: CO2 goals Amsterdam in 2025 and 2040 and real carbon emission in 1990 and 2012

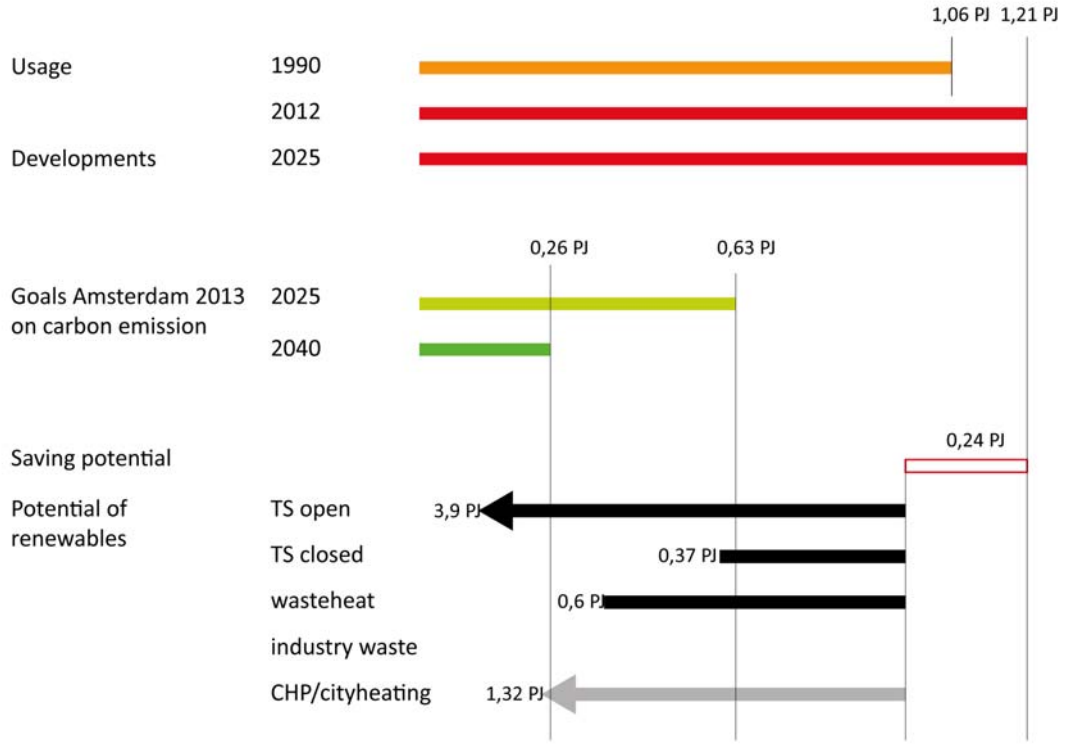
As seen in the graph the targets are ambitious. It is not needed to make more ambitious targets for the SUL area. If the SUL succeeds in delivering these results, that will be an outstanding performance.

6.3 Quantitative possibilities in the SUL

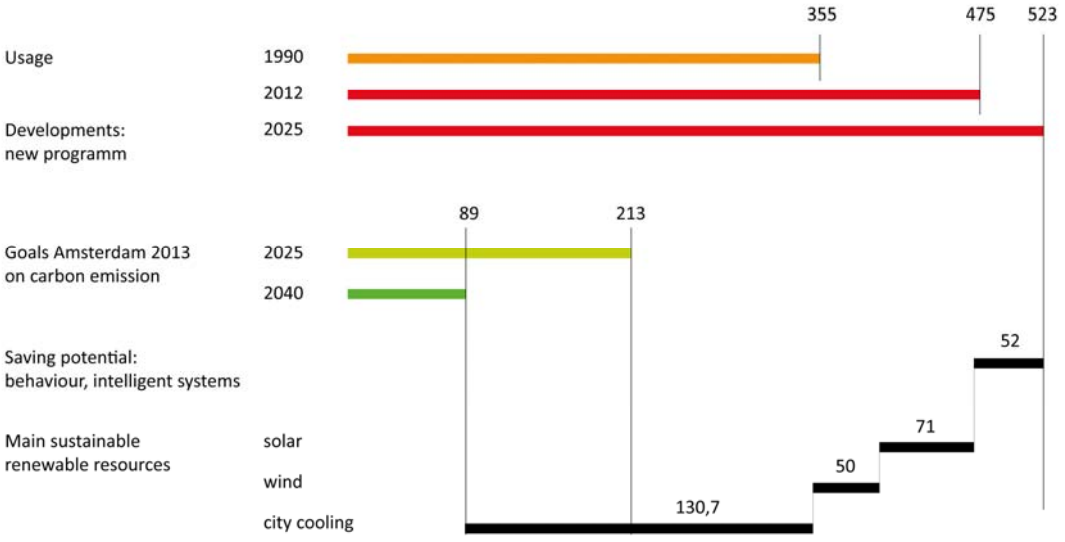
With the help of the energy atlas it is possible to answer the question whether the general quantitative targets from Amsterdam are in theory to be reached. In the figures here it shows that this is possible. The figures give the usage, the goals and then calculate backwards from the usage with green alternatives.

