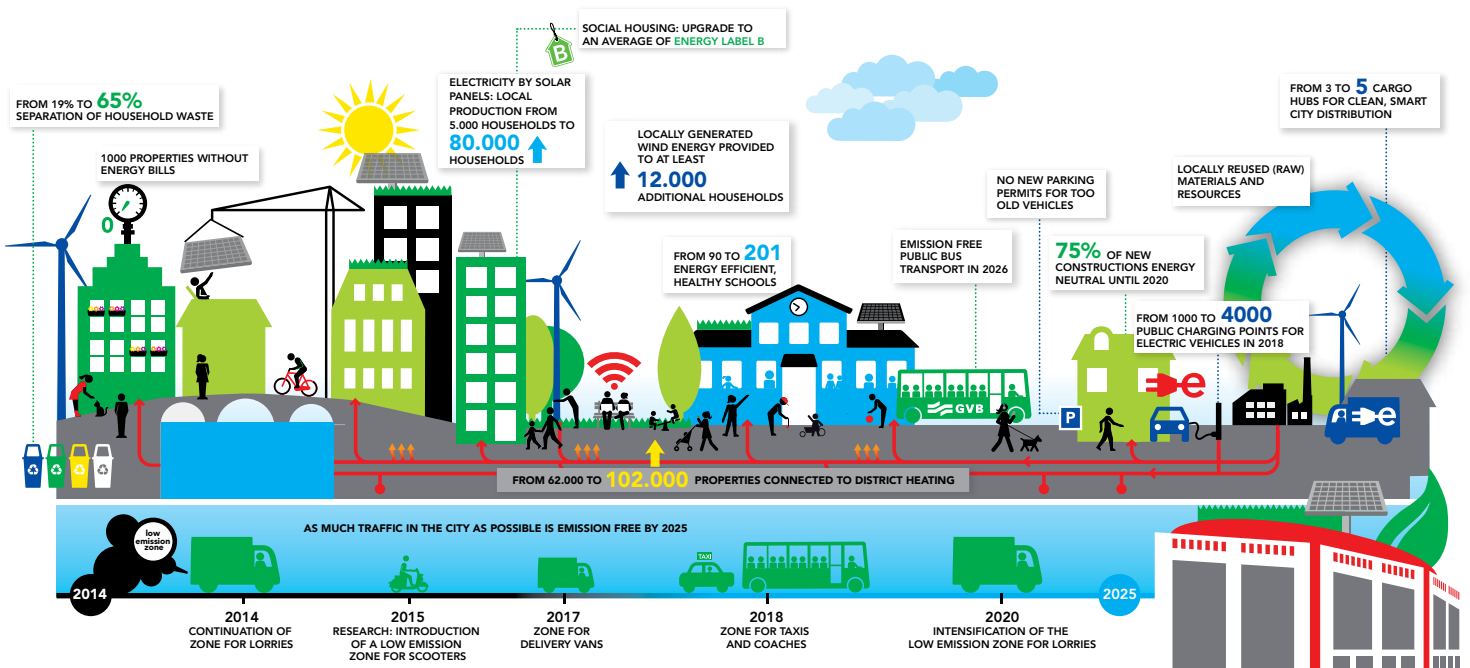




City of
Amsterdam



Transformation Agenda Amsterdam

and Explanatory paper

Colophon

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Text and editing: Municipality of Amsterdam, department of Urban Planning and Sustainability, sustainability team

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explanatory paper

Introduction

The Amsterdam transformation agenda has two main parts. The first part is the explanatory paper and is written to create more insight in the background of the Amsterdam energy planning and to link this with the TRANSFORM format. Main target audience is the TRANSFORM partners, the European Commission and other cities. The explanatory paper follows the logics of defining the gap (in relation to earlier set goals), explaining the gap, defining new actions. Three parts are added to link to the Agenda Amsterdam Sustainable and to reflect on questions from partners, TU Delft reflection and the TRANSFORM advisory board:

- Way of work; a short explanation of the changed way of work proposed in the Agenda.
- Accounting; a short description of the way of accounting, for finance and impact .
- Added value of TRANSFORM

The second part is the Agenda Sustainable Amsterdam create more insight in the background of the Amsterdam energy planning. It's the new guiding policy for most of the (municipal) work on sustainability for the period of 2014-2018 and beyond. This piece was written for the council of Amsterdam, who really strive for change to move towards upscale of projects and impact. The Agenda Sustainable Amsterdam is approved unanimously in March 2015. A brief summary of that document can be found at page 70.

All the work done on for the transformation agenda is directly incorporated in the Agenda Sustainable Amsterdam.

1. Status quo

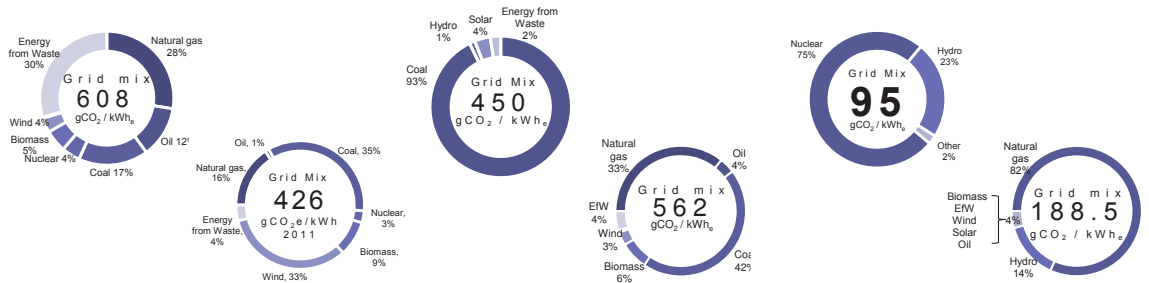
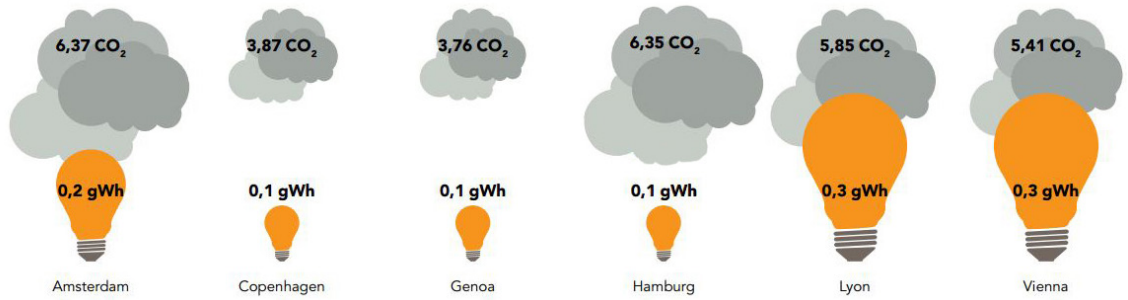
Amsterdam has recently developed a new policy for a more sustainable Amsterdam: the Agenda Sustainable Amsterdam (2015). The focus of this Agenda is to support a better quality of life and to induce a circular economy. The vision is to create more clean air, to have affordable energy, to reduce the spillage of raw materials and to reduce the threshold for sustainable initiatives.

The goals to reduce CO2 emission are redefined in such a way to keep in track with the long term CO2 goals of the city. Due to economic and demographic growth, CO2 emission increased since 1990 with app. 30%. Recently this trend turned into a downwards trend. The Agenda Sustainable Amsterdam directs towards an acceleration for its CO2 goals: 40% CO2 reduction in the next 5 years.

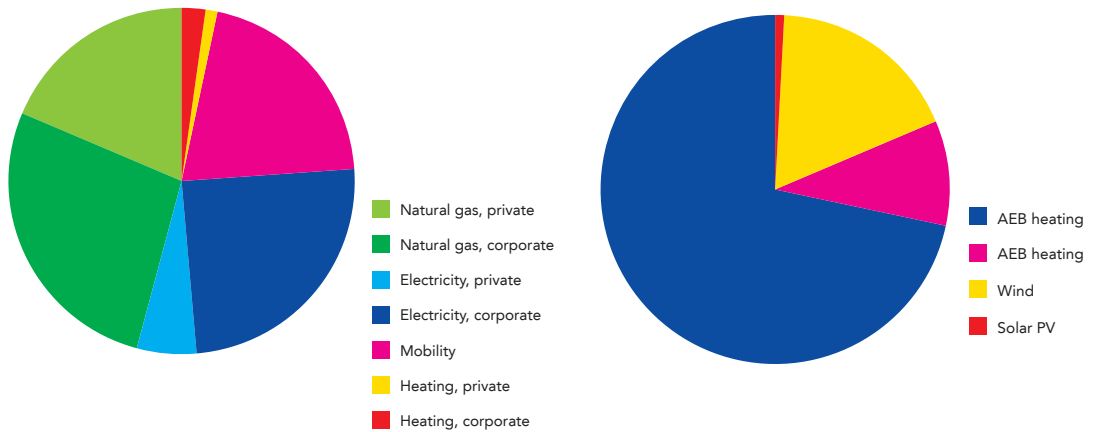
Gap analysis on CO2 emission

A gaps analysis means tracing the deviation of the actual CO2 emission and the goals set in (energy)policies. TRANSFORM defines two levels of gap analysis. The quantitative gap describing the numeric deviation between the set goals and the actual CO2 emission in the city. Is the city on track? The qualitative gap. This is the analysis of the background why proposed measures are (un)successful in contributing to the set goals. Is the appropriate policy in place?

An essential note in this way of reasoning is the relation of the two gaps. There is often no direct relation between a set policy and direct impact on CO2 emissions. City administrations often simply lack competences to ensure CO2 reduction. For example, there is limited power to adjust legal frameworks or the city has a limited assets in the building stock or energy infrastructures. Moreover, changes in energy consumption is strongly depending on people's behavior. Simply said, energy policies are mostly enabling policies. For Amsterdam this is certainly the case.

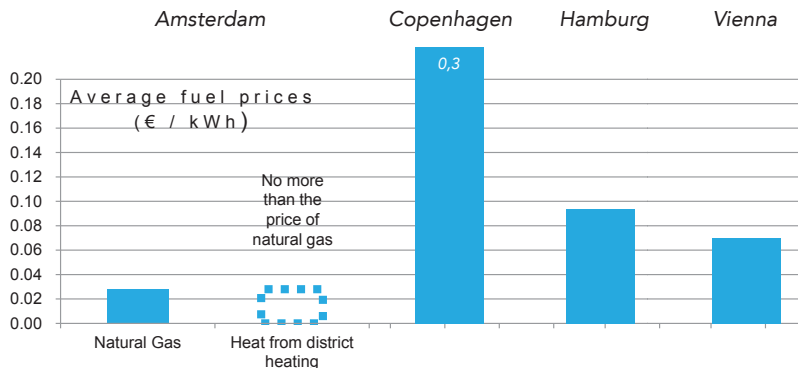


Infographic: CO₂ emissions per city per capita per year, primary energy consumption (gWh per capita per year) and national energy mix for electricity. Source: TRANSFORM/Arup



In 2013, energy consumption in Amsterdam amounted to 54,500 terajoules, measured at the user level, thus excluding conversion and transmission losses, and excluding geothermal energy.

In 2013, 2,700 terajoules of renewable energy was produced in Amsterdam.



Infographic: Average domestic district heating prices (€/kWh) in Amsterdam, Copenhagen, Hamburg and Vienna. Source: TRANSFORM/Arup

The city's quantitative goals

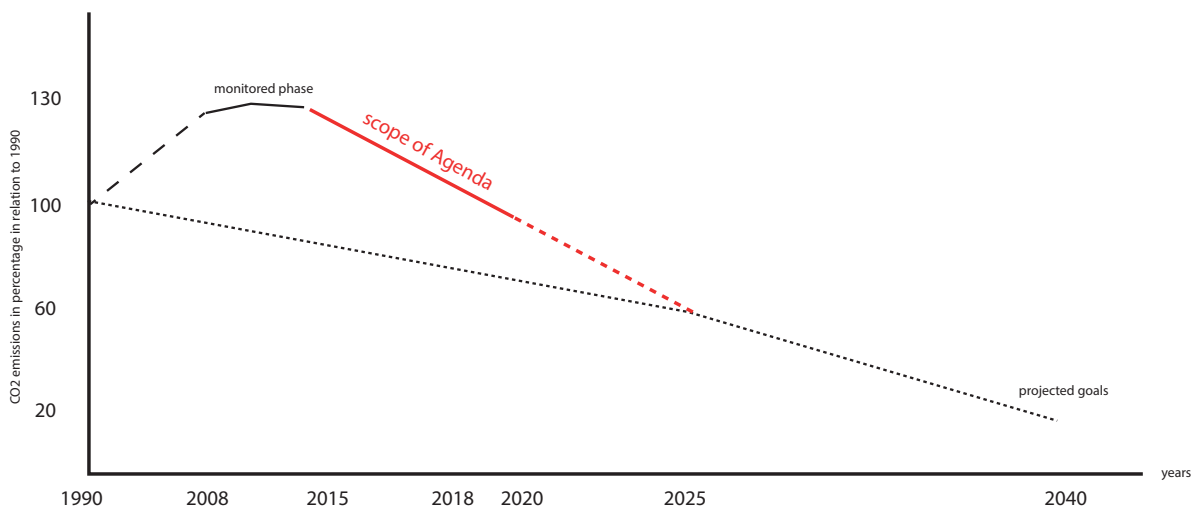
In the recent years the city had set its goals to become more sustainable by energy and air quality policies. Climate protection was the main driver. The approach was quite sectorial with individual goals for each topic. The 'Amsterdam Structural vision 2040, Economically vital and Sustainable' (2010) functions as a reference framework. The energy goals where to reduce 40% of CO2 by 2025 and 75% by 2040, baseline 1990.

In the recently approved Agenda Sustainable Amsterdam the goals (on carbon emission) have been reframed to the period for the following six years in order to relate to the current tenure and to be able to monitor on a smaller time frame. The goals are:

- Produce more renewable energy: By 2020 20% more renewable energy per capita than in 2013.
- Lower energy consumption : by 2020 20% less energy per capita than in 2013.

In fact, this reframing means an acceleration of results in the recent past and redirects a trend towards the initially set goals to reach 40% CO2 reduction in 2025.

Amsterdam monitors CO2 emission every two years and publishes the results online. The main trend is that emission have grown intensely since 1990. Just in recent years this growing trend first was stabilized and turned in to a slightly diminishing trend. The city did not monitor its emissions until 1996 but estimated that there is a 30% increase. So the gap of the quantitative goals is serious. To realize the goals in the period till 2025, 70% of today's emissions have to be cut.



Graph: gap analysis

Aerial view of Sloterdijk in 1990



Aerial view of Sloterdijk) in 2013



What factors are causing this gap?

Deep diving in the CO₂ monitoring gives a recent perspective (since 2008) on the gap, more long term trends are derived from other data. Main causes are:

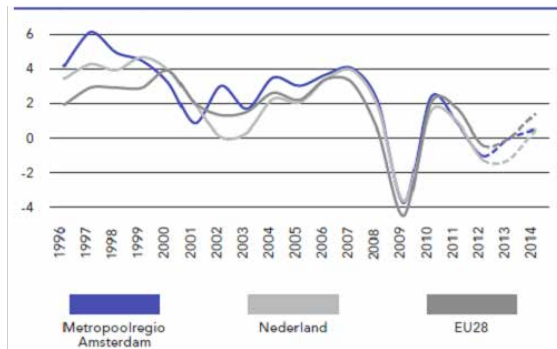
- population is growing each year with app 1%.
- economy (non-domestic sectors) is growing, so does the CO₂ emission. In specific retail, datacenter, offices, hotels have been growing. For example the app. 40 datacenters in Amsterdam use 11% of all the electricity used by non-domestic functions. Numbers show that since 2008 mainly the electric use in non-domestic functions has grown.

Box: The political status quo during TRANSFORM

During TRANSFORM, the municipal elections were held. In march of 2014 new politicians were elected and in august 2014 a new coalition was settled.. The new alderperson on sustainability decided to make a 3x100 days plan to deliver a new transformation agenda: 'Agenda Sustainable Amsterdam'. First there was a 100 days exploration and inventory on initiatives in the city, in the second part the Agenda was written, in the third part the approval took place. On March 11th 2015 the Agenda was unanimously approved by the city council.

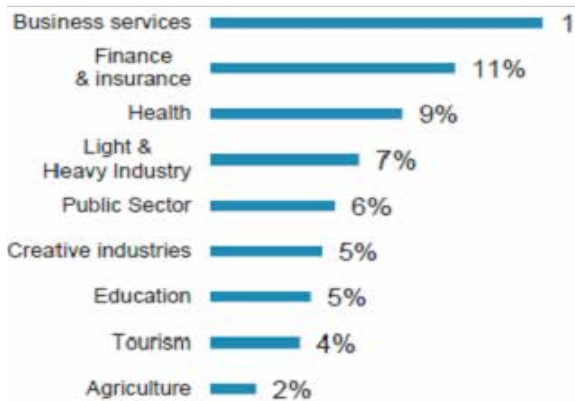
The political change led to the demand for an overarching integrative policy now and guides the development of actions in the following period. Referring to TRANSFORM, changes occurred on many aspects but mostly in the way of work. When the noted actions are elaborated, a second moment of change evolves.

Economic growth Amsterdam Metropolitan Area, Netherlands and the EU - percentage (GRP and GDP); 1996-2014



Forecast 2013 and 2014 / Source: Eurostat, CBS (RIP processing)

GDP 2013: € 38 billion in the MRA.



2. The quantitative gaps and related actions

TRANSFORM's focus to support the Amsterdam Sustainability Agenda is on the topics energy reduction in housing, energy reduction in non-domestic sectors, sustainable heating and cooling. The technical, financial and most of all social conditions to take in account developing policies for these topics vary widely. The drive of people, organizations and business is a central element in all topics, and so are financial flows. For energy saving in housing an industry driven concept which results in a zero energy bill is copied and redeveloped for stacked housing. For energy saving in non-domestic sectors, covenants based on the Environmental Act are to be set up. Key in the approach for sustainable heating and cooling is moving towards an open, sustainable and affordable system, by organizing the dialogue between the industry and citizens and test solutions at district level.

For the energy part in the Agenda Sustainable Amsterdam the course of the former years is continued. Energy is titled as one of the transition paths and focuses on energy reduction in the built up environment, renewable energy production and the use of fossil fuels efficiently. The use of waste heat is perceived as using fossil fuels efficiently. Therefore, in the CO₂ monitoring is calculated with a CO₂ component for using waste heat (district heating).

The focus in TRANSFORM is set at three topics:

- energy reduction in housing,
- energy reduction in non-domestic sectors,
- sustainable heating and cooling.

These three themes jointly have great potential for CO₂ reduction. In housing, which holds app. 35% of Amsterdam's the energy consumption (the built up environment), reduction potentials are estimated at 25-40%, following Rotterdam's research on energy saving (MUSIC project). In the non-domestic sector, which holds the remaining 65%, the reduction potential is estimated at similar impact (25-40%), based on expert judgment of the Environmental Law. Sustainable heating and cooling potentials are large enough to covering the current gas consumption (energy atlas). The transform instrument 'ability to implement' was also used a support to focus on these three themes.

Energy reduction in (social)housing.

The main existing policies on energy reduction in housing are the Energy Loan, a low 1,99 interest loan for privately owned housing and 'Bouwen aan de stad', (freely translated: building the city). Core of 'Bouwen aan de stad' is energy reduction by housing corporations. The city of Amsterdam co-finances for 50% each energy label improvement.

Looking at the CO2 monitor, emission have dropped in the housing sector the recent years but not as much as potentially possible. Main hurdles to come to bigger impact are (the list is not exhaustive):

- scale of renovation. Often large renovations are needed to make essential improvements on the energy demand. The housing corporations often have maintenance strategies of improving the building stock step by step (small interventions). If tenants have to move, additional costs appear of around 15.000-25000 euro, which are additional costs. Besides, the majority of housing corporations lack investment power. Large scale renovations need large scale investments capacity and result in to higher capital costs.
- financial flows and new legislation. If energy saving occurs, cost savings occur for the tenant while the corporation made the investment. This split incentive often cannot be fully charged for through the rent because of recent new national legislation for maximizing rental tariffs for social housing. So the is not allowed
- main effect becomes side effect. In renovation programs in where energy saving measures were taken – retrofit up till label b- eventually often limited energy was saved, but the comfort of the social houses increased. To indicate, where before the renovation only one room was heated by a gas fueled heater, now insulation measures are taken and several rooms are heated by an efficient central heating system . The new technical features add up to improvement of the energy label but the total saved energy is not proportional.
- 70% must agree. In social housing, which is about half of the building stock, 70% of the tenants have to agree with intensive renovations. In practice this number is hard to achieve and results into long processes.

In the Agenda Sustainable Amsterdam a new approach for energy related renovation is introduced. A concept called 'zero on the meter', a consortium of market parties to striving to develop renovation concepts which lead to a nearly zero energy bill. This is a national wide consortium of local housing corporations and 4 building companies which are supported by pension funds. This consortium is basically an energy service company, investing with private capital in the building stock and regaining the investments by monthly fee (instead of an energy bill). The result of this investment is pinpointed at 5,25%.

The concept is a "total make over" of the house, up to label A++, thus leading to energy savings. So far the concept has been proven on low rise building stock. The challenge is to develop a feasible version for stacked buildings.

The city supports this innovation and industry uptake by co-financing (app 8 mill), stakeholder management and lobby to improve legislation for integrating the cost from the energy bill to the rental price. In the coming period this support will be fine-tuned. The goal is to develop 1000 'zero on the meter' dwellings as a test (2018), and later –if feasible- scale up. (p 15 of the agenda)

Energy reduction in non-domestic building stock.

The main existing policies on energy reduction in non-domestic sectors are based on the Environmental Act. This act covers environmental issues like sound, smell, safety, air pollution and energy. This national law enforces enterprises to take measures which have a payback time of maximum five years. The act doesn't cover all enterprises, but a big share. The lower limit is 200.000 kWh and 75.000m³ gas per year, the upper limit is where the EU ETS trading system takes over.

In general the main hurdles to come to energy saving in non-domestic sector are listed below. Non-domestic sector is a brought definition. The remarks listed below are general and will be more and more specified per subsector in near future. As a follow up of TRANSFORM, a methodology is develop to analyze energy consumption spatially and by 30+ sectors. This will lead to more specific insights.

- Investment horizon. The average investment agenda of commercial companies is not in line with the return of investment period often encountered in energy saving investments. In general the differences between the investment cost plus the capital costs and the profits of energy saving are large due to low energy prices (for big consumers). This results into return of investment periods (7+ years) longer than an average company's investment horizon (3-5 years). Of course, exception are there.
- Custom fit is needed. In the non-domestic sector, the opportunity for energy saving varies from the building and the 'inventory' used to support the core activity of the company. An office has different opportunities than a furniture factory or big retail facility. And that's just the technical part. The philosophy of organizations towards energy (saving) vary widely too. This diversity needs an approach which is capable to house diversity or custom fit solutions.
- Ownership of buildings. In general, companies don't develop their own real estate but rent. And the chain stakeholders in this rental sector varies. Often the combination of (international) investors, trustees, real estate agents and the tenant set the context. Then, investments are often needed at both the building and the 'inventory' level. This leads to a complex split incentive situation.
- Share of energy. In many cases the energy bill is just a fraction of the companies yearly balance. Of course exceptions of more energy intensive sectors are present (datacenters, supermarkets, large offices) but in many cases energy covers a minor part of the company's yearly balance.

The variety of factors mention above are mostly covered by the Environmental Act but are very much of influence for the success of the execution of the act.

