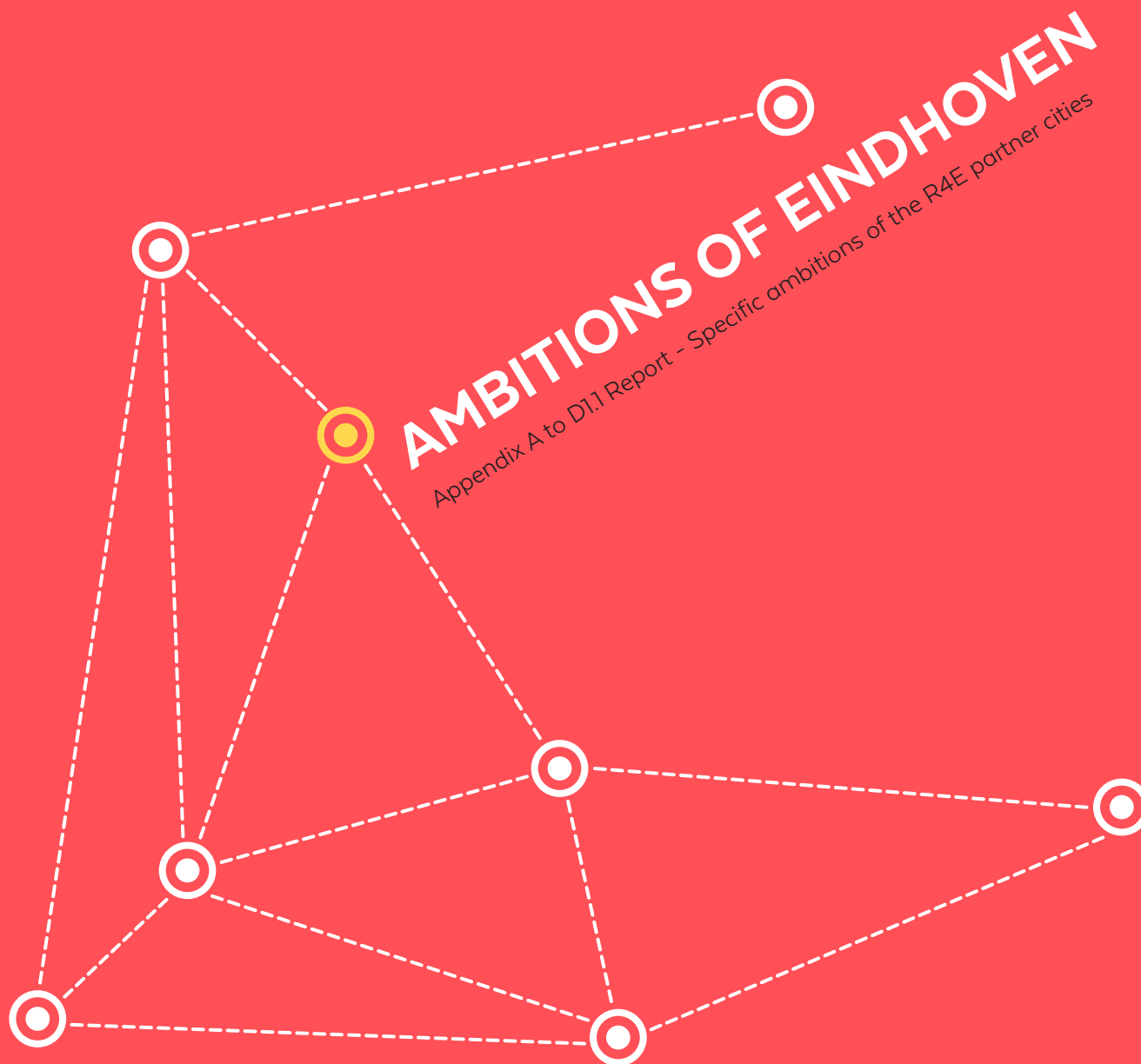




This project received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 649397



15 December 2015

Jan-Willem HOMMES & Luuk POSTMES, Gemeente Eindhoven
Elke DEN OUDEN & Rianne VALKENBURG, TU/e LightHouse

R4E

ROADMAPS
FOR
ENERGY®

This appendix is part of the D1.1 Report - Specific ambitions of the R4E partner cities and contains all results of the ambition setting activities held in the city of Eindhoven.