For heating there is a variety of options and combinations to reach the targets. For electricity the case is more complicated. For electricity all the potentials need to be used to the full to reach the target. It means that it is possible in the theoretical situation, but that there is scarce room for problems in the reality.

Energy use of Gas & heating



Electricity Use Energiek Zuidoost (GWh)



The objective for the implementation plan is a combination of overall values and objectives and individual targets from the main stakeholders. The main partners in the new cooperation must decide together to what extent will formulate SMART-targets, or that the objectives should be stated in a more qualitative value based approach. This overall objective will be more specified before December 2014.

Overall objectives

All the partners feel a societal responsibility. The mission is to come to an optimal use of resources: human, financial and material.

The following themes are agreed upon: energy, mobility and waste. Projects will be about:

- Energy: decrease energy use, a smarter use of energy sources and renewables
- Mobility: public transport, carsharing, electrical transport, SMART use of ICT and smart use of space (also in relation to carparking).
- Waste: decrease waste production, use of sustainable and reusable materials, and local processing of waste.

Important in the theme of energy is heating. The city is working on a heating strategy for the whole city. The area of Southeast is a pilot area.

The projects will be run by organisations in the area. These are mainly commercial organisations. Projects should therefore have an interesting aspect for the market, directly or indirectly. Therefore the innovative character of projects will be an important aspect.

The City: CO2 as KPI

The objectives as they are clear at August 2014:

The energy and climate ambitions for the city as a whole will be the basis for the objectives of the area of Southeast. These objectives are:

2025: 40% CO2 reduction (by reduction in energy use and production of renewables)

2040: 75% CO2 reduction

These are very ambitious objectives, since the actual CO2 emission has grown steadily between 1990 and 2012, with a total of 33%. To reach the 2025 goal means that the CO2 reduction must decrease with 73 % between 2015 and 2025.

- The newly elected political leaders are proposing to make the sustainability goals more clear ,appealing and fit to their period of power (2014-2018). The CO2 objective might be changed to two goals: (1) reducing energy consumption with 20% in 2020 and (2) bringing sustainable energy production to 20% of the total energy consumption, baseline 2013.

ArenA

The ArenA has a target for itself to be climate neutral in 2015. In order to achieve this goal, the ArenA developed a strategy of investing in energy production on a national scale and then shift to more local sources, which take more time to develop because of the need for collaboration with surrounding organisations like the AMC.

The goals set by the partners of ZO Circular are still in development. So far, for energy, the city goals are adapted.But as the name implies, it's about setting goals to develop a new, circular, economy. The common goals are driven by a wide range of individual goals: visability. branding, corporate social responsibility, cost reduction, etc. A strong dirver is the perception of some organisations that the only way to sound economics is to shift to sustainable ways of dealing with nature, capital and labour: to a circular economy.

The Smart Urban Lab within Amsterdam South East

The district is working in cooperation with the city on a development plan for the whole area of Southeast. Sustainability is part of this document. Here is a table with the basic KPI's for the area of the SUL. Beneath there are two graphics. They are both about the SUL: the state of 2012, the developments, the goals and the potentials for saving energy, smart balancing and renewables

Table 12: Basic KPIs for the SUL

	Status quo 2012	Target 2025 (80%)
Energy use (electricity)	475.000 MWh	380.000 MWh
Energy use (gas)	38.211 m^3	30.500 m^3
Emission of CO_2 and/or CO_2-equivalent		- 40%

6.4 Development strategies and priorities of future development activities

Strategy

Amsterdam Southeast is a built-up area. It is complex because with a lot of different owners and users. In the area there is already a system of city heating and cooling. A part of the buildings are connected to this system. Because the SUL Southeast is a brown field development, transformation to more sustainability is a step-by-step-process.

The development strategy is all about facilitating: creating a knowledge base, informing, bringing possible partners together, think along, connect, organise, helping to formulate projects and testing them. Therefore from the beginning of TRANSFORM the city stimulated ideas, cooperation and fostered all kinds of possible projects. The development strategy is bottom up.

This means that the measures were about positive stimulation. No big investments in totally new systems were made, no rules were formulated. The strategy was helping with: information, connections and finance.