In the last years working more actively with the Environmental Act was successfully developed in collaboration with the datacenters and hospitals. It's a methodology in which a specific sector and the municipality (policy makers and enforcing authority) come to an covenant for energy saving measures. In return for this covenant, the enforcement of the law will be reduced. Of course, the execution of the covenant will be monitored. If companies lack the execution, they will be enforced after all.

In the Agenda, this way of work will be proceeded and enlarged. In the period 2015-2018 all app. 950 big users will be invited to come to a covenant, including the municipality itself. (p 16 of the agenda).

Sustainable heating and cooling

Amsterdam is a gas fueled city. Nearly the total consumption for heating and domestic cooking is fueled by gas. The national fuel mix for electricity is largely dominated by gas and so is one of the two main sources for district heating in Amsterdam.

Since many years from a policy point of view, the substitution of gas by sustainable heating and cooling is a 'game changer' in Amsterdam's sustainability approach. In December 2013 app. 62000 home equivalents (one equivalent = the heating consumption of an average household) were connected to the district heating system, the goal for 2040 is to have 230.000 units connected. For UTES (underground thermal energy storage) and district cooling no specific goals are mentioned yet. Amsterdam's total heating consumption is app. 620.000 units.

The main barriers of more sustainable heating and cooling consumption are:

- Price and finance. Dutch national law enforces a price maximum to sustainable heating. It's related to the gas price. It's relatively low in comparison to other EU cities (TRANSFORM cities) and effects the business case partly. Another important factor is capital costs. District heating takes big investments while a breakeven point takes time. Therefore, costs of capital are of serious impact in the business case. If parties don't have access to low interest rates, the chance to develop sustainable heating infrastructure diminishes. (Fosbury 2014)
- Complex development process and 'fuzz' factor: To switch from a gas based heating system to a sustainable one, in many cases the system has changed at the level of each household. This takes an intensive process: for the physical part but also in the sense of convincing a lot of 'clients' to switch. On the clients side, having a serious renovation brings a lot of fuzz, while the (financial) incentive to change is minimal.
- Perception. The district heating system is often perceived as a consumers lock in. In contrast to the gas market the district heat market is (still) a single player market. Although the price for district heat is partially legal linked to the gas price, the system is often perceived as a monopoly and prices are not adjustable. (Ecofys 2014)

For sustainable heating and cooling, the Agenda Sustainable Amsterdam shifts from a mostly CO2 and quantitative driven ambition towards a combination of both: a quantitative target of 102.000 units connected in 2020 (agreed upon by the heating companies) and quantitative targets: open, sustainable and affordable heating for the city. To reach both goals, the municipality intensifies the dialogue with the heating companies, with citizens and new parties. Jointly, new ways of developing heating systems are researched at district and regional level (including TRANSFORM's Smart Urban Lab).

3. Shift in way of work

Besides introducing new measures a shift in way of work is made. In the sense of enabling topics, like the Climate and Energy investment fund, and in the sense of a mindset: by moving from (legal) norms to values for the citizens and businesses in Amsterdam. By encouraging frontrunners and enabling stragglers to by using the legal framework as a support rather than enforcing it. By improving collaboration internally in the administration and organizing collaboration with experts and initiatives in the city. By developing a more integrative approach between the transition paths of the Agenda (renewable energy, clean air, circular economy and climate resilient city and sustainable municipality).

Five major shifts

The transformation set in motion by the new Agenda Sustainable Amsterdam is broader than described above. While the TRANSFORM methodology focuses on improving part of a Sustainable Energy Action Plan (SEAP), the new college of mayor and alderpersons made the administration to deliver a totally renewed SEAP.

Besides setting new ambitious goals and defining new actions the Agenda addresses motion in more ways. Below for important changes are mentioned, but the summary of the Agenda gives the full perspective. (p 70, Agenda)

First, on a more philosophic level, the spirit of the agenda is to move from (legal) standards to values. A more user centric approach shifts the thinking from legal standers to the (eventu-

Gezamenlijk elektrisch jaargebruik van de Amsterdamse datacenters in 2013

Datacenters gebruiken veel energie. De 40 Amsterdamse vestigingen gebruiken samen 11% van het totale elektriciteitsgebruik van de 22.000 Amsterdamse bedrijven.



* Een gemiddeld A'dams huishouden gebruikt jaarlijks 1800 kWh

Amsterdamse datacenters besparen de komende 3 jaar

Deze besparingen liggen vast in Energie Efficiëntie Plannen. Bedrijven halen winst door het gebruik van efficiëntere koelinstallaties. In Amsterdam kan een datacenter gekoeld worden met buitenlucht.



40 miljoen kWh ligt vast in Energie Efficiëntie Plannen en 28 miljoen kWh verwacht door Omgevingsdienst Noordzeekanaalgebied

Hoeveel is 68 miljoen kWh electriciteit?

Dit is gelijk aan het elektrisch jaargebruik van

37.500 huishoudens

1,6 keer de totale Amsterdamse straatverlichting

Dit staat gelijk aan

37 kiloton minder CO₂-uitstoot per jaar

Infographic of energy reduction covenant with the datacenter industry. Source: municipality of Amsterdam

Dit is gelijk aan de jaaropbrengst of productie van

80 ha zonnepanelen in Amsterdam ligt nu 8 ha

13 windmolens van 3 MW

Amsterdamse datacenters investeren daartoe**



**Dit bedrag is gebaseerd op de volgende aannames: kWh prijs 8 cent en terugverdientijd van gemiddeld 3 jaar.

al) gains for the citizens and businesses in the city. For example, the approach for sustainable heating and cooling is not solely set to reach the climate goals but to combine this with the needs of the people in the city.

Secondly, an approach to encouraging front-runners and enabling stragglers to catch up is introduced. The legal framework is used as a support instead of a means to enforce. In dialogue with a specific sector, the legal norms are applied but in a light version. Step by step the norms are set and accentuated so that parties have time to adjust and can use natural investment moments. This way, the frontrunners are not hindered by the legal norms but the most straggling parties are triggered to move forward. If parties don't, the legal framework will be reinforced after all. An example is the environmental zone for the inner city of Amsterdam. In the first stage just a limit number of cars will be effected, but step by step the norm are to be accentuated so the air becomes cleaner. (p24, Agenda)

Thirdly, a collaborative approach is advocated in the Agenda. In the sense of sustainability collaboration no one can reach city level results individually. Collaboration is will evolve at many levels, serving the range of goals set by the Agenda and added goals by the participants. A good example is set by the college of mayor and alderpersons themselves by taking responsibility collectively. Also collaboration in the administration internally is organized. The Municipal Management Team has assigned the implementation and monitoring of the progress of the roadmap to the City Director of Operations. Annual financial statements will indicate the results achieved in the following areas:

- Have the targets been met, have the agreed actions been implemented?
- Are there any opportunities for intensification?
- What new actions have been added to the roadmap for reducing the municipal organization's CO2 emissions (p39, Agenda)

Moreover, in the Agenda 6 explicit actions on collaboration with external parties have been noted. (p50, Agenda). Further collaborations will be developed in the (joint) execution of the agenda.

Also, the close collaboration in Amsterdam Smart City between the municipality, grid operator Alliander (gas and electricity), telecom company KPN, delivery company PostNL, and consultancy Arcadis, supports the municipality in collaborating in a very open and constructive way.

And, strategic collaboration papers between the city, grid operator Alliander (gas and electricity), Waternet (governmental watercompany for all watercycles) and Nuon Vattenval (heat company) are to be updated.

Fourthly, integration is a consistent thread in the approach of the Agenda. Both content wise as organizational wise. The combination of transition paths was chosen by societal urgency, political or societal preference, the continuation of previous policies and content wise. The clear cut effects of this integration are still to be discovered, but are expected for example in the relation between:

- circular economy- energy: recycle waste or use this (locally) to generate energy?
- clean air and CO2 reduction: clean air interventions also contribute to CO2 reduction?
- mobility and energy production: using sustainable energy as a fuel for mobility improves the business case for local renewable energy production because of higher energy tariffs in mobility?
- climate resilient interventions contribute to a lower energy consumption in the water cycle?

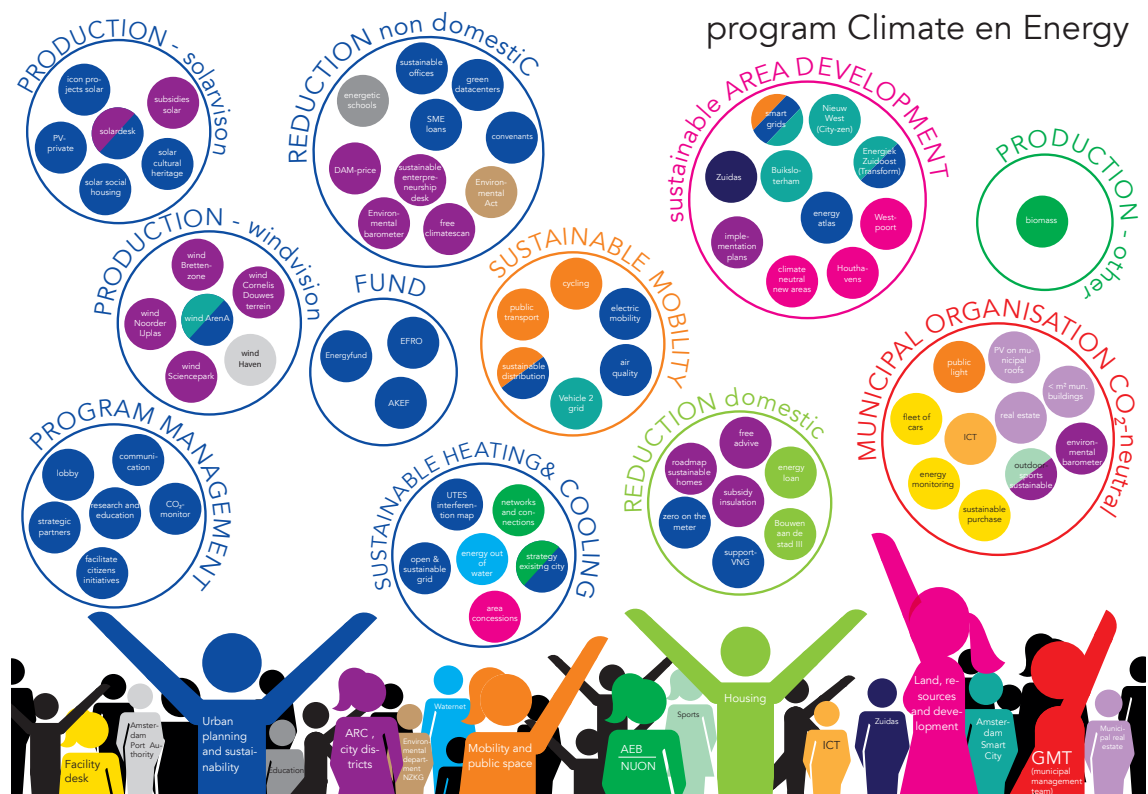
Organizational integration is mainly happening in the city administration. The development of the Agenda Sustainable Amsterdam is in parallel developed with a reorganization of the administration. This contributes to a joint working of policymakers and executive departments on the execution of the Agenda.

Fifthly, Amsterdam is shifting from subsidies to revolving funding. The climate and energy fund is in place and has two parts: a social part (20%) and a market oriented part (80%). The social part has a low interest rate (4.5%) and the market oriented part follows the market interest rates but accepts a higher risk. This way innovative projects can be funded like normal ones. The fund is designed to support both innovation and impact. In total the fund holds 110 million euro. Daily app. 80.000 is used.

Collaboration in the making of

The Agenda Sustainable Amsterdam is a production of the municipality –interlinking several departments- and main partners. The making was led by the Department of Urban Planning and Sustainability. This department set up the framework and co-created on the content with concerned departments in direct contact with directors and experts. In bigger workshops many colleagues were consulted too . 100 dagen

Main stakeholders like the Amsterdam Port Authority, the governmental watercompany Waternet, grid company Alliander, Schiphol Airport, Amsterdam Arena, heat companies Westpoort Warmte and Nuon Vattenval, Housing corporations, the Amsterdam union for tenants, representatives of citizens, young entrepreneurs active in the energy sector, market parties for e-mobility, unions for taxi's and touring cars, initiatives in the city, etc. were contacted and agreed upon the Agenda. Further collaboration will follow in the development of the action plans and in regular contact. The action plans will lead to the elaboration of the role and investments of these parties and the municipality.



Infographic of the involve municipal parties concerning the main topics on energy. Source: municipality of Amsterdam

4. Accounting

Accounting is incorporated in the Agenda for finance and monitoring on set goals. The financial accounting is linked to the planning and control cycle of the municipality and therefore fully part of the operational management of the municipality. Accounting and monitoring takes place at both the political level and the administrative level. In the Agenda, the overall budget and goals are defined, a more fine grained way of accounting and monitoring will be part of (to be developed) action plans.

Accountability becomes more and more part of integrated sustainability planning (of which TRANSFORM's focus, smart energy planning, is part of). For the first time, the accounting of the Agenda is made part of the planning and control cycle of the municipality, thus from the fully part of the operational management.

In different stages of policy development, different kinds of financial and impact assessments are used. For the Agenda Sustainable Amsterdam the accounting is done at two levels:

The financial are monitored at this level by the board of mayor and alderperson, plus the city council. This is done three times a year (p59, Agenda). This is supported by the general management team and the planning and control cycle of the whole municipality. The financial department of the municipality controls the so called 'framework budget' (in dutch; rompbegroting). This is the budget published on page 56 of the Agenda.

The next level is at the board of the Department of Urban Planning and Sustainability. This board controls detailed working programs which are set up jointly with the responsible Alderperson. At the time of writing these working programs and action plans are developed.

The municipal sustainability index (as hitherto included in financial statements) was introduced in 2010 and indicates long-term trends in sustainability. Some parts of the index have been modified to reflect the Agenda. This index will be included every year in the municipality's annual sustainability publication, and will no longer appear in the financial statements. The financial statements can then focus on managing on the basis of the results and targets of the college term.

5. Added value of TRANSFORM

TRANSFORM supported the making of the agenda in several ways. TRANSFORM brought input for a new way of working in which policy making on the city level is simultaneous combined with implementation on the district level. This brings forward an applied way of policy development. Also working with all partners in the consortium brought reflection and inspiration.

The Agenda was drawn in 100 days. A very dynamic development process involved tens of colleagues as well as politicians. The core team latterly worked side by side with the responsible alderman. The people driving the agenda were also involved in the TRANSFORM project from the start, ensuring the linkage between the two.

TRANSFORM's added value:

Added value in a philosophic way. Amsterdam's search of new ways of working, like being more open to other parties, work data based and working simultaneously on the making of policy and realization of projects is clearly strengthened by TRANSFORM. A philosophy of enabling change and 'doing' change is tested, shown and learned from, thanks to TRANSFORM. The part 3 'Approach' expresses this philosophy.

Added value by reflection. One of the most appreciated contributions of TRANSFORM is learning and improving by reflection. Reflection takes place in TRANSFORM by comparing the cities amongst each other (like the baseline analysis) or as self-reflection (e.g. by the PESTLEGS methodology or the ILS workshops). The reflection between cities is most valuable at the strategic level: the level in which cities interact with the political level, commercial parties, power etc. This is very much different and unique per city and transforming this is a unique process too. For example setting up Hamburg Energy and rebuying the grids, this is to Amsterdam's perception a way of organizing influence and impact. Amsterdam will act totally different but improves itself by looking at the Hamburg scheme of roles, responsibilities and impact. In this example Amsterdam will move towards enabling the market instead of becoming a player on the market itself.

Some examples:

- From Genoa and Hamburg the way of working with the political level inspired us to engage the politicians also on the content level. Working on the agenda and moving towards action plans at the time of writing puts this learning into practice.
- Copenhagen shows us how strong and

effective legislation can be for implementing the heat grid. This contributed to develop research on other ways of creating conditions with similar impact: not enforcing legislation but use this as a base to start dialogue with citizens and businesses (see way of work).

- Vienna shares with us a way of creating integration by a framework strategy. We act differently due to different administration schemes and the lack of assets. But it does reflect to us an example of what integration and organization within the city departments and with parties outside the municipality could be. Strategic covenants are an answer to Amsterdam needs.
- Lyon's regional approach is very inspiring for Amsterdam. In Lyon the regional authority is enabled with formal competences on energy (grids). Although powers are very differently distributed in Amsterdam, the question rises what and how to organize transformation on the regional level? We are moving

Self-reflection is increased by developing analysis methodologies in TRANSFORM, like the baseline analysis and PESTLEGS. Also a stronger cycle of monitoring is enabled by data, like the energy atlas. The ILSes are a way of work which Amsterdam envisions to carry on.

Added value by methodological improvement. Besides on what to transform, TRANSFORM made us even more aware of the question how to transform. By all kinds of instruments –also ones we did not apply– we are better capable to continuously adapt to changing conditions. So to transform. The instruments help us to improve on the tactical level of transformation, meaning: to build up a set of measures, set priority, to monitor impact, to add new measures, to evaluate measures etc. For example:

- PESTLEGS. This is the methodology to assess the context of policy or measures in the field of energy. To the originally PESTLE assessment (on Political, Economic, Social, Technical, Legal, Environmental conditions) the G

for governance and S for space was added to make it appropriate to house spatial diversity.

- Data (energy atlas) is used to improve our work and make it more efficient.
- Through TRANSFORM the SUL of Amsterdam South East is developed. Working on the district level and on the city level at the same time brings the advantage to be able to reflect planning with implementation and vice versa. The topics of heating and cooling, energy saving in commercial buildings and intelligent infrastructures this feedback loop takes place.

Added value by transferability (content). In TRANSFORM, cross learning between cities and other partners is essential. On the level of actions or measures, latterly copying a measure from one place to the other didn't take place. The context is determining in that sense. What does happen is transferring measures from one place to the other.

In TRANSFORM the key considerations are an important vehicle to do this –still in development– as well as the ILS. For example Hamburg's approach for energy reduction was used to reflect on the Amsterdam approach. Both contain knowledge exchange, stakeholder management, finance construction and commitment paper. The only difference is the base of collaboration: in Hamburg so far it was done on a voluntary basis, in Amsterdam we also have the environmental law as a base for negotiations. From the ILS in Vienna international experts delivered an alternative legal way to create power on a local level, a so called Special Purpose Vehicle. This is a legal body, which can be erected by an area developer in order to set goals for an area, incorporate these goals to urban development, finance the investment and deal with the energy bill afterwards. We will transfer this knowledge to our SUL and to new future developed areas. Thirdly by joining ILSes and bringing knowledge to other cities, we gained knowledge as well. The heating and cooling topic in Genoa (low temperature) gives input on the SUL in Amsterdam and on its turn feeding the discussion of the development of the heating and cooling discussion on the Agenda level.



Agenda Sustainable
Amsterdam



City of
Amsterdam



Sustainable
Amsterdam

Sustainable Amsterdam

Agenda for renewable energy, clear air, a
circular economy and a climate-resilient city

Adopted by the Municipal Council of Amsterdam, March 2015

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Reading guide

Preface: Foreword by Alderperson for Sustainability, Abdeluheh Choho, and the introduction to this Sustainability Agenda.

Part I Ambition and direction: Part I elaborates on the ambitions and goals of the Agenda through five themes, or transition pathways. These are: renewable energy, clean air, a circular economy and a climate-resilient city. The fifth pathway concerns improving the sustainability of the municipality itself. These transition pathways all contribute to a sustainable Amsterdam.

Part II Coherence: Various components of the five transition pathways are closely connected. The pathways also relate to domains such as mobility, housing and work, the built environment, monuments and heritage, education, sports, employment, public space, green areas, area development, transformation and infrastructure. Part II briefly explores and describes these interrelationships.

Part III Approach: The municipality proposes an integral approach to achieve the set goals. This working method is described in Part III, which also describes how the implementation of the Sustainability Agenda is organised within the municipality. This includes the financing of the transition to a sustainable Amsterdam. Finally, Part III sets out how the municipality will monitor developments in the city and its own contribution.

Part IV Overview: The overview offers a summary of the implementation programme in terms of goals, direction and measures. This part also presents the city government's schedule of the discussion and approval of plans and projects. Finally, a summary of the Sustainability Agenda is provided.



Preface

In the coalition agreement entitled 'Amsterdam belongs to everyone' ('Amsterdam is van iedereen'), the sustainabilisation of Amsterdam has been given a prominent role. A more sustainable Amsterdam is seen as a starting point for how we wish to develop the city and the opportunities we wish to create. We view sustainability as a motor for society and as a driver of the economy.

Dots on the horizon are necessary to demonstrate what we wish to achieve regarding major issues such as climate change, air pollution and natural resource scarcity. The real challenge now is to go beyond developing new visions and scenarios and to pragmatically engage with our city.

This Agenda barely touches on the urgency of global issues. These are familiar and evident. Instead, we set goals for the foreseeable future and consider what we, and not the generations after us, need to do to achieve those goals now.

For we must start now to clean up the pollution and to tackle the wastage in our city. Amsterdam looks clean, but the air we breathe is dirty, the indoor climate in our schools is often unhealthy, energy bills are beyond many people's means, there is too much wastage of precious natural resources and the obstacles faced by creative and sustainable initiatives are often too great.

Fortunately, Amsterdam has huge potential. If, through sustainable generation and energy conservation, we work together with all Amsterdam's inhabitants to reduce our total energy bill of €1.8 billion by 10 per cent, then that will boost our local economy by €180 million. If we manage to reduce the amount of kilometres driven through the city by polluting vehicles and develop smarter logistics, then our air will become cleaner and traffic circulation more efficient. By following the pioneers who produce raw materials, rather than waste, we can build a circular economy. Through building rooftop gardens wherever feasible, Amsterdam will be considerably better equipped to deal with the

costly torrential rains that the future has in store for us.

This Sustainability Agenda is not a definitive implementation programme, but it does formulate ambitions, goals and directions. In this sense it is literally an 'agenda'. Our City Council's course is clear.

Climate-neutral construction will no longer be just an intention, but an essential determining factor. Accordingly, we shall go from the current 1 per cent to 75 per cent planned climate-neutral construction in the city. To improve air quality in the city we will encourage clean vehicles, but will also introduce environmental zones. This will not only achieve compliance with European standards, but will also reduce soot levels by double-digit percentage points, making the air progressively healthier. By doubling the percentage of waste that we separate over the next four years, Amsterdam will no longer be bottom of the class.

Through these efforts, the municipality has a modest yet important role to fulfil. We must eliminate obstructive regulations, but must set clear standards as well. We need to intervene if financial parties fail to fund promising initiatives and innovations. When Amsterdam citizens and their organisations and businesses seek information and support, we must be available and accessible. We must provide a platform for emerging pioneers. And last but not least, our municipal organisation must transform from an underachiever into a front runner.

Amsterdam has so much to be proud of. We are a city bursting with thinkers, go-getters, techies, inventors, entrepreneurs and 'ordinary' citizens eager to devote their time, creativity and effort to building a sustainable city. I look forward to working with all these people to create a circular Amsterdam economy.

*Abdeluheh Choho,
Aldersperson for Sustainability*

I Ambition and direction

Part I sets out the ambitions, goals and direction for five transition pathways. The first four pathways concern the city of Amsterdam: renewable energy, clean air, circular economy and a climate-resilient city. The fifth pathway addresses the sustainability of the municipality's own operational management. For each transition pathway, 'rethinking' is of the essence: to establish new ways of production, consumption and distribution, in order to enhance sustainability.



