The Amsterdam energy transition roadmap – introducing the City-zen methodology

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The Amsterdam Energy Transition Roadmap - Introducing the City-zen Methodology

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Abstract

Purpose
City-zen is an EU-funded interdisciplinary project that aims to develop and demonstrate energy-efficient cities and to build methods and tools for cities, industries and citizens to achieve ambitious sustainability targets. As part of the project an Urban Energy Transition Methodology is developed, elaborated and used to create Roadmaps, which indicate the interventions needed to get from the current situation to the desired sustainable future state of a city. For one of the partner cities, Amsterdam, such a Roadmap was developed.

Design/methodology/approach
This paper discusses the approach and methodology behind the City-zen Urban Energy Transition Methodology, with its 6 steps from the initial energy analysis to the roadmap towards a desired future state. The paper will illustrate this by results from the Amsterdam Roadmap study, in numbers and figures.

Findings
The Roadmap study of Amsterdam revealed that the city can become energy neutral in its heat demand, but not in the production of sufficient electricity from renewables.

Research limitations/implications
Although as yet only applied to the city of Amsterdam, the methodology behind the roadmap can be applied by cities across the world.

Practical implications
An enormous effort is required in order to transform, renovate and adapt parts of the city. It was calculated, for instance, how many energy renovation projects, district heating pipes and photovoltaic panels will be annually needed in order to timely become carbon neutral, energy neutral and ‘fossil free’.

Social implications
The technical-spatial content of the Roadmap was presented to stakeholders of the Dutch capital city, such as politicians, energy companies, commercial enterprises, and not least citizens themselves. Although informed by scientific work, the Roadmap appealed to many, demonstrated by the extensive media coverage.

Originality
The City-zen Methodology builds upon earlier urban energy approaches such as REAP (Tillie et al. 2009), LES (Dobbelsteen et al. 2011) and Energy Potential Mapping (Broersma et al. 2013),

but creates a stepped approach that has not been presented and applied to a city as a whole yet. As far as we know, so far, an energy transition roadmap has never been developed for an entire city.

Keywords: sustainable cities, urban energy transition, energy transition roadmap, zero energy, zero carbon, fossil free

1. Introduction

1.1 EU goals

A so-called 20-20-20 target was set by the EU to achieve 20% energy savings, 20% increase in production of renewables, and 20% carbon emission reductions by 2020. This ambition was followed by the EU Energy Building Performance Directive that by 2020 all newly constructed buildings need to be ‘nearly’ zero energy. These aims have now been surpassed by the Paris Climate Treaty Agreements, which aim for a carbon-neutral built environment by 2050.
The greatest challenge lies in the approach of the existing built environment. Started in 2014, the EU FP7 funded project called City-zen addresses this urban energy transition assignment. It tests new technologies and develops methods and tools, spatial-technical as well as social-economical and legal-political, to help cities getting the transition started. As part of City-zen, so-called Roadmaps are developed for the two partner cities, Amsterdam and Grenoble. These Roadmaps should pave the way towards a desired future state.

1.2 Definitions of sustainable ambitions

Before sustainability-related targets and goals can be set, a clarification of possible ambitions is needed, because in debates there is a mix-up and confusion about terms such as zero carbon, zero energy, fossil free, and circular. Therefore, we first state our practical definitions of these terms.

(Net) zero carbon, carbon neutral, climate neutral
In a living system as we know on earth, total absence of carbon emissions is impossible, so when people talk of ‘zero carbon’, they mean ‘net zero carbon’ or ‘carbon neutral’, related to a certain period, mostly one year. Since the ambition of carbon reduction is related to climate change mitigation, the goal is actually to become ‘climate neutral’, encompassing also other greenhouse gases (GHG). Simplification to ‘carbon neutral’ therefore requires a conversion of other GHG emissions to ‘carbon equivalents’. A clean definition of (net) zero carbon, carbon neutral or climate neutral is that, over a year’s time, the net GHG emission of the system considered is zero. For this purpose, carbon emissions from fossil fuels may be sequestered, for instance by storage in the underground, or by functional use in horticulture or industry, or compensated by planting green. Indirectly, in order to become climate neutral, compensation is possible through carbon trading (of CO_2 certificates). Being climate neutral therefore does not necessarily mean that a system is ‘zero energy’.

(Net) zero energy, energy neutral
Similar to zero carbon, for a living system ‘zero energy’ literally means death, so in the light of sustainable cities, the actual goal is to become ‘net zero energy’ or ‘energy neutral’. A clean definition of energy neutral is that in the system considered, over a year’s time, the quantity of renewable energy produced equals the energy used. By this definition, the use of fossil fuels is allowed, as long as it is compensated by sufficient production of renewable energy (e.g. sun, wind, water, soil, biomass). An example of this is the Danish island of Samsø: fossil fuels are

still used for cars and ferry boats but the island produces more renewable energy than it needs, so it is energy neutral (and climate neutral), actually energy positive, but not yet ‘fossil free’.

Fossil free

Being ‘fossil free’ eliminates the use of fossil fuels. In this case no use of fossil resources (mineral oil, natural gas, coal) is allowed anywhere in the system considered. In a fossil-free system, all elements run on renewable energy resources. A fossil-free system can be called circular for the use of energy but not yet for other flows, such as water, materials and food (nutrients).

Circular, Cradle to Cradle

There are two types of circular systems: compliant with the natural cycle, where all resources return to nature in a non-harmful, non-toxic manner, and compliant with the technical cycle, where all resources are being reused. In that sense it is a different term for what McDonough & Braungart (2002) already coined ‘Cradle to Cradle’. Circularity is often solely coupled to the use of products, focusing on reusing, recycling and reprocessing of materials, but it also harnesses the energy, water and nutrient cycle, including more complicated biological and chemical processes. A circular system can be defined as a system that reuses all resources and waste flows coming from these resources, with input solely of renewable energy. Overall, a circular system should be able to function by itself, autarkic or self-sufficient.