This way of working means to start en find out what works and then scale up or try again. The strategy is to institutionalize this learning process. Therefore less stress is put on the exact contribution to the KPIs of the projects. In this learning process this progress measurement and realistic goal setting must improve.

Themes and flagship projects

For the coming years the cooperation will focus on the themes of energy, mobility and waste. The main priority will be on (a combination of) heating and retrofitting of offices.

Flagship projects are the projects that are about local cooperation. The most visible and conceptual are important for the branding of the area as a sustainable area. The production of electricity of the AMC hospital for the ArenA soccer stadium is a flagship project in this sense. Also new renewable energy projects where different organisations cooperate are interesting, like SMART living Gaasperdam.

All projects

The projects that are defined/researched/started are:

Energy: retrofit and saving (5.1)

1. Smart Living Gaasperdam
2. BREAAM 4 offices: yearly monitoring of the sustainability of the office buildings
3. Retrofit market transparency: bringing demand and supply in contact

Energy: smart balancing (5.2)

4. AMC-ArenA electricity: local electricity production and exchange. (smart grid)
5. AMC Wasteheat
6. Energy plan Medical Business Park:

Energy: Renewables (5.3)

7. ArenA Solar: production of solar energy
8. ArenA-AMC solar parking

Mobility (5.4)

9. Mobility Portal Southeast
10. SMART charging hubs
11. Orange Gas station

Waste (5.5)

12. Pharma filter business case (AMC-Waternet)

Knowledge, innovation, promotion and behaviour (5.6)

13. research & education programme (Strategic knowledge alliance)

14. Solar gambling: student design to promote the use of sustainable energy and behaviour with residents

15. Using the flat: student action research on living more sustainable in a 60-ties flat.

6.5 Future management and organization of the SUL

TThe Amsterdam ArenA, the heating and cooling grid company NUON, the hospital AMC, the city of Amsterdam and the district of Southeast will join forces in a new programme organisation. The workname of this programme is ZO Circulair (Southeast circular). Other partners are invited to join the initiative and take part in projects. ZO Circulair will be part of ZO Samen (Southeast Together), which is the association of the institutions in the area.

The organisation of ZO Circulair can be seen in figure X. A steering group will consist of end-users, the municipality and a knowledge institution. They are in charge of the ongoing strategic planning, implementation and monitoring.

The partners will invest in the cooperation with human resources of with a financial contribution. These resources will be used for programme management: setting up new initiatives, monitoring current projects, financing and marketing. In case that the human resources are not enough, the programme management can be hired externally

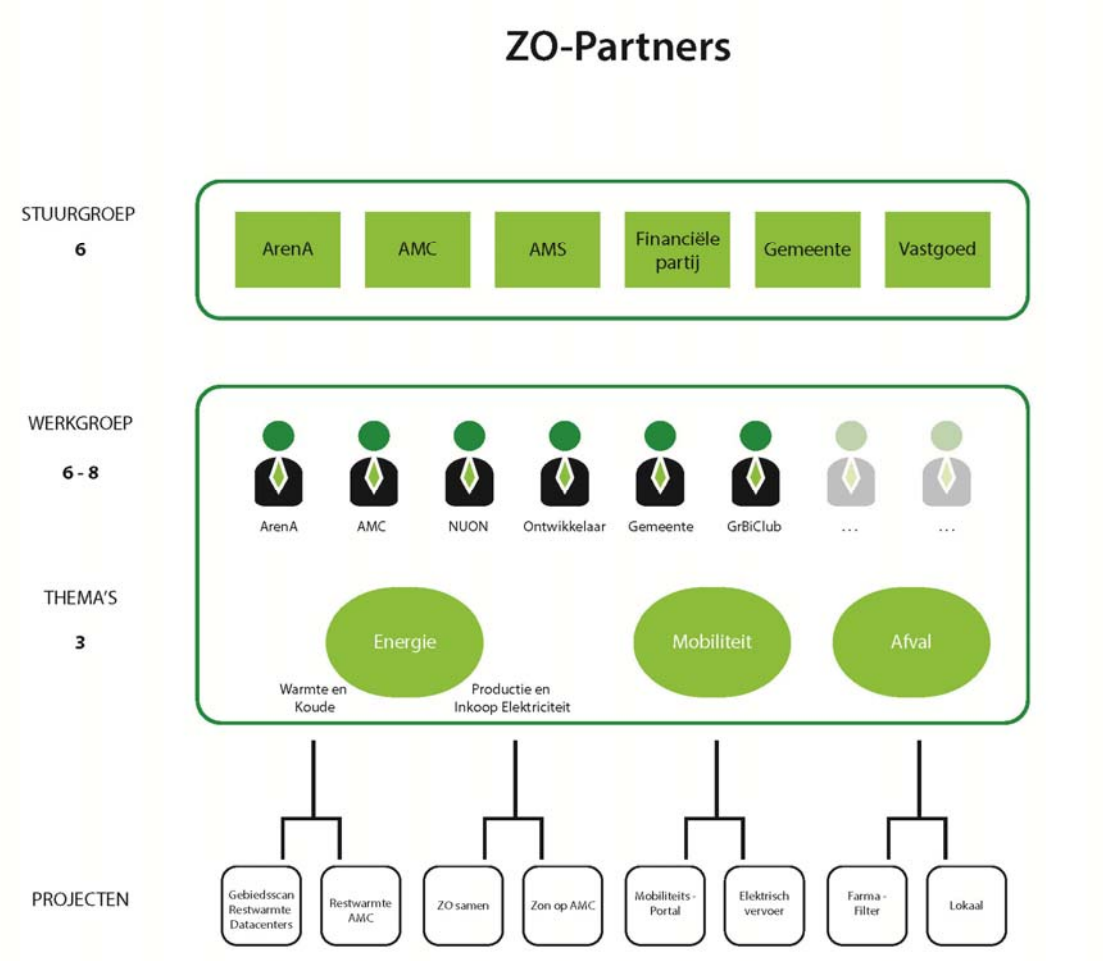
In comparison to the TRANSFORM period 2013/2014 there will be some changes. Most projects that started or were researched during the TRANSFORM-period will be part of the programme of ZO Circular. It is possible that the new organisation will decide that some projects will be out of scope.