Regarding the production of renewable energy, the ambition is to generate, per citizen, 20 per cent more energy compared to 2013 (the last year of the previous Municipal Executive term). We can accelerate the process by enabling the construction of new wind turbines, by facilitating a strong growth in solar energy systems and by expanding the city's heating grid. The ambition is to use 20 per cent less energy per inhabitant in 2020, compared to 2013. The municipality sees opportunities to accelerate progress by enhancing the sustainability of the existing housing stock, by implementing energy-saving measures within homes, businesses and social real estate, and by encouraging climate-neutral construction.



The current measures regarding air quality mainly aim to comply with national and European standards. We will push the bar higher, shifting the focus from 'standards' to 'health'. Distinguishing 'healthy' from 'unhealthy' will no longer just be determined by what our measurement points indicate: we will also examine the real health effects on the individual Amsterdam inhabitant. For example, how is the air quality for a person cycling behind a two-stroke scooter? Furthermore, we will reduce soot emissions – a harmful substance for which no standards or limitations have so far been set. This means, specifically, that we and our urban partners will be planting a flag in 2025: from then on, motorised traffic should be as clean or emission-free as possible. Everyone will have time to adjust their vehicles accordingly, with the municipality eager to lend a hand. But at a certain point, we will regulate and enforce the agreements through increasingly stringent environmental zones. The city will remain a front runner in terms of electric transport by increasing the number of public electric charging points to 4,000.



Several pilot schemes have recently been conducted in the Amsterdam region exploring the transition to a circular economy. In the coming period we will embark upon a real transition. This requires the stimulation of industriousness, research and innovation. It is important for the municipality to have a clear view of the system. We must make significant improvements in terms of running separate waste collection systems and waste recycling. The ambition is to separate 65 per cent of domestic waste for reuse by 2020. This requires a strong effort from both the waste management chain, and from Amsterdam's inhabitants.



Finally, climate adaptation is very much a collaborative challenge. We will need to accept water management issues, but we can begin to adapt our city to greater volumes of water now, as well as preparing for drier periods. In the coming Municipal Executive period, we will determine what it takes to make Amsterdam climate resilient, what working arrangements this entails and how we can incorporate this into our work.



The City of Amsterdam is improving the sustainability of its own operational management. In 2025 it will have reduced its own CO2 emissions by 45 percent, compared to 2012. The municipality spends approximately 1.5 billion euros annually on procurement. Through sustainable procurement, the municipality will contribute to the sustainability of production chains. The municipality will furthermore increase the proportion of separate waste collection by municipal offices from around 40 percent now to 75 percent by 2025.



1. Renewable energy

Amsterdam citizens and businesses jointly spend approximately €1.8 billion on electricity bills annually. This is a massive amount of money that flows out of the city, year after year. Around 23 per cent of social housing tenants have trouble paying their energy bills. The municipality wants to join forces with partners in the city to invest more in energy efficiency and in the local production of renewable energy. This will simultaneously reinforce the economic structure of the region and contribute to an affordable residential and business environment.

1.1 Ambitions and goals

The Municipality of Amsterdam is working with numerous partners to create a more renewable energy-based economy, which in time should be entirely fossil fuel-free – thus not dependent on coal, oil or gas. Since Amsterdam is likely to continue its strong growth rate over the coming years, we aim to improve our renewable energy performance per capita. The city has set the following main targets:

- By 2020, we will generate 20 per cent more renewable energy per capita compared to 2013. We will achieve this in the following ways:
 - Producing more wind and solar energy;
 - Making more use of renewable heating.
- By 2020, we will use 20 per cent less energy per capita compared to 2013. We will achieve this in the following ways:
 - Making existing housing stock more sustainable;
 - Reducing energy consumption by corporate real estate and social real estate;
 - Encouraging energy-neutral construction.

Reducing the use of (fossil-based) energy and increasing renewable energy production will result in a lowering of Amsterdam's CO₂ emissions. This effort will thus contribute to building an economy that will emit 40 and 75 per cent less CO₂ by 2025 and 2040 respectively, compared to 1990 (source: Structuurvisie Amsterdam 2040). Current CO₂ emissions are at 4,437 kilotons a year.

1.2 Generating more renewable energy

Achieving the goals requires an acceleration in both generating and saving energy. The table below shows how the proportion of renewable energy has increased over the past period. This increase is attributable to more sustainable production by AEB Amsterdam (Afval Energie Bedrijf, or Waste Energy Company) and an expansion of the district heating grid. We want to accelerate this growth over the coming years, but also want to make more use of wind and solar sources. The target is set for 18 megawatt (MW) of extra wind energy, 150 MW of extra solar energy (around 950,000 square metres of solar panels) and an expansion of the sustainable district heating grid to around 102,000 connections. We are furthermore certain to encounter additional new opportunities – for example, regarding the use of biomass. Current sources, such as heat generated by the waste energy plant, must obviously continue to operate optimally and improve their sustainability. Furthermore, new opportunities will always present themselves – for example, in the field of biomass and by deploying new technologies and process innovations. See also paragraph 1.5.

1.2.1 Generate more wind and solar energy

Solar energy is a very suitable technology for residents and companies, enabling them to generate their own renewable energy. Small-scale energy consumers can already do so at a price that can compete with that of grid-sup-



2013 With around 40,000 solar panels totalling 60,000m², we can generate 9MW of power. This is sufficient for the consumption of approximately 5,000 Amsterdam households.



2020 With around 630,000 solar panels, with a total surface area of 100 ha (1 km²), we can generate 160 MW of power. This is sufficient for the consumption of approximately 80,000 households.



2040 Amsterdam reaches the threshold of 1,000MW of solar power. This is just over two thirds of the potential yield (1,300MW). This is sufficient for the consumption of approximately 450,000 households.

plied energy. A further advantage of making this personal investment is a reduced dependency on electricity price fluctuations.

From 2014-2018, the municipality wants to contribute to an increase of solar energy production in Amsterdam from 9 MW in 2013 to 160 MW by 2020. Increasing the amount of wind energy is one of the main measures set out in the SER Energy Agreement for Sustainable Growth. Amsterdam aims to increase wind energy by at least 18 MW by 2020. This means raising the current amount of 67 MW to 85 MW by 2020.

Actions and measures

Ways of contributing to an increase in solar energy:

- Actively inform roof owners about the possibilities of solar energy;
- Amend or scrap obstructive local rules, such

as requirements regarding building aesthetics;

- Demonstrate how local sustainable development is impeded by national regulation and call on the national government to amend obstructive legislation, such as tax rules.
- Simplify building rights on leasehold properties with respect to solar energy projects;
- Make arrangements with housing associations and businesses regarding the utilisation of roof surfaces: for example, placing solar panels on the garages of the Municipal Transport Authority (GVB);
- Support social real estate, such as schools, in using their roof surfaces;
- Financially support initiatives through the new Energy Fund and other schemes.

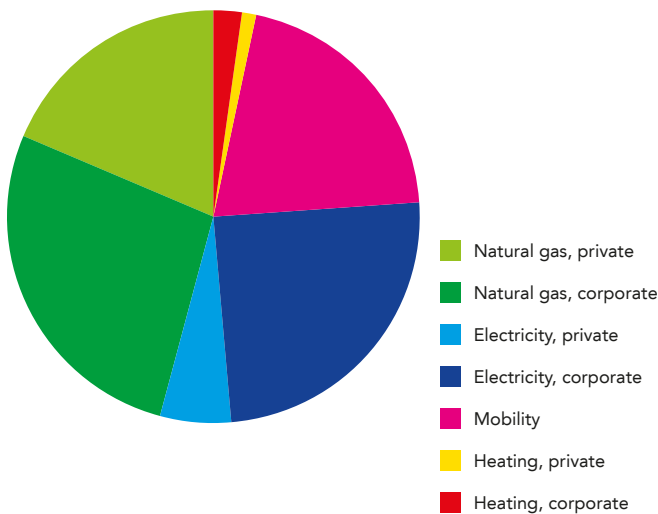
Ways of contributing to an to an increase in wind energy:

- Discuss sites for wind turbines with provincial and central government;

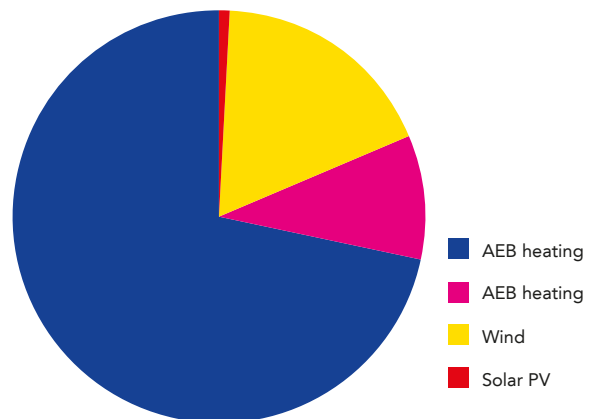
Consumption versus sources 2013

Every year, the city of Amsterdam uses 54,500 terajoules of energy. Around 45 per cent of this energy consists of gas, 30 per cent is electricity, 20 per cent is mobility on Amsterdam territory and 5 per cent is heating. Approximately 35 per cent of the natural gas, electricity and heat is consumed by private households, with the rest utilised by the corporate sector.

Amsterdam annually produces 2,700 terajoules of renewable energy. The main sources of renewable energy on Amsterdam territory are electricity production by AEB Amsterdam (71 per cent), district heating (10 per cent), wind energy (18 per cent) and solar energy (1 per cent). Electricity production by AEB Amsterdam is fairly stable, district heating has expanded and solar energy is growing rapidly, although the latter remains a modest contributor overall. The amount of renewable energy produced by wind turbines has not increased in the recent past. This has come from 36 wind turbines for many years now.



In 2013, 2,700 terajoules of renewable energy was produced in Amsterdam.



In 2013, energy consumption in Amsterdam amounted to 54,500 terajoules, measured at the user level, thus excluding conversion and transmission losses, and excluding geothermal energy.

- The wind vision 'Space for windmills in Amsterdam (Ruimte voor windmolens in Amsterdam) remains the point of departure for the ambition of Amsterdam. The aim in the discussion with the provincial and central government is to create space for a windmill power generation capacity of 250 MW by 2025 en 400 MW by 2040.
- Seek sites for wind turbines in the Amsterdam port area, around the Noorder IJplas and the NDSM Wharf;
- The possibility for residents and businesses to participate as a precondition and offer Amsterdam inhabitants the option of purchasing locally produced, renewable energy;
- The municipality facilitates the availability of sites by following the spatial and legal processes. This contributes to the business case.

Various external factors may influence the extent to which the City of Amsterdam can achieve its ambitions for the production of renewable energy. Firstly, there is the willingness to invest on the part of citizens and businesses, and the related cost of the required technolo-

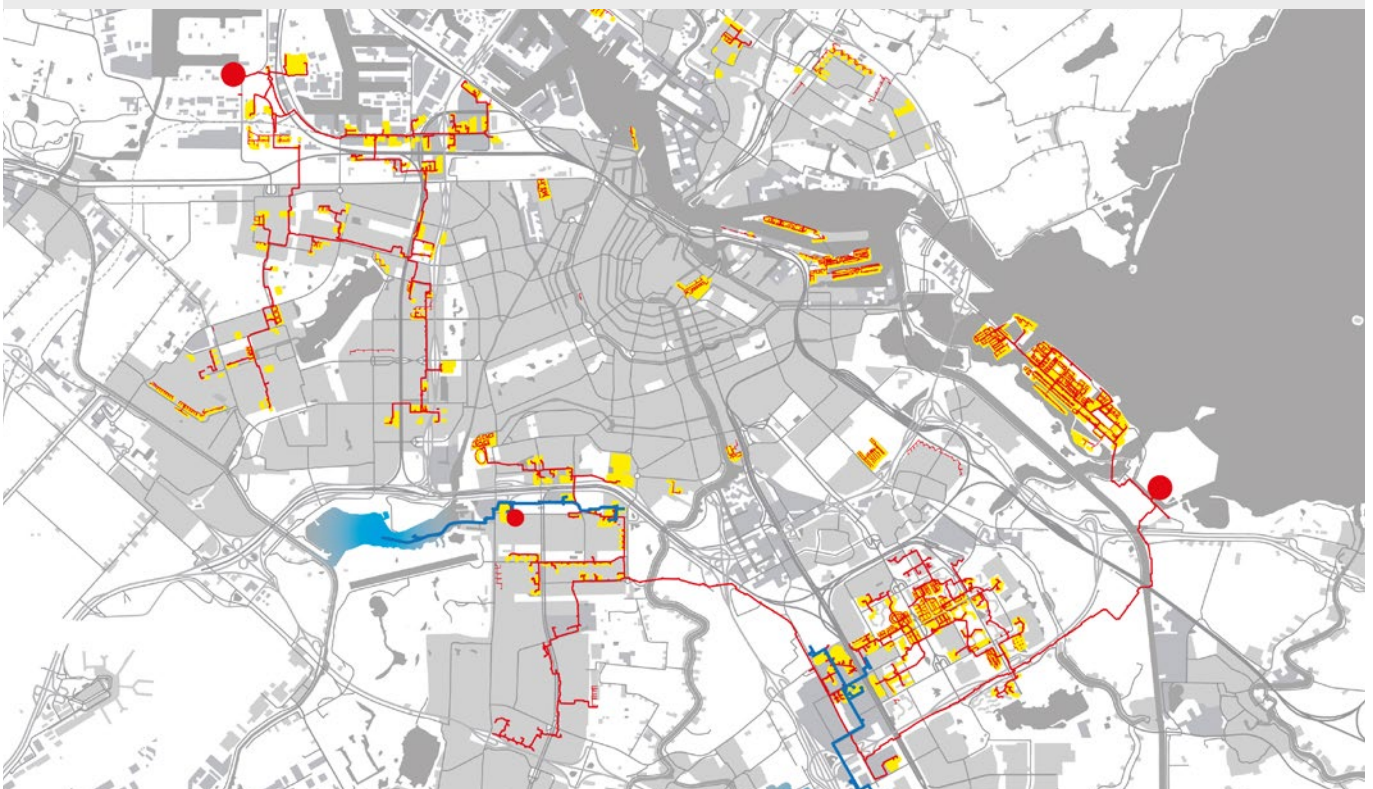
gy. National regulations play a role, including the conditions under which households can offset expenses and the financial incentive regime (the SDE + subsidy and the tax arrangement for cooperatives). The pace at which Amsterdam will be able to develop wind turbines on its territory also depends on provincial policies and central government regulations, such as the Schiphol Airport Zoning Decree.

1.2.2 Making more use of renewable heating

Natural gas resources will eventually be depleted. From 2024, the Netherlands will become a net importer. It would, therefore, be wise for Amsterdam to derive heat from other, renewable sources. Developments in district heating and small-scale renewable heating sources, such as underground heat and cold storage (warmtekuudeopslag, WKO), show that this is feasible.

There are various large and small heating grids in the city, connected to different sources. The main grids at present are the waste power plant

This map shows existing grids and sources of district heating (centrally generated residual heat, for example, from waste incineration) and cooling in Amsterdam. In addition, the connected dwellings and businesses are indicated in yellow. There are two major grids in Amsterdam: WestpoortWarmte owns the grid in the west of the city and Nuon owns the southern and south-eastern grid. There are also various small grids. Parts of the Zuidas district and parts of the business park in Zuidoost use water drawn from the Nieuwe Meer and Ouderkerkerplas bodies of water, respectively, for cooling.



of AEB Amsterdam and the Diemer electricity plant. There are concrete plans to connect smaller sustainable sources to biomass. In December 2013, around 62,000 households and businesses were connected to these grids. In a partnership with Nuon and AEB Amsterdam called WestpoortWarmte (WpW), the City of Amsterdam is investing in the expansion of the district heating grid, with a large number of connections created particularly in the Zuidoost, Zuidas and Nieuw West districts. New district heating schemes are coming, such as the climate-neutral Houthavens, Zeeburgereiland and areas in Amsterdam-Noord.

In various locations throughout the city where there is a need for both heating and cooling, market parties and private builders have built heat and cold storage systems. The municipality has enacted the Verordening interferentiegebieden bodemenergie (Soil energy interference areas by-law) to prevent systems from interfering with each other in parts of the city with a 'crowded substratum', thus improving their performance. Smart connections can also be made with heating through the sewer system or cooling through the tap-water grid. Moreover, Amsterdam has cooling networks in Zuidoost and the Zuidas, through which Nuon supplies renewable cooling from deep lakes.

Even after implementing energy-saving measures, the demand for heating in existing constructions will remain significantly higher than the demand in new development areas. In the coming years, new developments will approach energy neutrality. To enable a robust growth in the number of connections to district heating, housing blocks and businesses in the existing city must also be connected. This is tailor-made work. In many instances this process runs smoothly, as demonstrated by the new contracts concluded by WestpoortWarmte (WpW) and Nuon, but in other city districts it requires vigorous effort and new solutions. The municipality is addressing this issue, utilising its ability to bring together the various parties such as housing associations and energy companies.

The expanding district heating grid will need to permanently adapt to the changing environment and to developments in demand. The Municipal Council has indicated through various resolutions that affordability, sustainability,

openness and room for alternative heating systems are essential to enable a strong growth of the district heating grid, with the support of Amsterdam citizen.

- **Affordable:** the district heating grid creates a win-win-win situation: for the consumer who maintains an affordable energy bill; for the owner or developer whose connection fee is competitive; and for the heating company, who gains a positive business case.
- **Sustainable:** more renewable energy sources are connected to the grid, while existing fossil fuel sources are phased out over time. Wherever possible, initiatives seeking an alternative renewable heating supply are accommodated. This must be a substantially more sustainable option.
- **Open:** the district heating grid is open to a variety of heat producers. In time, the grid should facilitate heat transport between parties with a heat surplus and parties with a heat demand. By continuing to connect new and small heat sources to the grid, the reliability and sustainability of the heat supply is improved.

Actions and measures

- WpW, in which Nuon and AEB Amsterdam participate, has the ambition to expand the district heating grid to 230,000 connections by 2040. To achieve this target, the number of new connections per year must increase. For the current Municipal Executive term, the goal is to add 19,000 connections to reach 81,000 connections by 2018, with a further growth to 102,000 by the end of 2020. The City of Amsterdam supports this ambition.
- In 2015, the municipality will draw up a Heating Action Plan together with stakeholders, to create a future-proof framework for all partners in the city working on urban development, transformation and renovation. This framework will help make the right choices and arrangements about the connection of existing developments and new development to the district heating grid and/or to other sources such as underground heat and cold storage.
- In the coming years, we will also look into (developing projects on) geothermal energy and large-scale thermal solar energy as

renewable sources. The possibilities offered by more innovative heating and cooling systems using the water cycle will also be examined. A large-scale rollout will be prepared by means of a feasibility study and possibly with trial projects, together with other parties involved, such as Waternet.

- In addition to these agreements, the municipality sees 'Zero Energy Buildings' ('Nul op de meter-woningen', NOM) as an option to improve current housing stock. Although a number of projects are underway elsewhere in the country, these are insufficiently relevant to the challenge facing Amsterdam: to

Housing stock according to ownership in Amsterdam. Source: O+S							
Numbers	2001	2003	2005	2007	2009	2011	2013
Owner-occupied housing	72,000	80,000	89,800	102,500	112,250	119,100	125,100
Association rentals	206,000	206,000	202,500	192,100	192,240	186,500	182,700
Private rentals	93,000	89,000	83,800	84,700	84,740	88,900	89,200
Total	371,000	375,000	376,100	379,300	389,230	394,500	397,000

1.3 Reducing energy consumption

1.3.1 Improving the sustainability of existing housing stock

Saving energy increases domestic comfort and improves the value and quality of Amsterdam's housing portfolio. Homeowners (housing associations and private owners) are responsible for implementing energy-saving measures. The municipality therefore encourages homeowners to invest in improving the energy performance of their property. Rising energy costs pose a problem for a growing group of households. 'Energy poverty' is a new theme. It denotes a situation where low-income households must spend more than 10 per cent of their disposable income on energy bills. The municipality is attempting to obtain a clearer view of this problem and will propose measures if necessary.

Actions and measures

The Energy Agreement will form the basis for the level of ambition and measures that we take in this field.

- In 2015, the municipality will conclude agreements with housing associations regarding energy-saving measures for their properties. These agreements are based on the housing association sector's commitment to the SER Energy Agreement to bring their properties, on average, to Label B by 2020.
- The municipality and housing associations will collaborate on the production of renewable energy – for instance, by means of solar panels.

find a NOM solution for the existing stacked housing stock. The municipality therefore wishes to boost this effort with the ambition to develop 1,000 NOM dwellings, together with market parties. If this proves successful, then the concept can be promoted further among homeowners.

The concept is based on two principles: first, the construction company guarantees that the home will no longer have an energy bill after refurbishment. With this guarantee, money reserved for the energy bill can be used to finance the refurbishment work to make the home sustainable. This creates additional investment budget. Second, by tackling a large number of homes, the construction company should be able to standardise operations and to prefabricate many of the energy and renovation measures. This should reduce the costs of the measures. The concept is relatively new and will therefore need to be proven in practice first.

- In (the city districts of) Amsterdam, various schemes have been implemented in recent years to encourage energy conservation in Amsterdam homes. These schemes will be evaluated in 2015, and decisions on new schemes will be taken. The starting point is: effectiveness and connection to the framework of the Sustainability Agenda.
- Conduct research into energy poverty.

1.3.2 Reducing energy consumption by businesses

The City of Amsterdam is collaborating with the private sector and public organisations to reduce their energy use, based on the national agreements outlined in the SER Energy Agreement. Frontrunners are rewarded, where possible, by fewer inspections. To qualify, medium-sized and large energy consumers must, in principle, take all measures with a payback period of five years or less. This obligation will be supervised and enforced systematically in the coming period, with annual reports on the achieved results.

Actions and measures

- The ambition is to have determined by 2018 whether virtually all 950 large-scale energy consumers in the city have complied with the energy-saving obligation stipulated by the Environmental Management Act (*Wet milieubeheer*), or whether agreements have been made to that end. The municipality will also examine its own organisation.
- No special requirements regarding energy conservation apply for small consumers. Nevertheless, they can often save costs on their energy bills as well. These businesses can call on the municipality for independent information and a free energy scan describing potential measures, required investments and the payback period.

1.3.3 Schools

Research and the experiences of school boards have revealed in recent years that a healthy indoor climate positively affects pupils' school performance. At the same time as improving the indoor climate, energy-saving measures can be taken to reduce energy use – for instance,

by insulating the school building. Additionally and where possible, energy-production facilities will be created, for instance by means of solar panels on the roof. The two targets – healthy climate and energy efficiency – will be tackled jointly when revitalising current school buildings in Amsterdam, in close cooperation with the school boards.

Actions and measures

- In the period 2015-2018, the Municipal Executive aims to tackle 111 existing primary and secondary schools (complementing the 90 schools that have been tackled in the past eight years). These schools will then satisfy the *Programma van Eisen (PvE) Frisse Scholen* (Schedule of Requirements for Clean Schools) category B, and will be improved at neutral operating costs, starting with 20 primary schools in 2015 (see box).
- From 1 January 2015, all newly constructed primary schools will at the very minimum meet the *Programma van Eisen (PvE) Frisse Scholen* (Schedule of Requirements for Clean Schools), as set out in the *Municipal Housing Regulations (Verordening Huisvestingsvoorzieningen)*.
- The ambition for 2015 and 2016 is for all newly constructed (and special) secondary schools to meet the *Programma van Eisen (PvE) Frisse Scholen* (Schedule of Requirements for Clean Schools). This can be recorded formally in the 2016 *Municipal Housing Regulations*, which applies for applications for 2017.
- All schools that do not yet meet these standards will be subjected to a *Gezonde Scholen Toets* (Healthy Schools Assessment) in 2015, so that a priority list can be drawn up for subsequent years at the end of 2015.