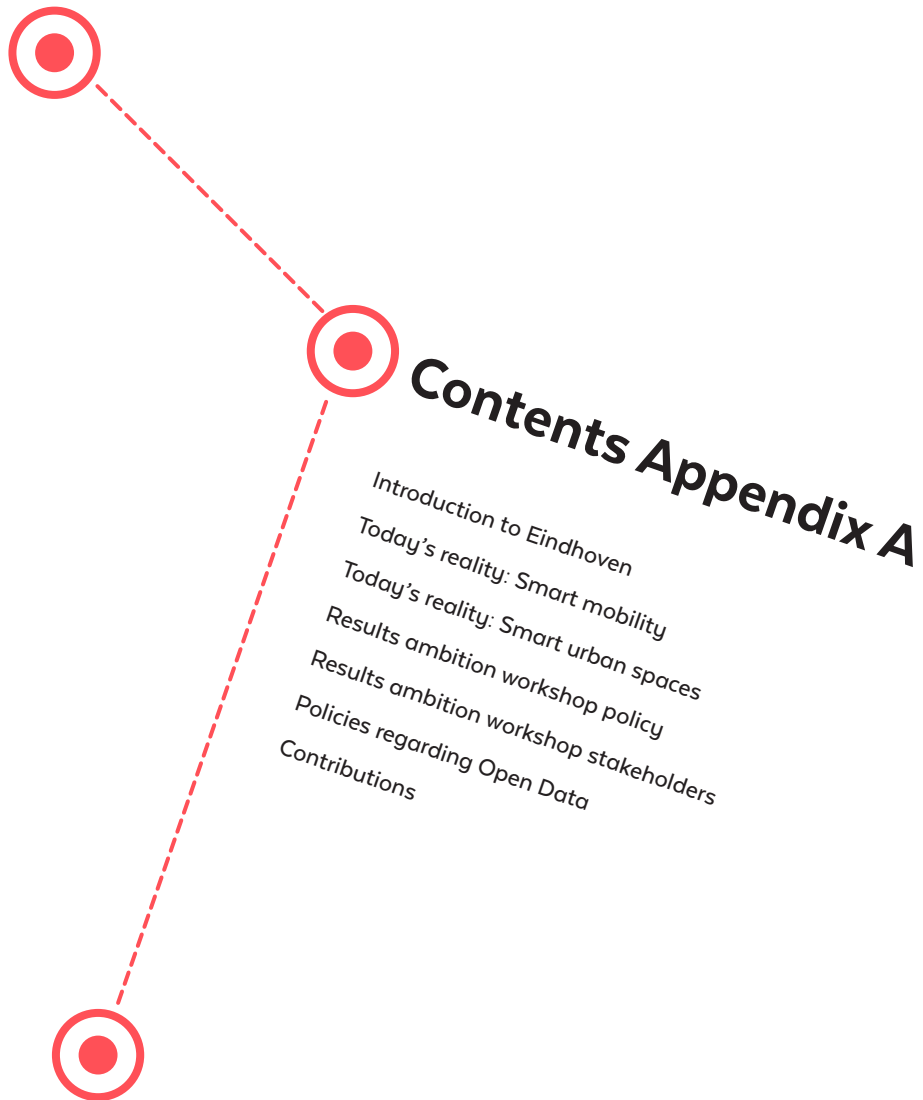


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Disclaimer: This report presents the views of the authors, and does not necessarily reflect the official European Commission's view on the subject.

Versions of this report:

23 April 2015	Draft for internal check in the city (limited distribution)
13 May 2015	Concept for sharing with R4E partners (limited distribution)
6 November 2015	Version for final check
15 December 2015	Final version for public distribution





Introduction to Eindhoven

Introduction to the city

Eindhoven is located in the province of North Brabant in the south of the Netherlands, originally at the confluence of the Dommel and Gender streams. The Gender was dammed short of the city centre in the 1950s, but the Dommel still runs through the city. The population was 221,402 in 2014, making it the fifth-largest city in the Netherlands and the largest in North Brabant.

Neighbouring towns and cities include Son en Breugel, Nuenen, Geldrop-Mierlo, Heeze-Leende, Waalre, Veldhoven, Eersel, Oirschot and Best. The agglomeration has a population of 337,487. The population of the metropolitan area is 419,045. The city region has a population of 749,841. Also, Eindhoven is part of Brabant Stad, a combined metropolitan area with a population of more than 2 million inhabitants.

Eindhoven has grown from a small town in 1232 to one of the biggest cities in the Netherlands. After the independence of the Netherlands in 1815, Eindhoven was a small village of some 1250 people in an economically backward and mostly agricultural area. Cheap land, cheap labour and the existence of pre-industrial home-sourcing made Eindhoven an attractive area for industry. During the 19th century Eindhoven grew into an industrial town with factories for textiles, cigars and matches. Most of these industries disappeared after World War II. In 1891 the brothers Gerard and Anton Philips founded the small light bulb factory that would grow into one of the world's largest electronic companies. Philips' presence was probably the largest single contributing factor to the major growth of Eindhoven in the 20th century. It attracted and spun off many high-tech companies, making Eindhoven into today's major 'Brainport' technology and industrial hub. In 2005, a full third of the total spending on research in the Netherlands was in or around Eindhoven. A quarter of the jobs in the region are in technology and ICT, with companies such as FEI Company, NXP Semiconductors, ASML, Simac, Newways, Philips and DAF.

Eindhoven has long been a centre of cooperation between research and industry. This tradition started with Philips, and has since expanded to large cooperative networks. Eindhoven University of Technology (TU/e) hosts an incubator for technology start-ups (the Twinning Centre), and the Philips Research (formerly the 'NatLab') has developed into the High Tech Campus Eindhoven.

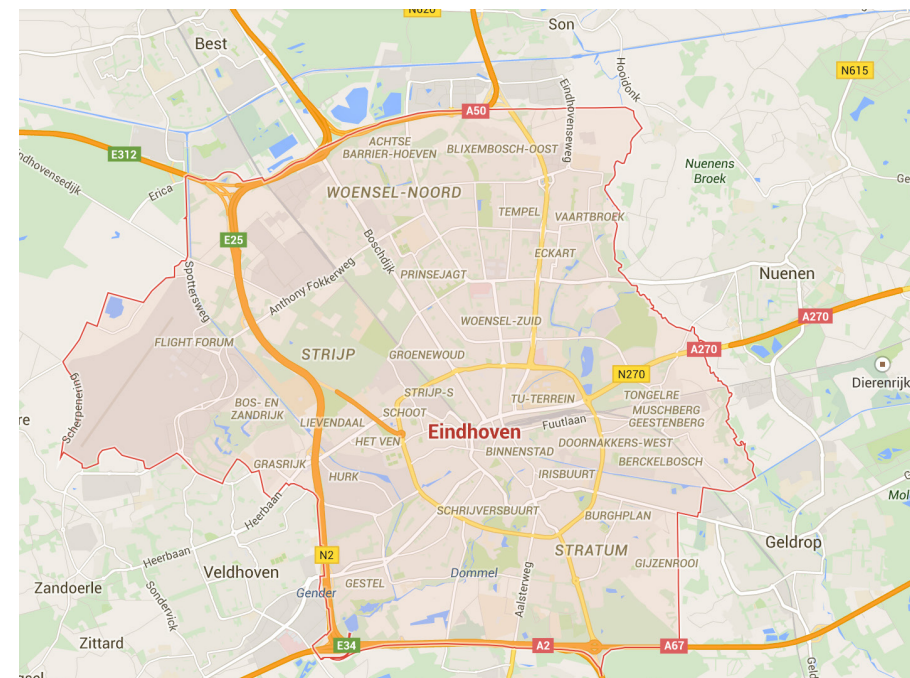
Due to its high-tech environment, Eindhoven is part of several initiatives to develop and promote the knowledge economy in the region. Some examples are:

- Brainport: a cooperative initiative by local government, industry and Eindhoven University of Technology to develop the local knowledge economy in the Eindhoven region.

- MRE (Metropolitan Region Eindhoven): a cooperative agreement among the municipalities in the Eindhoven metropolitan area.
- ELAt (Eindhoven-Louvain-Aachen triangle): an extensive cooperation agreement between the universities and surrounding regions of Eindhoven, Louvain (Belgium) and Aachen (Germany).
- Within the Eindhoven region (and particularly Helmond), several parties are working together in the automotive sector. In particular in the Automotive Campus – a testing facility on a European scale – for testing and European certification of vehicles. This cooperation involves the Eindhoven University of Technology, TNO Automotive and a number of automotive companies in and around Helmond and Eindhoven.

As a result of these efforts, the Intelligent Community Forum named the Eindhoven metropolitan region as Intelligent Community of the Year in 2011.