In a circular system, all resources keep flowing in loops, creating stability from the moment of circularity onwards, but it does not mean that past damages or shortages have been solved. That is what regenerative stands for.

Regenerative, Beyond Sustainable, Positive Footprint

A regenerative system does more than a circular one, in that it regenerates damages and shortages that have evolved over time, before a system became circular. Various scholars have identified that the earth at present is overstretched, that our individual Ecological Footprint (Wackernagel & Rees 1996) on average is larger than our share of earth surface, that we have created an unbalanced situation beyond natural recovery. Becoming regenerative means that a system not just takes care of its own self-sufficient functioning yet also makes amends for the damage created in centuries before. This is also referred to as ‘beyond sustainable’ (Luscuere et al. 2016), aiming to create ‘positive footprints’.

1.3 Amsterdam and its sustainability ambitions

The City of Amsterdam has expressed its sustainability ambitions in numerous documents, most lately in the city council’s coalition agreement (Groenlinks et al. 2018). The city wants to become climate neutral and – triggered by the national uproar about earthquakes in parts of the country due to gas drillings – to get rid of natural gas. Amsterdam is getting the energy transition started, and City-zen, in which the city is a partner, is helping out. City-zen does this as well in the other partner city, Grenoble, and so-called Roadshows are held to help ten other European cities in their energy transition (Dobbelsteen et al. 2018).

1.4 The Amsterdam City-zen Roadmap

The Amsterdam Roadmap is based on the City-zen Urban Energy Transition Methodology. The Roadmap will demonstrate how the current fossil fuel based urban energy system can be transformed into one that is running fully on renewables. It will show how different spatial-technical interventions in the built environment, based on local sustainable energy potentials, will be integrated through all scale levels of the city and contribute to the final goal and targets set in-between.

The area that will be addressed in the City-zen Roadmap of Amsterdam is the municipality of Amsterdam as a whole (figure 1). By applying the City-zen methodology, we worked successively from the large (municipality) scale to district and neighbourhood scale. In order to make the urban energy interventions more tangible, special attention was given to two neighbourhoods, which were elaborated into more detail: the historic Amsterdam city centre, in particular a neighbourhood around the Brouwersgracht, and the Slotermeer neighbourhood, a post-war extension area to the west of the city centre.

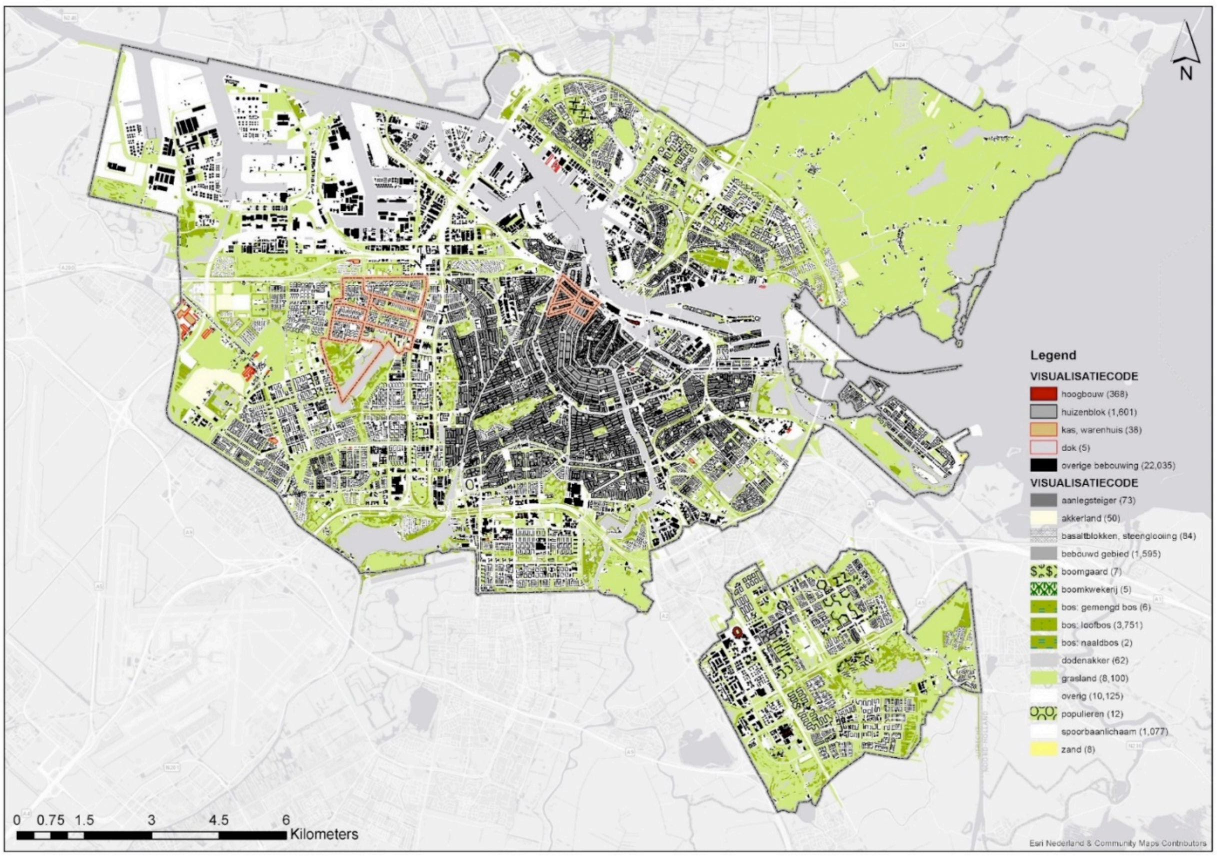

Figure 1: Municipal borders of Amsterdam and the neighbourhoods of Slotermeer and the inner-city considered for the City-zen Roadmap

2. The City-zen energy transition approach

European cities usually have ambitious goals in becoming more sustainable, but often are not on track towards their short-term (e.g. EU2020) targets. The pathways to move forward in the transition towards a sustainably built environment are complex to outline. The City-zen methodology helps provide structure within these complex tasks. The output of this is an 'Energy Master Plan' for a city or neighbourhood, based on an energy analysis of several energy maps (demand and potentials) of the city, with a roadmap that will head for a preliminary set of targets and goals (also beyond 2020). The roadmap exists of several energy interventions and measures, both at the technical and strategic level, which are attached to a timeline.

