

CITY OF THE FUTURE 2050

Rotterdam Alexander

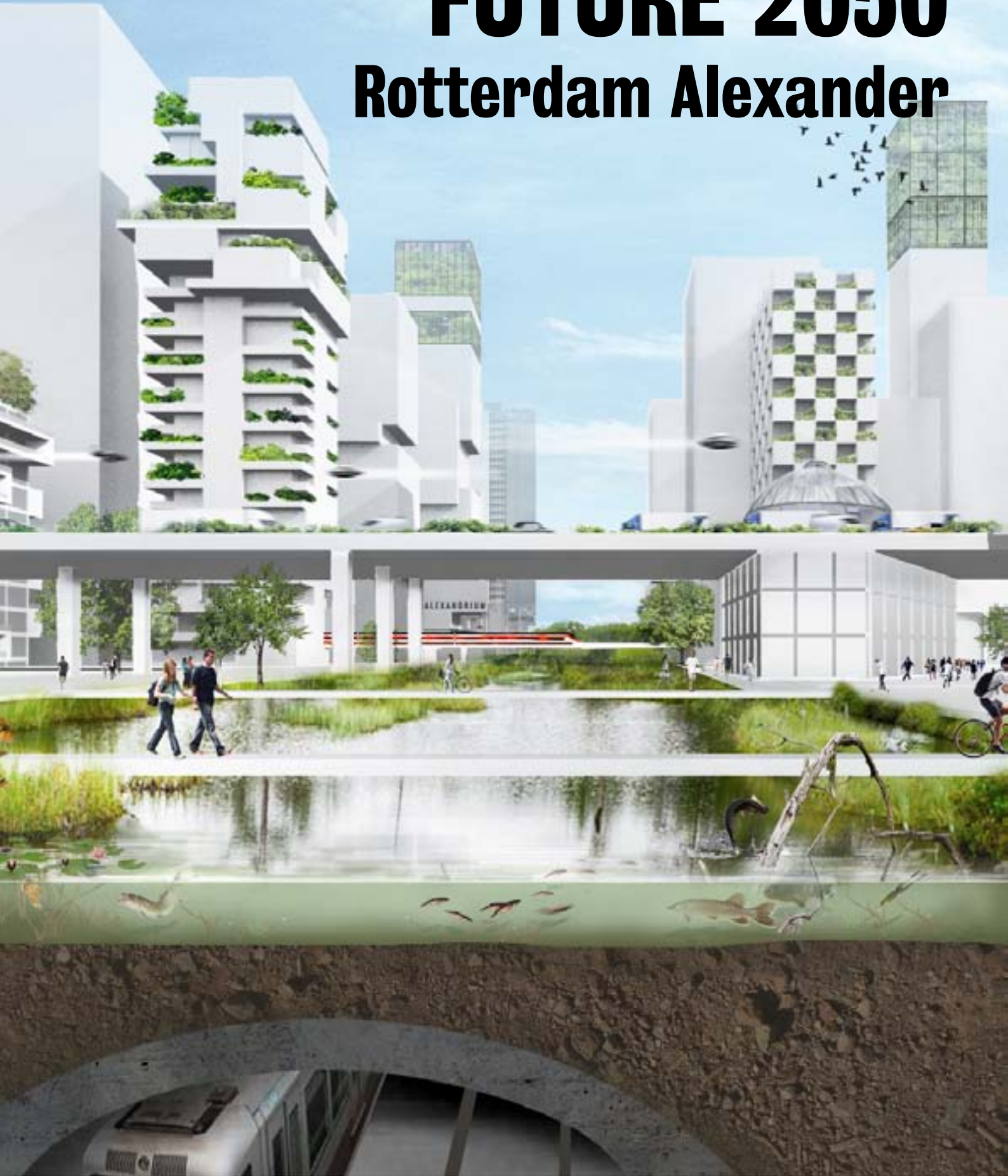




Fig. 1 City of the future

Design study 'City of the Future' City making in times of major transitions

This concise publication is about designing for 'The City of the Future'. This study about the city of 2050 is initiated by Dutch governments and knowledge institutions as to see how cities should react/develop/ what changes are needed in regard to major challenges: climate change, loss of biodiversity, natural resource depletion, and pollution. The question is how a new approach to urban planning may /can assist/enable the transition towards a sustainable, circular economy. The research did not only look into specific locations and challenges, but also sought to find generic solution approaches and design strategies that are applicable anywhere/everywhere in the world.

About this study

The 'City of the Future' design study was carried out in 2018. Ten teams explored new ways of city making by looking at five different test locations (of 1x1 kilometres) in Amsterdam, Rotterdam, Den Haag, Utrecht and Eindhoven.

The underlying question was how can we link building assignments to the energy transition, transport innovations, circular economy, and other system- and network innovations in times of intensive densification.

Can we work together to ensure a paradigm shift that can guarantee a sustainable future for the city? Can we look further than sector specific challenges or specific transitions? And how do these new systems and interfaces look? What do we need to get there and to what could this lead – what would it look like?

10 multidisciplinary teams worked on different visions for the five test locations. Besides architects and urban planners, landscape architects, mobility experts, experts in the area of the circular economy, the energy transition, future strategies and smart cities, artists, writers, etc. joined this big adventure/expedition/discovery. All participants worked together with stakeholders from the municipalities and areas/locations on a 'level playing field'. They developed five 'vensters op de stad' (city frames) and worked on more general ideas for the city of the future. The teams and ideas were fed by masterclasses, local workshops and plenary meetings where general debates on the city of the future took place.

Results

The results of the 'City of the Future' design study were presented 3 November 2018. The outcomes – scenario's, final sketches and roadmaps that show how we could get there – make the city of the future imaginable. The square kilometre where everything comes together illustrates how the city of the future can become concrete.

This study is a joint initiative of BNA Onderzoek, TU Delft, Vereniging Deltametropool, The Municipalities of Amsterdam, Rotterdam, The Hague, Utrecht, and Eindhoven, The Directorate-Generals for Mobility, Space, and Water and Rijkswaterstaat of the Ministry of infrastructure and Water Management and the Ministry of the Interior and Kingdom Relations. Scientific support from TU Delft, University of Antwerp, AMS Institute, and PBL Netherlands Environmental Assessment Agency.

**WHAT ARE THE BIGGEST TRANSITION
CHALLENGES IN 2018?**

**HOW DOES THE CITY OF THE FUTURE
LOOK IN THE 21ST CENTURY?**

Transitions and social challenges

Designing the City of the Future means thinking about the requirements: what goals to pursuit and with what conditions do we need to take in account? We tackle the major threats within the design of the City of 2050: climate change, resource depletion, loss of biodiversity and pollution.