Source: Wikipedia

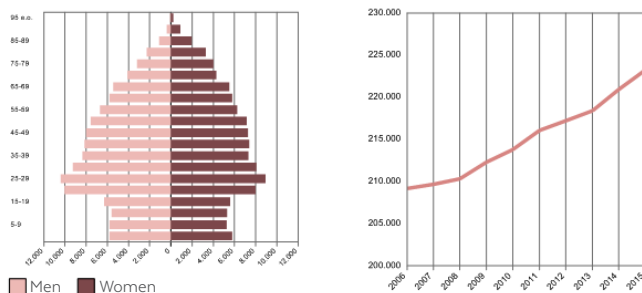


Map of Eindhoven

Source: Google

Demographical aspects (2015)

- Size in km2 88,87 km2
- Number of inhabitants 223.220
- Population trends: growing (see graph below)



Social aspects

- Level of education of citizens 18% low standard of education
- Share of population with energy poverty none ??
- Percentage of people that require special care/needs:
 - 21% suffers from prolonged illness
 - 13% has poor health conditions
 - 4% is hampered at home
 - 6% is severely hampered in spare time
- Percentage of people from foreign origin (see also table below):
 - 70% of the inhabitants of Eindhoven is Dutch
 - 17% is of non-western origin
 - 13% is of western origin

Immigrant populations	No in 1995	No in 2013
Turkish Dutch	6590	10305
Indonesian Dutch	7111	6236
Moroccan Dutch	3183	5743
Surinam Dutch	3227	3714
Chinese Dutch	958	3129

Economical aspects

- Income per head in comparison to the national average income Eindhoven €30.600,-- (€13.400,-- per inhabitant)
- Level of infrastructure maintenance Basic
- Maintenance costs (green areas, roads, infrastructure) Approximately 45 million (inclusive big repairs)

Environmental aspects

- Total m2 public green area within the urbanised area 1168 ha. and outside 366 ha
- Climate conditions: average temperature 10,3 degree C, rainfall 750 mm per year)
- Impact of climate change & measures taken to handle climate change. Most important, at this moment is heavier rainfall events
- Renewable energy production in the city: Biomass energy plant
- Air quality & noise data for the last 2 years online measuring of air quality: <http://www.eindhoven.nl/artikelen/Meetwaarden-luchtkwaliteit.htm>
- Water consumption per head 120 lit/day; 100% of underground water sources
- Supply and distribution of water: water company: Brabant Water
- Type of waste collection underground containers and small containers
- Biological sewage plant

Energy usage

- Energy performance of buildings in the city: average energy index: 1,82 (2014, source: klimaatmonitor databank)
- Residential Energy consumption (for houses): 5363 kWh/pp/yr (2012, source: monitoring report)

- Total energy consumption: 4722222 MWh/yr (2012, source monitoring report)
- Total CO2 emission per head: 6346 kg/pp/yr (2012, source monitoring report)
- Total energy consumption in the local industry: 2450000 MWh/yr (2012, source monitoring report)
- Municipal buildings energy consumption: 1,53 kW/m2 (2014, source: klimaatmonitor databank)
- Renewable energy production in the city: 122222 MWh/yr biomass (2012, source monitoring report).

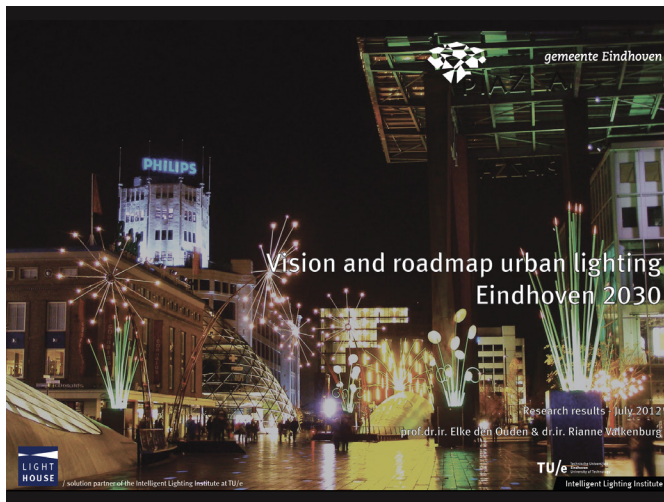
Decision making process

- Organisation of responsibilities: municipality, no 'outsourcing' to company
- Process of decision making regarding energy and sustainability: The college van burgemeester en wethouders (abbreviated as college van B&W or simply B&W) is the executive board of a municipality in the Netherlands. This local government body plays a central role in municipal politics in the Netherlands. It consists of the mayor (burgemeester) and the members of the municipal executive (wethouders).
- Extensive involvement of stakeholders
- Extensive participation of citizens

Recent projects

- Vision and roadmap urban lighting in Eindhoven 2030
- Eindhoven started the process of creating visions and roadmaps in 2012 when the city was wondering how it would handle the transition to LED technology for urban lighting. Where many cities were replacing traditional lighting systems with LED technology to save energy, the municipality of Eindhoven was seeing an opportunity to use the urban lighting grid also as an opportunity to realise the smart city ambition.

The city was not sure about the exact vision and route to achieve the vision and asked TU/e LightHouse to facilitate the creation of such a vision and roadmap for urban lighting in 2030 as a co-creation process.



The project resulted in a shared vision for the future of urban lighting in Eindhoven, and a roadmap that indicates possible technologies in the field of lighting and smart cities to achieve the desired future.

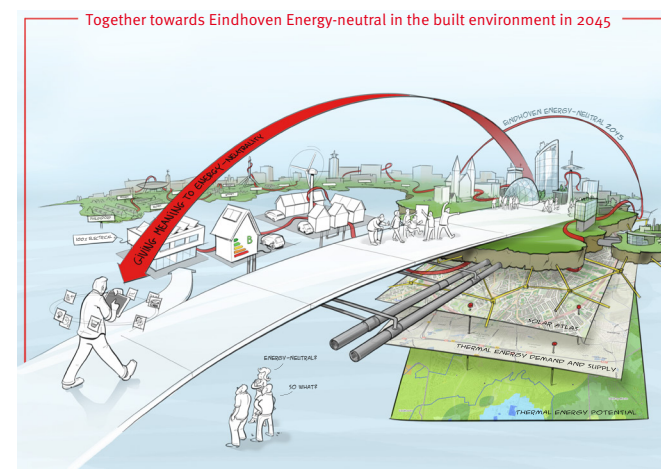
The vision and roadmap urban lighting Eindhoven 2030 has been established as the official policy for the municipality in November 2012. Currently the municipality is working on the implementing the vision and roadmap by executing a first tender for an innovation relation to develop, implement and continuously innovate the smart lighting grid. As the tendering process requires different approach than the more traditional 'product based' procurement processes, the municipality decided to have dialogue rounds with different consortia. More information on the tender can be found on the site of the municipality: <http://www.eindhoven.nl/smartlight>