Figure 2 illustrates the the City-zen Urban Energy Transition Methodology. In this figure different steps are highlighted: 1. Energy analysis (present circumstances, current energy demands etc.), 2. Current planning and trends (the near future plan already started), 3. Societal and stakeholder analysis (political, legal, social, economic analysis), 4. Scenarios for the future (external variables that will influence the future state of cities), 5. Sustainable city vision with goals and principles (inspired by a so-called Book of Inspiration, produced from the City-zen project), and 6. The Roadmap, with energy strategies and actions (supported by the City-zen 'Catalogue of Measures').

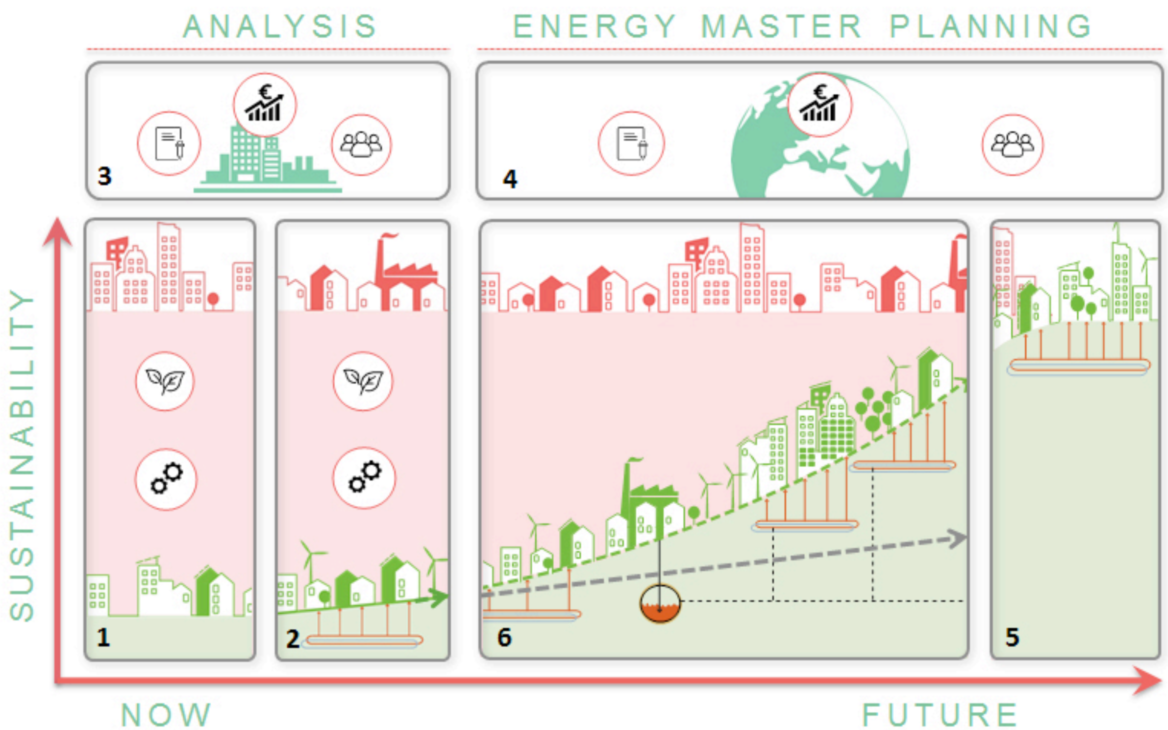

Figure 2: City-zen Urban Energy Transition Methodology

In the study presented, we primarily focused on determining the urban energy interventions required to make the transition to the desired future state of the city, climate neutral. Energy interventions are technical-spatial measures that are specified for a specific location and implementation time frame. Examples are: extending a heat network in a neighbourhood, retrofitting building blocks, or installing of a certain amount of solar power on roofs in a district, within a certain period.

Energy Potential Mapping (Broersma et al. 2013) is used to determine the renewable energy potentials of a city as Amsterdam. This EPM method structurally exposes the geographical-physical and technical layers into local layers of energy potentials. The technical-spatial quantification of demand, reduction potential and renewable supply forms the first analytical step of the approach.

We acknowledge that, to be able to realise these interventions, multiple barriers may exist that need to be dealt with (Amsterdam Economic Board 2018). The solutions for these can be on a non-technical level, such as political decision-making processes, agreements with housing corporations, and economic barriers to establish far-going energy renovations. We analysed these but they are not discussed in this paper.

3. Outcomes of the preparative research

3.1 Current demand and sustainable supply

Analysis of the present circumstances revealed the energy usage of the city of Amsterdam. In total, the city uses 15.2 PJ of electricity, of which 2.8 PJ for private homes and 13.3 PJ for business purposes. In addition, 26.1 PJ of natural gas is used, of which 10.5 PJ for homes and 15.8 PJ for businesses. Finally, 2.0 PJ of heat used comes from district heating, of which 0.9 PJ for homes and 1.1 PJ for business. These energy values however say little until we know how much of these can actually be generated in a sustainable way.