Twenty-first-century threats

- Climate change
- Natural resource depletion
- Loss of biodiversity
- Pollution

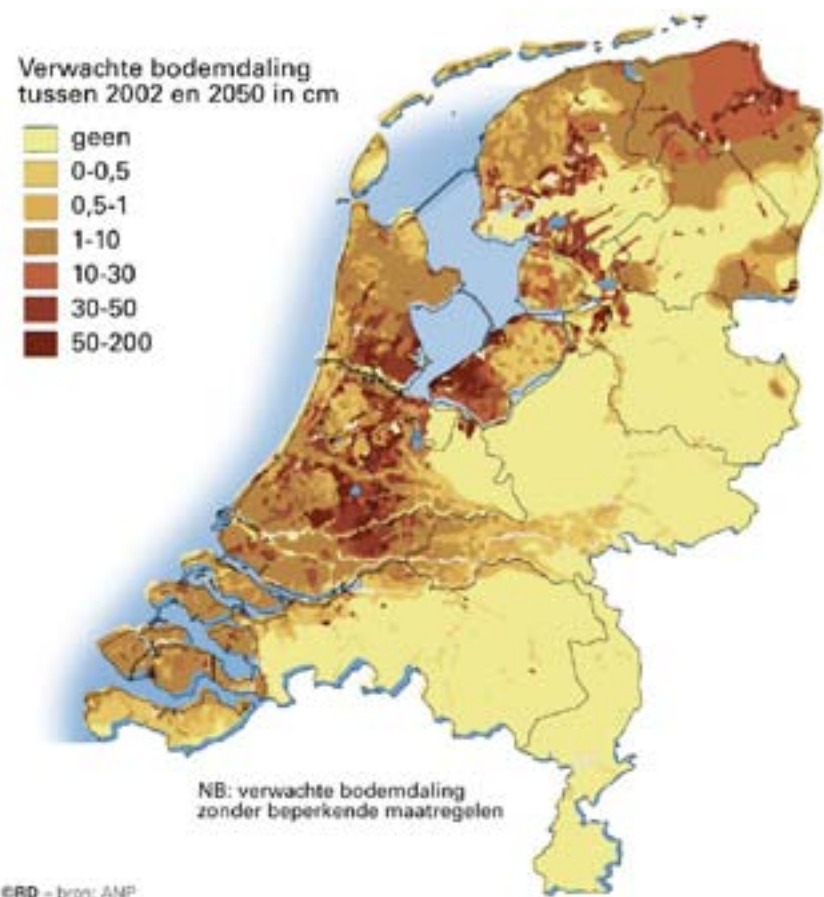
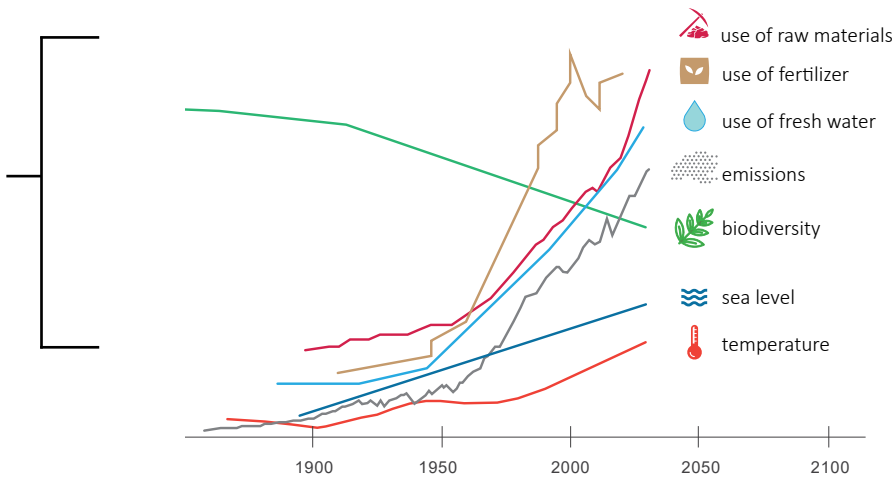


Fig. 2 There are also other threats. Peat oxidation causes subsidence, CO2 and methane emissions

Climate change

While climate changes in the past occurred as part of earth's natural processes, the current climate changes are no doubt the effect of human activity. Climate change causes direct and indirect issues to arise such as extreme weather circumstances (for example: heat waves and hurricanes in Northern Europe and deserts around the Mediterranean), rising sea levels, drought, floods, loss of agricultural land; threats for health, national security, and economies.



Fig. 3 Climate march

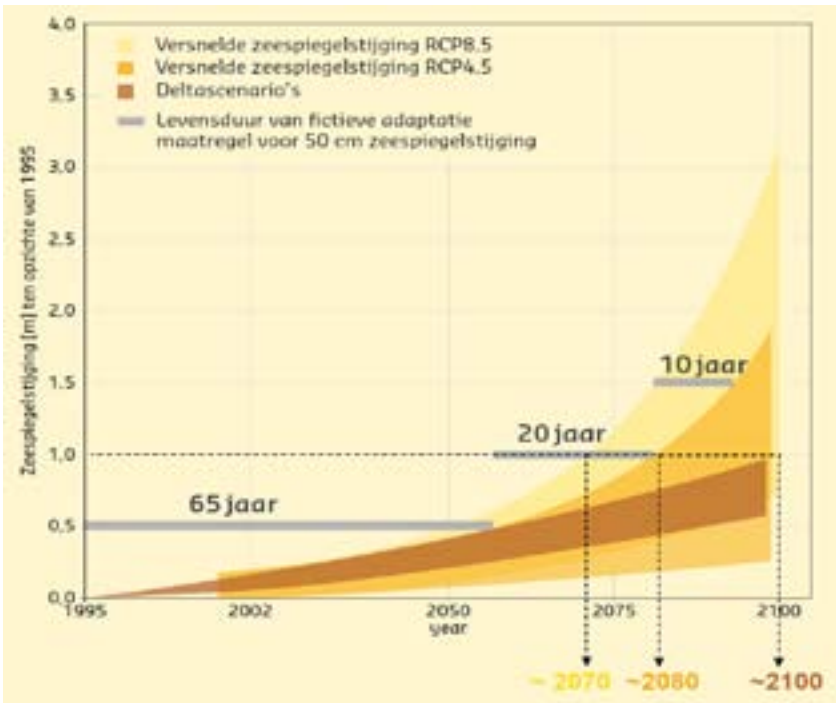


Fig. 4. Expected rises in sea level until 2100

Resource depletion

We are dependent on many natural resources when it comes to our future, maintaining and developing our current wealth, and the production of goods. There are three different natural resources:

- Inexhaustible resources such as solar, wind and geothermal power
- Renewable resources such as trees, topsoil and fresh water
- Non-renewable resources, exhaustible resources, such as fossil fuels, metallic minerals (iron, aluminium, copper, and rare earth elements) and non-metallic minerals (salt and sand)

We are used to extract everything we need from nature. Nowadays we do this at an alarming high rate that exhausts the exhaustible resources and results in material shortages. Even the regeneration of renewable resources cannot keep up, which results in deforestation and soil erosion. To tackle these problems, we need to change our practice and create an ecological civilization. We need to improve the 'capacity' of the earth by implementing sustainable and resilient urban strategies and need to transform our linear economy into a circular economy



Fig. 5 Circular economy

Loss of biodiversity

A direct cause of the loss of biodiversity and the collapse of ecosystems is the destruction of the living environment. This forms a direct threat to our food security, our health, and the future of our living environment in general.

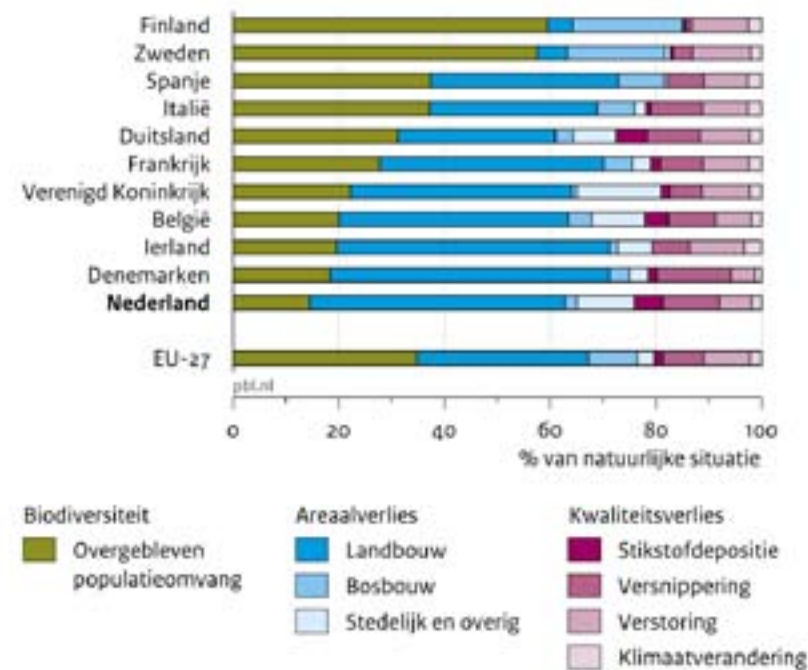


Fig. 6 Causes loss of biodiversity Europe



Fig. 7 Pollution

Pollution

Pollution is the umbrella concept for many different issues. For example:

- air pollution
- waste (plastic, waste in general)
- radiation (UV, electromagnetic)
- water pollution (drinking water, groundwater, oceans)
- light pollution, which (among others) causes wild animals to become disoriented
- noise pollution

All these forms of pollution are the cause of many problems: severe implications for health for all living organisms, threat to food safety, water shortages, loss of living environment and biodiversity, etc.

Related challenges

- How can we tackle the causes of threats in order to relieve the pressure on eco systems? Think of sustainability and reducing energy use, consumption, traffic, etc.
- How can we ensure that wealth is evenly distributed and boost the education level of the population?