Frisse scholen klasse B (Clean Schools category B)

The *Programma van Eisen (PvE) Frisse Scholen* (Schedule of Requirements for Clean Schools), the guideline for the construction or refurbishment of schools, aims to improve the indoor climate and to encourage schools to use less energy (see www.frissescholen.nl). This Schedule of Requirements sets out five specific themes that are important for a healthy school: energy efficiency, air quality, thermal comfort, visual comfort and acoustic comfort. Ambition levels have been defined for each theme, ranging from basic category level C (acceptable) to B (good) to A (very good). These ambition levels are linked to (performance) requirements. According to the *Municipal Housing Regulations*, newly constructed primary schools in Amsterdam must minimally meet category B. For other types of schools, this ambition level will be included in the 2016 *Municipal Housing Regulations*, to take effect in 2017. Category B means that the school scores well on all aspects: the energy performance of the building is 25 per cent better compared to the *Buildings Decree (Bouwbesluit)*. Category B in terms of air quality and visual comfort for existing schools is also the point of departure in the *Healthy Schools programme 2015-2018*.



1.3.4 Sports facilities

In the sports sector, there is much to be gained in making facilities more sustainable. The condition of such facilities – in particular sports club buildings – is often outdated and installations have become obsolete. Through targeted measures, sports facilities can contribute to saving energy and possibly to the local production of renewable energy as well. This applies to municipal facilities and to sports club facilities. There is a further opportunity to implement sustainability measures when organising sports events such as the European Athletics Championships in 2016 or at annually recurrent events such as the Dam to Dam run and the Amsterdam Marathon.

Actions and measures

- Implement the Sustainable Amsterdam Sports Clubs project (Duurzame Amsterdamse Sportverenigingen), with the target of increasing the sustainability of at least 25 per cent of outdoor sports clubs with a club house in 2015; e.g. by offering energy scans and supervising the implementation of measures.
- Incorporating sustainability criteria as relevant in the Subsidy Scheme for Outdoor Sports Club Facilities (Subsidieregeling voor Verenigingsaccommodaties Buitensport).
- Applying the Sports Club Facilities Fund (Sportaccommodatiefonds) to invest in sustainability as part of a healthy, future-proof

sports infrastructure by including sustainability as a condition for new investments.

- Applying the Sports Club Facilities Fund to invest in energy measures in existing facilities and to investigate whether co-funding with the Energy Fund is an option, in accordance with the applicable (to be drafted) criteria and expenditure goals of that fund.

1.3.5 Encourage energy-neutral new developments

The 2008 Council Resolution to have only climate-neutral construction (EPC = 0.15) by 2015 has achieved limited results so far, namely 1% of new developments. This goal requires a stronger emphasis on challenging the market through the selection process of developers and other parties, and by applying a higher ambition to designated areas. The Buildings Decree stipulates that energy-neutral new developments (the new term in the sector) should be standard by 2020. The municipality applies the following objective: in 2020, both residential and non-residential construction is energy neutral. The ambition is for 75 per cent of the programme in contracts concluded from 1 January 2015 onwards to be developed in an energy-neutral manner.

Whereas the Buildings Decree indicates the minimum in accordance with the European guideline, the market will be challenged to deliver even better performance. Developing

parties – developers and housing associations, but also (collectives of) private clients – will be encouraged by:

1. Assigning at least a 30 per cent weight (in terms of significance) to sustainability when weighing criteria in the selection of development plans and developing parties. For ground-level homes, the bar can be set considerably higher while remaining affordable. Considering sustainability criteria as part of selection processes is in line with European tendering law.
2. In addition to the already existing district of excellence of Houthavens and the prospective district of Buiksloterham, additional areas will be designated where every effort is made, jointly with developers, housing associations and parties such as Alliander, AEB Amsterdam and Waternet, to achieve the maximum in terms of energy efficiency, renewable energy production (e.g. solar energy), recycled materials, climate resilience (e.g. against torrential rainfall) and mobility. This new ambition requires a new approach to district development.
3. Regulation and enforcement: Amsterdam will organise random inspections of energy-performance levels when delivering new

developments by evaluating the EPC reports and through on-site inspections.

1.5 Smarter energy infrastructure and innovation

Grid operator Liander and the City of Amsterdam are working together to maintain existing grids and build new ones. The capacity and the design of the power grid are compatible with the current use of the grid and the available sources. For the time being, the existing grid can still accommodate the increase in renewable sources such as solar energy and the increasing demand by electric vehicles. However, the grid will need to adapt as we move towards the energy system of 2040. It will require Smart Grids – innovative technologies to manage the power grid – to connect demand and supply more efficiently at the local level. Now is the time to gain experience with this; if we wait until the grids really need to be adapted, then this might jeopardise the reliability of the system.

Innovative energy technologies hold new opportunities for the city. The municipality remains up to date with the latest technology by maintaining close contact with knowledge institutes, innovative companies and start-ups,



and with the Amsterdam Economic Board and Amsterdam Smart City. For the 2014-2018 period, Amsterdam will specifically focus on innovations in the field of heating grids, smart power grids and their connection to electric mobility, and the application of the innovative concept of Zero Energy Buildings in Amsterdam.



2. Clean Air

In a city with clean air, it is pleasant to live, walk, cycle and play outdoors, without worrying about your health. Too much air pollution has a negative impact on the quality of life and can be harmful to one's health. It also impedes the development of the city: it is prohibited to build schools or dwellings in some areas because of the poor air quality. That is why the air in Amsterdam needs to become as clear and healthy as possible, with the least possible amount of nitrogen dioxide, particulates and soot.

2.1 Ambitions and goals

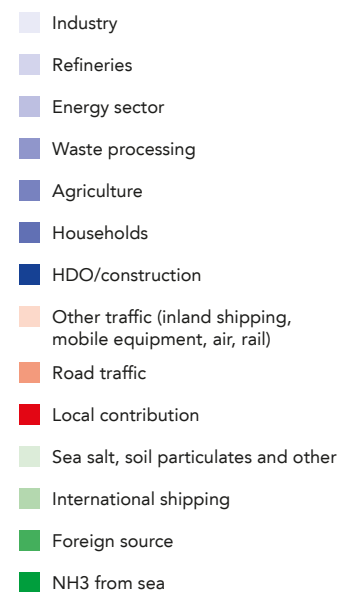
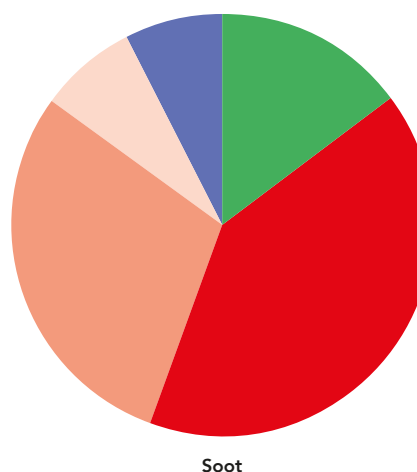
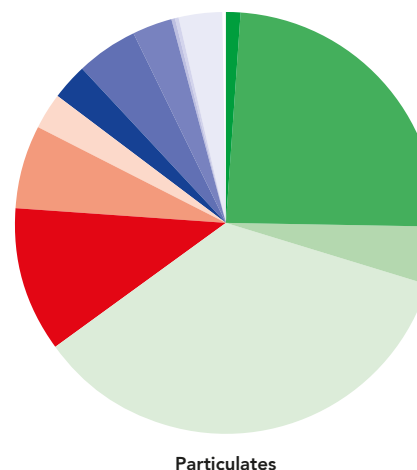
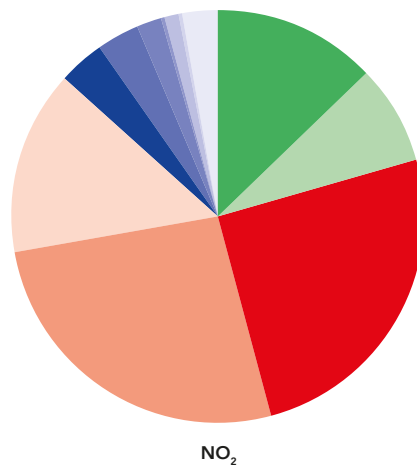
Amsterdam is a true bicyclists' and pedestrians' city, and wishes to remain so in the future. This should also be fostered from the perspective of making the air cleaner, as bikes and pedestrians do not cause air pollution. That is why the municipality is doing all it can to facilitate these modes of transport – for instance, by building sufficient bicycle parking facilities and by creating fast and safe cycling routes across the city. To improve the air quality, the municipality is also encouraging smarter and cleaner motorised traffic. This is an important goal, as an important proportion of the air pollution in Amsterdam (in some areas up to 50 per cent) is caused by urban motorised traffic. To reduce the pressure and improve health, the municipality is working with partners to achieve efficient traffic circulation and to make the provisioning and logistics of Amsterdam as clever and efficient as possible.

Here, the city's approach to mobility is a significant factor. The ambitions of this approach greatly contribute to cleaner air in the city. Conversely, the city's measures to clean up the air contribute to the mobility ambitions. The Mobility Approach (Mobiliteitsaanpak) and Mobility Agenda (Agenda Mobiliteit) concentrate primarily on reducing the traffic burden and on maintaining the accessibility of the city.

This Sustainability Agenda focuses primarily on having cleaner motorised traffic in the city. The ultimate goal is to remain an attractive bicycling city, to make motorised traffic as emission-free as possible and to guide traffic through the city as efficiently as possible. This cannot be accomplished from one day to the next, but the Municipal Executive will be taking important steps over the coming four years to have the traffic within the A10 ring road emission-free, as much as possible.

Amsterdam has set the following target regarding the quality of air: the air in Amsterdam will become healthy, with the least possible amount of nitrogen dioxide, particulates and soot.

- At the most heavily affected location, the amount of nitrogen dioxide (NO₂) will be a maximum of 30 microgram/m³ by 2025. This implies a reduction of 30 per cent compared to 2015.



Amsterdam traffic's contribution to emissions

The three pie charts indicate how much various sources contribute to the presence of nitrogen dioxide, particulates and soot in the air. At some locations, the traffic's contribution to soot emissions approximates as much as 50%. The harmful impact of soot on our health is becoming steadily clearer, even while there is no European standard in place for this substance. The City of Amsterdam will include soot in these considerations from now on. Source: TNO.

- The highest measured concentration of soot in 2025 is 30 per cent lower than in 2015.

Regarding particulates (PM10), Amsterdam already satisfies the statutory norm so that there is no objective here, from that perspective. Regarding the health objective, the commitment to reducing NO₂ and soot (EC) automatically implies an effort to reduce PM10. Measures that contribute to reducing NO₂ and EC are also effective in reducing PM10. For that reason there is no separate objective for PM10.

2.2 Amsterdam achieves the standard

Achieving the standard is a legal duty, and much has been achieved in that respect. Amsterdam will meet the statutory norm at all locations. To enable this, agreements have been made among the state, provincial and municipal authorities in the National Air Quality Collaboration Programme (Nationaal Samenwerkingsprogramma Luchtkwaliteit, NSL). The Amsterdam measures are set out in the 2011 Clean Air Plan for Amsterdam (Plan Schone Lucht voor Amsterdam). This plan was evaluated and adjusted in 2013. The current set of measures will be continued with the goal of achieving the NO₂ standard in all locations as quickly as possible. It has been calculated previously that, with the current measures and without additional measures by the national government or by European authorities, this goal will be achieved by 2021. The municipality does not want to wait that long, however, and is therefore taking extra measures (see section 2.3). The last exceedances of the standard will be solved by the end of the current Municipal Executive term.

Actions and measures (previously established)

The measures set out in the Clean Air Plan for Amsterdam (Plan Schone Lucht voor Amsterdam) will be implemented during the current term:

- Implement the Electric Transportation Subsidy Programme;
- Implement the Euro6/alternative fuels Subsidy Programme;
- Further rollout of tailored programme to promote clean transport among corporate frequent road users;
- Further rollout of measures for sustainable

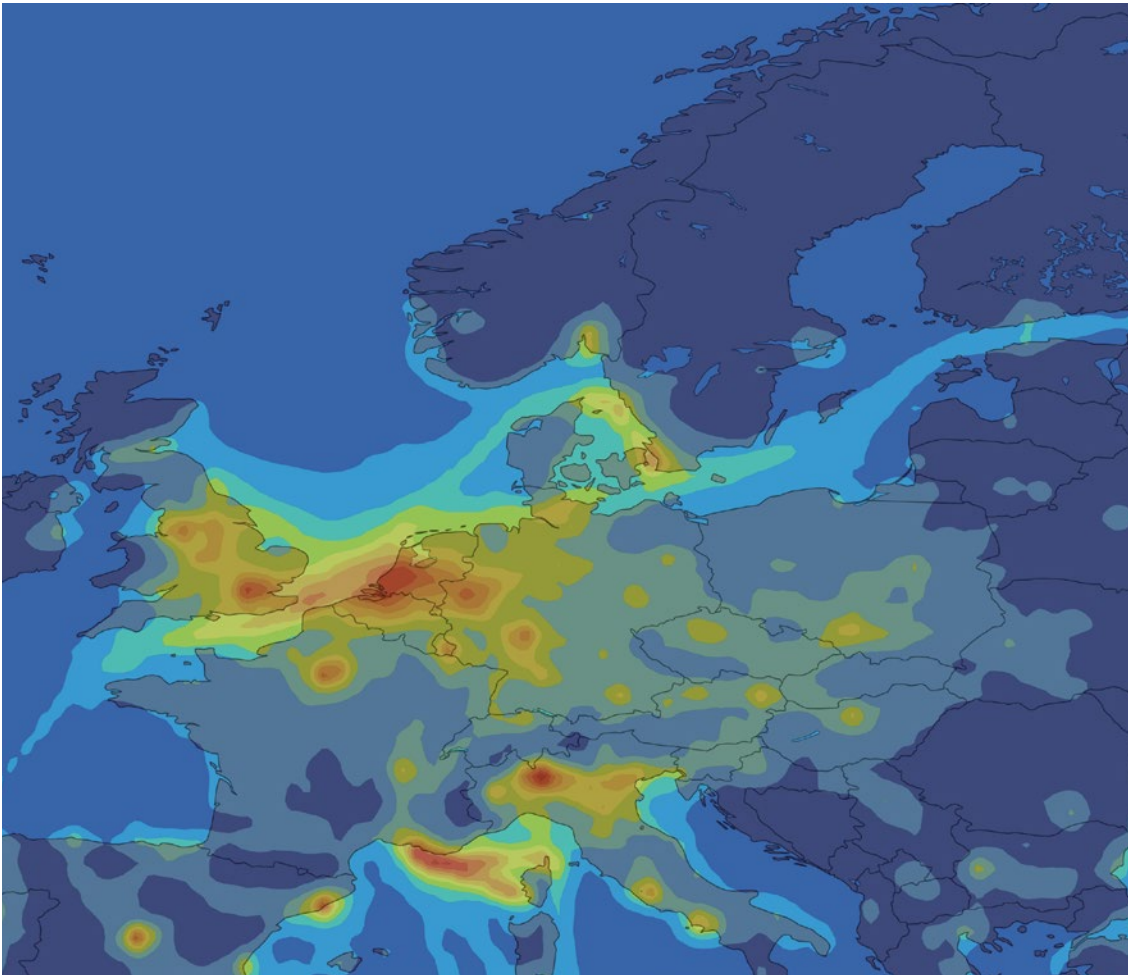
goods transportation, such as constructing smart goods transfer stations and offering exemption windows for emission-free distributors;

- Preparation of Cleaner Parking Plan (implementation per 1/1/2016);
- Implementation of location-specific measures (particularly for traffic circulation).

2.3 Amsterdam increasingly cleaner/Approach per traffic group

Experience shows that a policy of encouragement alone is not enough to clean up the air at the desired rate; it requires a lot of time and effort. The College of Mayor and Alderpersons wants to see a rapid, (cost) efficient and lasting improvement of the air quality. This is best assured by implementing a comprehensive set of measures that is both facilitating and directive and regulatory. It should be a set of measures that provides clarity for the long term (2025) so that residents, businesses and visitors have a clear practical perspective.

This combination of encouragement and regulation will be applied to the main polluting traffic groups in the city. These are lorries, delivery vans, taxis, coaches, public transport (buses) and private cars. Each group will have its own approach, with the ambition of having as many traffic groups emission-free as possible by 2025 (or to have them as clean as possible, depending on what is technically feasible). The measures per group will be determined with a view to each group's relative contribution to pollution, both as a traffic group (how much do they drive in the city compared to other groups?) as in terms of emission per individual vehicle, and to what the market offers in terms of clean vehicles and fuels. It is moreover a condition that the municipality finance this process in the most cost-efficient manner. An environmental zone will therefore be designated for taxis, delivery vans and touring coaches by not later than 2018. As in Utrecht and Rotterdam, this clear and unambiguous regulatory measure aims to ban the oldest and most polluting vehicles from those parts of the city where the air quality is at its poorest (within the A10 ring road). In consultation with the corporate sector, emission targets and indicators will be established for each traffic group in order to track the pro-



gress. The starting point is always that increasingly stricter demands are imposed on emission levels through staged regulatory action, taking operational management and coping capacity into account as much as possible. In addition to the measures above, new parking licences for private vehicles will be directly related to age requirements, from 2016.

Organising goods transportation more efficiently will reduce traffic in the city. The municipality can make important contributions to creating smarter logistics and provisioning by optimally facilitating the effort and through targeted measures. This includes, for example, the creation of at least two additional sustainable cargo hubs at the city perimeters. Here goods can be transferred on to clean (preferably emission-free) urban transportation modes. Three such cargo hubs are already in operation, at Zuidoost, Foodcenter Amsterdam and Westpoort.

Actions and measures

- Confer with representatives of public transportation companies, cargo transporters, delivery companies, taxis and touring coaches to reach agreements on encouraging, facilitating and regulating clean transportation. Set a clear target per group (preferably emission-free transportation within the A10 ring road by 2025) and make agreements about the staged realisation of this goal.
- Work out stimulating and facilitating measures to optimally facilitate entrepreneurs who opt for emission-free transportation, by offering privileges or eliminating obstacles. (Calculate the effects, practical elaboration, planning, legal possibilities, etc.)
- Establish a clear regulatory measure per category (incl. implementation plan and phases). The goal is to establish an environmental zone for delivery vehicles (per 1 January 2017, minimally Euro III diesel, vehicles not older than 1/1/2000), taxis (no later than 1 January 2018, minimally Euro 5 diesel), coaches (no later than 1 January 2018, minimally Euro IV diesel) and to further implement and tighten in 2020 the environmental zone for freight lorries. The staged realisation is aimed at establishing a zone that is as clean as possible, preferably emission-free by 2025, taking operational management and coping capacity into account as much as possible. Agreements will also be made with these groups on a set of suitable stimulating measures (e.g. rollout of exclusively emission-free taxi ranks or extra facilities for touring coaches within the A10 ring road) and on how the municipality can facilitate this development.
- Introduce age criteria for parking licences, for diesel not older than 1/1/2000 (minimally Euro 4) and petrol not older than 1/7/1992 (minimally Euro 1) as a regulatory measure for private vehicles (elaboration of a 2013 Council Decision).
- Collaborate with the Municipal Transport Authority (GVB) to achieve an emission-free public bus service in 2026.
- Collaborate with the GVB to research means of cleaning up the municipal ferry services (feasibility, costs, effects on air quality).
- Promote smarter logistics by facilitating and stimulating the further use of the three cargo hubs and by providing space for two further sustainable cargo hubs.
- Research the possibility to introduce an environmental zone for two-stroke scooters. The already implemented plan to move these scooters on to the roadway has already mitigated much of the harm to cyclists' health. The municipality furthermore continues to discuss means of accelerating the clean up of these vehicles with the national government.
- Research means to clean up other sources of air pollution, including mobile equipment.
- Research the contribution of car sharing to air quality.
- Amsterdam has an advanced air quality-measuring network, managed by the Municipal Health Service (GGD). In the coming years, the municipality will actively seek to make available knowledge accessible and

Amsterdam Electric

Electric transport is entirely emission-free and will thus contribute significantly to cleaner air in the city. In the past five years, Amsterdam has acquired an excellent reputation worldwide regarding electric transport. Amsterdam has an extensive and intensively used public charging network (1,000 public charging points). There are, moreover, purchase subsidies – and, of course, there's a logo that is used throughout Europe. A foundation has also been established for a remarkable collaboration between local, national and international pioneers that has resulted in, among other things, new business activity and employment opportunities in the city.

The number of electric cars is growing. In 2014, around 3,000 unique electric vehicles were counted every month, amounting to a monthly average of 1 million clean E-kilometres. Electric power has also become commonplace in the taxi and distribution sector, and GVB has concrete plans to make the rest of its fleet electric as well, in addition to its buses. Amsterdam is still the world's frontrunner in this respect, but this should not be taken for granted. This Municipal Executive wants Amsterdam to retain its leading position and for that reason will, among other things, expand the public charging grid to 4,000 charging points by 2018, in response to demand.

comprehensible, as far and as effectively as possible. This could include, for example, real-time insight into air quality and smog levels.

2.4 Location-specific solutions

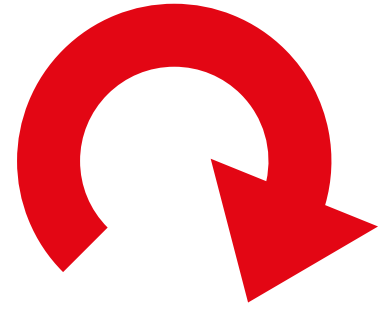
Aside from this citywide approach and the implementation of generic measures, we are also taking highly targeted measures to ensure that the air quality in the most persistent problem areas improves as quickly as possible. Even if the standard is attained everywhere, we will continue to monitor the most heavily affected areas. After all, these are often the places that most affect the accessibility and hence the attractiveness of the city. Wherever possible, and without displacing the problem to elsewhere, we will opt for location-specific solutions that are good for the air quality, the traffic flow and accessibility. Improving traffic flows is an

effective measure – for instance, by introducing smart solutions in the circulation, by a better alignment of traffic lights, by combining the different traffic flows more effectively and by a better distribution of traffic. The citywide focus on traffic flow through the mobility strategy, and the focus on traffic flow at specific heavily affected areas through the air quality strategy, can thus reinforce each other. This will benefit the city’s accessibility in the long run, as well as the air quality.

Actions and measures

- Monitor and investigate the most heavily affected locations;
- Research concrete location-specific measures;
- Implement measures.





3. Circulair economy

In a circular economy, energy, water, natural resources and food are used carefully. 'Waste' is considered a natural resource, and energy is derived from renewable sources. It is called 'circular' because scarce natural resources are recovered and used to generate new financial or non-financial gains. This requires new production, consumption, regional distribution, local distribution and logistics models, to accelerate the transition from 'possession' to the 'use' and 'sharing' of products.

Our linear model of production and consumption is under pressure. The global population will grow to 9 billion people by 2050, with a concomitant growth in demand for natural resources. This demand and the limited nature of various natural resources are causing scarcity and high volatility in prices. More and more companies are therefore deciding to make the transition to a circular economy: this transition provides opportunities for innovation and (the export of) new production technologies and business models, and reduces dependence on imports. Consulting firm McKinsey has forecasted the impact of the circular economy for the European Union at €500 billion per year. According to the TNO (Netherlands Organisation for Applied Scientific Research), the impact on the Dutch economy amounts to approximately €7.3 billion and 54,000 new jobs. Amsterdam aims to acquire a leading position in this.