Our energy potential mapping analysis, informed by data from the municipality (City of Amsterdam 2017, 2018; Gemeente Amsterdam 2017) and the Energy Atlas of Amsterdam (Boogert et al. 2014), produced interesting findings. First, Amsterdam cannot provide itself with sufficient renewable power; there simply is not enough space and urban surfaces to generate sufficient solar and wind power. Second, the AEB waste incineration plant – now considered as a sustainable source of heat and power – cannot function as a renewable source in the long run; it does not fit the goal of a circular economy. Third, high-temperature (HT, 65+^{o}C) deep geothermal heat sources can replace heat from fossil fuel and waste (Bär et al. 2017; Geodan 2018), but only partly. Fourth, Amsterdam cannot produce enough biogas and hydrogen to replace natural gas significantly. Fifth, Amsterdam has plenty of mid- (MT, 40-65^{o}C)) and low-temperature (LT, 25-40^{o}C) heat sources. Think of natural sources as soil, open water and air, but also anthropogenic sources of waste heat, such as data centres, supermarkets and industries.

In the light of climate change, Amsterdam will also have to cater for cooling demands. Cold can be delivered through electrical systems (air-conditioning) or through environmental sources (soil, water, air). In this research, when 'heat' is mentioned, it also refers to 'cold'.

3.2 Scenarios for heat and electricity

The main conclusion of the preparative analytic research is that the city needs to be smart with high-temperature (HT) heat, currently primarily provided by natural gas. Where possible, a shift from HT demand to MT or LT is desired, which is possible if buildings with HT heating systems can be energetically renovated so MT or LT heating systems can replace the old ones. This is difficult with ancient, monumental buildings, which will still mostly need HT heating, possibly to be supplied by geothermal heat or green fuels. New to be constructed buildings however should be based on LT systems, i.e. heat pump systems and local LT heat grids. Other buildings in Amsterdam, after limited energy renovation, might be suited for MT temperatures, which could be the return temperature of HT heat grids. This transition from fossil-based HT sources to a mix of renewable HT, MT and LT sources can be seen in figure 3, left, assuming a growth in new buildings (Amsterdam is expanding), which need to be net zero energy, and potential energy savings in existing buildings.

These scenarios were developed by the authors, based on the Energy Potential Mapping study of Amsterdam and informed by data from the City of Amsterdam, such as the current energy demand (Gemeente Amsterdam 2017) and growth projections (Gemeente Amsterdam 2011). Informed by statistical data of the Research Information and Statistics bureau of Amsterdam (OIS 2018), the growth of Amsterdam citizens is expected to be 25-40% until 2040. For existing buildings, through energy retrofitting, heat demand reduction by a third is considered to be attainable.

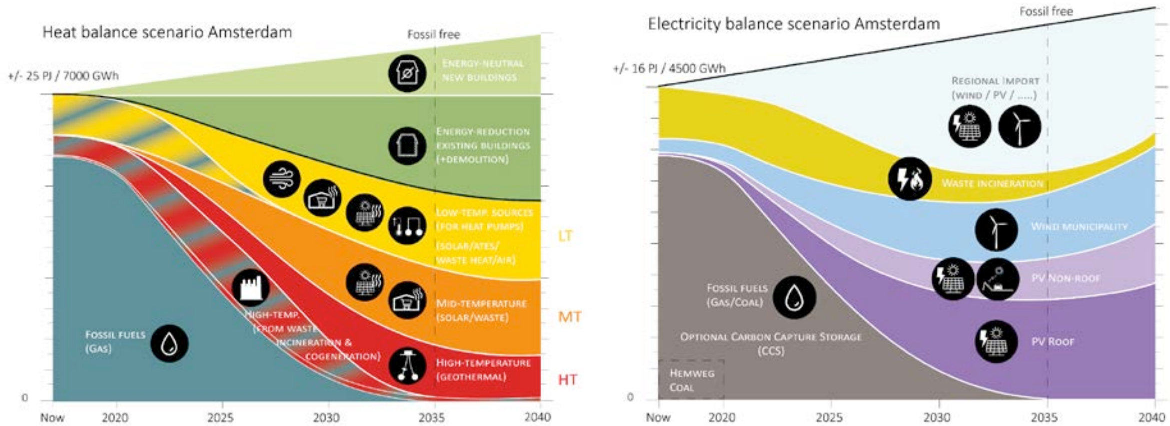

Figure 3: Future scenario for the heat (left) and electricity (right) balance of Amsterdam (informed by Gemeente Amsterdam 2011; Gemeente Amsterdam 2017; OIS 2018)

For electricity, the current supply from the gas-fired and coal-fired power plant, and in due time, most of the electricity from waste incineration, needs to be replaced by renewables. The city has potential for both solar and wind energy, but a considerable part still needs to be supplied from outside. Figure 3, right, illustrates the shift from the current use of fossil fuels (Gemeente Amsterdam 2017) to renewables in the energy system.

Based on recent historical developments, the electricity use of households is expected to be reduced by 1.5% per year for user-related electricity, summing up to -30% in the year 2040. In the meantime, in line with municipal goals (Gemeente Amsterdam 2011), housing developments are expected to increase by 30% until 2040. Furthermore, electrification of domestic heating (from gas boiler to heat pump) was calculated to lead to a demand increase by 1250 GWh and electrification of vehicles (cars, motorbikes and bicycles) to 1500 GWh electricity demand increase. For non-residential purposes, electricity efficiency is expected to reduce the demand by 20-25%, whilst completely compensated by projected growth in these functions by 20-25% as well

4. Vision of a sustainable city

For the future aim of Amsterdam, destination of the city's Roadmap, the following vision was described.

By 2050, the city of Amsterdam is envisioned to be circular, meaning that it has control over all of its resources, energy, water, materials, food and waste flows affiliated with them. The city is clean, has no harmful or toxic fumes anymore, has drastically reduced the number of deaths and loss of life expectancy related to fine dust particles.

Because of a circular system of nutrients, the city and its region have become extremely effective in producing food, clean water and renewable energy, including urban agriculture in formerly vacant buildings, on rooftops, attached to buildings, also serving the need for green outdoor spaces and biodiversity. The city is rich in essential pollinators, such as bees and bumblebees. Citizens are healthy and happy; children grow up in a safe environment.

All transportation is based on renewable energy, mostly human-powered, or otherwise electric or with fuel cells. Biofuels – because of their exhaust gases – are only allowed outside the urban cores. There are no cars in the inner-city. An efficient underground system supplies the city with goods and foods.