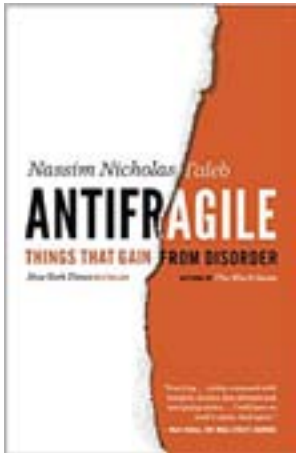
Poverty is one of the main causes of the destruction of tropical rain forest and the loss of biodiversity. Better education and distribution of wealth are the key requirements for the restoration of ecosystems.

Transitions and system changes

Despite these threats there is need for despair: there are major ongoing transitions which we can build upon (energy, climate, economy, mobility, digitization). And there are emerging transitions that we can boost (water issue, landscape and greening, reforestation and peat regeneration). Analyses teach us that there are also transitions which are barely on our radar and for which we need to set the agenda ourselves (use of time and space, biodiversity, ecological civilization). The combination of threats and transitions leads us to 4 necessary system changes:

- » local instead of global
- » circular instead of linear
- » mixed instead of separated
- » anti-fragile instead of robust*

*Nassim Nicholas Taleb: Things that gain from disorder



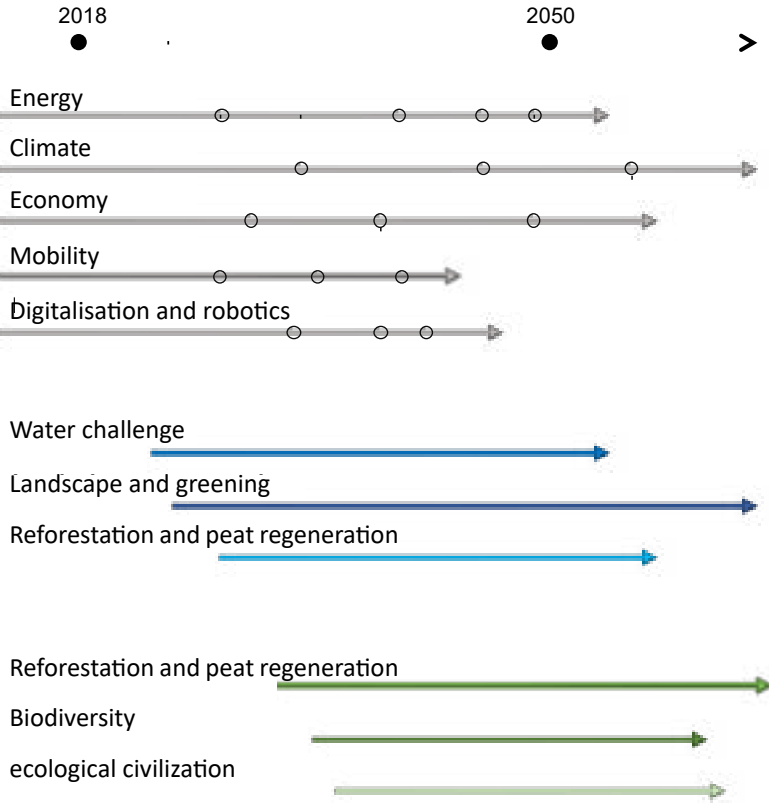
Transitions that will take place until 2050

Ongoing transitions

Influence policy started

Off the radar

Analysis and vision



Deforestation drivers

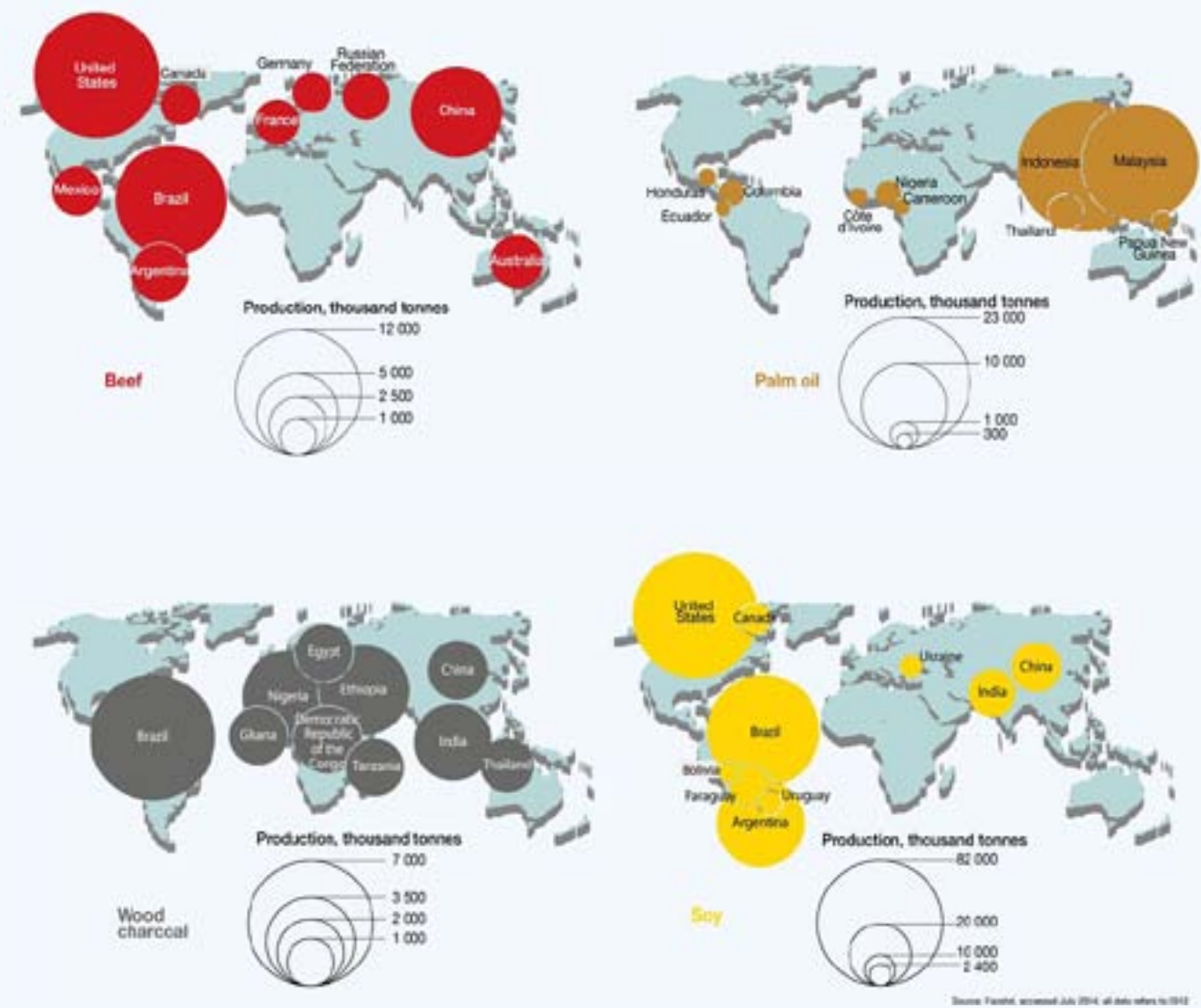


Fig. 8



Fig. 9



Fig. 10



Fig. 11



Fig. 12



Fig. 13

Mondiaal landgebruik door Nederlandse consumptie van landbouwproducten, 2010



Fig 14. Global land-use caused by the Dutch consumption of agricultural products

Mondiaal biodiversiteitsverlies door Nederlandse consumptie

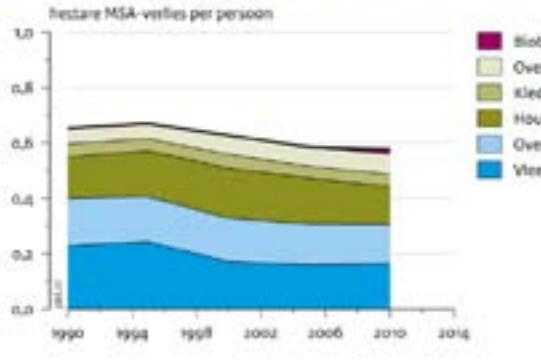


Fig.15 Global loss of biodiversity caused by Dutch consumption

Biodiversiteit

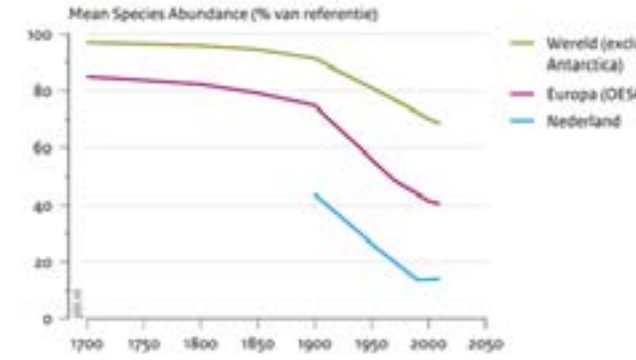


Fig. 16 Loss of biodiversity; worldwide, in Europe, in the Netherlands

Kaart van Braziliaanse staten naar beschikbaarheid (in procenten, 2007)



Fig. 21 Poverty is one of the main causes of the loss of habitats and species.