Another change will be that some roles will shift. So far the programme management was done by the city of Amsterdam, office of Climate & Energy. So far, the city was in

the lead. In the new organisation of ZO Circular the partners in the area of Southeast will be the majority. The city will become one of the partners.

So far no specific agreements are made on the way of monitoring and the data gathering on the area level. On the level of the city and in cooperation with the grid company a lot of data is gathered in the energy atlas. The data on electricity and gas use will be updated yearly. The municipality will also invest in an atlas on waste. These data will both be useful.

The reason to involve a knowledge institution is to foster learning. Learning from initiatives and techniques from other places and – even more interesting – learning from own experiences and communicating this to others. By regularly evaluating the projects and administrating it will become clear and explicit what projects contribute to the objectives.



Signatures 18th October 2014 on cooperation on programme management

7. Implementation measures, key actors for future realization

This chapter contains a description of concrete measures and projects for the coming years. As explained in the previous chapter. This implementation plan will stay a living plan. In the coming years new projects will be formulated and others will be discarded.

The description of the projects contain: general description, definition of key actors for the respective measures, description of expected start and finishing dates, investments/running costs and other financial issues relevant for implementation (e.g. public aids, subsidy schemes, business models)

7.1 Energy: retrofit and saving

SMART Living Gaasperdam, business concept in development			
Start of implementation	2013	(Planned) Completion	2015 … =>
Description of the measure	In Gaasperdam (neighbourhood within Southeast) inhabitants, companies and the city agreed on working together to make the houses more sustainable. Spreading the sustainable virus and enthusiasm between the inhabitants is the goal: learning by doing. There are 33.000 inhabitants in Gaasperdam. Their houses are built in the seventies and eighties. The goal is to raise the sustainability and the comfort of the houses, without raising the monthly costs. The search to improve the quality of living is not only in the field of energy, but also in other areas like water, waste, internet, food, mobility, care and safety. A pilot has been done in 2012 by "Wij krijgen kippen" in the neighbourhood Holendrecht East. The energy atlas provided a start and direction in the area. In September 2014 a letter of Intent has been signed by the involved parties to upscale the project to the whole of Gaasperdam. The project runs for a year. From then on it should be a platform that functions on its own. Another goal of the project is to foster the cooperation between the organisations and companies.		
Key-actors	City district Southeast, Wij krijgen Kippen (private initiative), Waternet, Reggefiber, Liander, Alliander, AEB (Waste&Energy Company), Amsterdam SMART city		
Target group	Inhabitants, Private houses		
Financing	The key actors contribute in kind with people working on the project. The intention is to keep the with small budgets. The action should be directed at real change and investments in improvement of the real estate.		
Publicity / participation	**www.slimwonengaasperdam,** A letter of Intent has been signed by the involved parties. This was a public event. Thematic sessions with inhabitants are planned.		
Impact on goals	the goal is to develop a platform on which people can interact. Everybody can set their own goals. Estimated minimum impact is 1200 kWh per year per house. Meaning 0,5 ton per house.		