Water is cleaner than ever before, a self-purifying natural system that provides plenty of places for swimming and nature everywhere across the city. In spite of global warming, in wintertime

some of the canals are frozen by the heat pumps of the canal houses, who take their heat from every second canal. In-between canals remain open for electric touristic boats, operated by robotic systems.
The inner-city has not changed so much as one would expect. Building-integrated PV has turned many of the historic buildings to energy neutrality, in an almost invisible way. While all neighbourhoods outside the Singel canal have become energy neutral by themselves, the historic centre is still supplied to a limited extent with geothermal heat from external plants, transported by the heat and cold system of the city.
Amsterdam has become the ultimate paragon for a sustainable city and attracts millions of tourists for that accomplishment.
The Amsterdam Roadmap and an ambitious municipal action agenda should cater for this.

5. Strategy towards the future

5.1 Scale of the entire city

In order to define the best energy transition strategy for Amsterdam, we first investigated the city's districts and neighbourhoods (see figure 4).

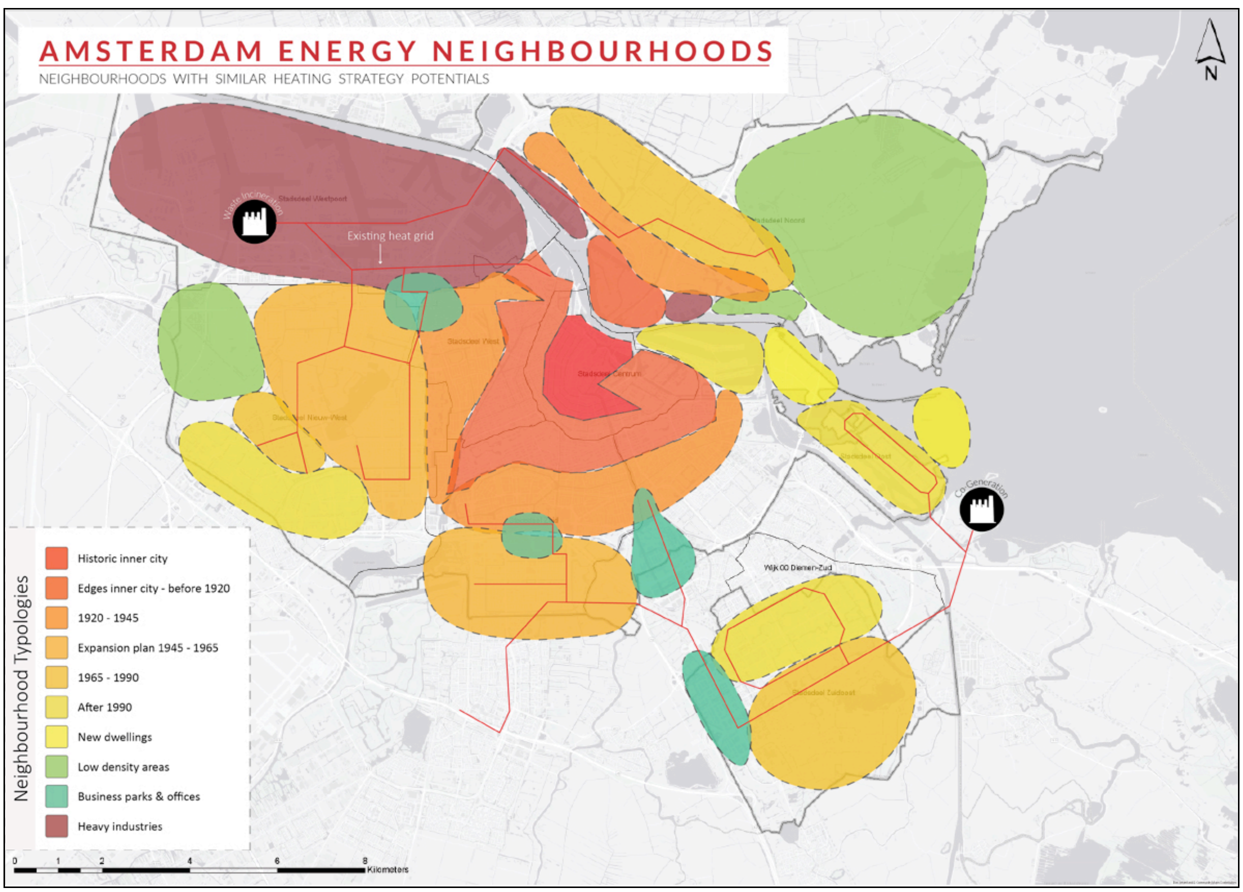

Figure 4: Neighbourhoods of Amsterdam, subdivided by construction era

By determining the era of construction and building typology and combining these with the current energy labels or energy consumption data of buildings, we could make an estimate of the extent that buildings could be renovated and in how far the energy consumption could be brought down. This then defined the possible energy interventions, for heat and electricity, per neighbourhood. Figure 5 illustrates this.