Income inequality increased in most, but not all OECD countries

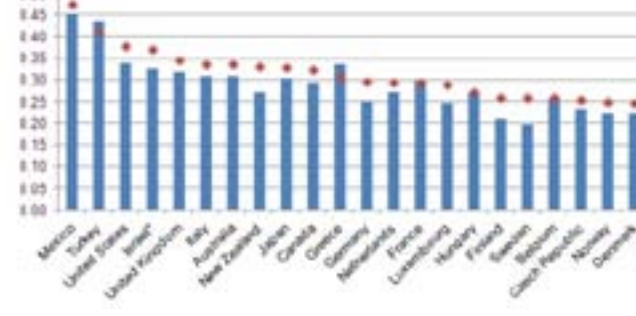


Fig. 22 Income inequality

Next spread:
Possible solutions: reforestation, nature inclusive cities and buildings, inner city food production.

Cities could help to make the restoration of ecosystems possible: think of the introduction of the circular economy, the relocation of food production to the cities, nature inclusive building, usage of agricultural land for large scale reforestation.

Gig. 24

A wide river flows through a lush green landscape. The river is surrounded by dense vegetation, including tall grasses and trees. In the background, a large dam or bridge structure is visible across the water. The scene is captured from a high vantage point, looking down at the river and the surrounding land.

African Forest Landscape Restoration Initiative

a pan-African, country-led effort to restore 100 million hectares of degraded and deforested landscapes by 2030.

Fig. 28

Fig. 26

Fig. 27

An aerial photograph showing a vast agricultural landscape. The central part of the image is dominated by a large field with a distinct grid-like pattern of rows, likely a vineyard or orchard. The rows are spaced out, and the ground between them appears lighter in color. This field is surrounded by dense, dark green vegetation, possibly trees or shrubs. In the background, a range of mountains is visible under a clear sky. The overall scene suggests a well-managed agricultural area in a semi-arid or mountainous region.



Zevenkamp

Prins Alexander

Schollevaar

RESEARCH AREA
1 KM² ROTTERDAM – ALEXANDER NODE



Fig. 32 Photo collage Rotterdam Alexander

Case: Rotterdam Alexander Node, introduction From functional hub to beating heart

Rotterdam Alexander has a lot of what a city needs: residents, facilities, pleasant living conditions, employment, and accessibility. However, the area does not function as a vibrant and cohesive district. There is no relation between the different functionalities and places and there is no attractive and full-fledged centre - a beating heart for the residents of Rotterdam East and Capelle. The challenge is to make Alexanderknoop an attractive city centre by intensive densification (more housing and facilities), by adding quality leisure spaces, and by improving its connection to the surrounding residential areas. We want to link this challenge to several key transitions: the new inclusive economy, sustainable mobility, and innovative (housing and) care concepts based on circularity on all levels: the building, neighbourhood life, station biotope, and metropolitan landscape.

Alexanderknoop as the heart of an inclusive city; a safe and complete living environment. The economic and social world seem to be too far apart and should be better connected. A better connection between the city centre (economic sphere) and the surrounding residential areas (social sphere) could be established through: a more attractive slow traffic network that is connected to train, metro and other mobility services; a wider range of facilities that fit a regional hub; extra housing; and an improved design of public space. Which facilities are needed exactly, how much space these facilities need and in what way the area could be strengthened by this, has to be researched the coming years. However, we are certain that Rotterdam Alexander must become the city centre of a city that is ready for future requirements and demands.



Fig. 33 Rotterdam, harbour and Alexander node



Fig. 34 Rotterdam Alexander: shopping and working alongside the motorway



Fig. 35.



Fig. 36.



Fig. 37.



Fig. 38.



Fig. 39.



Fig. 40.



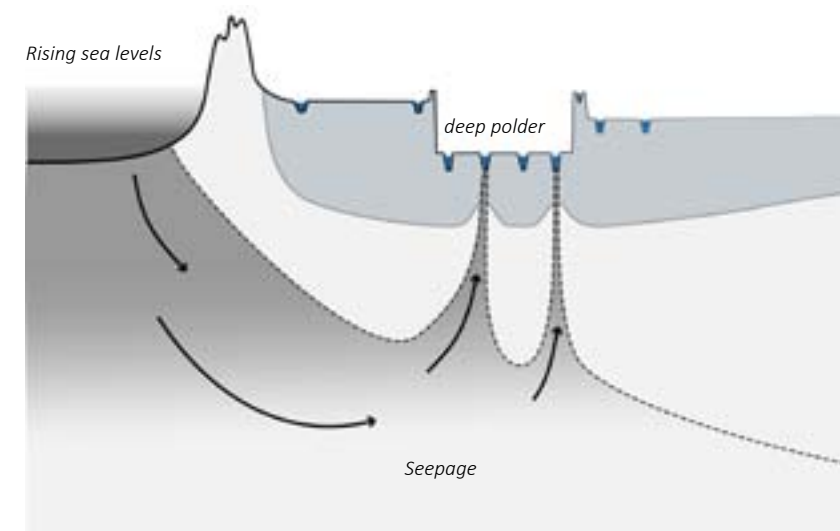
Fig. 41.



2019

SPEARHEADS

1. Inclusive city – thanks to perfect accessibility, the location is suitable for a broad range of functions: living, working, education, care, leisure, and so on. We strive for a new form of urbanism that combines multifunctional and mixed-use low buildings and middle- and high-rise buildings in high density increasing the possibilities for social interaction, leisure, and business meetings. The rich mixture of functions stimulates encounters and the exchange of knowledge. Our goal is to develop a new city centre that is inclusive and liveable and has significance for the adjacent mixed-use residential/work areas.
2. We enhance and strengthen the local economy by exploiting circular economy opportunities within retail, repairing and manufacturing. We do this on the level of the neighbourhood in the community centre as well as the station biotope because it is good for the planet and can enhance social cohesion. We reduce, reuse and recycle: the city is considered a source of raw materials and the station area as hub where the streams/flows come together and are processed.
3. In the province Zuid-Holland 75% of the surface area suffers of subsidence caused by settlement, contraction and oxidation of peat soils. It is an important challenge to make this area less vulnerable to the effects of climate change like more subsidence, salinization and desiccation. At the same time, the contribution of oxidizing peat soil to the climate problem (nitrous oxide, methane, CO₂) should be limited. Flexible water-level management, peat regeneration and reforestation can invert subsidence and peat oxidation and enable the combination of heave and uptake of greenhouse gas emissions.



Specific problems in Rotterdam Alexander caused by the deep polder: subsidence and salinization

ROTTERDAM ALEXANDER
CITY OF THE FUTURE

CIAM XXI
THE BREATHING CITY



Fig. 42 Light, air and space: the ideals of CIAM IV (1933 Athens)

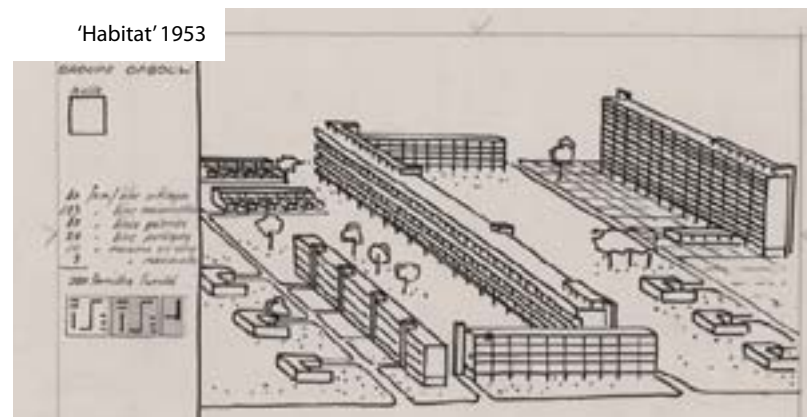


Fig. 43 Discussion about habitat: first design for plan Alexanderpolder, in the runup to CIAM X (1956 Dubrovnik)



Fig. 44 1953-1955 Rotterdam Alexander – presentation panel C.I.A.M.: City of the Future



Fig. 45 The ideals of CIAM X: treat neighbourhoods like villages.