BREEAM for offices Monitor (proposal, not decided on)			
Start of implementation	2015	(Planned) Completion	yearly
Description of the measure	As a collective of offices it becomes interesting (€ 1.000 per participant) to perform yearly a basic BREEAM research. This will give the offices insight in their relative sustainability, how they score and where they can improve. This initiative started in Rotterdam and came to the office area of the South Axis of Amsterdam. This is an opportunity for Southeast to join in. In Rotterdam 30% of the office floor area participated. For 20% owners told to start measures.		
Key-actors	City of Amsterdam, VAZO/ ZO Circulair,		
Target group	individual office owners		
Financing	City of Amsterdam (in kind), VAZO (10.000), individual offices (1.000)		
Publicity, participation			
Impact on goals	**no quantitative goals.**		

Retrofit market research			
Start of implementation	2015	(Planned) Completion	2015
Description of the measure	This is a preliminary research on demand and supply concerning retrofit in the officemarket. There are office owners interested in retrofitting, but it is at the moment not clear what their exact needs are and what considerations they have. At the same time there are different marketsuppliers who have the impression they have interesting products and financial models, but they have the impression the officeowners are not familiar with the possibilities. The preliminary research will be the start of the knowledge building in the area concerning retrofitting.		
Key-actors	City of Amsterdam as a moderator,		
Target group	Office owners		
Financing	In kind, working hours		
Publicity, participation	There will be interviews and a small physical market.		
Impact on goals	estimated 25% reduction per building per year, means for office floor space app 800 ton C02 reduction for 50.000 m2		

7.2 Energy: Smart balancing

AMC-ArenA electricity demand supply management, businesscase			
Start of implementation	2015	(Planned) Completion	[year]
Description of the measure	The Amsterdam Medical Center (AMC) owns private powerplants. One state of the art powerplant is unused. AMC has an overcapacity of reserve production capacity. Therefore the AMC wants to sell energy to the ArenA soccer stadium. The ArenA has at times a very high peak use of electricity during events. The ArenA wants to use the electricity plant of the AMC as a buffer and to shave their peak use. At the same time it is a very visible project and example of energy production and use on a local scale. This pilot project makes the topic of local energy market very tangible. The feasibility of the business case will be available in the end of October 2014.		
Key-actors	Amsterdam ArenA stadium and Amsterdam Medical Center (AMC). Other actors: Ecofys, Amsterdam municipality, university of Twente, grid company Liander.		
Target group	Amsterdam ArenA and Amsterdam Medical Center. Next phase other users in the area using waste heat from the power plant and buying energy.		
Financing	Amsterdam ArenA stadium and Amsterdam Medical Center are researching financing models and other financial options.		
Publicity, participation	**?** ArenA and AMC will promote the project under the condition that the business case is positive. Amsterdam SMART City is already promoting the project. There is already interest from city journals.		
Impact on goals	Innovation on electricity infrastructure and pricing. No quantitative targets on CO2 reduction. .		

Hospital (AMC) Waste heat, business case			
Start of implementation	2015	(Planned) Completion	tbc
Description of the measure	The AMC hospital owns a private powerplant to ensure power for the vital parts of the hospital. Most of the time, the wasteheat of the plant is used for the hospital itself. Current ideas are to bring the overcapacity of the powerplants to the electricity market. If the hospital succeeds in doing so, a big amount of extra heat is generated too. There are possibilities to use this heat in the local district heating system. There is also a possibility to use this heat for a new to build medical business park. It depends on the negotiations with the city heating company NUON what AMC will choose to do. If AMC chooses to sell their high temperature waste heat to NUON it can be implemented in 2015. In the current phase the city is doing a research with the help of the company Fosbury Energy. This quick scan will be the starting point for a market consultation of possible waste heat users.		
Key-actors	City of Amsterdam, AMC (producer, decision maker), NUON (city heating)		
Target group	Real estate owners around the AMC hospital		
Financing	The city of Amsterdam is financing the quick scan and the consultation round.		
Publicity, participation	Users will be actively approached after the quick scan.		
Impact on goals	The business case accounts for app 1600 ton C02 reduction.		

Energy plan Medical business park			
Start of implementation	2014	(Planned) Completion	[year]
Description of the measure	Just south of the AMC hospital there is planned a medical business park. The city heating company NUON has no interest in selling their heat here: it is not profitable. In the planning process an energy plan is to be made. High EPC-standards in combination with a smart heating and cooling grid (including storage) can be the outcome.		
Key-actors	AMC, **developer**, city of Amsterdam		
Target group	AMC, developers, future owners and renters.		
Financing	**?**		
Publicity, participation	**-**		
Impact on goals	Governance goal. Try to bring energy planning in regular area development planning. This example can be used for creating a new standard in planning. No quantative target yet. This is part of to be planned program. This measure contributes to having app 75& C02 reduction per m2 for newly to develop floorspace.		