3.1 Ambitions and goals

The Amsterdam region is in a good position to take advantage of a circular economy. The region has many entrepreneurial and innovative citizens, as well as start-ups, organisations, research institutions and companies that are already working on the circular economy. This strong position is also confirmed by the national Green Deal, 'The Netherlands as a circular hotspot', which is committed to accelerating the transition to a circular economy by prioritising circular projects that are scalable and replicable, among other initiatives. The municipality will encourage innovation and circular activities as part of its active contribution in this respect. In addition, Amsterdam will collaborate with regional municipalities, the Amsterdam Economic Board and numerous other partners to create a circular economy at the regional scale, so that acceleration and upscaling can be achieved.

The city's long-term ambition is to create a circular economy with new methods of production, distribution and consumption. The period 2015-2016 will be used to gain a further understanding of the possibilities and associated roles, and to select a number of innovation projects. There is moreover a strong ambition to increase separation of household waste in the coming period. The College wants to take these important steps by:

1. Encouraging innovation, research and circular activities;
2. Recovering more natural resources, with the associated objective of separating 65 per cent of household waste by 2020.

3.2 Stimulating innovation, research and circular activity

A quantitative understanding of the movements of natural resources and distribution in Amsterdam is necessary to determine the opportunities for high-quality reuse. It will also determine what businesses and residents can do, and the possible roles and tools of the government. The municipality and its partners will therefore carry out a Circular QuickScan (QuickScan Circulair) in 2015. This QuickScan will examine:

- the size of the flows of natural resources and materials that enter the city, are used in the city and leave the city;
- the potential economic value and opportunities for targeted interventions by companies, research institutions and the government.

The first bio-based and circular clusters of mutually supportive businesses already exist in the region, for instance in the Amsterdam port area. The city also has many start-ups and good research facilities operating in the area of the

Amsterdam is building a circular economy based on the following seven principles:

- There is no waste in a circular economy. All materials will end up in an infinite technological or organic cycle.
- All energy will be derived from renewable sources.
- Natural resources will be used to generate new financial or non-financial gains.
- Modular and flexible product design and supply chains will increase the adaptability of systems.
- Transition from possession to use of services; this will require new business models for production, distribution and consumption.
- Different logistics; more region-oriented services and return logistics.
- Human activities contribute to eco-systems and eco-system services, and to the rebuilding of "natural capital".

circular economy. By using its economic policy, the municipality can strengthen this growing activity. These clusters can also be reinforced by combining them with applied research and innovation. For example, the Advanced Metropolitan Solutions Institute is starting a long-term innovation programme in the circular economy, focusing on natural resources, energy, water and food. Public and private initiatives can use this programme in Amsterdam as a testing ground, and data from the QuickScan will be used.

The sharing economy is booming, opening up new markets and challenging the status quo. Amsterdam is the incubator for many start-ups. The impact on society is potentially huge: more efficient use of consumer goods, changing distribution patterns – more region-oriented services and reverse logistics – and changes to existing structures and regulations. The repair and recycling industry is part of the circular economy, and contributes to high-quality reuse of natural resources and products. We will acquire greater understanding of the sharing economy and the repair and recycling industry in order to determine action and cooperation.

Measures and actions

- Circular economy as cornerstone of the innovation policy.
The municipality is preparing a circular economy urban innovation programme, which will be presented in mid-2015 to the College of Mayor and Alderpersons. The municipality will also conduct the Circular QuickScan in 2015 as part of this. This survey will provide data for the Advanced Metropolitan Solutions Institute's long-term circular economy innovation programme. An integrated vision of the sharing economy will also be prepared, to be presented to the College of Mayor and Alderpersons in Q3 2015.
Together with AEB Amsterdam, among others, we will prepare a first overview on opportunities for reinforcing the repair and recycling industry.
- Using economic policy to benefit a circular economy.
The municipality is preparing an action plan that describes how we are going to stimulate the circular economy using existing tools. This action plan will include the following topics:





- Sustainable enterprise will be embedded in the Amsterdam Enterprise Programme, which will include a focus on regulations, both local and national, and coordination with the Business Investment Zone.
- Development of free zones for sustainable and/or circular activities.
- Partly focusing national and international acquisition policy on attracting sustainable companies in specific sectors that contribute to a circular economy (in areas where the city has something to offer the market) and/or attracting businesses that will strengthen Amsterdam's leading position in the field of sustainability, an area where Amsterdam has a lot to offer. Amsterdam Marketing also has a prominent role to play here.

3.3 More recovery of natural resources and materials

3.3.1 Circular construction industry

It is estimated that 40 per cent of the natural resource flows in Amsterdam are related to construction and demolition. In 2015, those involved in the construction supply chain and the

City of Amsterdam will sign a national Green Deal to make this movement circular. We will conclude this deal with the entire supply chain – from financier, developer and builder to demolition firm. Under the Green Deal, partners agree that any materials resulting from demolition, renovation and construction projects will be reused locally. This process provides partners with insight into the opportunities for recycling locally in the short- and medium-term. It will also become clear how additional jobs can be created in this way. The municipality can contribute to creating circular construction and demolition waste flows by deliberately encouraging the local reuse of building materials in tendering processes for municipal building projects.

3.3.2 More separation of (household) waste

A circular economy will produce increasingly less waste. Any waste that is still present will be separated so that it can be reused. Producing less waste and increasing waste separation will provide Amsterdam's residents with immediate benefits, such as affordable waste collection and processing in the future, and affordable natural resources. In 2013, Amsterdam's residents produced 322kg of household waste per



person on average. Sixteen per cent of this was separated in 2010, increasing to around 19 per cent in 2013.

Amsterdam is lagging behind in the separation of waste, partly due to high-rise buildings. Due to lack of space, residents have to bring their waste to communal recycling points, where there are containers for paper, glass and residual waste. However, similar cities show that things can be organised better. Similar Dutch cities scored an average separation rate of 31 per cent in 2013. In comparable European cities, Oslo's residents separate 38 per cent of waste, for example, while Vienna's manage 45 per cent. The situation is different in municipalities with a higher proportion of low-rise buildings and a collection system. These can now achieve separation rates in the region of 65 to 75 per cent.

The City of Amsterdam has set a target of 65 per cent separation by 2020. That implies a big leap forward. To achieve this target, the cooperation of Amsterdam's inhabitants and cooperation between the city, its local districts and the waste industry is vital.

Separate collection of paper, cardboard, glass and household chemical waste has been customary in Amsterdam for many years. Plastic packaging and textiles can now also be collected separately, but there is considerable room for expansion. The separation of organic waste is the next step.

The municipality also intends to make proposals to separate more litter collected from public spaces, and also waste from offices, shops, institutions and companies that is similar to household waste. The implementation framework will be determined by the College of Mayor and Alderpersons, together with the waste service industry and district committees in the Waste Implementation Plan (Uitvoeringsplan Afval).

Measures and actions

- Draw up a Waste Implementation Plan, to be adopted by the College of Mayor and Alderpersons mid-2015, with the following components:
 - Decide between intensifying the current mixed-waste collection or starting separate collection of different types of waste to promote source separation (pre-separation). Separate collection of different types of waste makes it easier for Amsterdam's residents to separate waste, and is also easier to fit into public space.
 - Include a business case and investment proposal for the source separation of organic waste when collecting, for designated areas of the city.
 - Investigate specific options concerning post-separation of organic waste (including through the sewer), synthetic material and possibly paper at a later stage.
 - Include preconditions necessary to prevent the costs of waste collection and processing from rising for citizens, because of municipal policy.
 - Proposal to improve separation of bulky household waste.
 - Proposal to improve separation of waste and litter collected from public spaces by separate collection or subsequent separation.
 - Proposal to promote recycling of waste from offices, shops, institutions and companies that is similar to household waste.
 - Proposal on how to organise the waste management chain.
 - Research on optimising movements of waste collection lorries to improve safety, traffic flow and air quality in the city, and raise efficiency levels.

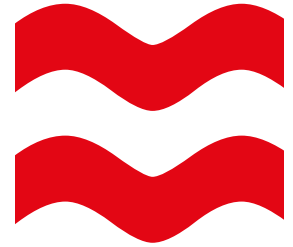
Examples of circular economy initiatives in the city

The capital of the Netherlands has many entrepreneurial and innovative people, as well as start-ups, organisations, research institutions and companies that are already working on the circular economy. Activities range from the development of 3D printers and apps in the field of smart mobility, to local initiatives such as Circular Buiksloterham, where residents and companies are trying to make the area as circular as possible.

In the area that lies roughly between Zaanstad, Amsterdam, Schiphol and Aalsmeer, known as the Westas (West Axis), there are multiple activities centring on a bio-based and circular economy. These clusters consist of companies that reinforce each other economically and can potentially exchange natural resources, including energy. The municipality is working with a number of companies, including the Port of Amsterdam, AEB Amsterdam, Waternet and Amsterdam Airport Schiphol, to develop various initiatives.

For example, the Port of Amsterdam wants to focus on expanding the business clusters that are active in the bio-based and circular economy. In this way, it intends to make the transition from a port focused on volume to a port that is more focused on achieving added value for the region. The Port also wants to strengthen links with urban distribution – for example, by bringing plastic waste from the city to the port as a natural resource. To make the effects of this sustainability policy transparent and measureable, the Port of Amsterdam is developing indicators. Where necessary, businesses around the port will be involved. The first set of indicators will be available at the end of the first quarter of 2015.

AEB Amsterdam is aiming to become a sustainable resource and energy company, and some of the activities it wants to focus on include the separation and reprocessing of waste, and strengthening the recycling cluster in the port area. Target: to recover four times as many natural resources from waste in 2018 in comparison to 2014. Waternet is investing in the transition towards a circular economy with the Circular Trade programme. The objective is carbon neutrality by 2020, both for Waternet's own organisation and its operational activities. Waternet recovers natural resources such as phosphate from wastewater, and is looking into possibilities of drawing energy from water and energy conservation. Amsterdam Airport Schiphol, KLM and the City of Amsterdam are cooperating on developing a strategic agenda for the metropolitan region. Sustainability is just one of their shared ambitions. A long-term commitment will be the basis of investments in areas such as mobility, energy and natural resources.



4. Climate resilient city

The climate is changing due to global warming. The Netherlands is predicted to have increasingly mild winters and hot summers. Our winters are becoming wetter on average, and we will increasingly experience extreme rainfall. Across the Netherlands, climate resilience in urban areas is gradually creeping up the agenda. That means we must be aware of the potential effects of climate change, learn to accept these changes and take them into account in the design of our urban areas.

4.1 Ambitions and goals

The frequency and heaviness of rainfall is increasing, especially in the summer, with all the associated consequences. For instance, the heavy downpour on 28 July 2014 caused approximately €5 million of damage in the city. A rise in sea levels and higher water levels will also affect water safety in the city. The risk of flooding caused by a dyke breach is fortunately low, but if this happened there would be considerable social disruption and immense damage.

In terms of the possible damage that water might cause in Amsterdam, the city is in a favourable starting position. In the 20th century, it was decided to raise ground levels where the city was expanded, which gives the city an advantage over other cities in the west of the Netherlands. It has made the city more water resilient and less prone to flooding. However, technical solutions such as larger sewer pipes and higher dykes will no longer be sufficient to limit problems and maintain safety: a new approach is needed. After all, the city is growing, with more buildings and more impervious surfaces in public spaces and courtyard gardens. This can cause flooding because rainwater cannot run into the soil. That is why we should design our urban areas more as 'sponges', and adapt to these climate changes. Our urban design must take into account underground flows and ideal groundwater levels: not too high so

as to cause problems, but not too low so that foundations dry out. These tasks are not confined to the borders of the city. Some problems and solutions are regional, national or European. Many solutions require the commitment of Amsterdam's inhabitants and businesses.

In its Amsterdam Structural Vision 2040, the City of Amsterdam established that it would cooperate in making the urban area more resistant in the future to flooding from extreme rainfall and longer periods of heat and drought. Together with regional partners and the national Delta Programme, Amsterdam detailed this ambition in 2014 in the Amsterdam Region Delta Strategy.

In 2014, the municipality signed the 'Spatial Adaptation' (Ruimtelijke Adaptatie) declaration of intent, as an outcome of the Delta Strategy. It expressed the intention to embed climate change in municipal policy by 2020.

After establishing ambitions and a strategy in the previous period, we are now ready to detail, embed and implement policy. This calls for further agreements between all parties.

Some problems and solutions are regional, national or European; others are local and can be implemented by Amsterdam's inhabitants themselves. Everyone must be more aware of how they consume water – not just the 'water manager'.

4.2 Rainproof city

4.2.1 Implementation of the Amsterdam Rainproof programme

Waternet launched the Amsterdam Rainproof programme as an initiative to make Amsterdam rain resilient. Rainproof encourages, informs and activates residents, business owners, government officials and knowledge workers to work on changing roofs, streets, gardens, parks and squares. The principle here is that targeted, small-scale, finely developed and effective measures will not only make the city more resilient to rain, but also a more attractive and better place to live. There are no expensive, large-scale, mono-functional solutions; instead there are clever adaptations that increase the sponge effect of the city. The programme focuses on:

- Research into problem areas with regard to rainproofness in Amsterdam, and sharing the results with the stakeholders responsible.
- Research into how some of the municipal sewer charges can be used to promote Rainproof-compatible activities by individuals and businesses.
- Activating citizens, entrepreneurs and social organisations through communication and incentive programmes. This might include measures to collect rainwater through green roofs or planting more greenery in gardens.
- Wherever possible, changes will be made to spatial development projects and scheduled management and maintenance operations to promote rainproofness without implying additional costs (work with work).



Who is responsible?

Public responsibilities for water in Amsterdam are divided among different authorities:

- The municipality is responsible for processing rainwater. The municipality has contracted Waternet to perform this task. Individuals and companies are responsible for processing rainwater on their own properties, to the extent that this can be reasonably expected. The programme Amsterdam Rainproof, funded by Waternet, is therefore directed at all Amsterdam inhabitants.
- The water board has an interest in rain resistance, as this reduces the pressure on the regional water system and the amount of water needing treatment, and improves the quality of the canals. The water board has contracted Waternet to perform these water-related tasks.
- The water boards, together with the Dutch government, are responsible for protection against flooding from rivers and the sea.
- The prevention or reduction of flood damage is a responsibility of local and regional authorities, private organisations and individuals.
- The safety region is responsible for disaster and crisis management on behalf of all the regional governments.

Climate-resilient cities

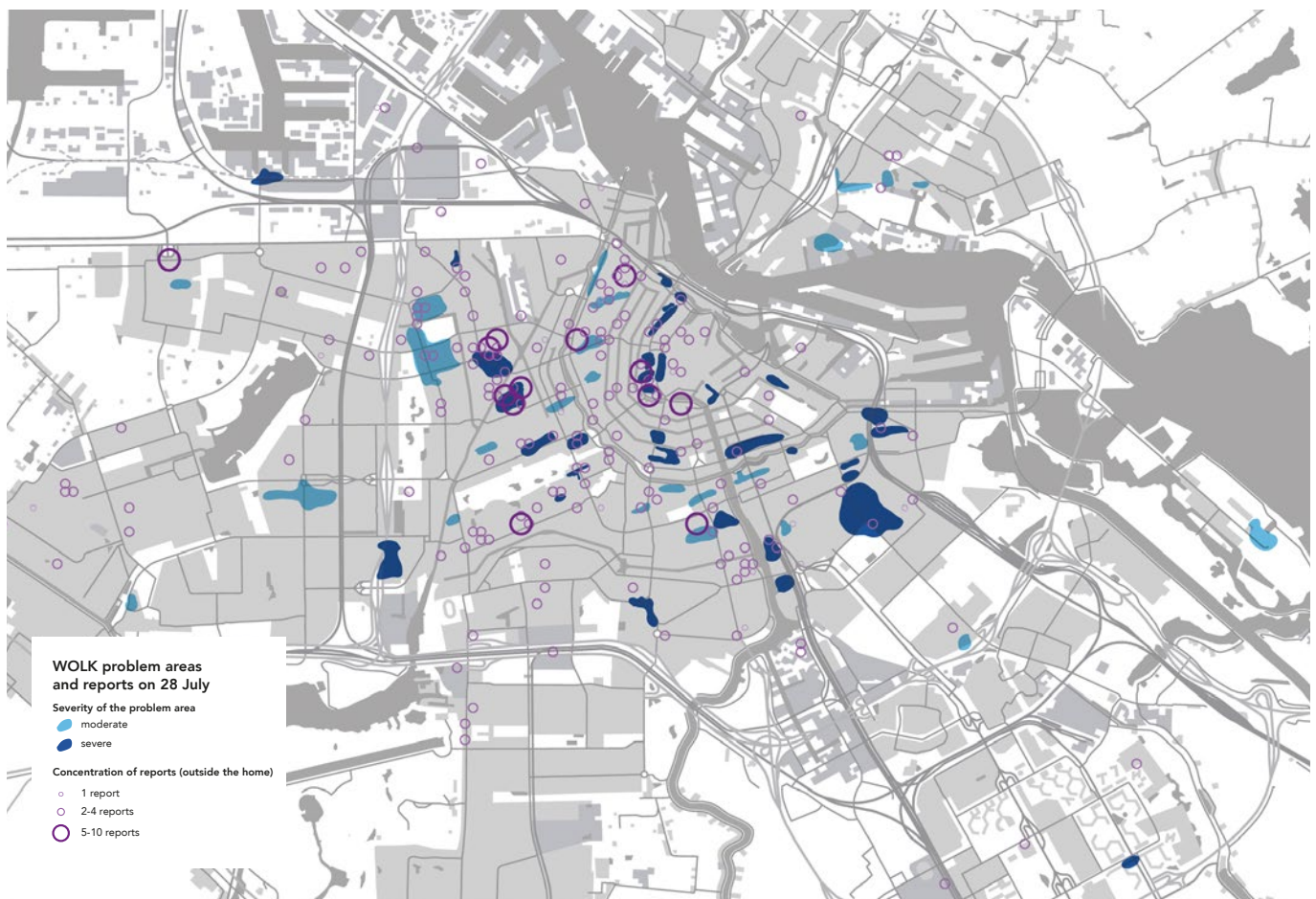
The 'Spatial Adaptation' declaration of intent is an outcome of the Delta Strategy. This declaration is in line with the ambitions of the Amsterdam Region Delta Strategy. The signatories to the declaration undertake to make the Netherlands as climate-resilient and resistant to flooding as possible by 2050.

In addition, it was agreed that this would be integrated into the policies and actions of all parties by 2020. When considering regional and local spatial issues, they will:

- analyse the water and climate resilience of their own planning area;
- translate the results of this analysis into a strategy with concrete targets;
- implement the policy and legal impact of this ambition.

In 2017, the national government will complete the National Adaptation Strategy, which includes health and infrastructure aspects, along with water.

Water-resilience bottlenecks (red circles) and cloudburst reports 28 July 2014 (Source: Amsterdam Rainproof 2014)



4.2.2 Contribution of the greenery and public space service

Through the greenery and public space service and the Green Fund, the College will contribute to water collection by greening public areas and roofs in Amsterdam. Greening roofs contributes to better absorption of rainwater and delays drainage to the street, reducing the load on existing sewers and allowing them to perform better. This will be included in the Green Agenda and the details of the Green

Fund. As part of the policy on public spaces, the so-called 'Blue Puccini' programme will determine policy frameworks for temporary water storage in public spaces. This will be included in the Vision on Public Space (Visie Openbare Ruimte)..

4.3 The Waterproof City

The Amstel, Gooi and Vecht Water Board is cooperating with the City of Amsterdam and partners on the programme The Waterproof



City (De Waterbestendige Stad). The principle behind this programme is to boost the protection of vital functions against widespread flooding caused by rivers, the sea and the IJsselmeer, thereby limiting severe damage and social disruption in the event of flooding.

This programme is primarily and specifically focused on the Westpoort area, since this area is home to much essential infrastructure, but it should result in an adaptation strategy for the entire region. The programme:

- analyses the domino effect of flooding (direct effects, secondary effects and indirect effects, such as economic damage);
- details possible measures (physical, policy, organisational);
- details governance (responsibilities, control mechanisms, policy);
- strives to raise awareness among businesses and regional authorities;
- sets out strategies for the Westpoort area.

The programme will be implemented in close cooperation with the various stakeholders – governments and private parties – and serve as an example of an ‘vital infrastructure adaptation strategy’ for the Amsterdam region. It will then be integrated into policy, so that actual implementation to protect essential infrastructure and buildings is guaranteed; not just in the Westpoort area, but also in other important places and buildings, such as new data centres or hospitals such as the Academic Medical Center (AMC).



This map shows the combined flood-prone areas. These areas could be flooded as a result of dyke breaches from the North Sea, the river Lek, the Markermeer or the regional water network.



5. Sustainable Municipality

The municipality will also make its own operational activities more sustainable, thereby adding scale and leading by example. One way the municipality can add scale is by purchasing sustainably: our procurement runs to around €1.5 billion annually.

5.1 Ambitions and goals

The municipality has set the following goals:

- Reduce municipal CO₂ emissions by 45 per cent by 2025 compared to 2012 levels (College of Mayor and Alderpersons decision in October 2013).
- Recycle 75 per cent of office waste.
- Ensure that municipality procurement meets the quantitative and qualitative objectives of this sustainability policy in terms of energy conservation, renewable energy supply, waste separation and smart and clean transport.
- Create a clear investment framework to facilitate sustainable investment.

5.2 Reduce the municipal organisation's CO₂ emissions

In 2013, CO₂ emissions from the municipal organisation reached 93,000 tonnes annually. In that year, the existing target for reductions in CO₂ emissions was adapted and redefined in a roadmap extending to 2025 with specific measures to save energy, which will reduce CO₂ emissions by 45 per cent compared to 2012. The roadmap included a scan of areas where investments will yield the greatest effects and where there are opportunities in terms of obvious moments, replacement or new purchase. In addition, an action plan was included with actions and action owners, and responsibilities for carrying out the activities in the roadmap were agreed.

Measures and actions

Energy measures per year are included in a number of areas, including:

1. IT: energy-efficient workplaces and procurement of energy-efficient data storage.
2. Public lighting: replace with dimmable LED lighting.
3. Offices: flexitime and disposal of office space, energy measures.
4. Vehicle fleet.

In the administrative organisation, the Municipal Management Team (Gemeentelijke Management Team, GMT) has assigned the implementation and monitoring of the progress of the roadmap to the City Director of Operations. Annual financial statements will indicate the results achieved in the following areas:

- Have the targets been met, have the agreed actions been implemented?
- Are there any opportunities for intensification?
- What new actions have been added to the roadmap?

5.3 Sustainable procurement

The municipality is a major economic player in the city of Amsterdam. The decisions made by the municipality on making procurement more sustainable will have an impact on the city, but also on chains of companies elsewhere in the world. The sustainability of municipal procurement will be an example to others.

What we expect of others, we shall do as well: procurement will meet the goals of this Agenda for transition to a circular economy, separation of waste, energy, energy supply and smart and clean transport. This is to set a good example in areas where we also request help from others, and to contribute to achieving the targets in the Sustainability Agenda more quickly, wherever possible.

5.3.1 Responsibility for achieving sustainability goals

The substantive responsibility for pursuing these sustainability goals and for determining the necessity of additional investments is assigned to official commissioning parties and budget holders. The mandatory sustainability paragraph in the annual financial statement will report results. The purchaser and the sustainable procurement consultant will focus on offering advice, so that sustainability goals are thoroughly considered in procurement decisions and the selection of suppliers.