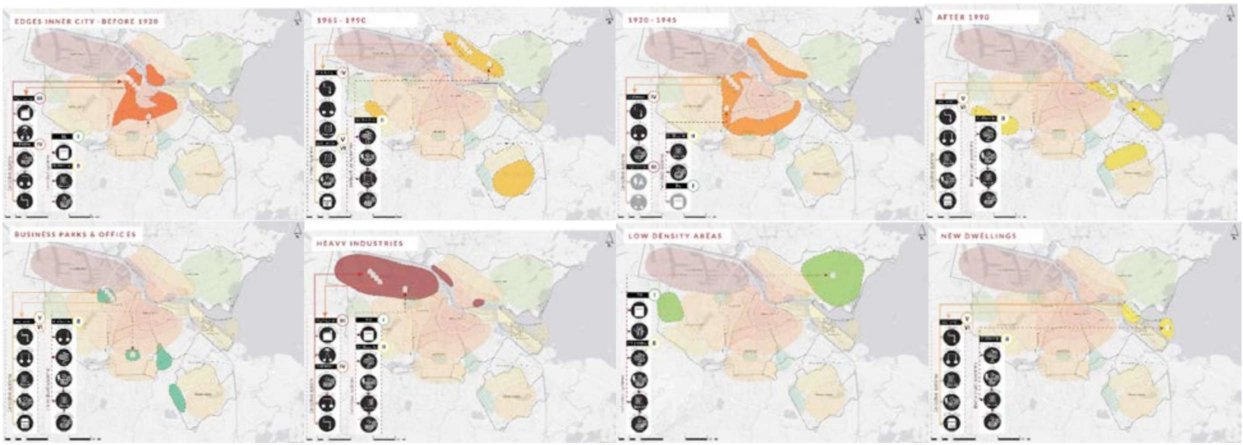

Figure 5: Possible combinations of measures per neighbourhood

One of the findings of the preparative research was that although Amsterdam has two unconnected district heating systems – one run on heat from the waste incineration, one on the waste heat from the gas-fired power plant – that serve the outer districts, while the city within the ring road actually needs this heat the most (see figure 6). This part of the city is now mainly served with natural gas boilers, which have to be replaced. Far-stretching energy renovation here is difficult, mostly due to the age of most of the buildings and because a lot of them are listed as monumental premises. The historic inner-city of Amsterdam is a Unesco World Heritage site, so altering the image of the city is limitedly allowed.

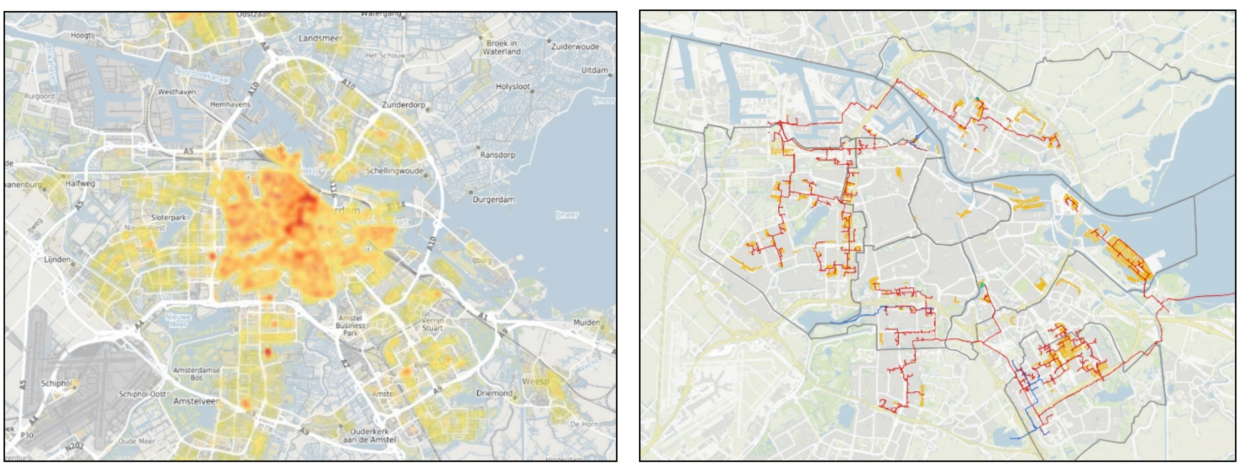

Figure 6: Discrepancy between the urban areas in Amsterdam where the heat demand is the greatest (left) and the service areas of the Amsterdam district heating (right). Images adapted from [City of Amsterdam].

In order to elaborate the urban energy transition of Amsterdam in a more practical way, as explained, two neighbourhoods were investigated in greater detail. Figure 7 shows typical images of parts of these areas, the Brouwersgracht and tenement flats in Slotermeer.

Figure 7: Image of the Brouwersgracht in Amsterdam Centre (left) and a typical tenement flat neighbourhood of Amsterdam Slotermeer (right) (GoogleMaps)

In the following sections the energy transition possibilities of these areas will be briefly discussed.

5.2 Amsterdam City Centre

Considered straightforwardly, there are three main choices for an energy transition: 1. Radical energy renovation to a very low energy demand for heating and with maximum photovoltaics (PV) to supply the remaining demand; 2. Connection to the HT/MT heat grid, thanks to which no radical renovation is needed; electricity can be supplied by invisible PV; 3. Use of the limited amount of sustainable gas, where we now use natural gas. Electricity is either procured sustainably or partly produced by invisible PV.
These three main routes have been elaborated in table 1, with solutions for heat at left and those for electricity at the top. The colour scheme indicated the intrinsic sustainability value for the area itself. It goes without saying that each of these solutions have consequences and will encounter opposition in all forms.

Table 1: Possible strategies for heat (left columns) and electricity (top rows) for the inner-city of Amsterdam

Possible energy strategies for Amsterdam city centre

			Electricity				
		Individual	maximal PV-application on all surfaces	PV-roof tiles + panels on invisible places	PV panels on invisible places	No PV	No PV, import green power
		Collective			Green power coming from Amsterdam (AGP: Amsterdam Green Power)	Green power coming from Amsterdam (AGP: Amsterdam Green Power)	No AGP (Amsterdam Green Power) company
	Renovation	Heat source					
Heating systeem	Deep renovations	HP on canal water	Interesting, but difficult to realize with the current policies towards monumental buildings				
Heating systeem	Limited renovations	HT heatwork geothermal		Achievable alternative by flexible attitude Monumental care organisation, relatively expensive	Achievable alternative, additional green power required, relatively expensive		
Heating systeem	Limited renovations	Green gas (AGF: Amsterdam Green Fuel)		Good combination chance, gas is a risk, relatively cheap	Combination is achievable, green power required, relatively cheap		
Heating systeem	No renovations	HT heat network with residual heat/ waste			Achievable, additional green power required, expensive infrastructure, low ambition	Challenge to realise the electricity production, expensive infrastructure	Responsibility for electricity production shifted to others, AEB in the lead
Heating systeem	No renovations	Green gas (AGF: Amsterdam Green Fuel)			Slightly better than the current situation, cheap, less ambitious, is there enough green gas available for this option?	In this case everything should be solved with the Amsterdam Green Energy (AGE) company	The worst solution, Amsterdam shifts all its responsibilities towards other parties