In parallel to the tendering process the city is experimenting with living labs for smart urban lighting solutions, such as on Stratumseind. This living lab was visited during the kick-off

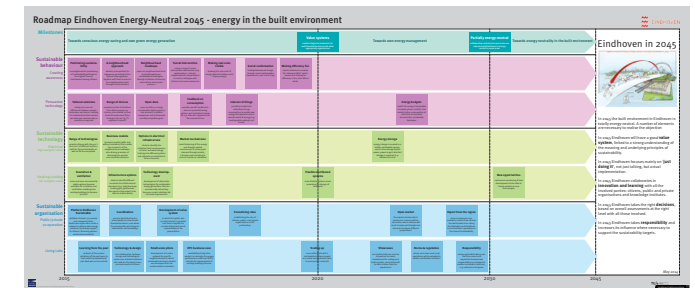
meeting of the R4E project. For more information: <https://nl-nl.facebook.com/LivingLabStratumseind>

- Vision and roadmap Eindhoven energy-neutral 2045

Eindhoven set itself the ambition to become energy-neutral by 2045. Ensuring that this goal is actually achieved in practice will require cooperation between government, business and industry, research institutes and the citizens of Eindhoven. A series of short-term activities with a long-term focus will have to be defined. To make the goal achievable, Eindhoven will need a shared vision and roadmap. Because of the interrelationships between the different Smart City related roadmaps, LightHouse has been asked to support the process of the creation of a vision and roadmap for Eindhoven Energy-neutral in 2045. In the project the focus is put on energy in the built environment. The project was done in co-creation with the housing association Woonbedrijf, various companies and knowledge institutes. Together a vision was made of the desired future scenario of energy in the built environment.



With the vision a roadmap was developed that indicated possibilities in technology and organisational set-up to achieve the desired future scenario.



Currently a more in-depth study is done in the required infrastructure in Eindhoven to become energy neutral by 2045.

The experience to co-create visions and roadmaps in collaboration with industry, knowledge institutes and citizens has encouraged Eindhoven to develop more roadmaps for smart city related themes.

Moreover, as Eindhoven has now experienced that collaboration with other cities also improves with having roadmaps. Therefore it embarked on the opportunity to develop a proposal for the EE7 call in the Horizon 2020 program to collaborate with other cities to develop visions and roadmaps for sustainable energy.

Selection of focus areas

The city has selected two focus areas for the R4E project:

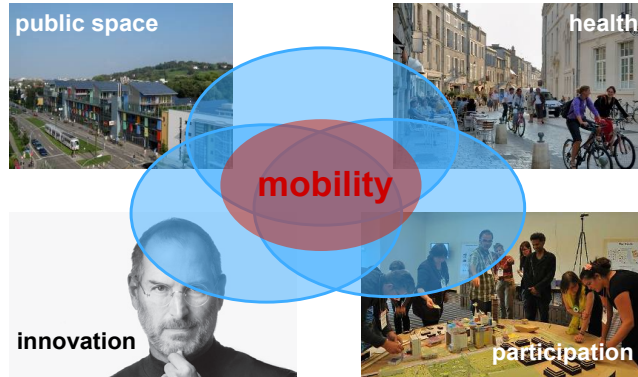
- Smart mobility
- Smart urban spaces

Today's reality: Smart mobility



Smart mobility in Eindhoven 2015

Current ambition: Eindhoven - City of the connected traveller

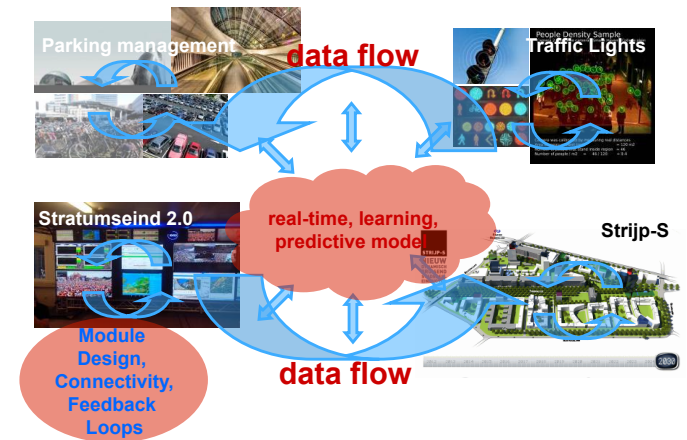


Traffic plan with more attention for pedestrians and cyclists.

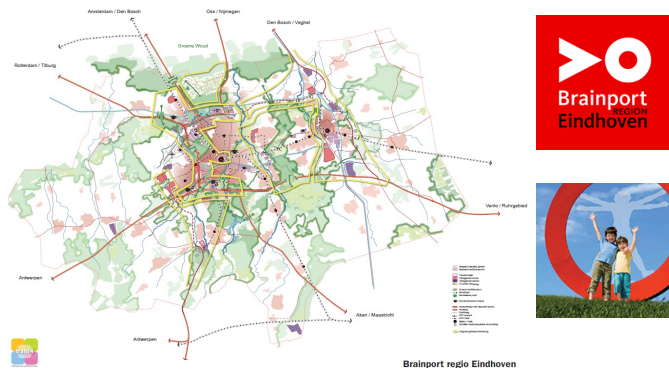
Cycle paths, e.g. Veldhoven.



Sensor city - status quo



Brainport: strategy 2040 available.