Measures and actions

■ Sustainable Procurement Intensification

Plan (Plan Intensivering Duurzaam Inkopen)

The sustainable procurement ambition will be elaborated on further in a plan in 2015, which will translate the overall ambitions and goals into shorter-term targets for procurement programmes or categories. We will do this in collaboration with knowledge institutes and companies. Wherever possible, this plan will make use of whatever is already up and running or already studied. Elements of the plan include:

- Process visualisation: which procurement programmes exist and are promising.
- Towards sustainable and circular purchasing.
- Drawing up a Kansenskaart (Opportunities Map) of innovative tendering methods, with guidelines to obtain maximum results in various types of procurement programmes.
- Identifying opportunities for joint ventures with other commissioning parties outside the municipality.
- Influencing the Dutch government or the EU, for example, as a result of possible obstacles to the procurement regulations.

■ Customisation

In 2015, we will continue to deliver customised procurement programmes without previously quantified targets. Procurement programmes with opportunities in terms of circular, smart and clean mobility and energy will be identified. The Board will receive reports on the selection of customised procurement programmes and ambitions per programme.

In 2014, the following procurement programmes were identified as promising in terms of sustainability:

- The municipality vehicle fleet. This fleet is extensive, with 400 cars and delivery vans, and 650 lorries, sweepers and waste collection vehicles. There are electric alternatives for vehicles under 3.5 tonnes, such as passenger cars and small vans. When purchasing or leasing these types of vehicles, our policy will be to select electric models. At the moment, there are few electric models of heavier vehicles, so we will select the cleanest versions.
- We will also organise our own provisioning as smartly and efficiently as possible. By setting requirements in the procurement of our own products, services and public works for smart and clean transport, we will encourage smart and clean logistics. In this way, we will fulfil an exemplary role for businesses and residents.
- Making the concrete supply chain circular. The municipality, together with parties in the industry, is drawing up a plan to make the recycling of concrete products and paving bricks in the soil, road and hydraulic engineering sectors circular. In addition, the municipality will work with market parties such as concrete product manufacturers, contractors and recycling companies.
- The percentage of office waste recycled will be 75 per cent. The service facility sector in the municipality will ensure that the percentage of office waste that is separated and recycled is significantly increased to 75 per cent. At present, this is estimated to be 40 per cent.

5.4 Assessment framework and mathematical models for sustainable investments

The municipality is asking businesses, institutions and residents to make substantial efforts to achieve sustainability goals. It is only reasonable, therefore, that the municipality itself makes equal efforts and takes appropriate measures. We are going to focus on investments in sustainability that are profitable. A clear set of mathematical models is therefore needed as a basis on which investment decisions concerning sustainable measures can be made. This will permit sustainable initiatives to be implemented more quickly. The Municipal Executive will present a proposal to the Council at the end of 2015. It will contain an assessment framework and clear rules for the sustainable investments that the municipality intends to make.

The College also aims to investigate if and to what extent taxation tools can be used to stimulate sustainability initiatives, and to study means of solving the 'split incentive' problem regarding sustainability investments, when the revenue is achieved elsewhere or later than the costs.

Since January 2014, the paper of the City of Amsterdam is delivered to 40 locations across the city by electric cargo hopper lorries, substituting a diesel lorry that stopped at every individual address. This is both more efficient and cleaner.



II Coherence

The transition pathways set out in this Agenda are interconnected in many aspects, and must be viewed coherently. They naturally involve mobility, the way we live and work, our modern and historic buildings, public spaces and areas of greenery and our infrastructure – in short, the city itself.

Developing a coherent approach creates opportunities for innovation, new projects and new business concepts. It requires a change in thinking, and connecting aspects that at first glance might appear unrelated. These might be ways of working, collaborating, drawing up regulations, urban planning, decision making, organisation, social organisation or financing.

For example: connecting homes to district heating implies work in public spaces as well as in the homes of Amsterdam inhabitants. For one person it means work; for another it means getting used to cooking on an electric stove. Someone else might see it as an opportunity for a new business concept. The College is making efforts to integrate and include sustainability in its day-to-day activities, and has therefore designed the organisation to reflect this. This municipal approach is described in Part III.

Some examples of coherence

Measures that benefit air quality often also benefit more energy-efficient mobility. More electric cars in the city will lead to an increase in demand for electricity. This must be renewable electricity otherwise we will not achieve the energy target. This link can be seen in the charging infrastructure for electric cars. Thanks to innovation, electric cars can be connected to locally-generated solar energy and batteries, reducing loads on the power grid. At the same time, clean energy sources benefit air quality. Expanding district heating contributes modestly to cleaner air by eliminating individual boilers at home.

A circular economy uses renewable energy, and in principle has no waste. That can lead to both dilemmas and opportunities. For example, the district heating network currently incinerates waste to generate heat: in the future, we expect to have a lot less waste. This requires new sustainable sources, which means there is room for innovation. Greater distribution of products oriented to the region, or more separate waste collection, implies more road use for lorries. This may be at odds with accessibility and air quality. It requires new methods of urban distribution and the bundling of waste collection movements within the city. The latter is good news for our congested centre and vulnerable public spaces.

Looking at the water management chain, there are plenty of opportunities to extract energy from water, such as underground heat and cold storage. Waste water is increasingly a commodity; for example, if organic waste were no longer discarded in the waste bin but shredded in a kitchen waste-disposal unit, it could be disposed of along with the waste water. Separate collection of various types of waste water improves the opportunities for targeted purification and recovery of natural resources and energy. Waternet will explore these possibilities, especially in new development projects.

work together
with stakeholders

sustainable free zone

district
focus

circular building

sound & energy
insulation

energy neutral
development

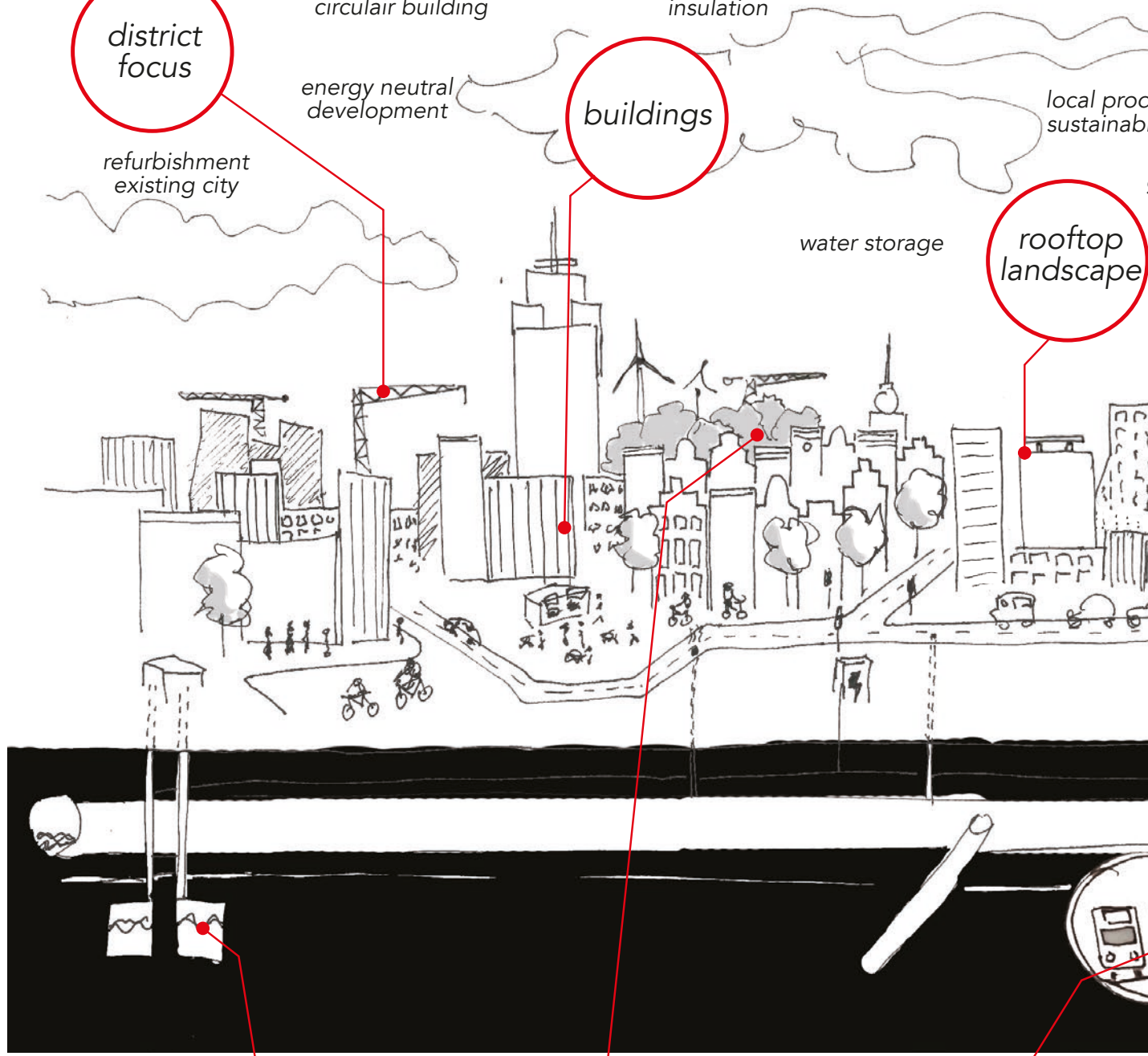
buildings

local prod
sustainab

refurbishment
existing city

water storage

rooftop
landscape



resources
extracted

water

space for bikers
& pedestrians

mobility

energy extracted

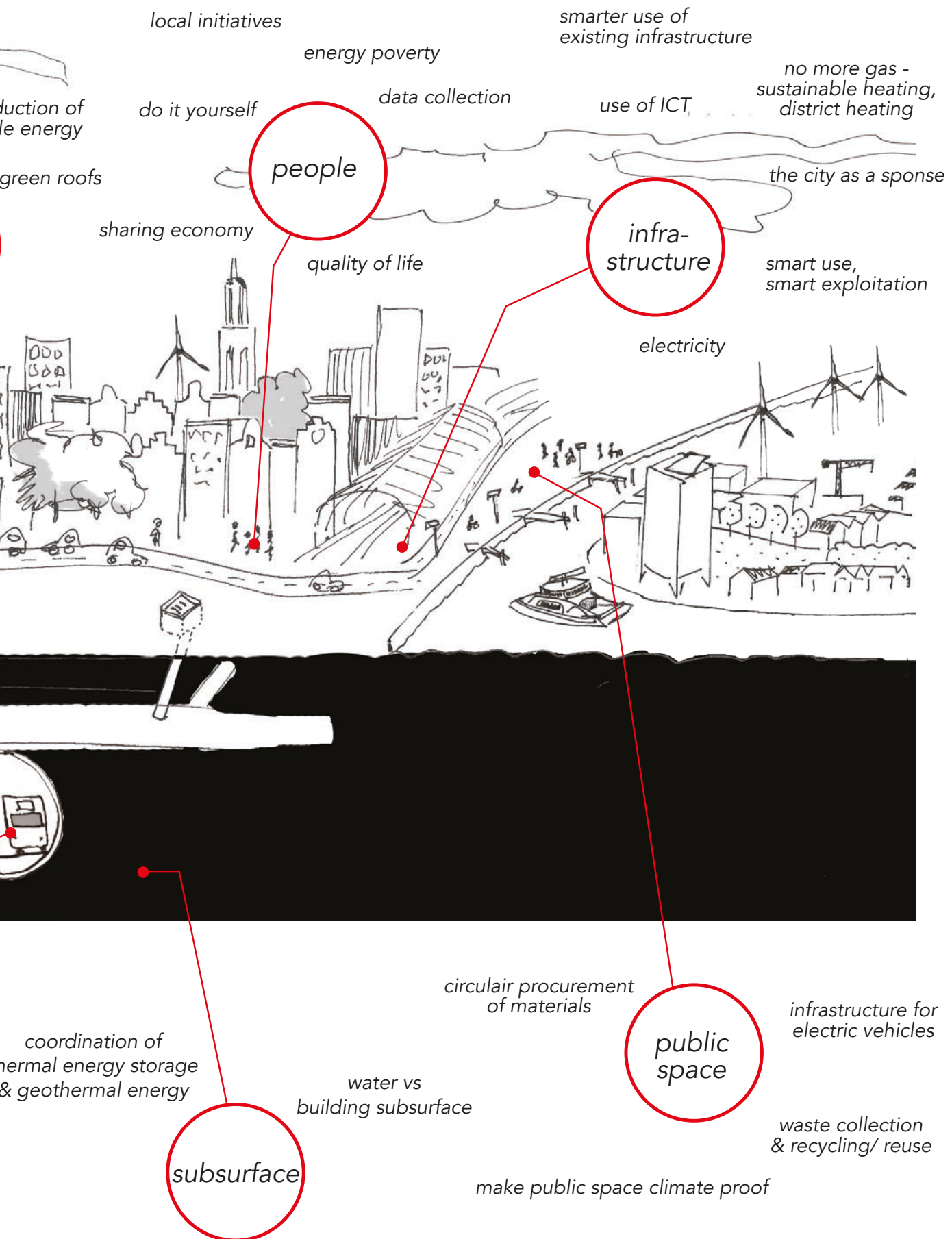
green
spaces

happiness
& health

water storage

cooling of the city

smart & clean
distribution



III Approach

It is easy to define social goals. They have a clear function, because the urgency is obvious to everyone or because people can easily recognise the results. However, the implementation and the results are ultimately most important. These involve many parties – nobody can achieve results alone. This requires collaboration. Frontrunners are the conduits of change. It is important, therefore, that the group of leaders is expanded and that this group can get 'the pack' to follow. It means that sustainability is just one part of our activities. For stragglers we will set a clear lower limit, which we shall enforce generally to create a level playing field for everyone.

1. Integrated approach

In order to contribute to implementing this Agenda, the City of Amsterdam has established an integrated approach, around which the organisation will be designed. The essence of this approach is described in this section.

Sustainability is full of new developments and technological advancements, and is crucial for the future of Amsterdam. That is why the Sustainability Agenda pays specific attention to innovative development and the role of the government as pioneer. Moreover, the return per euro on the environmental impact is applied as an important point of departure.



1.1 Collaboration

A key success factor in accelerating the transition to a sustainable city is working together and making the right connections. These might be between people, knowledge and money, between policy and implementation or between business, government, education and residents. It is an area where the municipality plays a role, sometimes by highlighting shared interests as an independent intermediary, sometimes by organising cooperation or joining pre-existing partnerships. It also means creating cross-departmental connections within our own organisation, and guiding citizens who knock on our door through the municipal organisation. Platforms such as Amsterdam Smart City, the Amsterdam Economic Board and various sustainable networks in the city such as Wij Krijgen Kippen (We Are Getting Chickens), Zuidas Green Business Club, DORA (sustainable entrepreneurs in the Amsterdam region), ZO! Duurzaam ('Sustainable South-East Amsterdam') and the Green IT Amsterdam Region Foundation are collaborating and ensuring acceleration in the field of sustainability.

All these parties collaborate on different scales. It may be in a building, on a street, in a neighbourhood or district, in the Amsterdam Metropolitan Area or between cities and regions. This Agenda is focused on Amsterdam. However, air pollution, waste, water, electric cars, consumer goods and natural resources do not end at governance scale levels. Solutions and causes

rarely go hand in hand with administrative boundaries. Amsterdam participates in national and regional networks, and maintains several international relationships so that it can learn from others and adopt smart examples.



1.2 Dealing with rules smartly

To smooth the implementation of sustainable initiatives and investments, the municipality aims to deal with regulations and procedures smartly, and to deregulate where possible and necessary. At the same time, the municipality is clear about goals and direction. This means being clear on what should happen in the long-term, for which reasonable time frames apply. Ultimately, these regulations and procedures will be enforced, so that those who have made efforts are not affected by unfair competition from stragglers.

Below is a partial list of the things we will do to facilitate implementation:

- In 2015, establish and flesh-out one or more free zones for sustainability and the circular economy, together with the central government and partners in the city. These might be experimental systems around electric vehicles and decentralised renewable electricity generation and smart grids, or removing barriers that prevent waste being used as a natural resource. Our application for the status of innovative project under the Crisis and Recovery Act (Crisis- en Herstelwet) also promises to be successful.
- In 2015, abolish certain rules regarding solar panels in the Policy Document on Planning Regulations for the location and external appearance of buildings (Welstandsnota) and explore whether solar panels can be installed without any planning permission at all.
- Making historic and other buildings in the conservation area sustainable must be analysed case by case. Communicating the options is a priority. The municipality will do this by continuing to offer personally tailored advice to property owners, as well as appointing 'historic building assistants' to assist

them in obtaining permits. Linking databases on solar energy potential and roofing should provide more insight into the potential of solar energy in historic areas of the city.

- Set up a regional helpdesk where people can seek advice on adopting sustainable measures. This helpdesk will be set up in cooperation with a number of municipalities, including Aalsmeer, Amstelveen, Diemen, Haarlemmermeer, Ouder-Amstel, Uithoorn and Ronde Venen.
- Communicate rules clearly to stakeholders (for example, planning permission regulations) by providing information digitally and organising contact people who can explain the rules and procedures and offer advice on implementation.
- Raise issues that are barriers to sustainability, such as the effect of the postcode-based system for tax allowances on local energy generation (postcoderoos) at the provincial and national level, and try to eliminate them.
- The Municipality of Amsterdam monitors which exemptions are desired, which ex-

emptions are used and what results these exemptions achieve. The municipality then actively communicates these learning points to the national government with the aim of structurally aligning legislation in the direction of sustainable development.



1.3 Financing the transition

The municipality wants to invest in the transition where the market is not yet willing or able to. The aim is to achieve results more quickly, facilitate collaboration and help to achieve the transition on a larger scale. The municipality will invest in both small-scale social initiatives and large projects by:

- Setting up a simple, effective and revolving Energy Fund. This fund will be the investment vehicle. By managing all the resources, we will get an overview that makes it easier to determine how different resources can reinforce each other.

More and more data

We are heading towards an 'internet of everything': it is estimated that 50 million objects will be linked to each other in Amsterdam by 2020. The city is generating more and more data. Not surprisingly, a lot is already happening in the field of city data, such as the air-quality monitoring network, monitoring points in the Amsterdam substratum and data from the network of electric charging points and Amsterdam's inhabitants, who are helping create the maps of where we cycle, drive and walk.

By unlocking data, numerous parties can better understand how the city actually functions. Data helps businesses to develop new products and services that contribute to the circular economy. Residents gain understanding of their surroundings and behaviour, and can compare their neighbourhood with other areas in the city. Data is used to develop a variety of apps, which can lead to the city being used in different ways. Data can also support integrated operations both within the municipality itself and with market parties.

Within the themes of the Sustainability Agenda, there are considerable differences in the current availability of data and their spatial representation. In the last period, much attention was paid to environmental issues such as air quality, noise and soil quality. This concerned analyses of the effects of many different activities that occur either in Amsterdam or sometimes on a larger scale.

For example, Amsterdam now has an advanced local air-quality monitoring network, which is managed by the Municipal Health Service. Amsterdam is actively working to unlock and give insight into the available knowledge, as much as possible. This includes real-time access to air quality and smog-level data. This information, in addition to nationwide projections, also plays an important role in determining air-quality policy.

Data regarding areas relevant to sustainability policy – such as energy, the sharing economy and water – are generally available at different organisations, but the data is hard to access and not represented spatially. This spatial representation is exactly what is necessary to turn data into a tool in the short term.

- Tendering schemes for investment by Amsterdam's inhabitants, businesses and social institutions.
- Evaluating the current but shortly obsolete city and district regulations on climate-neutral construction, energy conservation and energy generation in housing, and draw up new proposals for the period beginning 1 January 2016.
- Continue subsidies to promote clean mobility in this period, so that it is possible to meet the air-quality standard.

1.4 Increasing understanding

Policy efforts will be more effective if we increase our understanding of the development of the transition pathways. In addition, we will know more quickly what the results are, and where we need to make adjustments to achieve results. Such understanding is necessary so

that we and partners can steer events on the basis of the interconnections between supply chains and systems such as energy, water, air and natural resources – literally, in fact, as flows can now be observed on the basis of actual consumption and measured values, instead of relying on estimates or qualitative analyses.

Through a targeted data programme, the municipality will collaborate with other entities to develop this understanding. These partners include the Amsterdam Economic Board, the Advanced Metropolitan Solutions Institute, Waternet, AEB Amsterdam, the Port of Amsterdam, Alliander, Amsterdam Municipal Health Service (GGD), Amsterdam University of Applied Sciences, the University of Amsterdam, Amsterdam CTO (top sports and education organisation) and a wide range of municipal departments.



Soil quality



Energy - Use of Gas and Electricity



Energy from waste incineration and waste heat



Energy from soil and water



Energy from sun and wind



A lot of data can be found at www.maps.amsterdam.nl. What is the zoning plan around my property? Which buildings were constructed after 2000, and what is the energy consumption expressed in CO₂ per block? Where can I find green roofs in the city, and is my roof suitable for solar panels? The answers to these and many more questions can be found on this website. The maps yield a lot of insight, especially when combined. At the moment, online tools are being developed that will enable every Amsterdam resident to use different data sources. You can also try it for yourself via the QR code.

This programme will provide data and is a step towards harmonisation, enabling data to be mutually exchanged and analysed. Another objective is to make this data accessible to third parties wherever possible. Using data and data analysis in this way supports the ambitions and actions outlined in this Agenda.

1.5 Agreements with the city

During the next College term, the municipality is going to make or renew agreements to achieve the goals set out in this Agenda. This concerns agreements with sectors, chains or areas, housing associations, housing developers, traffic groups and strategic partners, as well as agreements within the municipality itself. Though voluntary, these agreements are not non-committal. Here are some examples:

- The municipality has concluded agreements with a number of sectors in recent years on the sustainability of their operations. Certification is used as a tool, such as the Green Key certification for hotels, Healthcare Environmental Thermometer (Milieuthermometer Zorg) for hospitals or the BREEAM certificate for the construction industry. We aim to expand this approach, and will explicitly seek cooperation with the region and the national government. Minimum mandatory requirements for energy efficiency will form the basis, complemented with agreements on reducing waste, water conservation, sustainable mobility and sustainable procurement. Sectors that conclude voluntary agreements with us to promote sustainability will be rewarded with fewer inspections. Promising new sectors will be identified in 2015.
- To achieve the transition to a circular economy, we will enter into talks with businesses, including those partly owned by the municipality, to discuss voluntary cooperation.
- Agreements will be made with housing associations in 2015 on the sustainability of social housing stock.
- Efforts are being made with parties from the construction industry to draw up a Green Deal on reducing construction and demolition waste.
- In order to reduce traffic pollution inside the A10 ring road, talks will be held with (representatives of) businesses with heavy road use, the taxi industry, the logistics industry, tour operators and the municipality's public transport company, GVB.
- Areas will also be designated with the parties involved, where everything possible will be tried and done in terms of sustainable development.

2. Organisation of the Agenda

2.1 Administrative organisation

2.1.1 Municipal Council

The Municipal Council will implement the Sustainability Agenda by means of the target and activity indicators outlined herein, and the planning and monitoring cycle of the municipality. In addition, a series of elaborations has been announced in this Agenda that will be submitted to the Council for adoption or for informative purposes, depending on the nature of the proposal. The Municipal Council can also steer the implementation of the Agenda on the basis of the budget, the financial statements and the annual publication 'State of Sustainable Amsterdam'. Indicators for this purpose are listed in section 4, 'Monitoring'.

2.1.2 College of Mayor and Alderpersons

Sustainability is part of our municipal primary processes, our operations and our procurement. However, more than one alderperson

is responsible for achieving the goals. The responsibility lies with the alderperson for the primary process, procurement or operation.

The College of Mayor and Alderpersons has, however, assigned the Alderperson for Sustainability the role of coordinating and spurring all relevant activities. To be able to perform this role, agreements regarding the Sustainability Agenda have been made per College portfolio. This makes the contribution to the sustainability goals clear within each portfolio.