7.3 Energy: renewables

Description of important measures, key projects etc.

ArenA Solar: the next phase, testbed			
Start of implementation	2015	(Planned) Completion	2015
Description of the measure	The ArenA Soccer stadium managed to cover the whole roof of the stadium with solar cells in 2014. In the next phase the ArenA will participate in innovation using solarfilm on the parts of the roof.		
Key-actors	ArenA Hanenergy		
Target group	The ArenA stadium has a big exposure. Their target groups are their users (for example fans of AJAX), and customers (world wide market to build stadiums). Therefore it is important to set the example as a role model.		
Financing	ArenA , Hanenergy		
Publicity, participation	Promotion by ArenA itself. **Amsterdam SMART City**		
Impact on goals	Close to zero. This is a testbed of app 100m2.		

AMC Solar Parking , business case			
Start of implementation	2014	(Planned) Completion	[2015 (business case)
Description of the measure	Covering parking places with a solar roof		
Key-actors	AMC and possibly other actors buying green energy, like ArenA		
Target group	AMC and possible buyers of solar energy		
Financing	AMC and third parties		
Publicity, participation	Promotion by AMC and Amsterdam Smart City		
Impact on goals	15.000 m^2 PV-cells, delivering app 1.8 million kWh, , 846 ton C02reduction		

7.4 Mobility

Description of important measures, key projects etc.

Mobility Portal Southeast, product development			
Start of implementation	[year]	(Planned) Completion	[year]
Description of the measure	Amsterdam Southeast is an area that attracts many visitors: 11.000.000 per year. At many times people visiting the area can save energy during their travel by travelling together or using a more sustainable mode of transport. That is why the ArenA developed a virtual portal that makes people aware of their possibilities and makes it easier to make a more sustainable travel. This portal can be upscaled for the whole of the SUL.		
Key-actors	ArenA, city of Amsterdam, Huawei, AMC, TNO, other companies and institutions in the area.		
Target group	Visitors of the area		
Financing	All parties, possibly cofinanced by national program on mobility (Bter benutten)		
Publicity, participation	ArenA, toher parties, Amsterdam Smart City		
Impact on goals	The goal is to have 10% less traffic during peak hours, CO2 reduction is not accounted for yet.		

If appropriate please add pictures/maps or integrate in overall mapping

Smart charging hubs , testbed			
Start of implementation	2014	(Planned) Completion	2014
Description of the measure	Testing of innovative charging service in a real world setting: start and stop charging with smartphone, variable speed of charging en the electronic arranging of electricity towards the charging hubs. De technique has been tested thoroughly. In this pilot the real practice will be the testing environment. Feedback will be gathered on improving the charging service further.		
Key-actors	The pilot is implemented by Allego en the city of Amsterdam. The project is subsidized by Mobi Europe, a European project on electrical mobility.		
Target group	Users of electrical vehicles		
Financing	Allego, city of Amsterdam and Mobi Europe		
Publicity, participation	Twitter and possibly a website.		
Impact on goals	The reduction is strongly depending on the amount of charging sessions. To give an idea: for 20 hubs, charge each day an equivalent of 200 km, reduce 175 ton each year. This calculation is baes on experiences in the Mobi.europe project		

Orange gas station: location study			
Start of implementation	2014	(Planned) Completion	[year]
Description of the measure	There is a private initiative to bring a gas station in the area. This station wants to offer only sustainable gas. The city helps in the finding of a location.		
Key-actors	Orange gas, City of Amsterdam		
Target group	Users of motorized vehicles visiting or passing the area.		
Financing	Cofinanced by the Amsterdam Investment Fund.		
Publicity, participation	?		
Impact on goals	estimation based on other orange gas stations: 540 ton yearly.		

7.5 Waste

Pharma Filter, business case			
Start of implementation	[year]	(Planned) Completion	[year]
Description of the measure	[Why is the measure necessary/reasonable? What shall be done/changed? What is the expected impact/outcome of the measure?]		
Key-actors	[Who is especially relevant for the implementation of this measure? What is the specific role of these key-actors?]		
Target group	[Who in the SUL is influenced by the measure (in his daily life)?]		
Financing	[Investment costs and operating costs, who finances the measure, funding schemes/public aids, business model]		
Publicity, participation	How will the public be involved in the implementation or be informed about planning and/or implementation?		
Impact on goals	150.000 m3 of green gas reduces 260 ton CO2		