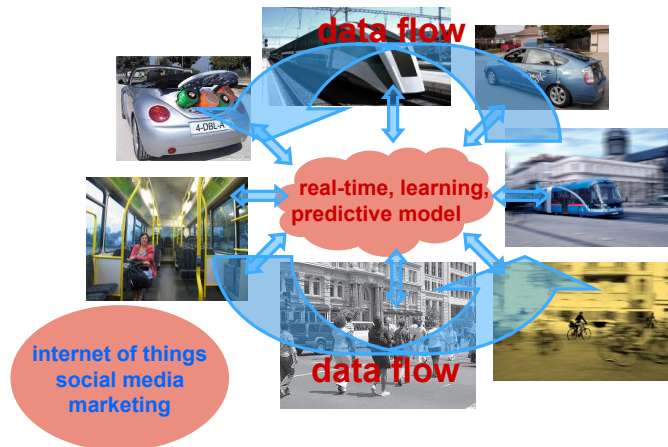


Modal split: current and ambition

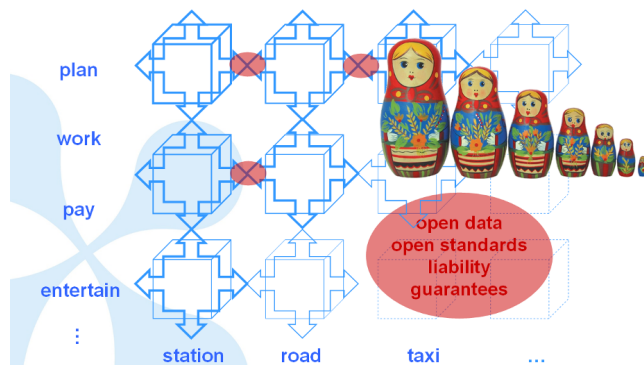
	% 2012	% 2025	total numbers '12 - '25
Pedestrians	13	14	+35%
Bicycles	40	44	+35%
Public Transport	5	7	+55%
Car	42	35	+ 5%
Totaal	100%	100%	

Current strategy: towards an open, modular platform

The use of different transport modes feels very similar.



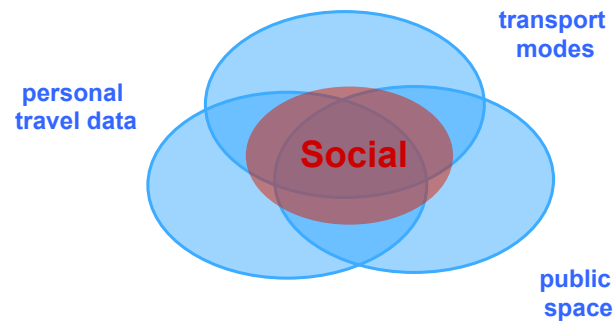
Modular: open = able to include future services



Innovation strategy: merging collective and private transport



Community: 'seamless mobility is sharing'



More information: www.eindhoven.nl/opweg

- Traffic plan which includes more space for pedestrians and cyclists



Wishes for the R4E project in 2050

Creating a more liveable, healthier and sustainable city:

- Public space is designed accordingly and also accessible for everyone. Affordability e.g. maintenance is part of the design
- Linking initiatives and identifying missing elements (e.g. Intensive use of public space)
- Waste water as source of energy and “natural” resources (circular economy)
- Eindhoven as garden/liveable city: the place to be!

- Current satisfaction level of citizens regarding urban spaces: 6,6 (on a scale from 1 to 10)



Results ambition workshop policy

2015

High Lights

The top three aspects in the city the municipality is most proud of:

- The cooperation of the region with all partners (e.g. municipality in Eindhoven and the waterboard (het waterschap de Dommel), DITCM (cooperation in the automotive industry), cities in the region, industry partners), which includes the definition of a joint assignment and responsibility. The cooperation is result-driven and results in hands-on implementations.
- The basic quality of the urban space is high. There is a balance in urban and rural space, 'green' enters the city, the Dommel meanders through the built environment, the quality of drinking water and surface water is high, StrijpS is an example where space is used for mobility solutions.
- Still many opportunities for transformation and development in the future. As opposed to other cities, in Eindhoven the riverside is not fully built and creates opportunities for (re) designing for healthy and pleasant environments for people to enjoy.

Priority in Policy

Which topics have the highest priority in the current policy:

- Climate change and its impact on living climate in the city. The aim is for energy neutral in 2045. Pro-active anticipation on CO2 reduction and creating a garden city. Priority is given to clean air and health policies.
- Integrated approach to public space, taking into account green, blue, red and grey, but always from the perspective of it's user. This approach is broader than the city itself and includes the region.
- Circular region and value creation. Including the ecology of the water, gaining raw materials and other products (medicines) from waste water, priority for sustainable solutions and materials.

2050

General Ambitions for the City

In 2050 there will no longer be contra-positions or compromises for human interest, economical interest or ecological interest: it will all be integrated into one value. This is also reflected and expresses in the awareness and behaviour of people and policy makers.

General aspirations

- Awareness of people
- Actual change of behaviour realised
- Quality of the living environment
- Integration of city and region no contradictions in economic, ecological and human interests
- Stimulate the planet through profit
- Looking for 'green deals'

Specific ambitions for smart mobility

1

In 2050 we value the traveller as premise of mobility solutions. S/he is facilitated in his/her mobility needs by seamless services and products that fit his or her personal needs at that moment.

Aspirations

- Appreciation for healthy and sustainable living
- Traveller centric
- Attention for pedestrian and cyclist
- Real time and reliable information
- Seamless accessibility
- Freedom of choice
- Social climate embraces sharing of solutions

2

In 2050 the Eindhoven region is “green”, both for the public space and green air in the city (‘garden city’), as well as ecologically. Sustainable and healthy choices are obvious, both for the municipality as for citizens.

Aspirations

- Sustainable city
- Healthy lifestyle and behaviour
- Healthy citizens choose walking as cycling as obvious choices
- Initiate behaviour change towards healthy lifestyle and choices
- CO2 and energy reduction
- Liveability and health

3

In 2050 the Eindhoven region is an economical vital region with plenty employability and economic activity. This is for a large part based on smart and sustainable mobility. The region is a living lab where innovative solutions are developed and tested in practice.

Aspirations

- Economic viable region
- Employability
- Innovation, technology, design
- Living labs for innovation
- Regional cooperation in the quadruple helix



Specific ambitions for smart urban spaces

1

In 2050 people value a good, healthy and sustainable living together with water and green spaces. People are aware and appreciate the interplay of nature and city. An interplay that compels healthy lifestyle and behaviour.

Aspirations

- Appreciation for nature in living environment
- Garden city
- Liveability and health

2

In 2050 all partners in the value chain value the entire ecosystem. All (infrastructural) elements of the urban environment and their interdependences are clear, being water in interplay with flora, pavement and built environment.

Aspirations

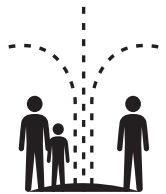
- Integral approach of public space

3

In 2050 the municipality of Eindhoven and the waterboard (het waterschap De Dommel) value sustainability and therefore a circular water region in Eindhoven for water, drinking water consumption, waste water and the mining of raw materials and energy from waste water.

Aspirations

- Circular region
- Closed water system for Eindhoven
- Mining raw materials



Results ambition workshop stakeholders



High Lights

The top three aspects in the city the external stakeholders and strategic partners are most proud of:

- Eindhoven Traffic Plan as integrated approach for mobility in the city and with specific attention for pedestrians and cyclists.
- Eindhoven region as a hot spot for smart mobility, with an automotive campus, university strategic area and plenty of innovative companies working on mobility of the future.