Fig. 46 CIAM IV – separating functions, CIAM X – dwelling, street, neighbourhood, city

History of Rotterdam Alexander Alexander Node and CIAM

CIAM, a series of international conferences about modern architecture, triggered a true revolution. The classical city, woven into a web of aesthetic, symbolic, and local influences, makes room for the modern, functional city that is disengaged from its context.

During the fourth congress, held on a cruise ship in 1933, the principles of the functional city were researched. Later, Le Corbusier used these principles to write his Athens Charter. Ask a first-year student architecture and he or she would recite the four-way division without hiccups: living, working, recreation, transport. These four functions were differentiated and strictly separated.

The separation of functions is deeply ingrained in our thinking about the city and we are barely able to think outside this separation. When the members of CIAM team 10 openly rebelled after the war, we see that the course is altered: the functional classification is replaced by the scales house, street, neighbourhood and city. However, the impact was modest and in 1959 the CIAM disbanded.

Alexanderknoop and CIAM

Rotterdam-Alexanderpolder was built according to the renewed CIAM-principles and shows how little impact Team 10 had. The suburb-idea is clearly visible, but when you zoom out it becomes clear that there is an absolute separation of functions: highway, railway, and subway create strict barriers, the centre of the district is intended for leisure and shopping, work is concentrated between railway and highway, and the remainder is intended for housing.

At first sight the separation of functions seems extremely successful: it enables optimization of the separate parts and relentless efficiency. However, when you look at the whole there is no synergy: the whole is less than the sum of its parts. Take for example waste that is radically separated over here just to be dumped on the other side of the world or the depletion of natural resources, the loss of biodiversity, water shortage, global sea level rise. The footprint that arises from the separation of functions is simply too large. To solve this, we need to change the current system of separation fundamentally into a system of blending.



Fig. 47 Location Alexander node

CIAM XXI, the breathing city

Scales: fluid mix

The twenty-first century CIAM (Rotterdam, 2018) breathes new life into CIAM X's social division. The static, monofunctional four-way division is replaced by a fluid mix of organisms that partly overlap. They are, from small to large: household, neighbourhood life, station biotope and metropolitan landscape. Each scale fulfils its own functions but is fed by and indebted to a smaller scale – this is the 'proximity' principle.

Living, working and leisure are combined to prevent unnecessary transport. The pedestrian is the measure of things; shared space is combined with fast, high-frequency trains, self-driving vehicles and drones. Functions are mixed as much as possible at every scale:

1. Household

On the smallest level the house not only functions as a place to live, but also as a place to work, stay, study, play, generate power, grow foods, buffering water, repair things. The house becomes a small-scale community where rooms, facilities, gardens, equipment and services are shared. In this case "house" is not an appropriate term anymore, instead we use the term Household.

2. Neighbourhood Life

The adage of this scale is: give residents space to develop activities. Local initiatives and local currencies are encouraged. Artificial intelligence is an important tool that is foremost helpful: good regulation should ensure that residents feel in control of the digitization of their neighbourhood. A neighbourhood produces that which it is good at, or what the conditions allow for. Because the neighbourhoods are interconnected surpluses and deficits are exchanged in the immediate proximity: a contribution to the local and regional circular economy.

Neighbourhoods thus differ in character and density but have in common that they all have a lot of public space, water, and greenery. These neighbourhoods are traffic reduced, socially inclusive, and cover every need of their 5.000 to 15.000 inhabitants. Again, the term 'neighbourhood' does not fit anymore and is replaced by Neighbourhood Life.

3. Station Biotope

The word 'station' or 'public transport hub' do not reflect the mixing that takes place on this scale. Therefore, we call the place where sophisticated, sustainable public transport blends in with the city: Station Biotope. These are multimodal intersections and mobility hubs that develop into a rich and varied cityscape. A place where a district's central facilities, culture and recreation, nature and greenery, living and community, production and retail, energy and water are connected.

4. Metropolitan Landscape

Rotterdam Alexander is part of the metropolitan landscape, a healthy ecosystem with 5 to 15 million inhabitants. On this level there is also maximum integration so that on all scales a circular metabolism is obtained through: adaptive water balance, sustainable energy supply, efficient transport networks, maximum accessibility, intensive use of space, regional food production, and thriving biodiversity.

The square kilometre around Rotterdam Alexander station is connected to the rest of the country and the world in many ways. Precisely because it is not an isolated enclave, any interventions staged here have to be executed in conjunction with the larger scale: that of the metropolitan landscape. On the following pages, this concept is developed with respect to three themes: water, biodiversity and mobility.

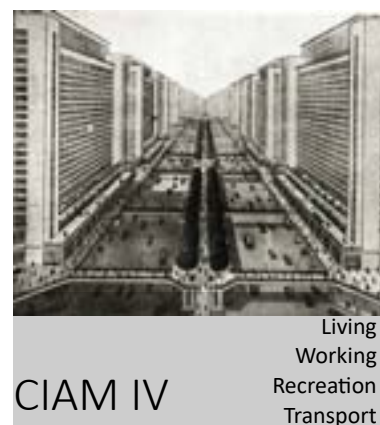


Fig. 48 CIAM IV (Athens, 1934) – the functional city



Fig. 49 CIAM X (Dubrovnik, 1956) – the social city

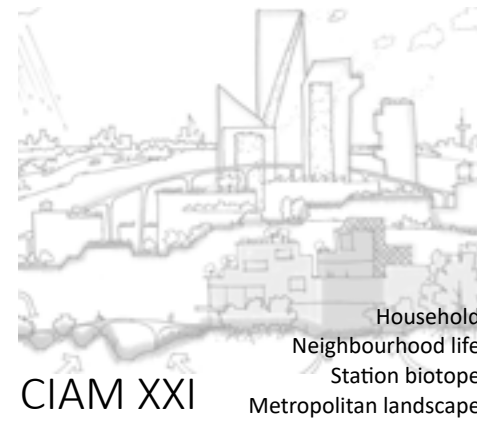


Fig. 50 CIAM XXI (Rotterdam, 2018) – the breathing city



Fig. 51 CIAM XXI (Rotterdam, 2018) – the breathing city

Systems

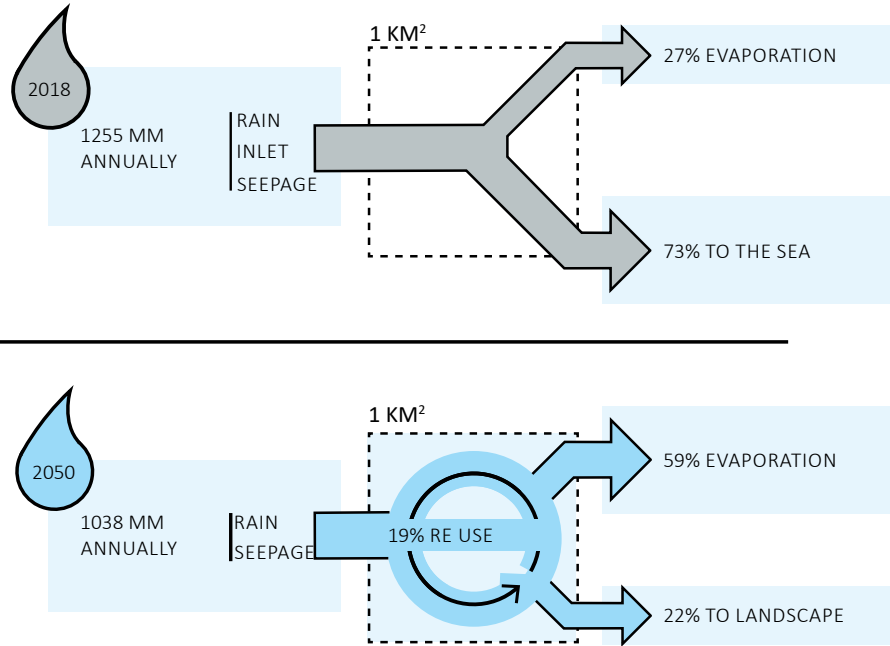
WATER

Rotterdam Alexander has a problem that many places on earth would love to have: too much freshwater. Almost three quarters of this freshwater is being pumped into the sea; this causes subsidence and that means pumping has to become increasingly intensive. CIAM XXI radically ends this practice of pumping freshwater to the sea and makes the city rainwater neutral. At the scale of the metropolitan landscape, this requires adaptive water management, greening, peat regeneration and reforestation.