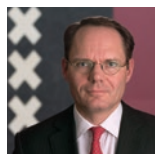
2.1.3 Management committees

The district management committees function as the 'eyes and ears' of the city. Through talks and recommendations, these committees have made a valuable contribution to the realisation of this Agenda. The committees will play another important role in implementing this Agenda, for example through their specific responsibilities (such as waste collection) or operations that



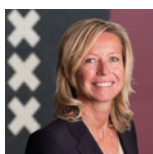
Mayor Eberhard van der Laan

- International positioning of Sustainable Amsterdam



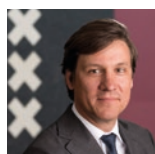
Udo Kock

- Create clear frameworks (calculation rules) for investments in sustainable measures
- Taxation policy for sustainability
- Waterproof Amsterdam



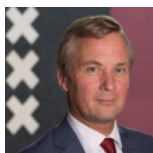
Kajsa Ollongren

- Circular economy innovation programme
- Use of economic tools
- Vision on the sharing economy
- Research and innovation
- Listed building conservation



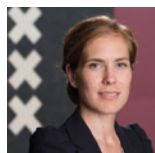
Pieter Litjens

- Clean and quick travel in the city
- Improve sustainability of municipal operational management



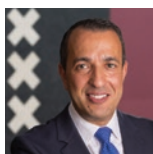
Eric van der Burg

- 75 per cent of newly allotted plots energy neutral, 100 per cent in 2020
- Selection procedure and areas of excellence
- Sustainable sports facilities



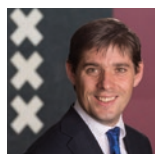
Simone Kukenheim

- Healthy schools for young people
- Make 100 schools more sustainable
- Saving energy and solar panels



Abdeluheh Choho

- Renewable energy and saving energy
- Smart and clean traffic
- 65 per cent waste separation by 2020
- Circular Economy
- Energy fund and schemes
- Sustainable municipal IT



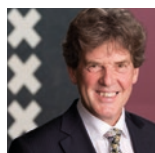
Arjan Vliegenthart

- Energy poverty programme
- Study into perspectives for jobs in construction



Laurens Ivens

- Agreements with housing associations: to average energy label B in 2020
- Support first 1,000 zero-energy homes
- Support tenants with improving sustainability



Arjan van Gils

- Improve sustainability of the municipal organisation in accordance with the Sustainability Agenda

focus on local areas. They also fulfil a flagging function through the administrative networks in the local districts. This Sustainability Agenda and its consequences are part of the city's implementation frameworks.

The coordinating Alderperson for Sustainability has agreed with the portfolio holders for sustainability in the board committees to collaborate on further developing the Agenda for each specified product, plan or theme. This will take the form of 'board couples', with the work divided between the portfolio holders.

2.2 Administrative organisation

Sustainability is part of our municipal primary processes, our operation management and our procurement. More than one part of the organisation is responsible for achieving the goals. The responsibility lies where the responsibility for the primary process, procurement or operation lies.

2.2.1 Sustainable municipality

The City Director of Operations is responsible for implementation of the Municipality CO₂ Neutral roadmap. The commissioning officers and authorising officers are responsible for sustainable procurement. Annual financial statements will report on progress.

2.2.2 Sustainability Team

Within the municipal organisation, the Space and Sustainability profit centre (RvE Ruimte en Duurzaamheid) and its subgroup the Sustainability Team have a coordinating and driving role regarding the goals and methodology described in this this Agenda. The team:

1. Is a point of contact for those in the city, in other words:
 - a. Is a point of contact and cooperation partner for Amsterdam's inhabitants and businesses with regard to sustainability;
 - b. Gathers information and makes it accessible digitally (via websites, newsletters and the municipal information point, Antwoord/14020);
 - c. Uses this Agenda to draw up and implement financing policy (Energy Fund, setting up city-wide schemes, clean-air regulations).
2. Contributes to creating a support base for sustainability:
 - a. Contributes to creating an internal and external support base for the Sustainability Agenda, through open, innovative communication methods, providing a platform for frontrunners, exploiting opportunities such as the Architecture Biennale in 2016, or the European Presidency of the Netherlands in 2016;
 - b. Together with partners, annually organises 'State of Sustainable Amsterdam' (Staat van duurzaam Amsterdam), which includes making a digital or hard-copy publication with local or regional partners.
3. Monitors progress and identifies new opportunities:
 - a. Annually updates the Sustainability Agenda in terms of measures and activities;
 - b. Highlights new themes, projects, challenges and obstacles to implementation of the Agenda;
 - c. Initiates new projects and initiatives with a large reduction or learning potential which have not yet been taken up elsewhere within the municipal organisation (and allocates these or implements them);
 - d. Integrates activities into the administrative line organisation or highlights integral issues which 'have no owner'.
4. Cooperates with partners and other authorities:
 - a. Contributes its own expertise to various projects;
 - b. Supports cooperation focusing on local areas with partners in projects such as, but not limited to, Buiksloterham Circular, SE Amsterdam Energy, Slim Gaaspedam, Westpoort and Slim Nieuw West;
 - c. Collaborates with research institutions, the Amsterdam Economic Board and the Amsterdam Metropolitan Area;
 - d. Cooperates nationally at G-4 level (the four large Dutch cities), with the VNG (Association of Netherlands Municipalities) or other networks on areas relevant to this Agenda;
 - e. Cooperates at a European or interna-

tional level, including via C40, European projects and networks;

5. Lobbies relevant bodies, including national and provincial governments, to improve the conditions for sustainable investments and projects by Amsterdam citizens and businesses. These include, but are not limited to:
 - a. Conditions for generation or micro-generation of renewable power, such as by using solar panels and wind energy (for example, the Electricity Act, taxation laws, SDE+ [Stimulating Generation of Sustainable Power+], airport zoning decree);
 - b. Stimulating and regulatory legislation to promote clean mobility;

- c. Level playing field and ambition for implementation and enforcement of statutory requirements, such as the Environmental Management Act and Building Act;
- d. Waste legislation concerning the reuse of natural resources.

2.3 Sustainability Council

The Sustainability Council (formerly Climate Council), consisting of representatives of companies, knowledge institutions, NGOs and umbrella organisations, will support the College of Mayor and Alderpersons with recommendations on policy and implementation in the area of sustainability.



3. Financing the transition

To achieve the sustainability goals, the municipality must largely depend on the efforts of others. Investment can be a problem for those third parties. The transition to a sustainable city requires a case-by-case approach to funding: projects often involve various parties, some just established, and it can also involve technology that has yet to be proven in the long-term. The risks associated with these two issues can mean that normal financiers cannot or will not provide financing. The City of Amsterdam understands that providing financial support for project initiatives will be effective. Through targeting funding, significant advances in impact and scale can be made with regard to sustainability.

3.1 Energy Fund

3.1.1 Establishment of Energy Fund, additional external financing

The City of Amsterdam will set up a revolving Energy Fund, as a simple and effective fund that is geared to the sustainability goals set out in this Agenda. Principles are:

- **Modern:** the initiative and responsibility for and the implementation of projects will lie with Amsterdam's inhabitants.
- **Simple:** it will be easy to find information on the fund and make an application, the selection process will be simple, short and predictable and the loan terms will be simple and concise (focused on a good balance between risk management on the one hand and costs on the other).
- **Accessible:** the fund will be for all Amsterdam citizens who want to invest in sustainable projects. There will be a suitable amount for small-scale initiatives by residents or groups of residents, and a more significant amount for large-scale projects.
- **Impact:** there will be as much cooperation as possible with market parties to increase the impact of the fund.

The Energy Fund will be the exclusive investment carrier. The new Energy Fund will combine all resources, and end the confusion of different old and new funds, current investments and allocated funding. By bringing the management of all these resources together, it will be clearer how the various resources can reinforce each other. In addition, this streamlining will simplify the municipality's financial landscape.

Currently, the municipality is holding meetings with experts inside and outside the municipality regarding the design of the Energy Fund. This will result in a proposal to be presented to the Council in mid-2015. The possibility of expanding the Energy Fund is also being looked at, so that the market can participate in the funding of initiatives. Various scenarios for the Energy Fund are being explored:

- Incorporating the new resources and existing investments into a separate legal entity. This would allow other investors to invest in this fund in advance or at a later stage.
- In terms of funding policy (adaptation to target group or area), the municipality designs the Energy Fund with its own strategy. This plan involves a variety of financing tools aimed at target groups.
- A mix of the above two scenarios.
- At the level of investment projects: for every major investment the Energy Fund will examine opportunities to co-fund the project. This will allow the fund to make investments on a case-by-case basis, and to determine per project how it can be implemented with a minimum of resources from the fund.

3.1.2 Transition period for the new fund

In the period before the establishment of the new Energy Fund, the municipality will invite new tenders for sustainable project proposals from the city. This will allow the municipality to bridge the period before the commencement of the Energy Fund and therefore ensure continuity for the city.

3.2 Evaluation of current schemes for built-up areas

In 2015, the municipality will evaluate and possibly end the current (but soon to expire) city and district subsidy schemes in the areas of climate-neutral building and energy conserva-

tion and generation in the housing stock. The schemes to be evaluated include: insulation grants for homeowners, all solar and collective energy initiatives and support for owners' associations.

The municipality will adopt new schemes based on the priorities outlined in the Sustainability Agenda. These will enter into force no later than 1 January 2016. The energy-labelling subsidy for housing associations will continue in 2015 and, in collaboration with the associations, will have its own follow-up programme. Some current schemes are listed below:





Subsidy schemes	Who	Location	Amount	Period	2011	2012	2013	2014	2015
Energy-labelling housing association	Housing and Social Support Department	Amsterdam	€33 million	2011-2014	█	█	█	█	█
Insulation energy for private home owners	City districts and province of Noord-Holland	Amsterdam	€1 million	2013-2014			█	█	█
Climate-neutral construction	Housing and Social Support Department	Amsterdam	€1.5 million	2012-2015		█	█	█	█
'Zon XL' (Sun XL)	City districts of Centrum, West, Noord, Nieuw-West and province of Noord-Holland	Centrum, West, Nieuw-West	€231,827	2014				█	█
Collective solar energy projects	City districts of Oost and Zuidoost	Oost and Zuidoost	€50,000	2014				█	█
Energy initiatives	City districts of Noord and West	Noord and West	€30,000						█
Warme voeten (Warm feet)	Housing and Social Support Department	Amsterdam	€1.2 million	from 2015					█

Evaluation and proposals for new schemes; 1/1/2016 new schemes take effect

3.3 Sustainability portfolio resources

The transition to a sustainable city with a circular economy requires investment from numerous parties: housing and property owners, parties involved with infrastructure, utility and energy companies, businesses, knowledge institutions, tenants, shopkeepers, residents and so on.

Efforts by the municipality are aimed at supporting these parties in this process. It therefore follows that investments by the municipality, via the Sustainability Portfolio, will mainly be in projects undertaken by these parties, where the market is unable or unwilling to provide funding or where set targets require acceleration. This principle is reflected in the municipality's spending. The total investment by the City of Amsterdam is more than €170 million. Most

Sustainability portfolio resources		Amount (in million €)		Goal	Transitiepad	
Energy Fund (general investment source)	Total		110.2	Invest in diverse projects (see breakdown below)		
	New Energy Fund	New resources for Coalition Accord	30	Support initiatives by Amsterdam residents, businesses, organisations and social institutions relating to energy transition and improving the city's sustainability		
		Addition to AIF 2013	15.2			
	Tendering schemes	Remaining AIF	2.5			
		Current investments in projects by AIF	7.5	Current projects		
	Current investments, schemes	Amsterdam Climate and Energy Fund (AKEF)	45	Invest in projects by businesses that contribute to CO ₂ reduction and to improving air quality		
		Amsterdam energy loan (risk covered through AIF)	10	Improving sustainability of existing housing stock		
Reserve for improving sustainability of housing stock	Designated reserve	8	Improving sustainability of existing housing stock/Zero-Energy Dwellings			
Air quality (2015-2018)	Allocated VGS resources, General Services and national government resources (subsidies via province of NH) + multiple-year budget reserve	34.4	Amsterdam Meets the Standard (continue set of measures) and A Steadily Cleaner Amsterdam (new set of measures)			
General resources, Sustainability Agenda (2015-2018)	Total	21	Implement other actions and measures of Sustainability Agenda in city and city districts			
	General Services 2015	7				
	General Services 2016-2018 annually €4.7 million	14.1				

of this amount (over €160 million) will be used for the investments mentioned above. This amount includes discretionary funds, previously allocated funds or current investments and incidental funding.

3.3.1 Investments in air quality

The total programme budget for investments in measures to improve air quality for the years 2015-2018 amounts to €34.4 million.

Previously established measures to improve air quality are covered by allocated general funds, a contribution by the Central Mobility Fund (known as VGS resources) and government funding (in the form of subsidies provided by the province of Noord-Holland). This funding was made available for implementing the National Air Quality Cooperation Programme (NSL). The funding from the VGS and the government constitute the bulk of the available budget. Reviews will take place in the coming period on the effectiveness of the Euro 6 subsidy, and whether a premium scheme is required for the introduction of the Clean Parking Scheme.

In the Long-term Proposal for the Central Mobility Fund (2015 Budget) for the years 2017 and 2018, €5.8 million a year has been earmarked for the implementation of the Air-quality programme presented in this Agenda.

3.3.2 Other municipal funds

The municipality is also investing in sustainability in the city from other portfolios. These investments are not included in the table below. They include, but are not limited to:

- the energy-labelling subsidy for housing associations (Housing portfolio);
- investments in healthy schools (Education portfolio);
- the implementation of European Structural Funds, a part of which has been earmarked for the 'low-carbon economy' and the Amsterdam Smart City programme (Economy portfolio);
- investments in the water supply and water and rain resilience (Water portfolio);
- investments from the Green Fund for climate adaptation (Public Space and Greenery portfolio);
- investments from the Sports Accommodation Fund in sustainable sports accommodation (Sports portfolio).

4. Monitoring

The Sustainability Agenda outlines goals and directions for five transition pathways, and describes the municipality's approach. This includes a package of measures and actions for 2015 and early 2016. By monitoring the process in respect to goals and activities, these actions will be supplemented and modified annually, where necessary.

4.1 Reporting method

To assist the city council, the College and management committees in making modifications, the College will formulate and report on goals, commitments and result-oriented agreements. The College aims to proceed as follows:

1. The budget will include target and activity indicators associated with the transition pathways to renewable energy, clean air and a circular economy. These relate to the following questions:
 - a. Are we generating more renewable energy in the city?
 - b. Are we saving more energy in the city?
 - c. Is the air in Amsterdam getting cleaner?
 - d. Are we separating more household waste in the city?

Reporting on the climate resilience transition pathway will be included in the budget line 'water', using the indicators listed therein. Reporting on the sustainable municipality transition pathway is safeguarded by the mandatory financial statement paragraph on sustainability. The budget did not list targets and activity indicators for the renewable energy, clean air and circular economy transition pathways. These are included under 4.2.

2. The College will report these indicators in financial statements, which contain a mandatory sustainability paragraph. In this paragraph, the Municipal Executive will report on progress on the CO₂ roadmap and the goals concerning sustainable procurement. The College wants to annually repeat the publication of the sustainability index in the financial statements in 'State of Sustainable Amsterdam', which will be used to engage the city in a dialogue (see point 3). The sustainability index has been adapted to this Agenda for this purpose.
3. The College aims to enter into an intensive dialogue with the city and the region on the implementation of the Sustainability Agenda. One of the elements is to connect to relevant platforms where talks on sustainability are already underway. The 'State of Sustainable Amsterdam' is another way to enter into this dialogue with the city. The corresponding annual publication will in any case include:
 - a. A quantitative sustainability index with trends, developments, facts and figures – such as CO₂ emissions in the city;
 - b. Summary of results of sustainability initiatives in the city and region;
 - c. New questions about implementation, new opportunities and developments.

4.2 Overview of target and activity indicators

Subject to the overall consideration of decisions on the budget indicators in the four-monthly report by the College and the municipal council, it is proposed to include the following target and activity indicators regarding the renewable energy, clean air and circular economy transition pathways.

Are we generating more renewable energy in the city?

Indicators for goals	Benchmark	Target values		
	Zero measurement 2013	2016	2018	2020
Annual renewable energy production per capita	100 (approx. 3.3GJ/capita)	106	113	120
Indicators for activities				
Capacity of set-up solar energy sources in MW	9MW	25MW	75MW	160MW
Capacity of set-up wind energy in MW	67MW	67MW	76MW	85MW

Are we saving more energy in the city?

Indicators for goals	Benchmark	Target values			
	Zero measurement 2013	2016	2018	2020	
Annual energy consumption per capita	100 (68GJ/capita) 91	85	80	80	
Indicators for activities					
Number of home equivalents connected to district heating	62,000	70,500	81,000	102,000	
Zero-Energy Buildings arranged	0		1,000		

Is Amsterdam's air becoming cleaner?

Indicators for goals	Benchmark	Target values		
	Zero measurement 2014	-	-	2025
NO ₂ concentration in most heavily affected location	100 (46.2 micrograms)			65 (30 micrograms)
Highest measured concentration of soot	100			70
Indicators for activities				
Number of public charging points for electric transport	1,000	2,500	4,000	
Number of cargo hubs	3	-	5	

Are we separating more household waste in Amsterdam?

Indicators for goals	Benchmark	Target values	
	Zero measurement 2013	2016	2020
Percentage of separated waste	19%	30%	65%

4.3 Renewed sustainability index

The municipal sustainability index (as hitherto included in financial statements) was introduced in 2010 and indicates long-term trends in sustainability. Some parts of the index have been modified to reflect this Agenda. This index will be included every year in the municipality's annual sustainability publication, and will no longer appear in the financial statements. The financial statements can then focus on managing on the basis of the results and targets of the College term. A summary of changes compared to the current index is listed below:

A. The following components will be added to the index:

- Sustainable energy generated per capita per year (GJ/capita);
- Energy consumption per capita per year (GJ/capita);
- Nitrogen dioxide concentration at the highest polluted locations ($\mu\text{g}/\text{m}^3$);
- Soot concentrations at the highest polluted locations.



B. The following index components will remain unchanged:

- CO₂ emissions per capita, CO₂ emissions in tonnes of CO₂ per capita per year, (source: emissions according to annual CO₂ report, number of residents O+S);
- Share of bicycles in the modal split (inverse proportion), share of bicycles in total traffic counts of bicycles + cars at 15 points around the city centre, (source: DIVV).

C. The following index components will no longer be included (justification in italics):

- Energy consumption of retail customers per capita, energy consumption of consumers in GJ per capita per year.
The margin of error of the figures provided (source: Alliander) in distinguishing between retail (consumer) and industrial consumption is so large that consistent reports are not possible.
- Attractiveness of Amsterdam for establishing new businesses, Ranking on the European Cities Monitor (ECM), inverse proportion not required (source: Cushman & Wakefield).
This ranking has no relation to sustainability or the lines set out in the Agenda. There is still no replacement list that says something about a circular economy.
- Energy consumption by businesses in terms of added value created, consumption of electricity + natural gas in megajoules (MJ) per € of added value created.
Differentiation between business and consumer consumption is error prone.
- Living environment indicator green/satisfaction (inverse proportion)
Score based on answers to the question 'How satisfied are you with your neighbourhood?' (Source: Living in Amsterdam).
Unrelated to substantive lines set out in the Sustainability Agenda.
- NO_x emissions per capita, average concentration of NO₂ + average concentration of NO₁₀ in µg/m³ as measured by ten monitoring stations (source: Municipal Health Service air quality measurements).
Replaced by nitrogen dioxide and soot, gives a better representation of air quality in the city.
- Proportion of clean lorries and vans (inverse proportion)
(percentage lorries which meet at least Euro 4 + percentage vans which meet at least Euro 4) / (source: Netherlands Organisation for Applied Scientific Research, TNO).
Reflects national trends, not trends in Amsterdam.



IV Overview

The overview offers a summary of the implementation programme in terms of goals, direction and measures. This part also presents the city government's schedule of the discussion and approval of plans and projects. Finally, a summary of the Sustainability Agenda is provided.