Most interesting as a case is the roll-out of the district heating towards the inner-city. Figure 8 illustrates the possible solution of that: since roads are already filled to the rim with infrastructure, heat pipes would have to be laid out in the canals. For the historical buildings the change would not be severe: their gas boiler would have to be replaced by a heat exchanger but otherwise no energy renovation would be needed, although some post-insulation and PV on roofs where allowed would improve the energy performance, of course. Boat houses in the canals could provide themselves with heat pumps and PV.

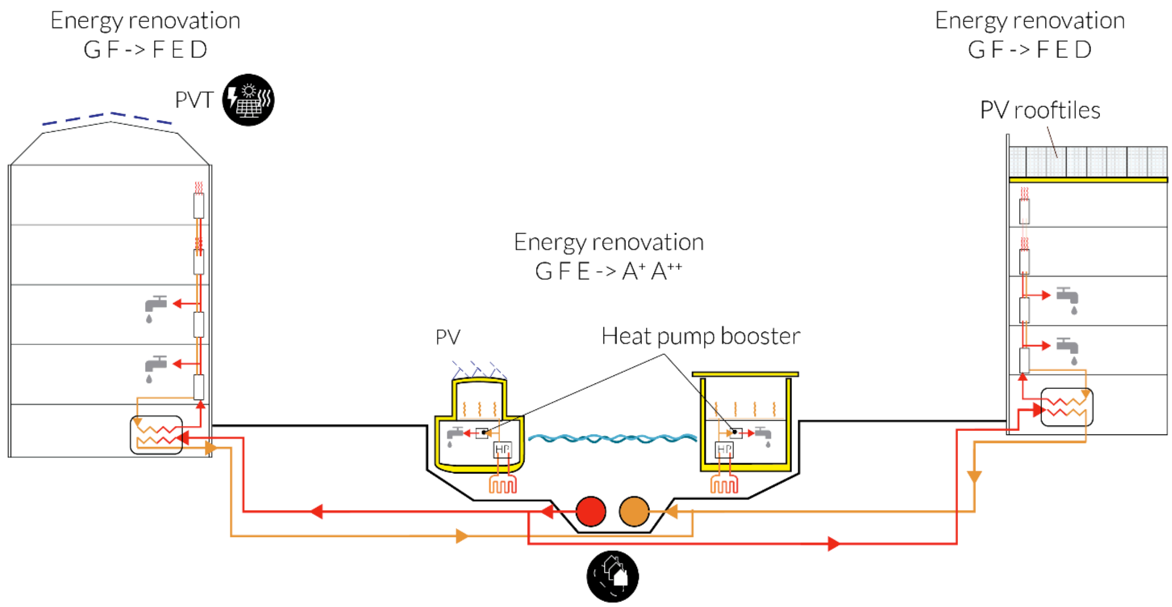

Figure 8: Illustration of the heat grid solution for the inner city of Amsterdam

5.3 Slotermeer

The New West district of Amsterdam is totally different from the city centre. Here, from 1945 until the 2000s new urban expansion was facilitated, with most of the residential buildings in the neighbourhood of Slotermeer from the 1950s and 1960s. Their energy performance is poor but these buildings usually have few restrictions regarding energy renovation. Therefore, a much greater package of interventions is possible compared to the city centre. Table 1 was also made for Slotermeer, but its size is three times larger.
Some of the interesting energy transition possibilities lie in the creation of localised mini heat grids on MT or LT heat, depending on the extent of renovation. These mini networks could be based on heat pumps with borehole thermal energy storage for inter-seasonal storage of heat, which could be produced largely by PV thermal panels on the buildings (PVT). Figure 9 gives an illustration of this principle.

For Slotermeer, a full set of measures was proposed for heat in the built environment itself, for electricity, mobility and for waste and water management. These are not discussed here. All together, these measures would enable the area to become fully carbon neutral, something that would not be possible for the city-centre.