- Rainwater is no longer drained away by the sewer system, but collected, reused and evaporated.
- The surplus of rainwater in the winter is saved for use in the summer.
- No more forced flooding of the polder system thanks to the natural desalination of seepage and no more sewer overflow.
- Pumping away excess water is superfluous.



Increase water level, create a circular eco system, indoor food production



Water management metropolitan landscape 2018 > 2050

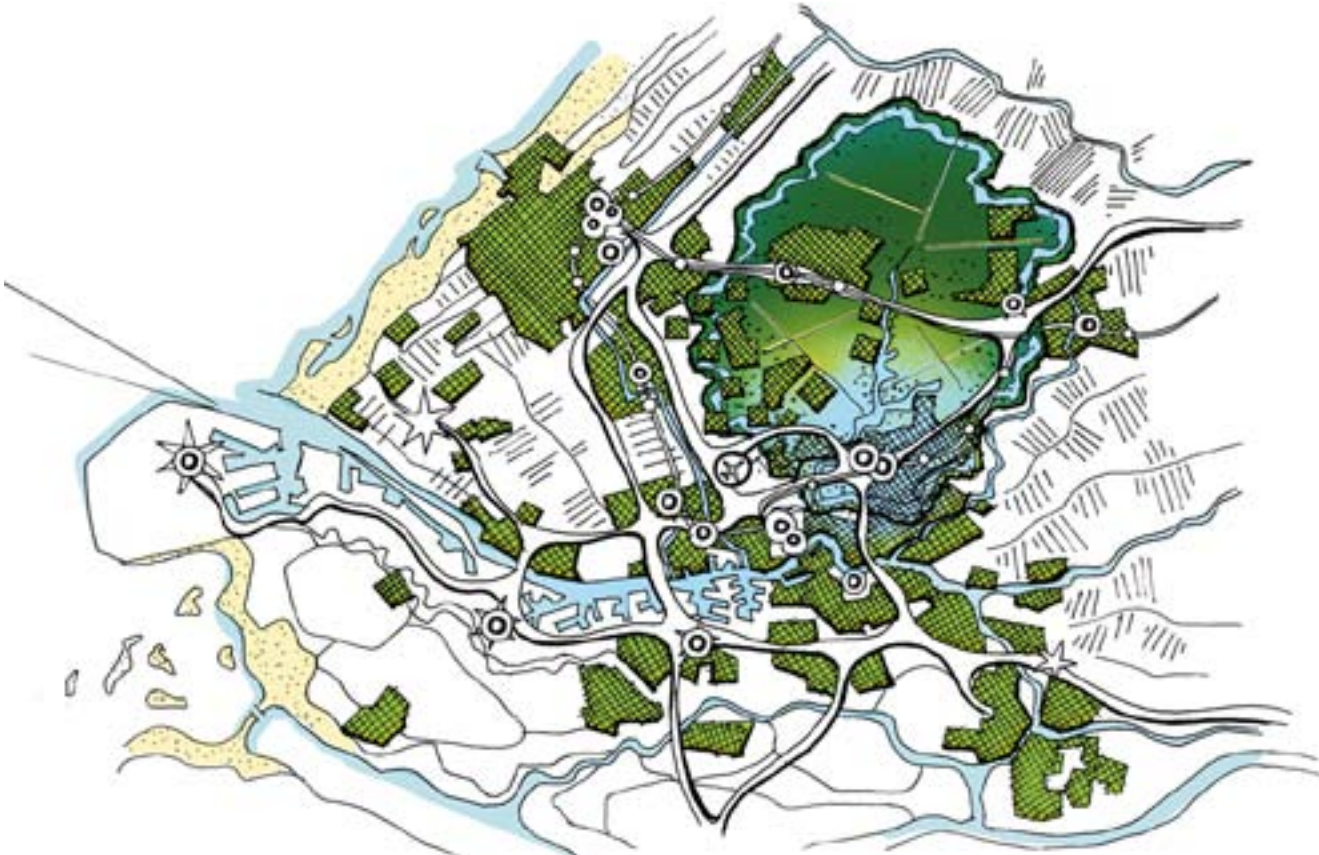


Scale water management 2050

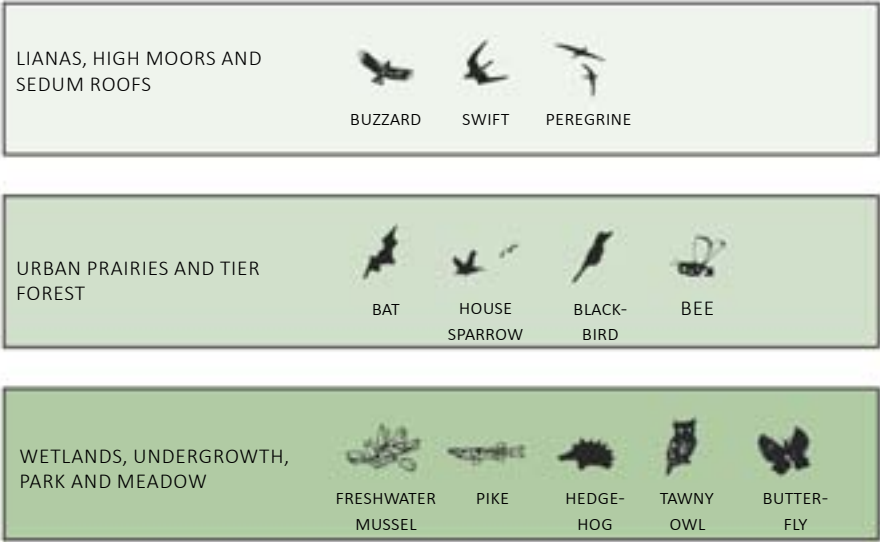
BIODIVERSITY

Currently, the stimulation of biodiversity remains limited to specific areas. CIAM XXI reverses this as well: biodiversity is leading and is therefore stimulated literally everywhere. In fact, the ground level is tripled to include the actual ground level, a medium-high roof level and a top-of-tower level. At the scale of the metropolitan landscape, this means technology is placed at the service of sustainable ecosystems, circular metabolisms and inner-city food production. We create inner-city habitats that include rich vegetation at different levels and house animal species that contribute to the stability of the ecosystem:

- freshwater mussels contribute to water purification.
- bats and swallows prevent insect pests.
- predatory fish, hedgehogs, owls and peregrine falcons are predators, which ensure the natural balance of the urban ecosystem.



The metropolitan landscape as a green-blue water machine: peat regeneration, reforestation, greening, more biodiversity.