Waste to energy: business case			
Start of implementation	2014	(Planned) Completion	[year]
Description of the measure	There is about 6.500 tons of waste from companies in the SUL area. The companies are legally free to choose a waste processing company. There are chances to gather the waste in the area and process this to oil and gas. This would shorten the waste kilometres and provide green energy to the area. At the same time this could be an easy alternative for the participating companies, because with the preferred technique it is not necessary to separate the waste beforehand. 1st phase: quick scan market research 2nd phase: involve the biggest waste producers in the area, especially AMC.		
Key-actors	AMC, entertainment cluster and shopping center		
Target group	AMC, ArenA, and possibly more actors with intrest of buying green energy from AMC		
Financing	!st and 2nd phase is financed by the city of Amsterdam. An external consultant is hired (Fosbury Energy)		
Publicity, participation	In the second phase the big waste producing companies will be contacted. If this leads to a business case, other companies will be invited in the next phase.		
Impact on goals	2.200.000 m3 gas from waste is maximum available (this includes the gas from the pharma filter. Estimated is that form this part app. 60% is green gas, therefore C02 reductions are app 2340 ton.If this gas is used for fuelling the CHP and waste heat is used too, another 700 ton is indirectly reduced.		

7.6 Knowledge, innovation, promotion and behaviour

Description of important measures, key projects etc.

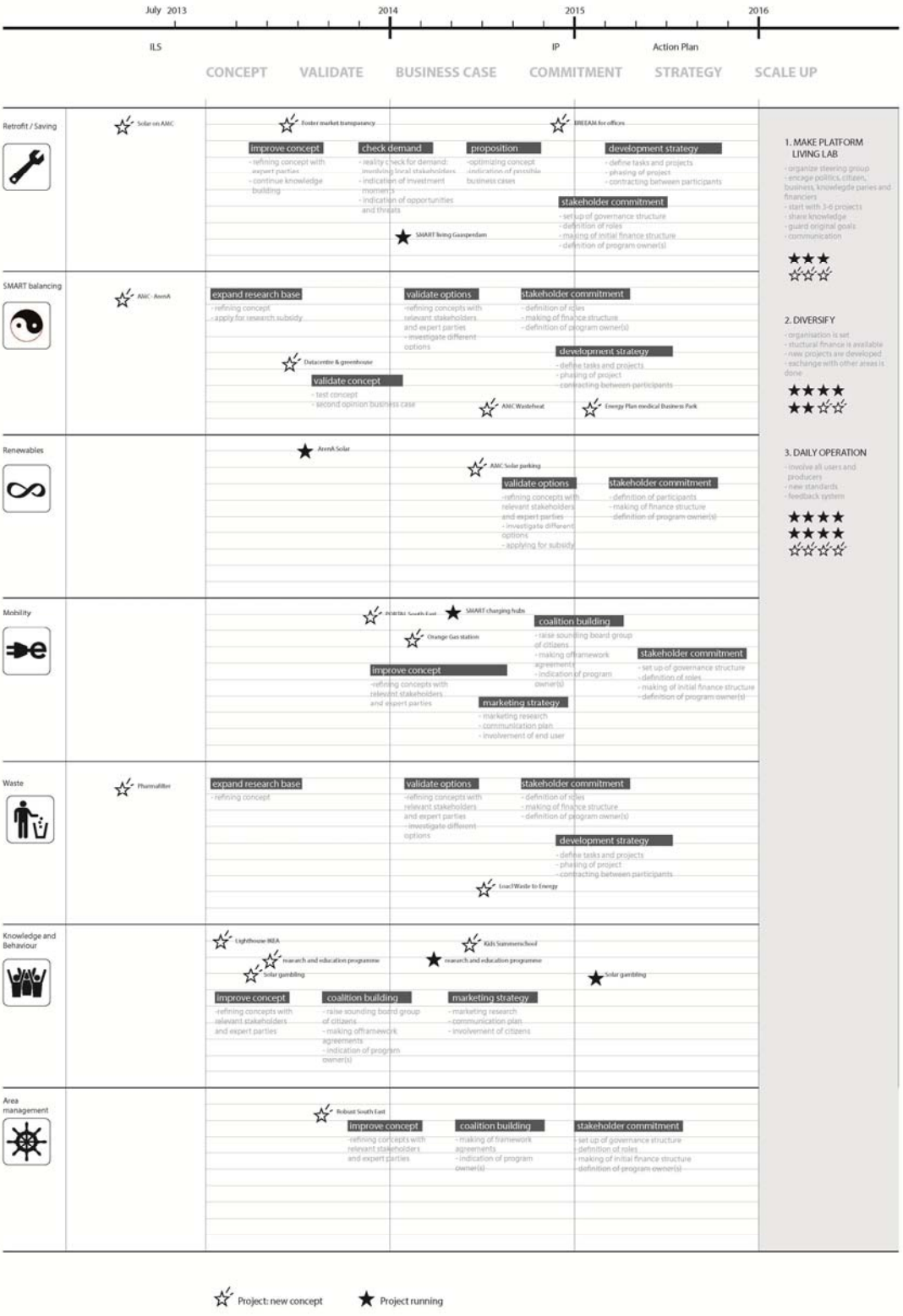
Action Research and education programme			
Start of implementation	2014	(Planned) Completion	[year]
Description of the measure	The new cooperation of organisations within Southeast has also the aim to foster information exchange and build up knowledge about practical sustainable development. Therefore research institutions are involved in this strategic knowledge alliance. Study programmes can be used to start projects in the area and learn from it. Two research classes are running from September 2014. • Using datacentre waste heat: UU-students • Saving Energy in The Flat: HvA students One class will start in January 2015. • Solar Gambling: HvA students		
Key-actors	ZO Circulair, Amsterdam university of Applies Sciences (HvA), University of Amsterdam, Amsterdam Metropolitan Solutions		
Target group	Students, researchers: different per class		
Financing	Key actors work together. So far this has been done in kind.		
Publicity, participation	Presentations, reports and interaction with stakeholders. Publications in journals.		
Impact on goals	No quantitative targets		