1
In 2050 individual choices for the type of mobility are facilitated by (f)actual information and seamless mobility products and services that fit personal needs at that moment.

Aspirations

Personal, well-advised & well-informed choices

- Context driven choices (e.g. time pressure, diversity of choice)
- Human centred: the way in which s/he would like: by foot, bike, bus, car, etcetera.
- Offerings according to needs (possession of mobility products is of less importance than access).
- Supply of transformation means efficiently tuned to demand.
- Destinations accessible by all means of transportation.
- Easy transfer between means.
- Centre ring road as a pleasant boulevard, where pedestrians and cyclists are acknowledged, public transport is good and parking slots are accessible.
- Enable interwoven displacements for living-working, living-shopping, social and business traffic.
- Seamless connections of means of transportation in mobility chain to offer flexibility and choice to people.
- Personal choices based upon occasion, weather, companionship, or activities on the road.
- Accurate and actual information on availability (time, place and costs), facilities (e.g. WiFi) and transfers to enable seamless combinations of transport modes and enable selection before and during the trip.
- Alternative choices with special added value without having to give in on freedom of choice (both public and personal transport modalities)
- Facilitating people not vehicles
- Seamless mobility is information driven (plan, book pay for multi-modal options), flexible (prepared for the unpredictable, modular expansion, using crowd control infrastructure), visibility as an

experience (with travel chain resilience), simplicity (easy to use, easy access and participation) community building (public space, transport modes, personal travel data)

- Innovation: balancing private and collective transport (sharing, demand responsive and self-organising)
- Demand driven: transport modes and services are building blocks of an individual journey
- Modular: no passenger is left behind (open data, open standards, liability, guarantees)
- Reduce travel time regardless of travel mode and focus on higher quality of travel time
- Focus on the needs of the individual traveller to provide him a door-to-door journey - 'from any A to any B' - linked seamlessly from the 'first kilometre/mile' to the 'last kilometre/mile' using the most convenient and appropriate combination of transport modes, including public transport, walking, cycling, taxi service and car usage
- The quality of the journey matters as much as its duration
- The focus becomes the overall door-to-door journey, not just the individual elements (journeys become coordinated, integrated and easy to use,
- With points of friction between different stages removed or reduced)
- The traveller only sees the 'tip of the iceberg' (while the delivery of transport services involves considerable underlying complexity for providers, it is simple for travellers to use)
- Journeys are more productive and enjoyable
- Support the strong aspects of transport modalities and co-modality instead of forcing people to use less attractive modalities (modal shift)
- Reduce restrictions
- Traveller centric thinking
- Facilitate the individual to optimal choices
- Stimulate behaviour change of traveller

Today's challenges

- Nowadays traffic systems and mobility modalities do not adjoin one another: the mean is the central concept instead of the traveller.

2

In 2050 sharing of transport solutions is an obvious choice, driven by a socially responsible and open mentality.

Aspirations

Social cohesion

- Maximum use of knowledge and experience of the users of the city. Involve residents, businesses, employees and visitors in shaping mobility in the future city.
- Attractive public spaces to meet and relax.
- Use of shared, clean facilities in transport: road car, auto-date, urban distribution, bikes.
- Public areas with a vibrant social-cultural atmosphere focused on personal encounters.
- The pedestrian is central and there is an urban dynamic of come and go in a public area with a high quality.
- Open, social city where everyone is welcome, with much diversity and mixed residential and cultures where each district has its own identity.
- Smart and social mobility: share management to increase loading factor of vehicles.
- Communal mobility services: bringing down mobility costs.
- Community building: contributing to community enhancement and social networks.
- A social city with good conditions for the sharing of transport modalities.
- Easily accessible and open to broad participation
- Contributions to community formation and strengthening of social networks.
- The number of citizens connected with a multi-modal transport library.
- Citizens “connected”

3

In 2050 people obviously chose walking and cycling as means of mobility due to the attractive and safe routes created through ‘place making’: actually making place for more sustainable transport and the improvement of urban quality with more green.

Aspirations

Green and healthy environment

- Improving the quality of public spaces
- Attractive living environment, free from nuisance and inconvenience of traffic
- Good quality of public spaces and green that enhances the spatial coherence: a beautiful face, cleaner air, a better feeling
- Green with significance for the quality of city life: living in districts bordering on a quiet, green ‘natural’ area and large parks
- Renovation of the environment encourages physical activity, making walking and cycling a natural choice
- Clean city, comfortable and nice to stay
- A city with plenty of space for flora (and water)
- Landscape and ecology are spared
- Structurally green is designed to improve the quality of public space and to compensate for harmful emissions from traffic
- Clean air (minimum emission of harmful substances) and sound from a comfortable level (quieter)
- Urban promenades and extensive network of walking routes
- Fast and comfortable cycling routes
- Healthy city that is inviting to be active
- Facilities on walking distance
- Human scale city
- Green entrée
- Safety: ambition to limit the traffic fatality to zero
- Shift to active travel modes to achieve positive health impact
- Better air quality
- Higher traffic safety
- Residential areas with less traffic and pollution nuisance
- A clean and healthy city with minimal emissions

2050

- A safe city with minimal traffic casualties
- Assuring quality of tranquillity and environment
- Improve air quality
- Acceptable quality of life and safety
- Reducing the number of road casualties
- Limiting the harmful effects of traffic
- Quality of life: air quality, sound quality, climate (CO2 emissions) and external security
- Road safety better than the national average

Today's challenges

- Nowadays air quality in the city is a serious problem.
- Nowadays lack of exercise is a serious health threat (obesity).

4

In 2050 mobility in the region is energy neutral and exclusively uses renewable sources and sustainable materials.

Aspirations

Sustainability

- Better for the people, better for the city
- Sustainable mobility giving priority to sustainable modes of move: more walking, cycling and use of public transport (change in the distribution of the use of modes = declining share car for shorter journeys to and from the city)
- Ensure sustainable transport for more and more people will be a logical choice
- Well accessible and sustainable for people and goods
- Principle: 'slow motion - fast forward'
- Principle: 'make room' for sustainability and urban quality with space for green
- Nice walkways and good facilities for pedestrians (pedestrian bridges, etc.)
- Shared facilities (eg. district cars and flex transport)
- Purchased or produced materials are extracted in a fair manner or formed
- Energy neutral in 2040: energy in traffic and required energy comes from renewable sources (even with the expected increase in traffic volume)
- Transition to renewable fuels (independent of fossil fuels)
- Intelligent traffic management to direct traffic to the appropriate routes and to use it as efficiently as possible
- Objectives for sustainable mobility have a positive impact on the four basic principles of The Natural Step
- Priority for people and sustainability (people counting traffic lights)
- Surface public transport is the obvious choice, compared to the private car or plane (for many journeys within cities and between cities, and especially compared with short-haul air within Europe)
- Sustainable accessibility city with change of mode (more walking, cycling and more use of public transport)
- Reducing the number of vehicles within the centre ring road
- Despite the growth of mobility still a liveable city

5

In 2050 new connections, routes and means of transportation facilitate the new dynamics in the city and the region, easily and sustainably connecting locations where people would like to be and where economic activity flourishes (the hotspots).