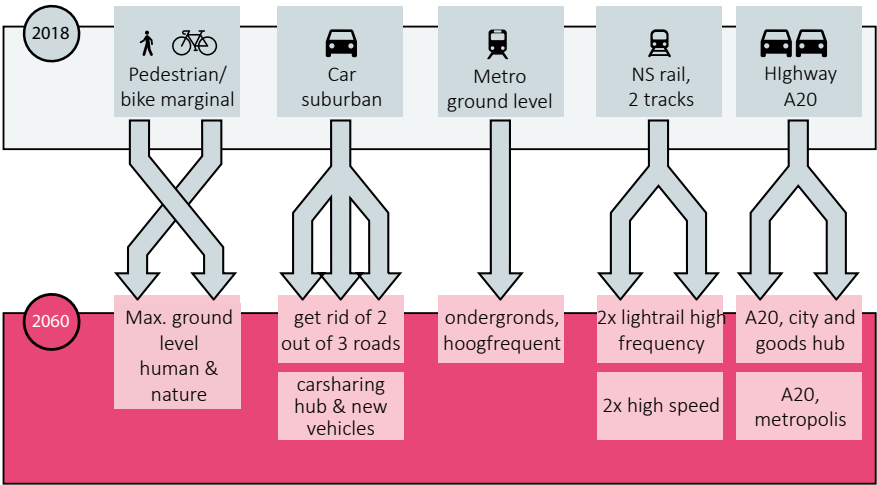


Scale green and biodiversity 2050

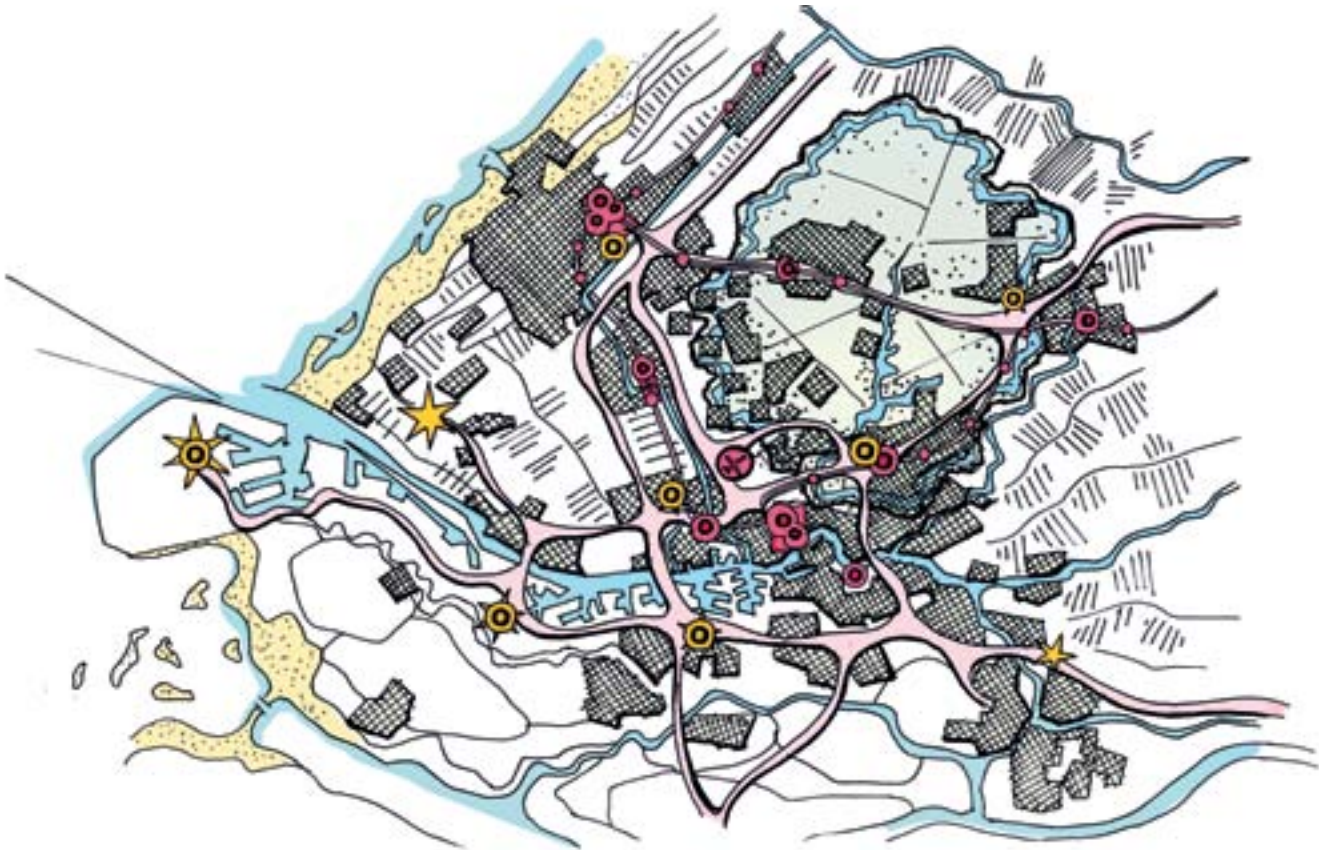
MOBILITY

Waterways, railways and motorways form the backbone of the transport network. Motorways become 'rivers' with fast, central lanes and slower peripheral lanes and are refitted for computer-guided vehicles. Multimodal hubs are the 'harbours' that guarantee optimal accessibility to people and goods. Densification around the hubs ensures the optimal use of space; pedestrians and playing children are given free rein.

- At the ground level, the requirements of pedestrians and the polder landscapes are leading; at least two out of three roads will be car-free; the metro goes underground.
- High-frequency, fast and self-driving rail transport on elevated railway lines.
- Elevated motorways for self-driving traffic, exchange with city and rail at hubs.
- Station biotopes combine the linking of traffic modalities at hubs with new centre functions and urban densification.



Mobility 2018>2050: transition mobility, circular economy, end pollution



Networks and multimodal hubs in the metropolitan landscape



Scales mobility and circularity 2050

Scale
Act local

Robust cities can absorb shocks and unexpected impulses, but that is not enough: we want the City of the Future to become richer and more diversified despite setbacks- just like other evolutionary systems. The American-Libanesse Nassim Taleb calls this characteristic anti-fragility.

Robustness and anti-fragility ask for a well-designed physical space that stimulates social interactions through a combination of human, natural and artificial systems. How and where problems should be solved becomes a question of scale instead of efficiency: acting local as much as possible.

A certain level of inefficiency makes the system vital and adaptive: as evolution is not about natural selection, but about the development of variation. The abundance of varieties and species ensures that there is always a convenient backup when an unforeseen shock occurs.

Due to the focus on the lowest scale the accessibility criterium is replaced by proximity principle. Within the historic CIAM thinking accessibility was of great importance: being able to move quickly from A to B creates proximity. Within this logic the hyperloop – a vacuum tube that transports people and goods in capsules with 1000 km/h – is an excellent means of transport. It becomes possible to live further and further away from our work.

We think that, besides time, distance should be a central principle. That is why we focus on proximity: make sure that different functions are mixed so well that everything is at walking or biking distance. With this the ground level reconquered.



From left to right fig. 52, fig. 53, fig. 54, fig. 55: Organize circularity at the right scale.

Every scale – household, neighbourhood life, station biotope, and metropolitan landscape—gets a proximity label that shows how autonomous that scale is. Such a proximity label entices citizens and policymakers, associations and companies, investors and politicians to make 'proximate choices' that enrich neighbourhood living and helps people to choose where to settle.

PROXIMITY LABEL

Before long, many of the systems used in Rotterdam Alexander will reach the end of their lifespan. This creates opportunities that require a vision to guide them. Incentives help to encourage all stakeholders to make the right decisions. That means nudging – for example by local currencies, local taxation, (neighbourhood) alliances and especially by the so-called 'proximity label'

The proximity label entices citizens and policymakers, associations and companies, investor, and politicians to make 'proximate choices' that enrich neighbourhood living. Proximate is the opposite of anonymous, distant and inaccessible. It centres on sustainable connections with and active access to everything people need to live a healthy life. This also means that we retrieve our production and our waste. Reshoring means less transport, local employment, programmatic enrichment, and a circular use of materials and raw materials

- Proximity label
- Besides the proximity labels per level (household, neighbourhood, station biotope, metropolitan landscape) there will also be labels per theme (energy, mobility, nature, water, waste, work, food, culture, education, care and services)

The proximity label promotes self-sufficiency



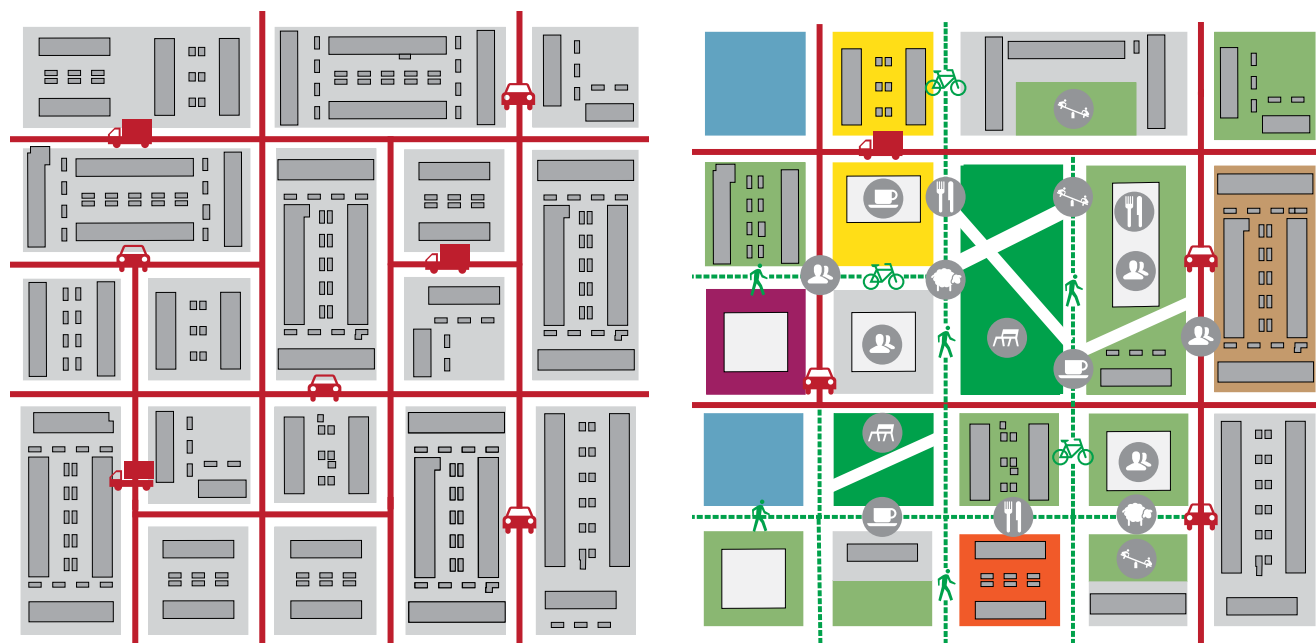
Develop local economy, stimulate neighbourhood life