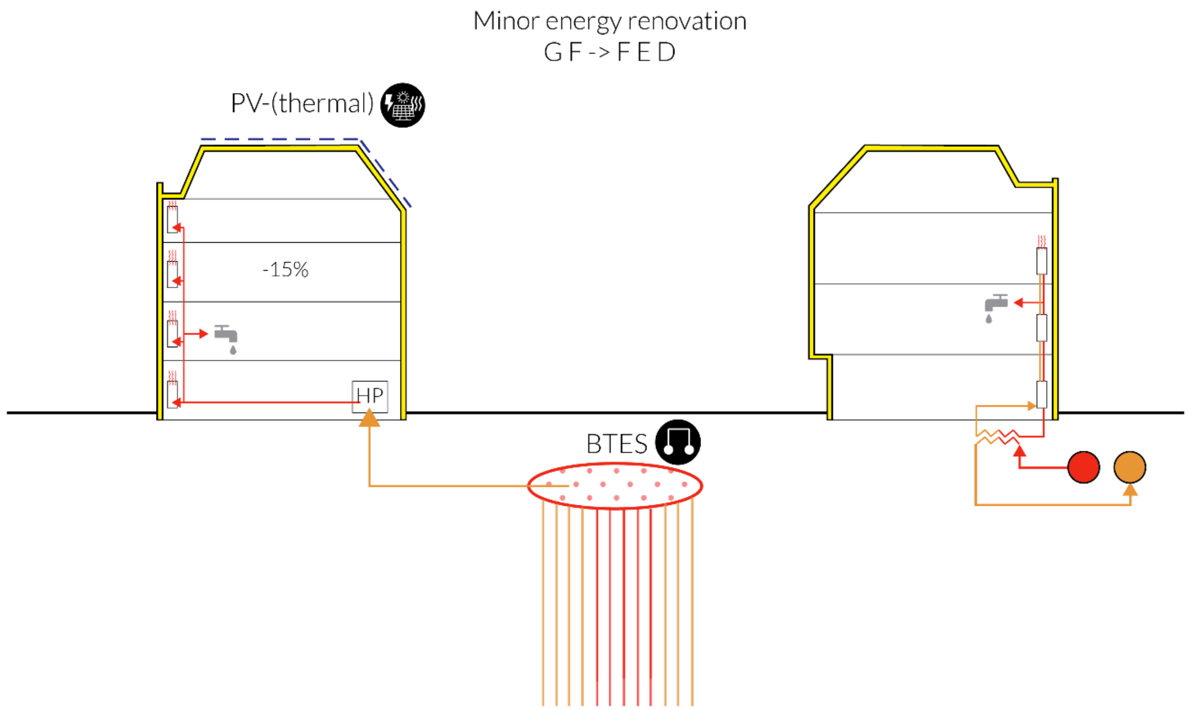

Figure 9: Illustration of the heat grid solution for the inner city of Amsterdam

6. The Amsterdam Roadmap

All strategies and measures combined were translated into schedules that show a timeframe within which these measures should be effectuated. Figure 10 gives two examples of these, for electricity (left) and for HT heat (right). MT heat and LT heat are missing, but equally important since these need to be tackled simultaneously.

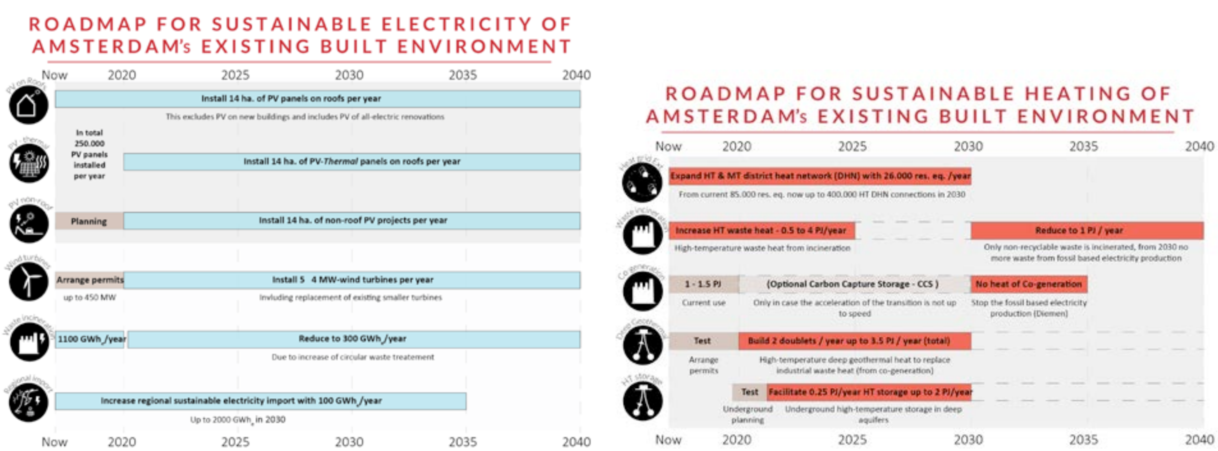

Figure 10: Roadmap schemes for electricity (left) and high-temperature heat (right)

These Roadmap schemes do not entirely speak for themselves. Therefore, we translated them to practical and harsh consequences given Amsterdam wants to be carbon neutral, energy neutral and rid of natural gas by the year 2040.

First, all newly constructed buildings need to be gasless, all-electric and at least energy neutral. Second, starting 2018, until 2040, 7,000 renovation projects need to be up and running simultaneously, offering labour to an estimated number of 14,000 construction workers and 2,000 installers permanently. Third, 26,000 new connections need to be connected to a new heat grid, annually, until 2030. This comes down to the roll-out of 78 km of heat pipe per annum. Fourth, until 2030, 20 geothermal doublets need to be drilled and installed, up to a capacity of 3.5 PJ. Fifth, by 2040, 100 wind turbines of 4 MW need to be placed within the municipal boundaries. Sixth, 28 ha of PV panels need to be laid on roofs and other surfaces, annually until 2040. This equals around 650 panels per working day. Hence, for 22 years, around 100 installers can be continuously on the job.

With these measures mentioned, by 2040, Amsterdam will have become energy neutral and fossil for its heat and cold provision and 60% self-reliant on renewable power. The remainder, 2200 GWh needs to be imported sustainable power from outside the city. For indication: this equals a number of 146 7.5-MW marine turbines on the North Sea, or 14.7 km^2 of PV elsewhere in the Netherlands.

7. Conclusion and discussion

The City-zen Amsterdam Roadmap demonstrates that urban energy transition is a demanding process, of which the establishment of a roadmap is just a first step.

The study revealed that a city as Amsterdam can become energy neutral in its heat demand, but not in the production of electricity from renewables. Even so, an enormous effort is required in order to transform, renovate and adapt parts of the city. Many of the energy measures required earn themselves back and start paying off within 10 years. Hence these are a business case for companies and individuals. Nonetheless, there will be interventions that require extra investments facilitated by commercial companies, banks, insurance companies, investment funds, governments and citizens themselves. Eventually all will be felt in the country's economic system, but the advantage is a healthy, liveable, safe world that future generations want to inherit, use and maintain (Kristinsson 2012). Therefore, it is evident that urban energy transition means an operation that will only be accepted if people understand the need and see the benefits.

In that sense, the technical-spatial content of the Roadmap was presented to stakeholders of the Dutch capital city, such as politicians, energy companies, commercial enterprises and not least citizens themselves. Although informed by scientific work, the Roadmap appealed to many, demonstrated by the extensive media coverage. The people want it.

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