Aspirations

Attractive and versatile city

- Attractive public space, attracting different audiences to stay there longer, with a varied offer of shops and restaurants, but also with a recognisable identity and a place where it feels good
- Pleasant and healthy living, working, doing business, stay and relax
- 'Cosy' squares and streets
- Peace and space for the people themselves
- Diversity in arrangement of squares based on history and districts with an instantly recognizable identity for its residents
- Inspiring place that breathes creativity
- With all sorts of things to do
- Plenty of culture
- Striking city combining old and new
- Wide and varied range of shops and amenities
- Visibility of urban characteristics of major transformations from the economic developments that have occurred in the past (medieval market town, industrial town, 'company town' and garden city, city reconstruction, and Brainport city)
- Characteristic radial road structure plus the centre ring road with his service roads as historical beam of the city retained alongside new compounds and other routes to facilitate the new dynamics in the city
- City of design, technology and knowledge
- Connecting the 'places to be'
- Supporting the City Vision 2040: experimental, open, faster and better, cosmopolitan city, courage and leadership, and collaboration
- Dynamic environment to live and work
- An attractive living environment in the city centre
- Space for sustainable and balanced growth

Today's challenges

- Nowadays accessibility of some locations is problematic (e.g. congestion on A67, or no public transport facilities at all).

6

In 2050 smart choices for regional flow and accessibility are based upon real-time analysis and predictions of travel flow and transportation behaviour.

Aspirations

Accessibility

- Maintain the accessibility even with increasing growth of mobility due to spatial, economic and demographic trends
- Public transport that brings you within walking distance from key facilities
- Connecting the 'places to be' (e.g. campus) by new routes and sustainable means
- Good connections to many destinations from stations and airport
- Solve and prevent problems associated with mobility
- Multi-modal accessibility of economic locations
- Eliminate annoying barriers and unsafe situations, particularly for pedestrians and cyclists in the growing town (crossing the inner centre ring road)
- Alternatives to traffic through the heart of the city and district strange traffic in residential areas
- Removing bottlenecks on the main road and on the track and the transitions from main road to urban roads and transfers (inter national and regional urban public transport or other means of transport)
- Using historical radials and centre ring road and modern new radials to form the ideal (faster and better) traffic structure with its own spatial recognition
- Traffic management to accommodate peak times
- Robust alternatives to encounter extreme situations and calamities
- Meet normative arrival times for emergency services and thereby desired route network
- Good accessibility concerns not only passengers but also transport of goods - partly because of the growth in freight transport on the road (even at low economic growth), the regional accessibility pressure
- Parking management: better use of public space
- Durable accessible for both passenger and freight
- Acceptable travel times from door to door: traveller central
- Cooperation for an accessible region
- Travel times from surrounding communities to key economic areas is 2005 level (in the future)



7

In 2050 the region is an economic hotspot for smart and sustainable mobility and stimulates innovation and technological developments through living labs.

- Promoting road safety
- In the coming years improve the biggest bottlenecks 10%
- Focus on logistics / freight
- Multi-modal accessibility of urban areas

Aspirations

Economic vitality

- Attractive and competitive business climate for companies and organisations in the city and region
- Multi-modal accessibility of the economic top locations
- Good (inter-)national connections with other economic hotspots, both national as well as worldwide (by train, road, air and waterways)
- Supporting new forms of collaboration and sharing of knowledge and experience between knowledge intensive companies, research facilities and production facilities
- Facilitating the shift that is taking place in the new economic dynamics towards new locations with new buildings in green for the knowledge industry - enabling the development of campuses in the city as the new 'villages'
- EU top-region where innovation is visible and intelligent solutions are applied in practice
- Entrepreneurship: innovation is leading to added economic activity and jobs
- Creating a really attractive business climate for the Brainport region
- Mobility as prerequisite for economic growth
- A vital economy by keeping accessibility of the villages and business locations in the cities in the Brabant province
- Exploiting the opportunities that good mobility provides for the development of the city and region
- Strengthening the position in the automotive branch
- Infrastructure as opportunity for new entrepreneurship

Eindhoven as a living lab

- Collaboration within Brainport, with the knowledge institutes and companies to develop innovative ideas for smart and efficient mobility
- The municipality in the role of director to support initiatives and facilitate collaboration between partners to enable the desired developments and practical realisation in the public space
- The city as a living lab to test new products in practice and research effectiveness

- Employers in the region are collaborating with the city to make commuter traffic and business related travelling more sustainable
- Creating room for innovation by eliminating regulatory hindrances
- Making available data open to business parties to enable the development of new solutions within the smart and sustainable mobility strategy
- Making innovation visible (buildings, routes, urban structure, identity of the city)
- Pentahelix stakeholder involvement
- Visibility: contributing to image of innovative city, attractive for critical mass of users
- Stimulate innovation in the area of mobility by active support of pilots
- Regional collaboration to ensure execution and implementation of integral solutions
- Addressing challenges that extend the local level in regional collaboration
- Leading the way in the stimulation of technology development and pilots
- Contribute to the Eindhoven spirit as innovative hotspot

Today's challenges

- Nowadays legal frameworks hinder innovative pilots for smart mobility solutions.
- Nowadays there is a lack of joint focus of all stakeholders in the region.

Results ambition workshop stakeholders



High Lights

The top three aspects in the city the external stakeholders and strategic partners are most proud of:

- The integration of green and water in the city urban space with The Dommel as aorta.
- Well functioning storm water system.
- Hands-on mentality where solutions are realised in cooperation.

1

In 2050 citizens are water aware and appreciate the water and green spaces in their habitat (the garden city).

Aspirations

The citizens:

- A water aware water user
- Water awareness reward
- Water aware society, appreciating nature and green spaces
- Water aware citizen understanding the functionality of the water system
- Large-scale sewer and centralised water treatment are no longer needed
- (Re)learning to live again with nature
- Awareness that nature happens: not everything is solvable, nor the responsibility of the municipality
- Biodiversity
- Telling stories: explaining this is why and what it is

Today's challenges

Nowadays citizens are unburdened and lack awareness to realise our ambition.