- MANY FUNCTIONS AT A DISTANCE → EVERYTHING CLOSE AT HAND = LESS TRAFFIC
- HOMOGENEOUS → VARIOUS = MORE INCLUSIVENESS
- LINEAR & AT A DISTANCE → CIRCULAR & LOCAL = MORE PRODUCTIVE
- SHOPPING & OWNING → SHARING & EXPERIENCING = MORE INTERACTION
- FOCUS ON CONSUMPTION → FOCUS ON ENCOUNTER = RICHER EXPERIENCE

Effects of greater proximity.

“We are moving toward a new organization of public space and transport at neighbourhood level”

- Team CIAM XXI



Neighbourhood life

2018 > 2050 Removing at least two of every three streets from neighbourhood systems will provide neighbourhood life with maximum space.

Planning in stages

Mixed rather than separated, local rather than global, circular rather than linear, anti-fragile rather than robust. Our program is not only ambitious, but also realistic. We can start now with small steps through housing that houses more functions, with neighbourhoods that differentiate and specialize, and with enriching intersections.

We are in the middle of many transitions, for example within energy, climate, economy, mobility, digitalization and robotization. Other transitions are still in their infancy, such as the water challenge, landscape and greening, reforestation and peat regeneration. Some transitions we have little or no idea of are the improvement of our use of space, stimulating biodiversity, and developing ecological ethics.

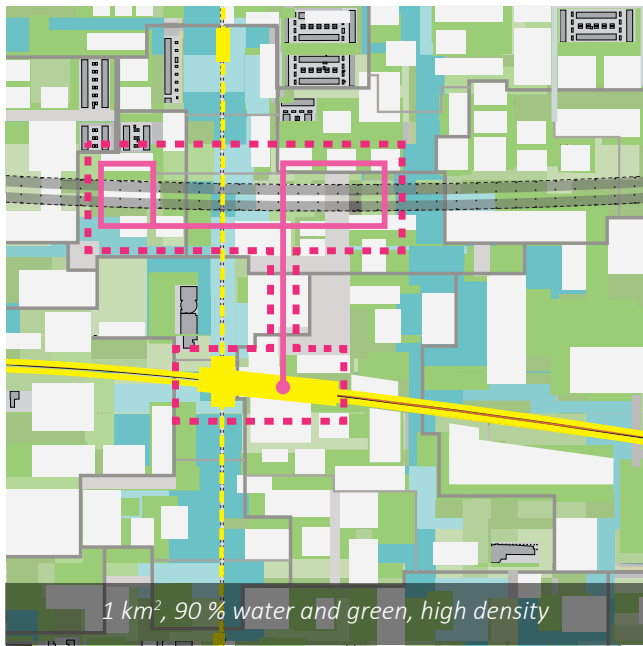
This is not a reason to succumb to pessimism or to wait until all transitions are fully established. On the contrary, we should freely take action with two rules in mind: an intervention should increase the mix and should increase proximity. Every action you take is a step in the good direction, colouring the city plan greener. This eclectic method makes it possible to fully profit from local circumstances and opportunities.

Step by step, block by block, neighbourhood by neighbourhood, the decisions of all stakeholders together lead to more diversity and create a mixed, kaleidoscopic city in which traffic is kept to a minimum and in which people solve problems locally rather than pass the buck.

Vision development station biotope

THE STATION BIOTOPE IS ALSO A NEIGHBOURHOOD

In order to reduce the demand for mobility, it is also essential to organize activities at the smallest conceivable scale, that is, as proximate as possible. But of course not everything can be produced locally. And even if they move about less, people will sometimes need to leave their neighbourhoods. The station biotope is the hub from which goods and people leave for other places in the metropolitan and global systems and to which they return. At the same time, the station biotope is a place where people dwell, work and live and in which slow traffic is given free rein. In short: the principles of neighbourhood life also apply to station biotopes.



Station biotope
2018 > 2050 Prins Alexanderlaan no longer exists, the A20 is supported by high columns, the metro runs underground and the station is a mobility hub surrounded by an attractive station biotope.

Rotterdam Alexander 2050: The Breathing City

An infrastructural hub today, this square kilometre will be a breathing station biotope by 2050. By adding new functions – housing, production, agriculture, recreation, ecology, biodiversity, water storage – the area has become mixed and self-sufficient. The ground level features urban wetlands, undergrowth, parks and meadows. On top of and between the buildings there is room for stacked green parks and squares. The upper floors of the towers are used for urban agriculture.



The hub (highway and rail) is the link between various modes of transport as well as part of the centre and a business location for the circular manufacturing industry.



Above: Wetlands on former Prins Alexanderlaan

Below: Metro underground and high frequency

Like Rotterdam Alexander itself, the surrounding neighbourhoods are reduced traffic and socially inclusive. They cover every need of their 5,000 to 15,000 inhabitants and although they differ in character and density, they all have a lot of public space, water and greenery. They contribute to the local and regional circular economy; surpluses and deficits are exchanged in the immediate proximity. Walking and biking become the main transport modes to move through public space.



Evaporation at 3 levels



In an 800 metre radius around the station cycling and walking are the main transport modes.



Pedestrians will have free rein; attractive public space



Node with high-speed train and light rail with mixed functions and facilities



More events in the station biotope



Local food production: urban agriculture on the highest floors creates room for nature development and reforestation in the metropolitan landscape.

The shopping mall has become a leisure area that centres on perception, experience and encounter. The station is a mobility hub that is directly accessible from the A20 motorway as well as a logistics centre for the circular economy.







RECOMMENDATIONS

1. **WATER AND THE METROPOLITAN LANDSCAPE**
 - » Depave ground levels, make room for water level fluctuations and use every drop of rainwater and seepage.
 - » Stack green levels for water buffering, evaporation and healthy living spaces.
2. **GREEN AND BIODIVERSITY**
 - » Move agriculture and food production to the cities as much as possible.
 - » Focus on nature development, peat regeneration, reforestation and greening throughout the metropolitan region.
3. **MOBILITY AND CIRCULARITY**
 - » Use proximity as a principle to mix living, working, nature and recreation.
 - » Avoid unnecessary traffic; make the pedestrian the measure of things.
 - » Refit highways and railways to accommodate self-driving vehicles and different speeds.
 - » Build mobility hubs for people and goods around road and railway hubs and also use these as circular economy hubs.
 - » Densify the area in an 800 metre radius around hubs to maximize use of them.
4. **PROCESS**
 - » Create sustainable areas neighbourhood by neighbourhood; enrich neighbourhood life with new programmes.
 - » Use the knowledge of local communities to develop plans.
 - » Introduce a 'proximity label' to stimulate self-sufficiency.
5. **GOVERNANCE**
 - » Adjust the tax system so that local and regional investment costs can be more easily offset against local and regional benefits.
 - » Adjust the governance model: use the principle of subsidiarity to delegate decision-making to the appropriate levels.

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THE BREATHING CITY

"Robust cities can absorb shocks and unexpected impulses. For team CIAM XXI, the bar is higher: it wants cities that become richer and more diverse through adversity, cities that move, evolve, breathe. A well-designed physical space stimulates social interaction through a combination of human, natural and artificial systems. To avoid unnecessary movement, functions are mixed at every level of scale. A local currency stimulates local initiatives. The pedestrian is the measure of things, shared space is combined with fast, high-frequency trains, self-propelled vehicles and drones. Artificial intelligence and digitization of the city are important tools, which citizens can control at all times".

- team CIAM XXI, 2018 -

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