Summerschool 4 kids, adding sustainability			
Start of implementation	2014	(Planned) Completion	[year]
Description of the measure	Every year the district of Southeast organises a summerschool for kids. In this summerschool the kids meet companies and institutions within the area. In this way they learn in a playful way. The subject of sustainability is a theme that can become more important in this summerschool. The next generation is the future.		
Key-actors	District of Southeast		
Target group	Children of Amsterdam Southeast		
Financing	District of Southeast subsidizes		
Publicity, participation	Every year the summerschool has a closing event, where the results and experiences are presented.		
Impact on goals	No quantitative targets		

Remark, if all projects are executed, on a yearly base app 6500 ton CO2 will be reduced, which is app 0,1 percent of the area's emission. This remark leads to more focus on upscale methodologies in the work on the SUL

Developing these project and being aware of the development steps to bring ideas to feasibility studies , to investments to operation, led to the setup of a project program. This program is used to guide the development process, in collaboration with the partners. On the horizontal scale common development steps are defined and further specified per project. The vertical scale reflects the program content wise.

Programme Energetic South East



8. Reflection – preliminary assessment

In general the Amsterdam work on the district level could be summarized as intensive stakeholder collaboration and using data as an instrument to understand the are quantitatively and to set priorities. These are the best practices for governance of the Amsterdam SUL.

More content wise, several business cases are developed which give deeply insight in the feasibility of projects/ideas. Coming to this point of development gives the sense of realism of projects and also contours of the needed investments. Also, it creates a feedback loop to parties to set priorities, based on impact and finance. For the AMC all this input leads to the need to make a development strategy. This is a best practise in the field of Economics and Governance

The orange gas station and the ArenA Solar are examples in which the Amsterdam Investment fund is used. This fund is not particularity used for the SUL but is available for the whole city. While working on the SUL the fund is communicated to the new initiatives but actually using the fund is up to the projects themselves. In the case of the ArenA Solar, the fund did contribute to make the project financially feasible.

The main barriers to come to implementation is knowledge with the local stakeholders on how they can act in the field of Smart (energy) Districts. What technologies are available, what is the effect, how to come from an idea to an investment decision in this field of work, etc. Also the transition towards a Smart District is not part of the daily work yet. It takes time to innovate, while time is not addressed to it. The Amsterdam ArenA is very ambitious and does organize extra capacity to innovate. In 2015 the city will support this by dedication of people to this innovation program. The parties who joined the captains dinner are also more and more aware of the dedication of time for innovation. Foreseen is that in march 2015 these parties decided to appoint capacity to a joined innovation program (the structural work on the SUL). This capacity building is an important challenge in the field of governance.

At the moment there are no measures needed on legal framework. But if local waste is turned into energy, the legal framework for waste treatment might be a barrier for fast implementation. Obtaining the licence is a very complex and costly process. More flexibility within the framework is probably needed to have this business case implemented or collaboration with parties which are already lisenced.

The land use plan needs change too in order to enable waste treatment installations and the solar above parking places. Within the municipality the same department responsible for sustainability is in charge of changing land use plans.

Table 23: Overview on best practice and barriers for implementation – PESTLEGS

Short description	Categorization by PESTLEGS
Best practices	
Business cases for local waste heat	E
Business case for solar for big consumers (low energy price)	E
Business case for local waste to energy	E
Business case for demand supply management	E
Stakeholder engagement	G
Funding by Amsterdam investment fund: solar on ArenA and Orange gas station	E, G
Barriers for implementation	
Local land use plan	L
Possibly: Waste treatment legislation	L