2

In 2050 our society properly handles and anticipates changes (e.g. climate change).

Aspirations

- Climate change and its consequences
- Anticipate climate change
- Appreciation and respect for nature in direct living environment
- Rediscovery of the garden city
- Liveability and healthy living
- Energy neutral ambitions

Today's challenges

Nowadays our efforts have decreased extreme water nuisance.

3

In 2050 citizens or companies experience no mortality, damage or nuisance by water.

Aspirations

Safety and 'dry feet':

- No water damage in the city/ houses
- Efficient water system
- Water safety is extreme high and the chance for damage is limited
- Robust system
- A planning for urban space that is water robust (storage, retention, drainage)
- Redefinition of "nuisance" and awareness that things will happen
- Taking responsibility as citizens
- Citizen awareness of own role and responsibility

Today's challenges

Nowadays our efforts have decreased extreme water nuisance.

4

In 2050 water consumption is limited to the first necessity of life (other needs are used from different wells).

Aspirations

Drinking water:

- Drinking water reduction down to 30 litres a day
- Still availability of high quality drinking water
- Drinking water out of waste water
- Drinking water out of surface water
- Integrated water system
- Every household processes its own water
- Plenty and usable supply from nature (tap drinking water)
- Still ground water as drinking water (no bottled water)
- Flush toilets with rain water

Today's challenges

Nowadays the Eindhoven region has the best drinking water in the world, however the consumption is too high.

5

2050

In 2050 the high quality of the (swimming) water and green spaces attracts people to Eindhoven and to spend more time outside.

Aspirations

Experience / recreation:

- Urban area that breaths nature
- Swimming in de Dommel, Gender and Canal
- People enjoying water and flora in the city
- Beautiful and safe swimming water
- Swimming in the Eindhoven's canal
- Green building facade as acoustics and climate control
- Balancing nature and humans
- Water as a USP to attract people to the city
- Enjoying water and recreation in the city
- Knowledge workers in Brainport
- Healthier people through recreation and green spaces
- Less CO₂ and NO₂, link to smart mobility
- Social benefits due to social contracts

Today's challenges

Nowadays we still neglect opportunities despite of our right intentions.

6

In 2050 city planning is done in new, democratic public private partnerships and the public space is designed in a way that it supports all its ambitions.

Aspirations

Health:

- Healthy sanitation
- Healthy living environment
- No mortality
- Water directing the design of public space

Today's challenges

Nowadays we still miss opportunities despite of our right intentions.

7

In 2050 public space is planned with water and green spaces in a way that contributes to a healthy city (e.g. biodiversity and nature).

Aspirations

Physical space:

- Self-regulatory city areas
- No pollution of surface water with humane excreta
- Plenty of water and green in the city
- The water structure as a platform for nature in the urban environment
- Combination with tourism
- Buffering waste water on green roofs
- Clean surface water
- City farming, local circuit
- Nurturing craftsmanship and knowledge
- Water is clean enough for swimming
- Physical visibility of water in direct surroundings

Today's challenges

Nowadays the planning of the urban environment has improved a lot but our ambition is to gain even higher quality.

8

In 2050 the public sector is a 'value-ment' ('waardeschap'); this new governance ('tussenheid') is situated in the midst of society to maximise meaning for and with citizens.

Aspirations

Organisation:

- No taxes
- Co-creation with citizens and companies
- No more water taxes
- 'Tussenheid' instead of 'overheid'
- The waterboard (het waterschap De Dommel) no longer exists
- "Water" in one organisation: optimal cooperation
- The waterboard (het waterschap De Dommel) and the municipality work jointly in everything
- The waterboard (het waterschap De Dommel) becomes 'waardeschap': value creation by integrating water + ...
- Seek for new balance in democracy: new public private partnerships
- The user pays
- Sponsoring maintenance of city parks
- new democracy working together in public private partnerships

Today's challenges

Nowadays innovations are hindered and delayed by legal frameworks and financial flows (distinction concerns, payments and authority).

9

In 2050 all meaningful elements from waste water will be reused (energy and raw materials).

Aspirations

Raw materials and energy:

- No more waste water
- We mine everything valuable
- No more water in waste water
- Locally processing of waste water
- Circular society: mining of materials
- Water treatment producing energy and useful materials
- Maximum reuse of heat, energy, fertilizer, etcetera's
- Use of Big Data?

Today's challenges

Nowadays the municipality of Eindhoven and The waterboard (het waterschap De Dommel) are learning organisations that cooperate successfully. However the ambition should include risk taking to seize opportunities.

10

In 2050 the mining of raw materials and energy from waste water will be optimised.

Aspirations

Sustainability:

- Sustainable society
- Cradle to cradle
- Citizens own their own energy plant
- Public private energy co-operations
- Innovate on integrated needs: water & nature, water & health, water & waste
- Water as buffer for sustainable energy (wind / sun)
- Optimal scaling
- Rational decision on economy of scale: house / district / city
- Consequences for infrastructure and investments
- Circular system in the region of Eindhoven
- Less use of energy

Other aspirations

In 2050 everyone understands his role and takes responsibility in an integrated approach for operations and asset management.

Asset management:

- Citizens take care of their environment (maintenance or even investments)
- Better understanding and control of rainfall
- Regulation of ground water
- Water systems free of maintenance
- A control system for sewer and water treatment

In 2050 people value a strong connectedness between urban, rural and nature areas and, therefore, a healthy balance between nature, living and working.

Biodiversity / nature:

- Coherence city and ecology
- Connecting the city and the region
- Nature
- Programmatic approach:
- More nature in the city and
- More (economic) activity in rural areas

Policies regarding Open Data

The open data of the city of Eindhoven is available on: <https://data.eindhoven.nl/>

Eindhoven has defined the policies regarding use and distribution of open data in Terms of Service.

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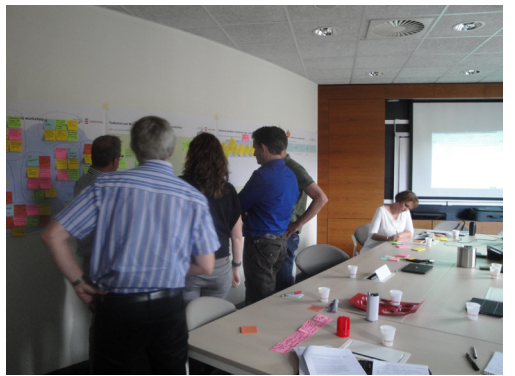


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Contributions

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