1. Implementation programme

Renewable energy

Goals	Focus 2015-2018	Actions and measures	Agenda
Produce more renewable energy: in 2020, produce 20 per cent more renewable energy per capita, compared to 2013	Contribute to an increase in solar energy in Amsterdam to 160MW in 2020, implementation by Zonvisie	Actively inform city residents and businesses about the possibilities of solar energy, based on an Energy Atlas analysis	2015- 2018
		Organise a tender/competition to develop a large-scale solar energy park in the city	2015- 2016
	Enable at least 18MW extra wind energy in Amsterdam in 2020; focus on port area, Noorder IJplas and NDSM Wharf; enable population participation	Reach agreement with the provinces on the sites	2015
		Enable the acceleration of the rate of new connections in the city as is, and increase sustainable district heating; 87,000 connections in 2018 and 102,000 in 2020	Create frameworks for existing city and new construction through Heating Action Plan, including principles of affordability, network accessibility and sustainability
Consume less energy: in 2020, consume 20 per cent less energy per capita, compared to 2013	Improve sustainability of existing housing stock, contributions to SER Energy Agreement	Contributions to agreement to build social housing averaging energy label B in 2020 (SER Energy Agreement) by fleshing out the 'how' with housing associations (e.g. energy labelling, renewable generation)	2015
		Prepare pilot project(s) Zero-Energy Dwellings in existing stacked construction, together with urban partners, in order to scale up the sustainability of stacked construction	2015 -2018Q3 2015 (Council)
		Support homeowners/owners' associations/tenants by means of subsidy schemes in 2015. Combine the traffic-noise reduction programme with energy-saving measures	2015
		Research energy poverty	Q2 2015 (College of Mayor and Alderpersons)
	Implement SER Energy Agreement: greater priority for energy saving by businesses. E.g.: in 2018, all large-scale energy consumers comply with the Environmental Management Act or have made agreements to that end with the relevant authorities	Make agreements with sectors, chains or areas based on national or international certification systems with respect to energy saving. Reward with fewer inspections.	2015 -2018
		Instruct the Environmental Office (OmgevingsDienst) to systematically check the energy-saving potential among the approx. 950 major consumers, with the goal of realising this potential on the basis of the Environmental Management Act, where no agreements have been made	2015-2018
	111 Make existing primary and (special) secondary schools healthy and energy-efficient. New schools must be built to meet the Programma van Eisen (PvE) Frisse Scholen (Schedule of requirements for Clean Schools), category B standard, on the basis of a municipal ordinance	Healthy Schools Programme 2015-2018, implementation 2015	Q1 2015 (College of Mayor and Alderpersons/ Council)
		Start tackling 15 to 20 primary schools in 2015, based on agreements and co-financing by municipality and school boards	2015
		Include Programma van Eisen (PvE) Frisse Scholen (Schedule of requirements for Clean Schools), category B in the 2016 ordinance for housing facilities with respect to newly constructed primary and (special) secondary schools	2016
		Healthy Schools Action Plan for primary and (special) secondary schools, for the period 2016-2018	Q4 2015 (Council)
Improve sustainability of sports facilities	Implement project Sustainable Amsterdam Sport Clubs, improving sustainability of at least 25 per cent of the 176 outdoor sports clubs	2015	
	Incorporate sustainability criteria in the Subsidy Scheme for Outdoor Sports Club Facilities. Apply the Sports Facilities Fund to invest in sustainable sports parks, based on co-financing	2015	
In 2020, develop new construction – residential and non-residential – in an energy-neutral manner. Until 2020, build 75 per cent of construction portfolio in an energy-neutral manner. Houthavens, Buiksloterham + new districts will become special sustainability districts	Include sustainability as a weighting factor (>30 per cent) in the selection of development plans and developing parties; incorporate in selection criteria policy	2015	
	Make the Amsterdam Energy Loan available for new construction	2015	
	Select additional special sustainability areas	2015	

Clean air

Goals	Focus 2015-2018	Actions and measures	Agenda
<p>Making Amsterdam's air healthy, with the least possible amount of nitrogen dioxide, particulates and soot</p> <p>1. In 2025, the concentration of nitrogen dioxide (NO₂) is a maximum of 30 microgram/m³ at the most heavily affected location; in 2015, the statutory standard will not be exceeded. This means that the amount in 2025 will be 35 per cent less, compared to 2015</p> <p>2. The highest measured concentration of soot in 2025 is 30 per cent less than in 2013</p>	<p>Amsterdam Meets the Standard Continue the current set of measures in the Clean Air Plan for AmsterdamGoal: to meet the standard for nitrogen dioxide at all locations as soon as possible</p> <hr/> <p>A Steadily Cleaner Amsterdam /Approach per traffic group Ambition: to make as many traffic groups emission-free or else as clean as possible in 2025Emission-free public transport in 2026</p> <hr/> <p>Maintain frontrunner position in electric transport</p> <hr/> <p>Location-specific solutionsGoal: to achieve the standard and to alleviate the most heavily affected locations</p>	<ol style="list-style-type: none"> 1. Implement the Electric Transport Subsidy Scheme 2. Implement the Subsidy Programme Euro6/alternative fuels 3. Further roll-out of customised approach to cleaning up corporate heavy road users 4. Prepare Cleaner Parking Plan (implementation per 1/1/2016) 5. Implement location-specific measures (particularly to improve traffic circulation) 6. Elaborate plan to eliminate the remaining exceedances before 2018 (in consultation with national and European authorities) 	2015-2018
		Confer with representatives of public transport companies, cargo transporters, delivery companies, taxis and touring coaches, to reach agreements on encouraging, facilitating and regulating clean transportation, aiming at a clear target per group (preferably emission-free mobility within the A10 ringroad by 2025) and at the staged realisation of this goal.	2015
		Set targets per traffic group regarding clean-up goals plus facilitating, stimulating and regulatory measures	Q 4 2015 (Council)
		Implement environmental zone for delivery vans; minimally Euro III diesel (not older than 1/1/2000)	Q1 2017
		Environmental zone for taxis; minimally Euro 5 diesel	Q1 2018
		Environmental zone for touring coaches; minimally Euro IV diesel	Q1 2018
		Introduce age criteria for parking licences, Euro 4 diesel (not older than 1/1/2000) and Euro 1 petrol (not older than 1/7/1992) as regulatory measure for private vehicles (elaboration of 2013 Council decision)	Q3 2015 (Council)
		Work towards emission-free public bus transport in 2026, in collaboration with GVB	2015-2018
		Research, with GVB, the possibilities to clean up municipal ferry services (feasibility, costs, impact on air quality)	2015
		Promote smarter logistics by further encouraging and facilitating the use of the three current cargo hubs, and by creating room for two more sustainable cargo hubs	2015-2018
		Research the possibility and propose an environmental zone for two-stroke scooters	Q2 2015 (Council)
		Demand-driven expansion of public charging points, aiming for 4,000 charging points in 2018	2015-2018
		Complete the call for tenders for expansion of the electric transport charging-point infrastructure	Q1 2016 (College of Mayor and Alderspersons)
		<ol style="list-style-type: none"> 1. Monitor and research the most heavily affected locations 2. Research concrete location-specific measures 3. Implement measures 	2015-2018







Circulair economy

Goals	Focus 2015-2018	Actions and measures	Agenda	
Encourage innovation, research and circular activities	Circular economy innovation programme in which private and public parties use Amsterdam as a testing ground for circular economy	The municipality will realise an urban innovation programme focusing on circular economy, in collaboration with knowledge institutes, and will start with the Circular Economy Quicksan. This also means input for the long-term circular economy innovation programme by AMS	Q4 2015 (College of Mayor and Alderpersons)	
	Encourage transition from possession to use	Integrated vision on the sharing economy (of goods, dwellings/offices to car-sharing)	Q1 2016 (Council)	
		Overview of opportunities to reinforce the repair and recycling sector	2015	
	Reinforce existing activities and encourage new ones	Action plan to use existing economic tools to further the circular economy		2015
			Research, in collaboration with the Amsterdam Economic Board and MRA municipalities, how e.g. the manufacturing industry, creative sector, logistics and financial services can contribute to the transition to a circular economy	2015-2016
In the port area, collaborate with the Havenbedrijf, AEB Amsterdam and Waternet to strengthen company clusters in the area of circular and bio-based economy, e.g. through recycling, renewable energy and green chemistry			2015-2018	
Recover more natural resources and materials	Greater focus on circular use of building materials in the construction sector	Green Deal with chain partners in the construction sector: make plan for circular construction waste flows, carry out two projects and create extra jobs	Q4 2015 (College of Mayor and Alderpersons)	
	Separate 65 per cent of household waste flows in 2020	Draw up Waste Implementation Plan, with choices regarding collection and processing models, chain organisation model, investment proposals for separate collection of household waste; develop plan how to promote the separate collection of bulky waste, litter in the public space and waste produced by offices and shops	Q2 2015 (College of Mayor and Alderpersons)	
		AEB Amsterdam has the ambition to recover four times as many natural resources from waste compared to 2014 through the post-separation of household waste; recover minerals from bottom ash; develop source-separated waste flows; study smarter collection methods to achieve higher separation percentages	2015-2018	

















Waterproof city

Goal	Focus 2015-2018	Actions and measures	Agenda
From 2020, climate adaptation is embedded in relevant municipal policy	Embed rainproofness in the primary process (programme Rainproof)	Complete research into problem areas relating to rainproofness in the city, and draw up an action plan as follow-up	Q2 2015 (College of Mayor and
		Create work through work, through spatial development projects and the urban management and maintenance cycles	2015
		Activate citizens, entrepreneurs and civil society parties through communication and incentive programmes	2015
	Embed the city's rainproofness in the primary process (Water portfolio)	Complete research into the option of tax incentives to encourage homeowners to make their property rain resilient	Q4 2015
		Draw up an adaptation strategy for the Amsterdam region, focusing on essential infrastructure, area-oriented measures, governance, regulations and financing options	2015-2018
		Contributions to water and rain resilience by the department of Greenery and Public Space	2015
		Draw up Green Agenda, with attention on the function of greenery and public space regarding water and rain resilience, using the Green Fund	2015

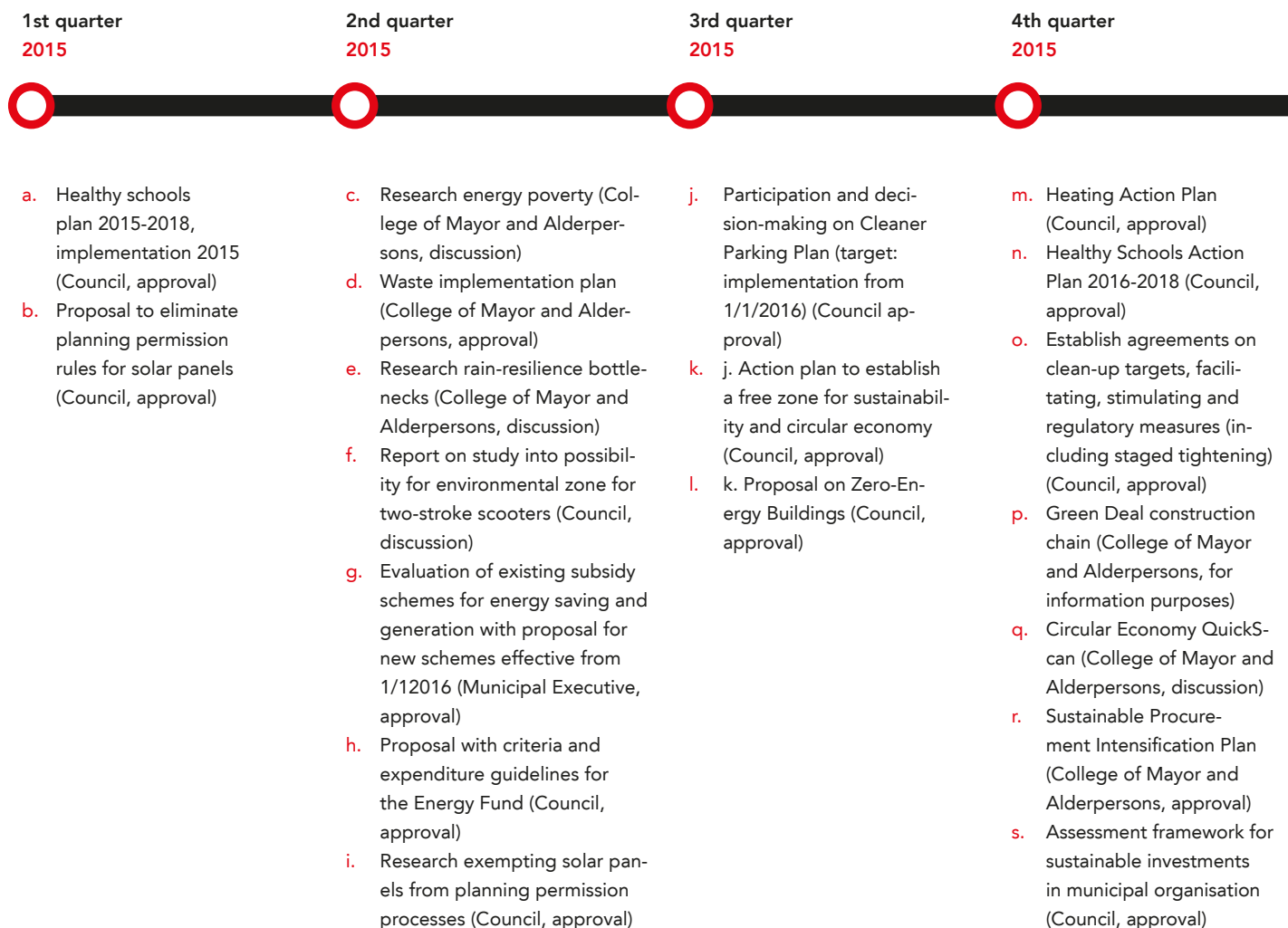
Sustainable municipality

Goals	Focus 2015-2018	Actions 2015-2018	Transition pathways
Municipality cuts 45 per cent CO ₂ emissions per 1/1/2025 on municipal operational activities	Implement roadmap 'Municipality CO ₂ Neutral'	Actions are identified in the roadmap, with action owner and action year, in the fields of offices, IT, vehicle fleet, public lighting	
Municipal procurement meets the Sustainability Agenda goals	Process visualisation, convert ambitions into targets for procurement processes and departments, and embed procurement through lead buyers and clients in new municipal organisation	Draw up plan to intensify sustainable procurement, Q4 (College of Mayor and Alderpersons)	
		The facilities sector substantially increases the percentage of waste separation at offices, to 75 per cent in 2018	
	Continue with current customised programmes	Staged action plan to clean up municipal vehicle fleet (go electric)	
		Create plan to recycle concrete and road bricks in the road- and construction-works company GWW, in a collaboration between the municipality, concrete product producers, builders and recycling companies	
Municipality offers a clear framework to facilitate sustainable investments		Present proposal to the Council containing an assessment framework for sustainable investments, including a set of clear rules to be applied for investment decisions regarding sustainability in the municipal organisation	

Approach

APPROACH	Focus 2015-2018	Actions 2015-2018	Agenda	Related to Transition Pathways
	Smarter approach to rules	Create a free zone for sustainability and circular economy; determine where and how with stakeholders. Draw up an action plan for the implementation.	Q3 2015 (Council)	
		Make information more accessible about the rules regarding planning permission in relation to sustainable initiatives; draw up a guidebook for Amsterdam residents and businesses	2015	
		Exempt solar panels from planning permission rules and processes	Q2 + Q3 2015 (Council)	
	Offer investment opportunities for projects in the city	Invite new tenders for sustainable project proposals	Q1 2015 (College of Mayor and Alderpersons)	
		Establish a new Energy Fund for sustainable investments, with criteria and expenditure guidelines; attract external financing	Q2 2015 (Council)	
		Evaluate and possibly end current or soon-to-expire municipal schemes regarding energy and improving sustainability of existing housing stock; propose new schemes to take effect by not later than 1/1 2016	Q2 2015 (Council)	
	Encourage knowledge and innovation; generate insight through data	Carry out Circular Economy Quickscan	Q4 2015 (College of Mayor and Alderpersons)	
		Data collection, analysis and simulation for water and rain resilience; apply Energy Atlas for projects	2015-2018	
		Data collection, analysis and application to charging-point infrastructure; clean and smart distribution and air quality, in collaboration with e.g. the public health service and Amsterdam University of Applied Sciences	2015-2018	
	Achieve goals of the Sustainability Agenda through agreements with city partners	Conclude a district covenant similar to Energiek Zuidoost, Slim Gaasperdam, Buiksloterham	2015	
		Make agreements with businesses and sectors, such as the healthcare sector, museums and automotive	2015-2018	
		Make agreements with traffic groups with regard to cleaning up mobility	2015	

2. Planning



Besides ambitions and directions for the next College term, the Sustainability Agenda includes a package of measures and actions for 2015 and early 2016. The results of monitoring targets and activities will be used to annually supplement and amend this implementation programme as necessary. Below is a timeline with an overview of key actions and measures. It also indicates whether the plan or product concerned is presented to the Municipal Council or the College of Mayor and Alderpersons.

1st quarter
2016



- t. Complete the tendering process for expansion of charging-point infrastructure for electric transport (College of Mayor and Alderpersons, approval)
- u. Draw up a vision on the sharing economy (Council, discussion)

1st quarter
2017



- v. Establish environmental zone for delivery vans (Council, approval)

1st quarter
2018



- w. Establish environmental zone for taxis (Council, approval)
- x. Establish environmental zone for touring coaches (Council, approval)

3. Summary

It is Amsterdam's aim to catch up in the area of sustainability. We will do this in close co-operation with partners in the city (residents, businesses, civic organisations and knowledge institutions), not only through creating broad public support but also by reinforcing energies and powers of perseverance already present in society. The Sustainability Agenda sets out quantitative and qualitative targets spread over five transition pathways, with the philosophy of the circular economy as a common thread: innovation, doing more with less, becoming smarter and renewable.

The Agenda defines the following quantitative targets:

1. Renewable energy: between 2013 and 2020, renewable energy generation per capita will be increased by 20 per cent;
2. Renewable energy: between 2013 and 2020, energy consumption per capita will be reduced by 20 per cent;
3. Clean air: between 2015 and 2025, the highest measured concentration of nitrogen dioxide will be reduced by 35 per cent;
4. Clean air: between 2015 and 2025, the highest measured concentration of soot will be reduced by 30 per cent;
5. Separation of waste: in 2020, 65 per cent of household waste will be separated;
6. Between 2012 and 2025, the municipality's CO₂ emissions will be reduced by 45 per cent.

And the following qualitative goals:

1. To ensure as much traffic as possible is emission-free (or as clean as possible) in Amsterdam in 2025;
2. To achieve a circular economy with new forms of production, distribution and consumption;
3. To incorporate climate adaptation in 2020 in relevant municipal policies on the basis of the declaration of intent signed by the College of Mayor and Alderpersons ('Spatial Adaptation');
4. To ensure municipal procurement meets the objectives outlined in this Agenda for the transition to a circular economy, the separation of waste, energy and smart and clean transport.



Renewable energy:

In 2020, 20 per cent more renewable energy will be generated per capita than in 2013, while energy consumption per capita will decrease by 20 per cent.

The City of Amsterdam will contribute to this target by:

- Increasing wind power, with the objective of installing 85MW of capacity by 2020 (currently 67MW) by establishing locations for wind turbines in the port of Amsterdam, around the Noorder IJplaspas and NDSM Wharf, and enabling Amsterdam's residents to participate;
- Increasing solar power with the objective of installing 160MW of capacity by 2020 (currently 9MW) by measures such as actively highlighting the potential of solar energy among target groups in the city, easing planning permission regulations, supporting projects with the Energy Fund and concluding agreements with housing associations and businesses about exploiting their roofs;
- Facilitating an increase in the number of connections to district heating to 102,000 in 2020 (currently 62,000) by drawing up a Heating Action Plan for the purpose, with an emphasis on the accessibility of the network, affordability of the solution and sustainability of resources;
- Making arrangements with housing associations based on the commitment agreed by sector in the Energy Agreement on making their housing stock more sustainable by achieving an average energy label of B by 2020;
- Creating the potential for at least 1,000 zero-energy homes in multi-storey developments to help accelerate sustainable housing construction;
- Gaining insight into energy poverty and possible solutions;
 - Making agreements with sectors about the sustainability of their operations, and prioritising inspections and enforcement of the Environmental

Management Act; determining, during this period, if all the approximately 950 major industrial customers in the city are complying with the energy-savings requirements in the Environmental Management Act, or if agreements have been concluded in this respect;

- Ensuring that 111 schools in Amsterdam get a clean indoor environment and can take energy-saving measures or generate renewable energy (111 of a total of 269 schools, 90 of which were already dealt with in the previous eight years), and adapting the 2016 Housing Regulations for newly built (special) secondary schools (to Healthy Schools category B);
- Making sustainable sports accommodation possible by implementing measures such as the Sustainable Amsterdam Sports Clubs project, with the objective of improving the sustainability of at least 25 per cent of outdoor sports clubhouses, and using the Sport Accommodation Fund to invest in new and existing buildings, and to examine whether co-financing from the Energy Fund is possible;
- Committing to energy-neutral new construction by weighing sustainability for at least 30 per cent (in significance) in the criteria used to select development plans and developers;
- Identifying areas in addition to the already existing area of excellence Houthavens and the new development area Buiksloterham where, in cooperation with parties, every possible effort will be made in terms of energy, renewable energy (including solar energy), materials, climate resilience (including against torrential rainfall) and mobility.



Clean air:

Between 2015 and 2025, the highest measured concentration of nitrogen dioxide will be reduced by 35 per cent and the highest measured concentration of soot will be reduced by 30 per cent. This will be achieved by:

- Continuing to apply the current package of measures to meet nitrogen dioxide standards, and introducing a package of measures to accelerate meeting standards;
- Designing a package of measures aimed at exceeding statutory clean-air standards (preferably emission-free within the ringroad, otherwise as clean as possible), including stimulating, easing and regulatory measures;
- Setting up regulatory measures as part of this, such as environmental zones, at least for delivery vehicles (before 1 January 2017), taxis (before 1 January 2018), coaches (before 1 January 2018) and tightening the environmental zone for goods vehicles in 2020 to increase the effectiveness of stimulation measures for these groups;
- Collaborating with the Municipal Transport Authority (GVB) to achieve emission-free public bus transport by 2026, and studying how municipal ferries can be made cleaner;
- Maintaining position as a frontrunner in electric transport by expanding charging infrastructure in accordance with demand to 4,000 public charging stations in 2018 through tenders (including studies into smart charging methods and connection to renewable energy and smart grids);
- Investigating and presenting the possibility for an environmental zone for two-stroke scooters;
- Promoting smarter logistics by developing a proposal with partners on the construction of two additional cargo hubs (goods transfer) in the city;
- Introducing the 'Cleaner Parking Plan' on 1 January 2016.



Circular economy:

Achieve a circular economy with new forms of production, distribution and consumption by promoting innovation, research and circular activity, and recovering more natural resources and materials. This will be achieved by:

- Carrying out a QuickScan on the circular economy to gain insight into the extent of the flows of natural resources and materials that enter the city, are used in the city and leave the city, the corresponding potential economic value and the opportunities for targeted interventions by companies, research institutions and government;
- Developing an urban innovation programme;
- Drawing up a vision on the sharing economy, which will include its impact on society, more efficient use of consumer goods, changing distribution patterns and changes in existing relationships and regulations;
- Drawing up an action plan on adapting the use of existing economic tools to strengthen the circular economy; e.g. by incorporating sustainable entrepreneurship in the Amsterdam Enterprise Programme, by seeking to forge a connection with the Business Investment Zone and by partly focusing acquisition policy on attracting sustainable companies;
- Concluding a Green Deal with the construction sector, including agreements on reusing building waste locally and creating additional jobs in the process;
- Drawing up a Waste Implementation Plan including: decision on collection model and processing model; investment proposal for collecting household organic waste in to-be-designated parts of the city; decision on stimulating the separate collection of bulky waste, litter from public spaces and office and shop waste.



Climate adaptation:

On the basis of the declaration of intent signed by the College of Mayor and Alderpersons ('Spatial Adaptation'), incorporate climate adaptation in 2020 in relevant municipal policies by measures including:

- Rainproof programme, which is concluding research into problem areas with regard to rainproofness in the city and will discuss the results with responsible stakeholders;
- On the basis of the Delta Strategy, an adaptation strategy for vital infrastructure will be drawn up as part of the water-resilient city programme.



Sustainable municipality:

The municipality wants to set a good example. We will do this by:

- Making the municipal organisation more sustainable: implementing the Municipality CO₂ Neutral roadmap;
- Intensifying professional sustainable procurement: drawing up Sustainable Procurement Intensification Plan;
- Assigning the substantive responsibility for applying the targets and making decisions if additional investment is required to commissioning officers and authorising officers; proposing action plans for promising procurement programmes;
- Preparing a testing framework for sustainable municipal investments.

In the transition to a sustainable city, the municipality has many different roles and extensive tools at its disposal. In the coming years, the College aims to make an impact by means of the following practices:



Using rules smartly to support sustainable initiatives by, among others:

Looking for flexibility in its own regulations and improving the provision of information on this (particularly in regard to planning permission);

- Defining one or more sustainable free zones in Amsterdam;
- Examining whether certain rules regarding solar panels in the Planning Permission Memorandum can be eliminated, and exploring whether solar panels can be installed without any planning permission at all;
- Consulting with the Dutch central government and the province on easing obstructive legislation and on the use of experimental schemes;
- Setting up a regional helpdesk where people can seek advice on taking sustainable measures.



Financing the transition by, among others:

Setting up a simple and effective Energy Fund. This fund will be the investment vehicle. By taking control of all resources, an overview is created that also makes it easier to determine how the different resources can reinforce each other;

- Making tendering schemes accessible to investment by Amsterdam's inhabitants, businesses and social institutions;
- Evaluating the current but soon-to-expire city and district regulations on climate-neutral building, energy conservation and energy generation in housing, and drawing up new proposals for the period beginning 1 January 2016;
- Continuing with the subsidies to promote clean mobility in this period, so that it is possible to meet the air-quality standard.



Increase understanding: continue the development of a data programme with partners in the city to map (open and real-time) datasets and make these accessible to the city, so that they can be used for more integrated projects and to make policy more effective.



Collaborate and make agreements with the city: in the coming period, agreements will be concluded with the city in all kinds of areas: with sectors, supply chains, industries, housing associations, developers, traffic groups, strategic partners and within the municipality itself in order to realise and implement the Agenda. Though voluntary, these agreements are not non-committal.

Monitoring: The College will make sure targets and activity indicators are coherent. They will be included in the budget and reports on their progress will be incorporated in the financial statements and the annual publication 'State of Sustainable Amsterdam'. The financial statements will also contain reports on the progress of the Municipality CO₂ Neutral roadmap and progress on sustainable procurement. Reports on air quality will be based on annual forecasts. This can be used to determine packages of measures.

Colophon

Sustainable Amsterdam, *Agenda for renewable energy, clear air, a circular economy and a climate-resilient city*, adopted by the Municipal Council of Amsterdam, March 2015

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